X-RAY AND ABSORPTION WAVELENGTHS AND TWO-THETA TABLES

SECOND EDITION

Prepared by

E. W. WHITE

G. G. JOHNSON, JR.

ASTM Data Series DS 37A



AMERICAN SOCIETY FOR TESTING AND MATERIALS

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Sponsored by

ASTM Committee E-2
on Emission Spectroscopy

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Contents

PAGE

Foreword iv

Two-Theta Table I 1

Periodic Table 47

Two-Theta Table II 51

Foreword

X-ray emission spectrography (X-ray fluorescence) and the electron microprobe are two basic techniques for elemental chemical analysis. X-ray fluorescence instruments are now used routinely for the determination of all elements fluorine and heavier. The more efficient X-ray excitation by electrons used in the microprobe makes it feasible to work with all elements boron and heavier. Lithium and beryllium also can be detected in the microprobe although not as readily as the heavier elements. Fundamental to the successful use of these techniques is the proper application of X-ray emission line and absorption edge wavelength data, together with calculated values for the Bragg diffraction angles of the analyzing crystals. The trend is toward the analysis of specimens having increasing complex chemistry as well as toward utilization of X-ray emission line shifts (soft X-ray spectroscopy) to determine how elements are chemically bonded in a given specimen. These developments have created a need for reference tables in convenient form. This volume is the second edition of such tables. It provides a listing of all X-ray emission lines (160 Å* and shorter), incorporating some 3400 first order lines, absorption edges, and the calculated two-theta values for 23 commonly used analyzing crystals.

Since publication of the first edition as ASTM Data Series DS 37, *X-Ray Emission Line Wavelength and Two-Theta Tables* in 1965, [*1*][1] several developments have stimulated preparation of a new edition. Taken singly, perhaps none of these developments would warrant a new edition, but together they represent a major advancement over the earlier version.

New analyzing crystals are being developed continually. The most important recent advances have been made with materials that are not single crystals in the usual sense. These include increased use of the so-called pseudo-crystals or Langmuir-Blodgett preparations of soap films. Lead stearate continues to be the most commonly used pseudo-crystal, although the laurates and lignocerates are now commonly used also. The newly developed synthetic graphite sold by Union Carbide under the trade name "Ucar" [*2*] may be the precursor to an important new family of analyzing materials. This graphite is really a highly oriented polycrystalline material giving a rather broad rocking curve ($\wedge\vee$0.4 deg), but its very high reflection efficiency more than offsets this limitation for many applications. Clinochlore is now in extensive use—especially in microprobe applications where it is suited ideally to the analysis of oxygen [*3*]. Its mechanical and chemical stability are particularly useful in soft X-ray applications. Another trend in analyzer crystal usage is to employ more than one orientation of the same crystal. This has become especially popular for LiF, ADP, EDDT, and quartz.

The X-ray line designations and column headings have been rendered much more readable in this edition, thanks to the availability of a special IBM print train. This train, owned by the Joint Committee on Powder Diffraction Standards, carries most of the Greek letters as well as large and small type, upper and lower case, and prime characters. As a result the table has the appearance of being printed from set type.

The situation with regard to satellite lines has been reviewed extensively. It was decided to delete most of the satellite lines given in DS-37 from this table. The reason is that apparently most of them were identified originally from X-ray films in which they were recognized as undulations in intensity within emission bands or broad wavelength tails. The identification of many of them as real satellite lines is now in doubt.

Correctional formulas are being used more and more in quantitative X-ray fluorescence and electron microprobe analysis. Fundamental to all these correctional formulas is knowledge of the X-ray absorption edge wavelength (energies) for each of the elements in a given matrix. Tabulations of absorption edges are usually quite separate from the emission line wavelength tables. This edition integrates the absorption edges in a manner that makes them quite easily retrieved.

This wavelength table has been compiled with the use of high resolution spectrometers in mind. It is realized that for many spectrometers, not all of the lines listed will be resolved; but it is believed better to have the lines listed, although unresolved, than to have the lines resolved and go unidentified or even misidentified.

The chemical effect on X-ray spectra is now common knowledge among X-ray fluorescence and microprobe users. It is observed as changes in line wavelength, shape, and relative intensity. The wavelength shift is strongest for the light element K-lines. Because the K-line peak shifts are often quite large they must be taken into account when "peaking" the spectrometer for even routine analysis. For this reason, one column (Δ) has been used in this table to designate the

[1]The italic numbers in brackets refer to the list of references appended to this Foreword.

magnitude of shift that one might encounter for the K-series lines. This will be useful in deciding whether or not one needs to repeak the spectrometer during intensity measurement of a given set of standards and unknowns.

It is impossible to assign accurate relative intensity values to X-ray lines even within a given series (K, L, M, etc.) of a given element. The reason is that observed relative intensities are dependent upon a host of experimental parameters including: energy of the X-rays or electrons causing the excitation; self-absorption within the sample; wavelength-dependent response or efficiency of the crystal and detector. The self-absorption effect is the primary basis for the observed chemical effect among the L-series lines. The Lα to Lβ line intensity ratio may vary by a factor of two to five, depending on the element and experimental conditions used. Nevertheless, it is important to know whether a given line can be expected to be seen as quite strong, weak, or very weak. Extensive search of the literature failed to provide us with enough information to assign such values for this table. The only recourse was to experimentally collect the required data. This was done using an Applied Research Laboratories Model EMX microprobe. The results of dozens of spectral scans (K, L, and M Series) have gone into arriving at the values used in this compilation. The major exception to this is with regard to the relative intensities among the third period element K-series where we have used mostly the relative intensity from several publications of Baun and Fischer. Most published 2θ tables have used a constant set of relative L-series intensities for all elements. However, there are quite drastic changes with increasing atomic number, and they have been taken into account here. Relative intensities have been determined for the M-series lines. No attempt has been made to assign N-series line intensities as these are seldom used analytical lines and we were unable to experimentally measure N spectral series.

No attempt has been made to include an index of refraction correction. All wavelengths are given in units of Å* as introduced by Bearden [*4*].

Data in the second portion of this book, as in the earlier edition, is ordered on the basis of increasing wavelength. This arrangement makes possible the phasing in and out of crystals during just their useful λ range. This allows compilation of 2θ value for a total of 23 analyzing crystals. Such a phasing is, of course, not feasible in the first section where the data are ordered primarily on the basis of increasing atomic number.

Description of Table

The table is divided into two major sections separated by a periodic chart showing the major lines of each element.

The first section presents all wavelength lines and X-ray absorption edges shorter than 160 Å*. Data in this section are listed on the basis of atomic number ($Z = 3 \rightarrow 98$) with decreasing λ within each element. The two-theta values are shown for a selection of the 15 most commonly uscd analyzing crystals.

The second section gives all the lines shown in the first section arranged on the basis of increasing wavelength. Lines having a relative intensity of 1.0 or less are carried only to the third order. The more intense lines are carried to a maximum of the tenth order or until $n\lambda$ exceeds 160 Å.*

The column headings and explanation of the symbols used within each column are as follows:

The two columns under the heading *El* show the accepted chemical symbol for each element.

The *Line* designation usually gives the Siegbahn notation (Kα, Lβ, etc.), but when that is not established then the level designations are used to show the two levels involved in the transitions.

The comment column (*c*) carries certain comments according to the following key:

	/ or C	R	*	$
A				X
B			X	
C			X	X
D		X		
E		X		X
F		X	X	
G		X	X	X
H	X			
I	X			X
J	X		X	
K	X		X	X
L	X	X		
M	X	X		X
N	X	X	X	
O	X	X	X	X

where:

/ indicates value was interpolated from data for neighboring elements.

C indicates value was calculated from other transitions for the same element.

R indicates that the "best" measured value was rejected by Bearden and Burr in their least-squares energy level adjustment. Hence the original value has been replaced by the adjusted value obtained by Bearden and Burr.

* indicates that this line does *not* represent a dipole transition and hence will be usually quite weak.

$ denotes a transition in which the electron in the initial state occupies a level that is unoccupied in the ground state of the isolated atom. These lines have been called "semi-optical" lines and were so designated in X-Ray Wavelengths. However, since the experimentally observed radiation comes from a solid target (in some cases, a chemical compound rather than a pure element), the transitions can be attributed mainly to solid state or chemical effects or both.

The *N* column denotes the diffraction order from the Bragg equation,

$$n\lambda = 2d \sin\theta.$$

The *I* or relative intensity column indicates the relative intensity of a given line, within a given series for a given element and order of diffraction. Obviously the actual intensity will vary from order to order in a manner dictated primarily by the structure factors of a given crystal and orientation. Occasional intensities left blank indicate that the intensity is very weak and unknown. The unresolved $K\alpha_1\alpha_2$ line intensity is given as 150, or the integrated intensity of the lines.

Z is the numerical value for the atomic number.

The value for *R* is the primary literature source according to the following key:

R = 0, the reference is Cauchois [5] where the wavelength was in kX units.

R = 1, the reference is Cauchois [5] where the wavelength was in Å units.

R = 6, the reference is Bearden [6] where the wavelength is in Å* units.

The *KeV* value was determined by dividing the wavelength of each line (first order) or absorption edge into the value for $h\nu$.

$$\text{ex.:} \quad \text{KeV} = \frac{12.396}{\lambda\text{Å}^*}$$

Lambda is wavelength in Å*. Wavelengths which appear as 31.599999, for example, should be understood to be 31.6. The series of 9s is due to the finite word length and numerical representation of certain numbers on a binary computer.

P is precision of data given in terms of 10^-. This figure represents the number of significant digits to the right of the decimal point in the *Lambda* column.

Δ is given only for the K-series lines where applicable. Also given in terms of 10^-.

Table 1 summarizes the pertinent data about each crystal used in generation of the 2θ values as tabulated. Silicon (111) and germanium (111) both give zero intensity second order diffraction. For that reason, 2θ values for all second order diffractions for these crystals have been generated as blanks.

TABLE 1—*The 23 analyzing crystals used to develop the two-theta data.*

Crystal Designation	Crystal Name	Bragg Diffraction Indices, hkℓ	2d Å*
Lmel	Lead melissate	Film	160.
Llign	Lead lignocerate	Film	130.
Lstear	Lead stearate	Film	100.7
Llaur	Lead laurate	Film	70.
Chlor	Clinochlore	001	28.392
KAP	Potassium acid phthlate	100	26.632
RbAP	Rubidium acid phthlate	100	26.121
Mica	Muscovite	002	19.840
Gypm	Gypsum	020	15.19
ADP	Ammonium dihydrogen phosphate	101	10.64
EDDT	Ethylenediamine D-tartrate	020	8.808
PET	Pentaerythritol	002	8.742
Qtz	α-Quartz	100	8.52
ADP	Ammonium dihydrogen phosphate	200	7.50
Graph	Graphite (also 101 α-Quartz)	002	6.708
Ge	Germanium	111	6.532
Si	Silicon	111	6.2709
ADP	Ammonium dihydrogen phosphate	112	6.14
NaCl	Sodium chloride	200	5.6410
LiF	Lithium fluoride	200	4.0267
LiF	Lithium fluoride	220	2.848
Qtz	α-Quartz	203	2.7490
Topaz	Topaz	303	2.7120

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E. W. White
G. G. Johnson, Jr.
Materials Research Laboratory,
The Pennsylvania State University,
University Park, Pa.

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[4] Bearden, J. A., "X-ray Wavelengths," *Reviews of Modern Physics,* Vol. 39, No. 1, 1967, pp. 78-124.

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[6] Basic data as presented in Ref 4, with minor revisions and supplied by J. A. Bearden, June 1969 on punched IBM cards.

Two-Theta Table I

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El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
8e	Kα	A	1	100	4	6	0.109	114.00000	0	0															
Be	AK		1		4	6	0.112	111.00000	0																
B	Kα		1	100	5	6	0.183	67.59999	1	0	84.34	149.91													
8	AK		1		5	1	0.192	64.59999	1		79.81	134.69													
C	Kα		1	100	6	6	0.277	44.70000	1	1	52.71	79.37													
C	AK		1		6	6	0.284	43.67999	2		51.41	77.22													
N	Kα		1	100	7	6	0.392	31.59999	2	1	36.58	53.67													
N	AK		1		7	6	0.400	30.98999	2		35.85	52.55													
0	Kα		1	100	8	6	0.525	23.62000	2	1	27.13	39.44	112.59	124.97	129.45										
0	AK		1		8	6	0.532	23.31999	2		26.78	38.92	110.44	122.24	126.45										
F	Kα		1	100	9	6	0.677	18.31999	2	2	20.95	30.34	80.37	86.93	89.07	134.85									
F	SKα'		1	35	9	1	0.680	18.21999	2	3	20.85	30.17	79.84	86.34	88.46	133.37									
F	SKα''		1	30	9	1	0.681	18.20000	2	3	20.83	30.14	79.74	86.22	88.33	133.08									
F	AK		1		9	1	0.687	18.04999	2		20.65	29.89	78.95	85.34	87.42	130.95									
Ne	$K\alpha_{1,2}$		1	100	10	6	0.848	14.61000	3		16.68	24.09	61.94	66.54	68.02	94.85	148.23								
Ne	AK		1		10	6	0.867	14.30180	4		16.33	23.58	60.49	64.96	66.39	92.25	140.62								
Na	$K\alpha_{1,2}$		1	100	11	6	1.041	11.91010	4	3	13.58	19.59	49.60	53.13	54.25	73.78	103.27								
Na	SKα'		1	3	11	0	1.047	11.83700	3	3	13.50	19.47	49.28	52.78	53.89	73.26	102.39								
Na	$SK\alpha_3$		1	10	11	0	1.050	11.80500	3	3	13.46	19.42	49.14	52.62	53.74	73.03	102.00								
Na	$SK\alpha_4$		1	10	11	0	1.052	11.78600	3	3	13.44	19.39	49.05	52.53	53.64	72.89	101.77								
Na	$SK\alpha_5$		1	2	11	0	1.058	11.71700	3	3	13.36	19.27	48.75	52.20	53.30	72.40	100.95								
Na	$SK\alpha_6$		1	1	11	0	1.061	11.68600	3	3	13.33	19.22	48.61	52.05	53.15	72.17	100.59								
Na	$K\beta_1$		1	.5	11	1	1.067	11.61742	3	2	13.25	19.11	48.31	51.73	52.82	71.68	99.78								
Na	Kβ	A	1	.5	11	6	1.071	11.57500	3	2	13.20	19.04	48.12	51.52	52.61	71.38	99.28								
Na	AK		1		11	6	1.071	11.56900	3		13.19	19.03	48.09	51.49	52.58	71.34	99.21								
Mg	$K\alpha_{1,2}$		1	100	12	6	1.253	9.89000	4	3	11.27	16.24	40.77	43.60	44.50	59.80	81.25	136.72							
Mg	SKα'		1	2	12	1	1.259	9.84785	3	3	11.22	16.17	40.59	43.40	44.30	59.52	80.83	135.50							
Mg	$SK\alpha_3$		1	8	12	1	1.262	9.82380	3	3	11.20	16.14	40.49	43.29	44.18	59.36	80.59	134.82							
Mg	$SK\alpha_4$		1	8	12	1	1.264	9.80777	3	3	11.18	16.11	40.42	43.22	44.11	59.25	80.43	134.38							
Mg	$SK\alpha_5$		1	.9	12	1	1.271	9.75366	3	3	11.12	16.02	40.18	42.97	43.85	58.89	79.90	132.90							
Mg	$SK\alpha_6$		1	.8	12	1	1.274	9.72761	3	3	11.09	15.98	40.07	42.85	43.73	58.72	79.64	132.20							
Mg	SKβ'		1	.01	12	1	1.282	9.66649	2	2	11.02	15.87	39.81	42.56	43.44	58.32	79.04	130.60							
Mg	$K8_1$		1	.7	12	1	1.295	9.56980	3	2	10.91	15.72	39.40	42.12	42.98	57.68	78.10	128.16							
Mg	Kβ		1	.7	12	6	1.302	9.52100	3	2	10.85	15.63	39.19	41.89	42.75	57.36	77.63	126.97							
Mg	AK		1		12	6	1.303	9.51220	4		10.84	15.62	39.15	41.85	42.71	57.30	77.54	126.76							
Al	AL_1		1		13	6	0.087	142.50000	1																
Al	$K\alpha_2$		1	50	13	6	1.486	8.34173	5	3	9.50	13.69	34.17	36.51	37.25	49.73	66.62	103.26	142.55	145.19					
Al	$K\alpha_{1,2}$		1	150	13	6	1.486	8.34013	5	3	9.50	13.69	34.17	36.50	37.24	49.72	66.60	103.23	142.48	145.12					
Al	$K\alpha_1$		1	100	13	6	1.486	8.33934	5	3	9.50	13.68	34.16	36.50	37.24	49.71	66.60	103.21	142.45	145.09					
Al	SKα'		1	2	13	1	1.493	8.30474	3	3	9.46	13.63	34.02	36.34	37.08	49.49	66.29	102.62	141.08	143.60					
Al	$SK\alpha_3$		1	8	13	1	1.496	8.28670	3	3	9.44	13.60	33.94	36.26	36.99	49.38	66.12	102.31	140.38	142.85					
Al	$SK\alpha_4$		1	4	13	1	1.499	8.27067	3	3	9.42	13.57	33.87	36.19	36.92	49.27	65.98	102.03	139.77	142.20					
Al	$SK\alpha_5$		1	.5	13	1	1.506	8.22859	3	3	9.37	13.50	33.69	35.99	36.72	49.01	65.60	101.31	138.20	140.53					
Al	$SK\alpha_6$		1	.4	13	1	1.510	8.20754	3	3	9.35	13.47	33.61	35.90	36.63	48.87	65.41	100.96	137.44	139.72					
Al	SK8'		1	.1	13	1	1.537	8.06626	2	2	9.19	13.23	33.01	35.26	35.97	47.98	64.15	98.60	132.64	134.65					
Al	$K8_1$		1	.7	13	1	1.553	7.98190	3	2	9.09	13.10	32.66	34.88	35.59	47.45	63.40	97.21	129.97	131.86					
Al	K8		1	.7	13	6	1.557	7.96000	3	2	9.07	13.06	32.56	34.78	35.48	47.31	63.21	96.86	129.30	131.16					
Al	AK		1		13	6	1.560	7.94813	5		9.05	13.04	32.51	34.73	35.43	47.23	63.10	96.66	128.94	130.79					
Si	$L_{2,3}$-M		1	100	14	6	0.091	135.50000	1																
Si	$AL_{2,3}$		1		14	6	0.101	123.00000	0																
Si	$K\alpha_2$		1	50	14	6	1.739	7.12791	5	3	8.12	11.69	29.08	31.05	31.67	42.11	55.97	84.12	108.05	109.25					
Si	$K\alpha_{1,2}$		1	150	14	6	1.739	7.12624	5	3	8.12	11.69	29.07	31.04	31.66	42.10	55.96	84.10	108.01	109.21					
Si	$K\alpha_1$		1	100	14	6	1.740	7.12542	5	3	8.12	11.68	29.07	31.04	31.66	42.10	55.95	84.09	107.99	109.19					
Si	SKα'		1	.5	14	1	1.747	7.09430	3	3	8.08	11.63	28.94	30.90	31.52	41.90	55.68	83.63	107.31	108.49					
Si	$SK\alpha_3$		1	6	14	1	1.752	7.07677	3	3	8.06	11.60	28.87	30.82	31.44	41.79	55.53	83.38	106.92	108.10					
Si	$SK\alpha_4$		1	3	14	1	1.754	7.06654	3	3	8.05	11.59	28.82	30.77	31.39	41.73	55.45	83.23	106.70	107.87					
Si	$SK\alpha_5$		1	.2	14	1	1.763	7.02957	3	3	8.01	11.53	28.67	30.61	31.22	41.50	55.13	82.70	105.90	107.05					
Si	$SK\alpha_6$		1	.1	14	1	1.766	7.01995	3	3	7.99	11.51	28.63	30.57	31.18	41.44	55.05	82.56	105.69	106.84					
Si	SKβ'		1	.1	14	1	1.819	6.81574	2	2	7.76	11.18	27.78	29.66	30.25	40.18	53.32	79.67	101.40	102.46					
Si	$K\beta_1$		1	2	14	1	1.829	6.77800	3	2	7.72	11.11	27.62	29.49	30.08	39.95	53.00	79.14	100.62	101.67					
Si	Kβ		1	2	14	6	1.836	6.75300	3	2	7.69	11.07	27.52	29.38	29.97	39.80	52.79	78.79	100.12	101.15					
Si	AK	H	1		14	6	1.840	6.73800	3		7.67	11.05	27.46	29.31	29.90	39.71	52.67	78.58	99.81	100.84					
P	$L_{2,3}$-M		1	100	15	6	0.119	103.79999	1																
P	$AL_{2,3}$		1		15	6	0.132	94.00000	0		137.96														
P	$K\alpha_2$	H	1	50	15	6	2.012	6.16000	3	3	7.01	10.10	25.06	26.75	27.28	36.18	47.85	70.75	88.75	89.60	133.36	141.14			

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-7}																	
P	$K\alpha_{1,2}$	H	1	150	15	6	2.013	6.15800	3	3	7.01	10.09	25.05	26.74	27.27	36.16	47.83	70.73	88.72	89.56	133.27	141.03			
P	$K\alpha_1$	H	1	100	15	6	2.013	6.15700	3	3	7.01	10.09	25.05	26.73	27.27	36.16	47.82	70.71	88.70	89.55	133.23	140.98			
P	$SK\alpha'$		1	.5	15	1	2.022	6.13096	3	3	6.98	10.05	24.94	26.62	27.15	36.00	47.61	70.37	88.22	89.07	132.12	139.64			
P	$SK\alpha_3$		1	5	15	1	2.027	6.11663	3	3	6.96	10.03	24.88	26.56	27.08	35.91	47.49	70.18	87.97	88.80	131.52	138.91			
P	$SK\alpha_4$		1	5	15	1	2.029	6.10881	3	3	6.96	10.01	24.85	26.52	27.05	35.87	47.43	70.08	87.82	88.66	131.20	138.53			
P	$SK\alpha_5$		1	.01	15	1	2.040	6.07525	3	3	6.92	9.96	24.71	26.37	26.90	35.66	47.15	69.64	87.22	88.05	129.83	136.89			
P	$SK\alpha_6$		1	.01	15	1	2.044	6.06322	3	3	6.90	9.94	24.66	26.32	26.84	35.59	47.05	69.48	87.00	87.83	129.35	136.32			
P	$SK\beta'$		1	.1	15	0	2.123	5.83767	2	2	6.65	9.57	23.73	25.32	25.83	34.22	45.20	66.55	83.02	83.79	120.98	126.68			
P	$K\beta_1$		1	3	15	0	2.136	5.80380	3	3	6.61	9.51	23.59	25.17	25.68	34.02	44.93	66.11	82.44	83.20	119.81	125.38			
P	$K\beta$		1	3	15	6	2.139	5.79600	3	3	6.60	9.50	23.56	25.14	25.64	33.97	44.86	66.01	82.30	83.06	119.55	125.08			
P	AK	H	1		15	6	2.143	5.78400	3		6.59	9.48	23.51	25.09	25.59	33.90	44.76	65.86	82.09	82.85	119.14	124.62			
S	Ll,n		1	100	16	6	0.149	83.39999	1		111.83														
S	$K\alpha_2$		1	50	16	6	2.306	5.37496	5	3	6.12	8.81	21.83	23.29	23.75	31.44	41.45	60.68	75.21	75.88	106.50	110.75	144.67		
S	$K\alpha_{1,2}$		1	150	16	6	2.307	5.37309	5	3	6.12	8.80	21.82	23.28	23.74	31.43	41.43	60.66	75.18	75.85	106.45	110.69	144.54		
S	$K\alpha_1$		1	100	16	6	2.307	5.37216	5	3	6.12	8.80	21.81	23.27	23.74	31.42	41.42	60.65	75.17	75.83	106.42	110.66	144.48		
S	$SK\alpha'$		1	.3	16	1	2.316	5.35329	3	3	6.09	8.77	21.74	23.19	23.65	31.31	41.27	60.41	74.86	75.52	105.89	110.08	143.24		
S	$SK\alpha_3$		1	45	16	1	2.321	5.34077	3	3	6.08	8.75	21.68	23.14	23.60	31.23	41.17	60.26	74.65	75.31	105.53	109.70	142.45		
S	$SK\alpha_4$		1	45	16	1	2.324	5.33415	3	3	6.07	8.74	21.66	23.11	23.57	31.19	41.12	60.18	74.54	75.20	105.35	109.50	142.03		
S	$K\beta_1$		1	7	16	6	2.464	5.03160	4	3	5.73	8.24	20.42	21.78	22.21	29.38	38.69	56.44	69.68	70.28	97.20	100.76	126.24		
S	$K\beta x$		1	7	16	6	2.468	5.02330	4	3	5.72	8.23	20.38	21.74	22.18	29.33	38.62	56.34	69.54	70.15	96.98	100.53	125.87		
S	AK		1		16	6	2.470	5.01850	4		5.71	8.22	20.36	21.72	22.15	29.30	38.58	56.28	69.47	70.07	96.86	100.40	125.66		
Cl	Ll		1	100	17	6	0.183	67.89999	2		84.80	151.86													
Cl	Ln		1	100	17	6	0.184	67.32999	2		83.92	148.25													
Cl	$K\alpha_2$		1	50	17	6	2.620	4.73070	4	3	5.39	7.75	19.18	20.46	20.87	27.59	36.29	52.80	64.97	65.52	89.70	92.81	113.99		
Cl	$K\alpha_{1,2}$		1	150	17	6	2.621	4.72877	4	3	5.38	7.75	19.17	20.46	20.86	27.58	36.28	52.77	64.94	65.49	89.65	92.76	113.92		
Cl	$K\alpha_1$		1	100	17	6	2.622	4.72780	4	3	5.38	7.75	19.17	20.45	20.86	27.57	36.27	52.76	64.93	65.48	89.63	92.74	113.88		
Cl	$SK\alpha_3$		1	4	17	1	2.631	4.71100	3	3	5.36	7.72	19.10	20.38	20.78	27.47	36.14	52.56	64.67	65.22	89.22	92.31	113.26		
Cl	$SK\alpha_4$		1	4	17	1	2.640	4.69567	3	3	5.35	7.69	19.04	20.31	20.71	27.38	36.01	52.38	64.43	64.98	88.86	91.92	112.70		
Cl	K8		1	8	17	6	2.815	4.40340	4	3	5.01	7.21	17.84	19.03	19.41	25.65	33.70	48.89	59.99	60.49	82.06	84.77	102.63		
Cl	AK		1		17	6	2.819	4.39710	4		5.01	7.20	17.82	19.01	19.38	25.61	33.65	48.82	59.90	60.40	81.92	84.62	102.43		
Ar	Ll	H	1	100	18	6	0.220	56.29999	1		67.99	107.08													
Ar	Ln	H	1	100	18	6	0.222	55.89999	1		67.44	105.99													
Ar	$K\alpha_2$		1	50	18	6	2.955	4.19474	5		4.77	6.87	16.99	18.12	18.48	24.41	32.06	46.44	56.88	57.35	77.41	79.91	96.08		
Ar	$K\alpha_{1,2}$		1	150	18	6	2.957	4.19278	5		4.77	6.87	16.98	18.12	18.47	24.40	32.05	46.41	56.85	57.32	77.37	79.86	96.02		
Ar	$K\alpha_1$		1	100	18	6	2.957	4.19180	5		4.77	6.87	16.98	18.11	18.47	24.39	32.04	46.40	56.84	57.31	77.35	79.84	95.99		
Ar	$K8_{1,3}$		1	15	18	6	3.190	3.88600	4		4.42	6.36	15.73	16.78	17.11	22.59	29.65	42.84	52.36	52.79	70.80	73.01	87.08	149.63	
Ar	AK		1		18	6	3.202	3.87090	5		4.41	6.34	15.67	16.71	17.04	22.50	29.53	42.67	52.14	52.56	70.49	72.68	86.66	148.03	
K	Ll		1	100	19	6	0.260	47.73999	2		56.60	86.00													
K	Ln		1	100	19	6	0.262	47.23999	2		55.95	84.89													
K	$AL_{2,3}$		1		19	6	0.294	42.09999	1		49.43	73.94													
K	$K\alpha_2$		1	50	19	6	3.310	3.74450	4	4	4.26	6.13	15.16	16.17	16.48	21.76	28.54	41.21	50.32	50.72	67.86	69.96	83.18	136.85	
K	$K\alpha_{1,2}$		1	150	19	6	3.312	3.74243	4	4	4.26	6.13	15.15	16.16	16.47	21.75	28.53	41.19	50.29	50.69	67.82	69.91	83.12	136.69	
K	$K\alpha_1$		1	100	19	6	3.313	3.74140	4	4	4.26	6.13	15.14	16.15	16.47	21.74	28.52	41.17	50.27	50.68	67.80	69.89	83.10	136.61	
K	$SK\alpha_3$		1	3	19	1	3.332	3.72060	3	4	4.23	6.09	15.06	16.06	16.38	21.62	28.36	40.94	49.97	50.38	67.37	69.44	82.53	135.04	
K	$SK\alpha_4$		1	3	19	1	3.335	3.71649	3	4	4.23	6.09	15.04	16.04	16.36	21.59	28.32	40.89	49.91	50.32	67.29	69.36	82.42	134.73	
K	$K\beta_{1,3}$		1	15	19	6	3.589	3.45390	4	4	3.93	5.66	13.97	14.90	15.20	20.05	26.29	37.88	46.17	46.54	61.98	63.84	75.51	118.13	
K	$K8_5$	C	1	.01	19	6	3.602	3.44130	4	4	3.92	5.64	13.92	14.85	15.14	19.98	26.19	37.74	46.00	46.36	61.73	63.58	75.19	117.44	
K	AK		1		19	6	3.607	3.43650	4		3.91	5.63	13.90	14.83	15.12	19.95	26.15	37.69	45.93	46.30	61.63	63.48	75.06	117.19	
Ca	Ll		1	1	20	6	0.303	40.95999	2		48.00	71.63													
Ca	Ln		1	1	20	6	0.306	40.45999	2		47.38	70.62													
Ca	$L\alpha_{1,2}$	A	1	100	20	6	0.341	36.32999	2		42.30	62.53													
Ca	$L\beta_1$	A	1	10	20	6	0.345	35.93999	2		41.82	61.78													
Ca	$AL_{2,3}$		1		20	6	0.348	35.62999	2		41.44	61.19													
Ca	AL_3		1		20	6	0.349	35.48999	2		41.27	60.93													
Ca	AL_2		1		20	6	0.353	35.12999	2		40.83	60.25													
Ca	$K\alpha_2$		1	50	20	6	3.687	3.36166	5	4	3.83	5.51	13.60	14.50	14.79	19.51	25.57	36.84	44.87	45.23	60.15	61.95	73.16	113.20	
Ca	$K\alpha_{1,2}$		1	150	20	6	3.690	3.35948	5	4	3.82	5.50	13.59	14.49	14.78	19.50	25.55	36.81	44.84	45.20	60.11	61.90	73.10	113.09	
Ca	$K\alpha_1$		1	100	20	6	3.691	3.35839	5	4	3.82	5.50	13.59	14.49	14.77	19.49	25.55	36.80	44.83	45.18	60.09	61.88	73.08	113.03	
Ca	$SK\alpha_3$		1	2	20	1	3.711	3.34013	3	4	3.80	5.47	13.51	14.41	14.69	19.38	25.41	36.59	44.57	44.93	59.73	61.51	72.61	112.10	
Ca	$SK\alpha_4$		1	2	20	1	3.715	3.33683	3	4	3.80	5.46	13.50	14.40	14.68	19.36	25.38	36.55	44.52	44.88	59.66	61.44	72.53	111.93	
Ca	$K8_{1,3}$		1	15	20	6	4.012	3.08970	4	4	3.52	5.06	12.49	13.32	13.59	17.92	23.47	33.76	41.07	41.39	54.85	56.46	66.42	100.23	
Ca	$K8_5$	C	1	.01	20	6	4.032	3.07460	4	4	3.50	5.03	12.43	13.26	13.52	17.83	23.36	33.59	40.86	41.18	54.56	56.16	66.06	99.56	
Ca	AK		1		20	6	4.037	3.07030	4		3.49	5.03	12.42	13.24	13.50	17.80	23.32	33.54	40.80	41.12	54.48	56.07	65.95	99.37	
Sc	Ll		1	1	21	6	0.348	35.59000	2		41.39	61.12													
Sc	Ln		1	1	21	6	0.353	35.12999	2		40.83	60.25													

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Sc	$L\alpha_{1,2}$		1	100	21	6	0.395	31.34999	2		36.28	53.21													
Sc	$L\beta_1$		1	10	21	6	0.400	31.01999	2		35.88	52.61													
Sc	$K\alpha_2$		1	50	21	6	4.085	3.03420	4	4	3.45	4.97	12.27	13.08	13.34	17.59	23.04	33.14	40.30	40.62	53.79	55.36	65.08	97.80	
Sc	$K\alpha_{1,2}$		1	150	21	6	4.088	3.03200	4	4	3.45	4.97	12.26	13.07	13.33	17.58	23.03	33.11	40.27	40.59	53.74	55.31	65.03	97.70	
Sc	$K\alpha_1$		1	100	21	6	4.090	3.03090	4	4	3.45	4.96	12.26	13.07	13.33	17.57	23.02	33.10	40.25	40.57	53.72	55.29	65.00	97.65	
Sc	$K\beta_{1,3}$		1	20	21	6	4.460	2.77960	4	4	3.16	4.55	11.24	11.98	12.22	16.11	21.09	30.29	36.79	37.08	48.96	50.37	59.04	87.31	154.83
Sc	$K\beta_5$		1	.02	21	6	4.486	2.76340	4	4	3.15	4.52	11.17	11.91	12.15	16.01	20.96	30.11	36.57	36.86	48.66	50.06	58.67	86.67	152.00
Sc	AK	H	1		21	6	4.488	2.76200	3		3.14	4.52	11.17	11.91	12.14	16.00	20.95	30.09	36.55	36.84	48.63	50.03	58.63	86.62	151.77
Ti	Ll		1	1	22	6	0.395	31.35999	2		36.29	53.23													
Ti	Ln		1	1	22	6	0.401	30.89000	2		35.73	52.37													
Ti	$L\alpha_{1,2}$		1	100	22	6	0.452	27.42000	2		31.60	46.12	149.93												
Ti	$AL_{2,3}$		1		22	6	0.454	27.28999	2		31.45	45.89	147.97												
Ti	$L\beta_1$		1	10	22	6	0.458	27.04999	2		31.16	45.46	144.63												
Ti	$K\alpha_2$		1	50	22	6	4.504	2.75216	5	4	3.13	4.51	11.13	11.86	12.10	15.95	20.88	29.98	36.42	36.70	48.44	49.84	58.40	86.23	150.19
Ti	$K\alpha_{1,2}$		1	150	22	6	4.508	2.74973	5	4	3.13	4.50	11.12	11.85	12.09	15.93	20.86	29.95	36.38	36.67	48.40	49.79	58.35	86.14	149.81
Ti	$K\alpha_1$		1	100	22	6	4.510	2.74851	5	4	3.13	4.50	11.11	11.85	12.08	15.93	20.85	29.94	36.37	36.65	48.38	49.77	58.32	86.09	149.62
Ti	$K\beta_{1,3}$		1	20	22	6	4.931	2.51391	5	4	2.86	4.12	10.16	10.83	11.05	14.56	19.05	27.33	33.17	33.42	44.02	45.27	52.93	77.27	123.94
Ti	$K\beta_5$	B	1	.02	22	6	4.961	2.49850	4	4	2.84	4.09	10.10	10.77	10.98	14.47	18.93	27.16	32.96	33.21	43.74	44.98	52.58	76.71	122.63
Ti	AK		1		22	6	4.964	2.49734	5		2.84	4.09	10.09	10.76	10.97	14.46	18.93	27.15	32.94	33.20	43.71	44.96	52.55	76.66	122.54
V	Ll		1	1	23	6	0.446	27.76999	2		32.02	46.75	155.97												
V	Ln		1	1	23	6	0.453	27.34000	2		31.51	45.98	148.71												
V	$L\alpha_{1,2}$		1	100	23	6	0.511	24.25000	2		27.87	40.54	117.32	131.17	136.36										
V	$L\beta_1$		1	10	23	6	0.519	23.87999	2		27.44	39.89	114.51	127.45	132.19										
V	$L\beta_{3,4}$	H	1	.1	23	6	0.585	21.18999	2		24.29	35.24	96.55	105.44	108.43										
V	$K\alpha_2$		1	50	23	6	4.944	2.50738	5	4	2.85	4.11	10.13	10.80	11.02	14.52	19.00	27.26	33.08	33.34	43.90	45.15	52.78	77.03	123.38
V	$K\alpha_{1,2}$		1	150	23	6	4.949	2.50483	5	4	2.85	4.10	10.12	10.79	11.01	14.51	18.98	27.23	33.04	33.30	43.85	45.10	52.72	76.94	123.17
V	$K\alpha_1$		1	100	23	6	4.951	2.50356	5	4	2.85	4.10	10.12	10.79	11.00	14.50	18.97	27.22	33.03	33.28	43.83	45.07	52.70	76.89	123.06
V	$K\beta_{1,3}$		1	20	23	6	5.426	2.28440	5	4	2.60	3.74	9.23	9.84	10.03	13.22	17.30	24.80	30.06	30.30	39.82	40.94	47.78	69.13	106.66
V	$K\beta_5$	B	1	.02	23	6	5.462	2.26951	5	4	2.58	3.72	9.17	9.78	9.97	13.14	17.19	24.63	29.86	30.09	39.55	40.66	47.45	68.61	105.67
V	AK		1		23	6	5.463	2.26910	4		2.58	3.72	9.17	9.78	9.97	13.13	17.18	24.63	29.86	30.09	39.54	40.65	47.44	68.60	105.64
Cr	Ll		1	1	24	6	0.500	24.78000	2		28.49	41.46	121.57	137.01	143.12										
Cr	Ln		1	1	24	6	0.510	24.29999	2		27.93	40.63	117.71	131.69	136.96										
Cr	$L\alpha_{1,2}$		1	100	24	6	0.573	21.64000	2		24.82	36.02	99.31	108.69	111.88										
Cr	$L\beta_1$		1	20	24	6	0.583	21.26999	2		24.39	35.38	97.03	106.01	109.03										
Cr	AL_3		1		24	6	0.599	20.70000	1		23.72	34.40	93.62	102.02	104.83										
Cr	$L\beta_{3,4}$		1	.1	24	6	0.654	18.95999	2		21.71	31.43	83.79	90.78	93.08	145.74									
Cr	AL_2		1		24	6	0.693	17.89999	1		20.48	29.63	78.17	84.46	86.51	128.90									
Cr	AL_1		1		24	6	0.742	16.70000	1		19.09	27.60	72.06	77.67	79.48	114.65									
Cr	$K\alpha_2$		1	50	24	6	5.405	2.29361	6	4	2.61	3.76	9.27	9.88	10.07	13.28	17.37	24.90	30.19	30.42	39.99	41.11	47.98	69.45	107.29
Cr	$K\alpha_{1,2}$		1	150	24	6	5.411	2.29100	5	4	2.61	3.75	9.26	9.87	10.06	13.26	17.35	24.87	30.15	30.39	39.94	41.06	47.92	69.36	107.11
Cr	$K\alpha_1$		1	100	24	6	5.414	2.28970	5	4	2.61	3.75	9.25	9.86	10.06	13.25	17.34	24.85	30.14	30.37	39.92	41.04	47.90	59.31	107.02
Cr	$K\beta_{1,3}$		1	18	24	6	5.946	2.08487	5	4	2.37	3.41	8.42	8.98	9.16	12.06	15.78	22.60	27.38	27.59	36.22	37.23	43.38	62.37	94.12
Cr	$K\beta_5$	B	1	.03	24	6	5.986	2.07087	5	4	2.36	3.39	8.37	8.92	9.09	11.98	15.67	22.45	27.20	27.41	35.96	36.97	43.08	61.90	93.29
Cr	AK		1		24	6	5.988	2.07020	5		2.36	3.39	8.36	8.92	9.09	11.98	15.67	22.44	27.19	27.40	35.95	36.95	43.06	61.88	93.25
Mn	Ll		1	2	25	6	0.556	22.28999	2		25.58	37.14	103.46	113.64	117.15										
Mn	Ln		1	1	25	6	0.567	21.84999	2		25.06	36.38	100.63	110.26	113.54										
Mn	$L\alpha_{1,2}$		1	100	25	6	0.637	19.45000	2		22.27	32.26	86.48	93.83	96.25	157.24									
Mn	$L\beta_1$		1	30	25	6	0.649	19.10999	2		21.88	31.69	84.61	91.71	94.04	148.82									
Mn	$L\beta_{3,4}$		1	.1	25	6	0.721	17.18999	2		19.66	28.43	74.52	80.40	82.31	120.09									
Mn	$K\alpha_2$		1	50	25	6	5.887	2.10578	5	4	2.40	3.45	8.51	9.07	9.25	12.19	15.94	22.83	27.66	27.88	36.59	37.61	43.84	63.06	95.36
Mn	$K\alpha_{1,2}$		1	150	25	6	5.894	2.10314	5	4	2.39	3.44	8.50	9.05	9.24	12.17	15.92	22.80	27.63	27.84	36.54	37.56	43.78	62.97	95.20
Mn	$K\alpha_1$		1	100	25	6	5.898	2.10182	6	4	2.39	3.44	8.49	9.05	9.23	12.16	15.91	22.79	27.61	27.82	36.52	37.54	43.75	62.93	95.12
Mn	$K\beta_{1,3}$		1	20	25	6	6.489	1.91021	5	4	2.17	3.13	7.72	8.23	8.39	11.05	14.45	20.68	25.05	25.24	33.09	34.01	39.59	56.64	84.25
Mn	$K\beta_5$	B	1	.03	25	6	6.534	1.89710	4	4	2.16	3.11	7.66	8.17	8.33	10.97	14.35	20.54	24.88	25.07	32.86	33.77	39.30	56.22	83.54
Mn	AK		1		25	6	6.536	1.89643	5		2.16	3.10	7.66	8.17	8.33	10.97	14.34	20.53	24.87	25.06	32.84	33.76	39.29	56.20	83.50
Fe	Ll		1	8	26	6	0.615	20.14999	2		23.09	33.46	90.42	98.33	100.96										
Fe	Ln		1	2	26	6	0.628	19.75000	2		22.62	32.78	88.15	95.73	98.24	169.08									
Fe	$L\alpha_{1,2}$		1	100	26	6	0.705	17.59000	2		20.12	29.11	76.57	82.67	84.66	124.90									
Fe	AL_3		1		26	6	0.707	17.52499	3		20.04	29.00	76.23	82.30	84.28	124.09									
Fe	$L\beta_1$		1	20	26	6	0.718	17.25999	2		19.74	28.55	74.88	80.80	82.72	120.91									
Fe	AL_2		1		26	6	0.721	17.20200	3		19.67	28.45	74.58	80.47	82.38	120.23									
Fe	$L\beta_{3,4}$		1	.5	26	6	0.792	15.65000	2		17.88	25.84	66.90	71.98	73.62	104.15									
Fe	$K\alpha_2$		1	50	26	6	6.390	1.93998	6		2.21	3.18	7.84	8.35	8.52	11.22	14.68	21.01	25.45	25.64	33.62	34.55	40.23	57.60	85.87
Fe	$K\alpha_{1,2}$		1	150	26	6	6.398	1.93735	6		2.20	3.17	7.83	8.34	8.51	11.21	14.66	20.98	25.41	25.61	33.57	34.51	40.17	57.52	85.73
Fe	$K\alpha_1$		1	100	26	6	6.403	1.93604	6		2.20	3.17	7.82	8.34	8.50	11.20	14.65	20.97	25.40	25.59	33.55	34.48	40.15	57.48	85.65

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Fe	$K\beta_{1,3}$		1	20	26	6	7.057	1.75661	5	4	2.00	2.88	7.09	7.56	7.71	10.16	13.28	19.01	23.01	23.18	30.36	31.20	36.29	51.73	76.16
Fe	$K\beta_5$	B	1	.03	26	6	7.107	1.74420	4	4	1.98	2.86	7.04	7.51	7.66	10.09	13.19	18.87	22.84	23.02	30.14	30.97	36.02	51.34	75.53
Fe	AK		1		26	6	7.110	1.74346	5		1.98	2.85	7.04	7.51	7.65	10.08	13.18	18.86	22.83	23.01	30.13	30.96	36.01	51.31	75.49
Co	L1		1	9	27	6	0.678	18.29199	3		20.93	30.30	80.22	86.76	88.90	134.43									
Co	Ln		1	2	27	6	0.694	17.87000	2		20.44	29.58	78.01	84.29	86.33	128.50									
Co	$L\alpha_{1,2}$		1	100	27	6	0.776	15.97200	3		18.25	26.38	68.47	73.70	75.39	107.23									
Co	AL_3		1		27	6	0.779	15.91500	3		18.19	26.28	68.19	73.39	75.07	106.68									
Co	$L\beta_1$		1	18	27	6	0.791	15.66600	3		17.90	25.86	66.98	72.06	73.70	104.30									
Co	AL_2		1		27	6	0.794	15.61800	3		17.84	25.78	66.75	71.81	73.44	103.85									
Co	$L\beta_{3,4}$		1	.5	27	6	0.866	14.31000	2		16.34	23.59	60.53	65.00	66.44	92.32	140.80								
Co	$K\alpha_2$		1	50	27	6	6.914	1.79285	6		2.04	2.94	7.24	7.72	7.87	10.37	13.56	19.40	23.49	23.67	31.00	31.86	37.06	52.88	78.03
Co	$K\alpha_{1,2}$		1	150	27	6	6.924	1.79026	6		2.04	2.93	7.23	7.71	7.86	10.35	13.54	19.37	23.45	23.63	30.96	31.81	37.01	52.80	77.89
Co	$K\alpha_1$		1	100	27	6	6.929	1.78896	6		2.04	2.93	7.23	7.70	7.85	10.35	13.53	19.36	23.44	23.62	30.93	31.79	36.98	52.76	77.83
Co	$K\beta_{1,3}$		1	20	27	6	7.648	1.62079	5	4	1.84	2.65	6.55	6.98	7.11	9.37	12.25	17.52	21.21	21.37	27.96	28.73	33.40	47.47	69.37
Co	$K\beta_5$	B	1	.03	27	6	7.705	1.60891	5	4	1.83	2.63	6.50	6.93	7.06	9.30	12.16	17.39	21.05	21.21	27.76	28.52	33.14	47.10	68.79
Co	AK		1		27	6	7.708	1.60815	5		1.83	2.63	6.49	6.92	7.06	9.30	12.15	17.39	21.04	21.20	27.74	28.51	33.13	47.08	68.76
Ni	L1		1	8	28	6	0.743	16.69299	3		19.08	27.59	72.02	77.63	79.44	114.57									
Ni	Ln		1	3	28	6	0.762	16.26999	2		18.60	26.88	69.93	75.31	77.05	110.18									
Ni	$L\alpha_{1,2}$		1	100	28	6	0.851	14.56100	3		16.63	24.01	61.71	66.29	67.76	94.43	146.91								
Ni	AL_3		1		28	6	0.853	14.52500	3		16.59	23.95	61.54	66.10	67.57	94.13	145.97								
Ni	$L\beta_1$		1	21	28	6	0.869	14.27100	3		16.29	23.53	60.35	64.80	66.23	91.99	139.94								
Ni	AL_2		1		28	6	0.870	14.24200	3		16.26	23.48	60.21	64.66	66.08	91.75	139.30								
Ni	$L\beta_{3,4}$		1	.8	28	6	0.941	13.18000	2		15.04	21.71	55.32	59.33	60.61	83.26	120.38								
Ni	$K\alpha_2$		1	50	28	6	7.460	1.66175	6		1.89	2.72	6.71	7.15	7.29	9.61	12.56	17.97	21.75	21.92	28.69	29.48	34.27	48.75	71.39
Ni	$K\alpha_{1,2}$		1	150	28	6	7.471	1.65919	6		1.89	2.72	6.70	7.14	7.28	9.59	12.54	17.94	21.72	21.88	28.64	29.43	34.21	48.67	71.26
Ni	$K\alpha_1$		1	100	28	6	7.477	1.65791	6		1.89	2.71	6.70	7.14	7.28	9.59	12.53	17.93	21.70	21.86	28.62	29.41	34.18	48.63	71.20
Ni	$K\beta_{1,3}$		1	20	28	6	8.263	1.50013	6		1.71	2.46	6.06	6.46	6.58	8.67	11.34	16.21	19.61	19.76	25.85	26.55	30.84	43.75	63.57
Ni	$K\beta_5$	B	1	.03	28	6	8.327	1.48862	5	4	1.69	2.44	6.01	6.41	6.53	8.61	11.25	16.09	19.46	19.61	25.64	26.35	30.60	43.39	63.03
Ni	AK		1		28	6	8.330	1.48807	5		1.69	2.44	6.01	6.41	6.53	8.60	11.24	16.08	19.45	19.60	25.63	26.34	30.59	43.38	63.00
Cu	AM_2		1		29	6	0.078	159.50000	1																
Cu	AM_1		1		29	6	0.112	110.59999	1																
Cu	L1		1	5	29	6	0.811	15.28600	3		17.46	25.23	65.15	70.06	71.63	100.79									
Cu	Ln		1	1	29	6	0.832	14.90000	2		17.02	24.58	63.31	68.04	69.56	97.36	157.57								
Cu	$L\alpha_{1,2}$		1	100	29	6	0.930	13.33600	3		15.22	21.97	56.03	60.10	61.40	84.47	122.79								
Cu	AL_3		1		29	6	0.933	13.28800	3		15.17	21.89	55.81	59.86	61.16	84.10	122.04								
Cu	$L\beta_1$		1	20	29	6	0.950	13.05300	3		14.90	21.49	54.74	58.70	59.96	82.28	118.48								
Cu	AL_2		1		29	6	0.953	13.01400	3		14.85	21.43	54.56	58.51	59.76	81.98	117.91								
Cu	$L\beta_{3,4}$		1	1	29	6	1.023	12.12200	3		13.83	19.94	50.55	54.15	55.30	75.32	105.88								
Cu	$K\alpha_2$		1	50	29	6	8.026	1.54439	6		1.76	2.53	6.24	6.65	6.78	8.93	11.67	16.69	20.20	20.35	26.62	27.35	31.78	45.11	65.68
Cu	$K\alpha_{1,2}$		1	150	29	6	8.040	1.54184	6		1.75	2.52	6.23	6.64	6.77	8.91	11.65	16.66	20.16	20.32	26.58	27.31	31.72	45.03	65.55
Cu	$K\alpha_1$		1	100	29	6	8.046	1.54056	6		1.75	2.52	6.22	6.63	6.76	8.91	11.64	16.65	20.15	20.30	26.55	27.28	31.70	44.99	65.49
Cu	$K\beta_3$		1	6	29	6	8.901	1.39260	4		1.58	2.28	5.62	5.99	6.11	8.05	10.52	15.04	18.19	18.33	23.96	24.62	28.58	40.47	58.55
Cu	$K\beta_{1,3}$		1	20	29	6	8.904	1.39222	6		1.58	2.28	5.62	5.99	6.11	8.05	10.52	15.04	18.19	18.33	23.96	24.61	28.58	40.46	58.53
Cu	$K\beta_5$	B	1	.03	29	6	8.976	1.38109	5		1.57	2.26	5.58	5.95	6.06	7.98	10.43	14.92	18.04	18.18	23.76	24.41	28.34	40.12	58.02
Cu	AK		1		29	6	8.979	1.38059	5		1.57	2.26	5.57	5.94	6.06	7.98	10.43	14.91	18.04	18.17	23.75	24.40	28.33	40.10	57.99
Zn	$M_{2,3}M_{4,5}$		1	100	30	6	0.079	157.00000	0																
Zn	AM_3		1		30	6	0.086	143.89999	1																
Zn	AM_2		1		30	6	0.090	137.00000	1																
Zn	L1		1	4	30	6	0.884	14.02000	2		16.01	23.11	59.18	63.53	64.92	89.93	134.73								
Zn	Ln		1	2	30	6	0.906	13.68000	2		15.62	22.54	57.61	61.82	63.16	87.18	128.47								
Zn	$L\alpha_{1,2}$		1	100	30	6	1.012	12.25400	3		13.98	20.16	51.14	54.79	55.95	76.29	107.55								
Zn	AL_3		1		30	6	1.022	12.13100	3		13.84	19.96	50.59	54.19	55.34	75.39	106.00								
Zn	$L\beta_1$		1	26	30	6	1.034	11.98300	3		13.67	19.71	49.93	53.48	54.61	74.31	104.16								
Zn	AL_2		1		30	6	1.045	11.86200	3		13.53	19.51	49.39	52.90	54.02	73.44	102.69								
Zn	$L\beta_{3,4}$		1	1	30	6	1.107	11.20000	3		12.77	18.41	46.47	49.74	50.78	68.74	95.01								
Zn	AL_1	H	1		30	6	1.198	10.35000	2		11.80	17.01	42.76	45.74	46.69	62.89	85.90	153.18							
Zn	$K\alpha_2$		1	50	30	6	8.614	1.43900	6		1.64	2.36	5.81	6.19	6.32	8.32	10.87	15.55	18.81	18.95	24.77	25.45	29.56	41.88	60.70
Zn	$K\alpha_{1,2}$		1	150	30	6	8.630	1.43644	6		1.63	2.35	5.80	6.18	6.30	8.30	10.85	15.52	18.77	18.91	24.73	25.41	29.50	41.80	60.58
Zn	$K\alpha_1$		1	100	30	6	8.637	1.43515	6		1.63	2.35	5.79	6.18	6.30	8.30	10.84	15.50	18.75	18.90	24.71	25.38	29.48	41.76	60.52
Zn	$K\beta_{1,3}$		1	20	30	6	9.570	1.29525	5		1.47	2.12	5.23	5.58	5.68	7.49	9.78	13.98	16.91	17.04	22.27	22.87	26.55	37.53	54.10
Zn	KB_5	B	1	.04	30	6	9.648	1.28480	4		1.46	2.10	5.19	5.53	5.64	7.43	9.70	13.87	16.78	16.90	22.08	22.69	26.33	37.21	53.63
Zn	$K\beta_2$		1	.3	30	6	9.656	1.28372	5		1.46	2.10	5.18	5.53	5.63	7.42	9.70	13.86	16.76	16.89	22.07	22.67	26.31	37.18	53.58
Zn	AK		1		30	6	9.659	1.28340	4		1.46	2.10	5.18	5.52	5.63	7.42	9.69	13.86	16.76	16.88	22.06	22.66	26.30	37.17	53.57
Ga	L1		1	1	31	6	0.957	12.95300	3		14.78	21.33	54.29	58.20	59.46	81.52	117.02								
Ga	Ln		1	1	31	6	0.984	12.59700	3		14.37	20.73	52.68	56.46	57.67	78.83	112.05								

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																
Ga	$L\alpha_{1,2}$		1	100	31	6	1.098	11.29200	3	12.88	18.57	46.87	50.17	51.23	69.38	96.04								
Ga	AL_3		1		31	6	1.117	11.10000	3	12.66	18.25	46.03	49.26	50.29	68.04	93.90								
Ga	$L\beta_1$		1	35	31	6	1.125	11.02300	3	12.57	18.12	45.69	48.90	49.92	67.50	93.05								
Ga	AL_2	H	1		31	6	1.145	10.82800	3	12.35	17.80	44.84	47.98	48.98	66.15	90.93								
Ga	$L\beta_{3,4}$		1	2	31	6	1.197	10.35900	3	11.81	17.02	42.80	45.78	46.73	62.95	85.99	153.61							
Ga	AL_1	H	1		31	6	1.303	9.51700	3	10.85	15.63	39.17	41.88	42.73	57.33	77.59	126.88							
Ga	$K\alpha_2$		1	50	31	6	9.223	1.34399	5	1.53	2.20	5.43	5.79	5.90	7.77	10.15	14.51	17.55	17.69	23.12	23.75	27.57	39.00	56.32
Ga	$K\alpha_{1,2}$		1	150	31	6	9.241	1.34138	5	1.53	2.20	5.42	5.77	5.89	7.75	10.13	14.49	17.52	17.65	23.07	23.70	27.51	38.92	56.20
Ga	$K\alpha_1$		1	100	31	6	9.250	1.34008	6	1.52	2.19	5.41	5.77	5.88	7.75	10.12	14.47	17.50	17.64	23.05	23.68	27.49	38.88	56.14
Ga	$K\beta_3$		1	7	31	6	10.259	1.20835	5	1.38	1.98	4.88	5.20	5.30	6.98	9.13	13.04	15.77	15.89	20.76	21.32	24.74	34.93	50.21
Ga	$K\beta_1$		1	14	31	6	10.263	1.20789	5	1.37	1.98	4.88	5.20	5.30	6.98	9.12	13.04	15.76	15.88	20.75	21.31	24.73	34.91	50.19
Ga	$K\beta_5$	B	1	.04	31	6	10.346	1.19810	4	1.36	1.96	4.84	5.16	5.26	6.92	9.05	12.93	15.64	15.75	20.58	21.14	24.53	34.62	49.76
Ga	$K8_2$		1	.3	31	6	10.365	1.19600	5	1.36	1.96	4.83	5.15	5.25	6.91	9.03	12.91	15.61	15.73	20.54	21.10	24.48	34.56	49.66
Ga	AK		1		31	6	10.366	1.19580	4	1.36	1.96	4.83	5.15	5.25	6.91	9.03	12.91	15.61	15.72	20.54	21.10	24.48	34.55	49.65
Ge	L1		1	1	32	6	1.036	11.96500	3	13.65	19.68	49.85	53.39	54.52	74.18	103.94								
Ge	Ln		1	1	32	6	1.068	11.60900	3	13.24	19.09	48.27	51.69	52.77	71.62	99.68								
Ge	$L\alpha_{1,2}$		1	100	32	6	1.188	10.43610	4	11.90	17.15	43.13	46.14	47.10	63.47	86.79	157.53							
Ge	AL_3		1		32	6	1.217	10.18700	3	11.61	16.74	42.05	44.98	45.91	61.79	84.23	146.44							
Ge	$L8_1$		1	35	32	6	1.218	10.17500	3	11.60	16.72	42.00	44.92	45.85	61.71	84.11	146.00							
Ge	AL_2		1		32	6	1.249	9.92400	3	11.31	16.30	40.92	43.76	44.66	60.03	81.59	137.72							
Ge	$L\beta_4$		1	1	32	6	1.286	9.64000	3	10.99	15.83	39.70	42.44	43.31	58.14	78.78	129.92							
Ge	$L\beta_3$		1	1	32	6	1.294	9.58100	3	10.92	15.73	39.44	42.17	43.04	57.75	78.21	128.44							
Ge	AL_1		1		32	6	1.413	8.77300	3	10.00	14.40	36.00	38.47	39.25	52.49	70.56	111.08	169.78						
Ge	$K\alpha_2$		1	50	32	6	9.854	1.25801	6	1.43	2.06	5.08	5.41	5.52	7.27	9.50	13.58	16.42	16.55	21.62	22.21	25.77	36.41	52.43
Ge	$K\alpha_{1,2}$		1	150	32	6	9.874	1.25537	6	1.43	2.06	5.07	5.40	5.51	7.26	9.48	13.55	16.39	16.51	21.57	22.16	25.72	36.33	52.31
Ge	$K\alpha_1$		1	100	32	6	9.885	1.25405	6	1.43	2.05	5.06	5.40	5.50	7.25	9.47	13.54	16.37	16.50	21.55	22.14	25.69	36.29	52.25
Ge	$K8_3$		1	7	32	6	10.976	1.12936	5	1.29	1.85	4.56	4.86	4.96	6.53	8.53	12.19	14.73	14.85	19.38	19.91	23.10	32.58	46.72
Ge	$K\beta_1$		1	14	32	6	10.980	1.12894	5	1.28	1.85	4.56	4.86	4.95	6.52	8.52	12.18	14.73	14.84	19.38	19.91	23.09	32.56	46.71
Ge	$K8_5$	B	1	.05	32	6	11.073	1.11950	4	1.27	1.83	4.52	4.82	4.91	6.47	8.45	12.08	14.60	14.72	19.21	19.74	22.89	32.28	46.29
Ge	$K8_2$		1	.5	32	6	11.099	1.11686	5	1.27	1.83	4.51	4.81	4.90	6.45	8.43	12.05	14.57	14.68	19.17	19.69	22.84	32.21	46.18
Ge	AK		1		32	6	11.102	1.11658	5	1.27	1.83	4.51	4.81	4.90	6.45	8.43	12.05	14.57	14.68	19.16	19.68	22.83	32.20	46.17
As	L1		1	1	33	6	1.120	11.07200	3	12.62	18.20	45.91	49.13	50.16	67.84	93.59								
As	Ln		1	1	33	6	1.155	10.73400	3	12.24	17.64	44.43	47.54	48.53	65.51	89.93								
As	$L\alpha_{1,2}$		1	100	33	6	1.282	9.67090	4	11.02	15.88	39.83	42.59	43.46	58.35	79.09	130.71							
As	$L\beta_1$		1	35	33	6	1.317	9.41410	4	10.73	15.46	38.73	41.40	42.25	56.65	76.60	124.45							
As	AL_3		1		33	6	1.323	9.36700	3	10.67	15.38	38.53	41.19	42.03	56.34	76.14	123.37							
As	AL_2		1		33	6	1.358	9.12500	3	10.40	14.98	37.49	40.07	40.89	54.77	73.84	118.10							
As	$L8_{3,4}$		1	2	33	6	1.388	8.92900	3	10.17	14.66	36.66	39.18	39.98	53.49	72.01	114.11							
As	AL_1		1		33	6	1.529	8.10700	3	9.24	13.30	33.18	35.45	36.16	48.24	64.51	99.27	133.97	136.05					
As	$K\alpha_2$		1	50	33	6	10.506	1.17987	5	1.34	1.93	4.76	5.08	5.18	6.82	8.91	12.73	15.40	15.51	20.26	20.81	24.15	34.08	48.95
As	$K\alpha_{1,2}$		1	150	33	6	10.530	1.17721	5	1.34	1.93	4.75	5.07	5.17	6.80	8.89	12.70	15.36	15.48	20.21	20.77	24.09	34.00	48.83
As	$K\alpha_1$		1	100	33	6	10.542	1.17588	5	1.34	1.93	4.75	5.06	5.16	6.80	8.88	12.69	15.34	15.46	20.19	20.74	24.06	33.96	48.77
As	$K\beta_3$		1	7	33	6	11.718	1.05783	5	1.20	1.73	4.27	4.55	4.64	6.11	7.99	11.41	13.80	13.90	18.15	18.64	21.62	30.46	43.61
As	$K\beta_1$		1	15	33	6	11.724	1.05730	5	1.20	1.73	4.27	4.55	4.64	6.11	7.98	11.41	13.79	13.89	18.14	18.63	21.61	30.45	43.58
As	$K\beta_5$	8	1	.05	33	6	11.819	1.04880	4	1.19	1.72	4.23	4.51	4.60	6.06	7.92	11.31	13.68	13.78	17.99	18.48	21.43	30.20	43.22
As	$K8_2$		1	1	33	6	11.862	1.04500	5	1.19	1.71	4.22	4.50	4.59	6.04	7.89	11.27	13.63	13.73	17.92	18.41	21.35	30.08	43.05
As	AK		1		33	6	11.862	1.04500	4	1.19	1.71	4.22	4.50	4.59	6.04	7.89	11.27	13.63	13.73	17.92	18.41	21.35	30.08	43.05
Se	L1		1	1	34	6	1.204	10.29400	3	11.73	16.91	42.52	45.48	46.42	62.51	85.33	150.70							
Se	Ln		1	1	34	6	1.244	9.96200	3	11.35	16.36	41.08	43.93	44.84	60.28	81.96	138.87							
Se	$L\alpha_{1,2}$		1	100	34	6	1.379	8.99000	4	10.24	14.76	36.92	39.46	40.26	53.89	72.58	115.33							
Se	$L8_1$		1	35	34	6	1.419	8.73580	4	9.95	14.34	35.84	38.30	39.08	52.25	70.21	110.38	165.32	175.68					
Se	AL_3		1		34	6	1.434	8.64600	3	9.85	14.19	35.46	37.89	38.66	51.67	69.39	108.70	157.99	163.00					
Se	AL_2		1		34	6	1.474	8.40700	3	9.58	13.80	34.45	36.80	37.55	50.14	67.21	104.40	145.29	148.17					
Se	$L8_{3,4}$	H	1	2	34	6	1.490	8.32100	3	9.48	13.65	34.08	36.41	37.15	49.59	66.43	102.90	141.72	144.29					
Se	AL_1		1		34	6	1.652	7.50300	3	8.55	12.31	30.65	32.73	33.39	44.44	59.20	89.69	116.82	118.25					
Se	$K\alpha_2$		1	50	34	6	11.179	1.10882	5	1.26	1.82	4.48	4.77	4.87	6.41	8.37	11.96	14.46	14.57	19.03	19.55	22.67	31.97	45.83
Se	$K\alpha_{1,2}$		1	150	34	6	11.207	1.10612	5	1.26	1.81	4.47	4.76	4.85	6.39	8.35	11.93	14.43	14.54	18.98	19.50	22.62	31.89	45.71
Se	$K\alpha_1$		1	100	34	6	11.220	1.10477	5	1.26	1.81	4.46	4.75	4.85	6.38	8.34	11.92	14.41	14.52	18.96	19.47	22.59	31.85	45.65
Se	$K8_3$		1	8	34	6	12.487	0.99268	5	1.13	1.63	4.01	4.27	4.36	5.74	7.49	10.71	12.94	13.04	17.02	17.48	20.27	28.54	40.80
Se	$K8_1$		1	16	34	6	12.494	0.99218	5	1.13	1.62	4.01	4.27	4.35	5.73	7.49	10.70	12.94	13.03	17.01	17.47	20.26	28.53	40.78
Se	$K8_5$		1	.05	34	6	12.594	0.98430	4	1.12	1.61	3.97	4.24	4.32	5.69	7.43	10.62	12.83	12.93	16.88	17.33	20.10	28.30	40.44
Se	$K\beta_2$		1	1	34	6	12.650	0.97992	5	1.12	1.60	3.96	4.22	4.30	5.66	7.40	10.57	12.78	12.87	16.80	17.26	20.01	28.17	40.25
Se	AK		1		34	6	12.652	0.97974	5	1.11	1.60	3.96	4.22	4.30	5.66	7.40	10.57	12.77	12.87	16.80	17.25	20.00	28.16	40.24
Br	$M_3-M_{4,5}$		1		35	6	0.109	113.79999	1															
Br	M_2-M_4	D	1		35	6	0.119	104.00000	1															

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Br	M_3-N_1		1		35	6	0.155	79.79999	1		104.83														
Br	M_2-N_1		1		35	6	0.161	76.89999	1		99.57														
Br	Ll		1	1	35	6	1.293	9.58500	3		10.92	15.74	39.46	42.19	43.05	57.78	78.25	128.54							
Br	Ln		1	1	35	6	1.339	9.25500	3		10.55	15.20	38.05	40.67	41.50	55.61	75.08	120.88							
Br	$L\alpha_{1,2}$		1	100	35	6	1.480	8.37460	4		9.54	13.74	34.31	36.66	37.40	49.94	66.92	103.83	143.90	146.66					
Br	$L\beta_1$		1	35	35	6	1.526	8.12510	4		9.26	13.33	33.26	35.53	36.25	48.35	64.67	99.57	134.58	136.69					
Br	AL_3	H	1		35	6	1.553	7.98400	3		9.09	13.10	32.66	34.89	35.60	47.46	63.42	97.25	130.04	131.93					
Br	$L\beta_{3,4}$	H	1	2	35	6	1.596	7.76700	3		8.85	12.74	31.75	33.91	34.60	46.09	61.50	93.77	123.72	125.36					
Br	AL_2	H	1		35	6	1.599	7.75300	3		8.83	12.72	31.69	33.85	34.53	46.01	61.38	93.55	123.34	124.96					
Br	AL_1	H	1		35	6	1.781	6.95900	3		7.93	11.41	28.38	30.29	30.90	41.07	54.53	81.69	104.39	105.51					
Br	$K\alpha_2$		1	50	35	6	11.876	1.04382	5		1.19	1.71	4.21	4.49	4.58	6.03	7.88	11.26	13.61	13.72	17.90	18.39	21.33	30.05	43.00
Br	$K\alpha_{1,2}$		1	150	35	6	11.907	1.04110	5		1.18	1.70	4.20	4.48	4.57	6.02	7.86	11.23	13.58	13.68	17.86	18.34	21.27	29.97	42.88
Br	$K\alpha_1$		1	100	35	6	11.922	1.03974	5		1.18	1.70	4.20	4.47	4.56	6.01	7.85	11.22	13.56	13.66	17.83	18.32	21.24	29.93	42.82
Br	$K\beta_3$		1	8	35	6	13.282	0.93327	5		1.06	1.53	3.77	4.02	4.10	5.39	7.04	10.06	12.16	12.26	15.99	16.43	19.05	26.80	38.26
Br	$K\beta_1$		1	16	35	6	13.289	0.93279	5		1.06	1.53	3.77	4.01	4.09	5.39	7.04	10.06	12.16	12.25	15.99	16.42	19.04	26.79	38.24
Br	$K\beta_5$	B	1	.06	35	6	13.402	0.92493	5		1.05	1.51	3.73	3.98	4.06	5.34	6.98	9.97	12.06	12.15	15.85	16.28	18.87	26.56	37.90
Br	$K\beta_2$		1	2	35	6	13.467	0.92046	5		1.05	1.51	3.72	3.96	4.04	5.32	6.95	9.93	12.00	12.09	15.77	16.20	18.78	26.43	37.71
Br	AK		1		35	6	13.468	0.92040	4		1.05	1.51	3.72	3.96	4.04	5.32	6.95	9.93	12.00	12.09	15.77	16.20	18.78	26.43	37.71
Kr	$L\alpha_{1,2}$		1	100	36	6	1.586	7.81700	3		8.90	12.82	31.96	34.14	34.83	46.41	61.94	94.56	125.12	126.81					
Kr	$L\beta_1$		1	35	36	6	1.636	7.57600	3		8.63	12.43	30.95	33.05	33.72	44.90	59.83	90.80	118.66	120.14					
Kr	$L\beta_6$		1	.1	36	6	1.651	7.51000	3		8.55	12.32	30.68	32.76	33.42	44.49	59.26	89.79	117.00	118.42					
Kr	AL_3		1		36	6	1.677	7.39200	3		8.42	12.12	30.18	32.23	32.88	43.75	58.24	88.01	114.12	115.47					
Kr	$L\beta_4$		1	1	36	6	1.697	7.30400	3		8.32	11.98	29.81	31.84	32.48	43.20	57.48	86.70	112.04	113.34					
Kr	$L\gamma_5$		1	.1	36	6	1.703	7.27900	3		8.29	11.94	29.71	31.72	32.36	43.05	57.27	86.33	111.46	112.74					
Kr	$L\beta_3$		1	1	36	6	1.706	7.26400	3		8.27	11.91	29.65	31.66	32.29	42.95	57.14	86.11	111.12	112.39					
Kr	L_2-N_3	B	1	.01	36	6	1.710	7.25000	3		8.26	11.89	29.59	31.59	32.23	42.87	57.02	85.90	110.80	112.06					
Kr	AL_2		1		36	6	1.729	7.16800	3		8.16	11.75	29.25	31.23	31.85	42.36	56.31	84.70	108.94	110.16					
Kr	AL_1	H	1		36	6	1.916	6.47000	2		7.37	10.61	26.34	28.12	28.68	38.07	50.42	74.90	94.54	95.48	149.38	164.20			
Kr	$K\alpha_2$		1	50	36	6	12.596	0.98410	4		1.12	1.61	3.97	4.24	4.32	5.69	7.43	10.61	12.83	12.93	16.87	17.33	20.09	28.29	40.43
Kr	$K\alpha_{1,2}$		1	150	36	6	12.631	0.98143	4		1.12	1.61	3.96	4.22	4.31	5.67	7.41	10.58	12.79	12.89	16.83	17.28	20.04	28.21	40.32
Kr	$K\alpha_1$		1	100	36	6	12.648	0.98010	4		1.12	1.60	3.96	4.22	4.30	5.66	7.40	10.57	12.78	12.87	16.80	17.26	20.01	28.18	40.26
Kr	$K\beta_3$		1	8	36	6	14.102	0.87900	4		1.00	1.44	3.55	3.78	3.86	5.08	6.63	9.48	11.45	11.54	15.06	15.47	17.93	25.22	35.95
Kr	$K\beta_1$		1	16	36	6	14.110	0.87850	4		1.00	1.44	3.55	3.78	3.85	5.08	6.63	9.47	11.45	11.53	15.05	15.46	17.92	25.20	35.93
Kr	$K\beta_5$	B	1	.06	36	6	14.235	0.87080	4		0.99	1.43	3.52	3.75	3.82	5.03	6.57	9.39	11.35	11.43	14.92	15.32	17.76	24.98	35.61
Kr	$K\beta_2$		1	3	36	6	14.312	0.86610	4		0.99	1.42	3.50	3.73	3.80	5.00	6.54	9.34	11.29	11.37	14.84	15.24	17.66	24.84	35.41
Kr	AK		1		36	6	14.322	0.86552	5		0.98	1.42	3.49	3.72	3.80	5.00	6.53	9.33	11.28	11.36	14.83	15.23	17.65	24.83	35.38
Rb	M_1-M_3	D	1		37	6	0.084	148.20000	1																
Rb	Mz_1		1		37	6	0.096	128.70000	1																
Rb	Mz_2		1		37	6	0.097	127.79999	1																
Rb	M_4-N_3		1		37	6	0.098	126.79999	1																
Rb	M_3-$M_{4,5}$		1		37	6	0.128	96.70000	1		147.59														
Rb	M_2-M_4		1		37	6	0.135	91.50000	1		130.64														
Rb	M_3-N_1		1		37	6	0.208	59.50000	1		72.44	116.42													
Rb	M_2-N_1		1		37	6	0.217	57.00000	1		68.95	109.03													
Rb	Ll		1	3	37	6	1.482	8.36360	4		9.53	13.72	34.26	36.61	37.35	49.87	66.82	103.64	143.44	146.16					
Rb	Ln		1	1	37	6	1.542	8.04150	4		9.16	13.19	32.91	35.15	35.86	47.82	63.93	98.19	131.84	133.81					
Rb	$L\alpha_2$		1	10	37	6	1.692	7.32510	4		8.34	12.01	29.90	31.93	32.57	43.33	57.66	87.02	112.54	113.84					
Rb	$L\alpha_1$		1	100	37	6	1.694	7.31830	4		8.34	12.00	29.87	31.90	32.54	43.29	57.60	86.91	112.38	113.68					
Rb	$L\beta_1$		1	45	37	6	1.752	7.07590	4		8.06	11.60	28.86	30.82	31.43	41.79	55.53	83.37	106.90	108.08					
Rb	$L\beta_6$		1	3	37	6	1.775	6.98420	4		7.95	11.45	28.48	30.41	31.02	41.22	54.75	82.05	104.92	106.06					
Rb	AL_3	H	1		37	6	1.806	6.86200	3		7.81	11.25	27.97	29.86	30.46	40.47	53.71	80.32	102.35	103.43					
Rb	$L\beta_4$		1	3	37	6	1.817	6.82070	4		7.77	11.18	27.80	29.68	30.27	40.22	53.36	79.74	101.50	102.56					
Rb	$L\beta_3$		1	3	37	6	1.826	6.78760	4		7.73	11.13	27.66	29.53	30.12	40.01	53.08	79.28	100.82	101.87					
Rb	$L\gamma_5$	A	1	.1	37	6	1.835	6.75530	4		7.59	11.08	27.53	29.39	29.98	39.81	52.81	78.82	100.16	101.20					
Rb	AL_2	H	1		37	6	1.866	6.64400	3		7.57	10.89	27.07	28.89	29.47	39.13	51.88	77.28	97.93	98.93	164.16				
Rb	$L\gamma_{2,3}$		1	.1	37	6	2.050	6.04580	4		6.88	9.91	24.59	26.24	26.77	35.48	46.91	69.25	86.69	87.51	128.65	135.51			
Rb	AL_1	H	1		37	6	2.063	6.00800	3		6.84	9.85	24.43	26.08	26.59	35.25	46.60	68.76	86.02	86.83	127.18	133.79			
Rb	$K\alpha_2$		1	50	37	6	13.333	0.92969	5		1.06	1.52	3.75	4.00	4.08	5.37	7.02	10.03	12.12	12.21	15.93	16.37	18.97	26.70	38.11
Rb	$K\alpha_{1,2}$		1	150	37	6	13.373	0.92693	5		1.05	1.52	3.74	3.99	4.07	5.36	7.00	10.00	12.08	12.17	15.89	16.32	18.92	26.62	37.99
Rb	$K\alpha_1$		1	100	37	6	13.393	0.92555	6		1.05	1.52	3.74	3.98	4.06	5.35	6.99	9.98	12.06	12.16	15.86	16.29	18.89	26.58	37.93
Rb	$K\beta_3$		1	8	37	6	14.949	0.82921	5		0.94	1.36	3.35	3.57	3.64	4.79	6.26	8.94	10.80	10.89	14.20	14.59	16.91	23.77	33.85
Rb	$K\beta_1$		1	16	37	6	14.959	0.82868	5		0.94	1.36	3.35	3.57	3.64	4.79	6.25	8.93	10.80	10.88	14.19	14.58	16.89	23.75	33.83
Rb	$K\beta_5$		1	.06	37	6	15.082	0.82190	4		0.94	1.35	3.32	3.54	3.61	4.75	6.20	8.86	10.71	10.79	14.08	14.46	16.76	23.56	33.55
Rb	$K\beta_2$		1	3	37	6	15.183	0.81645	5		0.93	1.34	3.30	3.51	3.58	4.72	6.16	8.80	10.64	10.72	13.98	14.36	16.64	23.40	33.32
Rb	AK		1		37	6	15.200	0.81554	5		0.93	1.34	3.29	3.51	3.58	4.71	6.16	8.79	10.63	10.71	13.97	14.34	16.63	23.37	33.28

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Rb	$K\beta_4$	C	1	.00	37	6	15.202	0.81540	4		0.93	1.33	3.29	3.51	3.58	4.71	6.15	8.79	10.62	10.70	13.96	14.34	16.62	23.37	33.27
Sr	Mz_1		1		38	6	0.114	108.70000	1																
Sr	Mz_2		1		38	6	0.115	108.00000	1																
Sr	$M_3-M_{4,5}$		1		38	6	0.136	91.39999	1		130.36														
Sr	M_2-M_4		1		38	6	0.145	85.70000	1		116.65														
Sr	M_3-N_1		1		38	6	0.231	53.59999	1		64.32	99.94													
Sr	M_2-N_1		1		38	6	0.242	51.29999	1		61.25	94.25													
Sr	Ll		1	3	38	6	1.582	7.83620	4		8.93	12.85	32.04	34.22	34.91	46.53	62.11	94.87	125.66	127.37					
Sr	Ln		1	1	38	6	1.649	7.51710	4		8.56	12.33	30.71	32.79	33.45	44.53	59.32	89.90	117.18	118.61					
Sr	$L\alpha_2$		1	10	38	6	1.804	6.86970	4		7.82	11.26	28.00	29.90	30.50	40.52	53.78	80.43	102.51	103.59					
Sr	$L\alpha_1$		1	100	38	6	1.806	6.86280	4		7.82	11.25	27.99	29.87	30.46	40.47	53.72	80.33	102.37	103.45					
Sr	$L\beta_1$		1	45	38	6	1.871	6.62390	4		7.54	10.86	26.98	28.80	29.38	39.01	51.71	77.00	97.53	98.53	161.84				
Sr	$L\beta_6$		1	3	38	6	1.901	6.51910	4		7.42	10.69	26.55	28.34	28.90	38.37	50.83	75.57	95.49	96.44	152.74	172.80			
Sr	$L\beta_4$		1	3	38	6	1.936	6.40260	4		7.29	10.50	26.07	27.82	28.38	37.65	49.86	73.99	93.26	94.18	145.29	157.15			
Sr	AL_3		1		38	6	1.941	6.38700	3		7.27	10.47	26.00	27.75	28.31	37.56	49.73	73.78	92.96	93.88	144.41	155.81			
Sr	$L\beta_3$		1	3	38	6	1.947	6.36720	4		7.25	10.44	25.92	27.66	28.22	37.44	49.56	73.51	92.59	93.50	143.32	154.20			
Sr	$L\gamma_5$		1	.1	38	6	1.969	6.29610	4		7.17	10.32	25.62	27.35	27.90	37.00	48.97	72.56	91.26	92.14	139.63	149.11			
Sr	AL_2		1		38	6	2.008	6.17300	3		7.03	10.12	25.12	26.80	27.34	36.26	47.96	70.92	88.99	89.84	133.92	141.83			
Sr	$L\gamma_{2,3}$		1	.1	38	6	2.196	5.64450	4		6.43	9.25	22.93	24.47	24.96	33.06	43.63	64.08	79.71	80.43	114.59	119.57			
Sr	AL_1	H	1		38	6	2.217	5.59200	3		6.37	9.16	22.72	24.24	24.72	32.74	43.20	63.41	78.82	79.53	112.95	117.76	164.89		
Sr	$K\alpha_2$		1	50	38	6	14.095	0.87943	5		1.00	1.44	3.55	3.78	3.86	5.08	6.64	9.48	11.46	11.55	15.07	15.47	17.94	25.23	35.97
Sr	$K\alpha_{1,2}$		1	150	38	6	14.140	0.87665	5		1.00	1.44	3.54	3.77	3.85	5.06	6.62	9.45	11.42	11.51	15.02	15.43	17.88	25.15	35.85
Sr	$K\alpha_1$		1	100	38	6	14.163	0.87526	5		1.00	1.43	3.53	3.77	3.84	5.06	6.61	9.44	11.41	11.49	14.99	15.40	17.85	25.11	35.80
Sr	$K\beta_3$		1	8	38	6	15.822	0.78345	5		0.89	1.28	3.16	3.37	3.44	4.53	5.91	8.45	10.21	10.28	13.41	13.78	15.97	22.44	31.93
Sr	$K\beta_1$		1	16	38	6	15.833	0.78292	5		0.89	1.28	3.16	3.37	3.44	4.52	5.91	8.44	10.20	10.28	13.41	13.77	15.96	22.42	31.91
Sr	$K\beta_5$		1	.07	38	6	15.966	0.77640	4		0.88	1.27	3.13	3.34	3.41	4.49	5.86	8.37	10.11	10.19	13.29	13.65	15.82	22.23	31.64
Sr	$K\beta_2$		1	3	38	6	16.082	0.77081	5		0.88	1.26	3.11	3.32	3.38	4.45	5.82	8.31	10.04	10.12	13.20	13.55	15.71	22.07	31.41
Sr	$K\beta_4$	C	1	.00	38	6	16.101	0.76989	5		0.88	1.26	3.11	3.31	3.38	4.45	5.81	8.30	10.03	10.10	13.18	13.54	15.69	22.05	31.37
Sr	AK		1		38	6	16.104	0.76973	5		0.88	1.26	3.11	3.31	3.38	4.45	5.81	8.30	10.03	10.10	13.18	13.53	15.69	22.04	31.36
Y	Mz		1		39	6	0.133	93.39999	1		136.10														
Y	$M_3-M_{4,5}$		1		39	6	0.143	86.50000	1		118.41														
Y	M_2-M_4		1		39	6	0.152	81.50000	1		108.06														
Y	M_3-N_1		1		39	6	0.256	48.50000	1		57.58	87.71													
Y	M_2-N_1		1		39	6	0.267	46.48000	2		54.98	83.21													
Y	Ll		1	3	39	6	1.685	7.35630	4		8.38	12.06	30.03	32.07	32.71	43.53	57.93	87.48	113.27	114.60					
Y	Ln		1	1	39	6	1.761	7.04060	4		8.02	11.55	28.72	30.66	31.27	41.57	55.23	82.86	106.13	107.29					
Y	$L\alpha_2$		1	10	39	6	1.920	6.45580	4		7.35	10.58	26.29	28.06	28.62	37.98	50.30	74.71	94.27	95.20	148.48	162.48			
Y	$L\alpha_1$		1	100	39	6	1.922	6.44880	4		7.34	10.57	26.26	28.03	28.59	37.94	50.24	74.61	94.13	95.07	148.04	161.69			
Y	$L\beta_1$		1	45	39	6	1.995	6.21200	4		7.07	10.18	25.28	26.98	27.52	36.49	48.28	71.44	89.70	90.57	135.66	143.98			
Y	$L\beta_6$		1	3	39	6	2.034	6.09420	4		6.94	9.99	24.79	26.46	26.98	35.78	47.31	69.89	87.56	88.39	130.60	137.81			
Y	$L\beta_4$		1	3	39	6	2.060	6.01860	4		6.85	9.86	24.48	26.12	26.64	35.32	46.68	68.90	86.21	87.02	127.59	134.26			
Y	$L\beta_3$		1	3	39	6	2.072	5.98320	4		6.81	9.81	24.33	25.97	26.48	35.10	46.39	68.43	85.58	86.38	126.24	132.69			
Y	AL_3		1		39	6	2.079	5.96200	3		6.79	9.77	24.24	25.87	26.39	34.98	46.22	68.16	85.20	86.00	125.44	131.77			
Y	$L\gamma_5$		1	.1	39	6	2.110	5.87540	4		6.69	9.63	23.89	25.49	26.00	34.45	45.51	67.04	83.68	84.46	122.30	128.18			
Y	AL_2		1		39	6	2.154	5.75600	3		6.55	9.43	23.39	24.96	25.46	33.73	44.54	65.50	81.61	82.36	118.20	123.58			
Y	$L\gamma_{2,3}$		1	.5	39	6	2.346	5.28300	4		6.01	8.66	21.45	22.88	23.34	30.89	40.70	59.54	73.71	74.36	103.92	107.96	138.96		
Y	AL_1	H	1		39	6	2.376	5.21700	3		5.94	8.55	21.18	22.59	23.04	30.49	40.17	58.72	72.64	73.28	102.11	106.01	135.29		
Y	$K\alpha_2$		1	50	39	6	14.880	0.83305	5		0.95	1.36	3.36	3.59	3.66	4.81	6.29	8.98	10.85	10.94	14.27	14.65	16.98	23.88	34.02
Y	$K\alpha_{1,2}$		1	150	39	6	14.931	0.83024	5		0.94	1.36	3.35	3.57	3.64	4.80	6.27	8.95	10.82	10.90	14.22	14.60	16.93	23.80	33.90
Y	$K\alpha_1$		1	100	39	6	14.956	0.82884	5		0.94	1.36	3.35	3.57	3.64	4.79	6.26	8.94	10.80	10.88	14.20	14.58	16.90	23.76	33.84
Y	$K\beta_3$		1	8	39	6	16.723	0.74126	5		0.84	1.21	2.99	3.19	3.25	4.28	5.59	7.99	9.66	9.73	12.69	13.03	15.10	21.22	30.17
Y	$K\beta_1$		1	16	39	6	16.735	0.74072	5		0.84	1.21	2.99	3.19	3.25	4.28	5.59	7.98	9.65	9.72	12.68	13.02	15.09	21.20	30.15
Y	$K\beta_5$		1	.07	39	6	16.877	0.73450	4		0.84	1.20	2.96	3.16	3.22	4.24	5.54	7.92	9.57	9.64	12.57	12.91	14.96	21.02	29.89
Y	$K\beta_2$		1	4	39	6	17.013	0.72864	5		0.83	1.19	2.94	3.14	3.20	4.21	5.50	7.85	9.49	9.56	12.47	12.81	14.84	20.85	29.65
Y	$K\beta_4$		1	.01	39	6	17.033	0.72776	5		0.83	1.19	2.94	3.13	3.19	4.20	5.49	7.84	9.48	9.55	12.46	12.79	14.83	20.83	29.61
Y	AK		1		39	6	17.035	0.72766	5		0.83	1.19	2.94	3.13	3.19	4.20	5.49	7.84	9.48	9.55	12.46	12.79	14.82	20.82	29.61
Zr	M_3-M_5		1		40	6	0.151	82.09999	1		109.23														
Zr	Mz_1		1		40	6	0.151	82.09999	1		109.23														
Zr	Mz_2		1		40	6	0.153	80.89999	1		106.91														
Zr	M_2-M_4		1		40	6	0.162	76.70000	1		99.22														
Zr	$M_{4,5}O_{2,3}$	A	1		40	6	0.177	70.00000	1		88.08														
Zr	Ll		1	3	40	6	1.792	6.91850	4		7.88	11.34	28.21	30.11	30.72	40.82	54.19	81.12	103.53	104.63					
Zr	Ln		1	1	40	6	1.876	6.60690	4		7.52	10.83	26.91	28.73	29.30	38.90	51.56	76.77	97.20	98.18	160.08				
Zr	$L\alpha_2$		1	10	40	6	2.040	6.07780	4		6.92	9.96	24.72	26.38	26.91	35.68	47.17	69.67	87.27	88.09	129.93	137.01			
Zr	$L\alpha_1$		1	100	40	6	2.042	6.07050	4		6.91	9.95	24.69	26.35	26.88	35.63	47.11	69.58	87.13	87.96	129.64	136.67			

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Zr	$L\beta_1$		1	45	40	6	2.124	5.83600	4		6.54	9.56	23.72	25.32	25.82	34.21	45.19	66.53	82.99	83.76	120.92	126.62			
Zr	$L\beta_6$		1	3	40	6	2.171	5.71010	4		6.50	9.36	23.20	24.76	25.25	33.45	44.16	64.91	80.83	81.56	116.69	121.89			
Zr	$L\beta_4$		1	3	40	6	2.187	5.66810	4		6.45	9.29	23.03	24.58	25.07	33.20	43.82	64.38	80.11	80.84	115.34	120.39			
Zr	$L\beta_3$		1	3	40	6	2.201	5.63300	4		6.41	9.23	22.89	24.42	24.91	32.99	43.53	63.93	79.51	80.24	114.23	119.17	173.90		
Zr	$L\beta_{2,15}$		1	1	40	6	2.219	5.58630	4		6.36	9.15	22.69	24.22	24.70	32.71	43.16	63.34	78.73	79.44	112.77	117.57	164.03		
Zr	AL_3		1		40	6	2.222	5.57900	3		6.35	9.14	22.66	24.18	24.66	32.66	43.10	63.25	78.60	79.31	112.55	117.32	162.99		
Zr	$L\gamma_5$		1	.1	40	6	2.255	5.49770	4		6.26	9.01	22.33	23.83	24.30	32.17	42.44	62.22	77.24	77.94	110.08	114.63	158.12		
Zr	$L\gamma_1$		1	1	40	6	2.302	5.38430	4		6.13	8.82	21.86	23.33	23.79	31.49	41.52	60.80	75.37	76.04	106.77	111.03	145.30		
Zr	AL_2		1		40	6	2.305	5.37800	3		6.12	8.81	21.84	23.30	23.76	31.46	41.47	60.72	75.26	75.93	106.59	110.84	144.87		
Zr	$L\gamma_{2,3}$		1	.5	40	6	2.502	4.95360	4		5.64	8.12	20.10	21.44	21.86	28.92	38.07	55.49	68.44	69.03	95.20	98.64	122.84		
Zr	AL_1	H	1		40	6	2.541	4.87900	3		5.55	7.99	19.79	21.11	21.53	28.47	37.47	54.59	67.27	67.85	93.33	96.65	119.75		
Zr	$K\alpha_2$		1	50	40	6	15.688	0.79015	5		0.90	1.29	3.19	3.40	3.47	4.56	5.96	8.52	10.29	10.37	13.53	13.90	16.10	22.63	32.21
Zr	$K\alpha_{1,2}$		1	150	40	6	15.744	0.78734	5		0.90	1.29	3.18	3.39	3.45	4.55	5.94	8.49	10.26	10.33	13.48	13.85	16.05	22.55	32.10
Zr	$K\alpha_1$		1	100	40	6	15.772	0.78593	5		0.89	1.29	3.17	3.38	3.45	4.54	5.93	8.47	10.24	10.32	13.46	13.82	16.02	22.51	32.04
Zr	$K\beta_3$		1	9	40	6	17.651	0.70228	5		0.80	1.15	2.83	3.02	3.08	4.06	5.30	7.57	9.15	9.22	12.02	12.34	14.30	20.09	28.55
Zr	$K8_1$		1	18	40	6	17.665	0.70173	5		0.80	1.15	2.83	3.02	3.08	4.05	5.30	7.56	9.14	9.21	12.01	12.33	14.29	20.07	28.53
Zr	$K\beta_5$		1	.08	40	6	17.813	0.69590	4		0.79	1.14	2.81	2.99	3.05	4.02	5.25	7.50	9.06	9.13	11.91	12.23	14.17	19.90	28.29
Zr	$K\beta_2$		1	4	40	6	17.967	0.68993	5		0.79	1.13	2.78	2.97	3.03	3.99	5.21	7.44	8.99	9.05	11.81	12.13	14.05	19.73	28.04
Zr	$K\beta_4$	B	1	.01	40	6	17.991	0.68901	5		0.78	1.13	2.78	2.96	3.02	3.98	5.20	7.43	8.97	9.04	11.79	12.11	14.03	19.71	28.00
Zr	AK		1		40	6	17.996	0.68883	5		0.78	1.13	2.78	2.96	3.02	3.98	5.20	7.42	8.97	9.04	11.79	12.11	14.03	19.70	27.99
Nb	M_3-M_5		1	1	41	6	0.158	78.39999	1		102.26														
Nb	Mz		1	1	41	6	0.172	72.18999	2		91.60														
Nb	M_2-M_4		1	1	41	6	0.172	72.09999	1		91.45														
Nb	$M_{4,5}O_{2,3}$	A	1	10	41	6	0.200	61.89999	1		75.86	124.33													
Nb	M_3-N_1		1	10	41	6	0.305	40.70000	1		47.68	71.10													
Nb	M_2-N_1		1	1	41	6	0.323	38.39999	1		44.83	66.54													
Nb	$M\gamma$		1	100	41	6	0.355	34.89999	1		40.56	59.81													
Nb	M_2-N_4		1	50	41	6	0.375	33.09999	1		38.38	56.44													
Nb	Ll		1	3	41	6	1.902	6.51760	4		7.42	10.68	26.54	28.33	28.90	38.36	50.82	75.55	95.46	96.41	152.63	172.39			
Nb	Ln		1	1	41	6	1.996	6.21090	4		7.07	10.18	25.27	26.97	27.51	36.49	48.27	71.43	89.68	90.55	135.61	143.92			
Nb	$L\alpha_2$		1	10	41	6	2.163	5.73190	4		6.53	9.39	23.29	24.86	25.35	33.58	44.34	65.19	81.20	81.94	117.41	122.69			
Nb	$L\alpha_1$		1	100	41	6	2.166	5.72430	4		6.52	9.38	23.26	24.82	25.32	33.54	44.28	65.09	81.07	81.81	117.16	122.41			
Nb	$L\beta_1$		1	45	41	6	2.257	5.49230	4		6.25	9.00	22.31	23.80	24.28	32.14	42.39	62.15	77.15	77.84	109.92	114.46	153.63		
Nb	$L\beta_6$		1	3	41	6	2.312	5.36130	4		6.10	8.79	21.77	23.23	23.69	31.36	41.34	60.51	74.99	75.65	106.12	110.32	143.76		
Nb	$L\beta_4$		1	3	41	6	2.319	5.34550	4		6.09	8.76	21.70	23.16	23.62	31.26	41.21	60.32	74.73	75.39	105.67	109.84	142.75		
Nb	$L\beta_3$		1	3	41	6	2.334	5.31020	4		6.05	8.70	21.56	23.00	23.46	31.05	40.92	59.88	74.15	74.81	104.67	108.77	140.56		
Nb	$L\beta_{2,15}$		1	1	41	6	2.367	5.23790	4		5.96	8.58	21.26	22.69	23.14	30.62	40.34	58.98	72.98	73.62	102.68	106.62	136.42		
Nb	AL_3	H	1		41	6	2.370	5.23000	3		5.95	8.57	21.23	22.65	23.10	30.57	40.28	58.88	72.85	73.49	102.46	106.39	135.99		
Nb	$L\gamma_5$		1	.1	41	6	2.406	5.15170	4		5.86	8.44	20.91	22.31	22.75	30.10	39.65	57.92	71.59	72.22	100.35	104.13	131.92		
Nb	$L\gamma_1$		1	1	41	6	2.461	5.03610	4		5.73	8.25	20.43	21.80	22.23	29.41	38.72	56.50	69.75	70.35	97.31	100.89	126.45		
Nb	AL_2	H	1		41	6	2.464	5.03100	3		5.73	8.24	20.41	21.78	22.21	29.38	38.68	56.44	69.67	70.27	97.18	100.75	126.22		
Nb	$L\gamma_{2,3}$		1	.5	41	6	2.663	4.65420	4		5.30	7.62	18.87	20.13	20.53	27.13	35.68	51.88	63.80	64.33	87.87	90.88	111.19		
Nb	AL_1	H	1		41	6	2.710	4.57500	3		5.21	7.49	18.55	19.78	20.17	26.66	35.06	50.93	62.59	63.11	86.00	88.92	108.39		
Nb	$K\alpha_2$		1	50	41	6	16.518	0.75044	5		0.85	1.23	3.03	3.23	3.29	4.34	5.66	8.09	9.78	9.85	12.85	13.19	15.29	21.48	30.56
Nb	$K\alpha_{1,2}$		1	150	41	6	16.581	0.74761	5		0.85	1.22	3.02	3.22	3.28	4.32	5.64	8.06	9.74	9.81	12.80	13.14	15.23	21.40	30.44
Nb	$K\alpha_1$		1	100	41	6	16.612	0.74620	5		0.85	1.22	3.01	3.21	3.27	4.31	5.63	8.04	9.72	9.79	12.77	13.12	15.20	21.36	30.38
Nb	$K\beta_3$		1	7	41	6	18.603	0.66634	5		0.76	1.09	2.69	2.87	2.92	3.85	5.03	7.18	8.68	8.74	11.40	11.71	13.57	19.05	27.06
Nb	$K\beta_1$		1	.6	41	6	18.619	0.66576	5		0.76	1.09	2.69	2.86	2.92	3.85	5.02	7.17	8.67	8.74	11.39	11.70	13.56	19.03	27.04
Nb	$K8_2$		1	4	41	6	18.949	0.65416	5		0.74	1.07	2.64	2.81	2.87	3.78	4.94	7.05	8.52	8.58	11.19	11.50	13.32	18.70	26.56
Nb	$K\beta_4$	B	1	.01	41	6	18.978	0.65318	5		0.74	1.07	2.64	2.81	2.87	3.77	4.93	7.04	8.51	8.57	11.18	11.48	13.30	18.67	26.52
Nb	AK		1		41	6	18.984	0.65298	5		0.74	1.07	2.64	2.81	2.86	3.77	4.93	7.04	8.50	8.57	11.17	11.47	13.29	18.67	26.51
Mo	M_3-M_5		1	10	42	6	0.166	74.89999	1		96.11														
Mo	M_2-M_4		1	1	42	6	0.180	68.89999	1		86.35	159.66													
Mo	Mz		1	10	42	6	0.193	64.37999	2		79.48	133.77													
Mo	$M_{4,5}O_{2,3}$	A	1	50	42	6	0.226	54.79999	1		65.94	103.05													
Mo	M_3-N_1		1	100	42	6	0.331	37.50000	1		43.73	64.78													
Mo	M_2-N_1		1	1	42	6	0.351	35.29999	1		41.04	60.57													
Mo	Ll		1	3	42	6	2.015	6.15080	4		7.00	10.08	25.02	26.71	27.24	36.12	47.77	70.63	88.58	89.43	132.96	140.66			
Mo	Ln		1	1	42	6	2.120	5.84750	4		6.66	9.58	23.77	25.37	25.87	34.28	45.28	66.68	83.19	83.96	121.32	127.07			
Mo	$L\alpha_2$		1	10	42	6	2.289	5.41437	5		6.16	8.87	21.99	23.46	23.93	31.67	41.76	61.18	75.86	76.54	107.64	111.97	147.41		
Mo	$L\alpha_1$		1	100	42	6	2.293	5.40655	5		6.16	8.86	21.96	23.43	23.89	31.63	41.70	61.08	75.73	76.41	107.41	111.73	146.85		
Mo	$L\beta_1$		1	45	42	6	2.394	5.17708	5		5.89	8.48	21.01	22.42	22.86	30.25	39.85	58.23	72.00	72.63	101.03	104.85	133.20		
Mo	$L8_4$		1	3	42	6	2.455	5.04880	4		5.75	8.27	20.49	21.86	22.29	29.49	38.83	56.66	69.95	70.55	97.64	101.24	127.02		
Mo	$L8_6$		1	3	42	6	2.455	5.04880	4		5.75	8.27	20.49	21.86	22.29	29.49	38.83	56.66	69.95	70.55	97.64	101.24	127.02		
Mo	$L\beta_3$		1	3	42	6	2.473	5.01330	4		5.71	8.21	20.34	21.70	22.13	29.27	38.54	56.22	69.39	69.99	96.72	100.26	125.43		

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Mo	$L\beta_{2,15}$		1	1	42	6	2.518	4.92320	4		5.60	8.07	19.97	21.31	21.73	28.74	37.82	55.12	67.97	68.55	94.43	97.82	121.56		
Mo	AL_3		1		42	6	2.523	4.91300	3		5.59	8.05	19.93	21.26	21.68	28.67	37.74	55.00	67.81	68.39	94.18	97.55	121.14		
Mo	$L\gamma_5$		1	.1	42	6	2.563	4.83690	4		5.51	7.92	19.62	20.93	21.34	28.22	37.14	54.08	66.62	67.19	92.28	95.55	118.06		
Mo	$L\gamma_1$		1	1	42	6	2.623	4.72580	4		5.38	7.74	19.16	20.44	20.85	27.56	36.25	52.74	64.90	65.45	89.58	92.69	113.81		
Mo	AL_2		1		42	6	2.627	4.71900	3		5.37	7.73	19.13	20.41	20.82	27.52	36.20	52.66	64.79	65.34	89.42	92.51	113.56		
Mo	$L\gamma_{2,3}$		1	.5	42	6	2.830	4.38000	4		4.99	7.17	17.75	18.93	19.31	25.51	33.52	48.62	59.64	60.14	81.53	84.22	101.87		
Mo	AL_1	H	1		42	6	2.880	4.30400	3		4.90	7.05	17.44	18.60	18.97	25.06	32.92	47.72	58.50	58.99	79.83	82.43	99.46		
Mo	$K\alpha_2$		1	50	42	6	17.371	0.71359	6		0.81	1.17	2.88	3.07	3.13	4.12	5.39	7.69	9.29	9.36	12.21	12.54	14.53	20.42	29.02
Mo	$K\alpha_{1,2}$		1	150	42	6	17.441	0.71073	6		0.81	1.16	2.87	3.06	3.12	4.11	5.36	7.66	9.26	9.33	12.16	12.49	14.48	20.33	28.90
Mo	$K\alpha_1$		1	100	42	6	17.476	0.70930	6		0.81	1.16	2.86	3.05	3.11	4.10	5.35	7.64	9.24	9.31	12.14	12.47	14.45	20.29	28.84
Mo	$K\beta_3$		1	7	42	6	19.587	0.63287	6		0.72	1.04	2.55	2.72	2.78	3.66	4.78	6.82	8.24	8.30	10.83	11.12	12.88	18.09	25.68
Mo	$K\beta_1$		1	17	42	6	19.605	0.63229	6		0.72	1.04	2.55	2.72	2.77	3.65	4.77	6.81	8.23	8.30	10.82	11.11	12.87	18.07	25.65
Mo	$K\beta_5''$	B	1	.4	42	6	19.768	0.62708	5		0.71	1.03	2.53	2.70	2.75	3.62	4.73	6.76	8.17	8.23	10.73	11.02	12.76	17.92	25.44
Mo	$K\beta_5'$	8	1	.8	42	6	19.773	0.62692	5		0.71	1.03	2.53	2.70	2.75	3.62	4.73	6.76	8.16	8.22	10.73	11.02	12.76	17.91	25.43
Mo	$K\beta_2''$		1	.1	42	6	19.959	0.62107	5		0.71	1.02	2.51	2.67	2.72	3.59	4.69	6.69	8.09	8.15	10.62	10.91	12.64	17.75	25.19
Mo	$K\beta_2$		1	4	42	6	19.962	0.62099	5		0.71	1.02	2.51	2.67	2.72	3.59	4.69	6.69	8.09	8.15	10.62	10.91	12.64	17.74	25.19
Mo	$K\beta_4$	8	1	.01	42	6	19.993	0.62001	5		0.71	1.01	2.50	2.67	2.72	3.58	4.68	6.68	8.07	8.13	10.61	10.89	12.62	17.72	25.15
Mo	AK		1		42	6	20.001	0.61978	5		0.71	1.01	2.50	2.67	2.72	3.58	4.68	6.68	8.07	8.13	10.60	10.89	12.62	17.71	25.14
Tc	$L\alpha_1$	H	1	100	43	6	2.424	5.11480	4		5.82	8.38	20.76	22.15	22.58	29.88	39.35	57.46	71.00	71.62	99.37	103.08	130.11		
Tc	$L\beta_1$	H	1	45	43	6	2.536	4.88730	4		5.56	8.01	19.82	21.15	21.57	28.52	37.54	54.69	67.40	67.98	93.53	96.87	120.08		
Tc	AL_3	H	1		43	6	2.677	4.63000	3		5.27	7.58	18.77	20.02	20.42	26.99	35.49	51.59	63.43	63.96	87.30	90.28	110.33		
Tc	AL_2	H	1		43	6	2.794	4.43600	3		5.05	7.27	17.98	19.18	19.56	25.84	33.96	49.28	60.48	60.99	82.80	85.55	103.70		
Tc	AL_1	H	1		43	6	3.055	4.05800	3		4.62	6.65	16.43	17.53	17.87	23.60	30.99	44.84	54.87	55.32	74.45	76.81	92.01		
Tc	$K\alpha_2$	H	1	50	43	6	18.248	0.67932	5		0.77	1.11	2.74	2.92	2.98	3.92	5.13	7.32	8.85	8.91	11.62	11.94	13.83	19.43	27.60
Tc	$K\alpha_{1,2}$	H	1	150	43	6	18.325	0.67645	5		0.77	1.11	2.73	2.91	2.97	3.91	5.10	7.29	8.81	8.88	11.58	11.89	13.77	19.34	27.48
Tc	$K\alpha_1$	H	1	100	43	6	18.364	0.67502	5		0.77	1.11	2.72	2.90	2.96	3.90	5.09	7.27	8.79	8.86	11.55	11.86	13.75	19.30	27.42
Tc	$K\beta_3$	H	1	8	43	6	20.595	0.60188	5		0.68	0.99	2.43	2.59	2.64	3.48	4.54	6.49	7.84	7.90	10.30	10.57	12.25	17.19	24.40
Tc	$K\beta_1$	H	1	16	43	6	20.615	0.60130	5		0.68	0.98	2.43	2.59	2.64	3.47	4.54	6.48	7.83	7.89	10.29	10.56	12.24	17.18	24.38
Tc	$K\beta_2$	H	1	3	43	6	21.002	0.59024	5		0.67	0.97	2.38	2.54	2.59	3.41	4.45	6.36	7.68	7.74	10.10	10.37	12.01	16.86	23.92
Tc	AK	H	1		43	6	21.044	0.58906	5		0.67	0.96	2.38	2.53	2.58	3.40	4.44	6.35	7.67	7.73	10.08	10.35	11.99	16.82	23.87
Ru	M_3-M_5		1	1	44	6	0.181	68.29999	1		85.41	154.69													
Ru	M_2-M_4		1	1	44	6	0.199	62.20000	1		76.29	125.39													
Ru	Mz		1	1	44	6	0.237	52.34000	2		62.63	96.79													
Ru	$M_{4,5}O_{2,3}$	A	1	1	44	6	0.277	44.79999	1		52.83	79.58													
Ru	M_2-N_1		1	1	44	6	0.384	32.29999	1		37.42	54.96													
Ru	$M\gamma$		1	100	44	6	0.461	26.89999	1		30.99	45.20	142.69												
Ru	M_2-N_4		1	1	44	6	0.486	25.50000	2		29.34	42.73	127.83	146.47	154.96										
Ru	Ll		1	3	44	6	2.252	5.50350	4		6.27	9.02	22.35	23.85	24.33	32.21	42.48	62.30	77.34	78.03	110.26	114.82	154.65		
Ru	Ln		1	1	44	6	2.382	5.20500	4		5.93	8.53	21.13	22.54	22.99	30.42	40.08	58.57	72.45	73.08	101.78	105.66	134.65		
Ru	$L\alpha_2$		1	10	44	6	2.554	4.85381	5		5.53	7.95	19.69	21.00	21.42	28.32	37.27	54.28	66.88	67.45	92.70	95.99	118.73		
Ru	$L\alpha_1$		1	100	44	6	2.558	4.84575	5		5.52	7.94	19.65	20.97	21.38	28.27	37.21	54.18	66.76	67.33	92.50	95.78	118.41		
Ru	$L\beta_1$		1	45	44	6	2.683	4.62058	5		5.26	7.57	18.73	19.98	20.38	26.93	35.42	51.48	63.28	63.82	87.07	90.04	109.99		
Ru	$L\beta_4$		1	3	44	6	2.741	4.52300	4		5.15	7.41	18.33	19.56	19.94	26.36	34.65	50.31	61.80	62.31	84.79	87.65	106.61		
Ru	$L\beta_6$		1	3	44	6	2.763	4.48660	4		5.11	7.35	18.18	19.40	19.78	26.14	34.36	49.88	61.24	61.76	83.96	86.76	105.38		
Ru	$L\beta_3$		1	3	44	6	2.763	4.48660	4		5.11	7.35	18.18	19.40	19.78	26.14	34.36	49.88	61.24	61.76	83.96	86.76	105.38		
Ru	$L\beta_{2,15}$		1	1	44	6	2.835	4.37180	4		4.98	7.16	17.72	18.90	19.27	25.46	33.45	48.52	59.52	60.01	81.34	84.02	101.61		
Ru	AL_3		1		44	6	2.837	4.36900	3		4.97	7.16	17.70	18.88	19.26	25.44	33.43	48.49	59.47	59.97	81.28	83.96	101.52		
Ru	$L\gamma_5$		1	.1	44	6	2.891	4.28730	4		4.88	7.02	17.37	18.53	18.89	24.96	32.79	47.52	58.25	58.74	79.45	82.04	98.93		
Ru	$L\gamma_1$		1	1	44	6	2.964	4.18220	4		4.76	6.85	16.94	18.07	18.43	24.34	31.96	46.29	56.70	57.16	77.14	79.62	95.70		
Ru	AL_2		1		44	6	2.966	4.18000	3		4.76	6.85	16.93	18.06	18.42	24.33	31.95	46.26	56.66	57.13	77.09	79.57	95.63		
Ru	$L\gamma_{2,3}$		1	.5	44	6	3.180	3.89770	4		4.44	6.38	15.78	16.83	17.16	22.66	29.74	42.98	52.53	52.96	71.05	73.27	87.41	150.93	
Ru	AL_1	H	1		44	6	3.232	3.83500	3		4.37	6.28	15.53	16.56	16.88	22.29	29.25	42.25	51.62	52.04	69.74	71.90	85.66	144.51	
Ru	$K\alpha_2$		1	50	44	6	19.147	0.64741	6		0.74	1.06	2.61	2.79	2.84	3.74	4.89	6.98	8.43	8.49	11.08	11.38	13.18	18.50	26.28
Ru	$K\alpha_{1,2}$		1	150	44	6	19.233	0.64452	6		0.73	1.06	2.60	2.77	2.83	3.72	4.86	6.95	8.39	8.46	11.03	11.33	13.12	18.42	26.16
Ru	$K\alpha_1$		1	100	44	6	19.276	0.64308	6		0.73	1.05	2.60	2.77	2.82	3.71	4.85	6.93	8.37	8.44	11.00	11.30	13.09	18.38	26.10
Ru	$K\beta_3$		1	8	44	6	21.631	0.57307	6		0.65	0.94	2.31	2.47	2.51	3.31	4.32	6.17	7.46	7.52	9.80	10.07	11.66	16.36	23.22
Ru	$K\beta_1$		1	16	44	6	21.653	0.57248	6		0.65	0.94	2.31	2.46	2.51	3.31	4.32	6.17	7.45	7.51	9.79	10.06	11.65	16.35	23.19
Ru	$K\beta_5''$	B	1	.5	44	6	21.824	0.56800	4		0.65	0.93	2.29	2.44	2.49	3.28	4.29	6.12	7.39	7.45	9.71	9.98	11.56	16.22	23.01
Ru	$K\beta_5'$	B	1	.08	44	6	21.830	0.56785	5		0.65	0.93	2.29	2.44	2.49	3.28	4.28	6.12	7.39	7.45	9.71	9.97	11.55	16.21	23.00
Ru	$K\beta_2$		1	3	44	6	22.070	0.56166	5		0.64	0.92	2.27	2.42	2.46	3.24	4.24	6.05	7.31	7.37	9.61	9.87	11.43	16.04	22.75
Ru	$K\beta_4$	8	1	.01	44	6	22.101	0.56089	5		0.64	0.92	2.26	2.41	2.46	3.24	4.23	6.04	7.30	7.36	9.59	9.85	11.41	16.01	22.72
Ru	AK		1		44	6	22.116	0.56051	5		0.64	0.92	2.26	2.41	2.46	3.24	4.23	6.04	7.30	7.35	9.59	9.85	11.41	16.00	22.70
Rh	M_3-M_5		1	1	45	6	0.189	65.50000	1		81.15	138.69													
Rh	M_2-M_4		1	1	45	6	0.209	59.29999	1		72.15	115.80													
Rh	Mz		1	1	45	6	0.260	47.67000	2		56.51	85.84													

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Rh	$M_{4,5}O_{2,3}$	A	1	10	45	6	0.303	40.89999	1		47.93	71.51													
Rh	M_3-N_1		1	10	45	6	0.416	29.79999	1		34.43	50.39													
Rh	M_2-N_1		1	1	45	6	0.441	28.09999	1		32.41	47.34	163.55												
Rh	Mγ		1	100	45	6	0.496	25.00999	2		28.76	41.87	123.50	139.80	146.46										
Rh	Ll		1	3	45	6	2.376	5.21690	4		5.94	8.55	21.18	22.59	23.04	30.49	40.17	58.72	72.64	73.28	102.10	106.01	135.28		
Rh	Ln		1	1	45	6	2.519	4.92170	4		5.60	8.06	19.97	21.30	21.72	28.73	37.81	55.11	67.94	68.53	94.40	97.78	121.50		
Rh	$L\alpha_2$		1	10	45	6	2.692	4.60545	5		5.24	7.54	18.67	19.92	20.31	26.84	35.30	51.30	63.05	63.58	86.72	89.67	109.46		
Rh	$L\alpha_1$		1	100	45	6	2.696	4.59743	5		5.23	7.53	18.64	19.88	20.27	26.80	35.24	51.20	62.93	63.46	86.53	89.47	109.18		
Rh	$L\beta_1$		1	42	45	6	2.834	4.37414	5		4.98	7.17	17.72	18.91	19.28	25.47	33.47	48.55	59.55	60.05	81.40	84.08	101.69		
Rh	$L\beta_4$		1	5	45	6	2.890	4.28880	4		4.88	7.03	17.38	18.53	18.90	24.97	32.80	47.54	58.28	58.76	79.49	82.08	98.98		
Rh	$L\beta_3$		1	11	45	6	2.915	4.25220	4		4.84	6.97	17.23	18.37	18.74	24.75	32.51	47.11	57.73	58.21	78.68	81.23	97.84		
Rh	$L\beta_6$		1	3	45	6	2.922	4.24170	4		4.83	6.95	17.18	18.33	18.69	24.69	32.43	46.99	57.58	58.05	78.45	80.99	97.52		
Rh	$L\beta_{2,15}$		1	25	45	6	3.001	4.13100	4		4.70	6.77	16.73	17.85	18.20	24.04	31.56	45.69	55.94	56.40	76.02	78.46	94.16		
Rh	AL_3		1		45	6	3.002	4.12990	4		4.70	6.76	16.73	17.84	18.19	24.03	31.55	45.68	55.92	56.38	76.00	78.43	94.13		
Rh	$L\gamma_5$		1	.1	45	6	3.064	4.04510	4		4.60	6.63	16.38	17.47	17.82	23.53	30.89	44.69	54.68	55.13	74.17	76.53	91.63		
Rh	$L\gamma_1$		1	10	45	6	3.143	3.94370	4		4.49	6.46	15.97	17.03	17.37	22.93	30.10	43.51	53.20	53.63	72.02	74.28	88.71	156.71	
Rh	AL_2		1		45	6	3.144	3.94250	4		4.49	6.46	15.96	17.03	17.36	22.92	30.09	43.50	53.18	53.61	71.99	74.25	88.68	156.54	
Rh	$L\gamma_{2,3}$		1	5	45	6	3.363	3.68550	4		4.19	6.04	14.92	15.91	16.22	21.41	28.08	40.53	49.47	49.87	66.65	68.70	81.59	132.49	
Rh	AL_1		1		45	6	3.416	3.62900	3		4.13	5.94	14.69	15.66	15.97	21.08	27.64	39.88	48.66	49.05	65.50	67.50	80.08	128.65	
Rh	$K\alpha_2$		1	50	45	6	20.070	0.61763	6		0.70	1.01	2.49	2.66	2.71	3.57	4.66	6.66	8.04	8.10	10.57	10.85	12.57	17.65	25.05
Rh	$K\alpha_{1,2}$		1	150	45	6	20.165	0.61473	6		0.70	1.01	2.48	2.65	2.70	3.55	4.64	6.62	8.00	8.06	10.52	10.80	12.51	17.56	24.93
Rh	$K\alpha_1$		1	100	45	6	20.213	0.61328	6		0.70	1.00	2.48	2.64	2.69	3.54	4.63	6.61	7.99	8.05	10.49	10.77	12.48	17.52	24.87
Rh	$K\beta_3$		1	8	45	6	22.695	0.54620	6		0.62	0.89	2.20	2.35	2.40	3.16	4.12	5.89	7.11	7.16	9.34	9.59	11.11	15.59	22.11
Rh	$K\beta_1$		1	16	45	6	22.720	0.54560	6		0.62	0.89	2.20	2.35	2.39	3.15	4.12	5.88	7.10	7.16	9.33	9.58	11.10	15.58	22.09
Rh	$K\beta_5''$	B	1	.05	45	6	22.906	0.54118	5		0.62	0.89	2.18	2.33	2.37	3.13	4.08	5.83	7.05	7.10	9.25	9.50	11.01	15.45	21.91
Rh	$K\beta_5'$	B	1	.05	45	6	22.913	0.54101	5		0.62	0.89	2.18	2.33	2.37	3.13	4.08	5.83	7.04	7.10	9.25	9.50	11.01	15.44	21.90
Rh	$K\beta_2''$		1	.1	45	6	23.164	0.53513	5		0.61	0.88	2.16	2.30	2.35	3.09	4.04	5.77	6.97	7.02	9.15	9.40	10.89	15.27	21.66
Rh	$K\beta_2$		1	4	45	6	23.169	0.53503	5		0.61	0.88	2.16	2.30	2.35	3.09	4.04	5.76	6.97	7.02	9.15	9.40	10.88	15.27	21.66
Rh	$K\beta_4$	B	1	.01	45	6	23.213	0.53401	5		0.61	0.87	2.16	2.30	2.34	3.08	4.03	5.75	6.95	7.00	9.13	9.38	10.86	15.24	21.61
Rh	AK		1		45	6	23.216	0.53395	5		0.61	0.87	2.16	2.30	2.34	3.08	4.03	5.75	6.95	7.00	9.13	9.38	10.86	15.24	21.61
Pd	M_3-M_5		1	1	46	6	0.197	62.89999	1		77.31	127.94													
Pd	M_2-M_4		1	1	46	6	0.219	56.50000	1		68.26	107.64													
Pd	Mz		1	1	46	6	0.284	43.59999	1		51.31	77.05													
Pd	$M_{4,5}O_{2,3}$	A	1	10	46	6	0.331	37.39999	1		43.60	64.59													
Pd	M_3-N_1		1	10	46	6	0.444	27.89999	1		32.17	46.98	158.64												
Pd	M_2-N_1		1	1	46	6	0.473	26.20000	1		30.16	43.96	134.68	159.33											
Pd	Mγ	H	1	100	46	6	0.532	23.29999	1		26.76	38.88	110.30	122.06	126.25										
Pd	M_2-N_4		1	50	46	6	0.561	22.09999	1		25.36	36.81	102.23	112.16	115.57										
Pd	M_1-$N_{2,3}$		1	1	46	6	0.617	20.09999	1		23.03	33.37	90.14	98.00	100.62										
Pd	Ll		1	2	46	6	2.503	4.95250	4		5.64	8.11	20.09	21.43	21.86	28.91	38.06	55.48	68.43	69.02	95.17	98.61	122.79		
Pd	Ln		1	1	46	6	2.660	4.66050	4		5.31	7.63	18.90	20.16	20.56	27.17	35.73	51.95	63.89	64.43	88.02	91.04	111.42		
Pd	$L\alpha_2$		1	10	46	6	2.833	4.37588	5		4.98	7.17	17.73	18.91	19.29	25.48	33.49	48.57	59.58	60.07	81.44	84.12	101.74		
Pd	$L\alpha_1$		1	100	46	6	2.838	4.36767	5		4.97	7.15	17.70	18.88	19.25	25.44	33.42	48.47	59.46	59.95	81.25	83.93	101.48		
Pd	$L\beta_1$		1	42	46	6	2.990	4.14622	5		4.72	6.79	16.79	17.91	18.27	24.13	31.68	45.87	56.16	56.63	76.36	78.80	94.62		
Pd	$L\beta_4$		1	5	46	6	3.045	4.07110	4		4.63	6.67	16.49	17.59	17.93	23.68	31.09	44.99	55.06	55.51	74.73	77.11	92.39		
Pd	$L\beta_3$		1	11	46	6	3.072	4.03460	4		4.59	6.61	16.34	17.43	17.77	23.47	30.81	44.57	54.52	54.97	73.95	76.29	91.32		
Pd	$L\beta_6$		1	1	46	6	3.087	4.01620	4		4.57	6.58	16.26	17.35	17.69	23.36	30.66	44.35	54.26	54.70	73.56	75.88	90.79	171.76	
Pd	$L\beta_{2,15}$		1	25	46	6	3.171	3.90887	5		4.45	6.40	15.83	16.88	17.21	22.73	29.82	43.11	52.69	53.12	71.28	73.51	87.73	152.22	
Pd	AL_3		1		46	6	3.172	3.90740	4		4.45	6.40	15.82	16.87	17.21	22.72	29.81	43.09	52.67	53.10	71.25	73.48	87.69	152.05	
Pd	$L\gamma_5$		1	.1	46	6	3.243	3.82220	4		4.35	6.26	15.47	16.50	16.83	22.22	29.15	42.11	51.44	51.85	69.47	71.63	85.31	143.33	
Pd	$L\beta_{10}$	B	1	.01	46	6	3.263	3.79880	4		4.32	6.22	15.38	16.40	16.72	22.08	28.97	41.84	51.10	51.51	68.99	71.12	84.66	141.27	
Pd	$L\beta_9$	B	1	.01	46	6	3.269	3.79200	4		4.32	6.21	15.35	16.37	16.69	22.04	28.91	41.76	51.00	51.41	68.85	70.98	84.48	140.69	
Pd	$L\gamma_1$		1	10	46	6	3.328	3.72460	4		4.24	6.10	15.08	16.08	16.40	21.64	28.39	40.98	50.03	50.44	67.46	69.53	82.64	135.34	
Pd	AL_2		1		46	6	3.330	3.72280	4		4.24	6.10	15.07	16.07	16.39	21.63	28.37	40.96	50.01	50.41	67.42	69.49	82.59	135.20	
Pd	$L\gamma_{2,3}$		1	5	46	6	3.553	3.48920	4		3.97	5.71	14.12	15.06	15.35	20.26	26.56	38.29	46.67	47.05	62.69	64.58	76.42	120.12	
Pd	AL_1		1		46	6	3.607	3.43690	4		3.91	5.63	13.91	14.83	15.12	19.95	26.15	37.69	45.93	46.30	61.64	63.49	75.07	117.20	
Pd	$K\alpha_2$		1	50	46	6	21.017	0.58982	6		0.67	0.97	2.38	2.54	2.59	3.41	4.45	6.36	7.68	7.74	10.09	10.36	12.00	16.85	23.90
Pd	$K\alpha_{1,2}$		1	150	46	6	21.121	0.58690	6		0.67	0.96	2.37	2.53	2.57	3.39	4.43	6.32	7.64	7.70	10.04	10.31	11.94	16.76	23.79
Pd	$K\alpha_1$		1	100	46	6	21.174	0.58545	6		0.67	0.96	2.36	2.52	2.57	3.38	4.42	6.31	7.62	7.68	10.01	10.28	11.91	16.72	23.73
Pd	$K\beta_3$		1	8	46	6	23.787	0.52112	6		0.59	0.85	2.10	2.24	2.29	3.01	3.93	5.61	6.78	6.84	8.91	9.15	10.60	14.87	21.09
Pd	$K\beta_1$		1	18	46	6	23.815	0.52052	6		0.59	0.85	2.10	2.24	2.28	3.01	3.93	5.61	6.78	6.83	8.90	9.14	10.59	14.85	21.06
Pd	$K\beta_5$	B	1	.1	46	6	23.991	0.51670	5		0.59	0.85	2.09	2.22	2.27	2.98	3.90	5.57	6.73	6.78	8.84	9.07	10.51	14.75	20.91
Pd	$K\beta_2$		1	3	46	6	24.295	0.51023	6		0.58	0.84	2.06	2.20	2.24	2.95	3.85	5.50	6.64	6.69	8.72	8.96	10.38	14.56	20.64
Pd	$K\beta_4$	B	1	.01	46	6	24.339	0.50930	4		0.58	0.83	2.06	2.19	2.23	2.94	3.84	5.49	6.63	6.68	8.71	8.94	10.36	14.53	20.60
Pd	AK		1		46	6	24.344	0.50920	5		0.58	0.83	2.06	2.19	2.23	2.94	3.84	5.49	6.63	6.68	8.71	8.94	10.36	14.53	20.60

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Ag	M_3-M_5		1	1	47	6	0.205	60.50000	1		73.85	119.60													
Ag	M_2-M_4		1	1	47	6	0.230	54.00000	1		64.86	100.96													
Ag	Mz		1	1	47	6	0.312	39.76999	2		46.52	69.24													
Ag	$M_{4,5}O_{2,3}$	A	1	1	47	6	0.370	33.50000	1		38.86	57.18													
Ag	AM_5		1		47	6	0.398	31.14000	2		36.03	52.83													
Ag	AM_4		1		47	6	0.402	30.81999	2		35.64	52.24													
Ag	M_3-N_1		1	10	47	6	0.477	26.00000	1		29.93	43.61	132.63	154.99	168.97										
Ag	M_5-N_1		1	1	47	6	0.508	24.39999	1		28.05	40.80	118.50	132.75	138.17										
Ag	$M\gamma$		1	100	47	6	0.568	21.81999	2		25.03	36.33	100.44	110.03	113.30										
Ag	M_2-N_4		1	50	47	6	0.600	20.65999	2		23.68	34.33	93.38	101.75	104.55										
Ag	$M_1-N_{2,3}$		1	1	47	6	0.659	18.79999	1		21.52	31.16	82.93	89.81	92.06	142.73									
Ag	Ll		1	2	47	6	2.633	4.70760	4		5.36	7.71	19.09	20.36	20.77	27.45	36.11	52.52	64.62	65.16	89.14	92.22	113.13		
Ag	Ln		1	1	47	6	2.806	4.41830	4		5.03	7.24	17.91	19.10	19.48	25.73	33.82	49.07	60.22	60.72	82.40	85.13	103.12		
Ag	$L\alpha_2$		1	10	47	6	2.978	4.16294	5		4.74	6.82	16.86	17.99	18.34	24.22	31.81	46.07	56.41	56.88	76.72	79.18	95.12		
Ag	$L\alpha_1$		1	100	47	6	2.984	4.15443	5		4.73	6.80	16.83	17.95	18.30	24.17	31.75	45.97	56.28	56.75	76.53	78.99	94.86		
Ag	$L\beta_1$		1	42	47	6	3.150	3.93473	5		4.48	6.44	15.93	16.99	17.33	22.88	30.03	43.41	53.07	53.50	71.83	74.08	88.46	155.47	
Ag	$L\beta_4$		1	5	47	6	3.203	3.87023	5		4.41	6.34	15.67	16.71	17.04	22.50	29.52	42.66	52.13	52.55	70.47	72.67	86.64	147.96	
Ag	$L\beta_3$		1	11	47	6	3.234	3.83313	5		4.36	6.28	15.52	16.55	16.88	22.28	29.23	42.23	51.59	52.01	69.70	71.86	85.61	144.33	
Ag	$L\beta_6$		1	1	47	6	3.255	3.80774	5		4.33	6.24	15.41	16.44	16.76	22.13	29.03	41.94	51.23	51.64	69.17	71.31	84.91	142.05	
Ag	$L\beta_{2,15}$		1	25	47	6	3.347	3.70335	5		4.22	6.07	14.99	15.99	16.30	21.52	28.22	40.74	49.73	50.13	67.02	69.08	82.07	133.77	
Ag	AL_3		1		47	6	3.350	3.69990	4		4.21	6.06	14.98	15.97	16.29	21.50	28.20	40.70	49.68	50.08	66.95	69.00	81.98	133.52	
Ag	$L\gamma_5$		1	.1	47	6	3.428	3.61638	5		4.12	5.92	14.64	15.61	15.92	21.00	27.55	39.74	48.48	48.87	65.25	67.23	79.75	127.82	
Ag	$L\beta_{10}$	8	1	.01	47	6	3.432	3.61158	5		4.11	5.91	14.62	15.59	15.89	20.98	27.51	39.68	48.41	48.80	65.15	67.13	79.62	127.52	
Ag	$L\beta_9$	8	1	.01	47	6	3.439	3.60497	5		4.10	5.90	14.59	15.56	15.87	20.94	27.46	39.61	48.32	48.71	65.02	66.99	79.44	127.09	
Ag	$L\gamma_1$		1	10	47	6	3.519	3.52260	5		4.01	5.77	14.25	15.20	15.50	20.45	26.82	38.67	47.15	47.53	63.35	65.27	77.29	122.05	
Ag	AL_2		1		47	6	3.525	3.51640	4		4.00	5.76	14.23	15.17	15.47	20.42	26.77	38.60	47.06	47.44	63.23	65.14	77.12	121.69	
Ag	$L\gamma_2$		1	3	47	6	3.743	3.31216	5		3.77	5.42	13.40	14.29	14.57	19.22	25.19	36.27	44.18	44.53	59.18	60.94	71.91	110.69	
Ag	$L\gamma_3$		1	2	47	6	3.749	3.30635	5		3.76	5.41	13.37	14.26	14.54	19.19	25.14	36.21	44.10	44.45	59.06	60.82	71.77	110.40	
Ag	AL_1		1		47	6	3.807	3.25640	4		3.71	5.33	13.17	14.05	14.32	18.89	24.76	35.64	43.40	43.74	58.08	59.81	70.52	107.94	
Ag	$K\alpha_2$		1	50	47	6	21.987	0.56380	6		0.64	0.92	2.28	2.43	2.47	3.26	4.25	6.07	7.34	7.40	9.64	9.90	11.47	16.10	22.84
Ag	$K\alpha_{1,2}$		1	150	47	6	22.101	0.56087	6		0.64	0.92	2.26	2.41	2.46	3.24	4.23	6.04	7.30	7.36	9.59	9.85	11.41	16.01	22.72
Ag	$K\alpha_1$		1	100	47	6	22.159	0.55941	7		0.64	0.92	2.26	2.41	2.45	3.23	4.22	6.03	7.28	7.34	9.57	9.83	11.38	15.97	22.66
Ag	$K\beta_3$		1	8	47	6	24.907	0.49768	6		0.57	0.81	2.01	2.14	2.18	2.87	3.76	5.36	6.48	6.53	8.51	8.74	10.12	14.20	20.13
Ag	$K\beta_1$		1	18	47	6	24.938	0.49707	6		0.57	0.81	2.01	2.14	2.18	2.87	3.75	5.36	6.47	6.52	8.50	8.73	10.11	14.18	20.10
Ag	$K\beta_5$	B	1	.1	47	6	25.141	0.49306	5		0.56	0.81	1.99	2.12	2.16	2.85	3.72	5.31	6.42	6.47	8.43	8.66	10.03	14.07	19.94
Ag	$K\beta_2$		1	5	47	6	25.452	0.48703	6		0.55	0.80	1.97	2.10	2.14	2.81	3.67	5.25	6.34	6.39	8.33	8.55	9.91	13.89	19.69
Ag	$K\beta_4$	B	1	.01	47	6	25.507	0.48598	5		0.55	0.80	1.96	2.09	2.13	2.81	3.67	5.24	6.33	6.37	8.31	8.53	9.88	13.86	19.65
Ag	AK		1		47	6	25.512	0.48589	5		0.55	0.80	1.96	2.09	2.13	2.81	3.67	5.23	6.32	6.37	8.31	8.53	9.88	13.86	19.65
Cd	M_3-M_5		1	1	48	6	0.211	58.70000	1		71.31	113.98													
Cd	M_2-M_4		1	1	48	6	0.238	52.00000	1		62.18	95.95													
Cd	Mz		1	1	48	6	0.337	36.79999	1		42.87	63.43													
Cd	M_5-O_3	A	1	1	48	6	0.402	30.79999	1		35.62	52.21													
Cd	$M_4-O_{2,3}$	A	1	10	48	6	0.408	30.39999	1		35.14	51.48													
Cd	$AM_{4,5}$		1		48	6	0.441	28.12999	2		32.44	47.39	164.42												
Cd	M_3-N_1		1	10	48	6	0.506	24.50000	1		28.15	40.97	119.29	133.84	139.42										
Cd	M_2-N_1		1	1	48	6	0.541	22.89999	1		26.29	38.19	107.52	118.60	122.49										
Cd	$M\gamma$		1	100	48	6	0.506	20.46999	2		23.45	34.01	92.27	100.46	103.19										
Cd	M_2-N_4		1	50	48	6	0.639	19.39999	2		22.22	32.18	86.20	93.51	95.92	155.82									
Cd	Ll		1	2	48	6	2.767	4.48014	5		5.10	7.34	18.16	19.37	19.75	26.10	34.31	49.80	61.15	61.66	83.81	86.61	105.16		
Cd	Ln		1	1	48	6	2.956	4.19315	5		4.77	6.87	16.99	18.12	18.48	24.40	32.05	46.42	56.86	57.33	77.38	79.87	96.03		
Cd	$L\alpha_2$		1	10	48	6	3.126	3.96496	5		4.51	6.49	16.06	17.12	17.46	23.06	30.26	43.76	53.51	53.94	72.47	74.75	89.32	159.92	
Cd	$L\alpha_1$		1	100	48	6	3.133	3.95635	5		4.50	6.48	16.02	17.09	17.42	23.01	30.19	43.66	53.38	53.82	72.29	74.56	89.07	158.56	
Cd	$L\beta_1$		1	42	48	6	3.316	3.73823	5		4.25	6.12	15.13	16.14	16.46	21.72	28.49	41.14	50.23	50.63	67.74	69.82	83.01	136.37	
Cd	$L\beta_4$		1	5	48	6	3.367	3.68203	5		4.19	6.03	14.90	15.89	16.21	21.39	28.06	40.49	49.42	49.82	66.58	68.62	81.50	132.25	
Cd	$L\beta_3$		1	11	48	6	3.401	3.64495	5		4.15	5.97	14.75	15.73	16.04	21.17	27.77	40.07	48.89	49.28	65.83	67.84	80.50	129.71	
Cd	$L\beta_6$		1	1	48	6	3.429	3.61467	5		4.11	5.92	14.63	15.60	15.91	20.99	27.53	39.72	48.46	48.85	65.21	67.20	79.70	127.71	
Cd	$L\beta_{2,15}$		1	25	48	6	3.528	3.51408	5		4.00	5.76	14.22	15.16	15.46	20.40	26.75	38.57	47.03	47.40	63.18	65.09	77.06	121.55	
Cd	AL_3		1		48	6	3.537	3.50470	4		3.99	5.74	14.18	15.12	15.42	20.35	26.68	38.46	46.89	47.27	63.00	64.90	76.82	121.01	
Cd	$L\beta_{10}$	B	1	.01	48	6	3.607	3.43670	4		3.91	5.63	13.90	14.83	15.12	19.95	26.15	37.69	45.93	46.30	61.64	63.49	75.07	117.19	
Cd	$L\beta_9$	8	1	.01	48	6	3.614	3.43015	5		3.90	5.62	13.88	14.80	15.09	19.91	26.10	37.61	45.84	46.20	61.51	63.35	74.90	116.83	
Cd	$L\gamma_5$		1	.1	48	6	3.619	3.42551	5		3.90	5.61	13.86	14.78	15.07	19.88	26.07	37.56	45.77	46.14	61.42	63.26	74.78	116.58	
Cd	$L\gamma_1$		1	10	48	6	3.716	3.33564	5		3.80	5.46	13.49	14.39	14.67	19.36	25.37	36.54	44.51	44.86	59.64	61.42	72.50	111.87	
Cd	AL_2		1		48	6	3.727	3.32570	4		3.79	5.45	13.45	14.35	14.63	19.30	25.29	36.43	44.37	44.72	59.44	61.21	72.25	111.37	
Cd	$L\gamma_2$		1	5	48	6	3.951	3.13770	4		3.57	5.14	12.69	13.53	13.80	18.20	23.84	34.30	41.74	42.07	55.78	57.42	67.59	102.38	
Cd	AL_1		1		48	6	4.018	3.08490	4		3.51	5.05	12.48	13.30	13.56	17.89	23.44	33.71	41.00	41.33	54.76	56.36	66.31	100.02	

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Cd	$K\alpha_2$		1	50	48	6	22.980	0.53942	6		0.61	0.88	2.18	2.32	2.37	3.12	4.07	5.81	7.02	7.08	9.22	9.47	10.97	15.40	21.84
Cd	$K\alpha_{1,2}$		1	150	48	6	23.106	0.53648	6		0.61	0.88	2.17	2.31	2.35	3.10	4.05	5.78	6.98	7.04	9.17	9.42	10.91	15.31	21.72
Cd	$K\alpha_1$		1	100	48	6	23.170	0.53501	6		0.61	0.88	2.16	2.30	2.35	3.09	4.04	5.76	6.96	7.02	9.15	9.40	10.88	15.27	21.66
Cd	$K\beta_3$		1	8	48	6	26.057	0.47573	6		0.54	0.78	1.92	2.05	2.09	2.75	3.59	5.13	6.19	6.24	8.13	8.35	9.68	13.57	19.23
Cd	$K\beta_1$		1	19	48	6	26.091	0.47510	6		0.54	0.78	1.92	2.04	2.08	2.74	3.58	5.12	6.18	6.23	8.12	8.34	9.66	13.55	19.21
Cd	$K\beta_2$		1	5	48	6	26.639	0.46533	6		0.53	0.76	1.88	2.00	2.04	2.69	3.51	5.01	6.06	6.10	7.96	8.17	9.46	13.27	18.81
Cd	AK		1		48	6	26.711	0.46407	5		0.53	0.76	1.87	2.00	2.04	2.68	3.50	5.00	6.04	6.09	7.93	8.15	9.44	13.24	18.76
In	Ll		1	7	49	6	2.904	4.26873	5		4.86	6.99	17.29	18.45	18.81	24.85	32.64	47.31	57.98	58.46	79.04	81.61	98.35		
In	Ln		1	7	49	6	3.112	3.98327	5		4.53	6.52	16.13	17.20	17.54	23.16	30.40	43.97	53.77	54.21	72.86	75.15	89.84	163.17	
In	$L\alpha_2$		1	10	49	6	3.279	3.78073	5		4.30	6.19	15.30	16.32	16.64	21.97	28.82	41.63	50.84	51.25	68.61	70.73	84.17	139.75	
In	$L\alpha_1$		1	100	49	6	3.286	3.77192	5		4.29	6.18	15.27	16.28	16.61	21.92	28.76	41.53	50.71	51.12	68.43	70.54	83.93	139.03	
In	$L\beta_1$		1	75	49	6	3.487	3.55531	5		4.05	5.82	14.39	15.34	15.65	20.65	27.07	39.04	47.61	47.99	64.01	65.95	78.14	124.00	
In	$L\beta_4$		1	4	49	6	3.535	3.50697	5		3.99	5.74	14.19	15.13	15.43	20.36	26.70	38.49	46.93	47.30	63.04	64.94	76.88	121.14	
In	$L\beta_3$		1	6	49	6	3.572	3.46984	5		3.95	5.68	14.04	14.97	15.27	20.14	26.41	38.07	46.40	46.77	62.30	64.17	75.92	119.02	
In	$L\beta_6$		1	1	49	6	3.608	3.43606	5		3.91	5.63	13.90	14.83	15.12	19.95	26.15	37.68	45.92	46.29	61.63	63.48	75.05	117.15	
In	$L\beta_{2,15}$		1	17	49	6	3.713	3.33838	5		3.80	5.47	13.51	14.40	14.69	19.37	25.39	36.57	44.55	44.90	59.69	61.47	72.57	112.01	
In	$L\beta_7$		1	.1	49	6	3.729	3.32400	3		3.78	5.44	13.45	14.34	14.62	19.29	25.28	36.41	44.34	44.70	59.41	61.18	72.21	111.28	
In	AL_3		1		49	6	3.730	3.32370	4		3.78	5.44	13.45	14.34	14.62	19.29	25.28	36.41	44.34	44.69	59.40	61.17	72.20	111.27	
In	$L\beta_{10}$	8	1	.01	49	6	3.786	3.27404	5		3.73	5.36	13.24	14.12	14.40	19.00	24.89	35.84	43.64	43.99	58.43	60.16	70.96	108.80	
In	$L\beta_9$	8	1	.01	49	6	3.794	3.26763	5		3.72	5.35	13.22	14.10	14.37	18.96	24.84	35.77	43.55	43.90	58.30	60.03	70.80	108.49	
In	$L\gamma_5$		1	.1	49	6	3.815	3.24907	5		3.70	5.32	13.14	14.01	14.29	18.85	24.70	35.56	43.29	43.64	57.94	59.66	70.34	107.59	
In	$L\gamma_1$		1	8	49	6	3.920	3.16213	5		3.60	5.18	12.79	13.64	13.91	18.34	24.03	34.58	42.08	42.41	56.25	57.91	68.19	103.50	
In	AL_2		1		49	6	3.939	3.14730	4		3.58	5.15	12.73	13.57	13.84	18.26	23.92	34.41	41.87	42.20	55.96	57.61	67.83	102.82	
In	$L\gamma_{2,3}$		1	2	49	6	4.160	2.98000	4		3.39	4.88	12.05	12.85	13.10	17.28	22.63	32.53	39.55	39.86	52.75	54.29	63.78	95.48	
In	$L\gamma_4$		1	.1	49	6	4.236	2.92640	4		3.33	4.79	11.83	12.62	12.86	16.96	22.22	31.93	38.81	39.11	51.73	53.23	62.50	93.23	
In	AL_1		1		49	6	4.237	2.92600	4		3.33	4.79	11.83	12.62	12.86	16.96	22.21	31.92	38.80	39.11	51.72	53.22	62.49	93.22	
In	$K\alpha_2$		1	50	49	6	23.998	0.51654	6		0.59	0.85	2.08	2.22	2.27	2.98	3.90	5.57	6.72	6.77	8.83	9.07	10.51	14.74	20.90
In	$K\alpha_{1,2}$		1	150	49	6	24.136	0.51359	6		0.58	0.84	2.07	2.21	2.25	2.97	3.88	5.53	6.69	6.74	8.78	9.02	10.45	14.66	20.78
In	$K\alpha_1$		1	100	49	6	24.206	0.51211	6		0.58	0.84	2.07	2.20	2.25	2.96	3.86	5.52	6.67	6.72	8.76	8.99	10.42	14.61	20.72
In	$K\beta_3$		1	8	49	6	27.233	0.45518	6		0.52	0.75	1.84	1.96	2.00	2.63	3.43	4.90	5.92	5.97	7.78	7.99	9.26	12.98	18.39
In	$K\beta_1$		1	19	49	6	27.271	0.45454	6		0.52	0.74	1.83	1.96	1.99	2.63	3.43	4.90	5.92	5.96	7.77	7.98	9.24	12.96	18.37
In	$K\beta_5''$	B	1	.1	49	6	27.487	0.45098	5		0.51	0.74	1.82	1.94	1.98	2.60	3.40	4.86	5.87	5.91	7.71	7.92	9.17	12.86	18.22
In	$K\beta_5'$	8	1	.1	49	6	27.494	0.45086	5		0.51	0.74	1.82	1.94	1.98	2.60	3.40	4.86	5.87	5.91	7.71	7.92	9.17	12.86	18.22
In	$K\beta_2$		1	5	49	6	27.856	0.44500	5		0.51	0.73	1.80	1.91	1.95	2.57	3.36	4.79	5.79	5.84	7.61	7.81	9.05	12.69	17.98
In	$K\beta_4$	B	1	.01	49	6	27.923	0.44393	5		0.51	0.73	1.79	1.91	1.95	2.56	3.35	4.78	5.78	5.82	7.59	7.79	9.03	12.66	17.94
In	$K-O_{2,3}$		1	.01	49	6	27.935	0.44374	5		0.50	0.73	1.79	1.91	1.95	2.56	3.35	4.78	5.78	5.82	7.59	7.79	9.02	12.65	17.93
In	AK	H	1		49	6	27.937	0.44371	5		0.50	0.73	1.79	1.91	1.95	2.56	3.35	4.78	5.78	5.82	7.59	7.79	9.02	12.65	17.93
Sn	M_3-M_5		1	1	50	6	0.229	54.20000	1		65.13	101.48													
Sn	M_2-M_4		1	1	50	6	0.262	47.29999	1		56.03	85.02													
Sn	Mz		1	1	50	6	0.397	31.23999	2		36.15	53.01													
Sn	M_5-O_3		1	1	50	6	0.482	25.70000	1		29.57	43.08	129.70	149.59	159.40										
Sn	$M_4-O_{2,3}$		1	10	50	6	0.490	25.29999	1		29.10	42.38	126.02	143.60	151.19										
Sn	$AM_{4,5}$		1		50	6	0.511	24.28000	2		27.90	40.59	117.56	131.48	136.72										
Sn	M_3-N_1		1	10	50	6	0.577	21.50000	1		24.66	35.77	98.45	107.67	110.79										
Sn	M_2-N_1		1	1	50	6	0.620	20.00000	1		22.91	33.20	89.57	97.35	99.93										
Sn	My		1	100	50	6	0.691	17.93999	2		20.52	29.70	78.38	84.70	86.76	129.44									
Sn	M_2-N_4		1	50	50	6	0.732	16.92999	2		19.36	27.99	73.21	78.94	80.80	117.15									
Sn	Ll		1	7	50	6	3.044	4.07165	5		4.63	6.67	16.49	17.59	17.94	23.69	31.10	45.00	55.07	55.52	74.74	77.12	92.41		
Sn	Ln		1	7	50	6	3.272	3.78876	5		4.31	6.21	15.34	16.36	16.68	22.02	28.89	41.72	50.95	51.37	68.78	70.91	84.39	140.42	
Sn	$L\alpha_2$		1	10	50	6	3.435	3.60891	5		4.11	5.91	14.61	15.58	15.88	20.96	27.49	39.65	48.38	48.76	65.10	67.08	79.55	127.34	
Sn	$L\alpha_1$		1	100	50	6	3.443	3.59994	5		4.10	5.90	14.57	15.54	15.84	20.91	27.42	39.55	48.25	48.64	64.91	66.89	79.31	126.77	
Sn	$L\beta_1$		1	75	50	6	3.662	3.38487	5		3.85	5.54	13.69	14.60	14.89	19.65	25.75	37.10	45.20	45.56	60.61	62.42	73.75	114.41	
Sn	$L\beta_4$		1	4	50	6	3.708	3.34335	5		3.81	5.48	13.53	14.42	14.71	19.40	25.43	36.63	44.62	44.97	59.79	61.57	72.70	112.26	
Sn	$L\beta_3$		1	6	50	6	3.750	3.30585	5		3.76	5.41	13.37	14.26	14.54	19.18	25.14	36.20	44.09	44.44	59.05	60.81	71.75	110.37	
Sn	$L\beta_6$		1	1	50	6	3.792	3.26901	5		3.72	5.35	13.22	14.10	14.38	18.97	24.86	35.79	43.57	43.92	58.33	60.06	70.83	108.55	
Sn	$L\beta_{2,15}$		1	17	50	6	3.904	3.17505	5		3.61	5.20	12.84	13.69	13.96	18.42	24.13	34.72	42.26	42.59	56.50	58.17	68.51	104.09	
Sn	$L\beta_7$		1	.1	50	6	3.927	3.15640	4		3.59	5.17	12.77	13.61	13.88	18.31	23.99	34.51	42.00	42.33	56.14	57.79	68.05	103.24	
Sn	AL_3		1		50	6	3.928	3.15570	4		3.59	5.17	12.76	13.61	13.88	18.30	23.98	34.51	41.99	42.32	56.13	57.78	68.03	103.20	
Sn	$L\beta_{10}$	B	1	.01	50	6	3.971	3.12170	5		3.55	5.11	12.62	13.46	13.73	18.11	23.72	34.12	41.52	41.84	55.47	57.10	67.20	101.66	
Sn	$L\beta_9$	B	1	.01	50	6	3.979	3.11513	5		3.55	5.10	12.60	13.43	13.70	18.07	23.67	34.05	41.42	41.75	55.34	56.97	67.04	101.36	
Sn	$L\gamma_5$		1	.1	50	6	4.018	3.08475	5		3.51	5.05	12.47	13.30	13.56	17.89	23.43	33.71	41.00	41.33	54.76	56.36	66.30	100.01	
Sn	$L\gamma_1$		1	8	50	6	4.130	3.00115	5		3.42	4.91	12.14	12.94	13.20	17.40	22.79	32.77	39.84	40.16	53.15	54.70	64.28	96.38	
Sn	AL_2		1		50	6	4.157	2.98230	4		3.39	4.88	12.06	12.86	13.11	17.29	22.65	32.56	39.58	39.89	52.79	54.33	63.83	95.57	
Sn	$L\gamma_{2,3}$		1	2	50	6	4.376	2.83270	4		3.22	4.64	11.45	12.21	12.45	16.42	21.50	30.88	37.52	37.81	49.96	51.40	60.29	89.42	168.12
Sn	$L\gamma_4$		1	.1	50	6	4.463	2.77750	4		3.16	4.55	11.23	11.97	12.21	16.10	21.07	30.26	36.76	37.05	48.92	50.33	58.99	87.23	154.45

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lstear (Film)	Llanr (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Sn	AL_1		1		50	6	4.464	2.77690	4		3.16	4.55	11.23	11.97	12.21	16.09	21.07	30.26	36.75	37.04	48.91	50.32	58.98	87.20	154.34
Sn	$K\alpha_2$		1	50	50	6	25.040	0.49505	6		0.56	0.81	2.00	2.13	2.17	2.86	3.74	5.33	6.44	6.49	8.46	8.69	10.07	14.12	20.02
Sn	$K\alpha_{1,2}$		1	150	50	6	25.191	0.49208	6		0.56	0.81	1.99	2.12	2.16	2.84	3.71	5.30	6.41	6.45	8.41	8.64	10.01	14.04	19.90
Sn	$K\alpha_1$		1	100	50	6	25.267	0.49060	6		0.56	0.80	1.98	2.11	2.15	2.83	3.70	5.29	6.39	6.43	8.39	8.61	9.98	14.00	19.84
Sn	$K\beta_3$		1	9	50	6	28.439	0.43588	6		0.50	0.71	1.76	1.88	1.91	2.52	3.29	4.70	5.67	5.72	7.45	7.65	8.86	12.43	17.61
Sn	$K8_1$		1	19	50	6	28.481	0.43524	6		0.50	0.71	1.76	1.87	1.91	2.51	3.28	4.69	5.66	5.71	7.44	7.64	8.85	12.41	17.58
Sn	$K\beta_5''$	B	1	.1	50	6	28.705	0.43184	5		0.49	0.71	1.74	1.86	1.89	2.49	3.26	4.65	5.62	5.66	7.38	7.58	8.78	12.31	17.44
Sn	$K8_5'$	B	1	.1	50	6	28.711	0.43175	5		0.49	0.71	1.74	1.86	1.89	2.49	3.26	4.65	5.62	5.66	7.38	7.58	8.78	12.31	17.44
Sn	$K\beta_2$		1	5	50	6	29.104	0.42591	6		0.48	0.70	1.72	1.83	1.87	2.46	3.21	4.59	5.54	5.59	7.28	7.48	8.66	12.14	17.20
Sn	$K\beta_4$	B	1	.01	50	6	29.170	0.42495	5		0.48	0.70	1.72	1.83	1.86	2.45	3.21	4.58	5.53	5.57	7.26	7.46	8.64	12.12	17.16
Sn	$K-O_{2,3}$		1	.01	50	6	29.190	0.42467	5		0.48	0.70	1.71	1.83	1.86	2.45	3.20	4.57	5.53	5.57	7.26	7.46	8.63	12.11	17.15
Sn	AK		1		50	6	29.190	0.42467	5		0.48	0.70	1.71	1.83	1.86	2.45	3.20	4.57	5.53	5.57	7.26	7.46	8.63	12.11	17.15
Sb	M_3-M_5		1	1	51	6	0.237	52.20000	1		62.45	96.44													
Sb	M_2-M_4		1	1	51	6	0.274	45.20000	1		53.34	80.44													
Sb	Mz		1	1	51	6	0.429	28.87999	2		33.33	48.73													
Sb	M_3-N_1		1	10	51	.6	0.614	20.20000	1		23.14	33.54	90.71	98.66	101.31										
Sb	M_2-N_1		1	1	51	6	0.659	18.79999	1		21.52	31.16	82.93	89.81	92.06	142.73									
Sb	$M\gamma$		1	100	51	6	0.733	16.92000	2		19.35	27.98	73.16	78.89	80.75	117.04									
Sb	M_2-N_4		1	50	51	6	0.776	15.98000	2		18.26	26.39	68.50	73.74	75.44	107.31									
Sb	Ll		1	7	51	6	3.188	3.88826	5		4.43	6.37	15.74	16.79	17.12	22.60	29.66	42.87	52.39	52.82	70.85	73.06	87.15	149.88	
Sb	Ln		1	7	51	6	3.436	3.60765	5		4.11	5.91	14.60	15.57	15.88	20.95	27.48	39.64	48.36	48.75	65.07	67.05	79.52	127.26	
Sb	$L\alpha_2$		1	10	51	6	3.595	3.44840	5		3.92	5.65	13.95	14.88	15.17	20.02	26.24	37.82	46.10	46.47	61.87	63.73	75.37	117.83	
Sb	$L\alpha_1$		1	100	51	6	3.604	3.43941	5		3.91	5.63	13.92	14.84	15.13	19.97	26.17	37.72	45.97	46.34	61.69	63.55	75.14	117.34	
Sb	$L8_1$		1	75	51	6	3.843	3.22567	5		3.67	5.28	13.05	13.91	14.19	18.71	24.52	35.30	42.97	43.31	57.48	59.18	69.76	106.47	
Sb	$L8_4$		1	4	51	6	3.886	3.19014	5		3.63	5.22	12.90	13.76	14.03	18.51	24.25	34.89	42.47	42.81	56.79	58.47	68.88	104.80	
Sb	$L8_3$		1	6	51	6	3.932	3.15258	5		3.59	5.16	12.75	13.60	13.86	18.29	23.96	34.47	41.95	42.28	56.07	57.72	67.96	103.06	
Sb	$L\beta_6$		1	1	51	6	3.979	3.11513	5		3.55	5.10	12.60	13.43	13.70	18.07	23.67	34.05	41.42	41.75	55.34	56.97	67.04	101.36	
Sb	$L\beta_{2,15}$		1	17	51	6	4.100	3.02335	5		3.44	4.95	12.23	13.04	13.29	17.53	22.96	33.02	40.15	40.47	53.58	55.14	64.82	97.33	
Sb	$L8_7$		1	.1	51	6	4.125	3.00520	4		3.42	4.92	12.15	12.96	13.21	17.42	22.82	32.81	39.90	40.21	53.23	54.78	64.38	96.55	
Sb	AL_3		1		51	6	4.132	3.00030	4		3.41	4.91	12.13	12.94	13.19	17.40	22.78	32.76	39.83	40.14	53.14	54.69	64.26	96.34	
Sb	$L\beta_{10}$	8	1	.01	51	6	4.161	2.97917	5		3.39	4.88	12.05	12.85	13.10	17.27	22.62	32.52	39.54	39.85	52.73	54.27	63.76	95.44	
Sb	$L\beta_9$	8	1	.01	51	6	4.170	2.97261	5		3.38	4.87	12.02	12.82	13.07	17.23	22.57	32.45	39.45	39.76	52.61	54.14	63.60	95.16	
Sb	$L\gamma_5$		1	.1	51	6	4.228	2.93187	5		3.34	4.80	11.85	12.64	12.89	17.00	22.26	31.99	38.89	39.19	51.83	53.34	62.63	93.46	
Sb	$L\gamma_1$		1	8	51	6	4.347	2.85159	5		3.25	4.67	11.53	12.29	12.53	16.53	21.64	31.09	37.78	38.08	50.31	51.77	60.73	90.18	
Sb	AL_2		1		51	6	4.381	2.82940	4		3.22	4.63	11.44	12.20	12.44	16.40	21.47	30.84	37.47	37.77	49.90	51.34	60.21	89.28	166.90
Sb	$L\gamma_{2,3}$		1	2	51	6	4.599	2.69530	4		3.07	4.41	10.89	11.62	11.85	15.62	20.44	29.35	35.64	35.92	47.38	48.74	57.08	84.04	142.31
Sb	$L\gamma_4$		1	.1	51	6	4.696	2.63980	4		3.00	4.32	10.67	11.38	11.60	15.29	20.02	28.73	34.88	35.15	46.35	47.67	55.80	81.93	135.91
Sb	AL_1		1		51	6	4.698	2.63880	4		3.00	4.32	10.67	11.37	11.60	15.29	20.01	28.72	34.87	35.14	46.33	47.65	55.78	81.89	135.81
Sb	$K\alpha_2$		1	50	51	6	26.106	0.47483	6		0.54	0.78	1.92	2.04	2.08	2.74	3.58	5.12	6.18	6.23	8.12	8.34	9.66	13.54	19.19
Sb	$K\alpha_{1,2}$		1	150	51	6	26.271	0.47184	6		0.54	0.77	1.90	2.03	2.07	2.73	3.56	5.08	6.14	6.19	8.07	8.28	9.60	13.46	19.07
Sb	$K\alpha_1$		1	100	51	6	26.355	0.47035	6		0.54	0.77	1.90	2.02	2.06	2.72	3.55	5.07	6.12	6.17	8.04	8.26	9.57	13.42	19.01
Sb	$K\beta_3$		1	9	51	6	29.674	0.41774	6		0.48	0.68	1.69	1.80	1.83	2.41	3.15	4.50	5.44	5.48	7.14	7.33	8.49	11.91	16.87
Sb	$K\beta_1$		1	20	51	6	29.721	0.41708	6		0.47	0.68	1.68	1.79	1.83	2.41	3.15	4.49	5.43	5.47	7.13	7.32	8.48	11.89	16.84
Sb	$K8_5''$	8	1	.1	51	6	29.951	0.41388	5		0.47	0.68	1.67	1.78	1.82	2.39	3.12	4.46	5.39	5.43	7.07	7.27	8.42	11.80	16.71
Sb	$K\beta_5'$	B	1	.1	51	6	29.958	0.41378	5		0.47	0.68	1.67	1.78	1.82	2.39	3.12	4.46	5.39	5.43	7.07	7.26	8.41	11.80	16.71
Sb	$K8_2$	D	1	5	51	6	30.388	0.40793	6		0.46	0.67	1.65	1.76	1.79	2.36	3.08	4.39	5.31	5.35	6.97	7.16	8.29	11.63	16.47
Sb	$K\beta_4$	B	1	.01	51	6	30.456	0.40702	5		0.46	0.67	1.64	1.75	1.79	2.35	3.07	4.38	5.30	5.34	6.96	7.15	8.28	11.60	16.43
Sb	AK		1		51	6	30.481	0.40668	5		0.46	0.67	1.64	1.75	1.78	2.35	3.07	4.38	5.29	5.33	6.95	7.14	8.27	11.59	16.42
Sb	$K-O_{2,3}$		1	.01	51	6	30.482	0.40666	5		0.46	0.67	1.64	1.75	1.78	2.35	3.07	4.38	5.29	5.33	6.95	7.14	8.27	11.59	16.42
Te	M_3-M_5		1	1	52	6	0.246	50.29999	1		59.93	91.87													
Te	Mz		1	1	52	6	0.464	26.71999	2		30.77	44.88	140.48												
Te	M_5-O_3		1	1	52	6	0.569	21.78000	2		24.98	36.26	100.19	109.73	112.98										
Te	$M_4-O_{2,3}$		1	10	52	6	0.581	21.34000	2		24.47	35.50	97.46	106.51	109.56										
Te	M_3-N_1		1	10	52	6	0.649	19.09999	1		21.87	31.67	84.56	91.64	93.98	148.60									
Te	M_2-N_1		1	1	52	6	0.704	17.59999	1		20.13	29.12	76.62	82.73	84.72	125.02									
Te	$M\gamma$		1	100	52	6	0.778	15.93000	2		18.20	26.31	68.26	73.48	75.16	106.82									
Te	Ll		1	7	52	6	3.335	3.71696	5		4.23	6.09	15.05	16.05	16.36	21.60	28.33	40.89	49.92	50.32	67.30	69.37	82.43	134.77	
Te	Ln		1	7	52	6	3.605	3.43832	5		3.91	5.63	13.91	14.84	15.13	19.96	26.17	37.71	45.95	46.32	61.67	63.52	75.11	117.28	
Te	$L\alpha_2$		1	10	52	6	3.758	3.29846	5		3.75	5.40	13.34	14.23	14.51	19.14	25.08	36.12	43.98	44.33	58.91	60.66	71.57	110.00	
Te	$L\alpha_1$		1	100	52	6	3.769	3.28920	5		3.74	5.39	13.31	14.19	14.47	19.09	25.01	36.01	43.86	44.20	58.73	60.47	71.34	109.55	
Te	$L8_1$		1	75	52	6	4.029	3.07677	5		3.50	5.04	12.44	13.27	13.53	17.84	23.37	33.62	40.89	41.21	54.60	56.20	66.11	99.66	
Te	$L\beta_4$		1	4	52	6	4.069	3.04661	5		3.47	4.99	12.32	13.14	13.40	17.67	23.14	33.28	40.47	40.79	54.02	55.60	65.38	98.33	
Te	$L\beta_3$		1	6	52	6	4.120	3.00893	5		3.42	4.93	12.17	12.97	13.23	17.45	22.85	32.85	39.95	40.27	53.30	54.86	64.47	96.71	
Te	$L8_6$		1	1	52	6	4.173	2.97088	5		3.38	4.86	12.01	12.81	13.06	17.22	22.56	32.43	39.42	39.73	52.58	54.11	63.56	95.09	
Te	$L8_{2,15}$		1	17	52	6	4.301	2.88217	5		3.28	4.72	11.65	12.43	12.67	16.71	21.88	31.43	38.20	38.50	50.89	52.37	61.45	91.41	

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Te	$L\beta_7$		1	.1	52	6	4.329	2.86340	4	3.26	4.69	11.58	12.34	12.59	16.60	21.73	31.22	37.94	38.24	50.54	52.00	61.01	90.65	
Te	AL_3		1		52	6	4.341	2.85550	4	3.25	4.68	11.54	12.31	12.55	16.55	21.67	31.14	37.83	38.13	50.39	51.85	60.82	90.33	
Te	$L\beta_{10}$	F	1	.01	52	6	4.356	2.84576	5	3.24	4.66	11.50	12.27	12.51	16.49	21.60	31.03	37.70	38.00	50.20	51.66	60.59	89.94	175.45
Te	$L\beta_9$	B	1	.01	52	6	4.366	2.83897	5	3.23	4.65	11.48	12.24	12.48	16.45	21.54	30.95	37.61	37.90	50.08	51.52	60.43	89.67	170.87
Te	$L\gamma_5$		1	.1	52	6	4.443	2.79007	5	3.18	4.57	11.28	12.03	12.26	16.17	21.17	30.40	36.93	37.22	49.16	50.57	59.29	87.72	156.85
Te	$L\gamma_1$		1	8	52	6	4.570	2.71241	5	3.09	4.44	10.96	11.69	11.92	15.72	20.57	29.54	35.87	36.15	47.70	49.07	57.48	84.69	144.50
Te	AL_2		1		52	6	4.612	2.68790	4	3.06	4.40	10.86	11.59	11.81	15.57	20.38	29.27	35.54	35.81	47.24	48.60	56.91	83.75	141.39
Te	$L\gamma_{2,3}$		1	2	52	6	4.828	2.56740	4	2.92	4.20	10.38	11.06	11.28	14.87	19.46	27.93	33.89	34.16	45.01	46.29	54.15	79.23	128.71
Te	$L\gamma_4$		1	.1	52	6	4.936	2.51130	4	2.86	4.11	10.15	10.82	11.03	14.54	19.03	27.30	33.13	33.39	43.97	45.22	52.87	77.17	123.71
Te	AL_1		1		52	6	4.939	2.50990	4	2.86	4.11	10.14	10.82	11.03	14.54	19.02	27.29	33.11	33.37	43.95	45.19	52.84	77.12	123.60
Te	$K\alpha_2$		1	50	52	6	27.197	0.45578	6	0.52	0.75	1.84	1.96	2.00	2.63	3.44	4.91	5.93	5.98	7.79	8.00	9.27	13.00	18.42
Te	$K\alpha_{1,2}$		1	150	52	6	27.377	0.45279	6	0.52	0.74	1.83	1.95	1.99	2.62	3.42	4.88	5.89	5.94	7.74	7.95	9.21	12.91	18.30
Te	$K\alpha_1$		1	100	52	6	27.468	0.45129	6	0.51	0.74	1.82	1.94	1.98	2.61	3.41	4.86	5.87	5.92	7.72	7.92	9.18	12.87	18.24
Te	$K\beta_3$		1	9	52	6	30.939	0.40066	6	0.46	0.66	1.62	1.72	1.76	2.31	3.02	4.32	5.21	5.25	6.85	7.03	8.15	11.42	16.17
Te	$K\beta_1$		1	20	52	6	30.990	0.39999	6	0.46	0.65	1.61	1.72	1.75	2.31	3.02	4.31	5.21	5.25	6.84	7.02	8.13	11.40	16.15
Te	$K\beta_2$	D	1	6	52	6	31.698	0.39106	6	0.45	0.64	1.58	1.68	1.72	2.26	2.95	4.21	5.09	5.13	6.58	6.86	7.95	11.15	15.78
Te	$K\text{-}O_{2,3}$		1	.01	52	6	31.806	0.38974	5	0.44	0.64	1.57	1.68	1.71	2.25	2.94	4.20	5.07	5.11	6.66	6.84	7.92	11.11	15.73
Te	AK		1		52	6	31.806	0.38974	5	0.44	0.64	1.57	1.68	1.71	2.25	2.94	4.20	5.07	5.11	6.66	6.84	7.92	11.11	15.73
I	$AM_{4,5}$		1		53	6	0.631	19.65999	2	22.52	32.62	87.65	95.16	97.64	164.55									
I	Ll		1	7	53	6	3.484	3.55754	5	4.05	5.83	14.40	15.35	15.66	20.66	27.09	39.07	47.64	48.03	64.06	66.00	78.20	124.14	
I	Ln		1	7	53	6	3.780	3.27979	5	3.73	5.37	13.27	14.15	14.43	19.03	24.94	35.91	43.72	44.07	58.54	60.28	71.10	109.08	
I	$L\alpha_2$		1	10	53	6	3.925	3.15791	5	3.59	5.17	12.77	13.62	13.89	18.32	24.00	34.53	42.02	42.35	56.17	57.82	68.09	103.31	
I	$L\alpha_1$		1	100	53	6	3.937	3.14860	5	3.58	5.16	12.73	13.58	13.85	18.26	23.93	34.43	41.89	42.22	55.99	57.64	67.86	102.88	
I	$L\beta_1$		1	75	53	6	4.220	2.93744	5	3.34	4.81	11.88	12.66	12.91	17.03	22.30	32.05	38.96	39.27	51.94	53.45	62.76	93.69	
I	$L\beta_4$		1	4	53	6	4.257	2.91207	5	3.31	4.77	11.77	12.56	12.80	16.88	22.11	31.77	38.61	38.92	51.46	52.95	62.16	92.64	
I	$L\beta_3$		1	6	53	6	4.313	2.87429	5	3.27	4.71	11.62	12.39	12.63	16.66	21.81	31.35	38.09	38.39	50.74	52.21	61.27	91.09	
I	$L\beta_6$		1	1	53	6	4.370	2.83672	5	3.23	4.65	11.47	12.23	12.47	16.44	21.53	30.93	37.58	37.87	50.03	51.48	60.38	89.58	169.80
I	$L\beta_{2,15}$		1	17	53	6	4.507	2.75053	5	3.13	4.50	11.12	11.86	12.09	15.94	20.86	29.96	36.39	36.68	48.41	49.81	58.37	86.17	149.93
I	$L\beta_7$		1	.1	53	6	4.543	2.72880	4	3.11	4.47	11.03	11.76	11.99	15.81	20.70	29.72	36.10	36.38	48.01	49.39	57.86	85.33	146.73
I	$L\beta_{10}$	B	1	.01	53	6	4.556	2.72104	5	3.10	4.46	11.00	11.73	11.96	15.77	20.64	29.63	35.99	36.27	47.86	49.24	57.68	85.03	145.66
I	AL_3	H	1		53	6	4.558	2.71960	4	3.10	4.45	10.99	11.72	11.95	15.76	20.63	29.62	35.97	36.25	47.84	49.21	57.65	84.97	145.46
I	$L\beta_9$	B	1	.01	53	6	4.568	2.71352	5	3.09	4.44	10.97	11.70	11.93	15.72	20.58	29.55	35.89	36.17	47.72	49.09	57.51	84.74	144.64
I	$L\gamma_5$		1	.1	53	6	4.665	2.65710	5	3.02	4.35	10.74	11.45	11.68	15.39	20.15	28.92	35.12	35.39	46.57	48.01	56.20	82.58	137.81
I	$L\gamma_1$		1	8	53	6	4.800	2.58244	5	2.94	4.23	10.44	11.13	11.35	14.96	19.58	28.09	34.10	34.36	45.28	46.58	54.49	79.78	130.12
I	AL_2	H	1		53	6	4.853	2.55420	4	2.91	4.18	10.32	11.01	11.22	14.79	19.36	27.78	33.71	33.98	44.76	46.04	53.85	78.74	127.49
I	$L\gamma_{2,3}$		1	2	53	6	5.065	2.44750	4	2.79	4.01	9.89	10.55	10.75	14.17	18.54	26.60	32.27	32.52	42.80	44.01	51.43	74.87	118.49
I	$L\gamma_4$		1	.1	53	6	5.184	2.39130	4	2.72	3.92	9.66	10.30	10.51	13.85	18.12	25.98	31.51	31.75	41.77	42.95	50.16	72.87	114.20
I	AL_1	H	1		53	6	5.191	2.38800	4	2.72	3.91	9.65	10.29	10.49	13.83	18.09	25.94	31.46	31.71	41.71	42.89	50.09	72.75	113.96
I	$K\alpha_2$		1	50	53	6	28.312	0.43783	6	0.50	0.72	1.77	1.88	1.92	2.53	3.30	4.72	5.70	5.74	7.48	7.69	8.90	12.48	17.69
I	$K\alpha_{1,2}$		1	150	53	6	28.508	0.43482	6	0.49	0.71	1.76	1.87	1.91	2.51	3.28	4.68	5.66	5.70	7.43	7.63	8.84	12.40	17.56
I	$K\alpha_1$		1	100	53	6	28.607	0.43332	6	0.49	0.71	1.75	1.86	1.90	2.50	3.27	4.67	5.64	5.68	7.41	7.61	8.81	12.36	17.50
I	$K\beta_3$		1	9	53	6	32.234	0.38456	6	0.44	0.63	1.55	1.65	1.69	2.22	2.90	4.14	5.00	5.04	6.57	6.75	7.82	10.96	15.52
I	$K\beta_1$		1	20	53	6	32.289	0.38390	6	0.44	0.63	1.55	1.65	1.68	2.22	2.90	4.14	5.00	5.03	6.56	6.74	7.80	10.94	15.49
I	$K\beta_2$	H	1	6	53	6	33.036	0.37523	5	0.43	0.61	1.51	1.61	1.65	2.17	2.83	4.04	4.88	4.92	6.41	6.59	7.63	10.69	15.14
I	AK		1		53	6	33.161	0.37381	5	0.43	0.61	1.51	1.61	1.64	2.16	2.82	4.03	4.86	4.90	6.39	6.56	7.60	10.65	15.08
Xe	$L\alpha_1$	H	1	100	54	6	4.109	3.01660	4	3.43	4.94	12.20	13.01	13.26	17.49	22.91	32.94	40.06	40.37	53.45	55.01	64.66	97.04	
Xe	AL_3		1		54	6	4.781	2.59260	4	2.95	4.25	10.48	11.17	11.39	15.02	19.65	28.21	34.24	34.50	45.47	46.77	54.72	80.16	131.10
Xe	AL_2		1		54	6	5.103	2.42920	4	2.76	3.98	9.82	10.47	10.67	14.07	18.40	26.39	32.02	32.27	42.46	43.66	51.02	74.21	117.07
Xe	AL_1		1		54	6	5.452	2.27370	4	2.59	3.72	9.19	9.80	9.99	13.16	17.22	24.68	29.92	30.15	39.63	40.74	47.54	68.76	105.95
Xe	$K\alpha_2$	H	1	50	54	6	29.453	0.42087	5	0.48	0.69	1.70	1.81	1.85	2.43	3.18	4.53	5.48	5.52	7.19	7.39	8.56	12.00	17.00
Xe	$K\alpha_{1,2}$	H	1	150	54	6	29.666	0.41785	5	0.48	0.68	1.69	1.80	1.83	2.41	3.15	4.50	5.44	5.48	7.14	7.34	8.50	11.91	16.87
Xe	$K\alpha_1$	H	1	100	54	6	29.774	0.41634	5	0.47	0.68	1.68	1.79	1.83	2.40	3.14	4.49	5.42	5.46	7.12	7.31	8.47	11.87	16.81
Xe	$K\beta_3$	H	1	9	54	6	33.556	0.36941	5	0.42	0.60	1.49	1.59	1.62	2.13	2.79	3.98	4.81	4.84	6.31	6.48	7.51	10.53	14.91
Xe	$K\beta_1$	H	1	20	54	6	33.619	0.36872	5	0.42	0.60	1.49	1.59	1.62	2.13	2.78	3.97	4.80	4.83	6.30	6.47	7.50	10.51	14.88
Xe	$K\beta_2$	H	1	6	54	6	34.408	0.36026	5	0.41	0.59	1.45	1.55	1.58	2.08	2.72	3.88	4.69	4.72	6.16	6.32	7.32	10.27	14.53
Xe	AK		1		54	6	34.587	0.35840	4	0.41	0.59	1.45	1.54	1.57	2.07	2.70	3.86	4.66	4.70	6.13	6.29	7.29	10.21	14.46
Cs	Ll		1	2	55	6	3.794	3.26700	4	3.72	5.35	13.22	14.09	14.37	18.96	24.84	35.76	43.54	43.89	58.29	60.02	70.78	108.46	
Cs	Ln		1	1	55	6	4.141	2.99320	4	3.41	4.90	12.10	12.91	13.16	17.35	22.73	32.68	39.73	40.05	53.00	54.55	64.09	96.04	
Cs	$L\alpha_2$		1	10	55	6	4.272	2.90200	4	3.30	4.75	11.73	12.51	12.76	16.82	22.03	31.66	38.47	38.78	51.27	52.75	61.92	92.23	
Cs	$L\alpha_1$		1	100	55	6	4.286	2.89240	4	3.29	4.74	11.69	12.47	12.71	16.77	21.95	31.55	38.34	38.64	51.09	52.57	61.69	91.83	
Cs	$L\beta_1$		1	50	55	6	4.619	2.68370	4	3.05	4.39	10.85	11.57	11.79	15.55	20.35	29.22	35.48	35.76	47.17	48.52	56.82	83.59	140.89
Cs	$L\beta_4$		1	5	55	6	4.649	2.66660	4	3.03	4.37	10.78	11.49	11.72	15.45	20.22	29.03	35.25	35.52	46.85	48.19	56.42	82.94	138.88
Cs	$L\beta_3$		1	6	55	6	4.716	2.62850	4	2.99	4.30	10.62	11.33	11.55	15.23	19.93	28.60	34.73	35.00	46.14	47.46	55.55	81.50	134.72
Cs	$L\beta_6$		1	.1	55	6	4.780	2.59320	4	2.95	4.25	10.48	11.18	11.40	15.02	19.66	28.21	34.24	34.51	45.48	46.78	54.74	80.18	131.16
Cs	$L\beta_{2,15}$		1	20	55	6	4.935	2.51180	4	2.86	4.11	10.15	10.82	11.04	14.55	19.04	27.31	33.14	33.40	43.98	45.23	52.88	77.19	123.76

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Cs	$L\beta_{10}$	8	1	.01	55	6	4.974	2.49200	4	2.84	4.08	10.07	10.74	10.95	14.43	18.88	27.09	32.87	33.12	43.62	44.85	52.43	76.47	122.09
Cs	$L\beta_9$	F	1	.01	55	6	4.988	2.48520	4	2.83	4.07	10.04	10.71	10.92	14.39	18.83	27.01	32.78	33.03	43.49	44.73	52.28	76.22	121.53
Cs	$L\beta_7$		1	.1	55	6	4.989	2.48490	4	2.83	4.07	10.04	10.71	10.92	14.39	18.83	27.01	32.77	33.03	43.49	44.72	52.27	76.21	121.50
Cs	AL_3		1		55	6	5.011	2.47400	4	2.82	4.05	10.00	10.66	10.87	14.33	18.75	26.89	32.63	32.88	43.28	44.51	52.03	75.82	120.61
Cs	$L\gamma_5$		1	.1	55	6	5.128	2.41740	4	2.75	3.96	9.77	10.42	10.62	14.00	18.31	26.26	31.86	32.11	42.25	43.44	50.75	73.79	116.16
Cs	$L\gamma_1$		1	5	55	6	5.279	2.34800	4	2.67	3.84	9.49	10.12	10.31	13.59	17.78	25.50	30.92	31.16	40.98	42.13	49.19	71.34	111.06
Cs	AL_2		1		55	6	5.357	2.31390	4	2.63	3.79	9.35	9.97	10.16	13.40	17.52	25.12	30.46	30.70	40.36	41.49	48.43	70.15	108.68
Cs	$L\gamma_2$		1	1	55	6	5.541	2.23710	4	2.55	3.66	9.04	9.64	9.83	12.95	16.94	24.27	29.43	29.65	38.96	40.06	46.73	67.50	103.53
Cs	$L\gamma_3$		1	1	55	6	5.552	2.23280	4	2.54	3.66	9.02	9.62	9.81	12.92	16.91	24.23	29.37	29.60	38.88	39.98	46.63	67.35	103.25
Cs	$L\gamma_4$		1	.1	55	6	5.702	2.17410	4	2.47	3.56	8.78	9.37	9.55	12.58	16.46	23.58	28.58	28.80	37.82	38.88	45.34	65.36	99.53
Cs	AL_1		1		55	6	5.720	2.16730	4	2.47	3.55	8.76	9.34	9.52	12.54	16.41	23.51	28.49	28.71	37.70	38.76	45.19	65.13	99.10
Cs	$K\alpha_2$		1	50	55	6	30.620	0.40483	6	0.46	0.66	1.63	1.74	1.78	2.34	3.05	4.36	5.27	5.31	6.92	7.11	8.23	11.54	16.34
Cs	$K\alpha_{1,2}$		1	150	55	6	30.851	0.40180	6	0.46	0.66	1.62	1.73	1.76	2.32	3.03	4.33	5.23	5.27	6.87	7.05	8.17	11.45	16.22
Cs	$K\alpha_1$		1	100	55	6	30.968	0.40029	6	0.46	0.66	1.62	1.72	1.76	2.31	3.02	4.31	5.21	5.25	6.84	7.03	8.14	11.41	16.16
Cs	$K\beta_3$		1	9	55	6	34.913	0.35505	6	0.40	0.58	1.43	1.53	1.56	2.05	2.68	3.82	4.62	4.66	6.07	6.23	7.22	10.12	14.32
Cs	$K8_1$		1	21	55	6	34.981	0.35436	6	0.40	0.58	1.43	1.52	1.55	2.05	2.67	3.82	4.61	4.65	6.06	6.22	7.20	10.10	14.30
Cs	$K\beta_2$		1	6	55	6	35.815	0.34611	5	0.39	0.57	1.40	1.49	1.52	2.00	2.61	3.73	4.50	4.54	5.92	6.07	7.04	9.86	13.96
Cs	AK		1		55	6	35.982	0.34451	5	0.39	0.56	1.39	1.48	1.51	1.99	2.60	3.71	4.48	4.52	5.89	6.05	7.00	9.82	13.90
Ba	N_4-O_3		1		56	6	0.078	159.00000	1															
Ba	Mz		1	1	56	6	0.501	20.64000	2	23.65	34.30	93.27	101.61	104.40										
Ba	M_5-O_3		1	.01	56	6	0.765	16.20000	2	18.52	26.76	69.58	74.93	76.66	109.48									
8a	M_4-O_2		1	10	56	6	0.779	15.91000	2	18.18	26.27	68.16	73.37	75.05	106.63									
Ba	AM_5		1		56	6	0.780	15.89000	2	18.16	26.24	68.07	73.26	74.94	106.43									
Ba	M_4-O_3		1	10	56	6	0.789	15.72000	2	17.96	25.96	67.24	72.35	74.00	104.81									
8a	AM_4		1		56	6	0.797	15.56000	2	17.78	25.69	66.47	71.50	73.12	103.31									
8a	$M\gamma$		1	100	56	6	0.972	12.75000	2	14.55	20.99	53.37	57.21	58.43	79.98	114.15								
8a	Ll		1	2	56	6	3.953	3.13550	4	3.57	5.13	12.68	13.52	13.79	18.19	23.83	34.28	41.71	42.04	55.73	57.37	67.54	102.28	
8a	Ln		1	1	56	6	4.330	2.86270	4	3.26	4.69	11.57	12.34	12.58	16.59	21.73	31.22	37.93	38.23	50.52	51.99	60.99	90.62	
Ba	$L\alpha_2$		1	10	56	6	4.450	2.78553	5	3.17	4.56	11.26	12.01	12.24	16.14	21.13	30.35	36.87	37.16	49.07	50.48	59.18	87.54	155.95
8a	$L\alpha_1$		1	100	56	6	4.465	2.77595	5	3.16	4.55	11.22	11.97	12.20	16.09	21.06	30.25	36.74	37.03	48.89	50.30	58.96	87.17	154.17
8a	$L\beta_1$		1	50	56	6	4.827	2.56821	5	2.92	4.21	10.38	11.07	11.28	14.88	19.47	27.94	33.90	34.17	45.02	46.30	54.17	79.26	128.78
Ba	$L8_4$		1	5	56	6	4.851	2.55530	4	2.91	4.18	10.33	11.01	11.23	14.80	19.37	27.79	33.73	33.99	44.78	46.06	53.87	78.78	127.59
Ba	$L\beta_3$		1	6	56	6	4.926	2.51640	4	2.86	4.12	10.17	10.84	11.06	14.57	19.07	27.36	33.20	33.46	44.07	45.32	52.99	77.36	124.15
Ba	$L\beta_6$		1	.1	56	6	4.993	2.48260	4	2.83	4.06	10.03	10.70	10.91	14.38	18.81	26.99	32.74	33.00	43.44	44.68	52.22	76.13	121.31
Ba	$L\beta_{2,15}$		1	20	56	6	5.156	2.40435	5	2.74	3.94	9.72	10.36	10.56	13.92	18.21	26.12	31.68	31.93	42.01	43.20	50.46	73.33	115.18
Ba	$L\beta_{10}$	B	1	.01	56	6	5.193	2.38690	4	2.72	3.91	9.65	10.28	10.49	13.82	18.08	25.93	31.45	31.69	41.69	42.87	50.07	72.71	113.88
8a	$L8_7$		1	.1	56	6	5.207	2.38060	4	2.71	3.90	9.62	10.26	10.46	13.78	18.03	25.86	31.36	31.60	41.57	42.75	49.92	72.49	113.42
8a	AL_3		1		56	6	5.246	2.36290	4	2.69	3.87	9.55	10.18	10.38	13.68	17.90	25.66	31.12	31.36	41.25	42.41	49.53	71.86	112.13
Ba	$L\gamma_5$		1	.1	56	6	5.370	2.30850	4	2.63	3.78	9.33	9.95	10.14	13.36	17.48	25.06	30.39	30.62	40.26	41.39	48.31	69.96	108.30
8a	$L\gamma_1$		1	5	56	6	5.530	2.24150	4	2.55	3.67	9.06	9.66	9.85	12.97	16.97	24.32	29.49	29.71	39.04	40.14	46.83	67.65	103.82
8a	AL_2		1		56	6	5.622	2.20480	4	2.51	3.61	8.91	9.50	9.68	12.76	16.69	23.92	28.99	29.22	38.38	39.45	46.02	66.40	101.46
Ba	$L\gamma_2$		1	1	56	6	5.796	2.13870	4	2.43	3.50	8.64	9.21	9.39	12.38	16.19	23.19	28.11	28.32	37.18	38.22	44.56	64.17	97.35
Ba	$L\gamma_3$		1	1	56	6	5.808	2.13420	4	2.43	3.49	8.62	9.19	9.37	12.35	16.15	23.14	28.04	28.26	37.10	38.14	44.46	64.01	97.07
Ba	$L\gamma_4$		1	.1	56	6	5.972	2.07560	4	2.36	3.40	8.38	8.94	9.12	12.01	15.71	22.50	27.26	27.47	36.05	37.05	43.18	62.06	93.57
8a	AL_1		1		56	6	5.995	2.06780	4	2.35	3.39	8.35	8.91	9.08	11.96	15.65	22.41	27.16	27.36	35.91	36.91	43.01	61.80	93.11
Ba	$K\alpha_2$		1	50	56	6	31.812	0.38967	6	0.44	0.64	1.57	1.68	1.71	2.25	2.94	4.20	5.07	5.11	6.66	6.84	7.92	11.11	15.73
Ba	$K\alpha_{1,2}$		1	150	56	6	32.062	0.38663	6	0.44	0.63	1.56	1.66	1.70	2.23	2.92	4.16	5.03	5.07	6.61	6.79	7.86	11.02	15.60
Ba	$K\alpha_1$		1	100	56	6	32.188	0.38511	6	0.44	0.63	1.55	1.66	1.69	2.22	2.91	4.15	5.01	5.05	6.58	6.76	7.83	10.98	15.54
Ba	$K\beta_3$		1	7	56	6	36.298	0.34151	6	0.39	0.56	1.38	1.47	1.50	1.97	2.58	3.68	4.44	4.48	5.84	5.99	6.94	9.73	13.77
8a	$K8_1$		1	21	56	6	36.372	0.34081	6	0.39	0.56	1.38	1.47	1.50	1.97	2.57	3.67	4.44	4.47	5.82	5.98	6.93	9.71	13.75
Ba	$K8_5$''	8	1	.1	56	6	36.637	0.33835	5	0.39	0.55	1.37	1.46	1.48	1.95	2.55	3.64	4.40	4.44	5.78	5.94	6.88	9.64	13.65
Ba	$K8_5$'	B	1	.1	56	6	36.659	0.33814	5	0.38	0.55	1.36	1.45	1.48	1.95	2.55	3.64	4.40	4.43	5.78	5.93	6.87	9.63	13.64
8a	$K8_2$		1	7	56	6	37.251	0.33277	5	0.38	0.54	1.34	1.43	1.46	1.92	2.51	3.58	4.33	4.36	5.69	5.84	6.76	9.48	13.42
8a	$K\beta_4$	B	1	.02	56	6	37.305	0.33229	5	0.38	0.54	1.34	1.43	1.46	1.92	2.51	3.58	4.32	4.36	5.68	5.83	6.75	9.47	13.40
Ba	K-$O_{2,3}$		1	.01	56	6	37.420	0.33127	5	0.38	0.54	1.34	1.43	1.45	1.91	2.50	3.57	4.31	4.34	5.66	5.81	6.73	9.44	13.36
8a	AK		1		56	6	37.446	0.33104	5	0.38	0.54	1.34	1.42	1.45	1.91	2.50	3.57	4.31	4.34	5.66	5.81	6.73	9.43	13.35
La	$N_{4,5}O_{2,3}$		1		57	6	0.081	152.59999	1															
La	Mz		1	.01	57	6	0.638	19.43999	2	22.26	32.25	86.42	93.76	96.19	156.95									
La	$M\alpha$	A	1	100	57	6	0.833	14.88000	2	16.99	24.55	63.21	67.94	69.45	97.18	156.81								
La	$M\beta$	A	1	45	57	6	0.854	14.51000	2	16.57	23.93	61.47	66.03	67.49	94.00	145.58								
La	$M\gamma$		1	1	57	6	1.026	12.08000	2	13.78	19.87	50.36	53.95	55.09	75.02	105.36								
La	Ll		1	2	57	6	4.124	3.00600	3	3.42	4.92	12.16	12.96	13.22	17.43	22.83	32.82	39.91	40.22	53.25	54.80	64.40	96.58	
La	Ln		1	1	57	6	4.524	2.74000	3	3.12	4.49	11.08	11.81	12.04	15.88	20.78	29.85	36.25	36.53	48.22	49.60	58.12	85.76	148.34
La	$L\alpha_2$		1	10	57	6	4.633	2.67533	5	3.04	4.38	10.81	11.53	11.76	15.50	20.29	29.13	35.36	35.64	47.01	48.36	56.62	83.27	139.89
La	$L\alpha_1$		1	100	57	6	4.650	2.66570	5	3.03	4.36	10.77	11.49	11.71	15.44	20.21	29.02	35.23	35.51	46.83	48.17	56.40	82.91	138.78

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	BbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
									10^{-}																
La	$L\beta_1$		1	50	57	6	5.041	2.45891	5		2.80	4.03	9.94	10.60	10.80	14.24	18.63	26.72	32.42	32.67	43.01	44.23	51.69	75.28	119.40
La	$L\beta_4$		1	5	57	6	5.061	2.44930	4		2.79	4.01	9.90	10.55	10.76	14.18	18.56	26.62	32.29	32.54	42.83	44.04	51.47	74.93	118.63
La	$L\beta_3$		1	6	57	6	5.143	2.41050	4		2.74	3.95	9.74	10.39	10.59	13.96	18.26	26.19	31.77	32.01	42.12	43.31	50.59	73.55	115.64
La	$L\beta_6$		1	.1	57	6	5.211	2.37900	4		2.71	3.90	9.61	10.25	10.45	13.77	18.02	25.84	31.34	31.58	41.54	42.72	49.89	72.43	113.30
La	$L\beta_{2,15}$		1	20	57	6	5.383	2.30300	4		2.62	3.77	9.31	9.92	10.12	13.33	17.44	25.00	30.31	30.55	40.16	41.29	48.19	69.77	107.93
La	$L\beta_{10}$	B	1	.01	57	6	5.413	2.29000	3		2.61	3.75	9.25	9.87	10.06	13.26	17.34	24.86	30.14	30.37	39.92	41.05	47.90	69.32	107.04
La	$L\beta_9$	B	1	.01	57	6	5.432	2.28200	3		2.60	3.74	9.22	9.83	10.02	13.21	17.28	24.77	30.03	30.26	39.78	40.90	47.72	59.05	106.50
La	$L\beta_7$		1	.1	57	6	5.449	2.27500	3		2.59	3.72	9.19	9.80	9.99	13.17	17.23	24.69	29.94	30.17	39.65	40.76	47.57	68.80	106.03
La	AL_3	H	1		57	6	5.483	2.26100	3		2.57	3.70	9.14	9.74	9.93	13.09	17.12	24.54	29.75	29.98	39.40	40.50	47.26	68.32	105.10
La	$L\gamma_5$		1	.1	57	6	5.620	2.20560	4		2.51	3.61	8.91	9.50	9.69	12.77	16.70	23.93	29.00	29.23	38.39	39.47	46.03	66.43	101.51
La	$L\gamma_1$		1	5	57	6	5.788	2.14180	4		2.44	3.51	8.65	9.23	9.41	12.39	16.21	23.23	28.15	28.36	37.24	38.28	44.63	64.27	97.53
La	AL_2	H	1		57	6	5.888	2.10530	4		2.40	3.45	8.50	9.07	9.25	12.18	15.93	22.82	27.66	27.87	36.58	37.60	43.83	63.05	95.33
La	$L\gamma_2$		1	1	57	6	6.059	2.04600	4		2.33	3.35	8.26	8.81	8.98	11.84	15.48	22.17	26.86	27.07	35.52	36.51	42.53	61.08	91.84
La	$L\gamma_3$		1	1	57	6	6.073	2.04100	4		2.32	3.34	8.24	8.79	8.96	11.81	15.44	22.12	26.80	27.00	35.43	36.42	42.42	60.91	91.56
La	$L\gamma_4$		1	.1	57	6	6.251	1.98300	4		2.26	3.25	8.01	8.54	8.71	11.47	15.00	21.48	26.02	26.22	34.39	35.35	41.16	59.01	88.26
La	AL_1	H	1		57	6	6.267	1.97800	4		2.25	3.24	7.99	8.52	8.69	11.44	14.96	21.43	25.96	26.15	34.30	35.25	41.05	58.84	87.98
La	$K\alpha_2$		1	50	57	6	33.028	0.37531	6		0.43	0.61	1.51	1.61	1.65	2.17	2.83	4.04	4.88	4.92	6.41	6.59	7.63	10.70	15.15
La	$K\alpha_{1,2}$		1	150	57	6	33.299	0.37226	6		0.42	0.61	1.50	1.60	1.63	2.15	2.81	4.01	4.84	4.88	6.36	6.53	7.57	10.61	15.02
La	$K\alpha_1$		1	100	57	6	33.436	0.37074	6		0.42	0.61	1.50	1.60	1.63	2.14	2.80	3.99	4.82	4.86	6.34	6.51	7.54	10.57	14.96
La	$K\beta_3$		1	9	57	6	37.714	0.32869	6		0.37	0.54	1.33	1.41	1.44	1.90	2.48	3.54	4.28	4.31	5.62	5.77	6.68	9.36	13.25
La	$K\beta_1$		1	21	57	6	37.795	0.32798	6		0.37	0.54	1.32	1.41	1.44	1.89	2.47	3.53	4.27	4.30	5.61	5.76	6.67	9.34	13.23
La	$K\beta_5$''	B	1	.1	57	6	38.068	0.32563	5		0.37	0.53	1.31	1.40	1.43	1.88	2.46	3.51	4.24	4.27	5.56	5.71	6.62	9.28	13.13
La	$K\beta_5$'	B	1	.2	57	6	38.088	0.32546	5		0.37	0.53	1.31	1.40	1.43	1.88	2.46	3.51	4.24	4.27	5.56	5.71	6.62	9.27	13.12
La	$K\beta_2$		1	7	57	6	38.723	0.32012	6		0.36	0.52	1.29	1.38	1.40	1.85	2.42	3.45	4.17	4.20	5.47	5.62	6.51	9.12	12.91
La	$K\beta_4$	B	1	.03	57	6	38.821	0.31931	5		0.36	0.52	1.29	1.37	1.40	1.84	2.41	3.44	4.16	4.19	5.46	5.60	6.49	9.10	12.87
La	$K-O_{2,3}$		1	.01	57	6	38.903	0.31864	5		0.36	0.52	1.29	1.37	1.40	1.84	2.40	3.43	4.15	4.18	5.45	5.59	6.48	9.08	12.85
La	AK		1		57	6	38.927	0.31844	5		0.36	0.52	1.29	1.37	1.40	1.84	2.40	3.43	4.14	4.18	5.44	5.59	6.47	9.07	12.84
Ce	$N_{4,5}O_{2,3}$		1		58	6	0.086	144.39999	1																
Ce	Mz		1	.01	58	6	0.676	18.34999	2		21.00	30.39	80.53	87.11	89.26	135.31									
Ce	$M_5-O_{2,3}$		1	.01	58	6	0.861	14.39000	2		16.43	23.73	60.91	65.41	66.86	92.99	142.64								
Ce	$M\alpha$		1	100	58	6	0.883	14.04000	2		16.03	23.14	59.27	63.63	65.03	90.09	135.12								
Ce	$M\beta$		1	45	58	6	0.902	13.75000	2		15.70	22.66	57.93	62.17	63.52	87.74	129.70								
Ce	$M\gamma$		1	1	58	6	1.075	11.53000	2		13.15	18.96	47.92	51.31	52.39	71.06	98.76								
Ce	Ll		1	2	58	6	4.287	2.89170	4		3.29	4.74	11.69	12.47	12.71	16.76	21.95	31.54	38.33	38.63	51.07	52.55	61.68	91.80	
Ce	Ln		1	1	58	6	4.731	2.62030	4		2.98	4.29	10.59	11.29	11.51	15.18	19.87	28.51	34.61	34.88	45.99	47.30	55.36	81.20	133.87
Ce	$L\alpha_2$		1	10	58	6	4.822	2.57060	4		2.93	4.21	10.39	11.08	11.30	14.89	19.49	27.96	33.94	34.20	45.07	46.35	54.22	79.35	129.00
Ce	$L\alpha_1$		1	100	58	6	4.839	2.56150	4		2.92	4.19	10.35	11.04	11.26	14.84	19.42	27.86	33.81	34.08	44.90	46.18	54.01	79.01	128.16
Ce	$L\beta_1$		1	50	58	6	5.261	2.35610	4		2.68	3.86	9.52	10.15	10.35	13.64	17.85	25.59	31.03	31.27	41.13	42.29	49.38	71.62	111.64
Ce	$L\beta_4$		1	5	58	6	5.276	2.34970	4		2.67	3.85	9.49	10.12	10.32	13.60	17.80	25.52	30.94	31.18	41.01	42.17	49.23	71.40	111.18
Ce	$L\beta_3$		1	6	58	6	5.364	2.31090	4		2.63	3.78	9.34	9.96	10.15	13.38	17.50	25.09	30.42	30.66	40.30	41.44	48.37	70.05	108.47
Ce	$L\beta_6$		1	.1	58	6	5.433	2.28180	4		2.60	3.74	9.22	9.83	10.02	13.21	17.28	24.77	30.03	30.26	39.77	40.89	47.72	69.04	106.49
Ce	$L\beta_{2,15}$		1	20	58	6	5.612	2.20870	4		2.51	3.62	8.92	9.51	9.70	12.78	16.72	23.96	29.05	29.27	38.45	39.53	46.10	66.53	101.71
Ce	$L\beta_{10}$	B	1	.01	58	6	5.645	2.19580	4		2.50	3.60	8.87	9.46	9.64	12.71	16.62	23.82	28.87	29.09	38.21	39.29	45.82	66.09	100.89
Ce	$L\beta_9$	8	1	.01	58	6	5.664	2.18850	4		2.49	3.58	8.84	9.43	9.61	12.67	16.57	23.74	28.77	29.00	38.08	39.15	45.66	65.85	100.43
Ce	$L\beta_7$	D	1	.1	58	6	5.685	2.18060	4		2.48	3.57	8.81	9.39	9.58	12.62	16.51	23.65	28.67	28.89	37.94	39.00	45.48	65.58	99.93
Ce	AL_3	H	1		58	6	5.723	2.16600	3		2.46	3.55	8.75	9.33	9.51	12.54	16.40	23.49	28.47	28.69	37.68	38.73	45.16	65.08	99.02
Ce	$L\gamma_5$		1	.1	58	6	5.874	2.11030	4		2.40	3.46	8.53	9.09	9.27	12.21	15.97	22.88	27.72	27.94	36.67	37.70	43.94	63.21	95.63
Ce	$L\gamma_1$		1	5	58	6	6.051	2.04870	4		2.33	3.35	8.28	8.82	9.00	11.85	15.50	22.20	26.90	27.11	35.57	36.56	42.59	61.17	92.00
Ce	$L\gamma_8$		1	.1	58	6	6.125	2.02370	4		2.30	3.31	8.17	8.72	8.89	11.71	15.31	21.93	26.57	26.77	35.12	36.10	42.05	60.34	90.56
Ce	AL_2	H	1		58	6	6.160	2.01240	4		2.29	3.29	8.13	8.67	8.84	11.64	15.23	21.80	26.41	26.62	34.92	35.89	41.80	59.97	89.92
Ce	$L\gamma_2$		1	1	58	6	6.324	1.96020	4		2.23	3.21	7.92	8.44	8.61	11.34	14.83	21.23	25.72	25.91	33.98	34.93	40.67	58.26	86.99
Ce	$L\gamma_3$		1	1	58	6	6.340	1.95530	4		2.23	3.20	7.90	8.42	8.59	11.31	14.79	21.18	25.65	25.85	33.89	34.84	40.56	58.10	86.72
Ce	$L\gamma_4$		1	.1	58	6	6.527	1.89910	4		2.16	3.11	7.67	8.18	8.34	10.99	14.36	20.56	24.90	25.09	32.89	33.80	39.35	56.28	83.64
Ce	AL_1	H	1		58	6	6.547	1.89340	4		2.15	3.10	7.65	8.15	8.31	10.95	14.32	20.50	24.83	25.02	32.79	33.70	39.22	56.10	83.34
Ce	$K\alpha_2$		1	50	58	6	34.273	0.36168	6		0.41	0.59	1.46	1.56	1.59	2.09	2.73	3.90	4.71	4.74	6.18	6.35	7.35	10.31	14.59
Ce	$K\alpha_{1,2}$		1	150	58	6	34.566	0.35862	6		0.41	0.59	1.45	1.54	1.57	2.07	2.71	3.86	4.67	4.70	6.13	6.29	7.29	10.22	14.47
Ce	$K\alpha_1$		1	100	58	6	34.714	0.35709	6		0.41	0.58	1.44	1.54	1.57	2.06	2.69	3.85	4.65	4.68	6.10	6.27	7.26	10.18	14.41
Ce	$K\beta_3$		1	10	58	6	39.163	0.31652	6		0.36	0.52	1.28	1.36	1.39	1.83	2.39	3.41	4.12	4.15	5.41	5.55	6.43	9.02	12.76
Ce	$K\beta_1$		1	22	58	6	39.251	0.31582	6		0.36	0.52	1.27	1.36	1.39	1.82	2.38	3.40	4.11	4.14	5.40	5.54	6.42	9.00	12.73
Ce	$K\beta_5$''	B	1	.2	58	6	39.532	0.31357	5		0.36	0.51	1.27	1.35	1.38	1.81	2.37	3.38	4.08	4.11	5.36	5.50	6.37	8.93	12.64
Ce	$K\beta_5$'	B	1	.2	58	6	39.551	0.31342	5		0.36	0.51	1.27	1.35	1.37	1.81	2.36	3.38	4.08	4.11	5.36	5.50	6.37	8.93	12.64
Ce	$K\beta_2$		1	7	58	6	40.226	0.30816	5		0.35	0.50	1.24	1.33	1.35	1.78	2.32	3.32	4.01	4.04	5.27	5.41	6.26	8.78	12.42
Ce	$K\beta_4$	8	1	.01	58	6	40.329	0.30737	5		0.35	0.50	1.24	1.32	1.35	1.78	2.32	3.31	4.00	4.03	5.25	5.39	6.25	8.76	12.39
Ce	$K-O_{2,3}$		1	.01	58	6	40.420	0.30668	5		0.35	0.50	1.24	1.32	1.35	1.77	2.31	3.30	3.99	4.02	5.24	5.38	6.23	8.74	12.36
Ce	AK		1		58	6	40.446	0.30648	5		0.35	0.50	1.24	1.32	1.34	1.77	2.31	3.30	3.99	4.02	5.24	5.38	6.23	8.73	12.36

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Pr	$N_{4,5}O_{2,3}$		1		59	6	0.091	136.50000	1																
Pr	$N_{4,5}N_{6,7}$		1		59	6	0.110	113.00000	0																
Pr	Mz		1	.01	59	6	0.713	17.37999	2		19.88	28.75	75.49	81.48	83.42	122.33									
Pr	AM_5		1		59	6	0.925	13.39400	3		15.29	22.06	56.30	60.39	61.70	84.92	123.71								
Pr	Mα		1	100	59	6	0.929	13.34300	3		15.23	21.98	56.06	60.13	61.44	84.53	122.90								
Pr	AM_4		1		59	6	0.945	13.12200	3		14.97	21.61	55.05	59.04	60.31	82.81	119.51								
Pr	Mβ		1	45	59	6	0.949	13.06000	2		14.90	21.51	54.77	58.73	60.00	82.34	118.58								
Pr	Mγ		1	1	59	6	1.127	10.99800	3		12.54	18.08	45.58	48.78	49.80	67.33	92.78								
Pr	Ll		1	2	59	6	4.452	2.78410	4		3.17	4.56	11.25	12.00	12.24	16.13	21.12	30.34	36.85	37.14	49.04	50.46	59.15	87.49	155.68
Pr	Ln		1	1	59	6	4.935	2.51200	3		2.86	4.11	10.15	10.82	11.04	14.55	19.04	27.31	33.14	33.40	43.98	45.23	52.89	77.20	123.77
Pr	$L\alpha_2$		1	10	59	6	5.013	2.47290	4		2.81	4.05	9.99	10.66	10.86	14.32	18.74	26.88	32.61	32.86	43.26	44.49	52.00	75.78	120.52
Pr	$L\alpha_1$		1	100	59	6	5.033	2.46300	4		2.80	4.03	9.95	10.61	10.82	14.26	18.66	26.77	32.48	32.73	43.08	44.30	51.78	75.42	119.72
Pr	$L\beta_1$		1	50	59	6	5.488	2.25880	4		2.57	3.70	9.13	9.73	9.92	13.07	17.10	24.51	29.72	29.95	39.36	40.46	47.21	68.25	104.96
Pr	$L\beta_4$		1	5	59	6	5.497	2.25500	4		2.57	3.69	9.11	9.71	9.90	13.05	17.07	24.47	29.67	29.90	39.29	40.39	47.13	68.12	104.71
Pr	$L\beta_3$		1	6	59	6	5.591	2.21720	4		2.52	3.63	8.96	9.55	9.74	12.83	16.79	24.06	29.16	29.38	38.60	39.69	46.29	66.82	102.25
Pr	$L8_6$		1	.1	59	6	5.659	2.19060	4		2.49	3.59	8.85	9.44	9.62	12.68	16.58	23.76	28.80	29.02	38.12	39.19	45.70	65.92	100.56
Pr	$L\beta_{2,15}$		1	20	59	6	5.849	2.11940	4		2.41	3.47	8.56	9.13	9.31	12.26	16.04	22.98	27.85	28.06	36.84	37.87	44.14	63.52	96.18
Pr	$L\beta_{10}$	B	1	.01	59	6	5.883	2.10710	4		2.40	3.45	8.51	9.08	9.25	12.19	15.95	22.84	27.68	27.89	36.62	37.64	43.87	63.11	95.44
Pr	$L\beta_9$	B	1	.01	59	6	5.902	2.10040	4		2.39	3.44	8.49	9.05	9.22	12.15	15.90	22.77	27.59	27.80	36.49	37.51	43.72	62.88	95.04
Pr	$L\beta_7$		1	.1	59	6	5.926	2.09190	4		2.38	3.42	8.45	9.01	9.19	12.10	15.83	22.68	27.48	27.69	36.34	37.36	43.53	62.60	94.53
Pr	AL_3	H	1		59	6	5.962	2.07910	4		2.37	3.40	8.40	8.96	9.13	12.03	15.73	22.54	27.31	27.52	36.11	37.12	43.25	62.17	93.78
Pr	$L\gamma_5$		1	.1	59	6	6.135	2.02050	4		2.30	3.31	8.16	8.70	8.87	11.69	15.29	21.89	26.52	26.73	35.06	36.04	41.98	60.24	90.38
Pr	$L\gamma_1$		1	5	59	6	6.321	1.96110	4		2.23	3.21	7.92	8.45	8.61	11.35	14.84	21.24	25.73	25.93	34.00	34.94	40.69	58.29	87.04
Pr	$L\gamma_8$		1	.1	59	6	6.402	1.93620	4		2.20	3.17	7.82	8.34	8.50	11.20	14.65	20.97	25.40	25.59	33.55	34.49	40.15	57.48	85.66
Pr	AL_2	H	1		59	6	6.438	1.92550	4		2.19	3.15	7.78	8.29	8.45	11.14	14.56	20.85	25.25	25.45	33.36	34.29	39.92	57.14	85.08
Pr	$L\gamma_2$		1	1	59	6	6.597	1.87910	4		2.14	3.08	7.59	8.09	8.25	10.87	14.21	20.34	24.64	24.83	32.54	33.44	38.92	55.64	82.57
Pr	$L\gamma_3$		1	1	59	6	6.615	1.87400	4		2.13	3.07	7.57	8.07	8.23	10.84	14.17	20.29	24.57	24.76	32.44	33.34	38.81	55.47	82.30
Pr	$L\gamma_4$		1	.1	59	6	6.814	1.81930	4		2.07	2.98	7.35	7.83	7.99	10.52	13.76	19.69	23.84	24.02	31.47	32.34	37.63	53.72	79.40
Pr	AL_1	H	1		59	6	6.833	1.81410	4		2.06	2.97	7.33	7.81	7.96	10.49	13.72	19.63	23.77	23.95	31.38	32.25	37.52	53.56	79.13
Pr	$K\alpha_2$		1	50	59	6	35.544	0.34875	6		0.40	0.57	1.41	1.50	1.53	2.01	2.63	3.76	4.54	4.57	5.96	6.12	7.09	9.94	14.07
Pr	$K\alpha_{1,2}$		1	150	59	6	35.860	0.34568	6		0.39	0.57	1.40	1.49	1.52	2.00	2.61	3.72	4.50	4.53	5.91	6.07	7.03	9.85	13.94
Pr	$K\alpha_1$		1	100	59	6	36.020	0.34414	6		0.39	0.56	1.39	1.48	1.51	1.99	2.60	3.71	4.48	4.51	5.88	6.04	7.00	9.81	13.88
Pr	$K\beta_3$		1	10	59	6	40.646	0.30497	6		0.35	0.50	1.23	1.31	1.34	1.76	2.30	3.28	3.97	4.00	5.21	5.35	6.20	8.69	12.29
Pr	$K\beta_1$		1	22	59	6	40.741	0.30426	6		0.35	0.50	1.23	1.31	1.33	1.76	2.30	3.28	3.96	3.99	5.20	5.34	6.18	8.67	12.27
Pr	$K\beta_2$		1	65	59	6	41.767	0.29679	5		0.34	0.49	1.20	1.28	1.30	1.71	2.24	3.20	3.86	3.89	5.07	5.21	6.03	8.45	11.96
Pr	AK		1		59	6	41.995	0.29518	5		0.34	0.48	1.19	1.27	1.29	1.70	2.23	3.18	3.84	3.87	5.04	5.18	6.00	8.41	11.90
Nd	$N_{4,5}O_{2,3}$		1		60	6	0.096	128.89999	1																
Nd	$N_{4,5}N_{6,7}$		1		60	6	0.116	107.00000	0																
Nd	Mz		1	.01	60	6	0.753	16.45999	2		18.82	27.20	70.86	76.35	78.12	112.12									
Nd	AM_5		1		60	6	0.973	12.73700	3		14.53	20.97	53.31	57.14	58.37	79.88	113.97								
Nd	Mα		1	100	60	6	0.978	12.68000	2		14.47	20.87	53.05	56.86	58.08	79.45	113.18								
Nd	AM_4		1		60	6	0.995	12.45900	3		14.21	20.50	52.06	55.79	56.98	77.80	110.21								
Nd	Mβ		1	55	60	6	0.996	12.44000	2		14.19	20.47	51.97	55.69	56.88	77.66	109.96								
Nd	Mγ		1	1	60	6	1.180	10.50500	3		11.98	17.26	43.43	46.46	47.43	63.94	87.51	161.73							
Nd	Ll		1	2	60	6	4.632	2.67600	4		3.05	4.38	10.82	11.53	11.76	15.50	20.29	29.13	35.37	35.65	47.02	48.37	56.64	83.30	139.97
Nd	Ln		1	1	60	6	5.145	2.40940	4		2.74	3.95	9.74	10.38	10.58	13.95	18.25	26.18	31.75	32.00	42.10	43.29	50.57	73.51	115.56
Nd	$L\alpha_2$		1	10	60	6	5.207	2.38070	4		2.71	3.90	9.62	10.26	10.46	13.78	18.03	25.86	31.36	31.61	41.58	42.75	49.93	72.49	113.42
Nd	$L\alpha_1$		1	100	60	6	5.229	2.37040	4		2.70	3.88	9.58	10.21	10.41	13.72	17.96	25.74	31.22	31.47	41.39	42.56	49.70	72.13	112.67
Nd	$L\beta_4$		1	5	60	6	5.721	2.16690	4		2.47	3.55	8.75	9.33	9.52	12.54	16.40	23.50	28.48	28.70	37.69	38.75	45.18	65.12	99.08
Nd	$L8_1$		1	50	60	6	5.721	2.16690	4		2.47	3.55	8.75	9.33	9.52	12.54	16.40	23.50	28.48	28.70	37.69	38.75	45.18	65.12	99.08
Nd	$L8_3$		1	6	60	6	5.828	2.12680	4		2.42	3.48	8.59	9.16	9.34	12.31	16.10	23.06	27.95	28.16	36.97	38.00	44.30	63.77	96.62
Nd	$L8_6$		1	.1	60	6	5.892	2.10390	4		2.39	3.44	8.50	9.06	9.24	12.17	15.92	22.81	27.64	27.85	36.56	37.58	43.80	63.00	95.25
Nd	$L\beta_{2,15}$		1	20	60	6	6.088	2.03600	4		2.32	3.33	8.22	8.77	8.94	11.78	15.41	22.06	26.73	26.94	35.34	36.32	42.31	60.75	91.27
Nd	$L\beta_{10}$	B	1	.01	60	6	6.125	2.02370	4		2.30	3.31	8.17	8.72	8.89	11.71	15.31	21.93	26.57	26.77	35.12	36.10	42.05	60.34	90.56
Nd	$L\beta_9$	B	1	.01	60	6	6.147	2.01650	4		2.29	3.30	8.15	8.68	8.86	11.67	15.26	21.85	26.47	26.67	34.99	35.96	41.89	60.11	90.15
Nd	$L8_7$		1	.1	60	6	6.170	2.00920	4		2.29	3.29	8.12	8.65	8.82	11.62	15.20	21.77	26.37	26.57	34.86	35.83	41.73	59.87	89.74
Nd	AL_3		1		60	6	6.208	1.99670	4		2.27	3.27	8.07	8.60	8.77	11.55	15.11	21.63	26.20	26.41	34.63	35.60	41.46	59.46	89.03
Nd	$L\gamma_5$		1	.1	60	6	6.405	1.93550	4		2.20	3.17	7.82	8.34	8.50	11.20	14.64	20.96	25.39	25.58	33.54	34.47	40.13	57.46	85.62
Nd	$L\gamma_1$		1	5	60	6	6.601	1.87790	4		2.14	3.07	7.58	8.09	8.25	10.86	14.20	20.33	24.62	24.81	32.51	33.42	38.89	55.60	82.50
Nd	$L\gamma_8$		1	.1	60	6	6.682	1.85520	4		2.11	3.04	7.49	7.99	8.15	10.73	14.03	20.08	24.32	24.50	32.11	33.00	38.40	54.87	81.30
Nd	AL_2		1		60	6	6.722	1.84400	4		2.10	3.02	7.45	7.94	8.10	10.67	13.95	19.96	24.17	24.35	31.91	32.80	38.16	54.51	80.70
Nd	$L\gamma_2$		1	1	60	6	6.882	1.80130	4		2.05	2.95	7.28	7.76	7.91	10.42	13.62	19.49	23.60	23.78	31.15	32.02	37.24	53.15	78.47
Nd	$L\gamma_3$		1	1	60	6	6.900	1.79640	4		2.04	2.94	7.26	7.74	7.89	10.39	13.58	19.44	23.54	23.72	31.07	31.93	37.14	52.99	78.21
Nd	$L\gamma_4$		1	.1	60	6	7.106	1.74450	4		1.99	2.86	7.05	7.51	7.66	10.09	13.19	18.87	22.85	23.02	30.15	30.98	36.03	51.35	75.55
Nd	AL_1		1		60	6	7.128	1.73900	4		1.98	2.85	7.02	7.49	7.63	10.06	13.15	18.81	22.77	22.95	30.05	30.88	35.91	51.17	75.27

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Nd	$K\alpha_2$		1	50	60	6	36.841	0.33647	6		0.38	0.55	1.36	1.45	1.48	1.94	2.54	3.62	4.38	4.41	5.75	5.91	6.84	9.59	13.57
Nd	$K\alpha_{1,2}$		1	150	60	6	37.182	0.33339	6		0.38	0.55	1.35	1.43	1.46	1.93	2.52	3.59	4.34	4.37	5.70	5.85	6.78	9.50	13.44
Nd	$K\alpha_1$		1	100	60	6	37.355	0.33185	6		0.38	0.54	1.34	1.43	1.46	1.92	2.50	3.57	4.32	4.35	5.67	5.82	6.75	9.45	13.38
Nd	$K\beta_3$		1	10	60	6	42.159	0.29403	6		0.33	0.48	1.19	1.27	1.29	1.70	2.22	3.17	3.83	3.85	5.02	5.16	5.98	8.38	11.85
Nd	$K\beta_1$		1	22	60	6	42.264	0.29330	6		0.33	0.48	1.18	1.26	1.29	1.69	2.21	3.16	3.82	3.85	5.01	5.15	5.96	8.35	11.82
Nd	$K\beta_2$	H	1	7	60	6	43.327	0.28610	4		0.33	0.47	1.15	1.23	1.26	1.65	2.16	3.08	3.72	3.75	4.89	5.02	5.81	8.15	11.53
Nd	AK		1		60	6	43.567	0.28453	5		0.32	0.47	1.15	1.22	1.25	1.64	2.15	3.06	3.70	3.73	4.86	4.99	5.78	8.10	11.47
Pm	$L\alpha_2$		1	10	61	6	5.407	2.29260	4		2.61	3.75	9.26	9.88	10.07	13.27	17.36	24.89	30.17	30.41	39.97	41.09	47.96	69.41	107.22
Pm	$L\alpha_1$		1	100	61	6	5.432	2.28220	4		2.60	3.74	9.22	9.83	10.02	13.21	17.28	24.77	30.03	30.27	39.78	40.90	47.73	69.05	106.52
Pm	$L\beta_1$		1	50	61	6	5.960	2.07970	4		2.37	3.41	8.40	8.96	9.13	12.03	15.74	22.54	27.31	27.52	36.12	37.13	43.27	62.19	93.81
Pm	$L\beta_3$		1	6	61	6	6.070	2.04210	4		2.32	3.34	8.25	8.80	8.97	11.82	15.45	22.13	26.81	27.02	35.45	36.44	42.45	60.95	91.62
Pm	$L\beta_{2,15}$		1	20	61	6	6.338	1.95590	4		2.23	3.20	7.90	8.42	8.59	11.32	14.80	21.19	25.66	25.86	33.90	34.85	40.57	58.12	86.75
Pm	AL_3	H	1		61	6	6.459	1.91910	4		2.18	3.14	7.75	8.26	8.43	11.10	14.52	20.78	25.17	25.36	33.25	34.17	39.78	56.93	84.73
Pm	$L\gamma_1$		1	5	61	6	6.891	1.79890	4		2.05	2.95	7.27	7.75	7.90	10.40	13.60	19.47	23.57	23.75	31.11	31.97	37.19	53.07	78.34
Pm	AL_2	H	1		61	6	7.013	1.76760	4		2.01	2.89	7.14	7.61	7.76	10.22	13.36	19.13	23.15	23.33	30.56	31.40	36.52	52.08	76.73
Pm	AL_1	H	1		61	6	7.434	1.66740	4		1.90	2.73	6.73	7.18	7.32	9.64	12.60	18.03	21.82	21.99	28.79	29.58	34.39	48.92	71.67
Pm	$K\alpha_2$	H	1	50	61	6	38.165	0.32480	6		0.37	0.53	1.31	1.40	1.42	1.88	2.45	3.50	4.23	4.26	5.55	5.70	6.60	9.25	13.10
Pm	$K\alpha_{1,2}$	H	1	150	61	6	38.532	0.32171	6		0.37	0.53	1.30	1.38	1.41	1.86	2.43	3.47	4.19	4.22	5.50	5.65	6.54	9.17	12.97
Pm	$K\alpha_1$	H	1	100	61	6	38.718	0.32016	6		0.36	0.52	1.29	1.38	1.40	1.85	2.42	3.45	4.17	4.20	5.47	5.62	6.51	9.12	12.91
Pm	$K\beta_3$	H	1	10	61	6	43.705	0.28363	5		0.32	0.46	1.14	1.22	1.24	1.64	2.14	3.06	3.69	3.72	4.85	4.98	5.76	8.08	11.43
Pm	$K\beta_1$	H	1	22	61	6	43.818	0.28290	5		0.32	0.46	1.14	1.22	1.24	1.63	2.13	3.05	3.68	3.71	4.83	4.96	5.75	8.06	11.40
Pm	$K\beta_2$	H	1	8	61	6	44.929	0.27590	4		0.31	0.45	1.11	1.19	1.21	1.59	2.08	2.97	3.59	3.62	4.71	4.84	5.61	7.86	11.12
Pm	AK	H	1		61	6	45.190	0.27431	5		0.31	0.45	1.11	1.18	1.20	1.58	2.07	2.95	3.57	3.60	4.69	4.81	5.57	7.81	11.05
Sm	$N_{4,5}O_{2,3}$		1		62	6	0.106	117.39999	1																
Sm	$N_{4,5}N_{6,7}$		1		62	6	0.126	98.00000	0		153.40														
Sm	Mz		1	.01	62	6	0.831	14.91000	2		17.03	24.60	63.36	68.09	69.61	97.44	157.96								
Sm	AM_5		1		62	6	1.073	11.55200	3		13.17	19.00	48.02	51.41	52.50	71.22	99.02								
Sm	$M\alpha$		1	100	62	6	1.081	11.47000	2		13.08	18.86	47.66	51.02	52.09	70.64	98.07								
Sm	AM_4		1		62	6	1.098	11.28800	3		12.87	18.56	46.85	50.16	51.21	69.35	96.00								
Sm	$M\beta$		1	45	62	6	1.100	11.27000	2		12.85	18.53	46.77	50.07	51.12	69.23	95.79								
Sm	$M\gamma$		1	1	62	6	1.291	9.60000	3		10.94	15.77	39.53	42.26	43.13	57.88	78.39	128.91							
Sm	Ll		1	2	62	6	4.994	2.48230	4		2.83	4.06	10.03	10.70	10.91	14.37	18.81	26.98	32.74	32.99	43.44	44.67	52.21	76.12	121.29
Sm	Ln		1	1	62	6	5.588	2.21824	5		2.52	3.63	8.96	9.56	9.74	12.84	16.79	24.07	29.17	29.40	38.62	39.70	46.31	66.86	102.32
Sm	$L\alpha_2$		1	10	62	6	5.607	2.21062	5		2.52	3.62	8.93	9.52	9.71	12.79	16.74	23.98	29.07	29.30	38.48	39.56	46.14	66.60	101.83
Sm	$L\alpha_1$		1	100	62	6	5.635	2.19980	5		2.50	3.60	8.89	9.48	9.66	12.73	16.65	23.86	28.93	29.15	38.29	39.36	45.90	66.23	101.14
Sm	$L8_4$		1	5	62	6	6.195	2.00095	5		2.28	3.28	8.08	8.62	8.79	11.58	15.14	21.68	26.26	26.46	34.71	35.68	41.55	59.59	89.27
Sm	$L\beta_1$		1	50	62	6	6.204	1.99806	5		2.27	3.27	8.07	8.61	8.77	11.56	15.12	21.65	26.22	26.42	34.66	35.62	41.49	59.50	89.11
Sm	$L\beta_3$		1	6	62	6	6.317	1.96241	5		2.23	3.21	7.93	8.45	8.62	11.35	14.85	21.26	25.75	25.94	34.02	34.97	40.72	58.33	87.11
Sm	$L\beta_6$		1	.1	62	6	6.369	1.94643	5		2.22	3.19	7.86	8.38	8.55	11.26	14.72	21.08	25.53	25.73	33.74	34.67	40.37	57.81	86.23
Sm	$L\beta_{2,15}$		1	20	62	6	6.586	1.88221	5		2.14	3.08	7.60	8.11	8.26	10.89	14.24	20.38	24.68	24.87	32.59	33.49	38.98	55.74	82.74
Sm	$L8_{10}$	B	1	.01	62	6	6.629	1.86990	5		2.13	3.06	7.55	8.05	8.21	10.82	14.14	20.24	24.51	24.70	32.37	33.27	38.72	55.34	82.08
Sm	$L8_9$	B	1	.01	62	6	6.659	1.86165	5		2.12	3.05	7.52	8.02	8.17	10.77	14.08	20.15	24.40	24.59	32.23	33.12	38.54	55.08	81.64
Sm	$L8_7$		1	.1	62	6	6.678	1.85626	5		2.11	3.04	7.50	7.99	8.15	10.74	14.04	20.09	24.33	24.52	32.13	33.02	38.42	54.90	81.35
Sm	$L\beta_5$		1	.1	62	6	6.711	1.84700	5		2.10	3.02	7.46	7.95	8.11	10.68	13.97	19.99	24.21	24.39	31.96	32.85	38.23	54.61	80.86
Sm	AL_3		1		62	6	6.716	1.84570	4		2.10	3.02	7.45	7.95	8.10	10.68	13.96	19.98	24.19	24.38	31.94	32.83	38.20	54.56	80.79
Sm	$L\gamma_5$		1	.1	62	6	6.967	1.77934	5		2.02	2.91	7.19	7.66	7.81	10.29	13.45	19.25	23.31	23.49	30.76	31.61	36.77	52.45	77.33
Sm	$L\gamma_1$		1	5	62	6	7.177	1.72724	5		1.97	2.83	6.98	7.44	7.58	9.99	13.06	18.68	22.62	22.79	29.84	30.67	35.66	50.80	74.67
Sm	$L\gamma_8$		1	.1	62	6	7.265	1.70634	5		1.94	2.79	6.89	7.35	7.49	9.87	12.90	18.46	22.34	22.51	29.47	30.29	35.21	50.15	73.62
Sm	$L\gamma_6$	A	1	.01	62	6	7.306	1.69666	5		1.93	2.78	6.85	7.31	7.45	9.81	12.83	18.35	22.21	22.38	29.30	30.11	35.01	49.84	73.13
Sm	AL_2		1		62	6	7.312	1.69530	4		1.93	2.78	6.85	7.30	7.44	9.80	12.82	18.34	22.19	22.36	29.28	30.09	34.98	49.80	73.06
Sm	$L\gamma_2$		1	1	62	6	7.465	1.66044	5		1.89	2.72	6.71	7.15	7.29	9.60	12.55	17.96	21.73	21.90	28.66	29.45	34.24	48.71	71.33
Sm	$L\gamma_3$		1	1	62	6	7.485	1.65601	5		1.88	2.71	6.69	7.13	7.27	9.58	12.52	17.91	21.67	21.84	28.58	29.37	34.14	48.57	71.11
Sm	$L\gamma_4$		1	.1	62	6	7.712	1.60728	5		1.83	2.63	6.49	6.92	7.06	9.29	12.15	17.38	21.03	21.19	27.73	28.49	33.11	47.05	68.71
Sm	AL_1		1		62	6	7.747	1.60020	4		1.82	2.62	6.46	6.89	7.02	9.25	12.09	17.30	20.93	21.09	27.60	28.36	32.96	46.83	68.37
Sm	$K\alpha_2$		1	50	62	6	39.516	0.31370	6		0.36	0.51	1.27	1.35	1.38	1.81	2.37	3.38	4.08	4.11	5.36	5.51	6.38	8.94	12.65
Sm	$K\alpha_{1,2}$		1	150	62	6	39.911	0.31059	6		0.35	0.51	1.25	1.34	1.36	1.79	2.34	3.35	4.04	4.07	5.31	5.45	6.31	8.85	12.52
Sm	$K\alpha_1$		1	100	62	6	40.111	0.30904	6		0.35	0.51	1.25	1.33	1.36	1.79	2.33	3.33	4.02	4.05	5.28	5.42	6.28	8.80	12.46
Sm	$K\beta_3$		1	10	62	6	45.281	0.27376	5		0.31	0.45	1.10	1.18	1.20	1.58	2.07	2.95	3.56	3.59	4.68	4.80	5.56	7.80	11.03
Sm	$K8_1$		1	22	62	6	45.405	0.27301	5		0.31	0.45	1.10	1.17	1.20	1.58	2.06	2.94	3.55	3.58	4.67	4.79	5.55	7.78	11.00
Sm	$K8_5$	B	1	.2	62	6	45.723	0.27111	5		0.31	0.44	1.09	1.17	1.19	1.57	2.05	2.92	3.53	3.55	4.63	4.76	5.51	7.72	10.92
Sm	$K\beta_2$	H	1	8	62	6	46.566	0.26620	4		0.30	0.44	1.07	1.15	1.17	1.54	2.01	2.87	3.46	3.49	4.55	4.67	5.41	7.58	10.73
Sm	$K-O_{2,3}$		1	.01	62	6	46.793	0.26491	5		0.30	0.43	1.07	1.14	1.16	1.53	2.00	2.85	3.45	3.47	4.53	4.65	5.38	7.54	10.67
Sm	AK		1		62	6	46.841	0.26464	5		0.30	0.43	1.07	1.14	1.16	1.53	2.00	2.85	3.44	3.47	4.52	4.64	5.38	7.54	10.66
Eu	$N_{4,5}O_{2,3}$		1		63	6	0.111	112.00000	1																
Eu	Mz		1	.01	63	6	0.872	14.22000	2		16.24	23.44	60.11	64.54	65.97	91.57	138.83								

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Eu	AM_5		1		63	6	1.126	11.01300	3		12.56	18.10	45.65	48.85	49.87	67.43	92.94								
Eu	Mα		1	100	63	6	1.131	10.96000	2		12.50	18.02	45.41	48.60	49.62	67.07	92.36								
Eu	Mβ		1	45	63	6	1.153	10.75000	3		12.26	17.67	44.50	47.61	48.60	65.62	90.10								
Eu	AM_4		1		63	6	1.157	10.71100	3		12.21	17.60	44.33	47.43	48.42	65.35	89.68								
Eu	Mγ		1	1	63	6	1.346	9.21100	3		10.50	15.12	37.86	40.47	41.30	55.33	74.66	119.92							
Eu	Ll		1	2	63	6	5.176	2.39480	4		2.73	3.92	9.68	10.32	10.52	13.87	18.14	26.01	31.55	31.80	41.83	43.02	50.24	72.99	114.46
Eu	Ln		1	1	63	6	5.816	2.13150	4		2.43	3.49	8.61	9.18	9.36	12.33	16.13	23.11	28.01	28.22	37.05	38.09	44.40	63.92	96.91
Eu	$L\alpha_2$		1	10	63	6	5.816	2.13150	4		2.43	3.49	8.61	9.18	9.36	12.33	16.13	23.11	28.01	28.22	37.05	38.09	44.40	63.92	96.91
Eu	$L\alpha_1$		1	100	63	6	5.845	2.12090	4		2.41	3.47	8.57	9.14	9.31	12.27	16.05	23.00	27.87	28.08	36.86	37.89	44.17	63.57	96.27
Eu	$L\beta_4$		1	5	63	6	6.438	1.92550	4		2.19	3.15	7.78	8.29	8.45	11.14	14.56	20.85	25.25	25.45	33.36	34.29	39.92	57.14	85.08
Eu	$L\beta_1$		1	50	63	6	6.455	1.92030	4		2.19	3.14	7.76	8.27	8.43	11.11	14.53	20.80	25.19	25.38	33.27	34.19	39.80	56.97	84.79
Eu	$L\beta_3$		1	6	63	6	6.570	1.88670	4		2.15	3.09	7.62	8.12	8.28	10.91	14.27	20.43	24.74	24.93	32.67	33.58	39.08	55.88	82.98
Eu	$L\beta_6$		1	.1	63	6	6.616	1.87370	4		2.13	3.07	7.57	8.07	8.23	10.84	14.17	20.29	24.56	24.75	32.44	33.34	38.80	55.46	82.28
Eu	$L\beta_{2,15}$		1	20	63	6	6.842	1.81180	4		2.06	2.97	7.32	7.80	7.95	10.48	13.70	19.61	23.74	23.92	31.34	32.21	37.47	53.48	79.01
Eu	$L\beta_{10}$	B	1	.01	63	6	6.889	1.79930	4		2.05	2.95	7.27	7.75	7.90	10.41	13.61	19.47	23.57	23.76	31.12	31.98	37.20	53.08	78.36
Eu	$L\beta_9$	B	1	.01	63	6	6.919	1.79160	4		2.04	2.93	7.24	7.71	7.87	10.36	13.55	19.39	23.47	23.65	30.98	31.84	37.04	52.84	77.96
Eu	$L\beta_7$		1	.1	63	6	6.944	1.78510	4		2.03	2.92	7.21	7.69	7.84	10.32	13.50	19.32	23.39	23.57	30.87	31.72	36.90	52.63	77.63
Eu	$L\beta_5$	A	1	.1	63	6	6.975	1.77720	4		2.02	2.91	7.18	7.65	7.80	10.28	13.44	19.23	23.28	23.46	30.73	31.58	36.73	52.38	77.22
Eu	AL_3		1		63	6	6.979	1.77610	4		2.02	2.91	7.17	7.65	7.80	10.27	13.43	19.22	23.27	23.44	30.71	31.56	36.70	52.35	77.16
Eu	$L\gamma_5$		1	.1	63	6	7.255	1.70850	4		1.94	2.80	6.90	7.36	7.50	9.88	12.92	18.48	22.37	22.54	29.51	30.33	35.26	50.21	73.72
Eu	$L\gamma_1$		1	5	63	6	7.479	1.65740	4		1.89	2.71	6.69	7.14	7.28	9.58	12.53	17.92	21.69	21.86	28.61	29.40	34.17	48.61	71.18
Eu	$L\gamma_8$		1	.1	63	6	7.584	1.63460	4		1.86	2.68	6.60	7.04	7.18	9.45	12.36	17.67	21.39	21.55	28.21	28.98	33.69	47.90	70.05
Eu	$L\gamma_6$	A	1	.01	63	6	7.613	1.62820	4		1.85	2.67	6.58	7.01	7.15	9.41	12.31	17.60	21.31	21.47	28.09	28.87	33.55	47.70	69.74
Eu	AL_2		1		63	6	7.618	1.62710	4		1.85	2.66	6.57	7.01	7.14	9.41	12.30	17.59	21.29	21.45	28.08	28.85	33.53	47.67	69.68
Eu	$L\gamma_2$		1	1	63	6	7.766	1.59610	4		1.82	2.61	6.45	6.87	7.01	9.23	12.06	17.25	20.88	21.04	27.53	28.29	32.87	46.71	68.17
Eu	$L\gamma_3$		1	1	63	6	7.795	1.59030	4		1.81	2.60	6.42	6.85	6.98	9.20	12.02	17.19	20.80	20.96	27.43	28.18	32.75	46.53	67.89
Eu	$L\gamma_4$		1	.1	63	6	8.029	1.54390	4		1.76	2.53	6.23	6.65	6.78	8.93	11.67	16.69	20.19	20.34	26.61	27.34	31.77	45.09	65.65
Eu	AL_1		1		63	6	8.059	1.53810	4		1.75	2.52	6.21	6.62	6.75	8.89	11.62	16.62	20.11	20.27	26.51	27.24	31.65	44.91	65.38
Eu	$K\alpha_2$		1	50	63	6	40.895	0.30312	6		0.34	0.50	1.22	1.30	1.33	1.75	2.29	3.26	3.94	3.97	5.18	5.32	6.16	8.63	12.22
Eu	$K\alpha_{1,2}$		1	150	63	6	41.320	0.30000	6		0.34	0.49	1.21	1.29	1.32	1.73	2.26	3.23	3.90	3.93	5.13	5.26	6.10	8.55	12.09
Eu	$K\alpha_1$		1	100	63	6	41.535	0.29845	6		0.34	0.49	1.20	1.28	1.31	1.72	2.25	3.21	3.88	3.91	5.10	5.24	6.07	8.50	12.03
Eu	$K\beta_3$		1	11	63	6	46.896	0.26433	6		0.30	0.43	1.07	1.14	1.16	1.53	1.99	2.85	3.44	3.47	4.52	4.64	5.37	7.53	10.65
Eu	$K\beta_1$		1	23	63	6	47.030	0.26358	6		0.30	0.43	1.06	1.13	1.16	1.52	1.99	2.84	3.43	3.46	4.50	4.63	5.36	7.51	10.62
Eu	$K\beta_2$		1	8	63	6	48.248	0.25692	6		0.29	0.42	1.04	1.11	1.13	1.48	1.94	2.77	3.34	3.37	4.39	4.51	5.22	7.32	10.35
Eu	$K\text{-}O_{2,3}$		1	.01	63	6	48.489	0.25564	6		0.29	0.42	1.03	1.10	1.12	1.48	1.93	2.75	3.33	3.35	4.37	4.49	5.19	7.28	10.30
Eu	AK		1		63	6	48.511	0.25553	5		0.29	0.42	1.03	1.10	1.12	1.48	1.93	2.75	3.32	3.35	4.37	4.48	5.19	7.28	10.30
Gd	M2		1	.01	64	6	0.913	13.57000	2		15.49	22.36	57.10	61.27	62.60	86.31	126.59								
Gd	Mα		1	100	64	6	1.185	10.46000	2		11.92	17.19	43.24	46.25	47.21	63.64	87.04	158.89							
Gd	Mβ		1	45	64	6	1.209	10.25400	3		11.69	16.85	42.34	45.29	46.23	62.24	84.92	149.04							
Gd	Mγ		1	1	64	6	1.402	8.84400	3		10.08	14.52	36.30	38.79	39.58	52.94	71.21	112.45							
Gd	Ll		1	2	64	6	5.361	2.31220	4		2.63	3.79	9.34	9.96	10.16	13.39	17.51	25.10	30.44	30.67	40.33	41.46	48.40	70.09	108.56
Gd	$L\alpha_2$		1	10	64	6	6.024	2.05780	4		2.34	3.37	8.31	8.86	9.04	11.91	15.57	22.30	27.02	27.23	35.73	36.73	42.79	61.47	92.53
Gd	Ln		1	1	64	6	6.049	2.04940	4		2.33	3.36	8.28	8.83	9.00	11.86	15.51	22.21	26.91	27.12	35.58	36.57	42.61	61.19	92.04
Gd	$L\alpha_1$		1	100	64	6	6.056	2.04680	4		2.33	3.35	8.27	8.82	8.99	11.84	15.49	22.18	26.87	27.08	35.53	36.52	42.55	61.10	91.89
Gd	$L\beta_4$		1	5	64	6	6.686	1.85400	4		2.11	3.04	7.49	7.98	8.14	10.72	14.02	20.07	24.30	24.49	32.09	32.98	38.38	54.83	81.23
Gd	$L\beta_1$		1	50	64	6	6.712	1.84680	4		2.10	3.02	7.46	7.95	8.11	10.68	13.97	19.99	24.21	24.39	31.96	32.85	38.22	54.60	80.85
Gd	$L\beta_3$		1	6	64	6	6.830	1.81500	4		2.07	2.97	7.33	7.82	7.97	10.50	13.72	19.64	23.78	23.97	31.40	32.27	37.54	53.58	79.18
Gd	$L\beta_6$		1	.1	64	6	6.866	1.80540	4		2.05	2.96	7.29	7.77	7.93	10.44	13.65	19.54	23.66	23.84	31.23	32.09	37.33	53.28	78.68
Gd	$L\beta_{2,15}$		1	20	64	6	7.102	1.74550	4		1.99	2.86	7.05	7.52	7.66	10.09	13.20	18.88	22.86	23.04	30.17	31.00	36.05	51.38	75.60
Gd	$L\beta_{10}$	B	1	.01	64	6	7.159	1.73150	4		1.97	2.83	6.99	7.46	7.60	10.01	13.09	18.73	22.67	22.85	29.92	30.74	35.75	50.94	74.89
Gd	$L\beta_9$	B	1	.01	64	6	7.190	1.72400	4		1.96	2.82	6.96	7.42	7.57	9.97	13.03	18.65	22.57	22.75	29.79	30.61	35.59	50.70	74.51
Gd	$L\beta_7$		1	.1	64	6	7.206	1.72030	4		1.96	2.82	6.95	7.41	7.55	9.95	13.01	18.61	22.53	22.70	29.72	30.54	35.51	50.58	74.32
Gd	$L\beta_5$		1	.1	64	6	7.236	1.71300	4		1.95	2.80	6.92	7.38	7.52	9.91	12.95	18.53	22.43	22.60	29.59	30.41	35.36	50.35	73.95
Gd	AL_3		1		64	6	7.242	1.71170	4		1.95	2.80	6.91	7.37	7.51	9.90	12.94	18.52	22.41	22.58	29.57	30.38	35.33	50.31	73.89
Gd	$L\gamma_5$		1	.1	64	6	7.553	1.64120	4		1.87	2.69	6.63	7.07	7.20	9.49	12.41	17.75	21.48	21.64	28.32	29.10	33.83	48.11	70.38
Gd	$L\gamma_1$		1	5	64	6	7.784	1.59240	4		1.81	2.61	6.43	6.86	6.99	9.21	12.03	17.21	20.83	20.99	27.46	28.22	32.79	46.59	67.99
Gd	$L\gamma_8$		1	.1	64	6	7.892	1.57070	4		1.79	2.57	6.34	6.76	6.89	9.08	11.87	16.98	20.54	20.70	27.08	27.83	32.33	45.92	66.94
Gd	$L\gamma_6$		1	.01	64	6	7.924	1.56440	4		1.78	2.56	6.32	6.74	6.87	9.05	11.82	16.91	20.46	20.62	26.97	27.71	32.20	45.72	66.64
Gd	AL_2		1		64	6	7.930	1.56320	4		1.78	2.56	6.31	6.73	6.86	9.04	11.81	16.90	20.45	20.60	26.95	27.69	32.18	45.69	66.58
Gd	$L\gamma_2$		1	1	64	6	8.086	1.53310	4		1.74	2.51	6.19	6.60	6.73	8.86	11.59	16.57	20.05	20.20	26.42	27.15	31.54	44.76	65.14
Gd	$L\gamma_3$		1	1	64	6	8.104	1.52970	4		1.74	2.50	6.18	6.59	6.71	8.84	11.56	16.53	20.00	20.16	26.36	27.09	31.47	44.65	64.97
Gd	$L\gamma_4$		1	.1	64	6	8.354	1.48390	4		1.69	2.43	5.99	6.39	6.51	8.58	11.21	16.03	19.40	19.55	25.56	26.26	30.50	43.25	62.80
Gd	$L_1\text{-}O_{4,5}$	B	1	.01	64	6	8.372	1.48070	4		1.69	2.42	5.98	6.37	6.50	8.56	11.19	16.00	19.36	19.50	25.50	26.20	30.44	43.15	62.65
Gd	AL_1		1		64	6	8.385	1.47840	4		1.68	2.42	5.97	6.36	6.49	8.55	11.17	15.97	19.33	19.47	25.46	26.16	30.39	43.08	62.54
Gd	$K\alpha_2$		1	50	64	6	42.302	0.29304	6		0.33	0.48	1.18	1.26	1.29	1.69	2.21	3.16	3.81	3.84	5.01	5.14	5.96	8.35	11.81

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Gd	$K\alpha_{1,2}$		1	150	64	6	42.757	0.28991	6	0.33	0.47	1.17	1.25	1.27	1.67	2.19	3.12	3.77	3.80	4.95	5.09	5.89	8.26	11.69
Gd	$K\alpha_1$		1	100	64	6	42.989	0.28835	6	0.33	0.47	1.16	1.24	1.27	1.67	2.18	3.11	3.75	3.78	4.93	5.06	5.86	8.21	11.62
Gd	$K\beta_3$		1	11	64	6	48.547	0.25534	5	0.29	0.42	1.03	1.10	1.12	1.47	1.93	2.75	3.32	3.35	4.36	4.48	5.19	7.27	10.29
Gd	$K\beta_1$		1	23	64	6	48.688	0.25460	5	0.29	0.42	1.03	1.10	1.12	1.47	1.92	2.74	3.31	3.34	4.35	4.47	5.17	7.25	10.26
Gd	$K\beta_5$	B	1	.2	64	6	49.045	0.25275	5	0.29	0.41	1.02	1.09	1.11	1.46	1.91	2.72	3.29	3.31	4.32	4.44	5.14	7.20	10.18
Gd	$K\beta_2$		1	8	64	6	49.952	0.24816	5	0.28	0.41	1.00	1.07	1.09	1.43	1.87	2.67	3.23	3.25	4.24	4.35	5.04	7.07	10.00
Gd	$K-O_{2,3}$		1	.01	64	6	50.213	0.24687	5	0.28	0.40	1.00	1.06	1.08	1.43	1.86	2.66	3.21	3.24	4.22	4.33	5.02	7.03	9.95
Gd	AK		1		64	6	50.225	0.24681	5	0.28	0.40	1.00	1.06	1.08	1.43	1.86	2.66	3.21	3.24	4.22	4.33	5.02	7.03	9.94
Tb	$N_{4,5}O_{2,3}$		1		65	6	0.121	102.20000	1															
Tb	$N_{4,5}N_{6,7}$		1		65	6	0.144	86.00000	0	117.30														
Tb	Mz		1	.01	65	6	0.955	12.98000	2	14.81	21.37	54.41	58.34	59.59	81.72	117.41								
Tb	Mα		1	100	65	6	1.240	10.00000	2	11.40	16.43	41.25	44.11	45.02	60.53	82.35	140.05							
Tb	MB		1	45	65	6	1.266	9.79200	3	11.16	16.08	40.35	43.14	44.03	59.15	80.28	133.94							
Tb	Mγ		1	1	65	6	1.461	8.48600	3	9.67	13.93	34.78	37.16	37.92	50.65	67.93	105.79	148.92	152.20					
Tb	Ll		1	2	65	6	5.546	2.23520	4	2.54	3.66	9.03	9.63	9.82	12.94	16.92	24.25	29.40	29.63	38.93	40.02	46.69	67.44	103.41
Tb	$L\alpha_2$		1	10	65	6	6.237	1.98750	4	2.26	3.25	8.03	8.56	8.73	11.50	15.04	21.53	26.08	26.28	34.47	35.43	41.26	59.15	88.51
Tb	$L\alpha_1$		1	100	65	6	6.272	1.97650	4	2.25	3.24	7.98	8.51	8.68	11.43	14.95	21.41	25.93	26.13	34.27	35.23	41.02	58.79	87.89
Tb	Ln		1	1	65	6	6.283	1.97300	4	2.25	3.23	7.97	8.50	8.66	11.41	14.93	21.37	25.89	26.09	34.21	35.16	40.95	58.68	87.70
Tb	$L\beta_4$		1	5	65	6	6.939	1.78640	4	2.03	2.92	7.21	7.69	7.84	10.33	13.51	19.33	23.40	23.58	30.89	31.74	36.92	52.67	77.69
Tb	$L\beta_1$		1	50	65	6	6.977	1.77680	4	2.02	2.91	7.18	7.65	7.80	10.28	13.43	19.23	23.28	23.45	30.72	31.57	36.72	52.37	77.20
Tb	$L\beta_3$		1	6	65	6	7.095	1.74720	4	1.99	2.86	7.06	7.52	7.67	10.10	13.21	18.90	22.88	23.06	30.20	31.03	36.09	51.43	75.68
Tb	$L\beta_6$		1	.1	65	6	7.115	1.74220	4	1.98	2.85	7.04	7.50	7.65	10.08	13.17	18.85	22.82	22.99	30.11	30.94	35.98	51.27	75.43
Tb	$L\beta_{2,15}$		1	20	65	6	7.365	1.68300	4	1.92	2.76	6.80	7.25	7.39	9.73	12.72	18.20	22.03	22.20	29.06	29.86	34.72	49.41	72.45
Tb	$L\beta_{10}$	B	1	.01	65	6	7.435	1.66730	4	1.90	2.73	6.73	7.18	7.32	9.64	12.60	18.03	21.82	21.99	28.78	29.58	34.38	48.92	71.67
Tb	$L\beta_7$		1	.1	65	6	7.474	1.65850	4	1.89	2.72	6.70	7.14	7.28	9.59	12.54	17.93	21.71	21.87	28.63	29.42	34.20	48.65	71.23
Tb	$L\beta_5$		1	.1	65	6	7.508	1.65100	4	1.88	2.70	6.67	7.11	7.25	9.55	12.48	17.85	21.61	21.77	28.50	29.28	34.04	48.41	70.86
Tb	AL_3		1		65	6	7.514	1.64970	4	1.88	2.70	6.66	7.10	7.24	9.54	12.47	17.84	21.59	21.75	28.47	29.26	34.01	48.37	70.80
Tb	$L\gamma_5$		1	.1	65	6	7.852	1.57870	4	1.80	2.58	6.38	6.80	6.93	9.13	11.93	17.07	20.65	20.81	27.22	27.97	32.50	46.17	67.33
Tb	$L\gamma_1$		1	5	65	6	8.100	1.53030	4	1.74	2.51	6.18	6.59	6.72	8.85	11.56	16.54	20.01	20.16	26.37	27.10	31.48	44.67	65.00
Tb	$L\gamma_8$		1	.1	65	6	8.211	1.50970	4	1.72	2.47	6.10	6.50	6.63	8.73	11.41	16.31	19.74	19.89	26.01	26.73	31.05	44.04	64.02
Tb	$L\gamma_6$		1	.01	65	6	8.245	1.50350	4	1.71	2.46	6.07	6.47	6.60	8.69	11.36	16.25	19.66	19.81	25.90	26.61	30.92	43.85	63.73
Tb	AL_2		1		65	6	8.251	1.50230	4	1.71	2.46	6.07	6.47	6.59	8.69	11.35	16.23	19.64	19.79	25.88	26.59	30.89	43.81	63.67
Tb	$L\gamma_2$		1	1	65	6	8.396	1.47640	4	1.68	2.42	5.96	6.36	6.48	8.54	11.16	15.95	19.30	19.45	25.43	26.13	30.35	43.02	62.45
Tb	$L\gamma_3$		1	1	65	6	8.422	1.47180	4	1.67	2.41	5.94	6.34	6.46	8.51	11.12	15.90	19.24	19.38	25.35	26.04	30.25	42.88	62.23
Tb	$L\gamma_4$		1	.1	65	6	8.683	1.42760	4	1.62	2.34	5.76	6.15	6.27	8.25	10.79	15.42	18.66	18.80	24.58	25.25	29.32	41.53	60.17
Tb	$L_1-O_{4,5}$	B	1	.01	65	6	8.712	1.42280	4	1.62	2.33	5.74	6.12	6.24	8.22	10.75	15.37	18.59	18.73	24.49	25.16	29.22	41.38	59.94
Tb	AL_1		1		65	6	8.715	1.42230	4	1.62	2.33	5.74	6.12	6.24	8.22	10.75	15.36	18.59	18.73	24.48	25.15	29.21	41.37	59.92
Tb	$K\alpha_2$		1	50	65	6	43.737	0.28342	6	0.32	0.46	1.14	1.22	1.24	1.64	2.14	3.05	3.69	3.72	4.84	4.97	5.76	8.07	11.42
Tb	$K\alpha_{1,2}$		1	150	65	6	44.226	0.28029	6	0.32	0.46	1.13	1.21	1.23	1.62	2.11	3.02	3.65	3.67	4.79	4.92	5.70	7.98	11.30
Tb	$K\alpha_1$		1	100	65	6	44.474	0.27872	6	0.32	0.46	1.12	1.20	1.22	1.61	2.10	3.00	3.63	3.65	4.76	4.89	5.66	7.94	11.23
Tb	$K\beta_3$		1	11	65	6	50.221	0.24683	5	0.28	0.40	1.00	1.06	1.08	1.43	1.86	2.66	3.21	3.24	4.22	4.33	5.02	7.03	9.94
Tb	$K\beta_1$		1	23	65	6	50.374	0.24608	5	0.28	0.40	0.99	1.06	1.08	1.42	1.86	2.65	3.20	3.23	4.20	4.32	5.00	7.01	9.91
Tb	$K\beta_2$	H	1	8	65	6	51.715	0.23970	4	0.27	0.39	0.97	1.03	1.05	1.38	1.81	2.58	3.12	3.14	4.10	4.21	4.87	6.83	9.66
Tb	$K-O_{2,3}$		1	.01	65	6	51.957	0.23858	5	0.27	0.39	0.96	1.03	1.05	1.38	1.80	2.57	3.10	3.13	4.08	4.19	4.85	6.79	9.61
Tb	AK		1		65	6	51.994	0.23841	5	0.27	0.39	0.96	1.03	1.05	1.38	1.80	2.57	3.10	3.13	4.07	4.18	4.84	6.79	9.60
Oy	$N_{4,5}O_{2,3}$		1		66	6	0.128	97.20000	1	149.70														
Dy	$N_{4,5}N_{6,7}$		1		66	6	0.149	83.00000	0	111.02														
Dy	Mz		1	.01	66	6	0.997	12.43000	2	14.18	20.46	51.93	55.64	56.83	77.59	109.83								
Oy	Mα		1	100	66	6	1.293	9.59000	2	10.93	15.75	39.48	42.21	43.08	57.81	78.30	128.66							
Oy	MB		1	45	66	6	1.325	9.35700	3	10.55	15.36	38.48	41.14	41.98	56.28	76.05	123.14							
Oy	Mγ		1	1	66	6	1.522	8.14400	3	9.28	13.36	33.34	35.61	36.33	48.47	64.84	99.89	135.22	137.37					
Oy	Ll		1	2	66	6	5.742	2.15877	5	2.46	3.53	8.72	9.30	9.48	12.49	16.34	23.41	28.37	28.59	37.55	38.60	45.00	64.84	98.58
Oy	$L\alpha_2$		1	10	66	6	6.457	1.91991	5	2.18	3.14	7.75	8.27	8.43	11.11	14.52	20.79	25.18	25.37	33.26	34.19	39.80	56.95	84.77
Dy	$L\alpha_1$		1	100	66	6	6.494	1.90881	5	2.17	3.13	7.71	8.22	8.38	11.04	14.44	20.67	25.03	25.22	33.06	33.98	39.56	56.60	84.17
Oy	Ln		1	1	66	6	6.533	1.89743	5	2.16	3.11	7.66	8.17	8.33	10.98	14.35	20.54	24.88	25.07	32.86	33.77	39.31	56.23	83.55
Dy	$L\beta_4$		1	5	66	6	7.203	1.72103	5	1.96	2.82	6.95	7.41	7.56	9.95	13.01	18.62	22.54	22.71	29.73	30.55	35.53	50.61	74.36
Oy	$L\beta_1$		1	50	66	6	7.246	1.71062	5	1.95	2.80	6.91	7.37	7.51	9.89	12.93	18.50	22.40	22.57	29.55	30.36	35.31	50.28	73.83
Dy	$L\beta_3$		1	6	66	6	7.369	1.68220	4	1.91	2.75	6.79	7.24	7.38	9.73	12.72	18.19	22.02	22.19	29.05	29.85	34.70	49.39	72.41
Dy	$L\beta_6$		1	.1	66	6	7.369	1.68213	5	1.91	2.75	6.79	7.24	7.38	9.73	12.72	18.19	22.02	22.19	29.05	29.85	34.70	49.39	72.40
Dy	$L\beta_{2,15}$		1	20	66	6	7.634	1.62369	5	1.85	2.66	6.56	6.99	7.13	9.39	12.27	17.56	21.25	21.41	28.02	28.79	33.46	47.56	69.52
Oy	$L\beta_{10}$	B	1	.01	66	6	7.712	1.60743	5	1.83	2.63	6.49	6.92	7.06	9.29	12.15	17.38	21.03	21.19	27.73	28.49	33.11	47.06	68.72
Dy	$L\beta_7$		1	.1	66	6	7.726	1.60447	5	1.83	2.63	6.48	6.91	7.04	9.28	12.13	17.35	20.99	21.15	27.68	28.44	33.05	46.96	68.58
Dy	$L\beta_9$	B	1	.01	66	6	7.749	1.59973	5	1.82	2.62	6.46	6.89	7.02	9.25	12.09	17.29	20.93	21.09	27.59	28.35	32.95	46.82	68.35
Dy	AL_3		1		66	6	7.788	1.59160	4	1.81	2.61	6.43	6.85	6.99	9.20	12.03	17.21	20.82	20.98	27.45	28.21	32.78	46.57	67.95
Dy	$L\beta_5$		1	.1	66	6	7.804	1.58837	5	1.81	2.60	6.41	6.84	6.97	9.18	12.00	17.17	20.78	20.94	27.39	28.15	32.71	46.47	67.80

El	Line	C	N	I	Z	R	Kev	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Dy	$L\gamma_5$		1	.1	66	6	8.165	1.51824	5	1.73	2.49	6.13	6.54	6.66	8.78	11.47	16.41	19.85	20.00	26.16	26.88	31.23	44.30	64.43
Dy	$L\gamma_1$		1	5	66	6	8.417	1.47266	5	1.68	2.41	5.95	6.34	6.46	8.51	11.13	15.91	19.25	19.40	25.36	26.06	30.27	42.91	62.27
Dy	$L\gamma_6$		1	.01	66	6	8.574	1.44579	5	1.65	2.37	5.84	6.22	6.35	8.36	10.92	15.62	18.90	19.04	24.89	25.58	29.70	42.08	61.02
Dy	AL_2		1		66	6	8.582	1.44450	4	1.64	2.36	5.83	6.22	6.34	8.35	10.91	15.61	18.88	19.02	24.87	25.55	29.67	42.05	60.95
Dy	$L\gamma_2$		1	1	66	6	8.713	1.42278	5	1.62	2.33	5.74	6.12	6.24	8.22	10.75	15.37	18.59	18.73	24.49	25.16	29.22	41.38	59.94
Dy	$L\gamma_3$		1	1	66	6	8.752	1.41640	5	1.61	2.32	5.72	6.10	6.22	8.19	10.70	15.30	18.51	18.65	24.38	25.05	29.08	41.19	59.65
Dy	$L\gamma_4$		1	.1	66	6	9.018	1.37459	5	1.56	2.25	5.55	5.92	6.03	7.95	10.38	14.85	17.96	18.09	23.65	24.30	28.21	39.92	57.72
Dy	AL_1	H	1		66	6	9.053	1.36920	4	1.56	2.24	5.53	5.89	6.01	7.91	10.34	14.79	17.89	18.02	23.56	24.20	28.09	39.76	57.47
Dy	$K\alpha_2$		1	50	66	6	45.200	0.27425	6	0.31	0.45	1.11	1.18	1.20	1.58	2.07	2.95	3.57	3.60	4.69	4.81	5.57	7.81	11.05
Dy	$K\alpha_{1,2}$		1	150	66	6	45.724	0.27110	6	0.31	0.44	1.09	1.17	1.19	1.57	2.05	2.92	3.53	3.55	4.63	4.76	5.51	7.72	10.92
Dy	$K\alpha_1$		1	100	66	6	45.991	0.26953	6	0.31	0.44	1.09	1.16	1.18	1.56	2.03	2.90	3.51	3.53	4.61	4.73	5.48	7.68	10.86
Dy	$K\beta_3$		1	11	66	6	51.949	0.23862	5	0.27	0.39	0.96	1.03	1.05	1.38	1.80	2.57	3.10	3.13	4.08	4.19	4.85	6.79	9.61
Dy	$K\beta_1$		1	23	66	6	52.110	0.23788	5	0.27	0.39	0.96	1.02	1.04	1.37	1.79	2.56	3.10	3.12	4.06	4.17	4.83	6.77	9.58
Dy	$K\beta_5$	B	1	.2	66	6	52.485	0.23618	5	0.27	0.39	0.95	1.02	1.04	1.36	1.78	2.54	3.07	3.10	4.04	4.14	4.80	6.73	9.51
Dy	$K\beta_2$	H	1	9	66	6	53.500	0.23170	4	0.26	0.38	0.94	1.00	1.02	1.34	1.75	2.50	3.01	3.04	3.96	4.07	4.71	6.60	9.33
Dy	$K-O_{2,3}$		1	.01	66	6	53.765	0.23056	5	0.26	0.38	0.93	0.99	1.01	1.33	1.74	2.48	3.00	3.02	3.94	4.05	4.68	6.57	9.29
Dy	AK		1		66	6	53.783	0.23048	5	0.26	0.38	0.93	0.99	1.01	1.33	1.74	2.48	3.00	3.02	3.94	4.04	4.68	6.56	9.28
Ho	Mz		1	.01	67	6	1.045	11.86000	2	13.53	19.51	49.38	52.89	54.01	73.42	102.66								
Ho	Mα		1	100	67	6	1.347	9.20000	2	10.48	15.10	37.81	40.42	41.24	55.25	74.55	119.69							
Ho	Mβ		1	45	67	6	1.383	8.96500	3	10.22	14.72	36.81	39.34	40.15	53.73	72.34	114.83							
Ho	Mγ		1	1	67	6	1.576	7.86500	3	8.96	12.90	32.16	34.35	35.05	46.71	62.37	95.33	126.49	128.23					
Ho	Ll		1	2	67	6	5.942	2.08600	4	2.37	3.42	8.43	8.98	9.16	12.07	15.79	22.61	27.40	27.61	36.24	37.25	43.41	62.40	94.18
Ho	$L\alpha_2$		1	10	67	6	6.679	1.85610	4	2.11	3.04	7.50	7.99	8.15	10.74	14.04	20.09	24.33	24.52	32.13	33.02	38.42	54.90	81.34
Ho	$L\alpha_1$		1	100	67	6	6.719	1.84500	4	2.10	3.02	7.45	7.94	8.10	10.67	13.95	19.97	24.18	24.37	31.93	32.81	38.18	54.54	80.76
Ho	Ln		1	1	67	6	6.787	1.82640	4	2.08	2.99	7.38	7.86	8.02	10.56	13.81	19.77	23.94	24.12	31.60	32.47	37.78	53.95	79.78
Ho	$L\beta_4$		1	5	67	6	7.470	1.65950	4	1.89	2.72	6.70	7.15	7.29	9.60	12.54	17.95	21.72	21.89	28.65	29.44	34.22	48.68	71.28
Ho	$L\beta_1$		1	50	67	6	7.524	1.64750	4	1.87	2.70	6.65	7.09	7.23	9.53	12.45	17.82	21.56	21.73	28.43	29.22	33.96	48.30	70.69
Ho	$L\beta_6$		1	.1	67	6	7.634	1.62370	4	1.85	2.66	6.56	6.99	7.13	9.39	12.27	17.56	21.25	21.41	28.02	28.79	33.46	47.56	69.52
Ho	$L\beta_3$		1	6	67	6	7.650	1.62030	4	1.84	2.65	6.54	6.98	7.11	9.37	12.25	17.52	21.20	21.36	27.96	28.72	33.39	47.46	69.35
Ho	$L\beta_{2,15}$		1	20	67	6	7.910	1.56710	4	1.78	2.57	6.33	6.75	6.88	9.06	11.84	16.94	20.50	20.65	27.02	27.76	32.26	45.81	66.77
Ho	$L\beta_{10}$	8	1	.01	67	6	8.005	1.54860	4	1.76	2.54	6.25	6.67	6.80	8.95	11.70	16.74	20.25	20.41	26.70	27.43	31.87	45.24	65.88
Ho	$L\beta_5$		1	.1	67	6	8.061	1.53780	4	1.75	2.52	6.21	6.62	6.75	8.89	11.62	16.62	20.11	20.26	26.51	27.23	31.64	44.90	65.36
Ho	AL_3		1		67	6	8.066	1.53680	4	1.75	2.52	6.21	6.62	6.75	8.89	11.61	16.61	20.10	20.25	26.49	27.22	31.62	44.87	65.31
Ho	$L\gamma_5$		1	.1	67	6	8.480	1.46180	4	1.66	2.39	5.90	6.29	6.42	8.45	11.04	15.79	19.11	19.25	25.17	25.86	30.04	42.57	61.76
Ho	$L\gamma_1$		1	5	67	6	8.746	1.41740	4	1.61	2.32	5.72	6.10	6.22	8.19	10.71	15.31	18.52	18.66	24.40	25.06	29.11	41.22	59.69
Ho	$L\gamma_8$		1	.1	67	6	8.865	1.39830	4	1.59	2.29	5.65	6.02	6.14	8.08	10.56	15.10	18.27	18.41	24.06	24.72	28.70	40.64	58.81
Ho	$L\gamma_6$		1	.01	67	6	8.903	1.39230	4	1.58	2.28	5.62	5.99	6.11	8.05	10.52	15.04	18.19	18.33	23.96	24.61	28.58	40.46	58.53
Ho	AL_2		1		67	6	8.915	1.39050	4	1.58	2.28	5.61	5.99	6.10	8.04	10.50	15.02	18.17	18.30	23.93	24.58	28.54	40.40	58.45
Ho	$L\gamma_2$		1	1	67	6	9.049	1.36980	4	1.56	2.24	5.53	5.90	6.01	7.92	10.35	14.79	17.89	18.03	23.57	24.21	28.11	39.78	57.50
Ho	$L\gamma_3$		1	1	67	6	9.086	1.36430	4	1.55	2.23	5.51	5.87	5.99	7.89	10.31	14.73	17.82	17.96	23.47	24.11	27.99	39.61	57.25
Ho	$L\gamma_4$		1	.1	67	6	9.373	1.32250	4	1.50	2.17	5.34	5.69	5.80	7.64	9.99	14.28	17.27	17.40	22.74	23.36	27.12	38.35	55.34
Ho	$L_1-O_{4,5}$	8	1	.01	67	6	9.385	1.32080	4	1.50	2.16	5.33	5.69	5.80	7.63	9.98	14.26	17.25	17.38	22.71	23.33	27.08	38.30	55.26
Ho	AL_1		1		67	6	9.398	1.31900	4	1.50	2.16	5.33	5.68	5.79	7.62	9.96	14.24	17.22	17.36	22.68	23.30	27.04	38.24	55.18
Ho	$K\alpha_2$		1	50	67	6	46.692	0.26549	6	0.30	0.43	1.07	1.14	1.16	1.53	2.00	2.86	3.45	3.48	4.54	4.66	5.40	7.56	10.70
Ho	$K\alpha_{1,2}$		1	150	67	6	47.253	0.26233	6	0.30	0.43	1.06	1.13	1.15	1.52	1.98	2.83	3.41	3.44	4.48	4.60	5.33	7.47	10.57
Ho	$K\alpha_1$		1	100	67	6	47.539	0.26076	6	0.30	0.43	1.05	1.12	1.14	1.51	1.97	2.81	3.39	3.42	4.46	4.58	5.30	7.43	10.51
Ho	$K\beta_3$		1	11	67	6	53.702	0.23083	5	0.26	0.38	0.93	0.99	1.01	1.33	1.74	2.49	3.00	3.03	3.94	4.05	4.69	6.57	9.30
Ho	$K\beta_1$		1	22	67	6	53.868	0.23012	5	0.26	0.38	0.93	0.99	1.01	1.33	1.74	2.48	2.99	3.02	3.93	4.04	4.68	6.55	9.27
Ho	$K\beta_5$	B	1	.2	67	6	54.238	0.22855	5	0.26	0.37	0.92	0.98	1.00	1.32	1.72	2.46	2.97	3.00	3.91	4.01	4.64	6.51	9.21
Ho	$K\beta_2$	H	1	8	67	6	55.315	0.22410	4	0.26	0.37	0.90	0.96	0.98	1.29	1.69	2.41	2.92	2.94	3.83	3.93	4.55	6.38	9.03
Ho	$K-O_{2,3}$		1	.01	67	6	55.575	0.22305	5	0.25	0.37	0.90	0.96	0.98	1.29	1.68	2.40	2.90	2.92	3.81	3.91	4.53	6.35	8.98
Ho	AK		1		67	6	55.610	0.22291	5	0.25	0.36	0.90	0.96	0.98	1.29	1.68	2.40	2.90	2.92	3.81	3.91	4.53	6.35	8.98
Er	$N_5-N_{6,7}$		1		68	6	0.162	76.29999	1	98.52														
Er	N_4-N_6		1		68	6	0.171	72.70000	1	92.43														
Er	Mz		1	.01	68	6	1.090	11.37000	2	12.97	18.70	47.21	50.55	51.61	69.93	96.92								
Er	AM_5		1		68	6	1.401	8.84700	3	10.08	14.52	36.31	38.80	39.59	52.96	71.24	112.50							
Er	Mα		1	100	68	6	1.405	8.82000	2	10.05	14.48	36.20	38.68	39.47	52.79	70.99	111.98							
Er	AM_4		1		68	6	1.441	8.60100	3	9.80	14.12	35.27	37.68	38.45	51.38	68.98	107.87	155.11	159.39					
Er	Mβ		1	45	68	6	1.443	8.59200	3	9.79	14.10	35.23	37.64	38.41	51.32	68.89	107.71	154.57	158.74					
Er	M_3-N_4		1	.1	68	6	1.631	7.60000	2	8.66	12.47	31.05	33.16	33.83	45.05	60.04	91.17	119.28	120.77					
Er	Mγ		1	1	68	6	1.643	7.54600	3	8.60	12.38	30.83	32.92	33.58	44.71	59.57	90.34	117.90	119.35					
Er	Ll		1	2	68	6	6.152	2.01500	3	2.29	3.30	8.14	8.68	8.85	11.66	15.25	21.83	26.45	26.65	34.96	35.94	41.86	60.06	90.07
Er	$L\alpha_2$		1	10	68	6	6.904	1.79550	4	2.04	2.94	7.25	7.73	7.88	10.38	13.58	19.43	23.52	23.70	31.05	31.91	37.12	52.96	78.17
Er	$L\alpha_1$		1	100	68	6	6.947	1.78425	5	2.03	2.92	7.21	7.68	7.83	10.32	13.49	19.31	23.37	23.55	30.85	31.70	36.88	52.61	77.58
Er	Ln		1	1	68	6	7.057	1.75660	4	2.00	2.88	7.09	7.56	7.71	10.16	13.28	19.01	23.01	23.18	30.36	31.20	36.29	51.73	76.16

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Er	$L\beta_4$		1	5	68	6	7.744	1.60070	4	1.82	2.62	6.46	6.89	7.03	9.26	12.10	17.31	20.94	21.10	27.61	28.37	32.97	46.85	68.39
Er	$L8_1$		1	50	68	6	7.809	1.58730	4	1.81	2.60	6.41	6.83	6.97	9.18	12.00	17.16	20.76	20.92	27.38	28.13	32.69	46.43	67.74
Er	$L8_6$		1	.1	68	6	7.908	1.56750	4	1.78	2.57	6.33	6.75	6.88	9.06	11.85	16.94	20.50	20.66	27.03	27.77	32.27	45.82	66.79
Er	$L\beta_3$		1	6	68	6	7.938	1.56160	4	1.78	2.56	6.31	6.72	6.85	9.03	11.80	16.88	20.42	20.58	26.92	27.66	32.14	45.64	66.50
Er	$L8_{2,15}$		1	20	68	6	8.188	1.51399	5	1.72	2.48	6.11	6.52	6.65	8.75	11.44	16.36	19.80	19.95	26.09	26.80	31.14	44.17	64.23
Er	$L\beta_{10}$	B	1	.01	68	6	8.297	1.49410	4	1.70	2.45	6.03	6.43	6.56	8.64	11.29	16.14	19.53	19.68	25.74	26.45	30.72	43.56	63.28
Er	$L\beta_7$		1	.1	68	6	8.297	1.49410	4	1.70	2.45	6.03	6.43	6.56	8.64	11.29	16.14	19.53	19.68	25.74	26.45	30.72	43.56	63.28
Er	$L8_9$	B	1	.01	68	6	8.345	1.48550	4	1.69	2.43	6.00	6.40	6.52	8.59	11.22	16.05	19.42	19.57	25.59	26.29	30.54	43.30	62.88
Er	$L\beta_5$		1	.1	68	6	8.349	1.48480	4	1.69	2.43	6.00	6.39	6.52	8.58	11.22	16.04	19.41	19.56	25.58	26.28	30.52	43.28	62.85
Er	AL_3		1		68	6	8.356	1.48350	4	1.69	2.43	5.99	6.39	6.51	8.58	11.21	16.03	19.39	19.54	25.55	26.25	30.49	43.24	62.78
Er	$L\gamma_5$		1	.1	68	6	8.812	1.40670	4	1.60	2.30	5.68	6.06	6.17	8.13	10.63	15.19	18.38	18.52	24.21	24.87	28.88	40.90	59.20
Er	$L\gamma_1$		1	5	68	6	9.087	1.36410	4	1.55	2.23	5.51	5.87	5.99	7.88	10.30	14.73	17.82	17.95	23.47	24.11	27.99	39.60	57.24
Er	$L\gamma_6$		1	.01	68	6	9.253	1.33970	4	1.52	2.19	5.41	5.77	5.88	7.74	10.12	14.47	17.50	17.63	23.04	23.67	27.48	38.87	56.12
Er	AL_2		1		68	6	9.260	1.33860	4	1.52	2.19	5.40	5.76	5.87	7.74	10.11	14.45	17.48	17.62	23.02	23.65	27.45	38.83	56.07
Er	$L\gamma_2$		1	1	68	6	9.384	1.32100	4	1.50	2.16	5.33	5.69	5.80	7.64	9.98	14.26	17.25	17.38	22.71	23.34	27.09	38.30	55.27
Er	$L\gamma_3$		1	1	68	6	9.429	1.31460	4	1.50	2.15	5.31	5.66	5.77	7.60	9.93	14.19	17.17	17.30	22.60	23.22	26.95	38.11	54.98
Er	$L\gamma_4$		1	.1	68	6	9.721	1.27520	4	1.45	2.09	5.15	5.49	5.60	7.37	9.63	13.77	16.65	16.78	21.92	22.52	26.13	36.93	53.20
Er	AL_1		1		68	6	9.756	1.27060	4	1.45	2.08	5.13	5.47	5.58	7.34	9.60	13.72	16.59	16.71	21.84	22.43	26.03	36.79	52.99
Er	$K\alpha_2$		1	50	68	6	48.213	0.25711	6	0.29	0.42	1.04	1.11	1.13	1.49	1.94	2.77	3.35	3.37	4.39	4.51	5.22	7.32	10.36
Er	$K\alpha_{1,2}$		1	150	68	6	48.813	0.25395	6	0.29	0.42	1.02	1.09	1.11	1.47	1.92	2.74	3.30	3.33	4.34	4.46	5.16	7.23	10.23
Er	$K\alpha_1$		1	100	68	6	49.119	0.25236	6	0.29	0.41	1.02	1.09	1.11	1.46	1.90	2.72	3.28	3.31	4.31	4.43	5.13	7.19	10.17
Er	$K\beta_3$		1	12	68	6	55.485	0.22341	5	0.25	0.37	0.90	0.96	0.98	1.29	1.69	2.41	2.91	2.93	3.82	3.92	4.54	6.36	9.00
Er	$K\beta_1$		1	22	68	6	55.672	0.22266	5	0.25	0.36	0.90	0.96	0.98	1.29	1.68	2.40	2.90	2.92	3.80	3.91	4.52	6.34	8.97
Er	$K\beta_5$	B	1	.2	68	6	56.030	0.22124	5	0.25	0.36	0.89	0.95	0.97	1.28	1.67	2.38	2.88	2.90	3.78	3.88	4.50	6.30	8.91
Er	$K\beta_2$	H	1	8	68	6	57.204	0.21670	4	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.33	2.82	2.84	3.70	3.80	4.40	6.17	8.73
Er	$K-O_{2,3}$		1	.01	68	6	57.439	0.21581	5	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.32	2.81	2.83	3.69	3.79	4.39	6.14	8.69
Er	AK		1		68	6	57.477	0.21567	5	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.32	2.81	2.83	3.68	3.78	4.38	6.14	8.69
Tm	AM_5		1		69	6	1.461	8.48700	3	9.67	13.93	34.79	37.17	37.92	50.65	67.94	105.81	148.97	152.25					
Tm	$M\alpha$		1	100	69	6	1.462	8.48000	2	9.66	13.92	34.76	37.13	37.89	50.61	67.87	105.69	148.63	151.87					
Tm	$M\beta$		1	45	69	6	1.503	8.24900	3	9.40	13.54	33.78	36.09	36.82	49.14	65.78	101.66	138.96	141.33					
Tm	Ll		1	2	69	6	6.341	1.95500	4	2.22	3.20	7.90	8.42	8.58	11.31	14.79	21.18	25.65	25.85	33.89	34.83	40.56	58.09	86.70
Tm	$L\alpha_2$		1	10	69	6	7.132	1.73810	4	1.98	2.85	7.02	7.48	7.63	10.05	13.14	18.80	22.76	22.94	30.03	30.86	35.89	51.15	75.22
Tm	$L\alpha_1$	H	1	100	69	6	7.179	1.72680	4	1.97	2.83	6.97	7.44	7.58	9.99	13.05	18.68	22.61	22.79	29.83	30.66	35.65	50.79	74.65
Tm	Ln		1	1	69	6	7.308	1.69630	4	1.93	2.78	6.85	7.30	7.45	9.81	12.82	18.35	22.21	22.38	29.30	30.10	35.00	49.83	73.11
Tm	$L8_4$		1	5	69	6	8.024	1.54480	4	1.76	2.53	6.24	6.65	6.78	8.93	11.67	16.70	20.20	20.36	26.63	27.36	31.79	45.12	65.70
Tm	$L\beta_1$		1	50	69	6	8.100	1.53040	4	1.74	2.51	6.18	6.59	6.72	8.85	11.56	16.54	20.01	20.16	26.38	27.10	31.48	44.68	65.01
Tm	$L8_6$		1	.1	69	6	8.176	1.51620	4	1.73	2.48	6.12	6.53	6.66	8.77	11.46	16.39	19.82	19.98	26.13	26.84	31.18	44.24	64.33
Tm	$L\beta_3$		1	6	69	6	8.229	1.50630	4	1.71	2.47	6.08	6.48	6.61	8.71	11.38	16.28	19.69	19.84	25.95	26.67	30.97	43.94	63.86
Tm	$L\beta_{2,15}$		1	20	69	6	8.467	1.46400	4	1.67	2.40	5.91	6.30	6.43	8.46	11.06	15.82	19.14	19.28	25.21	25.90	30.08	42.64	61.87
Tm	$L\beta_{10}$	B	1	.01	69	6	8.602	1.44100	4	1.64	2.36	5.82	6.20	6.32	8.33	10.89	15.57	18.83	18.98	24.81	25.49	29.60	41.94	60.79
Tm	$L\beta_5$		1	.1	69	6	8.639	1.43490	4	1.63	2.35	5.79	6.18	6.30	8.29	10.84	15.50	18.75	18.89	24.70	25.38	29.47	41.75	60.51
Tm	$L\beta_9$	B	1	.01	69	6	8.647	1.43360	4	1.63	2.35	5.79	6.17	6.29	8.29	10.83	15.49	18.73	18.88	24.68	25.36	29.45	41.71	60.45
Tm	AL_3		1		69	6	8.648	1.43340	4	1.63	2.35	5.79	6.17	6.29	8.29	10.83	15.48	18.73	18.87	24.68	25.35	29.44	41.71	60.44
Tm	$L\gamma_5$		1	.1	69	6	9.143	1.35580	4	1.54	2.22	5.47	5.84	5.95	7.84	10.24	14.64	17.71	17.84	23.32	23.96	27.81	39.35	56.86
Tm	$L\gamma_1$		1	5	69	6	9.424	1.31530	4	1.50	2.15	5.31	5.66	5.77	7.60	9.93	14.20	17.18	17.31	22.62	23.23	26.97	38.13	55.01
Tm	$L\gamma_6$		1	.01	69	6	9.606	1.29050	4	1.47	2.11	5.21	5.55	5.66	7.46	9.75	13.93	16.85	16.98	22.18	22.79	26.45	37.39	53.89
Tm	AL_2		1		69	6	9.615	1.28920	4	1.47	2.11	5.21	5.55	5.66	7.45	9.74	13.92	16.83	16.96	22.16	22.77	26.42	37.35	53.83
Tm	$L\gamma_2$		1	1	69	6	9.728	1.27420	4	1.45	2.09	5.14	5.48	5.59	7.36	9.62	13.76	16.64	16.76	21.90	22.50	26.11	36.90	53.15
Tm	$L\gamma_3$		1	1	69	6	9.778	1.26780	4	1.44	2.08	5.12	5.46	5.56	7.33	9.58	13.69	16.55	16.68	21.79	22.38	25.98	36.70	52.87
Tm	$L\gamma_4$		1	.1	69	6	10.083	1.22940	4	1.40	2.01	4.96	5.29	5.40	7.11	9.28	13.27	16.05	16.17	21.12	21.70	25.18	35.55	51.15
Tm	$L_1-O_{4,5}$	B	1	.01	69	6	10.108	1.22630	4	1.40	2.01	4.95	5.28	5.38	7.09	9.26	13.24	16.01	16.13	21.07	21.64	25.11	35.46	51.01
Tm	AL_1		1		69	6	10.119	1.22500	4	1.39	2.01	4.95	5.27	5.38	7.08	9.25	13.22	15.99	16.11	21.04	21.62	25.08	35.42	50.95
Tm	$K\alpha_2$		1	50	69	6	49.764	0.24909	6	0.28	0.41	1.01	1.07	1.09	1.44	1.88	2.68	3.24	3.27	4.26	4.37	5.06	7.09	10.04
Tm	$K\alpha_{1,2}$		1	150	69	6	50.406	0.24592	6	0.28	0.40	0.99	1.06	1.08	1.42	1.86	2.65	3.20	3.22	4.20	4.32	5.00	7.00	9.91
Tm	$K\alpha_1$		1	100	69	6	50.733	0.24434	6	0.28	0.40	0.99	1.05	1.07	1.41	1.84	2.63	3.18	3.20	4.17	4.29	4.97	6.96	9.84
Tm	$K\beta_3$		1	11	69	6	57.293	0.21636	5	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.33	2.82	2.84	3.70	3.80	4.40	6.16	8.71
Tm	$K\beta_1$		1	23	69	6	57.506	0.21556	5	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.32	2.80	2.83	3.68	3.78	4.38	6.14	8.68
Tm	$K\beta_5$	B	1	.2	69	6	57.914	0.21404	5	0.24	0.35	0.86	0.92	0.94	1.24	1.61	2.31	2.78	2.81	3.66	3.76	4.35	6.09	8.62
Tm	$K\beta_2$	H	1	9	69	6	59.085	0.20980	4	0.24	0.34	0.85	0.90	0.92	1.21	1.58	2.26	2.73	2.75	3.58	3.68	4.26	5.97	8.45
Tm	$K-O_{2,3}$		1	.01	69	6	59.337	0.20891	5	0.24	0.34	0.84	0.90	0.92	1.21	1.58	2.25	2.72	2.74	3.57	3.67	4.24	5.95	8.41
Tm	AK	H	1		69	6	59.368	0.20880	5	0.24	0.34	0.84	0.90	0.92	1.21	1.58	2.25	2.72	2.74	3.57	3.66	4.24	5.94	8.41
Yb	$N_5-N_{6,7}$		1		70	6	0.179	69.29999	1	86.97	163.78													
Yb	N_4-N_6		1		70	6	0.190	65.09999	1	80.55	136.87													
Yb	Mz		1	.01	70	6	1.183	10.48000	2	11.95	17.22	43.32	46.35	47.31	63.77	87.25	160.10							
Yb	M_3-N_1		1	.5	70	6	1.464	8.47000	3	9.65	13.90	34.71	37.09	37.84	50.54	67.78	105.51	148.15	151.34					

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Yb	Mα		1	100	70	6	1.521	8.14900	3		9.28	13.37	33.36	35.63	36.36	48.50	64.89	99.97	135.39	137.55					
Yb	Mβ		1	45	70	6	1.567	7.90900	3		9.01	12.97	32.35	34.55	35.25	46.99	62.75	96.03	127.78	129.57					
Yb	Mγ		1	1	70	6	1.765	7.02400	3		8.00	11.52	28.65	30.58	31.20	41.47	55.09	82.62	105.78	106.93					
Yb	Ll		1	2	70	6	6.544	1.89415	5		2.16	3.10	7.65	8.16	8.32	10.96	14.33	20.51	24.84	25.03	32.80	33.71	39.24	56.12	83.38
Yb	Lt	B	1	.01	70	6	6.770	1.83091	5		2.08	3.00	7.39	7.88	8.04	10.59	13.85	19.82	24.00	24.18	31.68	32.56	37.88	54.09	80.01
Yb	$L\alpha_2$		1	10	70	6	7.366	1.68285	5		1.92	2.76	6.80	7.25	7.39	9.73	12.72	18.20	22.03	22.20	29.06	29.86	34.71	49.41	72.44
Yb	$L\alpha_1$		1	100	70	6	7.414	1.67189	5		1.90	2.74	6.75	7.20	7.34	9.67	12.64	18.08	21.88	22.05	28.86	29.66	34.48	49.07	71.89
Yb	Ln		1	1	70	6	7.579	1.63560	5		1.86	2.68	6.61	7.04	7.18	9.46	12.36	17.69	21.40	21.57	28.23	29.00	33.71	47.93	70.10
Yb	L_2-M_2	B	1	.01	70	6	7.804	1.58844	5		1.81	2.60	6.41	6.84	6.97	9.18	12.00	17.17	20.78	20.94	27.40	28.15	32.71	46.47	67.80
Yb	$L\beta_4$		1	5	70	6	8.312	1.49138	5		1.70	2.44	6.02	6.42	6.55	8.62	11.27	16.12	19.50	19.65	25.69	26.40	30.66	43.48	63.16
Yb	$L\beta_1$		1	50	70	6	8.400	1.47565	5		1.68	2.42	5.96	6.35	6.48	8.53	11.15	15.94	19.29	19.44	25.42	26.11	30.33	43.00	62.41
Yb	$L\beta_6$		1	.1	70	6	8.455	1.46610	4		1.67	2.40	5.92	6.31	6.44	8.48	11.08	15.84	19.16	19.31	25.25	25.94	30.13	42.70	61.97
Yb	$L\beta_3$		1	6	70	6	8.535	1.45233	5		1.65	2.38	5.86	6.25	6.37	8.40	10.97	15.69	18.98	19.13	25.01	25.69	29.84	42.28	61.32
Yb	$L\beta_{2,15}$		1	20	70	6	8.757	1.41550	5		1.61	2.32	5.72	6.09	6.21	8.18	10.69	15.29	18.50	18.64	24.36	25.03	29.07	41.16	59.61
Yb	$L\beta_7$		1	.1	70	6	8.887	1.39480	4		1.59	2.28	5.63	6.00	6.12	8.06	10.54	15.07	18.22	18.36	24.00	24.66	28.63	40.53	58.65
Yb	$L\beta_{10}$	B	1	.01	70	6	8.908	1.39150	4		1.58	2.28	5.62	5.99	6.11	8.04	10.51	15.03	18.18	18.32	23.94	24.60	28.56	40.43	58.50
Yb	L_3-$O_{2,3}$	8	1	.01	70	6	8.919	1.38980	4		1.58	2.28	5.61	5.98	6.10	8.03	10.50	15.01	18.16	18.30	23.91	24.57	28.53	40.38	58.42
Yb	$L8_5$		1	.1	70	6	8.938	1.38696	5		1.58	2.27	5.60	5.97	6.09	8.02	10.48	14.98	18.12	18.26	23.87	24.52	28.47	40.30	58.29
Yb	AL_3		1		70	6	8.942	1.38620	4		1.58	2.27	5.60	5.97	6.08	8.01	10.47	14.97	18.11	18.25	23.85	24.50	28.45	40.27	58.25
Yb	$L\beta_9$	8	1	.01	70	6	8.958	1.38380	4		1.57	2.27	5.59	5.96	6.07	8.00	10.45	14.95	18.08	18.22	23.81	24.46	28.40	40.20	58.14
Yb	$L\gamma_5$		1	.1	70	6	9.489	1.30630	4		1.49	2.14	5.27	5.62	5.73	7.55	9.87	14.10	17.06	17.19	22.46	23.07	26.78	37.86	54.60
Yb	$L\gamma_1$		1	5	70	6	9.778	1.26769	5		1.44	2.08	5.12	5.46	5.56	7.33	9.57	13.69	16.55	16.68	21.79	22.38	25.97	36.70	52.86
Yb	$L\gamma_8$		1	.1	70	6	9.923	1.24923	5		1.42	2.05	5.04	5.38	5.48	7.22	9.43	13.49	16.31	16.43	21.47	22.05	25.59	36.15	52.03
Yb	L_2-$O_{2,3}$	8	1	.01	70	6	9.954	1.24530	4		1.42	2.04	5.03	5.36	5.47	7.20	9.40	13.44	16.26	16.38	21.40	21.98	25.51	36.03	51.86
Yb	AL_2		1		70	6	9.974	1.24280	4		1.41	2.03	5.02	5.35	5.45	7.18	9.39	13.42	16.22	16.35	21.35	21.94	25.46	35.96	51.75
Yb	$L\gamma_6$		1	.01	70	6	9.975	1.24271	5		1.41	2.03	5.02	5.35	5.45	7.18	9.39	13.41	16.22	16.35	21.35	21.93	25.45	35.95	51.74
Yb	$L\gamma_2$		1	1	70	6	10.088	1.22879	5		1.40	2.01	4.96	5.29	5.39	7.10	9.28	13.26	16.04	16.16	21.11	21.69	25.16	35.54	51.12
Yb	$L\gamma_3$		1	1	70	6	10.141	1.22232	5		1.39	2.00	4.93	5.26	5.36	7.06	9.23	13.19	15.95	16.08	21.00	21.57	25.03	35.34	50.83
Yb	L_1-O_1	B	1	.01	70	6	10.429	1.18860	4		1.35	1.95	4.80	5.12	5.22	6.87	8.98	12.83	15.51	15.63	20.41	20.97	24.33	34.34	49.33
Yb	$L\gamma_4$		1	.1	70	6	10.458	1.18530	4		1.35	1.94	4.79	5.10	5.20	6.85	8.95	12.79	15.47	15.59	20.36	20.91	24.26	34.24	49.19
Yb	L_1-$O_{4,5}$	8	1	.01	70	6	10.481	1.18270	4		1.35	1.94	4.77	5.09	5.19	6.84	8.93	12.76	15.43	15.55	20.31	20.86	24.21	34.16	49.07
Yb	AL_1		1		70	6	10.489	1.18180	4		1.34	1.93	4.77	5.09	5.19	6.83	8.92	12.75	15.42	15.54	20.29	20.85	24.19	34.14	49.03
Yb	$K\alpha_2$		1	50	70	6	51.345	0.24142	6		0.27	0.40	0.97	1.04	1.06	1.39	1.82	2.60	3.14	3.17	4.13	4.24	4.91	6.87	9.73
Yb	$K\alpha_{1,2}$		1	150	70	6	52.030	0.23824	6		0.27	0.39	0.96	1.03	1.05	1.38	1.80	2.57	3.10	3.12	4.07	4.18	4.84	6.78	9.60
Yb	$K\alpha_1$		1	100	70	6	52.380	0.23665	6		0.27	0.39	0.96	1.02	1.04	1.37	1.79	2.55	3.08	3.10	4.04	4.15	4.81	6.74	9.53
Yb	$K\beta_3$	H	1	12	70	6	59.141	0.20960	4		0.24	0.34	0.85	0.90	0.92	1.21	1.58	2.26	2.73	2.75	3.58	3.68	4.26	5.97	8.44
Yb	$K8_1$		1	64	70	6	59.356	0.20884	5		0.24	0.34	0.84	0.90	0.92	1.21	1.58	2.25	2.72	2.74	3.57	3.66	4.24	5.95	8.41
Yb	$K8_5$	8	1	.3	70	6	59.771	0.20739	5		0.24	0.34	0.84	0.89	0.91	1.20	1.56	2.23	2.70	2.72	3.54	3.64	4.21	5.90	8.35
Yb	$K\beta_2$	H	1	9	70	6	60.974	0.20330	4		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.19	2.65	2.67	3.47	3.57	4.13	5.79	8.19
Yb	K-$O_{2,3}$	B	1	.01	70	6	61.287	0.20226	5		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.18	2.63	2.65	3.46	3.55	4.11	5.76	8.14
Yb	AK		1		70	6	61.294	0.20224	5		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.18	2.63	2.65	3.46	3.55	4.11	5.76	8.14
Lu	N_5-$N_{6,7}$		1		71	6	0.189	65.70000	1		81.45	139.63													
Lu	N_4-N_6		1		71	6	0.197	63.00000	1		77.46	128.32													
Lu	Mα		1	100	71	6	1.581	7.84000	3		8.93	12.86	32.06	34.24	34.93	46.55	62.15	94.93	125.77	127.49					
Lu	Mβ		1	45	71	6	1.631	7.60100	3		8.66	12.47	31.06	33.17	33.83	45.05	60.05	91.18	119.30	120.80					
Lu	Mγ		1	1	71	6	1.832	6.76800	3		7.71	11.10	27.58	29.44	30.03	39.89	52.92	79.00	100.42	101.46					
Lu	Ll		1	2	71	6	6.752	1.83600	4		2.09	3.01	7.42	7.91	8.06	10.62	13.88	19.87	24.06	24.25	31.77	32.65	37.99	54.25	80.28
Lu	Lt	B	1	.01	71	6	6.980	1.77600	4		2.02	2.91	7.17	7.65	7.80	10.27	13.43	19.22	23.27	23.44	30.71	31.55	36.70	52.34	77.16
Lu	$L\alpha_2$		1	10	71	6	7.604	1.63029	5		1.86	2.67	6.58	7.02	7.16	9.43	12.32	17.63	21.33	21.50	28.13	28.91	33.60	47.77	69.84
Lu	$L\alpha_1$		1	100	71	6	7.654	1.61951	5		1.84	2.65	6.54	6.97	7.11	9.36	12.24	17.51	21.19	21.35	27.94	28.71	33.37	47.43	69.31
Lu	Ln		1	1	71	6	7.856	1.57790	4		1.80	2.58	6.37	6.79	6.93	9.12	11.93	17.06	20.64	20.80	27.21	27.96	32.49	46.14	67.29
Lu	L_2-M_2	8	1	.01	71	6	8.084	1.53333	5		1.74	2.51	6.19	6.60	6.73	8.87	11.59	16.57	20.05	20.20	26.43	27.15	31.55	44.77	65.15
Lu	$L\beta_4$		1	5	71	6	8.605	1.44056	5		1.64	2.36	5.82	6.20	6.32	8.33	10.88	15.56	18.83	18.97	24.80	25.48	29.59	41.93	60.77
Lu	$L\beta_1$		1	50	71	6	8.708	1.42359	5		1.62	2.33	5.75	6.13	6.25	8.23	10.76	15.38	18.60	18.74	24.51	25.18	29.24	41.41	59.98
Lu	$L\beta_6$		1	.1	71	6	8.736	1.41890	4		1.61	2.32	5.73	6.11	6.23	8.20	10.72	15.33	18.54	18.68	24.42	25.09	29.14	41.27	59.76
Lu	$L\beta_3$		1	6	71	6	8.845	1.40140	5		1.59	2.29	5.66	6.03	6.15	8.10	10.59	15.14	18.31	18.45	24.12	24.78	28.77	40.73	58.95
Lu	$L\beta_{15}$		1	20	71	6	9.038	1.37150	4		1.56	2.25	5.54	5.90	6.02	7.93	10.36	14.81	17.92	18.05	23.60	24.24	28.14	39.83	57.58
Lu	$L\beta_2$		1	1	71	6	9.047	1.37012	5		1.56	2.24	5.53	5.90	6.01	7.92	10.35	14.80	17.90	18.03	23.57	24.22	28.11	39.79	57.51
Lu	$L\beta_7$		1	.1	71	6	9.186	1.34949	5		1.54	2.21	5.45	5.81	5.92	7.80	10.19	14.57	17.63	17.76	23.21	23.85	27.68	39.16	56.57
Lu	L_3-$O_{2,3}$	B	1	.01	71	6	9.215	1.34524	5		1.53	2.20	5.43	5.79	5.90	7.78	10.16	14.53	17.57	17.70	23.14	23.77	27.59	39.03	56.37
Lu	$L8_{10}$	8	1	.01	71	6	9.230	1.34300	4		1.53	2.20	5.42	5.78	5.89	7.76	10.14	14.50	17.54	17.67	23.10	23.73	27.55	38.97	56.27
Lu	$L8_5$		1	.1	71	6	9.238	1.34183	5		1.53	2.20	5.42	5.78	5.89	7.76	10.14	14.49	17.53	17.66	23.08	23.71	27.52	38.93	56.22
Lu	AL_3	H	1		71	6	9.247	1.34050	4		1.53	2.19	5.41	5.77	5.88	7.75	10.13	14.48	17.51	17.64	23.05	23.68	27.49	38.89	56.16
Lu	$L\beta_9$	8	1	.01	71	6	9.280	1.33580	4		1.52	2.19	5.39	5.75	5.86	7.72	10.09	14.42	17.45	17.58	22.97	23.60	27.40	38.75	55.94
Lu	$L\gamma_5$		1	.1	71	6	9.841	1.25960	4		1.43	2.06	5.09	5.42	5.53	7.28	9.51	13.60	16.44	16.57	21.65	22.24	25.81	36.46	52.50

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Lu	$L\gamma_1$		1	5	71	6	10.142	1.22228	5		1.39	2.00	4.93	5.26	5.36	7.06	9.23	13.19	15.95	16.07	21.00	21.57	25.03	35.34	50.83
Lu	$L\gamma_8$		1	.1	71	6	10.290	1.20470	4		1.37	1.97	4.86	5.19	5.29	6.96	9.10	13.00	15.72	15.84	20.69	21.26	24.66	34.82	50.05
Lu	L_2-$O_{2,3}$	B	1	.01	71	6	10.318	1.20140	4		1.37	1.97	4.85	5.17	5.27	6.94	9.07	12.97	15.68	15.80	20.63	21.20	24.59	34.72	49.90
Lu	$L\gamma_6$		1	.01	71	6	10.341	1.19870	4		1.36	1.96	4.84	5.16	5.26	6.93	9.05	12.94	15.64	15.76	20.59	21.15	24.54	34.64	49.78
Lu	AL_2		1		71	6	10.343	1.19850	4		1.36	1.96	4.84	5.16	5.26	6.93	9.05	12.94	15.64	15.76	20.58	21.15	24.53	34.63	49.77
Lu	$L\gamma_2$		1	1	71	6	10.458	1.18530	4		1.35	1.94	4.79	5.10	5.20	6.85	8.95	12.79	15.47	15.59	20.36	20.91	24.26	34.24	49.19
Lu	$L\gamma_3$		1	1	71	6	10.509	1.17953	5		1.34	1.93	4.76	5.08	5.18	6.82	8.91	12.73	15.39	15.51	20.26	20.81	24.14	34.07	48.93
Lu	L_1-N_4	B	1	.01	71	6	10.665	1.16227	5		1.32	1.90	4.69	5.00	5.10	6.72	8.78	12.54	15.17	15.28	19.96	20.50	23.78	33.55	48.17
Lu	$L\gamma_{11}$	B	1	.01	71	6	10.676	1.16107	5		1.32	1.90	4.69	5.00	5.10	6.71	8.77	12.53	15.15	15.26	19.93	20.48	23.76	33.52	48.12
Lu	$L\gamma_4$		1	.1	71	6	10.840	1.14350	4		1.30	1.87	4.62	4.92	5.02	6.61	8.63	12.34	14.92	15.03	19.63	20.16	23.39	33.00	47.35
Lu	AL_1		1		71	6	10.872	1.14020	4		1.30	1.87	4.60	4.91	5.00	6.59	8.61	12.30	14.88	14.99	19.57	20.11	23.32	32.90	47.20
Lu	$K\alpha_2$		1	50	71	6	52.956	0.23408	6		0.27	0.38	0.94	1.01	1.03	1.35	1.77	2.52	3.05	3.07	4.00	4.11	4.76	6.67	9.43
Lu	$K\alpha_{1,2}$		1	150	71	6	53.687	0.23089	6		0.26	0.38	0.93	0.99	1.01	1.33	1.74	2.49	3.00	3.03	3.95	4.05	4.69	6.57	9.30
Lu	$K\alpha_1$		1	100	71	6	54.061	0.22930	6		0.26	0.38	0.93	0.99	1.01	1.32	1.73	2.47	2.98	3.01	3.92	4.02	4.66	6.53	9.24
Lu	$K\beta_3$	H	1	12	71	6	61.037	0.20309	5		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.19	2.64	2.66	3.47	3.56	4.13	5.78	8.18
Lu	$K\beta_1$	H	1	65	71	6	61.272	0.20231	5		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.18	2.63	2.65	3.46	3.55	4.11	5.76	8.15
Lu	$K8_5$	B	1	.3	71	6	61.721	0.20084	5		0.23	0.33	0.81	0.86	0.88	1.16	1.52	2.16	2.61	2.63	3.43	3.52	4.08	5.72	8.09
Lu	$K8_2$	H	1	9	71	6	62.956	0.19690	4		0.22	0.32	0.79	0.85	0.86	1.14	1.49	2.12	2.56	2.58	3.36	3.45	4.00	5.61	7.93
Lu	K-$O_{2,3}$		1	.01	71	6	63.280	0.19589	5		0.22	0.32	0.79	0.84	0.86	1.13	1.48	2.11	2.55	2.57	3.35	3.44	3.98	5.58	7.89
Lu	AK		1		71	6	63.293	0.19585	5		0.22	0.32	0.79	0.84	0.86	1.13	1.48	2.11	2.55	2.57	3.35	3.44	3.98	5.58	7.89
Hf	Mz_1		1	.01	72	6	1.280	9.68600	3		11.04	15.91	39.89	42.65	43.53	58.45	79.23	131.10							
Hf	Mz_2		1	.01	72	6	1.280	9.68600	3		11.04	15.91	39.89	42.65	43.53	58.45	79.23	131.10							
Hf	M_3-N_1		1	.5	72	6	1.572	7.88700	3		8.98	12.94	32.26	34.45	35.15	46.85	62.56	95.68	127.13	128.90					
Hf	$M\alpha$		1	100	72	6	1.644	7.53900	3		8.59	12.37	30.80	32.89	33.55	44.67	59.51	90.23	117.72	119.17					
Hf	$M8$		1	45	72	6	1.697	7.30300	3		8.32	11.98	29.81	31.83	32.47	43.20	57.47	86.69	112.02	113.31					
8f	$M\gamma$		1	1	72	6	1.894	6.54400	3		7.45	10.73	26.65	28.45	29.02	38.52	51.04	75.91	95.97	96.93	154.61				
Hf	$L1$		1	3	72	6	6.958	1.78145	5		2.03	2.92	7.19	7.67	7.82	10.30	13.47	19.28	23.34	23.52	30.80	31.65	36.82	52.52	77.44
8f	Lt	B	1	.01	72	6	7.194	1.72305	5		1.96	2.82	6.96	7.42	7.56	9.96	13.03	18.64	22.56	22.73	29.77	30.59	35.57	50.67	74.46
Hf	Ls	B	1	.01	72	6	7.452	1.66346	5		1.89	2.72	6.72	7.16	7.30	9.62	12.57	17.99	21.77	21.94	28.72	29.51	34.30	48.80	71.48
8f	$L\alpha_2$		1	10	72	6	7.843	1.58046	5		1.80	2.59	6.38	6.80	6.94	9.14	11.94	17.08	20.67	20.83	27.25	28.00	32.54	46.22	67.41
Hf	$L\alpha_1$		1	100	72	6	7.898	1.56958	5		1.79	2.57	6.34	6.76	6.89	9.08	11.86	16.97	20.53	20.69	27.06	27.81	32.31	45.88	66.89
Hf	Ln		1	1	72	6	8.138	1.52325	5		1.73	2.49	6.15	6.56	6.69	8.81	11.51	16.46	19.92	20.07	26.25	26.97	31.33	44.46	64.67
Hf	L_2-M_2	B	1	.01	72	6	8.372	1.48064	5		1.68	2.42	5.98	6.37	6.50	8.56	11.19	16.00	19.35	19.50	25.50	26.20	30.43	43.15	62.65
8f	$L8_{1,7}$	B	1	.01	72	6	8.630	1.43643	5		1.63	2.35	5.80	6.18	6.30	8.30	10.85	15.52	18.77	18.91	24.73	25.41	29.50	41.80	60.58
8f	L_1-M_1	B	1	.01	72	6	8.667	1.43025	5		1.63	2.34	5.78	6.16	6.28	8.27	10.81	15.45	18.69	18.83	24.62	25.30	29.37	41.61	60.29
8f	$L8_4$		1	4	72	6	8.904	1.39220	5		1.58	2.28	5.62	5.99	6.11	8.05	10.52	15.04	18.19	18.33	23.96	24.61	28.58	40.46	58.53
8f	$L8_6$		1	.1	72	6	9.021	1.37410	5		1.56	2.25	5.55	5.92	6.03	7.94	10.38	14.84	17.95	18.09	23.64	24.29	28.20	39.91	57.69
Hf	$L\beta_1$		1	50	72	6	9.021	1.37410	5		1.56	2.25	5.55	5.92	6.03	7.94	10.38	14.84	17.95	18.09	23.64	24.29	28.20	39.91	57.69
8f	L_3-N_2	B	1	.01	72	6	9.122	1.35887	5		1.55	2.22	5.49	5.85	5.96	7.85	10.26	14.67	17.75	17.88	23.38	24.01	27.88	39.45	57.00
Hf	$L8_3$		1	6	72	6	9.162	1.35300	5		1.54	2.22	5.46	5.82	5.94	7.82	10.22	14.61	17.67	17.81	23.27	23.91	27.76	39.27	56.73
Hf	L_3-N_3	B	1	.01	72	6	9.179	1.35053	5		1.54	2.21	5.45	5.81	5.93	7.81	10.20	14.58	17.64	17.77	23.23	23.86	27.70	39.19	56.61
Hf	$L8_{15}$		1	1	72	6	9.336	1.32783	5		1.51	2.17	5.36	5.72	5.83	7.67	10.03	14.34	17.34	17.47	22.83	23.46	27.23	38.51	55.58
Hf	$L8_2$		1	20	72	6	9.346	1.32639	5		1.51	2.17	5.36	5.71	5.82	7.67	10.02	14.32	17.32	17.45	22.81	23.43	27.20	38.47	55.51
Hf	$L8_7$		1	.1	72	6	9.494	1.30564	5		1.49	2.14	5.27	5.62	5.73	7.55	9.86	14.10	17.05	17.18	22.45	23.06	26.77	37.84	54.57
Hf	Lu	F	1	.01	72	6	9.542	1.29909	5		1.48	2.13	5.25	5.59	5.70	7.51	9.81	14.03	16.96	17.09	22.33	22.94	26.63	37.64	54.28
Hf	$L8_{10}$	F	1	.01	72	6	9.553	1.29764	5		1.48	2.12	5.24	5.59	5.70	7.50	9.80	14.01	16.94	17.07	22.31	22.92	26.60	37.60	54.21
Hf	$L8_5$		1	.1	72	6	9.553	1.29761	5		1.48	2.12	5.24	5.59	5.69	7.50	9.80	14.01	16.94	17.07	22.31	22.92	26.60	37.60	54.21
Hf	AL_3		1		72	6	9.556	1.29720	4		1.48	2.12	5.24	5.58	5.69	7.50	9.80	14.01	16.94	17.07	22.30	22.91	26.59	37.59	54.19
8f	$L8_9$	B	1	.01	72	6	9.607	1.29025	5		1.47	2.11	5.21	5.55	5.66	7.46	9.75	13.93	16.85	16.97	22.18	22.78	26.44	37.38	53.88
Hf	$L\gamma_5$		1	.1	72	6	10.199	1.21537	5		1.38	1.99	4.91	5.23	5.33	7.02	9.18	13.12	15.86	15.98	20.88	21.45	24.88	35.14	50.52
Hf	$L\gamma_1$		1	10	72	6	10.514	1.17900	5		1.34	1.93	4.76	5.07	5.17	6.81	8.90	12.72	15.38	15.50	20.25	20.80	24.13	34.05	48.91
Hf	L_2-N_5	B	1	.01	72	6	10.524	1.17788	5		1.34	1.93	4.76	5.07	5.17	6.81	8.89	12.71	15.37	15.49	20.23	20.78	24.10	34.02	48.86
Hf	$L\gamma_8$		1	.8	72	6	10.674	1.16138	5		1.32	1.90	4.69	5.00	5.10	6.71	8.77	12.53	15.15	15.27	19.94	20.48	23.76	33.53	48.13
8f	Lv	B	1	.01	72	6	10.702	1.15830	5		1.32	1.90	4.68	4.99	5.08	6.69	8.75	12.50	15.11	15.23	19.89	20.43	23.70	33.44	48.00
Hf	$L\gamma_6$		1	.01	72	6	10.731	1.15519	5		1.31	1.89	4.66	4.97	5.07	6.68	8.72	12.47	15.07	15.19	19.83	20.37	23.63	33.34	47.86
Hf	AL_2		1		72	6	10.734	1.15480	4		1.31	1.89	4.66	4.97	5.07	6.67	8.72	12.46	15.07	15.18	19.83	20.37	23.63	33.33	47.84
Hf	$L\gamma_2$		1	1	72	6	10.832	1.14442	5		1.30	1.87	4.62	4.93	5.02	6.61	8.64	12.35	14.93	15.04	19.65	20.18	23.41	33.02	47.39
Hf	$L\gamma_3$		1	2	72	6	10.889	1.13841	5		1.30	1.86	4.60	4.90	5.00	6.58	8.60	12.28	14.85	14.96	19.54	20.07	23.29	32.85	47.12
Hf	L_1-N_4	8	1	.01	72	6	11.043	1.12250	5		1.28	1.84	4.53	4.83	4.93	6.49	8.48	12.11	14.64	14.75	19.27	19.79	22.96	32.37	46.42
Hf	$L\gamma_{11}$	B	1	.01	72	6	11.053	1.12146	5		1.28	1.84	4.53	4.83	4.92	6.48	8.47	12.10	14.63	14.74	19.25	19.77	22.93	32.34	46.38
Hf	L_1-O_1	B	1	.01	72	6	11.201	1.10664	5		1.26	1.81	4.47	4.76	4.86	6.40	8.36	11.94	14.44	14.55	18.99	19.51	22.63	31.90	45.73
Hf	$L\gamma_4p$		1	.1	72	6	11.231	1.10376	5		1.26	1.81	4.46	4.75	4.84	6.38	8.33	11.91	14.40	14.51	18.94	19.46	22.57	31.82	45.61
Hf	$L\gamma_4$		1	.1	72	6	11.238	1.10303	5		1.26	1.81	4.45	4.75	4.84	6.37	8.33	11.90	14.39	14.50	18.93	19.44	22.55	31.80	45.57
Hf	L_1-O_4	B	1	.01	72	6	11.260	1.10086	5		1.25	1.80	4.44	4.74	4.83	6.36	8.31	11.88	14.36	14.47	18.89	19.41	22.51	31.73	45.48
Hf	AL_1		1		72	6	11.272	1.09970	4		1.25	1.80	4.44	4.73	4.83	6.35	8.30	11.86	14.34	14.45	18.87	19.38	22.48	31.70	45.43

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Hf	$K\alpha_2$		1	50	72	6	54.602	0.22702	6		0.26	0.37	0.92	0.98	1.00	1.31	1.71	2.45	2.95	2.98	3.88	3.98	4.61	6.46	9.14
Hf	$K\alpha_{1,2}$		1	150	72	6	55.382	0.22383	6		0.25	0.37	0.90	0.96	0.98	1.29	1.69	2.41	2.91	2.93	3.82	3.93	4.55	6.37	9.02
Hf	$K\alpha_1$		1	100	72	6	55.781	0.22223	6		0.25	0.36	0.90	0.96	0.97	1.28	1.68	2.39	2.89	2.91	3.80	3.90	4.52	6.33	8.95
Hf	$K\beta_3$	H	1	12	72	6	62.969	0.19686	5		0.22	0.32	0.79	0.85	0.86	1.14	1.49	2.12	2.56	2.58	3.36	3.45	4.00	5.60	7.93
8f	$K\beta_1$	H	1	66	72	6	63.222	0.19607	5		0.22	0.32	0.79	0.84	0.86	1.13	1.48	2.11	2.55	2.57	3.35	3.44	3.98	5.58	7.90
8f	$K\beta_2$	H	1	9	72	6	64.969	0.19080	4		0.22	0.31	0.77	0.82	0.84	1.10	1.44	2.06	2.48	2.50	3.26	3.35	3.88	5.43	7.68
Hf	AK		1		72	6	65.304	0.18982	5		0.22	0.31	0.77	0.82	0.83	1.10	1.43	2.04	2.47	2.49	3.24	3.33	3.86	5.40	7.64
Ta	N_5-$N_{6,7}$		1		73	6	0.203	61.09999	1		74.71	121.58													
Ta	N_4-N_6		1		73	6	0.213	58.20000	1		70.61	112.49													
Ta	Mz_2		1	.01	73	6	1.329	9.33000	3		10.63	15.32	38.37	41.02	41.85	56.10	75.79	122.54							
Ta	Mz_1		1	.1	73	6	1.331	9.31600	3		10.62	15.30	38.31	40.95	41.79	56.01	75.66	122.22							
Ta	M_4-N_3		1	.01	73	6	1.393	8.90000	2		10.14	14.61	36.54	39.05	39.84	53.31	71.73	113.54							
Ta	M_3-N_1		1	.5	73	6	1.628	7.61200	3		8.67	12.49	31.10	33.22	33.89	45.12	60.15	91.35	119.59	121.09					
Ta	M_5-O_3		1	.01	73	6	1.698	7.30000	2		8.31	11.97	29.80	31.82	32.46	43.18	57.45	86.64	111.95	113.24					
Ta	$M\alpha$		1	100	73	6	1.709	7.25200	3		8.26	11.89	29.60	31.60	32.24	42.88	57.03	85.93	110.84	112.11					
Ta	AM_5	8	1		73	6	1.743	7.11000	2		8.10	11.66	29.01	30.97	31.59	42.00	55.82	83.86	107.65	108.84					
Ta	M_4-$O_{2,3}$		1	.01	73	6	1.748	7.09000	2		8.07	11.63	28.92	30.88	31.50	41.88	55.65	83.57	107.21	108.39					
Ta	$M\beta$		1	45	73	6	1.765	7.02300	3		8.00	11.52	28.64	30.58	31.19	41.46	55.08	82.61	105.75	106.91					
Ta	AM_4	H	1		73	6	1.804	6.87000	2		7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60					
Ta	M_3-N_4		1	.01	73	6	1.951	6.35300	3		7.23	10.41	25.86	27.60	28.15	37.35	49.45	73.32	92.32	93.22	142.55	153.11			
Ta	$M\gamma$		1	1	73	6	1.964	6.31200	3		7.19	10.35	25.69	27.42	27.97	37.10	49.11	72.77	91.55	92.45	140.43	150.17			
Ta	M_3-O_1		1	.01	73	6	2.126	5.83000	2		6.64	9.55	23.70	25.29	25.79	34.18	45.14	66.45	82.89	83.66	120.71	126.39			
Ta	M_3-$O_{4,5}$		1	.01	73	6	2.186	5.67000	2		6.46	9.29	23.04	24.58	25.07	33.21	43.84	64.40	80.14	80.87	115.40	120.46			
Ta	AM_3	8	1		73	6	2.194	5.65000	3		6.43	9.26	22.96	24.50	24.98	33.09	43.67	64.15	79.80	80.53	114.76	119.76			
Ta	M_2-N_4		1	.2	73	6	2.225	5.57000	3		6.34	9.13	22.63	24.14	24.62	32.61	43.02	63.13	78.45	79.16	112.27	117.02	161.80		
Ta	M_1-N_3		1	.5	73	6	2.296	5.40000	2		6.15	8.85	21.93	23.40	23.86	31.59	41.65	61.00	75.63	76.30	107.22	111.52	146.38		
Ta	AM_2	H	1		73	6	2.469	5.02000	3		5.71	8.22	20.37	21.73	22.16	29.31	38.60	56.30	69.49	70.09	96.90	100.44	125.72		
Ta	AM_1	H	1		73	6	2.704	4.58500	3		5.22	7.51	18.59	19.83	20.22	26.72	35.14	51.05	62.74	63.27	86.24	89.16	108.74		
Ta	Ll		1	3	73	6	7.172	1.72841	5		1.97	2.83	6.98	7.44	7.59	10.00	13.07	18.70	22.63	22.81	29.86	30.69	35.69	50.84	74.73
Ta	Lt	B	1	.01	73	6	7.411	1.67265	5		1.90	2.74	6.75	7.20	7.34	9.67	12.64	18.09	21.89	22.06	28.88	29.67	34.50	49.09	71.93
Ta	Ls	8	1	.01	73	6	7.687	1.61264	5		1.84	2.64	6.51	6.94	7.08	9.32	12.19	17.44	21.10	21.26	27.82	28.59	33.22	47.22	68.98
Ta	$L\alpha_2$		1	10	73	6	8.086	1.53293	5		1.74	2.51	6.19	6.60	6.73	8.86	11.58	16.57	20.05	20.20	26.42	27.15	31.54	44.75	65.13
Ta	$L\alpha_1$		1	100	73	6	8.145	1.52197	5		1.73	2.49	6.15	6.55	6.68	8.80	11.50	16.45	19.90	20.05	26.23	26.95	31.31	44.42	64.61
Ta	Ln		1	1	73	6	8.427	1.47106	5		1.67	2.41	5.94	6.33	6.46	8.50	11.11	15.89	19.23	19.38	25.34	26.03	30.23	42.86	62.20
Ta	L_2-M_2	B	1	.01	73	6	8.666	1.43048	5		1.63	2.34	5.78	6.16	6.28	8.27	10.81	15.45	18.69	18.84	24.63	25.30	29.38	41.62	60.30
Ta	$L\beta_{17}$	8	1	.01	73	6	8.941	1.38640	4		1.58	2.27	5.60	5.97	6.08	8.01	10.47	14.97	18.11	18.25	23.86	24.51	28.45	40.28	58.26
Ta	$L\beta_4$		1	4	73	6	9.211	1.34581	5		1.53	2.20	5.43	5.79	5.91	7.78	10.17	14.53	17.58	17.71	23.15	23.78	27.61	39.05	56.40
Ta	$L\beta_6$		1	.1	73	6	9.314	1.33094	5		1.51	2.18	5.37	5.73	5.84	7.69	10.05	14.37	17.38	17.51	22.89	23.51	27.29	38.60	55.72
Ta	$L\beta_1$		1	50	73	6	9.342	1.32698	5		1.51	2.17	5.36	5.71	5.82	7.67	10.02	14.33	17.33	17.46	22.82	23.44	27.21	38.48	55.54
Ta	L_2-M_5	B	1	.01	73	6	9.398	1.31897	5		1.50	2.16	5.33	5.68	5.79	7.62	9.96	14.24	17.22	17.36	22.68	23.30	27.04	38.24	55.18
Ta	L_3-N_2	8	1	.01	73	6	9.414	1.31670	4		1.50	2.16	5.32	5.67	5.78	7.61	9.95	14.22	17.19	17.33	22.64	23.26	27.00	38.17	55.07
Ta	L_3-N_3	B	1	.01	73	6	9.473	1.30860	4		1.49	2.14	5.28	5.63	5.74	7.56	9.88	14.13	17.09	17.22	22.50	23.11	26.83	37.93	54.71
Ta	$L\beta_3$		1	6	73	6	9.486	1.30678	5		1.49	2.14	5.28	5.63	5.74	7.55	9.87	14.11	17.06	17.19	22.47	23.08	26.79	37.88	54.62
Ta	$L\beta_{15}$		1	1	73	6	9.638	1.28619	5		1.46	2.11	5.19	5.54	5.64	7.43	9.71	13.89	16.79	16.92	22.11	22.71	26.36	37.26	53.69
Ta	$L\beta_2$		1	20	73	6	9.650	1.28454	5		1.46	2.10	5.19	5.53	5.64	7.42	9.70	13.87	16.77	16.90	22.08	22.68	26.33	37.21	53.62
Ta	$L\beta_7$		1	.1	73	6	9.808	1.26385	5		1.44	2.07	5.10	5.44	5.55	7.30	9.55	13.64	16.50	16.63	21.72	22.31	25.89	36.59	52.69
Ta	L_3-$O_{2,3}$	B	1	.01	73	6	9.837	1.26010	4		1.43	2.06	5.09	5.42	5.53	7.28	9.52	13.60	16.45	16.58	21.65	22.25	25.82	36.47	52.52
Ta	Lu	8	1	.01	73	6	9.855	1.25778	5		1.43	2.06	5.08	5.41	5.52	7.27	9.50	13.58	16.42	16.54	21.61	22.20	25.77	36.40	52.42
Ta	$L\beta_5$		1	.1	73	6	9.873	1.25550	4		1.43	2.06	5.07	5.40	5.51	7.26	9.48	13.55	16.39	16.51	21.57	22.16	25.72	36.34	52.31
Ta	AL_3		1		73	6	9.875	1.25530	4		1.43	2.06	5.07	5.40	5.51	7.26	9.48	13.55	16.39	16.51	21.57	22.16	25.72	36.33	52.31
Ta	$L\beta_{10}$	B	1	.01	73	6	9.888	1.25370	4		1.43	2.05	5.06	5.40	5.50	7.25	9.47	13.53	16.37	16.49	21.54	22.13	25.68	36.28	52.23
Ta	$L\beta_9$	B	1	.01	73	6	9.944	1.24660	4		1.42	2.04	5.03	5.37	5.47	7.20	9.41	13.46	16.27	16.40	21.42	22.00	25.53	36.07	51.92
Ta	$L\gamma_5$		1	.1	73	6	10.569	1.17290	4		1.33	1.92	4.74	5.05	5.15	6.78	8.86	12.66	15.30	15.42	20.14	20.69	24.00	33.87	48.64
Ta	L_2-N_2	F	1	.01	73	6	10.670	1.16181	5		1.32	1.90	4.69	5.00	5.10	6.71	8.77	12.54	15.16	15.27	19.95	20.49	23.77	33.54	48.15
Ta	L_2-N_3	8	1	.01	73	6	10.730	1.15530	4		1.31	1.89	4.66	4.97	5.07	6.68	8.72	12.47	15.07	15.19	19.83	20.37	23.64	33.35	47.86
Ta	$L\gamma_1$		1	10	73	6	10.893	1.13794	5		1.29	1.86	4.59	4.90	4.99	6.58	8.59	12.28	14.85	14.96	19.53	20.07	23.28	32.83	47.10
Ta	L_2-N_5	8	1	.01	73	6	10.904	1.13687	5		1.29	1.86	4.59	4.89	4.99	6.57	8.58	12.27	14.83	14.94	19.52	20.05	23.25	32.80	47.05
Ta	$L\gamma_8$		1	.1	73	6	11.063	1.12050	4		1.28	1.83	4.52	4.82	4.92	6.48	8.46	12.09	14.62	14.73	19.23	19.75	22.91	32.31	46.34
Ta	L_2-O_2	B	1	.01	73	6	11.089	1.11789	5		1.27	1.83	4.51	4.81	4.91	6.46	8.44	12.06	14.58	14.69	19.19	19.71	22.86	32.24	46.22
Ta	L_2-O_3	8	1	.01	73	6	11.098	1.11693	5		1.27	1.83	4.51	4.81	4.90	6.45	8.43	12.05	14.57	14.68	19.17	19.69	22.84	32.21	46.18
Ta	Lv	8	1	.01	73	6	11.110	1.11580	4		1.27	1.83	4.50	4.80	4.90	6.45	8.43	12.04	14.56	14.67	19.15	19.67	22.82	32.18	46.13
Ta	L_1-N_1	B	1	.01	73	6	11.115	1.11521	5		1.27	1.83	4.50	4.80	4.89	6.44	8.42	12.03	14.55	14.66	19.14	19.66	22.80	32.16	46.11
Ta	$L\gamma_6$		1	.01	73	6	11.129	1.11388	5		1.27	1.82	4.50	4.79	4.89	6.44	8.41	12.02	14.53	14.64	19.12	19.64	22.78	32.12	46.05
Ta	AL_2		1		73	6	11.130	1.11370	4		1.27	1.82	4.50	4.79	4.89	6.44	8.41	12.02	14.53	14.64	19.11	19.63	22.77	32.11	46.04
Ta	$L\gamma_2$		1	1	73	6	11.215	1.10530	4		1.26	1.81	4.46	4.76	4.85	6.39	8.35	11.93	14.42	14.53	18.97	19.48	22.60	31.86	45.67

El	Line	C	N	I	Z	R	KeV	Lambda P Å 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Ta	$L\gamma_3$		1	2	73	6	11.276	1.09936 5	1.25	1.80	4.44	4.73	4.82	6.35	8.30	11.86	14.34	14.45	18.87	19.38	22.48	31.69	45.41
Ta	L_1-N_4	8	1	.01	73	6	11.438	1.08377 5	1.23	1.77	4.38	4.66	4.76	6.26	8.18	11.69	14.14	14.24	18.60	19.10	22.15	31.23	44.73
Ta	$L\gamma_{11}$	F	1	.01	73	6	11.450	1.08260 5	1.23	1.77	4.37	4.66	4.75	6.26	8.17	11.68	14.12	14.23	18.58	19.08	22.13	31.19	44.68
Ta	L_1-O_1	8	1	.01	73	6	11.610	1.06771 5	1.22	1.75	4.31	4.60	4.69	6.17	8.06	11.52	13.93	14.03	18.32	18.82	21.82	30.75	44.04
Ta	$L\gamma_4 p$		1	.1	73	6	11.635	1.06544 5	1.21	1.74	4.30	4.59	4.68	6.16	8.04	11.49	13.90	14.00	18.28	18.77	21.77	30.69	43.94
Ta	$L\gamma_4$		1	.1	73	6	11.643	1.06467 5	1.21	1.74	4.30	4.58	4.67	6.15	8.04	11.49	13.89	13.99	18.26	18.76	21.76	30.66	43.90
Ta	$L_1-N_{6,7}$	8	1	.01	73	6	11.655	1.06357 5	1.21	1.74	4.29	4.58	4.67	6.15	8.03	11.47	13.87	13.98	18.25	18.74	21.74	30.63	43.86
Ta	$L_1-O_{4,5}$	8	1	.01	73	6	11.673	1.06192 5	1.21	1.74	4.29	4.57	4.66	6.14	8.02	11.46	13.85	13.95	18.22	18.71	21.70	30.58	43.78
Ta	AL_1		1		73	6	11.680	1.06130 4	1.21	1.74	4.28	4.57	4.66	6.13	8.01	11.45	13.84	13.95	18.21	18.70	21.69	30.56	43.76
Ta	$K\alpha_2$		1	50	73	6	56.267	0.22030 6	0.25	0.36	0.89	0.95	0.97	1.27	1.66	2.37	2.87	2.89	3.76	3.87	4.48	6.27	8.87
Ta	$K\alpha_{1,2}$		1	150	73	6	57.098	0.21710 6	0.25	0.36	0.88	0.93	0.95	1.25	1.64	2.34	2.82	2.85	3.71	3.81	4.41	6.18	8.74
Ta	$K\alpha_1$		1	100	73	6	57.523	0.21550 6	0.25	0.35	0.87	0.93	0.95	1.24	1.63	2.32	2.80	2.83	3.68	3.78	4.38	6.14	8.68
Ta	$K\beta_3$		1	12	73	6	64.938	0.19089 6	0.22	0.31	0.77	0.82	0.84	1.10	1.44	2.06	2.48	2.50	3.26	3.35	3.88	5.43	7.69
Ta	$K\beta_1$		1	26	73	6	65.212	0.19009 6	0.22	0.31	0.77	0.82	0.83	1.10	1.43	2.05	2.47	2.49	3.25	3.34	3.86	5.41	7.65
Ta	$K\beta_5''$	8	1	.3	73	6	65.615	0.18892 6	0.21	0.31	0.76	0.81	0.83	1.09	1.43	2.03	2.46	2.48	3.23	3.31	3.84	5.38	7.61
Ta	$K\beta_5'$	8	1	.3	73	6	65.672	0.18876 6	0.21	0.31	0.76	0.81	0.83	1.09	1.42	2.03	2.46	2.47	3.22	3.31	3.84	5.37	7.60
Ta	$K\beta_2''$		1	9	73	6	66.937	0.18519 6	0.21	0.30	0.75	0.80	0.81	1.07	1.40	1.99	2.41	2.43	3.16	3.25	3.76	5.27	7.46
Ta	$K\beta_2'$		1	9	73	6	67.001	0.18501 6	0.21	0.30	0.75	0.80	0.81	1.07	1.40	1.99	2.41	2.43	3.16	3.25	3.76	5.27	7.45
Ta	$K\beta_4$	8	1	.08	73	6	67.183	0.18451 5	0.21	0.30	0.74	0.79	0.81	1.07	1.39	1.99	2.40	2.42	3.15	3.24	3.75	5.25	7.43
Ta	$K-O_{2,3}$		1	.01	73	6	67.358	0.18403 6	0.21	0.30	0.74	0.79	0.81	1.06	1.39	1.98	2.39	2.41	3.14	3.23	3.74	5.24	7.41
Ta	AK		1		73	6	67.392	0.18394 5	0.21	0.30	0.74	0.79	0.81	1.06	1.39	1.98	2.39	2.41	3.14	3.23	3.74	5.24	7.41
W	N_5-N_6		1		74	6	0.208	59.50000 1	72.44	116.42													
W	N_5-N_7		1		74	6	0.212	58.39999 1	70.89	113.08													
W	N_4-N_6		1		74	6	0.222	55.79999 1	67.30	105.72													
W	N_2-N_4		1		74	6	0.230	54.00000 1	64.85	100.96													
W	Mz_2		1	.01	74	6	1.378	8.99300 3	10.25	14.76	36.93	39.47	40.28	53.91	72.60	115.39							
W	Mz_1		1	.01	74	6	1.383	8.96200 3	10.21	14.71	36.80	39.33	40.13	53.71	72.31	114.77							
W	M_4-N_3		1	.01	74	6	1.446	8.57300 3	9.77	14.07	35.15	37.56	38.32	51.20	68.72	107.36	153.47	157.43					
W	M_3-N_1		1	.5	74	6	1.684	7.36000 3	8.38	12.07	30.05	32.09	32.73	43.55	57.96	87.53	113.36	114.69					
W	M_5-O_3		1	.01	74	6	1.770	7.00500 3	7.98	11.49	28.57	30.50	31.11	41.35	54.92	82.35	105.37	106.51					
W	$M\alpha_2$		1	100	74	6	1.773	6.99200 3	7.96	11.47	28.51	30.44	31.05	41.27	54.81	82.16	105.09	106.23					
W	$M\alpha_1$		1	100	74	6	1.775	6.98300 3	7.95	11.45	28.48	30.40	31.01	41.22	54.74	82.04	104.90	106.03					
W	AM_5	H	1		74	6	1.815	6.83000 2	7.78	11.20	27.84	29.72	30.32	40.27	53.44	79.87	101.69	102.76					
W	M_4-O_2		1	.01	74	6	1.821	6.80600 3	7.75	11.16	27.74	29.61	30.21	40.12	53.24	79.53	101.20	102.25					
W	$M\beta$		1	45	74	6	1.835	6.75700 3	7.69	11.08	27.54	29.40	29.98	39.82	52.83	78.85	100.20	101.24					
W	AM_4	H	1		74	6	1.881	6.59000 2	7.50	10.80	26.84	28.65	29.23	38.80	51.42	76.54	96.87	97.85	158.47				
W	M_2-N_1		1	.01	74	6	1.974	6.28000 2	7.15	10.29	25.56	27.28	27.82	36.91	48.84	72.35	90.96	91.84	138.84	148.07			
W	M_3-N_4		1	.1	74	6	2.021	6.13400 3	6.98	10.05	24.95	26.63	27.16	36.02	47.63	70.41	88.28	89.12	132.25	139.79			
W	$M\gamma$		1	1	74	6	2.035	6.09200 3	6.94	9.99	24.78	26.45	26.97	35.76	47.29	69.86	87.52	88.35	130.51	137.70			
W	M_3-O_1		1	.01	74	6	2.203	5.62800 3	6.41	9.22	22.87	24.40	24.88	32.96	43.49	63.87	79.43	80.15	114.07	118.99	172.22		
W	AM_3	H	1		74	6	2.281	5.43500 3	6.19	8.91	22.07	23.55	24.02	31.80	41.93	61.44	76.20	76.88	108.24	112.62	148.94		
W	M_2-N_4		1	.1	74	6	2.314	5.35700 3	6.10	8.78	21.75	23.21	23.67	31.33	41.30	60.46	74.92	75.58	105.99	110.19	143.48		
W	M_1-N_3		1	.5	74	6	2.397	5.17200 3	5.89	8.47	20.99	22.40	22.84	30.22	39.81	58.17	71.92	72.55	100.89	104.71	132.94		
W	AM_2	H	1		74	6	2.574	4.81500 3	5.48	7.89	19.53	20.83	21.24	28.09	36.96	53.81	66.28	66.84	91.75	94.98	117.20		
W	$M_1-O_{2,3}$		1	.01	74	6	2.792	4.44000 2	5.05	7.27	17.99	19.19	19.57	25.86	33.99	49.33	60.54	61.05	82.89	85.65	103.83		
W	AM_1	H	1		74	6	2.813	4.40700 3	5.02	7.22	17.86	19.05	19.43	25.67	33.73	48.94	60.05	60.55	82.14	84.86	102.75		
W	Ll		1	3	74	6	7.386	1.67820 4	1.91	2.75	6.78	7.23	7.37	9.70	12.69	18.15	21.97	22.14	28.98	29.77	34.62	49.26	72.21
W	Lt	8	1	.01	74	6	7.631	1.62440 4	1.85	2.66	6.56	6.99	7.13	9.39	12.28	17.56	21.26	21.42	28.03	28.80	33.47	47.58	69.55
W	Ls	8	1	.01	74	6	7.925	1.56420 4	1.78	2.56	6.32	6.73	6.87	9.04	11.82	16.91	20.46	20.61	26.97	27.71	32.20	45.72	66.63
W	$L\alpha_2$		1	10	74	6	8.334	1.48743 5	1.69	2.44	6.01	6.40	6.53	8.60	11.24	16.07	19.44	19.59	25.62	26.33	30.58	43.36	62.97
W	$L\alpha_1$		1	100	74	6	8.396	1.47639 5	1.68	2.42	5.96	6.36	6.48	8.54	11.16	15.95	19.30	19.45	25.43	26.13	30.34	43.02	62.45
W	Ln		1	1	74	6	8.723	1.42110 5	1.62	2.33	5.74	6.12	6.24	8.21	10.74	15.35	18.57	18.71	24.46	25.13	29.18	41.33	59.87
W	$L\beta_{17}$	8	1	.01	74	6	9.260	1.33870 4	1.52	2.19	5.41	5.76	5.88	7.74	10.11	14.46	17.48	17.62	23.02	23.65	27.46	38.84	56.07
W	L_1-M_1	B	1	.01	74	6	9.275	1.33650 4	1.52	2.19	5.40	5.75	5.87	7.73	10.10	14.43	17.46	17.59	22.99	23.61	27.41	38.77	55.97
W	$L\beta_4$		1	4	74	6	9.524	1.30162 5	1.48	2.13	5.26	5.60	5.71	7.52	9.83	14.05	17.00	17.13	22.38	22.99	26.68	37.72	54.39
W	$L\beta_6$		1	.1	74	6	9.610	1.28989 5	1.47	2.11	5.21	5.55	5.66	7.46	9.74	13.93	16.84	16.97	22.17	22.78	26.44	37.37	53.86
W	$L\beta_1$		1	50	74	6	9.671	1.28181 6	1.46	2.10	5.18	5.52	5.63	7.41	9.68	13.84	16.74	16.86	22.03	22.63	26.27	37.12	53.50
W	L_3-N_2	B	1	.01	74	6	9.711	1.27650 4	1.45	2.09	5.15	5.49	5.60	7.38	9.64	13.78	16.67	16.79	21.94	22.54	26.16	36.97	53.26
W	L_2-M_5	8	1	.01	74	6	9.739	1.27280 4	1.45	2.08	5.14	5.48	5.59	7.36	9.61	13.74	16.62	16.74	21.88	22.47	26.08	36.85	53.09
W	L_3-N_3	8	1	.01	74	6	9.782	1.26720 4	1.44	2.07	5.12	5.45	5.56	7.32	9.57	13.68	16.54	16.67	21.78	22.37	25.96	36.69	52.84
W	$L\beta_3$		1	6	74	6	9.817	1.26269 5	1.44	2.07	5.10	5.44	5.54	7.30	9.54	13.63	16.48	16.61	21.70	22.29	25.87	36.55	52.64
W	$L\beta_{15}$		1	1	74	6	9.946	1.24631 5	1.42	2.04	5.03	5.36	5.47	7.20	9.41	13.45	16.27	16.39	21.41	22.00	25.53	36.06	51.90
W	$L\beta_2$		1	20	74	6	9.960	1.24460 5	1.42	2.04	5.02	5.36	5.46	7.19	9.40	13.43	16.25	16.37	21.39	21.97	25.49	36.01	51.83
W	$L\beta_7$		1	.1	74	6	10.127	1.22400 5	1.39	2.00	4.94	5.27	5.37	7.07	9.24	13.21	15.98	16.10	21.03	21.60	25.06	35.39	50.91
W	$L_3-O_{2,3}$	B	1	.01	74	6	10.152	1.22110 4	1.39	2.00	4.93	5.26	5.36	7.06	9.22	13.18	15.94	16.06	20.98	21.55	25.00	35.31	50.78

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
W	Lu	B	1	.01	74	6	10.172	1.21868	5	1.39	2.00	4.92	5.25	5.35	7.04	9.20	13.15	15.91	16.03	20.93	21.51	24.95	35.23	50.67
W	AL_3		1		74	6	10.198	1.21550	4	1.38	1.99	4.91	5.23	5.33	7.02	9.18	13.12	15.86	15.98	20.88	21.45	24.89	35.14	50.53
W	$L\beta_5$		1	.1	74	6	10.199	1.21545	5	1.38	1.99	4.91	5.23	5.33	7.02	9.18	13.12	15.86	15.98	20.88	21.45	24.89	35.14	50.53
W	$L\beta_{10}$	8	1	.01	74	6	10.226	1.21218	5	1.38	1.98	4.89	5.22	5.32	7.01	9.15	13.08	15.82	15.94	20.82	21.39	24.82	35.04	50.38
W	$L\beta_9$	B	1	.01	74	6	10.289	1.20479	5	1.37	1.97	4.86	5.19	5.29	6.96	9.10	13.00	15.72	15.84	20.69	21.26	24.66	34.82	50.05
W	$L\gamma_5$		1	.1	74	6	10.947	1.13235	5	1.29	1.85	4.57	4.87	4.97	6.54	8.55	12.22	14.77	14.88	19.44	19.97	23.16	32.67	46.86
W	L_2-N_2	B	1	.01	74	6	11.050	1.12180	4	1.28	1.84	4.53	4.83	4.92	6.48	8.47	12.10	14.63	14.75	19.25	19.78	22.94	32.35	46.39
W	L_2-N_3	B	1	.01	74	6	11.118	1.11490	4	1.27	1.83	4.50	4.80	4.89	6.44	8.42	12.03	14.54	14.65	19.13	19.66	22.80	32.15	46.09
W	$L\gamma_1$		1	10	74	6	11.284	1.09855	5	1.25	1.80	4.43	4.73	4.82	6.35	8.29	11.85	14.33	14.44	18.85	19.36	22.46	31.66	45.38
W	$L\gamma_8$		1	.1	74	6	11.466	1.08113	5	1.23	1.77	4.36	4.65	4.74	6.25	8.16	11.66	14.10	14.21	18.55	19.05	22.10	31.15	44.62
W	L_2-O_3	F	1	.01	74	6	11.505	1.07740	5	1.23	1.76	4.35	4.64	4.73	6.23	8.13	11.62	14.05	14.16	18.49	18.99	22.02	31.04	44.46
W	$L\nu$	B	1	.01	74	6	11.509	1.07710	4	1.23	1.76	4.35	4.64	4.73	6.22	8.13	11.62	14.05	14.15	18.48	18.98	22.02	31.03	44.44
W	AL_2		1		74	6	11.537	1.07450	4	1.22	1.76	4.34	4.62	4.72	6.21	8.11	11.59	14.01	14.12	18.43	18.94	21.96	30.95	44.33
W	$L\gamma_6$		1	.01	74	6	11.537	1.07448	5	1.22	1.76	4.34	4.62	4.72	6.21	8.11	11.59	14.01	14.12	18.43	18.94	21.96	30.95	44.33
W	$L\gamma_2$		1	1	74	6	11.606	1.06806	5	1.22	1.75	4.31	4.60	4.69	6.17	8.06	11.52	13.93	14.04	18.32	18.82	21.83	30.76	44.05
W	$L\gamma_3$		1	2	74	6	11.572	1.06200	5	1.21	1.74	4.29	4.57	4.66	6.14	8.02	11.46	13.85	13.96	18.22	18.71	21.70	30.58	43.79
W	L_1-N_4	8	1	.01	74	6	11.842	1.04680	4	1.19	1.71	4.23	4.51	4.59	6.05	7.90	11.29	13.65	13.75	17.96	18.44	21.39	30.14	43.13
W	$L\gamma_{11}$	8	1	.01	74	6	11.853	1.04580	4	1.19	1.71	4.22	4.50	4.59	6.04	7.90	11.28	13.64	13.74	17.94	18.43	21.37	30.11	43.09
W	L_1-O_1	B	1	.01	74	6	12.015	1.03170	4	1.17	1.69	4.16	4.44	4.53	5.96	7.79	11.13	13.45	13.56	17.69	18.18	21.08	29.69	42.48
W	$L\gamma_4$P		1	.1	74	6	12.051	1.02863	5	1.17	1.68	4.15	4.43	4.51	5.94	7.77	11.10	13.41	13.51	17.64	18.12	21.01	29.60	42.34
W	$L\gamma_4$		1	.1	74	6	12.061	1.02775	5	1.17	1.68	4.15	4.42	4.51	5.94	7.76	11.09	13.40	13.50	17.63	18.11	21.00	29.58	42.31
W	L_1-$O_{4,5}$	8	1	.01	74	6	12.094	1.02500	4	1.17	1.68	4.14	4.41	4.50	5.92	7.74	11.06	13.37	13.47	17.58	18.06	20.94	29.49	42.19
W	AL_1		1		74	6	12.098	1.02467	5	1.17	1.68	4.14	4.41	4.50	5.92	7.74	11.05	13.36	13.46	17.57	18.05	20.93	29.48	42.17
W	K-L_1	8	1	.01	74	6	57.410	0.21592	5	0.25	0.35	0.87	0.93	0.95	1.25	1.63	2.33	2.81	2.83	3.69	3.79	4.39	6.15	8.70
W	$K\alpha_2$		1	50	74	6	57.972	0.21383	6	0.24	0.35	0.86	0.92	0.94	1.24	1.61	2.30	2.78	2.80	3.65	3.75	4.34	6.09	8.61
W	$K\alpha_{1,2}$		1	150	74	6	58.856	0.21062	6	0.24	0.34	0.85	0.91	0.92	1.22	1.59	2.27	2.74	2.76	3.60	3.70	4.28	6.00	8.48
W	$K\alpha_1$		1	100	74	6	59.308	0.20901	7	0.24	0.34	0.84	0.90	0.92	1.21	1.58	2.25	2.72	2.74	3.57	3.67	4.25	5.95	8.42
W	$K\beta_3$		1	12	74	6	66.940	0.18518	6	0.21	0.30	0.75	0.80	0.81	1.07	1.40	1.99	2.41	2.43	3.16	3.25	3.76	5.27	7.46
W	$K\beta_1$		1	26	74	6	67.233	0.18437	6	0.21	0.30	0.74	0.79	0.81	1.06	1.39	1.99	2.40	2.42	3.15	3.23	3.75	5.25	7.42
W	$K\beta_5$''	B	1	.3	74	6	67.640	0.18326	6	0.21	0.30	0.74	0.79	0.80	1.06	1.38	1.97	2.38	2.40	3.13	3.22	3.72	5.22	7.38
W	$K\beta_5$'	8	1	.3	74	6	67.704	0.18309	6	0.21	0.30	0.74	0.79	0.80	1.06	1.38	1.97	2.38	2.40	3.13	3.21	3.72	5.21	7.37
W	$K\beta_2$''		1	10	74	6	69.020	0.17960	5	0.20	0.29	0.72	0.77	0.79	1.04	1.35	1.93	2.34	2.35	3.07	3.15	3.65	5.11	7.23
W	$K\beta_2$'		1	10	74	6	69.089	0.17942	6	0.20	0.29	0.72	0.77	0.79	1.04	1.35	1.93	2.33	2.35	3.07	3.15	3.65	5.11	7.22
W	$K\beta_4$	8	1	.1	74	6	69.282	0.17892	5	0.20	0.29	0.72	0.77	0.78	1.03	1.35	1.93	2.33	2.35	3.06	3.14	3.64	5.09	7.20
W	K-$O_{2,3}$		1	.01	74	6	69.467	0.17844	6	0.20	0.29	0.72	0.77	0.78	1.03	1.35	1.92	2.32	2.34	3.05	3.13	3.63	5.08	7.18
W	AK		1		74	6	69.496	0.17837	5	0.20	0.29	0.72	0.77	0.78	1.03	1.35	1.92	2.32	2.34	3.05	3.13	3.62	5.08	7.18
Re	M_{2}		1	.01	75	6	1.431	8.66400	3	9.87	14.22	35.54	37.97	38.74	51.79	69.55	109.03	159.25	164.68					
Re	M_{1}		1	.01	75	6	1.437	8.62900	3	9.83	14.16	35.39	37.81	38.58	51.56	69.23	108.39	156.86	161.56					
Re	M_4-N_3		1	.01	75	6	1.505	8.23900	3	9.39	13.52	33.74	36.04	36.77	49.07	65.69	101.49	138.59	140.94					
Re	$M\alpha$		1	100	75	6	1.842	6.72900	3	7.66	11.03	27.42	29.27	29.86	39.65	52.59	78.46	99.63	100.66					
Re	AM_5	H	1		75	6	1.890	6.56000	3	7.47	10.75	26.72	28.52	29.09	38.62	51.17	76.13	96.28	97.25	155.88				
Re	$M\beta$		1	45	75	6	1.906	6.50400	3	7.41	10.66	26.49	28.27	28.84	38.27	50.70	75.36	95.19	96.15	151.67	169.39			
Re	AM_4	H	1		75	6	1.958	6.33000	2	7.21	10.38	25.76	27.50	28.05	37.21	49.26	73.01	91.89	92.79	141.35	151.43			
Re	M_3-N_4		1	.01	75	6	2.090	5.93100	3	6.75	9.72	24.12	25.74	26.25	34.79	45.97	67.76	84.65	85.45	124.30	130.46			
Re	$M\gamma$		1	1	75	6	2.106	5.88500	3	6.70	9.65	23.93	25.53	26.04	34.51	45.59	67.16	83.85	84.63	122.64	128.57			
Re	AM_3	H	1		75	6	2.368	5.23400	3	5.96	8.58	21.25	22.67	23.12	30.59	40.31	58.93	72.92	73.56	102.57	106.51	136.20		
Re	AM_2	H	1		75	6	2.683	4.62000	3	5.26	7.57	18.73	19.98	20.37	26.93	35.41	51.47	63.27	63.81	87.06	90.03	109.97		
Re	AM_1	H	1		75	6	2.926	4.23600	3	4.82	6.94	17.16	18.30	18.67	24.66	32.39	46.92	57.49	57.97	78.32	80.86	97.34		
Re	Ll		1	3	75	6	7.602	1.63056	5	1.86	2.67	6.58	7.02	7.16	9.43	12.32	17.63	21.34	21.50	28.14	28.91	33.60	47.78	69.85
Re	Lt	B	1	.01	75	6	7.851	1.57890	4	1.80	2.58	6.38	6.80	6.93	9.13	11.93	17.07	20.65	20.81	27.23	27.98	32.51	46.17	67.34
Re	Ls	B	1	.01	75	6	8.167	1.51780	4	1.73	2.48	6.13	6.53	6.66	8.78	11.47	16.40	19.85	20.00	26.15	26.87	31.22	44.29	64.41
Re	$L\alpha_2$		1	10	75	6	8.585	1.44396	5	1.64	2.36	5.83	6.22	6.34	8.35	10.91	15.60	18.87	19.01	24.86	25.54	29.66	42.03	60.93
Re	$L\alpha_1$		1	100	75	6	8.651	1.43290	5	1.63	2.35	5.79	6.17	6.29	8.28	10.83	15.48	18.73	18.87	24.67	25.34	29.43	41.69	60.41
Re	Ln		1	1	75	6	9.026	1.37342	5	1.56	2.25	5.55	5.91	6.03	7.94	10.38	14.83	17.94	18.08	23.63	24.28	28.18	39.89	57.66
Re	L_2-M_2	B	1	.01	75	6	9.274	1.33660	4	1.52	2.19	5.40	5.75	5.87	7.73	10.10	14.43	17.46	17.59	22.99	23.61	27.41	38.77	55.98
Re	$L\beta_{17}$	B	1	.01	75	6	9.589	1.29270	4	1.47	2.12	5.22	5.56	5.67	7.47	9.76	13.96	16.88	17.01	22.22	22.83	26.50	37.45	53.99
Re	$L\beta_4$		1	4	75	6	9.845	1.25917	5	1.43	2.06	5.08	5.42	5.53	7.28	9.51	13.59	16.44	16.56	21.64	22.23	25.80	36.45	52.48
Re	$L\beta_6$		1	.1	75	6	9.909	1.25100	5	1.42	2.05	5.05	5.38	5.49	7.23	9.45	13.50	16.33	16.45	21.50	22.08	25.63	36.20	52.11
Re	$L\beta_1$		1	50	75	6	10.008	1.23858	5	1.41	2.03	5.00	5.33	5.44	7.16	9.35	13.37	16.17	16.29	21.28	21.86	25.37	35.83	51.56
Re	L_2-M_5	B	1	.01	75	6	10.074	1.23050	4	1.40	2.01	4.97	5.30	5.40	7.11	9.29	13.28	16.06	16.18	21.14	21.72	25.20	35.59	51.20
Re	L_3-N_3	B	1	.01	75	6	10.092	1.22830	4	1.40	2.01	4.96	5.29	5.39	7.10	9.28	13.26	16.03	16.15	21.10	21.68	25.15	35.52	51.10
Re	$L\beta_3$		1	6	75	6	10.158	1.22031	5	1.39	2.00	4.93	5.25	5.36	7.05	9.22	13.17	15.93	16.05	20.96	21.53	24.99	35.28	50.74
Re	$L\beta_{15}$		1	1	75	6	10.260	1.20819	5	1.37	1.98	4.88	5.20	5.30	6.98	9.12	13.04	15.77	15.89	20.75	21.32	24.73	34.92	50.20
Re	$L\beta_2$		1	20	75	6	10.274	1.20660	5	1.37	1.98	4.87	5.19	5.30	6.97	9.11	13.02	15.75	15.87	20.72	21.29	24.70	34.87	50.13
Re	$L\beta_7$		1	.1	75	6	10.451	1.18610	5	1.35	1.94	4.79	5.11	5.21	6.85	8.96	12.80	15.48	15.60	20.37	20.92	24.28	34.26	49.22

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
										10^{-}														
Re	Lu	B	1	.01	75	6	10.492	1.18150	4		1.34	1.93	4.77	5.09	5.18	6.83	8.92	12.75	15.42	15.53	20.29	20.84	24.18	34.13	49.02
Re	AL_3		1		75	6	10.529	1.17730	4		1.34	1.93	4.75	5.07	5.17	6.80	8.89	12.71	15.36	15.48	20.22	20.77	24.09	34.00	48.83
Re	$L\beta_5$		1	.1	75	6	10.530	1.17721	5		1.34	1.93	4.75	5.07	5.17	6.80	8.89	12.70	15.36	15.48	20.21	20.77	24.09	34.00	48.83
Re	$L\beta_{10}$	B	1	.01	75	6	10.575	1.17218	5		1.33	1.92	4.73	5.05	5.14	6.77	8.85	12.65	15.30	15.41	20.13	20.68	23.99	33.85	48.61
Re	$L\beta_9$	B	1	.01	75	6	10.642	1.16487	5		1.33	1.91	4.70	5.01	5.11	6.73	8.80	12.57	15.20	15.31	20.00	20.55	23.83	33.63	48.29
Re	$L\gamma_5$		1	.1	75	6	11.332	1.09388	5		1.24	1.79	4.42	4.71	4.80	6.32	8.26	11.80	14.27	14.38	18.77	19.28	22.36	31.53	45.17
Re	L_2-N_2	B	1	.01	75	6	11.436	1.08390	4		1.23	1.77	4.38	4.67	4.76	6.26	8.18	11.69	14.14	14.24	18.60	19.10	22.16	31.23	44.74
Re	L_2-N_3	B	1	.01	75	6	11.513	1.07670	4		1.23	1.76	4.35	4.63	4.72	6.22	8.13	11.62	14.04	14.15	18.47	18.98	22.01	31.02	44.43
Re	$L\gamma_1$		1	10	75	6	11.683	1.06099	5		1.21	1.74	4.28	4.57	4.66	6.13	8.01	11.45	13.84	13.94	18.20	18.70	21.68	30.56	43.74
Re	$L\gamma_8$		1	.1	75	6	11.874	1.04398	5		1.19	1.71	4.21	4.49	4.58	6.03	7.88	11.26	13.61	13.72	17.91	18.39	21.33	30.05	43.01
Re	L_1-N_1	B	1	.01	75	6	11.896	1.04200	4		1.19	1.71	4.21	4.48	4.57	6.02	7.87	11.24	13.59	13.69	17.87	18.36	21.29	30.00	42.92
Re	Lv	B	1	.01	75	6	11.915	1.04040	4		1.18	1.70	4.20	4.48	4.57	6.01	7.85	11.22	13.57	13.67	17.85	18.33	21.26	29.95	42.85
Re	L_2-O_3	B	1	.01	75	6	11.923	1.03970	4		1.18	1.70	4.20	4.47	4.56	6.01	7.85	11.22	13.56	13.66	17.83	18.32	21.24	29.93	42.82
Re	AL_2		1		75	6	11.953	1.03710	4		1.18	1.70	4.19	4.46	4.55	5.99	7.83	11.19	13.52	13.63	17.79	18.27	21.19	29.85	42.71
Re	$L\gamma_6$		1	.01	75	6	11.954	1.03699	5		1.18	1.70	4.19	4.46	4.55	5.99	7.83	11.19	13.52	13.63	17.79	18.27	21.19	29.85	42.71
Re	$L\gamma_2$		1	1	75	6	12.008	1.03233	5		1.17	1.69	4.17	4.44	4.53	5.97	7.79	11.14	13.46	13.56	17.71	18.19	21.09	29.71	42.50
Re	$L\gamma_3$		1	2	75	6	12.080	1.02613	5		1.17	1.68	4.14	4.42	4.50	5.93	7.75	11.07	13.38	13.48	17.60	18.08	20.96	29.53	42.24
Re	L_1-N_4	B	1	.01	75	6	12.250	1.01190	4		1.15	1.66	4.08	4.36	4.44	5.85	7.64	10.91	13.19	13.29	17.35	17.82	20.67	29.11	41.62
Re	$L\gamma_{11}$	B	1	.01	75	6	12.264	1.01080	4		1.15	1.65	4.08	4.35	4.44	5.84	7.63	10.90	13.18	13.28	17.33	17.80	20.64	29.08	41.58
Re	L_1-O_1	B	1	.01	75	6	12.440	0.99650	4		1.13	1.63	4.02	4.29	4.37	5.76	7.52	10.75	12.99	13.09	17.09	17.55	20.35	28.66	40.96
Re	$L\gamma_4 p$		1	.1	75	6	12.479	0.99334	5		1.13	1.63	4.01	4.28	4.36	5.74	7.50	10.71	12.95	13.05	17.03	17.49	20.28	28.56	40.83
Re	$L\gamma_4$		1	.1	75	6	12.490	0.99249	5		1.13	1.62	4.01	4.27	4.36	5.73	7.49	10.70	12.94	13.04	17.02	17.48	20.27	28.54	40.79
Re	L_1-$O_{4,5}$	B	1	.01	75	6	12.521	0.99000	4		1.13	1.62	4.00	4.26	4.34	5.72	7.47	10.68	12.91	13.00	16.97	17.43	20.22	28.47	40.68
Re	AL_1		1		75	6	12.529	0.98940	4		1.13	1.62	3.99	4.26	4.34	5.72	7.47	10.67	12.90	13.00	16.96	17.42	20.20	28.45	40.66
Re	$K\alpha_2$		1	50	75	6	59.708	0.20761	6		0.24	0.34	0.84	0.89	0.91	1.20	1.57	2.24	2.70	2.72	3.55	3.64	4.22	5.91	8.36
Re	$K\alpha_{1,2}$		1	150	75	6	60.648	0.20439	6		0.23	0.33	0.82	0.88	0.90	1.18	1.54	2.20	2.66	2.68	3.49	3.59	4.15	5.82	8.23
Re	$K\alpha_1$		1	100	75	6	61.130	0.20278	6		0.23	0.33	0.82	0.87	0.89	1.17	1.53	2.18	2.64	2.66	3.46	3.56	4.12	5.77	8.17
Re	$K\beta_3$		1	12	75	6	68.983	0.17970	6		0.20	0.29	0.73	0.77	0.79	1.04	1.36	1.94	2.34	2.36	3.07	3.15	3.65	5.12	7.24
Re	$K\beta_1$		1	26	75	6	69.298	0.17888	6		0.20	0.29	0.72	0.77	0.78	1.03	1.35	1.93	2.33	2.34	3.06	3.14	3.63	5.09	7.20
Re	$K\beta_5$''	B	1	.3	75	6	69.707	0.17783	5		0.20	0.29	0.72	0.77	0.78	1.03	1.34	1.92	2.31	2.33	3.04	3.12	3.61	5.06	7.16
Re	$K\beta_5$'	B	1	.3	75	6	69.774	0.17766	5		0.20	0.29	0.72	0.76	0.78	1.03	1.34	1.91	2.31	2.33	3.04	3.12	3.61	5.06	7.15
Re	$K\beta_2$''		1	10	75	6	71.139	0.17425	5		0.20	0.29	0.70	0.75	0.76	1.01	1.31	1.88	2.27	2.28	2.98	3.06	3.54	4.96	7.02
Re	$K\beta_2$'		1	10	75	6	71.219	0.17405	6		0.20	0.28	0.70	0.75	0.76	1.01	1.31	1.87	2.26	2.28	2.97	3.05	3.54	4.95	7.01
Re	$K\beta_4$	B	1	.1	75	6	71.397	0.17362	5		0.20	0.28	0.70	0.75	0.76	1.00	1.31	1.87	2.26	2.28	2.97	3.05	3.53	4.94	6.99
Re	K-$O_{2,3}$		1	.01	75	6	71.620	0.17308	5		0.20	0.28	0.70	0.74	0.76	1.00	1.31	1.86	2.25	2.27	2.96	3.04	3.52	4.93	6.97
Re	AK		1		75	6	71.645	0.17302	5		0.20	0.28	0.70	0.74	0.76	1.00	1.31	1.86	2.25	2.27	2.96	3.04	3.52	4.93	6.97
Os	N_5-$N_{6,7}$		1		76	6	0.227	54.70000	1		65.80	102.78													
Os	N_4-N_6		1		76	6	0.239	51.89999	1		62.05	95.71													
Os	Mz_2		1	.01	76	6	1.483	8.35900	3		9.52	13.72	34.24	36.59	37.33	49.84	66.77	103.56	143.25	145.95					
Os	Mz_1		1	.01	76	6	1.492	8.31000	3		9.47	13.64	34.04	36.36	37.10	49.52	66.33	102.71	141.28	143.83					
Os	M_3-N_1		1	.5	76	6	1.799	6.89000	2		7.85	11.30	28.09	29.99	30.59	40.64	53.95	80.72	102.93	104.03					
Os	$M\alpha$	D	1	100	76	6	1.914	6.47800	3		7.38	10.62	26.38	28.16	28.72	38.11	50.49	75.01	94.69	95.64	149.91	165.26			
Os	AM_5	H	1		76	6	1.968	6.30000	2		7.17	10.33	25.64	27.37	27.91	37.03	49.01	72.61	91.33	92.22	139.83	149.37			
Os	$M\beta$		1	45	76	6	1.978	6.26700	3		7.14	10.27	25.50	27.22	27.76	36.83	48.73	72.17	90.72	91.60	138.22	147.25			
Os	AM_4	H	1		76	6	2.041	6.07300	3		6.91	9.95	24.70	26.36	26.89	35.65	47.13	69.61	87.18	88.01	129.74	136.79			
Os	M_2-N_1		1	.01	76	6	2.134	5.81000	2		6.62	9.52	23.62	25.20	25.70	34.06	44.98	66.19	82.54	83.30	120.02	125.61			
Os	M_3-N_4		1	.1	76	6	2.166	5.72400	3		6.52	9.38	23.26	24.82	25.32	33.54	44.27	65.09	81.06	81.80	117.15	122.40			
Os	$M\gamma$		1	1	76	6	2.182	5.68200	3		6.47	9.31	23.09	24.64	25.13	33.28	43.93	64.56	80.35	81.08	115.78	120.89			
Os	AM_3	B	1		76	6	2.458	5.04300	3		5.74	8.26	20.46	21.83	22.26	29.45	38.78	56.58	69.86	70.46	97.49	101.08	126.76		
Os	M_2-N_4		1	.2	76	6	2.502	4.95500	3		5.64	8.12	20.10	21.45	21.87	28.93	38.08	55.51	68.47	69.06	95.24	98.68	122.90		
Os	M_1-N_3		1	.5	76	6	2.588	4.79000	2		5.45	7.85	19.43	20.72	21.13	27.94	36.76	53.51	65.89	66.45	91.13	94.33	116.24		
Os	AM_2	H	1		76	6	2.796	4.43300	3		5.05	7.26	17.97	19.16	19.54	25.82	33.94	49.24	60.44	60.94	82.73	85.48	103.60		
Os	AM_1	H	1		76	6	3.045	4.07100	3		4.63	6.67	16.49	17.59	17.93	23.68	31.09	44.99	55.06	55.51	74.73	77.11	92.39		
Os	Ll		1	3	76	6	7.821	1.58498	5		1.80	2.59	6.40	6.82	6.96	9.16	11.98	17.13	20.73	20.89	27.33	28.09	32.64	46.36	67.63
Os	Lt	B	1	.01	76	6	8.077	1.53470	4		1.75	2.51	6.20	6.61	6.74	8.87	11.60	16.59	20.07	20.22	26.45	27.18	31.57	44.81	65.21
Os	Ls	B	1	.01	76	6	8.413	1.47350	4		1.68	2.41	5.95	6.34	6.47	8.52	11.13	15.92	19.26	19.41	25.38	26.07	30.28	42.93	62.31
Os	$L\alpha_2$		1	10	76	6	8.840	1.40234	5		1.60	2.30	5.66	6.04	6.15	8.11	10.59	15.15	18.32	18.46	24.13	24.79	28.79	40.76	59.00
Os	$L\alpha_1$		1	100	76	6	8.910	1.39121	5		1.58	2.28	5.62	5.99	6.11	8.04	10.51	15.03	18.18	18.31	23.94	24.59	28.56	40.43	58.48
Os	Ln		1	1	76	6	9.335	1.32785	5		1.51	2.17	5.36	5.72	5.83	7.68	10.03	14.34	17.34	17.47	22.83	23.46	27.23	38.51	55.58
Os	L_2-M_2	B	1	.01	76	6	9.584	1.29340	4		1.47	2.12	5.22	5.57	5.68	7.48	9.77	13.96	16.89	17.02	22.23	22.84	26.51	37.47	54.02
Os	$L\beta_{17}$	B	1	.01	76	6	9.933	1.24800	4		1.42	2.04	5.04	5.37	5.48	7.21	9.43	13.47	16.29	16.42	21.44	22.03	25.56	36.11	51.98
Os	$L\beta_4$		1	4	76	6	10.174	1.21844	5		1.39	1.99	4.92	5.24	5.35	7.04	9.20	13.15	15.90	16.02	20.93	21.50	24.95	35.23	50.66
Os	$L\beta_6$		1	.1	76	6	10.215	1.21349	5		1.38	1.99	4.90	5.22	5.33	7.01	9.16	13.10	15.84	15.96	20.84	21.41	24.85	35.08	50.44
Os	L_3-N_2	B	1	.01	76	6	10.323	1.20086	5		1.37	1.97	4.85	5.17	5.27	6.94	9.07	12.96	15.67	15.79	20.63	21.19	24.58	34.70	49.88
Os	$L\beta_1$		1	50	76	6	10.354	1.19727	5		1.36	1.96	4.83	5.15	5.25	6.92	9.04	12.92	15.62	15.74	20.56	21.12	24.51	34.60	49.72

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Os	L_2-M_5	F	1	.01	76	6	10.423	1.18928	5	1.35	1.95	4.80	5.12	5.22	6.87	8.98	12.84	15.52	15.64	20.42	20.98	24.34	34.36	49.36
Os	$L\beta_3$		1	6	76	6	10.509	1.17955	5	1.34	1.93	4.76	5.08	5.18	6.82	8.91	12.73	15.39	15.51	20.26	20.81	24.14	34.07	48.93
Os	$L\beta_{15}$		1	1	76	6	10.580	1.17167	5	1.33	1.92	4.73	5.04	5.14	6.77	8.85	12.64	15.29	15.40	20.12	20.67	23.98	33.83	48.59
Os	$L\beta_2$		1	20	76	6	10.597	1.16979	5	1.33	1.92	4.72	5.03	5.13	6.76	8.83	12.62	15.26	15.38	20.09	20.63	23.94	33.78	48.50
Os	$L\beta_7$		1	7	76	6	10.785	1.14933	5	1.31	1.88	4.64	4.95	5.04	6.64	8.68	12.40	15.00	15.11	19.73	20.27	23.51	33.17	47.60
Os	Lu		8	1	.01	76	6	10.823	1.14537	5	1.30	1.88	4.62	4.93	5.03	6.62	8.65	12.36	14.94	15.06	19.66	20.20	23.43	33.05	47.43
Os	AL_3			1	76	6	10.866	1.14080	4	1.30	1.87	4.61	4.91	5.01	6.59	8.61	12.31	14.88	15.00	19.58	20.12	23.34	32.92	47.23
Os	$L\beta_5$		1	.1	76	6	10.869	1.14050	4	1.30	1.87	4.60	4.91	5.00	6.59	8.61	12.31	14.88	14.99	19.58	20.11	23.33	32.91	47.21
Os	$L\beta_{10}$	B	1	.01	76	6	10.936	1.13353	5	1.29	1.86	4.58	4.88	4.97	6.55	8.56	12.23	14.79	14.90	19.46	19.99	23.18	32.70	46.91
Os	$L\beta_9$	8	1	.01	76	6	11.005	1.12637	5	1.28	1.84	4.55	4.85	4.94	6.51	8.51	12.15	14.69	14.81	19.33	19.86	23.04	32.49	46.59
Os	$L\gamma_5$		1	.1	76	6	11.728	1.05693	5	1.20	1.73	4.27	4.55	4.64	6.11	7.98	11.40	13.78	13.89	18.13	18.62	21.60	30.44	43.57
Os	L_2-N_3	F	1	.01	76	6	11.915	1.04039	5	1.18	1.70	4.20	4.48	4.57	6.01	7.85	11.22	13.57	13.67	17.84	18.33	21.26	29.95	42.85
Os	$L\gamma_1$		1	10	76	6	12.093	1.02503	5	1.17	1.68	4.14	4.41	4.50	5.92	7.74	11.06	13.37	13.47	17.58	18.06	20.94	29.50	42.19
Os	$L\gamma_8$		1	.1	76	6	12.299	1.00788	5	1.15	1.65	4.07	4.34	4.42	5.82	7.61	10.87	13.14	13.24	17.28	17.75	20.58	28.99	41.45
Os	Lv		8	1	.01	76	6	12.334	1.00500	4	1.14	1.65	4.06	4.33	4.41	5.81	7.59	10.84	13.10	13.20	17.23	17.70	20.53	28.91	41.33
Os	L_2-O_3		8	1	.01	76	6	12.338	1.00470	4	1.14	1.64	4.06	4.32	4.41	5.81	7.58	10.84	13.10	13.20	17.23	17.70	20.52	28.90	41.31
Os	AL_2			1	76	6	12.379	1.00140	4	1.14	1.64	4.04	4.31	4.39	5.79	7.56	10.80	13.06	13.16	17.17	17.64	20.45	28.80	41.17
Os	$L\gamma_6$		1	.01	76	6	12.383	1.00107	5	1.14	1.64	4.04	4.31	4.39	5.78	7.56	10.80	13.05	13.15	17.17	17.63	20.44	28.79	41.16
Os	$L\gamma_2$		1	1	76	6	12.420	0.99805	5	1.14	1.63	4.03	4.30	4.38	5.77	7.53	10.76	13.01	13.11	17.11	17.58	20.38	28.70	41.03
Os	$L\gamma_3$		1	2	76	6	12.498	0.99186	5	1.13	1.62	4.00	4.27	4.35	5.73	7.49	10.70	12.93	13.03	17.01	17.47	20.25	28.52	40.76
Os	L_1-N_4		8	1	.01	76	6	12.685	0.97720	4	1.11	1.60	3.94	4.21	4.29	5.65	7.38	10.54	12.74	12.84	16.75	17.21	19.95	28.09	40.13
Os	$L\gamma_{11}$	B	1	.01	76	6	12.694	0.97650	4	1.11	1.60	3.94	4.20	4.28	5.64	7.37	10.53	12.73	12.83	16.74	17.20	19.94	28.07	40.10
Os	L_1-O_1	F	1	.01	76	6	12.882	0.96227	5	1.10	1.58	3.88	4.14	4.22	5.56	7.26	10.38	12.54	12.64	16.50	16.94	19.64	27.65	39.50
Os	$L\gamma_4$P		1	.1	76	6	12.908	0.96033	5	1.09	1.57	3.88	4.13	4.21	5.55	7.25	10.36	12.52	12.61	16.46	16.91	19.60	27.60	39.41
Os	$L\gamma_4$		1	.1	76	6	12.921	0.95938	5	1.09	1.57	3.87	4.13	4.21	5.54	7.24	10.35	12.51	12.60	16.45	16.89	19.58	27.57	39.37
Os	L_1-$O_{4,5}$		8	1	.01	76	6	12.966	0.95603	5	1.09	1.57	3.86	4.11	4.19	5.52	7.22	10.31	12.46	12.56	16.39	16.83	19.52	27.47	39.23
Os	AL_1			1	76	6	12.969	0.95580	4	1.09	1.56	3.86	4.11	4.19	5.52	7.22	10.31	12.46	12.55	16.38	16.83	19.51	27.46	39.22
Os	$K\alpha_2$		1	50	76	6	61.476	0.20164	6	0.23	0.33	0.81	0.87	0.88	1.16	1.52	2.17	2.62	2.64	3.45	3.54	4.10	5.74	8.12
Os	$K\alpha_{1,2}$		1	150	76	6	62.477	0.19841	6	0.23	0.32	0.80	0.85	0.87	1.15	1.50	2.14	2.58	2.60	3.39	3.48	4.03	5.65	7.99
Os	$K\alpha_1$		1	100	76	6	62.990	0.19679	6	0.22	0.32	0.79	0.85	0.86	1.14	1.48	2.12	2.56	2.58	3.36	3.45	4.00	5.60	7.92
Os	$K\beta_3$		1	12	76	6	71.065	0.17443	6	0.20	0.29	0.70	0.75	0.77	1.01	1.32	1.88	2.27	2.29	2.98	3.06	3.54	4.97	7.02
Os	$K\beta_1$		1	27	76	6	71.401	0.17361	6	0.20	0.28	0.70	0.75	0.76	1.00	1.31	1.87	2.26	2.28	2.97	3.05	3.53	4.94	6.99
Os	$K\beta_5$''	B	1	.3	76	6	71.811	0.17262	5	0.20	0.28	0.70	0.74	0.76	1.00	1.30	1.86	2.25	2.26	2.95	3.03	3.51	4.91	6.95
Os	$K\beta_5$'	8	1	.3	76	6	71.882	0.17245	5	0.20	0.28	0.70	0.74	0.76	1.00	1.30	1.86	2.24	2.26	2.95	3.03	3.50	4.91	6.94
Os	$K\beta_2$''		1	10	76	6	73.306	0.16910	5	0.19	0.28	0.68	0.73	0.74	0.98	1.28	1.82	2.20	2.22	2.89	2.97	3.44	4.81	6.81
Os	$K\beta_2$'		1	10	76	6	73.390	0.16891	6	0.19	0.28	0.68	0.73	0.74	0.98	1.27	1.82	2.20	2.21	2.89	2.96	3.43	4.81	6.80
Os	$K\beta_4$	B	1	.2	76	6	73.602	0.16842	5	0.19	0.28	0.68	0.72	0.74	0.97	1.27	1.81	2.19	2.21	2.88	2.95	3.42	4.79	6.78
Os	$K-O_{2,3}$		1	.01	76	6	73.795	0.16798	5	0.19	0.27	0.68	0.72	0.74	0.97	1.27	1.81	2.19	2.20	2.87	2.95	3.41	4.78	6.76
Os	AK	H	1		76	6	73.843	0.16787	5	0.19	0.27	0.68	0.72	0.74	0.97	1.27	1.81	2.18	2.20	2.87	2.95	3.41	4.78	6.76
Ir	N_5-$N_{6,7}$		1		77	6	0.235	52.79999	1	63.25	97.93													
Ir	N_4-N_6		1		77	6	0.247	50.20000	1	59.80	91.64													
Ir	Mz_2		1	.01	77	6	1.537	8.06500	3	9.19	13.23	33.01	35.26	35.97	47.97	64.14	98.57	132.60	134.61					
Ir	Mz_1		1	.01	77	6	1.545	8.02100	3	9.14	13.16	32.82	35.06	35.77	47.69	63.75	97.85	131.19	133.13					
Ir	M_4-N_3		1	.01	77	6	1.621	7.64500	3	8.71	12.54	31.24	33.36	34.04	45.33	60.44	91.86	120.45	121.98					
Ir	M_3-N_1		1	.5	77	6	1.859	6.66900	3	7.59	10.93	27.17	29.00	29.58	39.28	52.09	77.63	98.43	99.44	167.64				
Ir	$M\alpha_2$		1	100	77	6	1.975	6.27500	3	7.15	10.29	25.54	27.26	27.80	36.88	48.80	72.28	90.86	91.75	138.60	147.75			
Ir	$M\alpha_1$		1	100	77	6	1.980	6.26200	3	7.13	10.26	25.48	27.20	27.74	36.80	48.69	72.11	90.62	91.50	137.98	146.94			
Ir	AM_5	H	1		77	6	2.049	6.05000	2	6.89	9.92	24.61	26.26	26.78	35.51	46.94	69.31	86.77	87.59	128.82	135.70			
Ir	$M\beta$		1	45	77	6	2.053	6.03800	3	6.88	9.90	24.56	26.21	26.73	35.44	46.84	69.15	86.55	87.37	128.35	135.15			
Ir	AM_4	8	1		77	6	2.126	5.83000	2	6.64	9.55	23.70	25.29	25.79	34.18	45.14	66.45	82.89	83.66	120.71	126.39			
Ir	M_3-N_4		1	.1	77	6	2.238	5.54000	3	6.31	9.08	22.50	24.01	24.49	32.43	42.78	62.76	77.95	78.65	111.36	116.02	158.28		
Ir	$M\gamma$		1	1	77	6	2.254	5.50000	3	6.26	9.01	22.34	23.84	24.31	32.19	42.46	62.25	77.28	77.97	110.15	114.71	154.33		
Ir	M_3-$O_{4,5}$		1	.5	77	6	2.546	4.86900	3	5.54	7.98	19.75	21.07	21.49	28.41	37.39	54.47	67.12	67.69	93.08	96.39	119.34		
Ir	AM_3		1		77	6	2.550	4.86100	3	5.53	7.96	19.72	21.03	21.45	28.36	37.33	54.37	66.99	67.57	92.88	96.18	119.02		
Ir	M_2-N_4		1	.2	77	6	2.593	4.78000	3	5.44	7.83	19.38	20.68	21.09	27.88	36.68	53.39	65.73	66.29	90.89	94.07	115.85		
Ir	M_1-N_3	8	1	.5	77	6	2.677	4.63100	3	5.27	7.59	18.77	20.03	20.42	27.00	35.50	51.60	63.44	63.98	87.32	90.30	110.36		
Ir	AM_2	H	1		77	6	2.910	4.26000	3	4.85	6.98	17.26	18.41	18.77	24.80	32.57	47.20	57.85	58.33	78.85	81.41	98.08		
Ir	AM_1	H	1		77	6	3.166	3.91500	3	4.46	6.41	15.85	16.91	17.24	22.76	29.87	43.18	52.78	53.21	71.41	73.65	87.90	152.96	
Ir	Ll	D	1	3	77	6	8.040	1.54180	4	1.75	2.52	6.23	6.64	6.77	8.91	11.65	16.66	20.16	20.32	26.58	27.31	31.72	45.03	65.55
Ir	Lt	8	1	.01	77	6	8.303	1.49300	4	1.70	2.44	6.03	6.43	6.55	8.63	11.28	16.13	19.52	19.67	25.72	26.43	30.69	43.53	63.23
Ir	Ls	B	1	.01	77	6	8.658	1.43180	4	1.63	2.34	5.78	6.16	6.28	8.28	10.82	15.47	18.71	18.85	24.65	25.32	29.41	41.66	60.36
Ir	$L\alpha_2$		1	10	77	6	9.098	1.36250	5	1.55	2.23	5.50	5.87	5.98	7.88	10.29	14.71	17.80	17.93	23.44	24.08	27.95	39.56	57.16
Ir	$L\alpha_1$		1	100	77	6	9.174	1.35128	5	1.54	2.21	5.46	5.82	5.93	7.81	10.21	14.59	17.65	17.78	23.24	23.88	27.72	39.22	56.65
Ir	Ln	D	1	1	77	6	9.649	1.28470	4	1.46	2.10	5.19	5.53	5.64	7.43	9.70	13.87	16.77	16.90	22.08	22.69	26.33	37.21	53.63
Ir	L_2-M_2	B	1	.01	77	6	9.915	1.25020	4	1.42	2.05	5.05	5.38	5.49	7.23	9.44	13.50	16.32	16.44	21.48	22.07	25.61	36.18	52.08

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EOOT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Ir	L_1-M_1	B	1	.01	77	6	10.243	1.21020	4		1.38	1.98	4.89	5.21	5.31	6.99	9.14	13.06	15.79	15.91	20.79	21.35	24.78	34.98	50.29
Ir	$L\beta_{17}$	B	1	.01	77	6	10.271	1.20690	4		1.37	1.98	4.87	5.19	5.30	6.98	9.11	13.03	15.75	15.87	20.73	21.30	24.71	34.88	50.15
Ir	$L\beta_4$		1	4	77	6	10.509	1.17958	5		1.34	1.93	4.76	5.08	5.18	6.82	8.91	12.73	15.39	15.51	20.26	20.81	24.14	34.07	48.94
Ir	$L\beta_6$		1	.1	77	6	10.523	1.17796	5		1.34	1.93	4.76	5.07	5.17	6.81	8.90	12.71	15.37	15.49	20.23	20.78	24.11	34.02	48.86
Ir	L_3-N_2	B	1	.01	77	6	10.636	1.16545	5		1.33	1.91	4.71	5.02	5.11	6.74	8.80	12.58	15.21	15.32	20.01	20.56	23.85	33.65	48.31
Ir	$L\beta_1$		1	50	77	6	10.706	1.15781	5		1.32	1.90	4.67	4.98	5.08	6.69	8.74	12.49	15.11	15.22	19.88	20.42	23.69	33.42	47.97
Ir	L_3-N_3	B	1	.01	77	6	10.723	1.15600	4		1.32	1.89	4.67	4.98	5.07	6.68	8.73	12.47	15.08	15.20	19.85	20.39	23.65	33.37	47.89
Ir	L_2-M_5	B	1	.01	77	6	10.789	1.14890	4		1.31	1.88	4.64	4.94	5.04	6.64	8.68	12.40	14.99	15.10	19.72	20.26	23.50	33.16	47.58
Ir	$L\beta_3$		1	6	77	6	10.866	1.14085	5		1.30	1.87	4.61	4.91	5.01	6.59	8.61	12.31	14.88	15.00	19.58	20.12	23.34	32.92	47.23
Ir	$L\beta_{15}$		1	1	77	6	10.902	1.13707	5		1.29	1.86	4.59	4.89	4.99	6.57	8.59	12.27	14.83	14.95	19.52	20.05	23.26	32.81	47.06
Ir	$L\beta_2$		1	20	77	6	10.919	1.13532	5		1.29	1.86	4.58	4.89	4.98	6.56	8.57	12.25	14.81	14.92	19.49	20.02	23.22	32.75	46.99
Ir	$L\beta_7$		1	.1	77	6	11.119	1.11489	5		1.27	1.83	4.50	4.80	4.89	6.44	8.42	12.03	14.54	14.65	19.13	19.65	22.80	32.15	46.09
Ir	Lu	B	1	.01	77	6	11.153	1.11145	5		1.26	1.82	4.49	4.78	4.88	6.42	8.39	11.99	14.50	14.61	19.07	19.59	22.73	32.05	45.94
Ir	L_3-$O_{2,3}$	B	1	.01	77	6	11.175	1.10923	5		1.26	1.82	4.48	4.77	4.87	6.41	8.38	11.97	14.47	14.58	19.04	19.55	22.68	31.98	45.84
Ir	$L\beta_5$		1	.1	77	6	11.209	1.10585	5		1.26	1.81	4.46	4.76	4.85	6.39	8.35	11.93	14.43	14.53	18.98	19.49	22.61	31.88	45.70
Ir	AL_3		1		77	6	11.210	1.10580	4		1.26	1.81	4.46	4.76	4.85	6.39	8.35	11.93	14.42	14.53	18.98	19.49	22.61	31.88	45.69
Ir	$L\beta_{10}$	B	1	.01	77	6	11.300	1.09702	5		1.25	1.80	4.43	4.72	4.81	6.34	8.28	11.84	14.31	14.42	18.82	19.34	22.43	31.62	45.31
Ir	$L\beta_9$	B	1	.01	77	6	11.375	1.08975	5		1.24	1.78	4.40	4.69	4.78	6.30	8.23	11.76	14.21	14.32	18.70	19.21	22.28	31.40	44.99
Ir	$L\gamma_5$		1	.1	77	6	12.132	1.02175	5		1.16	1.67	4.12	4.40	4.48	5.90	7.71	11.02	13.32	13.42	17.52	18.00	20.87	29.40	42.05
Ir	L_2-N_2	B	1	.01	77	6	12.249	1.01200	4		1.15	1.66	4.09	4.36	4.44	5.85	7.64	10.92	13.20	13.30	17.35	17.83	20.67	29.11	41.63
Ir	L_2-N_3	B	1	.01	77	6	12.329	1.00540	4		1.14	1.65	4.06	4.33	4.41	5.81	7.59	10.84	13.11	13.21	17.24	17.71	20.53	28.92	41.34
Ir	$L\gamma_1$		1	10	77	6	12.510	0.99085	5		1.13	1.62	4.00	4.26	4.35	5.73	7.48	10.69	12.92	13.02	16.99	17.45	20.23	28.49	40.72
Ir	$L\gamma_8$		1	.1	77	6	12.726	0.97409	5		1.11	1.59	3.93	4.19	4.27	5.63	7.35	10.51	12.70	12.80	16.70	17.15	19.89	28.00	40.00
Ir	L_1-N_1	F	1	.01	77	6	12.726	0.97405	5		1.11	1.59	3.93	4.19	4.27	5.63	7.35	10.51	12.70	12.79	16.70	17.15	19.89	28.00	40.00
Ir	Lv	B	1	.01	77	6	12.758	0.97161	5		1.11	1.59	3.92	4.18	4.26	5.61	7.33	10.48	12.67	12.76	16.66	17.11	19.84	27.93	39.89
Ir	L_2-O_3	F	1	.01	77	6	12.771	0.97061	5		1.10	1.59	3.92	4.18	4.26	5.61	7.33	10.47	12.65	12.75	16.64	17.09	19.82	27.90	39.85
Ir	AL_2		1		77	6	12.818	0.96710	4		1.10	1.58	3.90	4.16	4.24	5.59	7.30	10.43	12.61	12.70	16.58	17.03	19.74	27.79	39.70
Ir	$L\gamma_6$		1	.01	77	6	12.818	0.96708	5		1.10	1.58	3.90	4.16	4.24	5.59	7.30	10.43	12.61	12.70	16.58	17.03	19.74	27.79	39.70
Ir	$L\gamma_2$		1	1	77	6	12.840	0.96545	5		1.10	1.58	3.90	4.16	4.24	5.58	7.29	10.41	12.59	12.68	16.55	17.00	19.71	27.75	39.63
Ir	$L\gamma_3$		1	2	77	6	12.922	0.95931	5		1.09	1.57	3.87	4.13	4.21	5.54	7.24	10.35	12.51	12.60	16.44	16.89	19.58	27.57	39.37
Ir	L_1-N_4	B	1	.01	77	6	13.105	0.94590	4		1.08	1.55	3.82	4.07	4.15	5.47	7.14	10.20	12.33	12.42	16.21	16.65	19.31	27.17	38.80
Ir	$L\gamma_{11}$	B	1	.01	77	6	13.123	0.94460	4		1.07	1.55	3.81	4.07	4.14	5.46	7.13	10.19	12.31	12.41	16.19	16.63	19.28	27.13	38.74
Ir	$L\gamma_4$p		1	.1	77	6	13.353	0.92831	5		1.06	1.52	3.75	4.00	4.07	5.36	7.01	10.01	12.10	12.19	15.91	16.34	18.94	26.66	38.05
Ir	$L\gamma_4$		1	.1	77	6	13.366	0.92744	5		1.06	1.52	3.74	3.99	4.07	5.36	7.00	10.00	12.09	12.18	15.89	16.33	18.93	26.63	38.01
Ir	L_1-$O_{4,5}$	B	1	.01	77	6	13.411	0.92430	4		1.05	1.51	3.73	3.98	4.06	5.34	6.98	9.97	12.05	12.14	15.84	16.27	18.86	26.54	37.88
Ir	AL_1		1		77	6	13.421	0.92360	4		1.05	1.51	3.73	3.97	4.05	5.34	6.97	9.96	12.04	12.13	15.83	16.26	18.85	26.52	37.85
Ir	$K\alpha_2$		1	50	77	6	63.276	0.19590	6		0.22	0.32	0.79	0.84	0.86	1.13	1.48	2.11	2.55	2.57	3.35	3.44	3.98	5.58	7.89
Ir	$K\alpha_{1,2}$		1	150	77	6	64.339	0.19267	6		0.22	0.32	0.78	0.83	0.85	1.11	1.45	2.08	2.51	2.53	3.29	3.38	3.91	5.49	7.76
Ir	$K\alpha_1$		1	100	77	6	64.885	0.19105	6		0.22	0.31	0.77	0.82	0.84	1.10	1.44	2.06	2.49	2.50	3.26	3.35	3.88	5.44	7.69
Ir	$K\beta_3$		1	12	77	6	73.190	0.16937	6		0.19	0.28	0.68	0.73	0.74	0.98	1.28	1.82	2.20	2.22	2.89	2.97	3.44	4.82	6.82
Ir	$K\beta_1$		1	27	77	6	73.548	0.16854	6		0.19	0.28	0.68	0.73	0.74	0.97	1.27	1.82	2.19	2.21	2.88	2.96	3.42	4.80	6.79
Ir	$K\beta_5$''	B	1	.3	77	6	73.966	0.16759	5		0.19	0.27	0.68	0.72	0.74	0.97	1.26	1.80	2.18	2.20	2.86	2.94	3.40	4.77	6.75
Ir	$K\beta_5$'	B	1	.3	77	6	74.062	0.16737	6		0.19	0.27	0.68	0.72	0.73	0.97	1.26	1.80	2.18	2.19	2.86	2.94	3.40	4.76	6.74
Ir	$K\beta_{2}$''		1	10	77	6	75.516	0.16415	5		0.19	0.27	0.66	0.71	0.72	0.95	1.24	1.77	2.14	2.15	2.80	2.88	3.34	4.67	6.61
Ir	$K\beta_2$'		1	10	77	6	75.606	0.16396	6		0.19	0.27	0.66	0.71	0.72	0.95	1.24	1.77	2.13	2.15	2.80	2.88	3.33	4.67	6.60
Ir	$K\beta_4$	B	1	.2	77	6	75.807	0.16352	5		0.19	0.27	0.66	0.70	0.72	0.94	1.23	1.76	2.13	2.14	2.79	2.87	3.32	4.65	6.58
Ir	K-$O_{2,3}$		1	.01	77	6	76.040	0.16302	6		0.19	0.27	0.66	0.70	0.72	0.94	1.23	1.76	2.12	2.14	2.79	2.86	3.31	4.64	6.56
Ir	AK	H	1		77	6	76.086	0.16292	5		0.19	0.27	0.66	0.70	0.71	0.94	1.23	1.75	2.12	2.14	2.78	2.86	3.31	4.64	6.56
Pt	N_5-$N_{6,7}$		1		78	6	0.244	50.89999	1		60.72	93.29													
Pt	N_4-N_6		1		78	6	0.258	48.09999	1		57.06	86.81													
Pt	Mz_2		1	1	78	6	1.591	7.79000	3		8.87	12.78	31.85	34.02	34.70	46.24	61.71	94.13	124.36	126.02					
Pt	Mz_1		1	2	78	6	1.602	7.73800	3		8.81	12.69	31.63	33.78	34.46	45.91	61.25	93.31	122.93	124.54					
Pt	M_4-N_3		1	.01	78	6	1.682	7.37100	3		8.40	12.09	30.09	32.14	32.78	43.62	58.06	87.70	113.62	114.95					
Pt	M_3-N_1		1	1	78	6	1.920	6.45500	3		7.35	10.58	26.28	28.05	28.61	37.97	50.30	74.70	94.25	95.19	148.43	162.39			
Pt	$M\alpha_2$		1	100	78	6	2.046	6.05800	3		6.90	9.93	24.64	26.30	26.82	35.56	47.01	69.41	86.91	87.73	129.14	136.08			
Pt	$M\alpha_1$		1	100	78	6	2.050	6.04700	3		6.89	9.91	24.59	26.25	26.77	35.49	46.92	69.27	86.71	87.53	128.70	135.56			
Pt	M_5-O_3		1	.01	78	6	2.070	5.98700	3		6.82	9.81	24.35	25.98	26.50	35.13	46.42	68.48	85.64	86.45	126.38	132.86			
Pt	$M\beta$		1	50	78	6	2.127	5.82800	3		6.64	9.55	23.69	25.28	25.78	34.17	45.12	66.42	82.85	83.62	120.64	126.31			
Pt	AM_5	H	1		78	6	2.134	5.81000	2		6.62	9.52	23.62	25.20	25.70	34.06	44.98	66.19	82.54	83.30	120.02	125.61			
Pt	AM_4	H	1		78	6	2.218	5.59000	2		6.36	9.16	22.71	24.23	24.71	32.73	43.19	63.39	78.79	79.50	112.89	117.69	164.58		
Pt	M_3-N_4		1	1	78	6	2.314	5.35700	3		6.10	8.78	21.75	23.21	23.67	31.33	41.30	60.46	74.92	75.58	105.99	110.19	143.48		
Pt	$M\gamma$		1	3	78	6	2.331	5.31900	3		6.06	8.72	21.60	23.04	23.50	31.10	40.99	59.99	74.30	74.95	104.92	109.04	141.10		
Pt	M_3-O_1		1	.01	78	6	2.542	4.87600	3		5.55	7.99	19.78	21.10	21.52	28.45	37.45	54.55	67.23	67.80	93.25	96.57	119.63		
Pt	M_3-$O_{4,5}$		1	.5	78	6	2.641	4.69400	3		5.34	7.69	19.03	20.30	20.70	27.37	36.00	52.36	64.41	64.95	88.82	91.88	112.63		
Pt	AM_3		1		78	6	2.645	4.68600	3		5.33	7.68	19.00	20.27	20.67	27.32	35.94	52.26	64.28	64.83	88.62	91.68	112.34		

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Pt	M_2-N_4		1	.5	78	6	2.694	4.60100	3		5.24	7.54	18.65	19.90	20.29	26.82	35.26	51.24	62.98	63.51	86.61	89.56	109.30		
Pt	M_1-N_3		1	1	78	6	2.779	4.46000	3		5.08	7.31	18.08	19.28	19.66	25.98	34.15	49.56	60.84	61.35	83.35	86.12	104.49		
Pt	AM_2		1		78	6	3.029	4.09300	3		4.66	6.70	16.58	17.68	18.03	23.81	31.26	45.25	55.38	55.84	75.20	77.60	93.03		
Pt	AM_1	H	1		78	6	3.295	3.76200	3		4.28	6.16	15.23	16.24	16.56	21.86	28.68	41.41	50.57	50.98	68.23	70.33	83.66	138.23	
Pt	Ll		1	3	78	6	8.267	1.49950	4		1.71	2.45	6.05	6.46	6.58	8.67	11.33	16.20	19.60	19.75	25.83	26.54	30.83	43.73	63.54
Pt	Lt	B	1	.01	78	6	8.531	1.45300	4		1.65	2.38	5.87	6.26	6.38	8.40	10.98	15.70	18.99	19.13	25.02	25.71	29.85	42.30	61.35
Pt	Ls	B	1	.01	78	6	8.921	1.38950	4		1.58	2.27	5.61	5.98	6.10	8.03	10.50	15.01	18.15	18.29	23.91	24.56	28.52	40.37	58.40
Pt	$L\alpha_2$		1	10	78	6	9.360	1.32432	5		1.51	2.17	5.35	5.70	5.81	7.65	10.00	14.30	17.29	17.43	22.77	23.39	27.16	38.40	55.42
Pt	$L\alpha_1$		1	100	78	6	9.441	1.31304	5		1.49	2.15	5.30	5.65	5.76	7.59	9.92	14.18	17.15	17.28	22.58	23.19	26.92	38.06	54.91
Pt	Ln		1	1	78	6	9.973	1.24290	4		1.41	2.03	5.02	5.35	5.45	7.18	9.39	13.42	16.22	16.35	21.36	21.94	25.46	35.96	51.75
Pt	L_2-M_2	B	1	.01	78	6	10.219	1.21300	3		1.38	1.99	4.90	5.22	5.32	7.01	9.16	13.09	15.83	15.95	20.84	21.40	24.83	35.07	50.42
Pt	L_1-M_1	B	1	.01	78	6	10.598	1.16962	5		1.33	1.91	4.72	5.03	5.13	6.76	8.83	12.62	15.26	15.38	20.08	20.63	23.93	33.77	48.50
Pt	$L\beta_{17}$	B	1	.01	78	6	10.625	1.16670	4		1.33	1.91	4.71	5.02	5.12	6.74	8.81	12.59	15.22	15.34	20.03	20.58	23.87	33.69	48.37
Pt	$L\beta_6$		1	.1	78	6	10.840	1.14355	5		1.30	1.87	4.62	4.92	5.02	6.61	8.63	12.34	14.92	15.03	19.63	20.17	23.39	33.00	47.35
Pt	$L\beta_4$		1	4	78	6	10.852	1.14223	5		1.30	1.87	4.61	4.92	5.01	6.60	8.62	12.33	14.90	15.02	19.61	20.14	23.36	32.96	47.29
Pt	L_3-N_2	B	1	.01	78	6	10.960	1.13100	4		1.29	1.85	4.57	4.87	4.96	6.54	8.54	12.20	14.75	14.87	19.41	19.94	23.13	32.63	46.80
Pt	L_3-N_3	B	1	.01	78	6	11.042	1.12260	4		1.28	1.84	4.53	4.83	4.93	6.49	8.48	12.11	14.64	14.76	19.27	19.79	22.96	32.38	46.43
Pt	$L\beta_1$		1	50	78	6	11.069	1.11990	5		1.27	1.83	4.52	4.82	4.91	6.47	8.46	12.08	14.61	14.72	19.22	19.74	22.90	32.30	46.31
Pt	L_2-M_5	F	1	.01	78	6	11.149	1.11183	5		1.27	1.82	4.49	4.79	4.88	6.43	8.40	12.00	14.50	14.61	19.08	19.60	22.73	32.06	45.96
Pt	$L\beta_3$	D	1	6	78	6	11.233	1.10358	5		1.26	1.81	4.46	4.75	4.84	6.38	8.33	11.91	14.40	14.50	18.94	19.45	22.56	31.81	45.60
Pt	$L\beta_2$		1	20	78	6	11.249	1.10200	5		1.25	1.80	4.45	4.74	4.84	6.37	8.32	11.89	14.37	14.48	18.91	19.43	22.53	31.77	45.53
Pt	$L\beta_7$		1	.1	78	6	11.460	1.08168	5		1.23	1.77	4.37	4.66	4.75	6.25	8.17	11.67	14.11	14.22	18.56	19.06	22.11	31.17	44.64
Pt	Lu	B	1	.01	78	6	11.489	1.07896	5		1.23	1.77	4.36	4.64	4.73	6.23	8.15	11.64	14.07	14.18	18.51	19.02	22.05	31.09	44.52
Pt	L_3-$O_{2,3}$	B	1	.01	78	6	11.519	1.07610	4		1.22	1.76	4.34	4.63	4.72	6.22	8.12	11.61	14.04	14.14	18.46	18.96	21.99	31.00	44.40
Pt	$L\beta_5$		1	1	78	6	11.559	1.07240	4		1.22	1.76	4.33	4.62	4.71	6.20	8.10	11.57	13.99	14.09	18.40	18.90	21.92	30.89	44.24
Pt	AL_3		1		78	6	11.560	1.07230	4		1.22	1.76	4.33	4.62	4.71	6.20	8.10	11.57	13.99	14.09	18.40	18.90	21.92	30.89	44.24
Pt	$L\beta_{10}$	B	1	.01	78	6	11.674	1.06183	5		1.21	1.74	4.29	4.57	4.66	6.14	8.02	11.45	13.85	13.95	18.22	18.71	21.70	30.58	43.78
Pt	$L\beta_9$	B	1	.01	78	6	11.756	1.05446	5		1.20	1.73	4.26	4.54	4.63	6.09	7.96	11.38	13.75	13.86	18.09	18.58	21.55	30.36	43.46
Pt	$L\gamma_5$		1	.1	78	6	12.550	0.98770	4		1.12	1.62	3.99	4.25	4.33	5.71	7.46	10.65	12.88	12.97	16.93	17.39	20.17	28.40	40.58
Pt	L_2-N_2	B	1	.01	78	6	12.659	0.97920	4		1.11	1.60	3.95	4.21	4.30	5.66	7.39	10.56	12.77	12.86	16.79	17.24	19.99	28.15	40.22
Pt	L_2-N_3	F	1	.01	78	6	12.751	0.97213	5		1.11	1.59	3.92	4.18	4.27	5.62	7.34	10.48	12.67	12.77	16.67	17.12	19.85	27.94	39.92
Pt	$L\gamma_1$		1	10	78	6	12.940	0.95797	5		1.09	1.57	3.87	4.12	4.20	5.54	7.23	10.33	12.49	12.58	16.42	16.87	19.56	27.53	39.31
Pt	L_1-N_1	F	1	.01	78	6	13.156	0.94226	5		1.07	1.54	3.80	4.06	4.13	5.44	7.11	10.16	12.28	12.38	16.15	16.59	19.23	27.07	38.64
Pt	$L\gamma_8$		1	.1	78	6	13.172	0.94110	4		1.07	1.54	3.80	4.05	4.13	5.44	7.10	10.15	12.27	12.36	16.13	16.57	19.21	27.03	38.59
Pt	Lv	B	1	.01	78	6	13.197	0.93931	5		1.07	1.54	3.79	4.04	4.12	5.43	7.09	10.13	12.24	12.34	16.10	16.54	19.17	26.98	38.51
Pt	$L\gamma_2$		1	1	78	6	13.268	0.93427	5		1.06	1.53	3.77	4.02	4.10	5.40	7.05	10.07	12.18	12.27	16.01	16.45	19.07	26.83	38.30
Pt	$L\gamma_6$		1	.01	78	6	13.269	0.93420	4		1.06	1.53	3.77	4.02	4.10	5.40	7.05	10.07	12.18	12.27	16.01	16.45	19.07	26.83	38.30
Pt	AL_2		1		78	6	13.270	0.93414	5		1.06	1.53	3.77	4.02	4.10	5.40	7.05	10.07	12.18	12.27	16.01	16.44	19.06	26.83	38.29
Pt	$L\gamma_3$		1	2	78	6	13.359	0.92791	5		1.06	1.52	3.75	3.99	4.07	5.36	7.00	10.01	12.09	12.19	15.90	16.33	18.94	26.65	38.03
Pt	$L\gamma_{11}$	B	1	.01	78	6	13.558	0.91430	4		1.04	1.50	3.69	3.93	4.01	5.28	6.90	9.86	11.92	12.01	15.67	16.09	18.66	26.25	37.45
Pt	L_1-O_1	B	1	.01	78	6	13.781	0.89950	4		1.02	1.47	3.63	3.87	3.95	5.20	6.79	9.70	11.72	11.81	15.41	15.83	18.35	25.82	36.82
Pt	$L\gamma_4$p		1	.1	78	6	13.812	0.89747	5		1.02	1.47	3.62	3.86	3.94	5.19	6.77	9.68	11.70	11.78	15.38	15.79	18.31	25.76	36.74
Pt	$L\gamma_4$		1	.1	78	6	13.826	0.89659	5		1.02	1.47	3.62	3.86	3.93	5.18	6.77	9.67	11.68	11.77	15.36	15.78	18.29	25.73	36.70
Pt	L_1-$O_{4,5}$	B	1	.01	78	6	13.875	0.89340	4		1.02	1.46	3.61	3.84	3.92	5.16	6.74	9.63	11.64	11.73	15.31	15.72	18.23	25.64	36.56
Pt	AL_1		1		78	6	13.880	0.89310	4		1.02	1.46	3.61	3.84	3.92	5.16	6.74	9.63	11.64	11.73	15.30	15.72	18.22	25.63	36.55
Pt	$K\alpha_2$		1	50	78	6	65.112	0.19038	6		0.22	0.31	0.77	0.82	0.84	1.10	1.44	2.05	2.48	2.50	3.25	3.34	3.87	5.42	7.67
Pt	$K\alpha_{1,2}$		1	150	78	6	66.241	0.18713	6		0.21	0.31	0.76	0.81	0.82	1.08	1.41	2.02	2.43	2.45	3.20	3.28	3.80	5.33	7.53
Pt	$K\alpha_1$		1	100	78	6	66.821	0.18551	6		0.21	0.30	0.75	0.80	0.81	1.07	1.40	2.00	2.41	2.43	3.17	3.25	3.77	5.28	7.47
Pt	$K\beta_3$		1	12	78	6	75.355	0.16450	6		0.19	0.27	0.66	0.71	0.72	0.95	1.24	1.77	2.14	2.16	2.81	2.89	3.34	4.68	6.62
Pt	$K\beta_1$		1	27	78	6	75.735	0.16367	6		0.19	0.27	0.66	0.70	0.72	0.95	1.23	1.76	2.13	2.15	2.80	2.87	3.33	4.66	6.59
Pt	$K\beta_5$''	B	1	.3	78	6	76.185	0.16271	5		0.19	0.27	0.66	0.70	0.71	0.94	1.23	1.75	2.12	2.13	2.78	2.85	3.31	4.63	6.55
Pt	$K\beta_5$'	B	1	.3	78	6	76.260	0.16255	5		0.18	0.27	0.66	0.70	0.71	0.94	1.23	1.75	2.11	2.13	2.78	2.85	3.30	4.63	6.54
Pt	$K\beta_5$'	B	1	.3	78	6	76.260	0.16255	5		0.18	0.27	0.66	0.70	0.71	0.94	1.23	1.75	2.11	2.13	2.78	2.85	3.30	4.63	6.54
Pt	$K\beta_2$''		1	10	78	6	77.772	0.15939	5		0.18	0.26	0.64	0.69	0.70	0.92	1.20	1.72	2.07	2.09	2.72	2.80	3.24	4.54	6.42
Pt	$K\beta_2$'		1	10	78	6	77.864	0.15920	5		0.18	0.26	0.64	0.69	0.70	0.92	1.20	1.71	2.07	2.09	2.72	2.79	3.23	4.53	6.41
Pt	$K\beta_4$	B	1	.2	78	6	78.056	0.15881	5		0.18	0.26	0.64	0.68	0.70	0.92	1.20	1.71	2.07	2.08	2.71	2.79	3.23	4.52	6.39
Pt	$K\beta_4$	B	1	.2	78	6	78.056	0.15881	5		0.18	0.26	0.64	0.68	0.70	0.92	1.20	1.71	2.07	2.08	2.71	2.79	3.23	4.52	6.39
Pt	K-$O_{2,3}$		1	.01	78	6	78.327	0.15826	5		0.18	0.26	0.64	0.68	0.69	0.91	1.19	1.70	2.06	2.07	2.70	2.78	3.22	4.51	6.37
Pt	AK		1		78	6	78.366	0.15818	5		0.18	0.26	0.64	0.68	0.69	0.91	1.19	1.70	2.06	2.07	2.70	2.78	3.21	4.50	6.37
Au	N_5-$N_{6,7}$		1		79	6	0.251	49.39999	1		58.76	89.77													
Au	N_4-N_6		1		79	6	0.265	46.79999	1		55.39	83.91													
Au	Mz_2		1	1	79	6	1.648	7.52300	3		8.57	12.34	30.73	32.82	33.48	44.57	59.37	89.99	117.32	118.76					
Au	Mz_1		1	2	79	6	1.660	7.46600	3		8.50	12.25	30.49	32.56	33.22	44.21	58.88	89.13	115.91	117.31					
Au	M_4-N_3		1	.01	79	6	1.746	7.10100	3		8.09	11.64	28.97	30.93	31.55	41.94	55.74	83.73	107.45	108.64					
Au	M_3-N_1		1	1	79	6	1.981	6.25900	3		7.13	10.26	25.47	27.19	27.73	36.78	48.67	72.07	90.57	91.45	137.84	146.75			

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Au	$M\alpha_2$		1	100	79	6	2.118	5.85400	3		6.67	9.59	23.80	25.40	25.90	34.32	45.34	66.76	83.31	84.08	121.55	127.33			
Au	$M\alpha_1$		1	100	79	6	2.123	5.84000	3		6.65	9.57	23.74	25.33	25.84	34.24	45.22	66.58	83.06	83.83	121.06	126.78			
Au	M_5-O_3		1	.01	79	6	2.149	5.76700	3		6.57	9.45	23.44	25.01	25.51	33.80	44.62	65.64	81.80	82.55	118.57	123.98			
Au	$M\beta$		1	50	79	6	2.204	5.62400	3		6.40	9.22	22.85	24.38	24.87	32.93	43.46	63.82	79.36	80.08	113.94	118.86	171.10		
Au	AM_5		1		79	6	2.220	5.58400	3		6.36	9.15	22.69	24.21	24.69	32.69	43.14	63.31	78.69	79.40	112.70	117.49	163.70		
Au	AM_4		1		79	6	2.307	5.37400	3		6.12	8.81	21.82	23.28	23.75	31.43	41.44	60.67	75.20	75.87	106.48	110.72	144.60		
Au	M_3-N_4		1	1	79	6	2.390	5.18600	3		5.90	8.50	21.05	22.46	22.90	30.31	39.93	58.34	72.14	72.77	101.27	105.11	133.66		
Au	$M\gamma$		1	3	79	6	2.409	5.14500	3		5.86	8.43	20.88	22.28	22.72	30.06	39.60	57.84	71.48	72.11	100.17	103.93	131.59		
Au	M_3-O_1		1	.1	79	6	2.636	4.70300	3		5.35	7.70	19.07	20.34	20.74	27.42	36.07	52.46	64.55	65.09	89.03	92.11	112.97		
Au	$M_3-O_{4,5}$		1	.5	79	6	2.741	4.52200	3		5.15	7.41	18.33	19.55	19.94	26.35	34.64	50.30	61.78	62.30	84.77	87.62	106.57		
Au	AM_3		1		79	6	2.744	4.51800	3		5.14	7.40	18.31	19.53	19.92	26.33	34.61	50.25	61.72	62.24	84.68	87.53	106.44		
Au	M_2-N_4		1	.5	79	6	2.797	4.43200	3		5.05	7.26	17.96	19.16	19.54	25.82	33.93	49.23	60.42	60.93	82.71	85.45	103.57		
Au	M_1-N_3		1	1	79	6	2.883	4.30000	3		4.89	7.04	17.42	18.58	18.95	25.03	32.89	47.67	58.44	58.93	79.74	82.34	99.33		
Au	AM_2	H	1		79	6	3.149	3.93600	3		4.48	6.45	15.94	17.00	17.33	22.89	30.04	43.42	53.09	53.52	71.86	74.11	88.49	155.65	
Au	AM_1	H	1		79	6	3.428	3.61600	3		4.12	5.92	14.63	15.61	15.91	21.00	27.54	39.74	48.48	48.87	65.24	67.23	79.74	127.80	
Au	Ll		1	3	79	6	8.493	1.45964	5		1.66	2.39	5.89	6.28	6.41	8.44	11.03	15.77	19.08	19.22	25.14	25.82	29.99	42.51	61.66
Au	Lt	B	1	.01	79	6	8.769	1.41366	5		1.61	2.31	5.71	6.09	6.20	8.17	10.68	15.27	18.47	18.61	24.33	25.00	29.03	41.11	59.52
Au	Ls	B	1	.01	79	6	9.173	1.35131	5		1.54	2.21	5.46	5.82	5.93	7.81	10.21	14.59	17.65	17.78	23.24	23.88	27.72	39.22	56.65
Au	$L\alpha_2$		1	10	79	6	9.626	1.28772	5		1.47	2.11	5.20	5.54	5.65	7.44	9.73	13.90	16.81	16.94	22.14	22.74	26.39	37.30	53.76
Au	$L\alpha_1$		1	100	79	6	9.712	1.27640	5		1.45	2.09	5.15	5.49	5.60	7.38	9.64	13.78	16.66	16.79	21.94	22.54	26.16	36.96	53.25
Au	Ln		1	1	79	6	10.307	1.20273	5		1.37	1.97	4.86	5.18	5.28	6.95	9.08	12.98	15.70	15.82	20.66	21.22	24.62	34.76	49.96
Au	L_2-M_2	B	1	.01	79	6	10.588	1.17080	4		1.33	1.92	4.73	5.04	5.14	6.77	8.84	12.63	15.28	15.39	20.10	20.65	23.96	33.81	48.55
Au	L_1-M_1	F	1	.01	79	6	10.926	1.13453	5		1.29	1.86	4.58	4.88	4.98	6.56	8.57	12.24	14.80	14.91	19.47	20.00	23.21	32.73	46.95
Au	$L\beta_{1,7}$	B	1	.01	79	6	10.990	1.12798	5		1.28	1.85	4.55	4.85	4.95	6.52	8.52	12.17	14.72	14.83	19.36	19.89	23.07	32.54	46.66
Au	$L8_6$		1	.1	79	6	11.158	1.11092	5		1.26	1.82	4.48	4.78	4.88	6.42	8.39	11.99	14.49	14.60	19.07	19.58	22.72	32.03	45.92
Au	$L\beta_4$		1	4	79	6	11.203	1.10651	5		1.26	1.81	4.47	4.76	4.86	6.39	8.35	11.94	14.43	14.54	18.99	19.51	22.62	31.90	45.73
Au	L_3-N_2	B	1	.01	79	6	11.272	1.09968	5		1.25	1.80	4.44	4.73	4.83	6.35	8.30	11.86	14.34	14.45	18.87	19.38	22.48	31.70	45.43
Au	L_3-N_3	B	1	.01	79	6	11.370	1.09026	5		1.24	1.78	4.40	4.69	4.78	6.30	8.23	11.76	14.22	14.33	18.71	19.22	22.29	31.42	45.02
Au	$L\beta_1$		1	50	79	6	11.440	1.08353	5		1.23	1.77	4.37	4.66	4.75	6.26	8.18	11.69	14.13	14.24	18.59	19.10	22.15	31.22	44.72
Au	L_2-M_5	B	1	.01	79	6	11.525	1.07560	4		1.22	1.76	4.34	4.63	4.72	6.22	8.12	11.60	14.03	14.13	18.45	18.96	21.98	30.99	44.38
Au	$L\beta_{15}$		1	1	79	6	11.565	1.07188	5		1.22	1.75	4.33	4.61	4.70	6.19	8.09	11.56	13.98	14.09	18.39	18.89	21.91	30.88	44.22
Au	$L\beta_2$		1	20	79	6	11.583	1.07022	5		1.22	1.75	4.32	4.61	4.70	6.18	8.08	11.55	13.96	14.06	18.36	18.86	21.87	30.83	44.15
Au	$L8_3$		1	6	79	6	11.608	1.06785	5		1.22	1.75	4.31	4.60	4.69	6.17	8.06	11.52	13.93	14.03	18.32	18.82	21.82	30.76	44.04
Au	$L8_7$		1	.1	79	6	11.809	1.04974	5		1.19	1.72	4.24	4.52	4.61	6.07	7.93	11.32	13.69	13.79	18.01	18.50	21.45	30.22	43.26
Au	Lu	B	1	.01	79	6	11.834	1.04752	5		1.19	1.71	4.23	4.51	4.60	6.05	7.91	11.30	13.66	13.76	17.97	18.46	21.40	30.16	43.16
Au	$L_3-O_{2,3}$	B	1	.01	79	6	11.862	1.04500	4		1.19	1.71	4.22	4.50	4.59	6.04	7.89	11.27	13.63	13.73	17.92	18.41	21.35	30.08	43.05
Au	$L8_5$		1	1	79	6	11.914	1.04044	5		1.18	1.70	4.20	4.48	4.57	6.01	7.86	11.22	13.57	13.67	17.85	18.33	21.26	29.95	42.85
Au	AL_3		1		79	6	11.919	1.04000	5		1.18	1.70	4.20	4.48	4.56	6.01	7.85	11.22	13.56	13.66	17.84	18.32	21.25	29.94	42.84
Au	$L_3-P_{2,3}$	C	1	.01	79	6	11.933	1.03876	5		1.18	1.70	4.19	4.47	4.56	6.00	7.84	11.21	13.55	13.65	17.82	18.30	21.22	29.90	42.78
Au	LB_{10}	B	1	.01	79	6	12.060	1.02789	5		1.17	1.68	4.15	4.42	4.51	5.94	7.76	11.09	13.40	13.50	17.63	18.11	21.00	29.58	42.31
Au	$L\beta_9$	B	1	.01	79	6	12.145	1.02063	5		1.16	1.67	4.12	4.39	4.48	5.90	7.71	11.01	13.31	13.41	17.50	17.98	20.85	29.37	42.00
Au	$L\gamma_5$		1	.1	79	6	12.972	0.95559	5		1.09	1.56	3.86	4.11	4.19	5.52	7.21	10.31	12.46	12.55	16.38	16.82	19.51	27.46	39.21
Au	L_2-N_3	B	1	.01	79	6	13.184	0.94020	4		1.07	1.54	3.80	4.05	4.13	5.43	7.10	10.14	12.26	12.35	16.11	16.55	19.19	27.01	38.55
Au	$L\gamma_1$		1	10	79	6	13.379	0.92650	5		1.05	1.52	3.74	3.99	4.07	5.35	6.99	9.99	12.08	12.17	15.88	16.31	18.91	26.61	37.97
Au	L_1-N_1	F	1	.01	79	6	13.592	0.91202	5		1.04	1.49	3.68	3.92	4.00	5.27	6.88	9.83	11.89	11.98	15.63	16.05	18.61	26.18	37.35
Au	$L\gamma_8$		1	.1	79	6	13.624	0.90989	5		1.04	1.49	3.67	3.92	3.99	5.26	6.87	9.81	11.86	11.95	15.59	16.01	18.56	26.12	37.26
Au	Lv	B	1	.01	79	6	13.646	0.90837	5		1.03	1.49	3.67	3.91	3.99	5.25	6.86	9.79	11.84	11.93	15.57	15.99	18.53	26.08	37.20
Au	L_2-O_2	B	1	.01	79	6	13.660	0.90746	5		1.03	1.49	3.66	3.91	3.98	5.24	6.85	9.79	11.83	11.92	15.55	15.97	18.51	26.05	37.16
Au	L_2-O_3	B	1	.01	79	6	13.676	0.90638	5		1.03	1.48	3.66	3.90	3.98	5.24	6.84	9.77	11.81	11.90	15.53	15.95	18.49	26.02	37.11
Au	$L\gamma_2$		1	1	79	6	13.707	0.90434	5		1.03	1.48	3.65	3.89	3.97	5.23	6.83	9.75	11.79	11.88	15.50	15.92	18.45	25.96	37.03
Au	$L\gamma_6$		1	.01	79	6	13.728	0.90297	5		1.03	1.48	3.65	3.89	3.96	5.22	6.82	9.74	11.77	11.86	15.47	15.89	18.42	25.92	36.97
Au	AL_2		1		79	6	13.734	0.90259	5		1.03	1.48	3.64	3.88	3.96	5.21	6.81	9.73	11.76	11.85	15.47	15.89	18.41	25.91	36.95
Au	$L\gamma_3$		1	2	79	6	13.807	0.89783	5		1.02	1.47	3.62	3.86	3.94	5.19	6.78	9.68	11.70	11.79	15.38	15.80	18.32	25.77	36.75
Au	L_1-N_4	B	1	.01	79	6	13.997	0.88563	5		1.01	1.45	3.58	3.81	3.89	5.12	6.68	9.55	11.54	11.63	15.17	15.58	18.07	25.41	36.23
Au	$L\gamma_{11}$	B	1	.01	79	6	14.017	0.88433	5		1.01	1.45	3.57	3.81	3.88	5.11	6.68	9.54	11.52	11.61	15.15	15.56	18.04	25.37	36.18
Au	L_1-O_1	F	1	.01	79	6	14.243	0.87034	5		0.99	1.42	3.51	3.75	3.82	5.03	6.57	9.38	11.34	11.43	14.91	15.31	17.75	24.97	35.59
Au	$L\gamma_4P$		1	.1	79	6	14.278	0.86816	5		0.99	1.42	3.50	3.74	3.81	5.02	6.55	9.36	11.31	11.40	14.87	15.28	17.71	24.90	35.50
Au	$L\gamma_4$		1	.1	79	6	14.297	0.86703	5		0.99	1.42	3.50	3.73	3.80	5.01	6.54	9.35	11.30	11.38	14.85	15.26	17.68	24.87	35.45
Au	$L_1-O_{4,5}$	8	1	.01	79	6	14.347	0.86400	5		0.98	1.41	3.49	3.72	3.79	4.99	6.52	9.32	11.26	11.34	14.80	15.20	17.62	24.78	35.32
Au	AL_1		1		79	6	14.351	0.86376	5		0.98	1.41	3.49	3.72	3.79	4.99	6.52	9.31	11.26	11.34	14.80	15.20	17.62	24.77	35.31
Au	$K-L_1$	8	1	.01	79	6	66.388	0.18672	5		0.21	0.31	0.75	0.80	0.82	1.08	1.41	2.01	2.43	2.45	3.19	3.28	3.79	5.32	7.52
Au	$K\alpha_2$		1	50	79	6	66.978	0.18507	6		0.21	0.30	0.75	0.80	0.81	1.07	1.40	1.99	2.41	2.43	3.16	3.25	3.76	5.27	7.45
Au	$K\alpha_{1,2}$		1	150	79	6	68.177	0.18182	6		0.21	0.30	0.73	0.78	0.80	1.05	1.37	1.96	2.37	2.38	3.11	3.19	3.69	5.18	7.32
Au	$K\alpha_1$		1	100	79	6	68.792	0.18019	6		0.21	0.29	0.73	0.78	0.79	1.04	1.36	1.94	2.34	2.36	3.08	3.16	3.66	5.13	7.26
Au	$K\beta_3$		1	13	79	6	77.567	0.15981	6		0.18	0.26	0.65	0.69	0.70	0.92	1.21	1.72	2.08	2.09	2.73	2.80	3.25	4.55	6.43

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Au	$K\beta_1$		1	27	79	6	77.971	0.15898	6		0.18	0.26	0.64	0.68	0.70	0.92	1.20	1.71	2.07	2.08	2.72	2.79	3.23	4.53	6.40
Au	$K\beta_5''$	B	1	.3	79	6	78.425	0.15806	6		0.18	0.26	0.64	0.68	0.69	0.91	1.19	1.70	2.06	2.07	2.70	2.77	3.21	4.50	6.36
Au	$K\beta_5'$	8	1	.3	79	6	78.515	0.15788	6		0.18	0.26	0.64	0.68	0.69	0.91	1.19	1.70	2.05	2.07	2.70	2.77	3.21	4.49	6.36
Au	$K\beta_2''$		1	10	79	6	80.062	0.15483	5		0.18	0.25	0.62	0.67	0.68	0.89	1.17	1.67	2.01	2.03	2.65	2.72	3.15	4.41	6.23
Au	$K\beta_2'$		1	10	79	6	80.172	0.15462	6		0.18	0.25	0.62	0.67	0.68	0.89	1.17	1.67	2.01	2.03	2.64	2.71	3.14	4.40	6.22
Au	$K\beta_4$	B	1	.2	79	6	80.377	0.15422	6		0.18	0.25	0.62	0.66	0.68	0.89	1.16	1.66	2.01	2.02	2.63	2.71	3.13	4.39	6.21
Au	$K-O_{2,3}$		1	.01	79	6	80.654	0.15369	6		0.17	0.25	0.62	0.66	0.67	0.89	1.16	1.66	2.00	2.01	2.63	2.70	3.12	4.37	6.19
Au	AK		1		79	6	80.707	0.15359	6		0.17	0.25	0.62	0.66	0.67	0.89	1.16	1.65	2.00	2.01	2.62	2.69	3.12	4.37	6.18
Hg	$N_5-N_{6,7}$	H	1		80	6	0.259	47.89999	1		56.81	86.36													
Hg	N_4-N_6	H	1		80	6	0.274	45.20000	1		53.34	80.44													
Hg	$M\delta$		1	.01	80	6	1.804	6.87000	2		7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60					
Hg	M_3-N_1		1	1	80	6	2.035	6.09000	2		6.93	9.98	24.77	26.44	26.96	35.75	47.27	69.83	87.48	88.32	130.43	137.60			
Hg	$M\alpha$		1	100	80	6	2.195	5.64760	4		6.43	9.26	22.95	24.49	24.97	33.08	43.65	64.12	79.76	80.49	114.69	119.68			
Hg	$M\beta$		1	50	80	6	2.282	5.43180	4		6.18	8.90	22.06	23.54	24.00	31.78	41.90	61.40	76.15	76.83	108.14	112.52	148.69		
Hg	AM_5	H	1		80	6	2.313	5.36000	2		6.10	8.78	21.76	23.22	23.68	31.35	41.33	60.50	74.97	75.63	106.08	110.28	143.68		
Hg	AM_4	H	1		80	6	2.404	5.15700	3		5.87	8.45	20.93	22.33	22.77	30.13	39.69	57.98	71.68	72.30	100.49	104.28	132.18		
Hg	$M\gamma$		1	3	80	6	2.487	4.98400	3		5.67	8.17	20.22	21.57	22.00	29.10	38.31	55.86	68.92	69.52	95.97	99.46	124.14		
Hg	AM_3	H	1		80	6	2.846	4.35500	3		4.96	7.13	17.65	18.82	19.19	25.36	33.32	48.32	59.27	59.76	80.97	83.63	101.07		
Hg	AM_2	H	1		80	6	3.277	3.78300	3		4.31	6.20	15.31	16.33	16.65	21.98	28.84	41.65	50.87	51.28	68.66	70.78	84.23	139.94	
Hg	AM_1	H	1		80	6	3.564	3.47800	3		3.96	5.70	14.07	15.01	15.30	20.19	26.47	38.16	46.52	46.89	62.46	64.34	76.13	119.48	
Hg	Ll		1	3	80	6	8.720	1.42160	4		1.62	2.33	5.74	6.12	6.24	8.22	10.74	15.36	18.58	18.72	24.47	25.14	29.19	41.35	59.89
Hg	Lt	F	1	.01	80	6	9.004	1.37670	4		1.57	2.25	5.56	5.93	6.04	7.96	10.40	14.87	17.98	18.12	23.69	24.33	28.25	39.99	57.81
Hg	Ls	F	1	.01	80	6	9.435	1.31381	5		1.50	2.15	5.30	5.66	5.77	7.59	9.92	14.19	17.16	17.29	22.59	23.21	26.94	38.09	54.94
Hg	$L\alpha_2$		1	10	80	6	9.896	1.25264	5		1.43	2.05	5.06	5.39	5.50	7.24	9.46	13.52	16.35	16.48	21.52	22.11	25.66	36.25	52.19
Hg	$L\alpha_1$		1	100	80	6	9.987	1.24120	5		1.41	2.03	5.01	5.34	5.45	7.17	9.37	13.40	16.20	16.33	21.33	21.91	25.42	35.91	51.67
Hg	Ln		1	1	80	6	10.649	1.16400	4		1.32	1.91	4.70	5.01	5.11	6.73	8.79	12.56	15.19	15.30	19.99	20.53	23.82	33.61	48.25
Hg	L_2-M_2	B	1	.01	80	6	10.886	1.13870	4		1.30	1.86	4.60	4.90	5.00	6.58	8.60	12.29	14.86	14.97	19.55	20.08	23.29	32.85	47.13
Hg	L_1-M_1	8	1	.01	80	6	11.270	1.09990	4		1.25	1.80	4.44	4.73	4.83	6.36	8.30	11.87	14.35	14.46	18.87	19.39	22.49	31.70	45.44
Hg	$L\beta_{17}$	8	1	.01	80	6	11.356	1.09160	4		1.24	1.79	4.41	4.70	4.79	6.31	8.24	11.78	14.24	14.35	18.73	19.24	22.32	31.46	45.07
Hg	$L\beta_6$		1	.1	80	6	11.480	1.07975	5		1.23	1.77	4.36	4.65	4.74	6.24	8.15	11.65	14.08	14.19	18.53	19.03	22.07	31.11	44.56
Hg	$L\beta_4$		1	4	80	6	11.561	1.07222	5		1.22	1.76	4.33	4.61	4.71	6.20	8.10	11.57	13.98	14.09	18.40	18.90	21.91	30.89	44.23
Hg	L_3-N_2	F	1	.01	80	6	11.605	1.06820	4		1.22	1.75	4.31	4.60	4.69	6.17	8.07	11.52	13.93	14.04	18.33	18.82	21.83	30.77	44.06
Hg	L_3-N_3	B	1	.01	80	6	11.711	1.05850	4		1.20	1.73	4.27	4.56	4.64	6.12	7.99	11.42	13.80	13.91	18.16	18.65	21.63	30.48	43.64
Hg	$L\beta_1$		1	50	80	6	11.821	1.04868	5		1.19	1.72	4.23	4.51	4.60	6.06	7.92	11.31	13.68	13.78	17.99	18.48	21.43	30.19	43.21
Hg	$L\beta_{15}$		1	1	80	6	11.902	1.04151	5		1.19	1.71	4.20	4.48	4.57	6.02	7.86	11.23	13.58	13.68	17.86	18.35	21.28	29.98	42.90
Hg	$L\beta_2$		1	20	80	6	11.922	1.03975	5		1.18	1.70	4.20	4.47	4.56	6.01	7.85	11.22	13.56	13.66	17.83	18.32	21.24	29.93	42.83
Hg	$L\beta_3$		1	6	80	6	11.993	1.03358	5		1.18	1.69	4.17	4.45	4.54	5.97	7.80	11.15	13.48	13.58	17.73	18.21	21.12	29.75	42.56
Hg	$L\beta_7$		1	.1	80	6	12.160	1.01937	5		1.16	1.67	4.12	4.39	4.47	5.89	7.70	11.00	13.29	13.39	17.48	17.96	20.82	29.33	41.95
Hg	Lup	B	1	.01	80	6	12.181	1.01769	5		1.16	1.67	4.11	4.38	4.47	5.88	7.68	10.98	13.27	13.37	17.45	17.93	20.79	29.28	41.87
Hg	Lu	F	1	.01	80	6	12.183	1.01746	5		1.16	1.67	4.11	4.38	4.46	5.88	7.68	10.97	13.27	13.37	17.45	17.92	20.78	29.27	41.86
Hg	L_3-O_2	B	1	.01	80	6	12.206	1.01558	5		1.16	1.66	4.10	4.37	4.46	5.87	7.67	10.95	13.24	13.34	17.42	17.89	20.74	29.22	41.78
Hg	L_3-O_3	8	1	.01	80	6	12.224	1.01404	5		1.15	1.66	4.09	4.36	4.45	5.86	7.66	10.94	13.22	13.32	17.39	17.86	20.71	29.17	41.72
Hg	$L\beta_5$		1	1	80	6	12.275	1.00987	5		1.15	1.65	4.08	4.35	4.43	5.84	7.62	10.89	13.17	13.27	17.32	17.79	20.63	29.05	41.54
Hg	AL_3		1		80	6	12.284	1.00910	4		1.15	1.65	4.07	4.34	4.43	5.83	7.62	10.88	13.16	13.26	17.30	17.77	20.61	29.03	41.50
Hg	$L\beta_{10}$	8	1	.01	80	6	12.443	0.99620	4		1.13	1.63	4.02	4.29	4.37	5.76	7.52	10.74	12.99	13.09	17.08	17.54	20.34	28.65	40.95
Hg	$L\beta_9$	B	1	.01	80	6	12.558	0.98710	4		1.12	1.62	3.98	4.25	4.33	5.70	7.45	10.65	12.87	12.97	16.92	17.38	20.16	28.38	40.56
Hg	$L\gamma_5$		1	.1	80	6	13.408	0.92453	5		1.05	1.51	3.73	3.98	4.06	5.34	6.98	9.97	12.05	12.14	15.84	16.27	18.87	26.55	37.89
Hg	L_2-N_3	B	1	.01	80	6	13.638	0.90894	5		1.03	1.49	3.67	3.91	3.99	5.25	6.86	9.80	11.85	11.94	15.58	16.00	18.55	26.09	37.22
Hg	$L\gamma_1$		1	10	80	6	13.828	0.89646	5		1.02	1.47	3.62	3.86	3.93	5.18	6.77	9.67	11.68	11.77	15.36	15.78	18.29	25.73	36.69
Hg	L_1-N_1	B	1	.01	80	6	14.043	0.88270	4		1.00	1.45	3.56	3.80	3.87	5.10	6.66	9.52	11.50	11.59	15.12	15.53	18.01	25.33	36.11
Hg	$L\gamma_8$		1	.1	80	6	14.087	0.87995	5		1.00	1.44	3.55	3.79	3.86	5.08	6.64	9.49	11.47	11.55	15.08	15.48	17.95	25.25	35.99
Hg	Lv	8	1	.01	80	6	14.105	0.87885	5		1.00	1.44	3.55	3.78	3.86	5.08	6.63	9.48	11.45	11.54	15.06	15.46	17.93	25.21	35.95
Hg	L_2-O_2	8	1	.01	80	6	14.112	0.87840	4		1.00	1.44	3.55	3.78	3.85	5.08	6.63	9.47	11.45	11.53	15.05	15.46	17.92	25.20	35.93
Hg	L_2-O_3	8	1	.01	80	6	14.154	0.87580	4		1.00	1.43	3.54	3.77	3.84	5.06	6.61	9.44	11.41	11.50	15.00	15.41	17.86	25.12	35.82
Hg	$L\gamma_2$		1	1	80	6	14.160	0.87544	5		1.00	1.43	3.53	3.77	3.84	5.06	6.61	9.44	11.41	11.49	15.00	15.40	17.86	25.11	35.80
Hg	$L\gamma_6$		1	.01	80	6	14.196	0.87319	5		0.99	1.43	3.52	3.76	3.83	5.04	6.59	9.41	11.38	11.47	14.96	15.36	17.81	25.05	35.71
Hg	AL_2		1		80	6	14.212	0.87220	4		0.99	1.43	3.52	3.75	3.83	5.04	6.58	9.40	11.37	11.45	14.94	15.35	17.79	25.02	35.67
Hg	$L\gamma_3$		1	2	80	6	14.262	0.86915	5		0.99	1.42	3.51	3.74	3.81	5.02	6.56	9.37	11.33	11.41	14.89	15.29	17.73	24.93	35.54
Hg	$L\gamma_{11}$	8	1	.01	80	6	14.472	0.85657	5		0.97	1.40	3.46	3.69	3.76	4.95	6.47	9.24	11.16	11.25	14.67	15.07	17.47	24.56	35.01
Hg	L_1-O_1	F	1	.01	80	6	14.716	0.84232	5		0.96	1.38	3.40	3.62	3.70	4.87	6.36	9.08	10.98	11.06	14.43	14.82	17.18	24.15	34.41
Hg	$L\gamma_4p$		1	.1	80	6	14.755	0.84013	5		0.96	1.38	3.39	3.62	3.69	4.85	6.34	9.06	10.95	11.03	14.39	14.78	17.13	24.09	34.31
Hg	$L\gamma_4$		1	.1	80	6	14.776	0.83894	5		0.95	1.37	3.39	3.61	3.68	4.85	6.33	9.04	10.93	11.01	14.37	14.76	17.11	24.05	34.26
Hg	AL_1		1		80	6	14.840	0.83530	4		0.95	1.37	3.37	3.59	3.67	4.83	6.30	9.01	10.88	10.97	14.31	14.69	17.03	23.95	34.11
Hg	$L_1-O_{4,5}$	B	1	.01	80	6	14.846	0.83500	4		0.95	1.37	3.37	3.59	3.66	4.82	6.30	9.00	10.88	10.96	14.30	14.69	17.02	23.94	34.10
Hg	$K\alpha_2$		1	50	80	6	68.883	0.17996	6		0.20	0.29	0.73	0.77	0.79	1.04	1.36	1.94	2.34	2.36	3.07	3.16	3.66	5.12	7.25

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Hg	$K\alpha_{1,2}$		1	150	80	6	70.154	0.17670	6		0.20	0.29	0.71	0.76	0.78	1.02	1.33	1.90	2.30	2.32	3.02	3.10	3.59	5.03	7.11
Hg	$K\alpha_1$		1	100	80	6	70.807	0.17507	6		0.20	0.29	0.71	0.75	0.77	1.01	1.32	1.89	2.28	2.29	2.99	3.07	3.56	4.98	7.05
Hg	$K\beta_3$		1	13	80	6	79.809	0.15532	6		0.18	0.25	0.63	0.67	0.68	0.90	1.17	1.67	2.02	2.04	2.65	2.73	3.16	4.42	6.25
Hg	$K\beta_1$		1	28	80	6	80.240	0.15449	6		0.18	0.25	0.62	0.66	0.68	0.89	1.17	1.66	2.01	2.03	2.64	2.71	3.14	4.40	6.22
Hg	$K\beta_5$	B	1	.4	80	6	80.740	0.15353	5		0.17	0.25	0.62	0.66	0.67	0.89	1.16	1.65	2.00	2.01	2.62	2.69	3.12	4.37	6.18
Hg	$K\beta_2''$		1	10	80	6	82.420	0.15040	5		0.17	0.25	0.61	0.65	0.66	0.87	1.13	1.62	1.96	1.97	2.57	2.64	3.06	4.28	6.05
Hg	$K\beta_2'$		1	10	80	6	82.530	0.15020	5		0.17	0.25	0.61	0.65	0.66	0.87	1.13	1.62	1.95	1.97	2.57	2.64	3.05	4.28	6.05
Hg	$K\beta_4$	8	1	.2	80	6	82.761	0.14978	5		0.17	0.25	0.60	0.64	0.66	0.87	1.13	1.61	1.95	1.96	2.56	2.63	3.04	4.26	6.03
Hg	$K-O_{2,3}$		1	.01	80	6	83.022	0.14931	5		0.17	0.24	0.60	0.64	0.66	0.86	1.13	1.61	1.94	1.96	2.55	2.62	3.03	4.25	6.01
Hg	AK	H	1		80	6	83.094	0.14918	5		0.17	0.24	0.60	0.64	0.65	0.86	1.13	1.61	1.94	1.96	2.55	2.62	3.03	4.25	6.01
Tl	N_7-O_5		1		81	6	0.105	117.70000	1																
Tl	N_6-O_4		1		81	6	0.108	115.29999	1																
Tl	N_6-O_5		1		81	6	0.110	113.00000	1																
Tl	$N_5-N_{6,7}$		1		81	6	0.267	46.50000	1		55.00	83.26													
Tl	Mz_2		1	1	81	6	1.763	7.03200	3		8.01	11.53	28.68	30.62	31.23	41.52	55.15	82.74	105.95	107.10					
Tl	Mz_1		1	2	81	6	1.777	6.97400	3		7.94	11.44	28.44	30.36	30.97	41.16	54.66	81.91	104.70	105.83					
Tl	M_3-N_1		1	1	81	6	2.107	5.88400	3		6.70	9.64	23.92	25.53	26.04	34.50	45.58	67.15	83.83	84.61	122.60	128.53			
Tl	$M\alpha_2$		1	100	81	6	2.265	5.47200	3		6.23	8.97	22.22	23.71	24.18	32.02	42.23	61.90	76.82	77.50	109.32	113.80	151.88		
Tl	$M\alpha_1$		1	100	81	6	2.270	5.46000	3		6.22	8.95	22.17	23.66	24.13	31.95	42.13	61.75	76.62	77.30	108.97	113.42	150.89		
Tl	$M\beta$		1	55	81	6	2.362	5.24900	3		5.98	8.60	21.31	22.73	23.18	30.68	40.43	59.12	73.16	73.80	102.98	106.95	137.03		
Tl	M_4-O_2		1	.1	81	6	2.386	5.19600	3		5.92	8.51	21.09	22.50	22.95	30.37	40.01	58.46	72.30	72.94	101.54	105.40	134.18		
Tl	AM_5	H	1		81	6	2.406	5.15300	3		5.87	8.44	20.91	22.31	22.76	30.11	39.66	57.93	71.61	72.24	100.38	104.16	131.98		
Tl	AM_4	H	1		81	6	2.503	4.95200	3		5.64	8.11	20.09	21.43	21.86	28.91	38.05	55.47	68.42	69.01	95.16	98.60	122.77		
Tl	M_3-N_4		1	1	81	6	2.548	4.86500	3		5.54	7.97	19.73	21.05	21.47	28.39	37.36	54.42	67.06	67.63	92.98	96.28	119.18		
Tl	$M\gamma$		1	3	81	6	2.570	4.82300	3		5.49	7.90	19.56	20.87	21.28	28.14	37.03	53.91	66.40	66.97	91.94	95.18	117.52		
Tl	$M_3-O_{4,5}$		1	.5	81	6	2.940	4.21600	3		4.80	6.91	17.08	18.22	18.58	24.54	32.23	46.69	57.20	57.67	77.88	80.40	96.73		
Tl	AM_3	H	1		81	6	2.953	4.19800	3		4.78	6.88	17.01	18.14	18.50	24.43	32.09	46.48	56.93	57.40	77.48	79.98	96.18		
Tl	M_2-N_4		1	1	81	6	3.012	4.11600	3		4.69	6.74	16.67	17.78	18.13	23.95	31.44	45.52	55.72	56.18	75.70	78.12	93.72		
Tl	M_1-N_3		1	1	81	6	3.089	4.01300	3		4.57	6.57	16.25	17.33	17.67	23.34	30.64	44.32	54.21	54.65	73.49	75.81	90.70	170.58	
Tl	AM_2	H	1		81	6	3.411	3.63400	3		4.14	5.95	14.71	15.69	15.99	21.11	27.68	39.94	48.73	49.13	65.60	67.61	80.21	128.98	
Tl	AM_1	H	1		81	6	3.705	3.34600	3		3.81	5.48	13.54	14.44	14.72	19.42	25.45	36.66	44.65	45.01	59.84	61.63	72.76	112.40	
Tl	Ll		1	3	81	6	8.952	1.38477	5		1.58	2.27	5.59	5.96	6.08	8.00	10.46	14.96	18.09	18.23	23.83	24.48	28.42	40.23	58.19
Tl	Lt	B	1	.01	81	6	9.240	1.34154	5		1.53	2.20	5.42	5.77	5.89	7.75	10.13	14.49	17.52	17.65	23.07	23.70	27.52	38.92	56.20
Tl	Ls	8	1	.01	81	6	9.699	1.27807	5		1.45	2.09	5.16	5.50	5.61	7.39	9.65	13.80	16.69	16.81	21.97	22.57	26.19	37.01	53.33
Tl	$L\alpha_2$		1	10	81	6	10.171	1.21875	5		1.39	2.00	4.92	5.25	5.35	7.04	9.20	13.15	15.91	16.03	20.94	21.51	24.95	35.24	50.67
Tl	$L\alpha_1$		1	100	81	6	10.267	1.20739	5		1.37	1.98	4.87	5.20	5.30	6.98	9.12	13.03	15.76	15.88	20.74	21.30	24.72	34.90	50.17
Tl	Ln		1	1	81	6	10.992	1.12769	5		1.28	1.85	4.55	4.85	4.95	6.52	8.51	12.17	14.71	14.82	19.36	19.88	23.06	32.53	46.65
Tl	L_2-M_2	F	1	.01	81	6	11.280	1.09891	5		1.25	1.80	4.44	4.73	4.82	6.35	8.30	11.86	14.33	14.44	18.86	19.37	22.47	31.68	45.39
Tl	L_1-M_1	8	1	.01	81	6	11.646	1.06440	4		1.21	1.74	4.30	4.58	4.67	6.15	8.04	11.48	13.88	13.99	18.26	18.76	21.75	30.66	43.89
Tl	$L\beta_{17}$	B	1	.01	81	6	11.738	1.05609	5		1.20	1.73	4.26	4.55	4.63	6.10	7.97	11.39	13.77	13.88	18.12	18.61	21.58	30.41	43.53
Tl	$L\beta_6$		1	.1	81	6	11.810	1.04963	5		1.19	1.72	4.24	4.52	4.61	6.07	7.92	11.32	13.69	13.79	18.00	18.49	21.45	30.22	43.25
Tl	$L\beta_4$		1	4	81	6	11.929	1.03918	5		1.18	1.70	4.20	4.47	4.56	6.00	7.85	11.21	13.55	13.65	17.82	18.31	21.23	29.91	42.80
Tl	L_3-N_3	8	1	.01	81	6	12.051	1.02860	4		1.17	1.68	4.15	4.43	4.51	5.94	7.77	11.10	13.41	13.51	17.64	18.12	21.01	29.60	42.34
Tl	$L\beta_1$		1	50	81	6	12.211	1.01513	5		1.16	1.66	4.10	4.37	4.45	5.87	7.66	10.95	13.24	13.34	17.41	17.88	20.73	29.20	41.76
Tl	$L\beta_{15}$		1	1	81	6	12.249	1.01201	5		1.15	1.66	4.09	4.36	4.44	5.85	7.64	10.92	13.20	13.30	17.35	17.83	20.67	29.11	41.63
Tl	$L\beta_2$		1	20	81	6	12.270	1.01031	5		1.15	1.65	4.08	4.35	4.43	5.84	7.63	10.90	13.17	13.27	17.32	17.80	20.63	29.06	41.56
Tl	L_2-M_5	8	1	.01	81	6	12.307	1.00722	5		1.15	1.65	4.07	4.33	4.42	5.82	7.60	10.86	13.13	13.23	17.27	17.74	20.57	28.97	41.42
Tl	$L\beta_3$		1	6	81	6	12.388	1.00062	5		1.14	1.64	4.04	4.31	4.39	5.78	7.55	10.79	13.05	13.15	17.16	17.62	20.43	28.78	41.14
Tl	$L\beta_7$		1	.1	81	6	12.519	0.99017	5		1.13	1.62	4.00	4.26	4.34	5.72	7.48	10.68	12.91	13.01	16.98	17.44	20.22	28.47	40.69
Tl	Lu	B	1	.01	81	6	12.536	0.98880	4		1.13	1.62	3.99	4.26	4.34	5.71	7.46	10.66	12.89	12.99	16.95	17.41	20.19	28.43	40.63
Tl	L_3-O_2	B	1	.01	81	6	12.554	0.98738	5		1.12	1.62	3.99	4.25	4.33	5.71	7.45	10.65	12.87	12.97	16.93	17.39	20.16	28.39	40.57
Tl	L_3-O_3	8	1	.01	81	6	12.580	0.98538	5		1.12	1.61	3.98	4.24	4.32	5.69	7.44	10.63	12.85	12.94	16.89	17.35	20.12	28.33	40.48
Tl	$L\beta_5$		1	1	81	6	12.641	0.98058	5		1.12	1.61	3.96	4.22	4.30	5.67	7.40	10.58	12.78	12.88	16.81	17.27	20.02	28.19	40.28
Tl	AL_3		1		81	6	12.658	0.97930	4		1.11	1.60	3.95	4.21	4.30	5.66	7.39	10.56	12.77	12.86	16.79	17.24	19.99	28.15	40.22
Tl	$L_3-P_{2,3}$	B	1	.01	81	6	12.659	0.97926	5		1.11	1.60	3.95	4.21	4.30	5.66	7.39	10.56	12.77	12.86	16.79	17.24	19.99	28.15	40.22
Tl	$L\beta_{10}$	8	1	.01	81	6	12.860	0.96389	5		1.10	1.58	3.89	4.15	4.23	5.57	7.28	10.40	12.57	12.66	16.52	16.97	19.68	27.70	39.56
Tl	$L\beta_9$	B	1	.01	81	6	12.956	0.95675	5		1.09	1.57	3.86	4.12	4.20	5.53	7.22	10.32	12.47	12.57	16.40	16.84	19.53	27.49	39.26
Tl	$L\gamma_5$		1	.1	81	6	13.850	0.89500	5		1.02	1.47	3.61	3.85	3.93	5.17	6.76	9.65	11.66	11.75	15.33	15.75	18.26	25.69	36.63
Tl	L_2-N_2	F	1	.01	81	6	13.974	0.88706	5		1.01	1.45	3.58	3.82	3.89	5.13	6.70	9.56	11.56	11.65	15.20	15.61	18.09	25.45	36.30
Tl	L_2-N_3	8	1	.01	81	6	14.087	0.87996	5		1.00	1.44	3.55	3.79	3.86	5.08	6.64	9.49	11.47	11.55	15.08	15.48	17.95	25.25	35.99
Tl	$L\gamma_1$		1	10	81	6	14.289	0.86752	5		0.99	1.42	3.50	3.73	3.81	5.01	6.55	9.35	11.30	11.39	14.86	15.26	17.69	24.88	35.47
Tl	L_1-N_1	B	1	.01	81	6	14.500	0.85490	4		0.97	1.40	3.45	3.68	3.75	4.94	6.45	9.22	11.14	11.22	14.64	15.04	17.43	24.52	34.94
Tl	$L\gamma_8$		1	.1	81	6	14.561	0.85130	4		0.97	1.39	3.44	3.66	3.74	4.92	6.43	9.18	11.09	11.18	14.58	14.98	17.36	24.41	34.78
Tl	Lv	8	1	.01	81	6	14.575	0.85048	5		0.97	1.39	3.43	3.66	3.73	4.91	6.42	9.17	11.08	11.17	14.57	14.96	17.34	24.39	34.75
Tl	L_2-O_2	B	1	.01	81	6	14.601	0.84900	4		0.97	1.39	3.43	3.65	3.73	4.91	6.41	9.15	11.06	11.15	14.54	14.94	17.31	24.34	34.69

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Tl	$L\gamma_2$		1	1	81	6	14.623	0.84773	5	0.96	1.39	3.42	3.65	3.72	4.90	6.40	9.14	11.05	11.13	14.52	14.91	17.29	24.31	34.63
Tl	$L\gamma_6$		1	.01	81	6	14.684	0.84420	4	0.96	1.38	3.41	3.63	3.70	4.88	6.37	9.10	11.00	11.08	14.46	14.85	17.21	24.20	34.49
Tl	AL_2		1		81	6	14.698	0.84340	4	0.96	1.38	3.40	3.63	3.70	4.87	6.37	9.09	10.99	11.07	14.45	14.84	17.20	24.18	34.45
Tl	$L\gamma_3$		1	2	81	6	14.734	0.84130	5	0.96	1.38	3.40	3.62	3.69	4.86	6.35	9.07	10.96	11.04	14.41	14.80	17.15	24.12	34.36
Tl	L_1-N_4	B	1	.01	81	6	14.935	0.83001	5	0.94	1.36	3.35	3.57	3.64	4.80	6.26	8.95	10.81	10.90	14.22	14.60	16.92	23.79	33.89
Tl	$L\gamma_{11}$	B	1	.01	81	6	14.957	0.82879	5	0.94	1.36	3.35	3.57	3.64	4.79	6.26	8.94	10.80	10.88	14.19	14.58	16.90	23.76	33.84
Tl	L_1-O_1	F	1	.01	81	6	15.208	0.81511	5	0.93	1.33	3.29	3.51	3.58	4.71	6.15	8.79	10.62	10.70	13.96	14.34	16.62	23.36	33.26
Tl	$L\gamma_4 p$		1	.1	81	6	15.246	0.81308	5	0.93	1.33	3.28	3.50	3.57	4.70	6.14	8.77	10.59	10.67	13.92	14.30	16.57	23.30	33.18
Tl	$L\gamma_4$		1	.1	81	6	15.269	0.81184	5	0.92	1.33	3.28	3.49	3.56	4.69	6.13	8.75	10.58	10.66	13.90	14.28	16.55	23.26	33.12
Tl	L_1-$O_{4,5}$	B	1	.01	81	6	15.330	0.80861	5	0.92	1.32	3.26	3.48	3.55	4.67	6.10	8.72	10.53	10.61	13.85	14.22	16.48	23.17	32.99
Tl	AL_1		1		81	6	15.340	0.80810	4	0.92	1.32	3.26	3.48	3.55	4.67	6.10	8.71	10.53	10.61	13.84	14.21	16.47	23.15	32.97
Tl	$K\alpha_2$		1	50	81	6	70.820	0.17504	6	0.20	0.29	0.71	0.75	0.77	1.01	1.32	1.89	2.28	2.29	2.99	3.07	3.56	4.98	7.05
Tl	$K\alpha_{1,2}$		1	150	81	6	72.167	0.17177	6	0.20	0.28	0.69	0.74	0.75	0.99	1.30	1.85	2.23	2.25	2.93	3.01	3.49	4.89	6.92
Tl	$K\alpha_1$		1	100	81	6	72.859	0.17014	6	0.19	0.28	0.69	0.73	0.75	0.98	1.28	1.83	2.21	2.23	2.91	2.99	3.46	4.84	6.85
Tl	$K\beta_3$		1	13	81	6	82.104	0.15098	6	0.17	0.25	0.61	0.65	0.66	0.87	1.14	1.63	1.96	1.98	2.58	2.65	3.07	4.30	6.08
Tl	$K\beta_1$		1	78	81	6	82.562	0.15014	6	0.17	0.25	0.61	0.65	0.66	0.87	1.13	1.62	1.95	1.97	2.57	2.63	3.05	4.27	6.04
Tl	$K\beta_5$	B	1	.4	81	6	83.100	0.14917	5	0.17	0.24	0.60	0.64	0.65	0.86	1.13	1.61	1.94	1.96	2.55	2.62	3.03	4.25	6.00
Tl	$K\beta_2''$		1	10	81	6	84.823	0.14614	5	0.17	0.24	0.59	0.63	0.64	0.84	1.10	1.57	1.90	1.92	2.50	2.56	2.97	4.16	5.88
Tl	$K\beta_2'$		1	10	81	6	84.933	0.14595	5	0.17	0.24	0.59	0.63	0.64	0.84	1.10	1.57	1.90	1.91	2.49	2.56	2.97	4.15	5.87
Tl	$K\beta_4$	B	1	.2	81	6	85.178	0.14553	5	0.17	0.24	0.59	0.63	0.64	0.84	1.10	1.57	1.89	1.91	2.49	2.55	2.96	4.14	5.86
Tl	K-$O_{2,3}$		1	.01	81	6	85.437	0.14509	5	0.17	0.24	0.59	0.62	0.64	0.84	1.09	1.56	1.89	1.90	2.48	2.55	2.95	4.13	5.84
Tl	AK	H	1		81	6	85.519	0.14495	5	0.16	0.24	0.59	0.62	0.64	0.84	1.09	1.56	1.89	1.90	2.48	2.54	2.94	4.13	5.83
Pb	N_7-O_5		1		82	6	0.119	104.29999	1															
Pb	N_6-O_4		1		82	6	0.121	102.39999	1															
Pb	N_6-O_5		1		82	6	0.124	100.20000	1	168.58														
Pb	N_5-$N_{6,7}$		1		82	6	0.275	45.00000	1	53.09	80.01													
Pb	N_4-N_6		1		82	6	0.293	42.29999	1	49.68	74.35													
Pb	MZ_2		1	.1	82	6	1.822	6.80200	3	7.75	11.15	27.72	29.60	30.19	40.10	53.20	79.48	101.11	102.17					
Pb	MZ_1		1	1	82	6	1.839	6.74000	3	7.68	11.05	27.47	29.32	29.91	39.72	52.68	78.61	99.85	100.89					
Pb	M_4-N_3		1	.01	82	6	1.942	6.38400	3	7.27	10.47	25.99	27.74	28.29	37.54	49.70	73.74	92.90	93.82	144.24	155.56			
Pb	M_3-N_1		1	1	82	6	2.173	5.70400	3	6.49	9.35	23.18	24.73	25.23	33.42	44.11	64.84	80.72	81.46	116.49	121.67			
Pb	$M\alpha_2$		1	100	82	6	2.339	5.29900	3	6.03	8.68	21.51	22.95	23.41	30.98	40.83	59.74	73.97	74.62	104.36	108.43	139.89		
Pb	$M\alpha_1$		1	100	82	6	2.345	5.28600	3	6.02	8.66	21.46	22.90	23.35	30.90	40.73	59.58	73.76	74.41	104.00	108.04	139.13		
Pb	M_5-O_3		1	.01	82	6	2.399	5.16800	3	5.88	8.47	20.98	22.38	22.82	30.20	39.78	58.12	71.85	72.48	100.78	104.59	132.74		
Pb	$M\beta$		1	60	82	6	2.442	5.07600	3	5.78	8.32	20.60	21.98	22.41	29.65	39.04	56.99	70.38	70.99	98.35	101.99	128.27		
Pb	M_4-O_2		1	1	82	6	2.477	5.00400	3	5.70	8.20	20.30	21.66	22.09	29.22	38.47	56.11	69.24	69.84	96.49	100.01	125.02		
Pb	AM_5		1		82	6	2.502	4.95500	3	5.64	8.12	20.10	21.45	21.87	28.93	38.08	55.51	68.47	69.06	95.24	98.68	122.90		
Pb	AM_4		1		82	6	2.606	4.75700	3	5.42	7.79	19.29	20.58	20.99	27.75	36.50	53.11	65.38	65.93	90.33	93.48	114.98		
Pb	M_3-N_4		1	5	82	6	2.629	4.71500	3	5.37	7.72	19.12	20.40	20.80	27.50	36.17	52.61	64.73	65.28	89.32	92.41	113.41		
Pb	$M\gamma$		1	5	82	6	2.652	4.67400	3	5.32	7.66	18.95	20.22	20.62	27.25	35.84	52.12	64.10	64.64	88.34	91.38	111.91		
Pb	M_2-N_1		1	.01	82	6	2.663	4.65500	3	5.30	7.63	18.87	20.13	20.53	27.14	35.69	51.89	63.81	64.35	87.89	90.90	111.22		
Pb	M_3-O_1		1	.5	82	6	2.921	4.24400	3	4.83	6.95	17.19	18.34	18.70	24.70	32.45	47.02	57.61	58.09	78.50	81.04	97.59		
Pb	M_3-$O_{4,5}$		1	1	82	6	3.046	4.06900	3	4.63	6.66	16.48	17.58	17.92	23.67	31.08	44.97	55.03	55.48	74.69	77.06	92.33		
Pb	AM_3	H	1		82	6	3.063	4.04700	3	4.61	6.63	16.39	17.48	17.83	23.54	30.90	44.71	54.71	55.15	74.21	76.57	91.68		
Pb	M_2-N_4		1	5	82	6	3.124	3.96800	3	4.52	6.50	16.07	17.14	17.48	23.07	30.29	43.79	53.55	53.99	72.53	74.81	89.40	160.43	
Pb	M_1-N_3		1	.1	82	6	3.201	3.87200	3	4.41	6.34	15.68	16.72	17.05	22.51	29.54	42.68	52.16	52.58	70.51	72.71	86.69	148.14	
Pb	AM_2	H	1		82	6	3.550	3.49200	3	3.97	5.72	14.13	15.07	15.37	20.27	26.58	38.32	46.71	47.09	62.74	64.63	76.49	120.28	
Pb	AM_1	H	1		82	6	3.853	3.21700	3	3.66	5.27	13.01	13.88	14.15	18.66	24.45	35.20	42.84	43.18	57.32	59.01	69.54	106.06	
Pb	Ll		1	3	82	6	9.183	1.34990	5	1.54	2.21	5.45	5.81	5.92	7.80	10.20	14.58	17.63	17.77	23.22	23.85	27.69	39.17	56.59
Pb	Lt	B	1	.01	82	6	9.479	1.30767	5	1.49	2.14	5.28	5.63	5.74	7.56	9.88	14.12	17.08	17.21	22.48	23.10	26.81	37.90	54.67
Pb	Ls	B	1	.01	82	6	9.966	1.24385	5	1.42	2.04	5.02	5.35	5.46	7.19	9.39	13.43	16.24	16.36	21.37	21.96	25.48	35.99	51.79
Pb	$L\alpha_2$		1	10	82	6	10.448	1.18648	5	1.35	1.94	4.79	5.11	5.21	6.86	8.96	12.80	15.48	15.60	20.38	20.93	24.28	34.27	49.24
Pb	$L\alpha_1$		1	100	82	6	10.550	1.17501	5	1.34	1.92	4.74	5.06	5.16	6.79	8.87	12.68	15.33	15.45	20.18	20.73	24.05	33.93	48.73
Pb	Ln		1	1	82	6	11.347	1.09241	5	1.24	1.79	4.41	4.70	4.79	6.31	8.25	11.79	14.25	14.36	18.74	19.25	22.33	31.48	45.11
Pb	L_2-M_2	B	1	.01	82	6	11.646	1.06440	4	1.21	1.74	4.30	4.58	4.67	6.15	8.04	11.48	13.88	13.99	18.26	18.76	21.75	30.66	43.89
Pb	L_1-M_1	B	1	.01	82	6	12.008	1.03230	4	1.17	1.69	4.17	4.44	4.53	5.97	7.79	11.14	13.46	13.56	17.70	18.19	21.09	29.71	42.50
Pb	$L\beta_{17}$	F	1	.01	82	6	12.132	1.02180	5	1.16	1.67	4.12	4.40	4.48	5.90	7.71	11.02	13.32	13.42	17.52	18.00	20.87	29.40	42.05
Pb	$L\beta_6$		1	.1	82	6	12.141	1.02100	4	1.16	1.67	4.12	4.39	4.48	5.90	7.71	11.01	13.31	13.41	17.51	17.99	20.86	29.38	42.02
Pb	L_3-N_2	B	1	.01	82	6	12.268	1.01040	5	1.15	1.65	4.08	4.35	4.43	5.84	7.63	10.90	13.17	13.27	17.33	17.80	20.64	29.07	41.56
Pb	$L\beta_4$		1	4	82	6	12.304	1.00750	4	1.15	1.65	4.07	4.34	4.42	5.82	7.61	10.87	13.14	13.24	17.28	17.75	20.58	28.98	41.43
Pb	L_3-N_3	B	1	.01	82	6	12.390	1.00050	4	1.14	1.64	4.04	4.31	4.39	5.78	7.55	10.79	13.04	13.14	17.16	17.62	20.43	28.77	41.13
Pb	$L\beta_{15}$		1	1	82	6	12.599	0.98389	5	1.12	1.61	3.97	4.23	4.32	5.69	7.43	10.61	12.83	12.92	16.87	17.33	20.09	28.29	40.42
Pb	$L\beta_1$		1	50	82	6	12.612	0.98291	5	1.12	1.61	3.97	4.23	4.31	5.68	7.42	10.60	12.81	12.91	16.85	17.31	20.07	28.26	40.38
Pb	$L\beta_2$		1	20	82	6	12.621	0.98221	5	1.12	1.61	3.97	4.23	4.31	5.68	7.41	10.59	12.81	12.90	16.84	17.30	20.05	28.24	40.35
Pb	L_2-M_5	B	1	.01	82	6	12.718	0.97470	4	1.11	1.60	3.93	4.19	4.28	5.63	7.36	10.51	12.71	12.80	16.71	17.16	19.90	28.02	40.03

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Pb	$L\beta_3$		1	6	82	6	12.791	0.96911	5		1.10	1.59	3.91	4.17	4.25	5.60	7.32	10.45	12.63	12.73	16.61	17.06	19.78	27.85	39.79
Pb	$L\beta_7$		1	.1	82	6	12.886	0.96200	4		1.09	1.57	3.88	4.14	4.22	5.56	7.26	10.37	12.54	12.64	16.49	16.94	19.64	27.64	39.48
Pb	Lu	B	1	.01	82	6	12.895	0.96133	5		1.09	1.57	3.88	4.14	4.22	5.55	7.26	10.37	12.53	12.63	16.48	16.93	19.62	27.62	39.45
Pb	L_3-O_2	B	1	.01	82	6	12.931	0.95860	4		1.09	1.57	3.87	4.13	4.21	5.54	7.24	10.34	12.50	12.59	16.43	16.88	19.57	27.54	39.34
Pb	L_3-O_3	8	1	.01	82	6	12.942	0.95780	4		1.09	1.57	3.87	4.12	4.20	5.53	7.23	10.33	12.49	12.58	16.42	16.86	19.55	27.52	39.30
Pb	$L\beta_5$		1	1	82	6	13.013	0.95260	4		1.08	1.56	3.85	4.10	4.18	5.50	7.19	10.27	12.42	12.51	16.33	16.77	19.44	27.37	39.08
Pb	L_3-$P_{2,3}$	B	1	.01	82	6	13.032	0.95118	5		1.08	1.56	3.84	4.09	4.17	5.50	7.18	10.26	12.40	12.49	16.30	16.75	19.42	27.33	39.02
Pb	AL_3		1		82	6	13.038	0.95073	5		1.08	1.56	3.84	4.09	4.17	5.49	7.18	10.25	12.39	12.49	16.30	16.74	19.41	27.31	39.00
Pb	$L\beta_{10}$	B	1	.01	82	6	13.273	0.93390	4		1.06	1.53	3.77	4.02	4.10	5.40	7.05	10.07	12.17	12.27	16.01	16.44	19.06	26.82	38.28
Pb	$L\beta_9$	B	1	.01	82	6	13.375	0.92680	4		1.05	1.52	3.74	3.99	4.07	5.35	7.00	9.99	12.08	12.17	15.88	16.31	18.91	26.61	37.98
Pb	$L\gamma_5$		1	.1	82	6	14.305	0.86655	5		0.99	1.42	3.50	3.73	3.80	5.01	6.54	9.34	11.29	11.38	14.84	15.25	17.67	24.86	35.43
Pb	L_2-N_2	B	1	.01	82	6	14.439	0.85850	4		0.98	1.41	3.47	3.69	3.77	4.96	6.48	9.26	11.19	11.27	14.71	15.10	17.51	24.62	35.09
Pb	L_2-N_3	8	1	.01	82	6	14.551	0.85192	5		0.97	1.39	3.44	3.67	3.74	4.92	6.43	9.18	11.10	11.18	14.59	14.99	17.37	24.43	34.81
Pb	$L\gamma_1$		1	10	82	6	14.762	0.83973	5		0.96	1.37	3.39	3.61	3.68	4.85	6.34	9.05	10.94	11.02	14.38	14.77	17.12	24.07	34.30
Pb	L_2-N_5	8	1	.01	82	6	14.789	0.83820	4		0.95	1.37	3.38	3.61	3.68	4.84	6.33	9.04	10.92	11.00	14.36	14.75	17.09	24.03	34.23
Pb	L_1-N_1	B	1	.01	82	6	14.960	0.82859	5		0.94	1.36	3.34	3.57	3.64	4.79	6.25	8.93	10.80	10.88	14.19	14.58	16.89	23.75	33.83
Pb	$L\gamma_8$		1	.1	82	6	15.050	0.82365	5		0.94	1.35	3.32	3.54	3.61	4.76	6.22	8.88	10.73	10.81	14.11	14.49	16.79	23.61	33.62
Pb	Lv	B	1	.01	82	6	15.057	0.82327	5		0.94	1.35	3.32	3.54	3.61	4.76	6.21	8.88	10.73	10.81	14.10	14.48	16.78	23.60	33.60
Pb	$L\gamma_2$		1	1	82	6	15.099	0.82100	4		0.93	1.34	3.31	3.53	3.60	4.74	6.20	8.85	10.70	10.78	14.06	14.44	16.74	23.53	33.51
Pb	L_2-O_3	B	1	.01	82	6	15.117	0.82000	4		0.93	1.34	3.31	3.53	3.60	4.74	6.19	8.84	10.68	10.76	14.04	14.42	16.72	23.50	33.47
Pb	$L\gamma_6$		1	.01	82	6	15.176	0.81683	5		0.93	1.34	3.30	3.52	3.58	4.72	6.17	8.81	10.64	10.72	13.99	14.37	16.65	23.41	33.33
Pb	L_2-P_1		1	.1	82	6	15.194	0.81583	5		0.93	1.34	3.29	3.51	3.58	4.71	6.16	8.80	10.63	10.71	13.97	14.35	16.63	23.38	33.29
Pb	AL_2		1		82	6	15.203	0.81538	5		0.93	1.33	3.29	3.51	3.58	4.71	6.15	8.79	10.62	10.70	13.96	14.34	16.62	23.37	33.27
Pb	$L\gamma_3$		1	2	82	6	15.215	0.81470	4		0.93	1.33	3.29	3.51	3.57	4.71	6.15	8.78	10.61	10.69	13.95	14.33	16.61	23.35	33.24
Pb	L_1-N_4	B	1	.01	82	6	15.425	0.80364	5		0.91	1.32	3.24	3.46	3.53	4.64	6.07	8.66	10.47	10.55	13.76	14.13	16.38	23.03	32.78
Pb	$L\gamma_{11}$	B	1	.01	82	6	15.450	0.80233	5		0.91	1.31	3.24	3.45	3.52	4.64	6.06	8.65	10.45	10.53	13.74	14.11	16.35	22.99	32.73
Pb	L_1-O_1	F	1	.01	82	6	15.711	0.78901	5		0.90	1.29	3.18	3.40	3.46	4.56	5.95	8.51	10.28	10.36	13.51	13.88	16.08	22.60	32.17
Pb	L_1-$N_{6,7}$	B	1	.01	82	6	15.723	0.78840	4		0.90	1.29	3.18	3.39	3.46	4.55	5.95	8.50	10.27	10.35	13.50	13.86	16.07	22.58	32.14
Pb	$L\gamma_4$P		1	.1	82	6	15.750	0.78706	5		0.90	1.29	3.18	3.39	3.45	4.55	5.94	8.48	10.25	10.33	13.48	13.84	16.04	22.54	32.09
Pb	$L\gamma_4$		1	.1	82	6	15.775	0.78580	4		0.89	1.29	3.17	3.38	3.45	4.54	5.93	8.47	10.24	10.31	13.45	13.82	16.01	22.51	32.03
Pb	L_1-$O_{4,5}$	B	1	.01	82	6	15.840	0.78257	5		0.89	1.28	3.16	3.37	3.43	4.52	5.91	8.44	10.19	10.27	13.40	13.76	15.95	22.41	31.90
Pb	AL_1		1		82	6	15.852	0.78196	5		0.89	1.28	3.16	3.37	3.43	4.52	5.90	8.43	10.19	10.26	13.39	13.75	15.94	22.40	31.87
Pb	$K\alpha_2$		1	50	82	6	72.792	0.17029	6		0.19	0.28	0.69	0.73	0.75	0.98	1.28	1.83	2.22	2.23	2.91	2.99	3.46	4.85	6.86
Pb	$K\alpha_{1,2}$		1	150	82	6	74.221	0.16701	6		0.19	0.27	0.67	0.72	0.73	0.96	1.26	1.80	2.17	2.19	2.85	2.93	3.39	4.75	6.72
Pb	$K\alpha_1$		1	100	82	6	74.956	0.16538	6		0.19	0.27	0.67	0.71	0.73	0.96	1.25	1.78	2.15	2.17	2.83	2.90	3.36	4.71	6.66
Pb	$K\beta_3$		1	13	82	6	84.436	0.14681	6		0.17	0.24	0.59	0.63	0.64	0.85	1.11	1.58	1.91	1.92	2.51	2.58	2.98	4.18	5.91
Pb	$K\beta_1$		1	88	82	6	84.922	0.14597	6		0.17	0.24	0.59	0.63	0.64	0.84	1.10	1.57	1.90	1.91	2.49	2.56	2.97	4.16	5.88
Pb	$K\beta_5$''	B	1	.4	82	6	85.419	0.14512	5		0.17	0.24	0.59	0.62	0.64	0.84	1.09	1.56	1.89	1.90	2.48	2.55	2.95	4.13	5.84
Pb	$K\beta_5$'	B	1	.4	82	6	85.519	0.14495	5		0.16	0.24	0.59	0.62	0.64	0.84	1.09	1.56	1.89	1.90	2.48	2.54	2.94	4.13	5.83
Pb	$K\beta_2$''		1	11	82	6	87.222	0.14212	5		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.53	1.85	1.86	2.43	2.49	2.89	4.05	5.72
Pb	$K\beta_2$'		1	11	82	6	87.351	0.14191	5		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.53	1.85	1.86	2.42	2.49	2.88	4.04	5.71
Pb	$K\beta_4$	B	1	.2	82	6	87.573	0.14155	5		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.52	1.84	1.86	2.42	2.48	2.88	4.03	5.70
Pb	K-$O_{2,3}$		1	.01	82	6	87.907	0.14101	6		0.16	0.23	0.57	0.61	0.62	0.81	1.06	1.52	1.83	1.85	2.41	2.47	2.86	4.01	5.68
Pb	AK		1		82	6	87.990	0.14088	6		0.16	0.23	0.57	0.61	0.62	0.81	1.06	1.52	1.83	1.85	2.41	2.47	2.86	4.01	5.67
Pb	K-P		1	.01	82	6	88.040	0.14080	4		0.16	0.23	0.57	0.61	0.62	0.81	1.06	1.52	1.83	1.85	2.41	2.47	2.86	4.01	5.67
Bi	N_7-O_5		1		83	6	0.133	93.20000	1		135.49														
Bi	N_6-O_4		1		83	6	0.135	91.59999	1		130.91														
Bi	N_1-$P_{2,3}$		1		83	6	0.932	13.30000	2		15.18	21.91	55.87	59.92	61.22	84.19	122.23								
Hi	Mz_2		1	.1	83	6	1.882	6.58500	3		7.50	10.80	26.82	28.63	29.20	38.77	51.38	76.47	96.77	97.75	158.02				
Bi	Mz_1		1	1	83	6	1.901	6.52100	3		7.43	10.69	26.56	28.35	28.91	38.38	50.85	75.60	95.52	96.48	152.88	173.35			
Bi	M_4-N_3		1	.01	83	6	2.012	6.16200	3		7.02	10.10	25.07	26.76	27.29	36.19	47.87	70.78	88.79	89.64	133.45	141.25			
Bi	M_3-N_1		1	1	83	6	2.239	5.53700	3		6.30	9.07	22.49	24.00	24.48	32.41	42.76	62.72	77.90	78.60	111.26	115.92	157.96		
Bi	$M\alpha_2$		1	100	83	6	2.416	5.13000	3		5.84	8.41	20.82	22.21	22.65	29.97	39.48	57.65	71.24	71.86	99.77	103.51	130.85		
Bi	$M\alpha_1$		1	100	83	6	2.422	5.11800	3		5.83	8.39	20.77	22.16	22.60	29.90	39.38	57.50	71.05	71.67	99.45	103.17	130.27		
Bi	$M\beta$		1	60	83	6	2.525	4.90900	3		5.59	8.04	19.91	21.24	21.66	28.65	37.71	54.95	67.74	68.33	94.08	97.45	120.97		
Bi	M_4-O_2		1	1	83	6	2.570	4.82300	3		5.49	7.90	19.56	20.87	21.28	28.14	37.03	53.91	66.40	66.97	91.94	95.18	117.52		
Bi	AM_5	H	1		83	6	2.602	4.76400	3		5.42	7.80	19.32	20.61	21.02	27.79	36.56	53.20	65.49	66.04	90.50	93.66	115.24		
Bi	M_4-$P_{2,3}$		1	.01	83	6	2.701	4.59000	2		5.23	7.52	18.61	19.85	20.24	26.75	35.18	51.11	62.81	63.34	86.35	89.29	108.92		
Bi	AM_4	H	1		83	6	2.711	4.57200	3		5.20	7.49	18.53	19.77	20.16	26.65	35.03	50.90	62.54	63.07	85.93	88.84	108.29		
Bi	M_3-N_4		1	5	83	6	2.712	4.57100	3		5.20	7.49	18.53	19.77	20.16	26.64	35.03	50.89	62.53	63.05	85.91	88.82	108.25		
Bi	$M\gamma$		1	5	83	6	2.735	4.53200	3		5.16	7.42	18.37	19.60	19.98	26.41	34.72	50.42	61.93	62.45	85.00	87.87	106.91		
Bi	M_3-O_1		1	.5	83	6	3.020	4.10500	3		4.67	6.72	16.63	17.73	18.08	23.88	31.36	45.39	55.56	56.01	75.46	77.87	93.39		
Bi	M_3-$O_{4,5}$		1	1	83	6	3.153	3.93200	3		4.48	6.44	15.92	16.98	17.32	22.86	30.00	43.38	53.03	53.46	71.77	74.02	88.38	155.11	
Bi	AM_3	H	1		83	6	3.175	3.90400	3		4.44	6.39	15.81	16.86	17.19	22.70	29.79	43.05	52.62	53.05	71.18	73.41	87.59	151.65	
Bi	M_1-N_2		1	1	83	6	3.185	3.89200	3		4.43	6.37	15.76	16.81	17.14	22.63	29.69	42.91	52.45	52.87	70.93	73.14	87.25	150.29	

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Bi	M_2-N_4		1	5	83	6	3.233	3.83400	3		4.36	6.28	15.52	16.55	16.88	22.28	29.24	42.24	51.61	52.03	69.72	71.88	85.64	144.41	
8i	M_1-N_3		1	.1	83	6	3.314	3.74000	3		4.26	6.13	15.14	16.15	16.46	21.73	28.51	41.16	50.25	50.66	67.77	69.86	83.06	136.50	
8i	AM_2	H	1		83	6	3.690	3.35900	3		3.82	5.50	13.59	14.49	14.78	19.49	25.55	36.81	44.84	45.19	60.10	61.89	73.09	113.07	
Bi	AM_1	H	1		83	6	4.006	3.09400	3		3.52	5.07	12.51	13.34	13.61	17.94	23.51	33.81	41.13	41.46	54.93	56.55	66.53	100.42	
Bi	Ll		1	3	83	6	9.419	1.31610	5		1.50	2.15	5.31	5.67	5.78	7.61	9.94	14.21	17.19	17.32	22.63	23.25	26.98	38.16	55.05
Bi	Lt	B	1	.01	83	6	9.724	1.27480	4		1.45	2.09	5.15	5.49	5.59	7.37	9.63	13.76	16.64	16.77	21.91	22.51	26.12	36.91	53.18
Bi	Ls	8	1	.01	83	6	10.240	1.21050	4		1.38	1.98	4.89	5.21	5.31	7.00	9.14	13.07	15.80	15.92	20.79	21.36	24.78	34.99	50.31
Bi	$L\alpha_2$		1	10	83	6	10.729	1.15536	5		1.31	1.89	4.66	4.97	5.07	6.68	8.72	12.47	15.07	15.19	19.84	20.38	23.64	33.35	47.87
Bi	$L\alpha_1$		1	100	83	6	10.837	1.14386	5		1.30	1.87	4.62	4.92	5.02	6.61	8.64	12.34	14.92	15.04	19.64	20.17	23.40	33.01	47.36
Bi	Ln		1	1	83	6	11.710	1.05856	5		1.20	1.73	4.27	4.56	4.65	6.12	7.99	11.42	13.81	13.91	18.16	18.65	21.63	30.48	43.64
Bi	L_2-M_2	B	1	.01	83	6	11.981	1.03460	4		1.18	1.69	4.18	4.45	4.54	5.98	7.81	11.16	13.49	13.59	17.74	18.23	21.14	29.78	42.60
Bi	L_1-M_1	B	1	.01	83	6	12.390	1.00050	4		1.14	1.64	4.04	4.31	4.39	5.78	7.55	10.79	13.04	13.14	17.16	17.62	20.43	28.77	41.13
Bi	$L\beta_6$		1	.1	83	6	12.479	0.99331	5		1.13	1.63	4.01	4.27	4.36	5.74	7.50	10.71	12.95	13.05	17.03	17.49	20.28	28.56	40.82
8i	$L\beta_{17}$	B	1	.01	83	6	12.532	0.98913	5		1.13	1.62	3.99	4.26	4.34	5.72	7.47	10.67	12.90	12.99	16.96	17.42	20.20	28.44	40.65
8i	L_3-N_2	B	1	.01	83	6	12.613	0.98280	5		1.12	1.61	3.97	4.23	4.31	5.68	7.42	10.60	12.81	12.91	16.85	17.31	20.07	28.25	40.37
8i	$L\beta_4$		1	4	83	6	12.689	0.97690	5		1.11	1.60	3.94	4.20	4.29	5.64	7.37	10.54	12.74	12.83	16.75	17.20	19.95	28.08	40.12
Bi	L_3-N_3	B	1	.01	83	6	12.737	0.97321	5		1.11	1.59	3.93	4.19	4.27	5.62	7.35	10.50	12.69	12.78	16.68	17.14	19.87	27.97	39.96
Bi	$L\beta_{15}$		1	1	83	6	12.953	0.95702	5		1.09	1.57	3.86	4.12	4.20	5.53	7.22	10.32	12.48	12.57	16.40	16.85	19.54	27.50	39.27
Bi	$L\beta_2$		1	20	83	6	12.978	0.95518	5		1.09	1.56	3.86	4.11	4.19	5.52	7.21	10.30	12.45	12.55	16.37	16.82	19.50	27.44	39.19
Bi	$L\beta_1$		1	50	83	6	13.021	0.95198	6		1.08	1.56	3.84	4.10	4.18	5.50	7.19	10.27	12.41	12.50	16.32	16.76	19.43	27.35	39.06
8i	L_2-M_5	B	1	.01	83	6	13.129	0.94419	5		1.07	1.55	3.81	4.06	4.14	5.46	7.13	10.18	12.31	12.40	16.18	16.62	19.27	27.12	38.72
Bi	$L\beta_3$		1	6	83	6	13.208	0.93855	5		1.07	1.54	3.79	4.04	4.12	5.42	7.08	10.12	12.23	12.33	16.09	16.52	19.15	26.96	38.48
Bi	$L\beta_7$		1	.1	83	6	13.257	0.93505	5		1.06	1.53	3.77	4.02	4.10	5.40	7.06	10.08	12.19	12.28	16.03	16.46	19.08	26.86	38.33
Bi	Lu	B	1	.01	83	6	13.257	0.93505	5		1.06	1.53	3.77	4.02	4.10	5.40	7.06	10.08	12.19	12.28	16.03	16.46	19.08	26.86	38.33
Bi	L_3-O_2	8	1	.01	83	6	13.296	0.93230	4		1.06	1.53	3.76	4.01	4.09	5.39	7.04	10.05	12.15	12.24	15.98	16.41	19.03	26.77	38.22
Bi	L_3-O_3	B	1	.01	83	6	13.326	0.93020	4		1.06	1.52	3.76	4.00	4.08	5.37	7.02	10.03	12.12	12.22	15.94	16.37	18.98	26.71	38.13
Bi	$L\beta_5$		1	1	83	6	13.393	0.92556	5		1.05	1.52	3.74	3.98	4.06	5.35	6.99	9.98	12.06	12.16	15.86	16.29	18.89	26.58	37.93
Bi	L_3-$P_{2,3}$	B	1	.01	83	6	13.414	0.92413	5		1.05	1.51	3.73	3.98	4.05	5.34	6.98	9.97	12.05	12.14	15.84	16.27	18.86	26.54	37.87
Bi	AL_3		1		83	6	13.424	0.92340	4		1.05	1.51	3.73	3.97	4.05	5.34	6.97	9.96	12.04	12.13	15.82	16.25	18.84	26.51	37.84
Bi	$L\beta_{10}$	B	1	.01	83	6	13.698	0.90495	5		1.03	1.48	3.65	3.89	3.97	5.23	6.83	9.76	11.79	11.88	15.51	15.93	18.46	25.98	37.05
Bi	$L\beta_9$	B	1	.01	83	6	13.805	0.89791	5		1.02	1.47	3.62	3.86	3.94	5.19	6.78	9.68	11.70	11.79	15.39	15.80	18.32	25.77	36.76
Bi	$L\gamma_5$		1	.1	83	6	14.771	0.83923	5		0.96	1.37	3.39	3.61	3.68	4.85	6.33	9.05	10.93	11.02	14.37	14.76	17.11	24.06	34.28
Bi	L_2-N_2	B	1	.01	83	6	14.856	0.83440	4		0.95	1.37	3.37	3.59	3.66	4.82	6.30	9.00	10.87	10.95	14.29	14.68	17.01	23.92	34.07
8i	L_2-N_3	B	1	.01	83	6	15.029	0.82480	4		0.94	1.35	3.33	3.55	3.62	4.77	6.23	8.89	10.75	10.83	14.13	14.51	16.82	23.64	33.67
Bi	$L\gamma_1$		1	10	83	6	15.245	0.81311	5		0.93	1.33	3.28	3.50	3.57	4.70	6.14	8.77	10.59	10.67	13.92	14.30	16.58	23.30	33.18
Bi	L_1-N_1	B	1	.01	83	6	15.453	0.80220	4		0.91	1.31	3.24	3.45	3.52	4.63	6.05	8.65	10.45	10.53	13.74	14.11	16.35	22.98	32.72
Bi	$L\gamma_8$		1	.1	83	6	15.547	0.79730	4		0.91	1.31	3.22	3.43	3.50	4.61	6.02	8.59	10.39	10.47	13.65	14.02	16.25	22.84	32.51
Bi	Lv	B	1	.01	83	6	15.549	0.79721	5		0.91	1.31	3.22	3.43	3.50	4.61	6.02	8.59	10.39	10.46	13.65	14.02	16.25	22.84	32.51
8i	$L\gamma_2$		1	1	83	6	15.580	0.79565	5		0.91	1.30	3.21	3.42	3.49	4.60	6.01	8.58	10.37	10.44	13.62	13.99	16.22	22.79	32.45
Bi	L_2-O_3	B	1	.01	83	6	15.615	0.79384	5		0.90	1.30	3.20	3.42	3.48	4.59	5.99	8.56	10.34	10.42	13.59	13.96	16.18	22.74	32.37
Bi	$L\gamma_6$		1	.01	83	6	15.683	0.79043	5		0.90	1.29	3.19	3.40	3.47	4.57	5.97	8.52	10.30	10.38	13.53	13.90	16.11	22.64	32.23
Bi	$L\gamma_3$		1	2	83	6	15.708	0.78917	5		0.90	1.29	3.19	3.40	3.46	4.56	5.96	8.51	10.28	10.36	13.51	13.88	16.08	22.61	32.17
8i	AL_2		1		83	6	15.717	0.78870	4		0.90	1.29	3.18	3.39	3.46	4.56	5.95	8.50	10.27	10.35	13.50	13.87	16.07	22.59	32.15
Bi	L_1-N_4	8	1	.01	83	6	15.922	0.77854	5		0.89	1.27	3.14	3.35	3.42	4.50	5.88	8.39	10.14	10.22	13.33	13.69	15.87	22.30	31.73
Bi	$L\gamma_{11}$	B	1	.01	83	6	15.948	0.77728	5		0.88	1.27	3.14	3.34	3.41	4.49	5.87	8.38	10.13	10.20	13.31	13.67	15.84	22.26	31.68
Bi	L_1-$N_{6,7}$	B	1	.01	83	6	16.223	0.76410	4		0.87	1.25	3.08	3.29	3.35	4.41	5.77	8.24	9.95	10.03	13.08	13.44	15.57	21.88	31.13
Bi	$L\gamma_4$p		1	.1	83	6	16.268	0.76198	5		0.87	1.25	3.08	3.28	3.34	4.40	5.75	8.21	9.93	10.00	13.04	13.40	15.53	21.82	31.04
Bi	$L\gamma_4$		1	.1	83	6	16.292	0.76087	5		0.87	1.25	3.07	3.27	3.34	4.40	5.74	8.20	9.91	9.99	13.03	13.38	15.50	21.78	30.99
Bi	L_1-$O_{4,5}$	B	1	.01	83	6	16.355	0.75791	5		0.86	1.24	3.06	3.26	3.33	4.38	5.72	8.17	9.87	9.95	12.97	13.33	15.44	21.70	30.87
Bi	AL_1		1		83	6	16.373	0.75710	4		0.86	1.24	3.06	3.26	3.32	4.37	5.71	8.16	9.86	9.94	12.96	13.31	15.43	21.68	30.83
Bi	$L\gamma_{13}$	D	1	.01	83	6	16.382	0.75668	5		0.86	1.24	3.05	3.26	3.32	4.37	5.71	8.16	9.86	9.93	12.95	13.30	15.42	21.66	30.82
Bi	$K\alpha_2$		1	50	83	6	74.802	0.16572	6		0.19	0.27	0.67	0.71	0.73	0.96	1.25	1.78	2.16	2.17	2.83	2.91	3.37	4.72	6.67
Bi	$K\alpha_{1,2}$		1	150	83	6	76.315	0.16243	6		0.18	0.27	0.66	0.70	0.71	0.94	1.23	1.75	2.11	2.13	2.78	2.85	3.30	4.62	6.54
Bi	$K\alpha_1$		1	100	83	6	77.095	0.16079	6		0.18	0.26	0.65	0.69	0.71	0.93	1.21	1.73	2.09	2.11	2.75	2.82	3.27	4.58	6.47
Bi	$K\beta_3$		1	13	83	6	86.819	0.14278	6		0.16	0.23	0.58	0.61	0.63	0.82	1.08	1.54	1.86	1.87	2.44	2.50	2.90	4.06	5.75
Bi	$K\beta_1$		1	89	83	6	87.328	0.14195	6		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.53	1.85	1.86	2.43	2.49	2.88	4.04	5.71
Bi	$K\beta_5$	F	1	.4	83	6	87.888	0.14104	6		0.16	0.23	0.57	0.61	0.62	0.81	1.06	1.52	1.84	1.85	2.41	2.47	2.87	4.01	5.68
Bi	$K\beta_2$''		1	11	83	6	89.716	0.13817	5		0.16	0.23	0.56	0.59	0.61	0.80	1.04	1.49	1.80	1.81	2.36	2.42	2.81	3.93	5.56
Bi	$K\beta_2$'		1	11	83	6	89.846	0.13797	5		0.16	0.23	0.56	0.59	0.61	0.80	1.04	1.49	1.80	1.81	2.36	2.42	2.80	3.93	5.55
Bi	$K\beta_4$	B	1	.3	83	6	90.094	0.13759	5		0.16	0.23	0.56	0.59	0.60	0.79	1.04	1.48	1.79	1.80	2.35	2.41	2.80	3.92	5.54
Bi	K-$O_{2,3}$		1	.01	83	6	90.422	0.13709	5		0.16	0.22	0.55	0.59	0.60	0.79	1.03	1.48	1.78	1.80	2.34	2.41	2.79	3.90	5.52
Bi	AK	H	1		83	6	90.521	0.13694	5		0.16	0.22	0.55	0.59	0.60	0.79	1.03	1.47	1.78	1.80	2.34	2.40	2.78	3.90	5.51
Po	Ll		1	3	84	6	9.662	1.28290	4		1.46	2.10	5.18	5.52	5.63	7.41	9.69	13.85	16.75	16.88	22.05	22.65	26.29	37.16	53.55
Po	$L\alpha_2$	H	1	10	84	6	11.014	1.12548	5		1.28	1.84	4.54	4.84	4.94	6.50	8.50	12.14	14.68	14.79	19.32	19.84	23.02	32.46	46.55
Po	$L\alpha_1$		1	100	84	6	11.129	1.11386	5		1.27	1.82	4.50	4.79	4.89	6.44	8.41	12.02	14.53	14.64	19.12	19.64	22.78	32.12	46.05

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Po	$L\beta_6$		1	.1	84	6	12.816	0.96720	4		1.10	1.58	3.90	4.16	4.24	5.59	7.30	10.43	12.61	12.70	16.58	17.03	19.75	27.80	39.71
Po	$L\beta_4$		1	4	84	6	13.083	0.94750	4		1.08	1.55	3.82	4.08	4.16	5.47	7.15	10.22	12.35	12.44	16.24	16.68	19.34	27.22	38.86
Po	$L\beta_{15}$		1	1	84	6	13.312	0.93120	4		1.06	1.52	3.76	4.01	4.09	5.38	7.03	10.04	12.14	12.23	15.96	16.39	19.00	26.74	38.17
Po	$L\beta_2$		1	20	84	6	13.338	0.92937	5		1.06	1.52	3.75	4.00	4.08	5.37	7.02	10.02	12.11	12.21	15.93	16.36	18.97	26.69	38.09
Po	$L\beta_1$		1	50	84	6	13.445	0.92200	4		1.05	1.51	3.72	3.97	4.05	5.33	6.96	9.94	12.02	12.11	15.80	16.23	18.81	26.47	37.78
Po	$L\beta_3$		1	6	84	6	13.635	0.90910	4		1.03	1.49	3.67	3.91	3.99	5.25	6.86	9.80	11.85	11.94	15.58	16.00	18.55	26.10	37.23
Po	$L\beta_5$		1	1	84	6	13.779	0.89960	4		1.02	1.47	3.63	3.87	3.95	5.20	6.79	9.70	11.72	11.81	15.41	15.83	18.35	25.82	36.83
Po	$L\gamma_1$		1	10	84	6	15.741	0.78748	5		0.90	1.29	3.18	3.39	3.46	4.55	5.94	8.49	10.26	10.34	13.48	13.85	16.05	22.56	32.10
Po	$L\gamma_2$		1	1	84	6	16.057	0.77200	3		0.88	1.26	3.12	3.32	3.39	4.46	5.83	8.32	10.06	10.13	13.22	13.58	15.73	22.11	31.46
Po	$L\gamma_6$		1	.01	84	6	16.215	0.76450	4		0.87	1.25	3.09	3.29	3.35	4.42	5.77	8.24	9.96	10.03	13.09	13.44	15.58	21.89	31.14
Po	$K\alpha_2$	H	1	50	84	6	76.851	0.16130	5		0.18	0.26	0.65	0.69	0.71	0.93	1.22	1.74	2.10	2.11	2.76	2.83	3.28	4.59	6.49
Po	$K\alpha_{1,2}$	H	1	150	84	6	78.452	0.15801	5		0.18	0.26	0.64	0.68	0.69	0.91	1.19	1.70	2.06	2.07	2.70	2.77	3.21	4.50	6.36
Po	$K\alpha_1$	H	1	100	84	6	79.279	0.15636	5		0.18	0.26	0.63	0.67	0.69	0.90	1.18	1.68	2.03	2.05	2.67	2.74	3.18	4.45	6.29
Po	$K\beta_3$	H	1	13	84	6	89.231	0.13892	5		0.16	0.23	0.56	0.60	0.61	0.80	1.05	1.50	1.81	1.82	2.37	2.44	2.82	3.95	5.59
Po	$K\beta_1$	H	1	89	84	6	89.781	0.13807	5		0.16	0.23	0.56	0.59	0.61	0.80	1.04	1.49	1.80	1.81	2.36	2.42	2.81	3.93	5.56
Po	$K\beta_2''$	H	1	11	84	6	92.246	0.13438	5		0.15	0.22	0.54	0.58	0.59	0.78	1.01	1.45	1.75	1.76	2.30	2.36	2.73	3.82	5.41
Po	$K\beta_2'$	H	1	11	84	6	92.383	0.13418	5		0.15	0.22	0.54	0.58	0.59	0.78	1.01	1.45	1.75	1.76	2.29	2.35	2.73	3.82	5.40
At	$L\alpha_2$	H	1	10	85	6	11.303	1.09671	5		1.25	1.80	4.43	4.72	4.81	6.34	8.28	11.83	14.31	14.41	18.82	19.33	22.42	31.61	45.30
At	$L\alpha_1$	H	1	100	85	6	11.425	1.08500	5		1.23	1.78	4.38	4.67	4.76	6.27	8.19	11.71	14.15	14.26	18.62	19.12	22.18	31.26	44.79
At	$L\beta_1$	H	1	50	85	6	13.874	0.89349	5		1.02	1.46	3.61	3.85	3.92	5.16	6.74	9.63	11.64	11.73	15.31	15.72	18.23	25.64	36.57
At	$L\beta_3$	H	1	10	85	6	14.065	0.88135	5		1.00	1.44	3.56	3.79	3.87	5.09	6.65	9.50	11.49	11.57	15.10	15.51	17.98	25.29	36.05
At	$L\gamma_1$	H	1	10	85	6	16.249	0.76289	5		0.87	1.25	3.08	3.28	3.35	4.41	5.76	8.22	9.94	10.01	13.06	13.41	15.55	21.84	31.07
At	$K\alpha_2$	H	1	50	85	6	78.930	0.15705	5		0.18	0.26	0.63	0.68	0.69	0.91	1.18	1.69	2.04	2.06	2.68	2.76	3.19	4.47	6.32
At	$K\alpha_{1,2}$	H	1	150	85	6	80.624	0.15375	5		0.17	0.25	0.62	0.66	0.67	0.89	1.16	1.66	2.00	2.02	2.63	2.70	3.12	4.38	6.19
At	$K\alpha_1$	H	1	100	85	6	81.499	0.15210	5		0.17	0.25	0.61	0.65	0.67	0.88	1.15	1.64	1.98	1.99	2.60	2.67	3.09	4.33	6.12
At	$K\beta_3$	H	1	13	85	6	91.707	0.13517	5		0.15	0.22	0.55	0.58	0.59	0.78	1.02	1.46	1.76	1.77	2.31	2.37	2.75	3.85	5.44
At	$K\beta_1$	H	1	29	85	6	92.287	0.13432	5		0.15	0.22	0.54	0.58	0.59	0.78	1.01	1.45	1.75	1.76	2.29	2.36	2.73	3.82	5.41
At	$K\beta_2''$	H	1	11	85	6	94.829	0.13072	5		0.15	0.21	0.53	0.56	0.57	0.76	0.99	1.41	1.70	1.71	2.23	2.29	2.66	3.72	5.26
At	$K\beta_2'$	H	1	11	85	6	94.974	0.13052	5		0.15	0.21	0.53	0.56	0.57	0.75	0.98	1.41	1.70	1.71	2.23	2.29	2.65	3.72	5.25
Rn	$L\alpha_2$	H	1	10	86	6	11.596	1.06899	5		1.22	1.75	4.32	4.60	4.69	6.18	8.07	11.53	13.94	14.05	18.34	18.84	21.85	30.79	44.09
Rn	$L\alpha_1$	H	1	100	86	6	11.725	1.05723	5		1.20	1.73	4.27	4.55	4.64	6.11	7.98	11.41	13.79	13.89	18.14	18.63	21.60	30.44	43.58
Rn	$L\beta_1$	H	1	50	86	6	14.313	0.86605	5		0.99	1.42	3.50	3.73	3.80	5.00	6.54	9.34	11.29	11.37	14.84	15.24	17.66	24.84	35.41
Rn	$L\beta_3$	H	1	10	86	6	14.509	0.85436	5		0.97	1.40	3.45	3.68	3.75	4.94	6.45	9.21	11.13	11.22	14.63	15.03	17.42	24.50	34.91
Rn	$L\gamma_1$	H	1	10	86	6	16.768	0.73928	5		0.84	1.21	2.98	3.18	3.24	4.27	5.58	7.97	9.63	9.70	12.65	13.00	15.06	21.16	30.09
Rn	$K\alpha_2$	H	1	50	86	6	81.051	0.15294	5		0.17	0.25	0.62	0.66	0.67	0.88	1.15	1.65	1.99	2.00	2.61	2.68	3.11	4.35	6.16
Rn	$K\alpha_{1,2}$	H	1	150	86	6	82.843	0.14963	5		0.17	0.24	0.60	0.64	0.66	0.86	1.13	1.61	1.95	1.96	2.56	2.63	3.04	4.26	6.02
Rn	$K\alpha_1$	H	1	100	86	6	83.768	0.14798	5		0.17	0.24	0.60	0.64	0.65	0.85	1.12	1.59	1.93	1.94	2.53	2.60	3.01	4.21	5.96
Rn	$K\beta_3$	H	1	13	86	6	94.230	0.13155	5		0.15	0.22	0.53	0.57	0.58	0.76	0.99	1.42	1.71	1.72	2.25	2.31	2.67	3.74	5.29
Rn	$K\beta_1$	H	1	29	86	6	94.850	0.13069	5		0.15	0.21	0.53	0.56	0.57	0.75	0.99	1.41	1.70	1.71	2.23	2.29	2.66	3.72	5.26
Rn	$K\beta_2''$	H	1	11	86	6	97.460	0.12719	5		0.14	0.21	0.51	0.55	0.56	0.73	0.96	1.37	1.65	1.67	2.17	2.23	2.58	3.62	5.12
Rn	$K\beta_2'$	H	1	11	86	6	97.622	0.12698	5		0.14	0.21	0.51	0.55	0.56	0.73	0.96	1.37	1.65	1.66	2.17	2.23	2.58	3.61	5.11
Fr	$L\alpha_2$	H	1	10	87	6	11.893	1.04230	5		1.19	1.71	4.21	4.49	4.57	6.02	7.87	11.24	13.59	13.70	17.88	18.36	21.30	30.00	42.94
Fr	$L\alpha_1$	H	1	100	87	6	12.029	1.03049	5		1.17	1.69	4.16	4.44	4.52	5.95	7.78	11.12	13.44	13.54	17.67	18.15	21.05	29.66	42.43
Fr	$L\beta_2$		1	20	87	6	14.448	0.85800	3		0.98	1.40	3.46	3.69	3.76	4.96	6.48	9.25	11.18	11.26	14.70	15.10	17.50	24.61	35.07
Fr	$L\beta_1$	H	1	50	87	6	14.768	0.83940	5		0.96	1.37	3.39	3.61	3.68	4.85	6.34	9.05	10.94	11.02	14.38	14.77	17.12	24.06	34.28
Fr	$L\beta_3$	H	1	10	87	6	14.973	0.82789	5		0.94	1.36	3.34	3.56	3.63	4.78	6.25	8.93	10.79	10.87	14.18	14.56	16.88	23.73	33.80
Fr	$L\gamma_1$	H	1	10	87	6	17.300	0.71652	5		0.82	1.17	2.89	3.08	3.14	4.14	5.41	7.72	9.33	9.40	12.26	12.60	14.59	20.50	29.14
Fr	$K\alpha_2$	H	1	50	87	6	83.217	0.14896	5		0.17	0.24	0.60	0.64	0.65	0.86	1.12	1.60	1.94	1.95	2.54	2.61	3.03	4.24	6.00
Fr	$K\alpha_{1,2}$	H	1	150	87	6	85.110	0.14565	5		0.17	0.24	0.59	0.63	0.64	0.84	1.10	1.57	1.89	1.91	2.49	2.56	2.96	4.15	5.86
Fr	$K\alpha_1$	H	1	100	87	6	86.089	0.14399	5		0.16	0.24	0.58	0.62	0.63	0.83	1.09	1.55	1.87	1.89	2.46	2.53	2.93	4.10	5.80
Fr	$K\beta_3$	H	1	14	87	6	96.791	0.12807	5		0.15	0.21	0.52	0.55	0.56	0.74	0.97	1.38	1.67	1.68	2.19	2.25	2.60	3.65	5.15
Fr	$K\beta_1$	H	1	29	87	6	97.460	0.12719	5		0.14	0.21	0.51	0.55	0.56	0.73	0.96	1.37	1.65	1.67	2.17	2.23	2.58	3.62	5.12
Fr	$K\beta_2''$	H	1	11	87	6	100.137	0.12379	5		0.14	0.20	0.50	0.53	0.54	0.71	0.93	1.33	1.61	1.62	2.11	2.17	2.51	3.52	4.98
Fr	$K\beta_2'$	H	1	11	87	6	100.307	0.12358	5		0.14	0.20	0.50	0.53	0.54	0.71	0.93	1.33	1.61	1.62	2.11	2.17	2.51	3.52	4.97
Ra	Ll		1	3	88	6	10.620	1.16719	5		1.33	1.91	4.71	5.02	5.12	6.75	8.81	12.60	15.23	15.35	20.04	20.59	23.88	33.70	48.39
Ra	$L\alpha_2$		1	10	88	6	12.194	1.01656	5		1.16	1.66	4.10	4.38	4.46	5.87	7.67	10.96	13.25	13.36	17.43	17.91	20.76	29.25	41.82
Ra	$L\alpha_1$		1	100	88	6	12.338	1.00473	5		1.14	1.64	4.06	4.32	4.41	5.81	7.59	10.84	13.10	13.20	17.23	17.70	20.52	28.90	41.32
Ra	Ln		1	1	88	6	13.661	0.90742	5		1.03	1.49	3.66	3.91	3.98	5.24	6.85	9.78	11.83	11.92	15.55	15.97	18.51	26.05	37.16
Ra	$L\beta_6$		1	.1	88	6	14.234	0.87088	5		0.99	1.43	3.52	3.75	3.82	5.03	6.57	9.39	11.35	11.43	14.92	15.32	17.76	24.98	35.61
Ra	L_3-N_2	B	1	.01	88	6	14.384	0.86180	4		0.98	1.41	3.48	3.71	3.78	4.98	6.50	9.29	11.23	11.31	14.76	15.16	17.58	24.72	35.23
Ra	L_3-N_3	B	1	.01	88	6	14.563	0.85120	4		0.97	1.39	3.44	3.66	3.73	4.92	6.42	9.18	11.09	11.18	14.58	14.98	17.36	24.41	34.78
Ra	$L\beta_{17}$	8	1	.01	88	6	14.591	0.84380	4		0.96	1.38	3.41	3.63	3.70	4.88	6.37	9.10	10.99	11.08	14.45	14.84	17.21	24.19	34.47
Ra	$L\beta_4$		1	4	88	6	14.745	0.84071	5		0.96	1.38	3.39	3.62	3.69	4.86	6.35	9.06	10.95	11.04	14.40	14.79	17.14	24.10	34.34
Ra	$L\beta_{15}$		1	1	88	6	14.806	0.83722	5		0.95	1.37	3.38	3.60	3.67	4.84	6.32	9.03	10.91	10.99	14.34	14.73	17.07	24.00	34.19
Ra	$L\beta_2$		1	20	88	6	14.839	0.83537	5		0.95	1.37	3.37	3.60	3.67	4.83	6.31	9.01	10.88	10.97	14.31	14.70	17.03	23.95	34.11

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Ra	Lu	8	1	.01	88	6	15.143	0.81860	4		0.93	1.34	3.30	3.52	3.59	4.73	6.18	8.82	10.67	10.75	14.02	14.40	16.69	23.46	33.41
Ra	$L\beta_7$		1	.1	88	6	15.187	0.81620	4		0.93	1.34	3.29	3.51	3.58	4.72	6.16	8.80	10.63	10.71	13.98	14.36	16.64	23.39	33.31
Ra	$L\beta_1$		1	50	88	6	15.233	0.81375	5		0.93	1.33	3.28	3.50	3.57	4.70	6.14	8.77	10.60	10.68	13.94	14.31	16.59	23.32	33.20
Ra	$L\beta_5$		1	1	88	6	15.375	0.80627	5		0.92	1.32	3.25	3.47	3.54	4.66	6.09	8.69	10.50	10.58	13.81	14.18	16.43	23.10	32.89
Ra	L_3-P_1		1	.01	88	6	15.399	0.80500	4		0.92	1.32	3.25	3.46	3.53	4.65	6.08	8.68	10.49	10.57	13.78	14.16	16.41	23.06	32.84
Ra	L_3-$P_{2,3}$	8	1	.01	88	6	15.422	0.80380	4		0.91	1.32	3.24	3.46	3.53	4.64	6.07	8.67	10.47	10.55	13.76	14.14	16.38	23.03	32.79
Ra	AL_3		1		88	6	15.441	0.80280	4		0.91	1.31	3.24	3.45	3.52	4.64	6.06	8.65	10.46	10.54	13.75	14.12	16.36	23.00	32.75
Ra	$L\beta_3$		1	6	88	6	15.442	0.80273	5		0.91	1.31	3.24	3.45	3.52	4.64	6.06	8.65	10.46	10.54	13.75	14.12	16.36	23.00	32.74
Ra	$L\beta_{10}$	8	1	.01	88	6	15.985	0.77546	5		0.88	1.27	3.13	3.34	3.40	4.48	5.85	8.36	10.10	10.18	13.28	13.64	15.80	22.21	31.60
Ra	$L\beta_9$	8	1	.01	88	6	16.129	0.76857	5		0.87	1.26	3.10	3.31	3.37	4.44	5.80	8.28	10.01	10.09	13.16	13.51	15.66	22.01	31.31
Ra	$L\gamma_5$		1	.1	88	6	17.271	0.71774	5		0.82	1.17	2.90	3.09	3.15	4.15	5.42	7.74	9.35	9.42	12.28	12.62	14.62	20.54	29.19
Ra	L_2-N_3	B	1	.01	88	6	17.600	0.70430	4		0.80	1.15	2.84	3.03	3.09	4.07	5.32	7.59	9.17	9.24	12.05	12.38	14.34	20.15	28.64
Ra	$L\gamma_1$		1	10	88	6	17.845	0.69463	5		0.79	1.14	2.80	2.99	3.05	4.01	5.24	7.49	9.05	9.11	11.89	12.21	14.15	19.87	28.23
Ra	L_2-N_5	8	1	.01	88	6	17.882	0.69320	4		0.79	1.13	2.80	2.98	3.04	4.00	5.23	7.47	9.03	9.10	11.86	12.18	14.12	19.83	28.17
Ra	L_1-N_1	8	1	.01	88	6	18.033	0.68740	4		0.78	1.13	2.77	2.96	3.02	3.97	5.19	7.41	8.95	9.02	11.76	12.08	14.00	19.66	27.93
Ra	$L\gamma_2$		1	1	88	6	18.176	0.68199	5		0.78	1.12	2.75	2.93	2.99	3.94	5.15	7.35	8.88	8.95	11.67	11.99	13.89	19.50	27.71
Ra	$L\gamma_8$		1	.1	88	6	18.227	0.68010	4		0.77	1.11	2.75	2.93	2.98	3.93	5.13	7.33	8.86	8.92	11.64	11.95	13.85	19.45	27.63
Ra	L_2-O_2	8	1	.01	88	6	18.283	0.67800	4		0.77	1.11	2.74	2.92	2.97	3.92	5.12	7.31	8.83	8.90	11.60	11.92	13.81	19.39	27.54
Ra	L_2-O_3	8	1	.01	88	6	18.326	0.67640	4		0.77	1.11	2.73	2.91	2.97	3.91	5.10	7.29	8.81	8.88	11.57	11.89	13.77	19.34	27.48
Ra	$L\gamma_3$		1	2	88	6	18.354	0.67538	5		0.77	1.11	2.73	2.91	2.96	3.90	5.10	7.28	8.80	8.86	11.56	11.87	13.75	19.31	27.44
Ra	$L\gamma_6$		1	.01	88	6	18.411	0.67328	5		0.77	1.10	2.72	2.90	2.95	3.89	5.08	7.26	8.77	8.83	11.52	11.83	13.71	19.25	27.35
Ra	L_2-P_1		1	.01	88	6	18.435	0.67240	4		0.77	1.10	2.71	2.89	2.95	3.88	5.07	7.25	8.76	8.82	11.51	11.82	13.69	19.23	27.31
Ra	L_2-$P_{2,3}$	B	1	.01	88	6	18.463	0.67140	4		0.76	1.10	2.71	2.89	2.95	3.88	5.07	7.24	8.74	8.81	11.49	11.80	13.67	19.20	27.27
Ra	AL_2		1		88	6	18.482	0.67070	4		0.76	1.10	2.71	2.89	2.94	3.87	5.06	7.23	8.73	8.80	11.48	11.79	13.66	19.18	27.24
Ra	L_1-N_4	8	1	.01	88	6	18.596	0.66660	4		0.76	1.09	2.69	2.87	2.92	3.85	5.03	7.18	8.68	8.75	11.41	11.71	13.57	19.06	27.07
Ra	$L\gamma_{11}$	8	1	.01	88	6	18.629	0.66540	4		0.76	1.09	2.69	2.86	2.92	3.84	5.02	7.17	8.67	8.73	11.39	11.69	13.55	19.02	27.02
Ra	$L\gamma_4$p		1	.1	88	6	19.032	0.65131	5		0.74	1.07	2.63	2.80	2.86	3.76	4.91	7.02	8.48	8.55	11.14	11.45	13.26	18.62	26.44
Ra	$L\gamma_4$		1	.1	88	6	19.081	0.64965	5		0.74	1.06	2.62	2.80	2.85	3.75	4.90	7.00	8.46	8.52	11.12	11.42	13.23	18.57	26.37
Ra	L_1-$O_{4,5}$	8	1	.01	88	6	19.165	0.64680	4		0.74	1.06	2.61	2.78	2.84	3.74	4.88	6.97	8.42	8.49	11.07	11.37	13.17	18.49	26.25
Ra	$L\gamma_{13}$		1	.01	88	6	19.215	0.64513	5		0.73	1.06	2.60	2.78	2.83	3.73	4.87	6.95	8.40	8.46	11.04	11.34	13.13	18.44	26.18
Ra	AL_1		1		88	6	19.234	0.64450	4		0.73	1.06	2.60	2.77	2.83	3.72	4.86	6.95	8.39	8.46	11.03	11.32	13.12	18.42	26.16
Ra	$K\alpha_2$	H	1	50	88	6	85.419	0.14512	5		0.17	0.24	0.59	0.62	0.64	0.84	1.09	1.56	1.89	1.90	2.48	2.55	2.95	4.13	5.84
Ra	$K\alpha_{1,2}$	H	1	150	88	6	87.419	0.14180	5		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.53	1.84	1.86	2.42	2.49	2.88	4.04	5.71
Ra	$K\alpha_1$	H	1	100	88	6	88.454	0.14014	5		0.16	0.23	0.57	0.60	0.61	0.81	1.06	1.51	1.82	1.84	2.39	2.46	2.85	3.99	5.64
Ra	$K\beta_3$	H	1	14	88	6	99.415	0.12469	5		0.14	0.20	0.50	0.54	0.55	0.72	0.94	1.34	1.62	1.63	2.13	2.19	2.53	3.55	5.02
Ra	$K\beta_1$	H	1	30	88	6	100.113	0.12382	5		0.14	0.20	0.50	0.53	0.54	0.72	0.93	1.33	1.61	1.62	2.12	2.17	2.52	3.52	4.98
Ra	$K\beta_2$''	H	1	11	88	6	102.871	0.12050	5		0.14	0.20	0.49	0.52	0.53	0.70	0.91	1.30	1.57	1.58	2.06	2.11	2.45	3.43	4.85
Ra	$K\beta_2$'	H	1	11	88	6	103.051	0.12029	5		0.14	0.20	0.49	0.52	0.53	0.69	0.91	1.30	1.57	1.58	2.06	2.11	2.44	3.42	4.84
Ac	$L\alpha_2$	H	1	10	89	6	12.499	0.99178	5		1.13	1.62	4.00	4.27	4.35	5.73	7.49	10.70	12.93	13.03	17.00	17.47	20.25	28.52	40.76
Ac	$L\alpha_1$	H	1	100	89	6	12.650	0.97993	5		1.12	1.60	3.96	4.22	4.30	5.66	7.40	10.57	12.78	12.87	16.80	17.26	20.01	28.17	40.25
Ac	$L\beta_1$	H	1	50	89	6	15.710	0.78903	5		0.90	1.29	3.18	3.40	3.46	4.56	5.96	8.51	10.28	10.36	13.51	13.88	16.08	22.60	32.17
Ac	$L\beta_3$	H	1	10	89	6	15.929	0.77822	5		0.89	1.27	3.14	3.35	3.41	4.50	5.87	8.39	10.14	10.21	13.32	13.68	15.86	22.29	31.72
Ac	$L\gamma_1$	H	1	10	89	6	18.405	0.67351	5		0.77	1.10	2.72	2.90	2.95	3.89	5.08	7.26	8.77	8.84	11.52	11.84	13.71	19.26	27.36
Ac	$K\alpha_2$	H	1	50	89	6	87.660	0.14141	5		0.16	0.23	0.57	0.61	0.62	0.82	1.07	1.52	1.84	1.85	2.42	2.48	2.87	4.03	5.69
Ac	$K\alpha_{1,2}$	H	1	150	89	6	89.773	0.13808	5		0.16	0.23	0.56	0.59	0.61	0.80	1.04	1.49	1.80	1.81	2.36	2.42	2.81	3.93	5.56
Ac	$K\alpha_1$	H	1	100	89	6	90.868	0.13642	6		0.16	0.22	0.55	0.59	0.60	0.79	1.03	1.47	1.77	1.79	2.33	2.39	2.77	3.88	5.49
Ac	$K\beta_3$	H	1	14	89	6	102.084	0.12143	5		0.14	0.20	0.49	0.52	0.53	0.70	0.92	1.31	1.58	1.59	2.07	2.13	2.47	3.46	4.89
Ac	$K\beta_1$	H	1	30	89	6	102.829	0.12055	5		0.14	0.20	0.49	0.52	0.53	0.70	0.91	1.30	1.57	1.58	2.06	2.11	2.45	3.43	4.85
Ac	$K\beta_2$''	H	1	11	89	6	105.660	0.11732	5		0.13	0.19	0.47	0.50	0.51	0.68	0.89	1.26	1.53	1.54	2.00	2.06	2.38	3.34	4.72
Ac	$K\beta_2$'	H	1	11	89	6	105.849	0.11711	5		0.13	0.19	0.47	0.50	0.51	0.68	0.88	1.26	1.52	1.54	2.00	2.05	2.38	3.33	4.71
Th	O_3-$P_{4,5}$		1		90	6	0.182	68.20000	1		85.26	153.96													
Th	N_7-O_5		1		90	6	0.248	50.00000	1		59.54	91.17													
Th	N_6-O_4		1		90	6	0.250	49.50000	1		58.89	90.01													
Th	N_6-O_5		1		90	6	0.257	48.20000	1		57.19	87.03													
Th	N_5-$N_{6,7}$		1		90	6	0.341	36.31999	2		42.28	62.51													
Th	N_4-N_6		1		90	6	0.369	33.56999	2		38.95	57.31													
Th	N_3-O_5		1		90	6	0.898	13.80000	1		15.75	22.74	58.16	52.42	63.78	88.14	130.60								
Th	N_2-O_4		1		90	6	1.072	11.56000	2		13.18	19.01	48.05	51.45	52.53	71.28	99.11								
Th	N_2-P_1		1		90	6	1.120	11.07000	2		12.62	18.20	45.90	49.12	50.15	67.83	93.57								
Th	N_1-P_2		1		90	6	1.313	9.44000	2		10.76	15.50	38.84	41.52	42.37	56.82	76.85	125.05							
Th	N_1-P_3		1		90	6	1.319	9.40000	2		10.71	15.43	38.67	41.34	42.18	56.56	76.46	124.12							
Th	Mz_2		1	.1	90	6	2.321	5.34000	3		6.08	8.75	21.68	23.13	23.59	31.23	41.16	60.25	74.64	75.30	105.51	109.67	142.40		
Th	Mz_1		1	1	90	6	2.363	5.24500	3		5.97	8.59	21.29	22.72	23.17	30.66	40.40	59.07	73.09	73.74	102.87	106.83	136.81		
Th	M_4-N_3		1	.01	90	6	2.524	4.91100	3		5.59	8.05	19.92	21.25	21.67	28.66	37.73	54.98	67.77	68.36	94.13	97.50	121.05		
Th	M_3-N_1		1	1	90	6	2.714	4.56800	3		5.20	7.48	18.52	19.75	20.14	26.62	35.00	50.85	62.48	63.00	85.84	88.75	108.15		

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Th	$M\alpha_2$		1	100	90	6	2.986	4.15100	3		4.72	6.80	16.81	17.93	18.29	24.15	31.72	45.93	56.23	56.70	76.46	78.91	94.76		
Th	$M\alpha_1$		1	100	90	6	2.996	4.13810	4		4.71	6.78	16.76	17.88	18.23	24.08	31.62	45.77	56.04	56.51	76.18	78.62	94.37		
Th	$M\beta$		1	60	90	6	3.145	3.94100	3		4.49	6.45	15.96	17.02	17.36	22.91	30.07	43.48	53.16	53.59	71.96	74.22	88.64	156.33	
Th	M_4-O_2		1	1	90	6	3.255	3.80800	3		4.33	6.24	15.42	16.44	16.77	22.13	29.04	41.94	51.23	51.65	69.18	71.32	84.92	142.07	
Th	M_5-P_3		1	.01	90	6	3.297	3.76000	3		4.28	6.16	15.22	16.23	16.55	21.85	28.66	41.39	50.54	50.95	68.18	70.29	83.60	138.07	
Th	AM_5		1		90	6	3.324	3.72900	3		4.24	6.11	15.09	16.10	16.42	21.67	28.42	41.03	50.09	50.50	67.55	69.62	82.76	135.67	
Th	M_3-N_4		1	5	90	6	3.334	3.71800	3		4.23	6.09	15.05	16.05	16.37	21.60	28.34	40.91	49.94	50.34	67.32	69.39	82.46	134.84	
Th	$M\gamma$		1	5	90	6	3.369	3.67900	3		4.19	6.03	14.89	15.88	16.19	21.37	28.03	40.46	49.38	49.78	66.52	68.56	81.41	132.04	
Th	AM_4		1		90	6	3.485	3.55700	3		4.05	5.83	14.39	15.35	15.65	20.66	27.09	39.06	47.64	48.02	64.05	65.99	78.18	124.10	
Th	M_2-N_1		1	.01	90	6	3.505	3.53700	3		4.03	5.79	14.31	15.26	15.56	20.54	26.93	38.83	47.35	47.73	63.64	65.57	77.66	122.90	
Th	M_3-O_1		1	.5	90	6	3.776	3.28300	3		3.74	5.38	13.28	14.16	14.44	19.05	24.96	35.94	43.77	44.12	58.60	60.34	71.18	109.24	
Th	M_3-$O_{4,5}$		1	1	90	6	3.959	3.13100	3		3.56	5.13	12.66	13.50	13.77	18.16	23.79	34.23	41.64	41.97	55.65	57.28	67.43	102.08	
Th	AM_3		1		90	6	4.040	3.06800	3		3.49	5.02	12.41	13.23	13.49	17.79	23.30	33.52	40.77	41.09	54.43	56.03	65.90	99.27	
Th	M_2-N_4		1	5	90	6	4.117	3.01100	3		3.43	4.93	12.18	12.98	13.24	17.46	22.87	32.88	39.98	40.29	53.34	54.90	64.52	96.80	
Th	M_1-N_3		1	.1	90	6	4.225	2.93400	3		3.34	4.80	11.86	12.65	12.90	17.01	22.27	32.01	38.91	39.22	51.87	53.38	62.68	93.55	
Th	M_2-O_4		1	1	90	6	4.735	2.61800	3		2.98	4.29	10.58	11.28	11.50	15.17	19.85	28.49	34.58	34.85	45.94	47.26	55.30	81.11	133.63
Th	M_1-O_3		1	.01	90	6	5.076	2.44200	3		2.78	4.00	9.87	10.52	10.73	14.14	18.50	26.54	32.19	32.44	42.70	43.91	51.30	74.67	118.06
Th	Ll		1	1	90	6	11.117	1.11508	5		1.27	1.83	4.50	4.80	4.89	6.44	8.42	12.03	14.55	14.66	19.14	19.66	22.80	32.15	46.10
Th	Lt	F	1	.01	90	6	11.468	1.08093	5		1.23	1.77	4.36	4.65	4.74	6.25	8.16	11.66	14.10	14.21	18.55	19.05	22.09	31.14	44.61
Th	Ls	F	1	.01	90	6	12.252	1.01175	5		1.15	1.66	4.08	4.35	4.44	5.85	7.64	10.91	13.19	13.29	17.35	17.82	20.66	29.10	41.62
Th	$L\alpha_2$		1	10	90	6	12.807	0.96788	5		1.10	1.58	3.91	4.17	4.25	5.59	7.31	10.44	12.62	12.71	16.59	17.04	19.76	27.82	39.73
Th	$L\alpha_1$		1	100	90	6	12.967	0.95600	5		1.09	1.57	3.86	4.11	4.19	5.52	7.22	10.31	12.46	12.56	16.39	16.83	19.51	27.47	39.23
Th	Ln		1	1	90	6	14.507	0.85446	5		0.97	1.40	3.45	3.68	3.75	4.94	6.45	9.21	11.13	11.22	14.64	15.03	17.42	24.50	34.92
Th	L_2-M_2	8	1	.01	90	6	14.867	0.83380	4		0.95	1.36	3.37	3.59	3.66	4.82	6.29	8.99	10.86	10.95	14.28	14.67	17.00	23.90	34.05
Th	$L\beta_6$		1	.1	90	6	14.973	0.82790	5		0.94	1.36	3.34	3.56	3.63	4.78	6.25	8.93	10.79	10.87	14.18	14.56	16.88	23.73	33.80
Th	L_3-N_2	B	1	.01	90	6	15.136	0.81900	4		0.93	1.34	3.31	3.52	3.59	4.73	6.18	8.83	10.67	10.75	14.03	14.41	16.70	23.47	33.43
Th	L_1-M_1	F	1	.01	90	6	15.287	0.81087	5		0.92	1.33	3.27	3.49	3.56	4.68	6.12	8.74	10.56	10.64	13.89	14.26	16.53	23.24	33.08
Th	L_3-N_3	8	1	.01	90	6	15.338	0.80820	4		0.92	1.32	3.26	3.48	3.55	4.67	6.10	8.71	10.53	10.61	13.84	14.21	16.47	23.16	32.97
Th	$L\beta_{15}$		1	1	90	6	15.585	0.79539	5		0.91	1.30	3.21	3.42	3.49	4.60	6.00	8.57	10.36	10.44	13.62	13.99	16.21	22.79	32.43
Th	$L\beta_2$		1	20	90	6	15.621	0.79354	5		0.90	1.30	3.20	3.41	3.48	4.58	5.99	8.55	10.34	10.42	13.59	13.96	16.17	22.73	32.36
Th	$L\beta_4$		1	4	90	6	15.640	0.79257	5		0.90	1.30	3.20	3.41	3.48	4.58	5.98	8.54	10.33	10.40	13.57	13.94	16.15	22.70	32.32
Th	$L\beta_{17}$	F	1	.01	90	6	15.644	0.79236	5		0.90	1.30	3.20	3.41	3.48	4.58	5.98	8.54	10.32	10.40	13.57	13.93	16.15	22.70	32.31
Th	Lu	B	1	.01	90	6	15.962	0.77661	5		0.88	1.27	3.13	3.34	3.41	4.49	5.86	8.37	10.12	10.19	13.30	13.66	15.83	22.24	31.65
Th	$L\beta_7$		1	.1	90	6	16.008	0.77437	5		0.88	1.27	3.13	3.33	3.40	4.47	5.84	8.35	10.09	10.16	13.26	13.62	15.78	22.18	31.55
Th	L_3-O_2	B	1	.01	90	6	16.072	0.77130	4		0.88	1.26	3.11	3.32	3.38	4.46	5.82	8.31	10.05	10.12	13.21	13.56	15.72	22.09	31.43
Th	L_3-O_3	8	1	.01	90	6	16.120	0.76900	4		0.88	1.26	3.10	3.31	3.37	4.44	5.80	8.29	10.02	10.09	13.17	13.52	15.67	22.02	31.33
Th	$L\beta_1$		1	50	90	6	16.199	0.76521	6		0.87	1.25	3.09	3.29	3.36	4.42	5.78	8.25	9.97	10.04	13.10	13.46	15.59	21.91	31.17
Th	$L\beta_5$		1	1	90	6	16.211	0.76468	5		0.87	1.25	3.09	3.29	3.36	4.42	5.77	8.24	9.96	10.04	13.09	13.45	15.58	21.89	31.15
Th	L_3-P_1		1	.01	90	6	16.238	0.76338	5		0.87	1.25	3.08	3.29	3.35	4.41	5.76	8.23	9.94	10.02	13.07	13.42	15.56	21.86	31.10
Th	L_3-$P_{2,3}$	B	1	.01	90	6	16.257	0.76250	4		0.87	1.25	3.08	3.28	3.35	4.41	5.75	8.22	9.93	10.01	13.05	13.41	15.54	21.83	31.06
Th	L_3-$P_{4,5}$		1	.01	90	6	16.292	0.76087	5		0.87	1.25	3.07	3.27	3.34	4.40	5.74	8.20	9.91	9.99	13.03	13.38	15.50	21.78	30.99
Th	AL_3		1		90	6	16.296	0.76070	4		0.87	1.25	3.07	3.27	3.34	4.39	5.74	8.20	9.91	9.98	13.02	13.38	15.50	21.78	30.98
Th	L_2-M_5	B	1	.01	90	6	16.356	0.75790	4		0.86	1.24	3.06	3.26	3.33	4.38	5.72	8.17	9.87	9.95	12.97	13.33	15.44	21.70	30.87
Th	$L\beta_3$		1	6	90	6	16.423	0.75479	5		0.86	1.24	3.05	3.25	3.31	4.36	5.70	8.14	9.83	9.91	12.92	13.27	15.38	21.61	30.74
Th	$L\beta_{10}$	8	1	.01	90	6	16.978	0.73010	4		0.83	1.20	2.95	3.14	3.20	4.22	5.51	7.87	9.51	9.58	12.50	12.84	14.87	20.89	29.71
Th	$L\beta_9$	8	1	.01	90	6	17.136	0.72340	4		0.82	1.18	2.92	3.11	3.17	4.18	5.46	7.80	9.42	9.49	12.38	12.72	14.74	20.70	29.43
Th	$L\gamma_5$	D	1	.1	90	6	18.361	0.67514	5		0.77	1.11	2.73	2.91	2.96	3.90	5.09	7.28	8.79	8.86	11.55	11.87	13.75	19.30	27.43
Th	L_2-N_3	B	1	.01	90	6	18.725	0.66200	4		0.75	1.08	2.67	2.85	2.90	3.82	5.00	7.13	8.62	8.69	11.33	11.63	13.48	18.93	26.88
Th	$L\gamma_1$		1	10	90	6	18.979	0.65313	5		0.74	1.07	2.64	2.81	2.87	3.77	4.93	7.04	8.50	8.57	11.18	11.48	13.30	18.67	26.52
Th	L_2-N_5	8	1	.01	90	6	19.009	0.65210	4		0.74	1.07	2.63	2.81	2.86	3.77	4.92	7.03	8.49	8.56	11.16	11.46	13.28	18.64	26.47
Th	L_1-N_1	B	1	.01	90	6	19.143	0.64755	5		0.74	1.06	2.61	2.79	2.84	3.74	4.89	6.98	8.43	8.50	11.08	11.38	13.18	18.51	26.28
Th	$L\gamma_2$		1	1	90	6	19.302	0.64221	5		0.73	1.05	2.59	2.76	2.82	3.71	4.85	6.92	8.36	8.43	10.99	11.28	13.07	18.35	26.06
Th	Lv	B	1	.01	90	6	19.349	0.64064	5		0.73	1.05	2.59	2.76	2.81	3.70	4.83	6.90	8.34	8.41	10.96	11.26	13.04	18.31	26.00
Th	$L\gamma_8$		1	.1	90	6	19.400	0.63898	5		0.73	1.05	2.58	2.75	2.80	3.69	4.82	6.89	8.32	8.38	10.93	11.23	13.01	18.26	25.93
Th	L_2-O_2	B	1	.01	90	6	19.463	0.63690	4		0.72	1.04	2.57	2.74	2.79	3.68	4.81	6.86	8.29	8.36	10.90	11.19	12.97	18.20	25.84
Th	L_2-O_3	B	1	.01	90	6	19.503	0.63560	4		0.72	1.04	2.57	2.74	2.79	3.67	4.80	6.85	8.28	8.34	10.87	11.17	12.94	18.16	25.79
Th	$L\gamma_3$		1	2	90	6	19.503	0.63559	5		0.72	1.04	2.57	2.74	2.79	3.67	4.80	6.85	8.28	8.34	10.87	11.17	12.94	18.16	25.79
Th	$L\gamma_6$		1	.01	90	6	19.596	0.63258	5		0.72	1.04	2.55	2.72	2.78	3.65	4.77	6.82	8.24	8.30	10.82	11.11	12.88	18.08	25.67
Th	L_2-P_1		1	.01	90	6	19.626	0.63160	4		0.72	1.03	2.55	2.72	2.77	3.65	4.77	6.81	8.22	8.29	10.81	11.10	12.86	18.05	25.63
Th	L_2-$P_{2,3}$	B	1	.01	90	6	19.639	0.63120	4		0.72	1.03	2.55	2.72	2.77	3.65	4.76	6.80	8.22	8.28	10.80	11.09	12.85	18.04	25.61
Th	L_2-P_4		1	.01	90	6	19.679	0.62991	5		0.72	1.03	2.54	2.71	2.76	3.64	4.75	6.79	8.20	8.26	10.78	11.07	12.82	18.00	25.56
Th	AL_2		1		90	6	19.679	0.62990	4		0.72	1.03	2.54	2.71	2.76	3.64	4.75	6.79	8.20	8.26	10.78	11.07	12.82	18.00	25.56
Th	L_1-N_4	B	1	.01	90	6	19.751	0.62760	4		0.71	1.03	2.53	2.70	2.75	3.63	4.74	6.76	8.17	8.23	10.74	11.03	12.78	17.93	25.46
Th	$L\gamma_{11}$	B	1	.01	90	6	19.791	0.62636	5		0.71	1.03	2.53	2.70	2.75	3.62	4.73	6.75	8.16	8.22	10.72	11.01	12.75	17.90	25.41
Th	L_1-$N_{6,7}$	B	1	.01	90	6	20.123	0.61600	4		0.70	1.01	2.49	2.65	2.70	3.56	4.65	6.64	8.02	8.08	10.54	10.82	12.54	17.60	24.98

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
Th	L_1-O_1		8	1	.01	90	6	20.169	0.61460	4	0.70	1.01	2.48	2.64	2.70	3.55	4.64	6.62	8.00	8.06	10.51	10.80	12.51	17.56	24.93
Th	$L\gamma_4$p			1	.1	90	6	20.238	0.61251	5	0.70	1.00	2.47	2.64	2.69	3.54	4.62	6.60	7.98	8.04	10.48	10.76	12.47	17.50	24.84
Th	$L\gamma_4$			1	.1	90	6	20.289	0.61098	5	0.70	1.00	2.47	2.63	2.68	3.53	4.61	6.58	7.96	8.02	10.45	10.73	12.44	17.46	24.78
Th	L_1-$O_{4,5}$	B	1	.01	90	6	20.378	0.60830	4		0.69	1.00	2.46	2.62	2.67	3.51	4.59	6.55	7.92	7.98	10.41	10.69	12.38	17.38	24.67
Th	$L\gamma_{13}$			1	.01	90	6	20.420	0.60705	5	0.69	0.99	2.45	2.61	2.66	3.51	4.58	6.54	7.90	7.96	10.38	10.66	12.36	17.34	24.61
Th	AL_1			1		90	6	20.459	0.60590	4	0.69	0.99	2.45	2.61	2.66	3.50	4.57	6.53	7.89	7.95	10.36	10.64	12.33	17.31	24.57
Th	$K\alpha_2$			1	50	90	6	89.938	0.13783	6	0.16	0.23	0.56	0.59	0.60	0.80	1.04	1.48	1.79	1.81	2.35	2.42	2.80	3.92	5.55
Th	$K\alpha_{1,2}$			1	150	90	6	92.174	0.13448	6	0.15	0.22	0.54	0.58	0.59	0.78	1.01	1.45	1.75	1.76	2.30	2.36	2.73	3.83	5.41
Th	$K\alpha_1$			1	100	90	6	93.334	0.13281	6	0.15	0.22	0.54	0.57	0.58	0.77	1.00	1.43	1.73	1.74	2.27	2.33	2.70	3.78	5.35
Th	$K\beta_3$			1	14	90	6	104.813	0.11827	6	0.13	0.19	0.48	0.51	0.52	0.68	0.89	1.27	1.54	1.55	2.02	2.07	2.40	3.37	4.76
Th	$K\beta_1$			1	30	90	6	105.591	0.11740	6	0.13	0.19	0.47	0.51	0.52	0.68	0.89	1.26	1.53	1.54	2.01	2.06	2.38	3.34	4.72
Th	$K\beta_5$	B	1	.5	90	6	106.251	0.11667	6		0.13	0.19	0.47	0.50	0.51	0.67	0.88	1.26	1.52	1.53	1.99	2.05	2.37	3.32	4.70
Th	$K\beta_2$''			1	11	90	6	108.489	0.11426	5	0.13	0.19	0.46	0.49	0.50	0.66	0.86	1.23	1.49	1.50	1.95	2.00	2.32	3.25	4.60
Th	$K\beta_2$'			1	11	90	6	108.699	0.11404	6	0.13	0.19	0.46	0.49	0.50	0.66	0.86	1.23	1.48	1.49	1.95	2.00	2.32	3.25	4.59
Th	$K\beta_4$	F	1	.4	90	6	108.940	0.11379	6		0.13	0.19	0.46	0.49	0.50	0.66	0.86	1.23	1.48	1.49	1.94	2.00	2.31	3.24	4.58
Th	K-$O_{2,3}$			1	.01	90	6	109.486	0.11322	5	0.13	0.19	0.46	0.49	0.50	0.65	0.85	1.22	1.47	1.48	1.93	1.99	2.30	3.22	4.56
Th	AK	H	1		90	6	109.631	0.11307	5		0.13	0.19	0.46	0.49	0.50	0.65	0.85	1.22	1.47	1.48	1.93	1.98	2.30	3.22	4.55
Pa	Mz_2			1	.1	91	6	2.387	5.19300	3	5.91	8.51	21.08	22.49	22.93	30.35	39.98	58.43	72.25	72.89	101.46	105.31	134.02		
Pa	Mz_1			1	1	91	6	2.434	5.09200	3	5.80	8.34	20.66	22.05	22.48	29.74	39.17	57.18	70.64	71.25	98.77	102.44	129.02		
Pa	M_3-N_1			1	1	91	6	2.786	4.45000	3	5.07	7.29	18.03	19.24	19.62	25.92	34.07	49.45	60.69	61.20	83.12	85.88	104.16		
Pa	$M\alpha_2$			1	100	91	6	3.072	4.03500	3	4.59	6.61	16.34	17.43	17.77	23.47	30.81	44.57	54.53	54.98	73.96	76.30	91.34		
Pa	$M\alpha_1$			1	100	91	6	3.082	4.02200	3	4.58	6.59	16.29	17.37	17.71	23.39	30.71	44.42	54.34	54.78	73.68	76.01	90.96	174.52	
Pa	$M\beta$			1	60	91	6	3.239	3.82700	3	4.36	6.27	15.49	16.52	16.85	22.24	29.18	42.16	51.51	51.92	69.57	71.73	85.44	143.77	
Pa	M_4-O_2			1	1	91	6	3.358	3.69100	3	4.20	6.05	14.94	15.93	16.25	21.44	28.13	40.60	49.55	49.95	66.77	68.81	81.74	132.88	
Pa	M_3-N_4			1	5	91	6	3.430	3.61400	3	4.11	5.92	14.63	15.60	15.91	20.99	27.53	39.71	48.45	48.84	65.20	67.18	79.68	127.67	
Pa	AM_5			1		91	6	3.442	3.60100	3	4.10	5.90	14.57	15.54	15.85	20.91	27.43	39.56	48.26	48.65	64.94	66.91	79.34	126.84	
Pa	$M\gamma$			1	5	91	6	3.465	3.57700	3	4.07	5.86	14.48	15.44	15.74	20.77	27.24	39.29	47.92	48.31	64.45	66.41	78.71	125.33	
Pa	M_2-N_1			1	.01	91	6	3.602	3.44100	3	3.92	5.64	13.92	14.85	15.14	19.98	26.19	37.74	45.99	46.36	61.72	63.58	75.18	117.42	
Pa	AM_4			1		91	6	3.615	3.42900	3	3.90	5.62	13.87	14.80	15.09	19.91	26.09	37.60	45.82	46.19	61.49	63.33	74.87	116.77	
Pa	M_3-O_1			1	.5	91	6	3.820	3.24500	3	3.69	5.31	13.13	14.00	14.27	18.83	24.67	35.51	43.24	43.58	57.86	59.58	70.23	107.39	
Pa	M_3-$O_{4,5}$			1	1	91	6	4.080	3.03800	3	3.46	4.97	12.29	13.10	13.36	17.62	23.07	33.18	40.35	40.67	53.86	55.43	65.17	97.96	
Pa	M_2-N_4			1	5	91	6	4.260	2.91000	3	3.31	4.77	11.77	12.55	12.79	16.87	22.09	31.74	38.58	38.89	51.42	52.91	62.11	92.55	
Pa	M_2-O_4			1	.01	91	6	4.905	2.52700	3	2.88	4.14	10.21	10.89	11.10	14.64	19.15	27.48	33.34	33.60	44.26	45.52	53.23	77.74	125.07
Pa	Ll			1	3	91	6	11.364	1.09080	4	1.24	1.79	4.40	4.69	4.79	6.30	8.24	11.77	14.23	14.34	18.72	19.23	22.30	31.44	45.04
Pa	$L\alpha_2$	H	1	10	91	6	13.120	0.94482	5		1.08	1.55	3.81	4.07	4.15	5.46	7.13	10.19	12.32	12.41	16.19	16.63	19.28	27.14	38.75
Pa	$L\alpha_1$			1	100	91	6	13.288	0.93284	5	1.06	1.53	3.77	4.01	4.09	5.39	7.04	10.06	12.16	12.25	15.99	16.42	19.04	26.79	38.24
Pa	Ln			1	1	91	6	14.944	0.82950	4	0.94	1.36	3.35	3.57	3.64	4.79	6.26	8.94	10.81	10.89	14.21	14.59	16.91	23.78	33.87
Pa	$L\beta_6$			1	.1	91	6	15.343	0.80790	4	0.92	1.32	3.26	3.48	3.54	4.67	6.10	8.71	10.53	10.61	13.83	14.21	16.47	23.15	32.96
Pa	$L\beta_2$			1	20	91	6	16.022	0.77370	4	0.88	1.27	3.12	3.33	3.39	4.47	5.84	8.34	10.08	10.16	13.25	13.61	15.77	22.16	31.53
Pa	$L\beta_4$			1	4	91	6	16.101	0.76990	4	0.88	1.26	3.11	3.31	3.38	4.45	5.81	8.30	10.03	10.11	13.18	13.54	15.69	22.05	31.37
Pa	$L\beta_7$			1	.1	91	6	16.427	0.75460	4	0.86	1.24	3.05	3.25	3.31	4.36	5.69	8.13	9.83	9.90	12.92	13.27	15.38	21.60	30.73
Pa	$L\beta_5$			1	1	91	6	16.634	0.74520	4	0.85	1.22	3.01	3.21	3.27	4.31	5.62	8.03	9.71	9.78	12.76	13.10	15.18	21.33	30.34
Pa	$L\beta_1$			1	50	91	6	16.699	0.74232	5	0.84	1.22	3.00	3.19	3.26	4.29	5.60	8.00	9.67	9.74	12.71	13.05	15.12	21.25	30.22
Pa	AL_3			1		91	6	16.765	0.73940	4	0.84	1.21	2.98	3.18	3.24	4.27	5.58	7.97	9.63	9.70	12.66	13.00	15.06	21.16	30.10
Pa	$L\beta_3$			1	6	91	6	16.927	0.73230	5	0.83	1.20	2.96	3.15	3.21	4.23	5.53	7.89	9.54	9.61	12.53	12.87	14.92	20.96	29.80
Pa	$L\beta_{10}$	B	1	.01	91	6	17.489	0.70880	4		0.81	1.16	2.86	3.05	3.11	4.09	5.35	7.64	9.23	9.30	12.13	12.46	14.44	20.28	28.82
Pa	$L\beta_9$	B	1	.01	91	6	17.663	0.70180	4		0.80	1.15	2.83	3.02	3.08	4.05	5.30	7.56	9.14	9.21	12.01	12.34	14.29	20.07	28.53
Pa	$L\gamma_5$			1	.1	91	6	18.925	0.65500	4	0.75	1.07	2.64	2.82	2.87	3.78	4.94	7.06	8.53	8.59	11.21	11.51	13.34	18.72	26.59
Pa	$L\gamma_1$	8	1	10	91	6	19.565	0.63358	5		0.72	1.04	2.56	2.73	2.78	3.66	4.78	6.83	8.25	8.31	10.84	11.13	12.90	18.11	25.71
Pa	$L\gamma_2$			1	1	91	6	19.869	0.62390	4	0.71	1.02	2.52	2.68	2.74	3.60	4.71	6.72	8.12	8.19	10.67	10.96	12.70	17.83	25.31
Pa	$L\gamma_3$			1	2	91	6	20.094	0.61690	4	0.70	1.01	2.49	2.65	2.71	3.56	4.66	6.65	8.03	8.09	10.55	10.84	12.56	17.63	25.02
Pa	$L\gamma_6$			1	.01	91	6	20.212	0.61330	4	0.70	1.00	2.48	2.64	2.69	3.54	4.63	6.61	7.99	8.05	10.49	10.78	12.48	17.52	24.87
Pa	AL_2			1		91	6	20.358	0.60890	4	0.69	1.00	2.46	2.62	2.67	3.52	4.59	6.56	7.93	7.99	10.42	10.70	12.39	17.40	24.69
Pa	$L\gamma_4$			1	.1	91	6	20.879	0.59370	4	0.68	0.97	2.40	2.55	2.60	3.43	4.48	6.40	7.73	7.79	10.16	10.43	12.08	16.96	24.06
Pa	AL_1			1		91	6	21.168	0.58560	4	0.67	0.96	2.36	2.52	2.57	3.38	4.42	6.31	7.62	7.68	10.02	10.29	11.92	16.72	23.73
Pa	$K\alpha_2$	H	1	50	91	6	92.271	0.13434	6		0.15	0.22	0.54	0.58	0.59	0.78	1.01	1.45	1.75	1.76	2.30	2.36	2.73	3.82	5.41
Pa	$K\alpha_{1,2}$	H	1	150	91	6	94.627	0.13100	6		0.15	0.21	0.53	0.56	0.57	0.76	0.99	1.41	1.70	1.72	2.24	2.30	2.66	3.73	5.27
Pa	$K\alpha_1$	H	1	100	91	6	95.852	0.12932	6		0.15	0.21	0.52	0.56	0.57	0.75	0.98	1.39	1.68	1.70	2.21	2.27	2.63	3.68	5.21
Pa	$K\beta_3$	H	1	14	91	6	107.576	0.11523	5		0.13	0.19	0.47	0.50	0.51	0.67	0.87	1.24	1.50	1.51	1.97	2.02	2.34	3.28	4.64
Pa	$K\beta_1$	H	1	30	91	6	108.409	0.11434	6		0.13	0.19	0.46	0.49	0.50	0.66	0.86	1.23	1.49	1.50	1.95	2.01	2.32	3.25	4.60
Pa	$K\beta_2$''	H	1	11	91	6	111.385	0.11129	5		0.13	0.18	0.45	0.48	0.49	0.64	0.84	1.20	1.45	1.46	1.90	1.95	2.26	3.17	4.48
Pa	$K\beta_2$'	H	1	11	91	6	111.605	0.11107	5		0.13	0.18	0.45	0.48	0.49	0.64	0.84	1.20	1.45	1.46	1.90	1.95	2.26	3.16	4.47
U	N_6-O_4			1		92	6	0.286	43.29999	1		50.93	76.42												
U	N_6-O_5			1		92	6	0.294	42.09999	1		49.43	73.94												
U	N_5-$N_{6,7}$			1		92	6	0.356	34.79999	1		40.43	59.62												

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
U	N_4-N_5		1		92	6	0.390	31.79999	1	36.82	54.04													
U	N_3-O_5		1		92	6	0.961	12.90000	2	14.72	21.24	54.05	57.94	59.19	81.11	116.26								
U	N_2-P_1		1		92	6	1.192	10.40000	2	11.86	17.09	42.98	45.97	46.92	63.23	86.42	155.62							
O	N_1-O_3		1		92	6	1.229	10.09000	2	11.50	16.58	41.63	44.53	45.45	61.14	83.25	142.99							
U	N_1-P_2		1		92	6	1.407	8.81000	2	10.04	14.46	36.15	38.64	39.42	52.73	70.90	111.79							
U	N_1-P_3		1		92	6	1.415	8.76000	2	9.98	14.38	35.94	38.41	39.19	52.40	70.44	110.83	168.03						
O	N_1-$P_{4,5}$		1		92	6	1.441	8.60000	2	9.80	14.11	35.26	37.68	38.44	51.38	68.97	107.85	155.05	159.32					
U	Mz_2		1	.1	92	6	2.455	5.05000	3	5.75	8.27	20.49	21.86	22.29	29.49	38.84	56.67	69.97	70.57	97.67	101.27	127.08		
O	Mz_1		1	1	92	6	2.506	4.94600	3	5.63	8.10	20.06	21.41	21.83	28.87	38.00	55.40	68.32	68.91	95.01	98.44	122.52		
U	M_4-N_3		1	.01	92	6	2.680	4.62500	3	5.26	7.58	18.75	20.00	20.40	26.96	35.45	51.53	63.35	63.88	87.18	90.15	110.15		
U	M_3-N_1		1	1	92	6	2.863	4.33000	3	4.93	7.09	17.54	18.71	19.08	25.21	33.12	48.03	58.89	59.38	80.41	83.04	100.28		
U	$M\alpha_2$		1	100	92	6	3.159	3.92400	3	4.47	6.43	15.89	16.95	17.28	22.81	29.94	43.28	52.91	53.34	71.60	73.85	88.15	154.08	
U	$M\alpha_1$		1	100	92	6	3.170	3.91000	3	4.45	6.40	15.83	16.88	17.22	22.73	29.83	43.12	52.71	53.14	71.31	73.54	87.76	152.36	
U	$M\beta$		1	60	92	6	3.336	3.71600	3	4.23	6.09	15.04	16.04	16.36	21.59	28.32	40.88	49.91	50.31	67.28	69.35	82.41	134.70	
U	M_4-O_2		1	1	92	6	3.466	3.57600	3	4.07	5.86	14.47	15.43	15.74	20.77	27.23	39.28	47.91	48.29	64.43	66.39	78.68	125.27	
U	M_3-N_4		1	5	92	6	3.521	3.52100	3	4.01	5.77	14.25	15.19	15.49	20.44	26.81	38.65	47.13	47.50	63.32	65.24	77.24	121.96	
U	AM_5		1		92	6	3.545	3.49700	3	3.98	5.73	14.15	15.09	15.39	20.30	26.62	38.38	46.78	47.16	62.84	64.74	76.62	120.56	
U	$M\gamma$		1	5	92	6	3.563	3.47900	3	3.96	5.70	14.08	15.01	15.31	20.20	26.48	38.17	46.53	46.90	62.48	64.36	76.16	119.54	
U	AM_4		1		92	6	3.719	3.33300	3	3.79	5.46	13.48	14.38	14.66	19.34	25.35	36.51	44.47	44.82	59.59	61.36	72.44	111.74	
O	M_2-N_1		1	.01	92	6	3.724	3.32900	3	3.79	5.45	13.47	14.36	14.64	19.32	25.32	36.47	44.41	44.77	59.51	61.28	72.33	111.53	
U	M_3-O_1		1	.5	92	6	3.979	3.11500	3	3.55	5.10	12.60	13.43	13.70	18.07	23.67	34.05	41.42	41.75	55.34	56.96	67.04	101.36	
U	M_3-$O_{4,5}$		1	1	92	6	4.205	2.94800	3	3.36	4.83	11.92	12.71	12.96	17.09	22.38	32.17	39.11	39.42	52.14	53.66	63.01	94.13	
U	M_1-N_2		1	1	92	6	4.245	2.92000	2	3.32	4.78	11.81	12.59	12.84	16.93	22.17	31.86	38.72	39.03	51.61	53.11	62.35	92.97	
U	AM_3		1		92	6	4.298	2.88400	3	3.28	4.72	11.66	12.43	12.68	16.72	21.89	31.45	38.23	38.53	50.93	52.40	61.50	91.49	
U	M_2-N_4		1	5	92	6	4.400	2.81700	3	3.21	4.61	11.39	12.14	12.38	16.33	21.37	30.70	37.30	37.60	49.66	51.10	59.92	88.79	163.08
O	M_1-N_3		1	.1	92	6	4.503	2.75300	3	3.13	4.51	11.13	11.87	12.10	15.95	20.88	29.99	36.43	36.71	48.46	49.85	58.42	86.27	150.32
U	M_2-O_4		1	.01	92	6	5.074	2.44300	3	2.78	4.00	9.87	10.53	10.73	14.15	18.51	26.55	32.21	32.46	42.72	43.93	51.33	74.70	118.14
U	M_1-O_3		1	.01	92	6	5.380	2.30400	3	2.62	3.77	9.31	9.93	10.12	13.34	17.45	25.01	30.33	30.56	40.18	41.31	48.21	69.81	107.99
U	M_1-P_3		1	.01	92	6	5.502	2.25300	3	2.56	3.69	9.10	9.71	9.90	13.04	17.06	24.45	29.64	29.87	39.25	40.35	47.08	68.05	104.57
U	Ll		1	3	92	6	11.616	1.06712	5	1.21	1.75	4.31	4.59	4.68	6.17	8.06	11.51	13.92	14.02	18.31	18.80	21.81	30.74	44.01
U	Lt	B	1	.01	92	6	11.980	1.03470	4	1.18	1.69	4.18	4.45	4.54	5.98	7.81	11.16	13.49	13.59	17.75	18.23	21.14	29.78	42.61
U	Ls	B	1	.01	92	6	12.864	0.96360	4	1.10	1.58	3.89	4.15	4.23	5.57	7.27	10.39	12.56	12.66	16.52	16.97	19.67	27.69	39.55
U	$L\alpha_2$		1	10	92	6	13.437	0.92256	6	1.05	1.51	3.72	3.97	4.05	5.33	6.96	9.95	12.02	12.12	15.81	16.24	18.83	26.49	37.80
U	$L\alpha_1$		1	100	92	6	13.612	0.91064	6	1.04	1.49	3.68	3.92	4.00	5.26	6.87	9.82	11.87	11.96	15.60	16.03	18.58	26.14	37.30
U	Ln		1	1	92	6	15.397	0.80509	5	0.92	1.32	3.25	3.46	3.53	4.65	6.08	8.68	10.49	10.57	13.79	14.16	16.41	23.07	32.84
O	$L\beta_6$		1	.1	92	6	15.723	0.78838	5	0.90	1.29	3.18	3.39	3.46	4.55	5.95	8.50	10.27	10.35	13.50	13.86	16.07	22.58	32.14
O	L_3-N_2	8	1	.01	92	6	15.889	0.78017	5	0.89	1.28	3.15	3.36	3.42	4.51	5.89	8.41	10.16	10.24	13.36	13.72	15.90	22.34	31.80
O	L_3-N_3	B	1	.01	92	6	16.118	0.76910	4	0.88	1.26	3.10	3.31	3.37	4.44	5.80	8.29	10.02	10.09	13.17	13.52	15.67	22.02	31.33
U	$L8_{1,5}$		1	1	92	6	16.383	0.75664	6	0.86	1.24	3.05	3.26	3.32	4.37	5.71	8.16	9.86	9.93	12.95	13.30	15.42	21.66	30.81
O	$L\beta_2$		1	20	92	6	16.425	0.75468	6	0.86	1.24	3.05	3.25	3.31	4.36	5.70	8.13	9.83	9.90	12.92	13.27	15.38	21.60	30.73
U	$L\beta_4$		1	4	92	6	16.573	0.74798	6	0.85	1.22	3.02	3.22	3.28	4.32	5.64	8.06	9.74	9.82	12.80	13.15	15.24	21.41	30.45
U	$L8_{1,7}$	B	1	.01	92	6	16.638	0.74503	5	0.85	1.22	3.01	3.21	3.27	4.30	5.62	8.03	9.70	9.78	12.75	13.10	15.18	21.33	30.33
O	Lu	B	1	.01	92	6	16.783	0.73860	6	0.84	1.21	2.98	3.18	3.24	4.27	5.57	7.96	9.62	9.69	12.64	12.99	15.05	21.14	30.06
U	$L8_7$		1	.1	92	6	16.842	0.73602	5	0.84	1.20	2.97	3.17	3.23	4.25	5.55	7.93	9.59	9.66	12.60	12.94	14.99	21.06	29.95
U	L_3-O_2	B	1	.01	92	6	16.904	0.73330	4	0.83	1.20	2.96	3.16	3.22	4.24	5.53	7.90	9.55	9.62	12.55	12.89	14.94	20.99	29.84
U	L_3-O_3	B	1	.01	92	6	16.960	0.73090	4	0.83	1.20	2.95	3.15	3.21	4.22	5.52	7.88	9.52	9.59	12.51	12.85	14.89	20.92	29.74
U	$L\beta_5$		1	1	92	6	17.067	0.72630	6	0.83	1.19	2.93	3.13	3.19	4.20	5.48	7.83	9.46	9.53	12.43	12.77	14.80	20.78	29.55
U	L_3-P_1		1	.01	92	6	17.093	0.72521	5	0.83	1.19	2.93	3.12	3.18	4.19	5.47	7.82	9.45	9.52	12.41	12.75	14.77	20.75	29.50
U	L_3-$P_{2,3}$	B	1	.01	92	6	17.115	0.72426	5	0.82	1.19	2.92	3.12	3.18	4.18	5.47	7.81	9.43	9.50	12.40	12.73	14.75	20.72	29.46
U	L_3-$P_{4,5}$		1	.01	92	6	17.159	0.72240	5	0.82	1.18	2.92	3.11	3.17	4.17	5.45	7.79	9.41	9.48	12.36	12.70	14.72	20.67	29.39
U	AL_3		1		92	6	17.162	0.72230	4	0.82	1.18	2.92	3.11	3.17	4.17	5.45	7.79	9.41	9.48	12.36	12.70	14.71	20.67	29.38
U	$L\beta_1$		1	50	92	6	17.217	0.71998	6	0.82	1.18	2.91	3.10	3.16	4.16	5.43	7.76	9.38	9.45	12.32	12.66	14.67	20.60	29.29
U	$L\beta_3$		1	6	92	6	17.452	0.71029	5	0.81	1.16	2.87	3.06	3.12	4.10	5.36	7.66	9.25	9.32	12.16	12.49	14.47	20.32	28.88
U	$L\beta_{10}$	B	1	.01	92	6	18.028	0.68760	5	0.78	1.13	2.78	2.96	3.02	3.97	5.19	7.41	8.95	9.02	11.77	12.09	14.00	19.66	27.94
U	$L\beta_9$	B	1	.01	92	6	18.202	0.68101	6	0.77	1.11	2.75	2.93	2.99	3.93	5.14	7.34	8.87	8.94	11.65	11.97	13.87	19.47	27.67
U	$L\gamma_5$		1	.1	92	6	19.504	0.63557	5	0.72	1.04	2.57	2.73	2.79	3.67	4.80	6.85	8.28	8.34	10.87	11.17	12.94	18.16	25.79
U	L_2-N_3	B	1	.01	92	6	19.904	0.62280	4	0.71	1.02	2.51	2.68	2.73	3.60	4.70	6.71	8.11	8.17	10.65	10.94	12.68	17.80	25.26
U	$L\gamma_1$		1	10	92	6	20.164	0.61477	6	0.70	1.01	2.48	2.65	2.70	3.55	4.64	6.62	8.00	8.07	10.52	10.80	12.51	17.56	24.93
U	$L\gamma_2$		1	1	92	6	20.481	0.60524	6	0.69	0.99	2.44	2.60	2.66	3.50	4.57	6.52	7.88	7.94	10.35	10.63	12.32	17.29	24.54
U	Lv	B	1	.01	92	6	20.554	0.60310	4	0.69	0.99	2.43	2.60	2.65	3.48	4.55	6.50	7.85	7.91	10.32	10.60	12.27	17.23	24.45
O	$L\gamma_8$		1	.1	92	6	20.617	0.60125	5	0.68	0.98	2.43	2.59	2.64	3.47	4.54	6.48	7.83	7.89	10.28	10.56	12.24	17.17	24.38
U	$L\gamma_3$		1	2	92	6	20.709	0.59857	6	0.68	0.98	2.42	2.58	2.63	3.46	4.52	6.45	7.79	7.85	10.24	10.52	12.18	17.10	24.27
U	L_2-O_3	8	1	.01	92	6	20.754	0.59728	5	0.68	0.98	2.41	2.57	2.62	3.45	4.51	6.44	7.78	7.84	10.22	10.49	12.16	17.06	24.21
U	$L\gamma_6$		1	.01	92	6	20.839	0.59484	6	0.68	0.97	2.40	2.56	2.61	3.44	4.49	6.41	7.74	7.80	10.17	10.45	12.11	16.99	24.11
U	L_2-$P_{2,3}$	B	1	.01	92	6	20.904	0.59300	4	0.67	0.97	2.39	2.55	2.60	3.43	4.47	6.39	7.72	7.78	10.14	10.42	12.07	16.94	24.04

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
								10^{-}																	
O	L_2-P_4		1	.01	92	6	20.938	0.59203	5		0.67	0.97	2.39	2.55	2.60	3.42	4.47	6.38	7.71	7.77	10.13	10.40	12.05	16.91	24.00
O	AL_2		1		92	6	20.943	0.59190	4		0.67	0.97	2.39	2.55	2.60	3.42	4.47	6.38	7.71	7.76	10.12	10.40	12.05	16.91	23.99
U	L_1-N_4	B	1	.01	92	6	20.976	0.59096	5		0.67	0.97	2.39	2.54	2.59	3.41	4.46	6.37	7.69	7.75	10.11	10.38	12.03	16.88	23.95
O	$L\gamma_{11}$	8	1	.01	92	6	21.015	0.58986	5		0.67	0.97	2.38	2.54	2.59	3.41	4.45	6.36	7.68	7.74	10.09	10.36	12.00	16.85	23.91
U	$L\gamma_4$P		1	.1	92	6	21.495	0.57670	6		0.66	0.94	2.33	2.48	2.53	3.33	4.35	6.21	7.51	7.56	9.86	10.13	11.74	16.47	23.37
O	$L\gamma_4$		1	.1	92	6	21.559	0.57499	5		0.65	0.94	2.32	2.47	2.52	3.32	4.34	6.20	7.49	7.54	9.83	10.10	11.70	16.42	23.30
U	L_1-$O_{4,5}$	B	1	.01	92	6	21.652	0.57250	4		0.65	0.94	2.31	2.46	2.51	3.31	4.32	6.17	7.45	7.51	9.79	10.06	11.65	16.35	23.19
U	$L\gamma_{13}$		1	.01	92	6	21.724	0.57060	4		0.65	0.93	2.30	2.46	2.50	3.30	4.31	6.15	7.43	7.48	9.76	10.02	11.61	16.29	23.11
U	AL_1		1		92	6	21.766	0.56950	4		0.65	0.93	2.30	2.45	2.50	3.29	4.30	6.14	7.41	7.47	9.74	10.00	11.59	16.26	23.07
U	$K\alpha_2$		1	50	92	6	94.649	0.13097	6		0.15	0.21	0.53	0.56	0.57	0.76	0.99	1.41	1.70	1.72	2.24	2.30	2.66	3.73	5.27
U	$K\alpha_{1,2}$		1	150	92	6	97.131	0.12762	6		0.15	0.21	0.52	0.55	0.56	0.74	0.96	1.37	1.66	1.67	2.18	2.24	2.59	3.63	5.14
U	$K\alpha_1$		1	100	92	6	98.422	0.12595	6		0.14	0.21	0.51	0.54	0.55	0.73	0.95	1.36	1.64	1.65	2.15	2.21	2.56	3.58	5.07
U	$K\beta_3$		1	14	92	6	110.387	0.11230	6		0.13	0.18	0.45	0.48	0.49	0.65	0.85	1.21	1.46	1.47	1.92	1.97	2.28	3.20	4.52
U	$K\beta_1$		1	31	92	6	111.281	0.11139	6		0.13	0.18	0.45	0.48	0.49	0.64	0.84	1.20	1.45	1.46	1.90	1.95	2.26	3.17	4.48
U	$K\beta_5$	B	1	.6	92	6	111.988	0.11069	5		0.13	0.18	0.45	0.48	0.49	0.64	0.84	1.19	1.44	1.45	1.89	1.94	2.25	3.15	4.45
O	$K\beta_2$''	D	1	11	92	6	114.314	0.10844	6		0.12	0.18	0.44	0.47	0.48	0.63	0.82	1.17	1.41	1.42	1.85	1.90	2.20	3.09	4.36
U	$K\beta_2$'		1	11	92	6	114.587	0.10818	5		0.12	0.18	0.44	0.47	0.47	0.62	0.82	1.17	1.41	1.42	1.85	1.90	2.20	3.08	4.35
U	$K\beta_4$	F	1	.4	92	6	114.832	0.10795	6		0.12	0.18	0.44	0.46	0.47	0.62	0.81	1.16	1.40	1.42	1.84	1.89	2.19	3.07	4.34
U	K-$O_{2,3}$		1	.01	92	6	115.376	0.10744	5		0.12	0.18	0.43	0.46	0.47	0.62	0.81	1.16	1.40	1.41	1.84	1.88	2.18	3.06	4.32
O	AK	H	1		92	6	115.602	0.10723	5		0.12	0.18	0.43	0.46	0.47	0.62	0.81	1.15	1.40	1.41	1.83	1.88	2.18	3.05	4.32
Np	Ll		1	3	93	6	11.887	1.04280	4		1.19	1.71	4.21	4.49	4.58	6.03	7.87	11.25	13.60	13.70	17.89	18.37	21.31	30.02	42.96
Np	$L\alpha_2$		1	10	93	6	13.757	0.90104	6		1.03	1.48	3.64	3.88	3.95	5.21	6.80	9.72	11.74	11.83	15.44	15.86	18.38	25.86	36.89
Np	$L\alpha_1$		1	100	93	6	13.942	0.88913	6		1.01	1.46	3.59	3.83	3.90	5.14	6.71	9.59	11.59	11.68	15.23	15.65	18.14	25.51	36.38
Np	Ln		1	1	93	6	15.874	0.78090	4		0.89	1.28	3.15	3.36	3.43	4.51	5.89	8.42	10.17	10.25	13.37	13.73	15.91	22.37	31.83
Np	$L\beta_6$		1	.1	93	6	16.120	0.76900	3		0.88	1.26	3.10	3.31	3.37	4.44	5.80	8.29	10.02	10.09	13.17	13.52	15.67	22.02	31.33
Np	$L\beta_2$		1	20	93	6	16.837	0.73623	6		0.84	1.21	2.97	3.17	3.23	4.25	5.56	7.94	9.59	9.66	12.60	12.94	15.00	21.07	29.96
Np	$L\beta_4$		1	4	93	6	17.058	0.72671	5		0.83	1.19	2.93	3.13	3.19	4.20	5.48	7.83	9.47	9.54	12.44	12.78	14.80	20.80	29.57
Np	AL_3		1		93	6	17.479	0.70920	5		0.81	1.16	2.86	3.05	3.11	4.10	5.35	7.64	9.24	9.31	12.14	12.47	14.44	20.29	28.84
Np	$L\beta_5$		1	1	93	6	17.505	0.70814	5		0.81	1.16	2.86	3.05	3.11	4.09	5.34	7.63	9.22	9.29	12.12	12.45	14.42	20.26	28.79
Np	$L\beta_1$		1	50	93	6	17.747	0.69848	6		0.79	1.14	2.82	3.01	3.06	4.04	5.27	7.53	9.10	9.17	11.95	12.28	14.23	19.98	28.39
Np	$L\beta_3$	H	1	6	93	6	17.986	0.68920	5		0.78	1.13	2.78	2.97	3.02	3.98	5.20	7.43	8.98	9.04	11.79	12.11	14.04	19.71	28.01
Np	$L\gamma_5$		1	.1	93	6	20.123	0.61600	3		0.70	1.01	2.49	2.65	2.70	3.56	4.65	6.64	8.02	8.08	10.54	10.82	12.54	17.60	24.98
Np	$L\gamma_1$		1	10	93	6	20.781	0.59650	6		0.68	0.98	2.41	2.57	2.62	3.45	4.50	6.43	7.77	7.83	10.20	10.48	12.14	17.04	24.18
Np	$L\gamma_2$		1	1	93	6	21.107	0.58730	4		0.67	0.96	2.37	2.53	2.58	3.39	4.43	6.33	7.65	7.70	10.05	10.32	11.95	16.77	23.80
Np	$L\gamma_3$		1	2	93	6	21.336	0.58100	4		0.66	0.95	2.35	2.50	2.55	3.36	4.38	6.26	7.56	7.62	9.94	10.21	11.82	16.59	23.54
Np	$L\gamma_6$		1	.01	93	6	21.484	0.57699	5		0.66	0.94	2.33	2.48	2.53	3.33	4.35	6.22	7.51	7.57	9.87	10.14	11.74	16.48	23.38
Np	AL_2		1		93	6	21.592	0.57410	4		0.65	0.94	2.32	2.47	2.52	3.32	4.33	6.19	7.47	7.53	9.82	10.08	11.68	16.39	23.26
Np	$L\gamma_4$		1	.1	93	6	22.195	0.55850	4		0.64	0.91	2.25	2.40	2.45	3.23	4.21	6.02	7.27	7.33	9.55	9.81	11.36	15.95	22.62
Np	AL_1		1		93	6	22.428	0.55270	4		0.63	0.90	2.23	2.38	2.42	3.19	4.17	5.96	7.20	7.25	9.45	9.71	11.25	15.78	22.38
Np	$K\alpha_2$		1	50	93	3	96.844	0.12800			0.15	0.21	0.52	0.55	0.56	0.74	0.97	1.38	1.67	1.68	2.19	2.25	2.60	3.64	5.15
Np	$K\alpha_{1,2}$		1	150	93	3	99.407	0.12470			0.14	0.20	0.50	0.54	0.55	0.72	0.94	1.34	1.62	1.63	2.13	2.19	2.53	3.55	5.02
Np	$K\alpha_1$		1	100	93	3	100.781	0.12300			0.14	0.20	0.50	0.53	0.54	0.71	0.93	1.32	1.60	1.61	2.10	2.16	2.50	3.50	4.95
Np	$K\beta_1$		1	30	93	3	113.725	0.10900			0.12	0.18	0.44	0.47	0.48	0.63	0.82	1.17	1.42	1.43	1.86	1.91	2.21	3.10	4.39
Np	$K\beta_2$		1	11	93	3	118.057	0.10500			0.12	0.17	0.42	0.45	0.46	0.61	0.79	1.13	1.37	1.38	1.79	1.84	2.13	2.99	4.23
Pu	Ll		1	3	94	6	12.122	1.02260	4		1.16	1.67	4.13	4.40	4.49	5.91	7.72	11.03	13.33	13.44	17.54	18.01	20.89	29.42	42.08
Pu	$L\alpha_2$		1	10	94	6	14.082	0.88028	5		1.00	1.44	3.55	3.79	3.86	5.09	6.64	9.49	11.47	11.56	15.08	15.49	17.96	25.26	36.01
Pu	$L\alpha_1$		1	100	94	6	14.276	0.86830	5		0.99	1.42	3.51	3.74	3.81	5.02	6.55	9.36	11.31	11.40	14.87	15.28	17.71	24.91	35.50
Pu	Ln		1	1	94	6	16.330	0.75910	4		0.86	1.24	3.06	3.27	3.33	4.39	5.73	8.18	9.89	9.96	13.00	13.35	15.47	21.73	30.92
Pu	$L\beta_6$		1	.1	94	6	16.495	0.75148	5		0.86	1.23	3.03	3.23	3.30	4.34	5.67	8.10	9.79	9.86	12.86	13.21	15.31	21.51	30.60
Pu	$L\beta_{15}$		1	1	94	6	17.205	0.72050	4		0.82	1.18	2.91	3.10	3.16	4.16	5.44	7.77	9.38	9.46	12.33	12.67	14.68	20.62	29.31
Pu	$L\beta_2$		1	20	94	6	17.252	0.71851	5		0.82	1.18	2.90	3.09	3.15	4.15	5.42	7.74	9.36	9.43	12.30	12.63	14.64	20.56	29.23
Pu	$L\beta_4$		1	4	94	6	17.553	0.70620	5		0.80	1.16	2.85	3.04	3.10	4.08	5.33	7.61	9.20	9.27	12.09	12.41	14.38	20.20	28.71
Pu	Lu	B	1	.01	94	6	17.630	0.70310	4		0.80	1.15	2.84	3.03	3.08	4.06	5.31	7.58	9.16	9.23	12.03	12.36	14.32	20.11	28.59
Pu	$L\beta_7$		1	.1	94	6	17.701	0.70030	4		0.80	1.15	2.83	3.01	3.07	4.05	5.28	7.55	9.12	9.19	11.98	12.31	14.26	20.03	28.47
Pu	$L\beta_5$		1	1	94	6	17.948	0.69068	5		0.79	1.13	2.79	2.97	3.03	3.99	5.21	7.44	8.99	9.06	11.82	12.14	14.07	19.75	28.07
Pu	AL_3		1		94	6	18.050	0.68675	5		0.78	1.12	2.77	2.96	3.01	3.97	5.18	7.40	8.94	9.01	11.75	12.07	13.99	19.64	27.91
Pu	$L\beta_1$		1	50	94	6	18.291	0.67772	5		0.77	1.11	2.74	2.92	2.97	3.92	5.11	7.30	8.83	8.89	11.60	11.91	13.80	19.38	27.53
Pu	$L\beta_3$		1	6	94	6	18.537	0.66871	5		0.76	1.09	2.70	2.88	2.93	3.86	5.05	7.21	8.71	8.77	11.44	11.75	13.62	19.12	27.16
Pu	$L\beta_{10}$	8	1	.01	94	6	19.124	0.64820	4		0.74	1.06	2.62	2.79	2.84	3.74	4.89	6.99	8.44	8.50	11.09	11.39	13.20	18.53	26.31
Pu	$L\beta_9$	B	1	.01	94	6	19.320	0.64160	4		0.73	1.05	2.59	2.76	2.81	3.71	4.84	6.91	8.35	8.42	10.98	11.27	13.06	18.34	26.04
Pu	$L\gamma_5$		1	.1	94	6	20.701	0.59880	4		0.68	0.98	2.42	2.58	2.63	3.46	4.52	6.45	7.80	7.86	10.24	10.52	12.19	17.10	24.27
Pu	$L\gamma_1$		1	10	94	6	21.414	0.57888	6		0.66	0.95	2.34	2.49	2.54	3.34	4.37	6.24	7.54	7.59	9.90	10.17	11.78	16.53	23.46
Pu	$L\gamma_2$		1	1	94	6	21.721	0.57068	5		0.65	0.93	2.30	2.46	2.50	3.30	4.31	6.15	7.43	7.49	9.76	10.02	11.61	16.30	23.12
Pu	$L\gamma_8$		1	.1	94	6	21.909	0.56580	4		0.64	0.93	2.28	2.43	2.48	3.27	4.27	6.10	7.37	7.42	9.68	9.94	11.51	16.16	22.92
Pu	$L\gamma_3$		1	2	94	6	21.979	0.56400	6		0.64	0.92	2.28	2.43	2.47	3.26	4.26	6.08	7.34	7.40	9.65	9.91	11.48	16.10	22.84

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Graph (002)	Ge (111)	NaCl (200)	LiF (200)	LiF (220)
Pu	$L\gamma_6$		1	.01	94	6	22.146	0.55973	5		0.64	0.92	2.26	2.41	2.46	3.23	4.22	6.03	7.29	7.34	9.57	9.83	11.39	15.98	22.67
Pu	AL_2		1		94	6	22.247	0.55720	4		0.63	0.91	2.25	2.40	2.44	3.22	4.20	6.00	7.25	7.31	9.53	9.79	11.34	15.91	22.56
Pu	$L\gamma_4 p$		1	.1	94	6	22.820	0.54320	4		0.62	0.89	2.19	2.34	2.38	3.14	4.10	5.85	7.07	7.12	9.29	9.54	11.05	15.51	21.99
Pu	$L\gamma_4$		1	.1	94	6	22.888	0.54160	4		0.62	0.89	2.19	2.33	2.38	3.13	4.09	5.84	7.05	7.10	9.26	9.51	11.02	15.46	21.93
Pu	AL_1		1		94	6	23.105	0.53650	4		0.61	0.88	2.17	2.31	2.35	3.10	4.05	5.78	6.98	7.04	9.17	9.42	10.91	15.31	21.72
Pu	$K\alpha_2$		1	50	94	3	99.168	0.12500			0.14	0.20	0.50	0.54	0.55	0.72	0.94	1.35	1.63	1.64	2.14	2.19	2.54	3.56	5.03
Pu	$K\alpha_{1,2}$		1	150	94	3	101.857	0.12170			0.14	0.20	0.49	0.52	0.53	0.70	0.92	1.31	1.58	1.60	2.08	2.14	2.47	3.46	4.90
Pu	$K\alpha_1$		1	100	94	3	103.300	0.12000			0.14	0.20	0.48	0.52	0.53	0.69	0.91	1.29	1.56	1.57	2.05	2.11	2.44	3.42	4.83
Pu	$K\beta_1$		1	30	94	3	116.943	0.10600			0.12	0.17	0.43	0.46	0.47	0.61	0.80	1.14	1.38	1.39	1.81	1.86	2.15	3.02	4.27
Pu	$K\beta_2$		1	11	94	3	120.350	0.10300			0.12	0.17	0.42	0.44	0.45	0.59	0.78	1.11	1.34	1.35	1.76	1.81	2.09	2.93	4.15
Am	Ll		1	3	95	6	12.381	1.00120	4		1.14	1.64	4.04	4.31	4.39	5.79	7.56	10.80	13.05	13.15	17.17	17.63	20.45	28.79	41.16
Am	$L\alpha_2$		1	10	95	6	14.409	0.86027	6		0.98	1.41	3.47	3.70	3.77	4.97	6.49	9.28	11.21	11.29	14.74	15.14	17.54	24.67	35.16
Am	$L\alpha_1$		1	100	95	6	14.615	0.84819	6		0.97	1.39	3.42	3.65	3.72	4.90	6.40	9.14	11.05	11.14	14.53	14.92	17.30	24.32	34.65
Am	$L\beta_6$		1	.1	95	6	16.884	0.73418	5		0.84	1.20	2.96	3.16	3.22	4.24	5.54	7.91	9.56	9.64	12.57	12.91	14.96	21.01	29.88
Am	$L\beta_{15}$		1	1	95	6	17.623	0.70341	5		0.80	1.15	2.84	3.03	3.09	4.06	5.31	7.58	9.16	9.23	12.04	12.36	14.33	20.12	28.60
Am	$L\beta_2$		1	20	95	6	17.673	0.70139	6		0.80	1.15	2.83	3.02	3.08	4.05	5.29	7.56	9.13	9.20	12.00	12.33	14.29	20.06	28.51
Am	$L\beta_4$		1	4	95	6	18.060	0.68639	5		0.78	1.12	2.77	2.95	3.01	3.97	5.18	7.40	8.94	9.01	11.75	12.06	13.98	19.63	27.89
Am	$L\beta_5$		1	1	95	6	18.396	0.67383	5		0.77	1.10	2.72	2.90	2.96	3.89	5.08	7.26	8.78	8.84	11.53	11.84	13.72	19.27	27.37
Am	AL_3		1		95	6	18.501	0.67002	5		0.76	1.10	2.70	2.88	2.94	3.87	5.06	7.22	8.73	8.79	11.46	11.77	13.64	19.16	27.21
Am	$L\beta_1$		1	50	95	6	18.849	0.65765	6		0.75	1.08	2.65	2.83	2.89	3.80	4.96	7.09	8.56	8.63	11.25	11.56	13.39	18.80	26.70
Am	$L\beta_3$		1	6	95	6	19.103	0.64891	5		0.74	1.06	2.62	2.79	2.85	3.75	4.90	6.99	8.45	8.51	11.10	11.40	13.21	18.55	26.34
Am	$L\gamma_1$		1	10	95	6	22.061	0.56189	6		0.64	0.92	2.27	2.42	2.47	3.25	4.24	6.05	7.32	7.37	9.61	9.87	11.43	16.04	22.76
Am	$L\gamma_2$		1	1	95	6	22.359	0.55440	4		0.63	0.91	2.24	2.39	2.43	3.20	4.18	5.97	7.22	7.27	9.48	9.74	11.28	15.83	22.45
Am	$L\gamma_6$		1	.01	95	6	22.824	0.54311	5		0.62	0.89	2.19	2.34	2.38	3.14	4.10	5.85	7.07	7.12	9.29	9.54	11.05	15.50	21.99
Am	$K\alpha_2$		1	50	95	3	101.607	0.12200			0.14	0.20	0.49	0.52	0.54	0.70	0.92	1.31	1.59	1.60	2.08	2.14	2.48	3.47	4.91
Am	$K\alpha_{1,2}$		1	150	95	3	104.431	0.11870			0.14	0.19	0.48	0.51	0.52	0.69	0.90	1.28	1.54	1.56	2.03	2.08	2.41	3.38	4.78
Am	$K\alpha_1$		1	100	95	3	105.949	0.11700			0.13	0.19	0.47	0.50	0.51	0.68	0.88	1.26	1.52	1.53	2.00	2.05	2.38	3.33	4.71
Am	$K\beta_1$		1	30	95	3	120.350	0.10300			0.12	0.17	0.42	0.44	0.45	0.59	0.78	1.11	1.34	1.35	1.76	1.81	2.09	2.93	4.15
Am	$K\beta_2$		1	11	95	3	123.960	0.10000			0.11	0.16	0.40	0.43	0.44	0.58	0.75	1.08	1.30	1.31	1.71	1.75	2.03	2.85	4.02
Cm	$L\alpha_2$		1	10	96	3	14.740	0.84100			0.96	1.38	3.39	3.62	3.69	4.86	6.35	9.07	10.96	11.04	14.40	14.79	17.15	24.11	34.35
Cm	$L\alpha_1$		1	100	96	3	14.953	0.82900			0.94	1.36	3.35	3.57	3.64	4.79	6.26	8.94	10.80	10.88	14.20	14.58	16.90	23.76	33.85
Cm	$L\beta_2$		1	20	96	3	18.096	0.68500			0.78	1.12	2.76	2.95	3.01	3.96	5.17	7.38	8.92	8.99	11.72	12.04	13.95	19.59	27.83
Cm	$L\beta_1$		1	50	96	3	19.399	0.63900			0.73	1.05	2.58	2.75	2.80	3.69	4.82	6.89	8.32	8.38	10.93	11.23	13.01	18.26	25.93
Cm	$L\gamma_1$		1	10	96	3	22.703	0.54600			0.62	0.89	2.20	2.35	2.40	3.15	4.12	5.88	7.11	7.16	9.34	9.59	11.11	15.59	22.11
Cm	$K\alpha_2$		1	50	96	3	104.168	0.11900			0.14	0.19	0.48	0.51	0.52	0.69	0.90	1.28	1.55	1.56	2.03	2.09	2.42	3.39	4.79
Cm	$K\alpha_{1,2}$		1	150	96	3	107.139	0.11570			0.13	0.19	0.47	0.50	0.51	0.67	0.87	1.25	1.51	1.52	1.98	2.03	2.35	3.29	4.66
Cm	$K\alpha_1$		1	100	96	3	108.737	0.11400			0.13	0.19	0.46	0.49	0.50	0.66	0.86	1.23	1.48	1.49	1.95	2.00	2.32	3.24	4.59
Cm	$K\beta_1$		1	30	96	3	122.733	0.10100			0.11	0.17	0.41	0.43	0.44	0.58	0.76	1.09	1.31	1.32	1.73	1.77	2.05	2.87	4.06
Cm	$K\beta_2$		1	11	96	3	126.490	0.09800			0.11	0.16	0.40	0.42	0.43	0.57	0.74	1.06	1.28	1.28	1.67	1.72	1.99	2.79	3.94
8k	$L\alpha_2$		1	10	97	3	15.080	0.82200			0.94	1.35	3.32	3.54	3.61	4.75	6.20	8.86	10.71	10.79	14.08	14.46	16.76	23.56	33.55
Bk	$L\alpha_1$		1	100	97	3	15.304	0.81000			0.92	1.33	3.27	3.49	3.55	4.68	6.11	8.73	10.55	10.63	13.87	14.25	16.51	23.21	33.05
Bk	$L\beta_2$		1	20	97	3	18.529	0.66900			0.76	1.10	2.70	2.88	2.94	3.86	5.05	7.21	8.71	8.78	11.45	11.76	13.62	19.13	27.17
Bk	$L\beta_1$		1	50	97	3	19.961	0.62100			0.71	1.02	2.51	2.67	2.72	3.59	4.69	6.69	8.09	8.15	10.62	10.91	12.64	17.74	25.19
Bk	$L\gamma_1$		1	10	97	3	23.389	0.53000			0.60	0.87	2.14	2.28	2.33	3.06	4.00	5.71	6.90	6.95	9.06	9.31	10.78	15.13	21.45
Bk	$K\alpha_2$		1	50	97	3	106.862	0.11600			0.13	0.19	0.47	0.50	0.51	0.67	0.88	1.25	1.51	1.52	1.98	2.04	2.36	3.30	4.67
8k	$K\alpha_{1,2}$		1	150	97	3	109.991	0.11270			0.13	0.18	0.45	0.48	0.49	0.65	0.85	1.21	1.47	1.48	1.93	1.98	2.29	3.21	4.54
Bk	$K\alpha_1$		1	100	97	3	111.676	0.11100			0.13	0.18	0.45	0.48	0.49	0.64	0.84	1.20	1.44	1.46	1.90	1.95	2.26	3.16	4.47
Bk	$K\beta_1$		1	30	97	3	126.490	0.09800			0.11	0.16	0.40	0.42	0.43	0.57	0.74	1.06	1.28	1.28	1.67	1.72	1.99	2.79	3.94
Bk	$K\beta_2$		1	11	97	3	130.484	0.09500			0.11	0.16	0.38	0.41	0.42	0.55	0.72	1.02	1.24	1.25	1.62	1.67	1.93	2.70	3.82
Cf	$L\alpha_2$		1	10	98	3	15.418	0.80400			0.91	1.32	3.25	3.46	3.53	4.65	6.07	8.67	10.47	10.55	13.77	14.14	16.39	23.04	32.80
Cf	$L\alpha_1$		1	100	98	3	15.652	0.79200			0.90	1.30	3.20	3.41	3.47	4.58	5.98	8.54	10.32	10.40	13.56	13.93	16.14	22.69	32.29
Cf	$L\beta_2$		1	20	98	3	18.983	0.65300			0.74	1.07	2.64	2.81	2.86	3.77	4.93	7.04	8.50	8.57	11.17	11.47	13.29	18.67	26.51
Cf	$L\beta_1$		1	50	98	3	20.557	0.60300			0.69	0.99	2.43	2.59	2.65	3.48	4.55	6.50	7.85	7.91	10.31	10.59	12.27	17.23	24.45
Cf	$L\gamma_1$		1	10	98	3	24.070	0.51500			0.59	0.84	2.08	2.22	2.26	2.97	3.89	5.55	6.70	6.75	8.81	9.04	10.48	14.70	20.84
Cf	$K\alpha_2$		1	50	98	3	109.699	0.11300			0.13	0.18	0.46	0.49	0.50	0.65	0.85	1.22	1.47	1.48	1.93	1.98	2.30	3.22	4.55
Cf	$K\alpha_{1,2}$		1	150	98	3	112.999	0.10970			0.12	0.18	0.44	0.47	0.48	0.63	0.83	1.18	1.43	1.44	1.87	1.92	2.23	3.12	4.41
Cf	$K\alpha_1$		1	100	98	3	114.778	0.10800			0.12	0.18	0.44	0.46	0.47	0.62	0.81	1.16	1.41	1.42	1.85	1.89	2.19	3.07	4.35
Cf	$K\beta_1$		1	30	98	3	127.794	0.09700			0.11	0.16	0.39	0.42	0.43	0.56	0.73	1.04	1.26	1.27	1.66	1.70	1.97	2.76	3.90
Cf	$K\beta_2$		1	11	98	3	133.290	0.09300			0.11	0.15	0.38	0.40	0.41	0.54	0.70	1.00	1.21	1.22	1.59	1.63	1.89	2.65	3.74

Periodic Table

WAVELENGTHS OF SELECTED X-RAY EMISSION LINES

	IA	IIA	IIIB	IVB	VB	VIB	VIIB	VIII			IB	IIB	IIIA	IVA	VA	VIA	VIIA	0	
	H 1																	He 2	
Kα	Li 3 230.0	Be 4 114.0											B 5 67.6	C 6 44.7	N 7 31.60	O 8 23.62	F 9 18.32	Ne 10 14.61	Kα
Kα $K\beta_1$	Na 11 11.91 11.62	Mg 12 9.890 9.570											Al 13 8.340 7.982	Si 14 7.126 6.778	P 15 6.158 5.804	S 16 5.373 5.032	Cl 17 4.729 4.403	Ar 18 4.193 3.886	Kα $K\beta_1$
Kα $K\beta_1$ $L\alpha_1$	K 19 3.742 3.454	Ca 20 3.359 3.090 36.33	Sc 21 3.032 2.780 31.35	Ti 22 2.750 2.514 27.42	V 23 2.505 2.284 24.25	Cr 24 2.291 2.085 21.64	Mn 25 2.103 1.910 19.45	Fe 26 1.937 1.757 17.59	Co 27 1.790 1.621 15.97	Ni 28 1.659 1.500 14.56	Cu 29 1.542 1.392 13.34	Zn 30 1.436 1.295 12.25	Ga 31 1.341 1.208 11.29	Ge 32 1.255 1.129 10.44	As 33 1.177 1.057 9.671	Se 34 1.106 0.992 8.990	Br 35 1.041 0.933 8.375	Kr 36 0.981 0.878 7.817	Kα $K\beta_1$ $L\alpha_1$
Kα $K\beta_1$ $L\alpha_1$	Rb 37 0.927 0.829 7.318	Sr 38 0.877 0.783 6.863	Y 39 0.830 0.741 6.449	Zr 40 0.787 0.702 6.070	Nb 41 0.748 0.666 5.724	Mo 42 0.711 0.632 5.406	Tc 43 0.676 0.601 5.115	Ru 44 0.644 0.572 4.846	Rh 45 0.615 0.546 4.597	Pd 46 0.587 0.520 4.368	Ag 47 0.561 0.497 4.154	Cd 48 0.536 0.475 3.956	In 49 0.514 0.454 3.772	Sn 50 0.492 0.435 3.600	Sb 51 0.472 0.417 3.439	Te 52 0.453 0.400 3.289	I 53 0.435 0.384 3.149	Xe 54 0.417 0.368 3.015	Kα $K\beta_1$ $L\alpha_1$
Kα $L\alpha_1$ $M\alpha_1$ N#	Ca 55 0.402 2.892	Ba 56 0.387 2.776	La*57 0.372 2.666 14.88	Hf 72 0.224 1.570 7.539	Ta 73 0.217 1.522 7.252 58.20	W 74 0.211 1.476 6.983 55.80	Re 75 0.204 1.433 6.729 54.70	Os 76 0.198 0.391 6.478 52.80	Ir 77 0.193 1.351 6.262 50.20	Pt 78 0.187 1.313 6.047 48.10	Au 79 0.182 1.276 5.840 46.80	Hg 80 0.177 1.241 5.648 45.20	Tl 81 0.172 1.207 5.460 46.50	Pb 82 0.167 1.175 5.286 42.30	Bi 83 0.162 1.144 5.118	Po 84 0.158 1.114	At 85 0.154 1.085	Rn 86 0.150 1.057	Kα $L\alpha_1$ $M\alpha_1$ N#
Kα $L\alpha_1$	Fr 87 0.146 1.030	Ra 88 0.142 1.005	Ac+89 0.138 0.980																

	Ce 58	Pr 59	Nd 60	Pm 61	Sm 62	Eu 63	Gd 64	Tb 65	Dy 66	Ho 67	Er 68	Tm 69	Yb 70	Lu 71	
Kα	0.359	0.346	0.333	0.322	0.310	0.300	0.290	0.280	0.271	0.262	0.254	0.246	0.238	0.231	Kα
$L\alpha_1$	2.561	2.463	2.370	2.282	2.200	2.121	2.047	1.976	1.909	1.845	1.784	1.727	1.672	1.619	$L\alpha_1$
$M\alpha_1$	14.04	13.34	12.68		11.47	10.96	10.46	10.00	9.590	9.200	8.820	8.480	8.149	7.840	$M\alpha_1$
	Th 90	Pa 91	U 92	Np 93	Pu 94	Am 95	Cm 96	Bk 97	Cf 98	Es 99	Fm 100	Md 101	No 102		
Kα	0.134	0.131	0.128	0.125	0.122	0.119	0.116	0.113	0.110						Kα
$L\alpha_1$	0.956	0.933	0.911	0.889	0.868	0.848	0.829	0.810	0.792						$L\alpha_1$
$M\alpha_1$	4.138	4.022	3.910												$M\alpha_1$
N#	9.442		8.810												N#

*La Series

+Ac Series

See table for line designation

Two-Theta Table II

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Cf	$K\beta_2$		1	11	98	3	133.290	0.09300		0.70	1.00	1.21	1.22	1.25	1.42	1.59	1.63	1.70	1.74	1.89	2.65	3.74	3.88	3.93
Bk	$K\beta_2$		1	11	97	3	130.484	0.09500		0.72	1.02	1.24	1.25	1.28	1.45	1.62	1.67	1.74	1.77	1.93	2.70	3.82	3.96	4.01
Cf	$K\beta_1$		1	30	98	3	127.794	0.09700		0.73	1.04	1.26	1.27	1.30	1.48	1.66	1.70	1.77	1.81	1.97	2.76	3.90	4.04	4.10
Cm	$K\beta_2$		1	11	96	3	126.490	0.09800		0.74	1.06	1.28	1.28	1.32	1.50	1.67	1.72	1.79	1.83	1.99	2.79	3.94	4.09	4.14
Bk	$K\beta_1$		1	30	97	3	126.490	0.09800		0.74	1.06	1.28	1.28	1.32	1.50	1.67	1.72	1.79	1.83	1.99	2.79	3.94	4.09	4.14
Am	$K\beta_2$		1	11	95	3	123.960	0.10000		0.75	1.08	1.30	1.31	1.35	1.53	1.71	1.75	1.83	1.87	2.03	2.85	4.02	4.17	4.23
Cm	$K\beta_1$		1	30	96	3	122.733	0.10100		0.76	1.09	1.31	1.32	1.36	1.54	1.73	1.77	1.85	1.89	2.05	2.87	4.06	4.21	4.27
Pu	$K\beta_2$		1	11	94	3	120.350	0.10300		0.78	1.11	1.34	1.35	1.39	1.57	1.76	1.81	1.88	1.92	2.09	2.93	4.15	4.29	4.35
Am	$K\beta_1$		1	30	95	3	120.350	0.10300		0.78	1.11	1.34	1.35	1.39	1.57	1.76	1.81	1.88	1.92	2.09	2.93	4.15	4.29	4.35
Np	$K\beta_2$		1	11	93	3	118.057	0.10500		0.79	1.13	1.37	1.38	1.41	1.60	1.79	1.84	1.92	1.96	2.13	2.99	4.23	4.38	4.44
Pu	$K\beta_1$		1	30	94	3	116.943	0.10600		0.80	1.14	1.38	1.39	1.43	1.62	1.81	1.86	1.94	1.98	2.15	3.02	4.27	4.42	4.48
U	AK	H	1		92	6	115.602	0.10723	5	0.81	1.15	1.40	1.41	1.44	1.64	1.83	1.88	1.96	2.00	2.18	3.05	4.32	4.47	4.53
U	$K\text{-}O_{2,3}$		1	.01	92	6	115.376	0.10744	5	0.81	1.16	1.40	1.41	1.45	1.64	1.84	1.88	1.96	2.01	2.18	3.06	4.32	4.48	4.54
U	$K\beta_4$	F	1	.4	92	6	114.832	0.10795	6	0.81	1.16	1.40	1.42	1.45	1.65	1.84	1.89	1.97	2.01	2.19	3.07	4.34	4.50	4.56
Cf	$K\alpha_1$		1	100	98	3	114.778	0.10800		0.81	1.16	1.41	1.42	1.45	1.65	1.85	1.89	1.97	2.02	2.19	3.07	4.35	4.50	4.56
U	$K\beta_2'$		1	11	92	6	114.587	0.10818	5	0.82	1.17	1.41	1.42	1.46	1.65	1.85	1.90	1.98	2.02	2.20	3.08	4.35	4.51	4.57
U	$K\beta_2''$	D	1	11	92	6	114.314	0.10844	6	0.82	1.17	1.41	1.42	1.46	1.66	1.85	1.90	1.98	2.02	2.20	3.09	4.36	4.52	4.58
Np	$K\beta_1$		1	30	93	3	113.725	0.10900		0.82	1.17	1.42	1.43	1.47	1.67	1.86	1.91	1.99	2.03	2.21	3.10	4.39	4.54	4.61
Cf	$K\alpha_{1,2}$		1	150	98	3	112.999	0.10970		0.83	1.18	1.43	1.44	1.48	1.68	1.87	1.92	2.00	2.05	2.23	3.12	4.41	4.57	4.64
U	$K\beta_5$	B	1	.6	92	6	111.988	0.11069	5	0.84	1.19	1.44	1.45	1.49	1.69	1.89	1.94	2.02	2.07	2.25	3.15	4.45	4.62	4.68
Bk	$K\alpha_1$		1	100	97	3	111.676	0.11100		0.84	1.20	1.44	1.46	1.49	1.70	1.90	1.95	2.03	2.07	2.26	3.16	4.47	4.63	4.69
Pa	$K\beta_2'$	H	1	11	91	6	111.605	0.11107	5	0.84	1.20	1.45	1.46	1.49	1.70	1.90	1.95	2.03	2.07	2.26	3.16	4.47	4.63	4.69
Pa	$K\beta_2''$	H	1	11	91	6	111.385	0.11129	5	0.84	1.20	1.45	1.46	1.50	1.70	1.90	1.95	2.03	2.08	2.26	3.17	4.48	4.64	4.70
U	$K\beta_1$		1	31	92	6	111.281	0.11139	6	0.84	1.20	1.45	1.46	1.50	1.70	1.90	1.95	2.04	2.08	2.26	3.17	4.48	4.64	4.71
U	$K\beta_3$		1	14	92	6	110.387	0.11230	6	0.85	1.21	1.46	1.47	1.51	1.72	1.92	1.97	2.05	2.10	2.28	3.20	4.52	4.68	4.75
Bk	$K\alpha_{1,2}$		1	150	97	3	109.991	0.11270		0.85	1.21	1.47	1.48	1.52	1.72	1.93	1.98	2.06	2.10	2.29	3.21	4.54	4.70	4.76
Cf	$K\alpha_2$		1	50	98	3	109.699	0.11300		0.85	1.22	1.47	1.48	1.52	1.73	1.93	1.98	2.07	2.11	2.30	3.22	4.55	4.71	4.78
Th	AK	H	1		90	6	109.631	0.11307	5	0.85	1.22	1.47	1.48	1.52	1.73	1.93	1.98	2.07	2.11	2.30	3.22	4.55	4.71	4.78
Th	$K\text{-}O_{2,3}$		1	.01	90	6	109.486	0.11322	5	0.85	1.22	1.47	1.48	1.52	1.73	1.93	1.99	2.07	2.11	2.30	3.22	4.56	4.72	4.79
Th	$K\beta_4$	F	1	.4	90	6	108.940	0.11379	6	0.86	1.23	1.48	1.49	1.53	1.74	1.94	2.00	2.08	2.12	2.31	3.24	4.58	4.74	4.81
Cm	$K\alpha_1$		1	100	96	3	108.737	0.11400		0.86	1.23	1.48	1.49	1.53	1.74	1.95	2.00	2.08	2.13	2.32	3.24	4.59	4.75	4.82
Th	$K\beta_2'$		1	11	90	6	108.699	0.11404	6	0.86	1.23	1.48	1.49	1.53	1.74	1.95	2.00	2.08	2.13	2.32	3.25	4.59	4.76	4.82
Th	$K\beta_2''$		1	11	90	6	108.489	0.11426	5	0.86	1.23	1.49	1.50	1.54	1.75	1.95	2.00	2.09	2.13	2.32	3.25	4.60	4.76	4.83
Pa	$K\beta_1$	H	1	30	91	6	108.409	0.11434	6	0.86	1.23	1.49	1.50	1.54	1.75	1.95	2.01	2.09	2.13	2.32	3.25	4.60	4.77	4.83
Pa	$K\beta_3$	H	1	14	91	6	107.576	0.11523	5	0.87	1.24	1.50	1.51	1.55	1.76	1.97	2.02	2.11	2.15	2.34	3.28	4.64	4.80	4.87
Cm	$K\alpha_{1,2}$		1	150	96	3	107.139	0.11570		0.87	1.25	1.51	1.52	1.56	1.77	1.98	2.03	2.11	2.16	2.35	3.29	4.66	4.82	4.89
Bk	$K\alpha_2$		1	50	97	3	106.862	0.11600		0.88	1.25	1.51	1.52	1.56	1.77	1.98	2.04	2.12	2.17	2.36	3.30	4.67	4.84	4.90
Th	$K\beta_5$	B	1	.5	90	6	106.251	0.11667	6	0.88	1.26	1.52	1.53	1.57	1.78	1.99	2.05	2.13	2.18	2.37	3.32	4.70	4.86	4.93
Am	$K\alpha_1$		1	100	95	3	105.949	0.11700		0.88	1.26	1.52	1.53	1.57	1.79	2.00	2.05	2.14	2.18	2.38	3.33	4.71	4.88	4.95
Ac	$K\beta_2'$	H	1	11	89	6	105.849	0.11711	5	0.88	1.26	1.52	1.54	1.58	1.79	2.00	2.05	2.14	2.19	2.38	3.33	4.71	4.88	4.95
Ac	$K\beta_2''$	H	1	11	89	6	105.660	0.11732	5	0.89	1.26	1.53	1.54	1.58	1.79	2.00	2.06	2.14	2.19	2.38	3.34	4.72	4.89	4.96
Th	$K\beta_1$		1	30	90	6	105.591	0.11740	6	0.89	1.26	1.53	1.54	1.58	1.79	2.01	2.06	2.15	2.19	2.38	3.34	4.72	4.90	4.96
Th	$K\beta_3$		1	14	90	6	104.813	0.11827	6	0.89	1.27	1.54	1.55	1.59	1.81	2.02	2.07	2.16	2.21	2.40	3.37	4.76	4.93	5.00
Am	$K\alpha_{1,2}$		1	150	95	3	104.431	0.11870		0.90	1.28	1.54	1.56	1.60	1.81	2.03	2.08	2.17	2.22	2.41	3.38	4.78	4.95	5.02
Cm	$K\alpha_2$		1	50	96	3	104.168	0.11900		0.90	1.28	1.55	1.56	1.60	1.82	2.03	2.09	2.17	2.22	2.42	3.39	4.79	4.95	5.03
Pu	$K\alpha_1$		1	100	94	3	103.300	0.12000		0.91	1.29	1.56	1.57	1.61	1.83	2.05	2.11	2.19	2.24	2.44	3.42	4.83	5.00	5.07
Ra	$K\beta_2'$	8	1	11	88	6	103.051	0.12029	5	0.91	1.30	1.57	1.58	1.62	1.84	2.06	2.11	2.20	2.25	2.44	3.42	4.84	5.02	5.08
Ra	$K\beta_2''$	H	1	11	88	6	102.871	0.12050	5	0.91	1.30	1.57	1.58	1.62	1.84	2.06	2.11	2.20	2.25	2.45	3.43	4.85	5.02	5.09
Ac	$K\beta_1$	H	1	30	89	6	102.829	0.12055	5	0.91	1.30	1.57	1.58	1.62	1.84	2.06	2.11	2.20	2.25	2.45	3.43	4.85	5.03	5.10
Ac	$K\beta_3$	H	1	14	89	6	102.084	0.12143	5	0.92	1.31	1.58	1.59	1.63	1.86	2.07	2.13	2.22	2.27	2.47	3.46	4.89	5.06	5.13
Pu	$K\alpha_{1,2}$		1	150	94	3	101.857	0.12170		0.92	1.31	1.58	1.60	1.64	1.86	2.08	2.14	2.22	2.27	2.47	3.46	4.90	5.07	5.14
Am	$K\alpha_2$		1	50	95	3	101.607	0.12200		0.92	1.31	1.59	1.60	1.64	1.86	2.08	2.14	2.23	2.28	2.48	3.47	4.91	5.09	5.16
Np	$K\alpha_1$		1	100	93	3	100.781	0.12300		0.93	1.32	1.60	1.61	1.65	1.88	2.10	2.16	2.25	2.30	2.50	3.50	4.95	5.13	5.20
Fr	$K\beta_2'$	H	1	11	87	6	100.307	0.12358	5	0.93	1.33	1.61	1.62	1.66	1.89	2.11	2.17	2.26	2.31	2.51	3.52	4.97	5.15	5.22
Fr	$K\beta_2''$	H	1	11	87	6	100.137	0.12379	5	0.93	1.33	1.61	1.62	1.66	1.89	2.11	2.17	2.26	2.31	2.51	3.52	4.98	5.16	5.23
Ra	$K\beta_1$	H	1	30	88	6	100.113	0.12382	5	0.93	1.33	1.61	1.62	1.67	1.89	2.12	2.17	2.26	2.31	2.52	3.52	4.98	5.16	5.23
Ra	$K\beta_3$	H	1	14	88	6	99.415	0.12469	5	0.94	1.34	1.62	1.63	1.68	1.91	2.13	2.19	2.28	2.33	2.53	3.55	5.02	5.20	5.27
Np	$K\alpha_{1,2}$		1	150	93	3	99.407	0.12470		0.94	1.34	1.62	1.63	1.68	1.91	2.13	2.19	2.28	2.33	2.53	3.55	5.02	5.20	5.27
Pu	$K\alpha_2$		1	50	94	3	99.168	0.12500		0.94	1.35	1.63	1.64	1.68	1.91	2.14	2.19	2.28	2.33	2.54	3.56	5.03	5.21	5.28
U	$K\alpha_1$		1	100	92	6	98.422	0.12595	6	0.95	1.36	1.64	1.65	1.69	1.92	2.15	2.21	2.30	2.35	2.56	3.58	5.07	5.25	5.32
Rn	$K\beta_2'$	H	1	11	86	6	97.622	0.12698	5	0.96	1.37	1.65	1.66	1.71	1.94	2.17	2.23	2.32	2.37	2.58	3.61	5.11	5.30	5.37
Rn	$K\beta_2''$	H	1	11	86	6	97.460	0.12719	5	0.96	1.37	1.65	1.67	1.71	1.94	2.17	2.23	2.32	2.37	2.58	3.62	5.12	5.30	5.38
Fr	$K\beta_1$	H	1	29	87	6	97.460	0.12719	5	0.96	1.37	1.65	1.67	1.71	1.94	2.17	2.23	2.32	2.37	2.58	3.62	5.12	5.30	5.38
U	$K\alpha_{1,2}$		1	150	92	6	97.131	0.12762	6	0.96	1.37	1.66	1.67	1.72	1.95	2.18	2.24	2.33	2.38	2.59	3.63	5.14	5.32	5.39
Np	$K\alpha_2$		1	50	93	3	96.844	0.12800		0.97	1.38	1.67	1.68	1.72	1.96	2.19	2.25	2.34	2.39	2.60	3.64	5.15	5.34	5.41

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Fr	$K\beta_3$	H	1	14	87	6	96.791	0.12807	5		0.97	1.38	1.67	1.68	1.72	1.96	2.19	2.25	2.34	2.39	2.60	3.65	5.15	5.34	5.41
Pa	$K\alpha_1$	H	1	100	91	6	95.852	0.12932	6		0.98	1.39	1.68	1.70	1.74	1.98	2.21	2.27	2.36	2.41	2.63	3.68	5.21	5.39	5.47
At	$K\beta_2'$	H	1	11	85	6	94.974	0.13052	5		0.98	1.41	1.70	1.71	1.76	1.99	2.23	2.29	2.39	2.44	2.65	3.72	5.25	5.44	5.52
Rn	$K\beta_1$	H	1	29	86	6	94.850	0.13069	5		0.99	1.41	1.70	1.71	1.76	2.00	2.23	2.29	2.39	2.44	2.66	3.72	5.26	5.45	5.52
At	$K\beta_2''$	H	1	11	85	6	94.829	0.13072	5		0.99	1.41	1.70	1.71	1.76	2.00	2.23	2.29	2.39	2.44	2.66	3.72	5.26	5.45	5.53
U	$K\alpha_2$		1	50	92	6	94.649	0.13097	6		0.99	1.41	1.70	1.72	1.76	2.00	2.24	2.30	2.39	2.44	2.66	3.73	5.27	5.46	5.54
Pa	$K\alpha_{1,2}$	H	1	150	91	6	94.627	0.13100	6		0.99	1.41	1.70	1.72	1.76	2.00	2.24	2.30	2.39	2.45	2.66	3.73	5.27	5.46	5.54
Rn	$K\beta_3$	H	1	13	86	6	94.230	0.13155	5		0.99	1.42	1.71	1.72	1.77	2.01	2.25	2.31	2.40	2.46	2.67	3.74	5.29	5.49	5.56
Th	$K\alpha_1$		1	100	90	6	93.334	0.13281	6		1.00	1.43	1.73	1.74	1.79	2.03	2.27	2.33	2.43	2.48	2.70	3.78	5.35	5.54	5.61
Po	$K\beta_2'$	H	1	11	84	6	92.383	0.13418	5		1.01	1.45	1.75	1.76	1.80	2.05	2.29	2.35	2.45	2.50	2.73	3.82	5.40	5.60	5.67
At	$K\beta_1$	H	1	29	85	6	92.287	0.13432	5		1.01	1.45	1.75	1.76	1.81	2.05	2.29	2.36	2.45	2.51	2.73	3.82	5.41	5.60	5.68
Pa	$K\alpha_2$	H	1	50	91	6	92.271	0.13434	6		1.01	1.45	1.75	1.76	1.81	2.05	2.30	2.36	2.46	2.51	2.73	3.82	5.41	5.60	5.68
Po	$K\beta_2''$	H	1	11	84	6	92.246	0.13438	5		1.01	1.45	1.75	1.76	1.81	2.05	2.30	2.36	2.46	2.51	2.73	3.82	5.41	5.60	5.68
Th	$K\alpha_{1,2}$		1	150	90	6	92.174	0.13448	6		1.01	1.45	1.75	1.76	1.81	2.05	2.30	2.36	2.46	2.51	2.73	3.83	5.41	5.61	5.68
At	$K\beta_3$	H	1	13	85	6	91.707	0.13517	5		1.02	1.46	1.76	1.77	1.82	2.07	2.31	2.37	2.47	2.52	2.75	3.85	5.44	5.64	5.71
Ac	$K\alpha_1$	H	1	100	89	6	90.868	0.13642	6		1.03	1.47	1.77	1.79	1.83	2.08	2.33	2.39	2.49	2.55	2.77	3.88	5.49	5.69	5.77
Bi	AK	H	1		83	6	90.521	0.13694	5		1.03	1.47	1.78	1.80	1.84	2.09	2.34	2.40	2.50	2.56	2.78	3.90	5.51	5.71	5.79
Bi	$K\text{-}O_{2,3}$		1	.01	83	6	90.422	0.13709	5		1.03	1.48	1.78	1.80	1.84	2.09	2.34	2.41	2.51	2.56	2.79	3.90	5.52	5.72	5.80
Bi	$K\beta_4$	B	1	.3	83	6	90.094	0.13759	5		1.04	1.48	1.79	1.80	1.85	2.10	2.35	2.41	2.51	2.57	2.80	3.92	5.54	5.74	5.82
Th	$K\alpha_2$		1	50	90	6	89.938	0.13783	6		1.04	1.48	1.79	1.81	1.85	2.11	2.35	2.42	2.52	2.57	2.80	3.92	5.55	5.75	5.83
Bi	$K\beta_2'$		1	11	83	6	89.846	0.13797	5		1.04	1.49	1.80	1.81	1.86	2.11	2.36	2.42	2.52	2.58	2.80	3.93	5.55	5.75	5.83
Po	$K\beta_1$	H	1	89	84	6	89.781	0.13807	5		1.04	1.49	1.80	1.81	1.86	2.11	2.36	2.42	2.52	2.58	2.81	3.93	5.56	5.76	5.84
Ac	$K\alpha_{1,2}$	H	1	150	89	6	89.773	0.13808	5		1.04	1.49	1.80	1.81	1.86	2.11	2.36	2.42	2.52	2.58	2.81	3.93	5.56	5.76	5.84
Bi	$K\beta_2''$		1	11	83	6	89.716	0.13817	5		1.04	1.49	1.80	1.81	1.86	2.11	2.36	2.42	2.53	2.58	2.81	3.93	5.56	5.76	5.84
Po	$K\beta_3$	H	1	13	84	6	89.231	0.13892	5		1.05	1.50	1.81	1.82	1.87	2.12	2.37	2.44	2.54	2.59	2.82	3.95	5.59	5.79	5.87
Ra	$K\alpha_1$	H	1	100	88	6	88.454	0.14014	5		1.06	1.51	1.82	1.84	1.88	2.14	2.39	2.46	2.56	2.62	2.85	3.99	5.64	5.84	5.92
Pb	K-P		1	.01	82	6	88.040	0.14080	4		1.06	1.52	1.83	1.85	1.89	2.15	2.41	2.47	2.57	2.63	2.86	4.01	5.67	5.87	5.95
Pb	AK		1		82	6	87.990	0.14088	6		1.06	1.52	1.83	1.85	1.89	2.15	2.41	2.47	2.57	2.63	2.86	4.01	5.67	5.88	5.96
Pb	$K\text{-}O_{2,3}$		1	.01	82	6	87.907	0.14101	6		1.06	1.52	1.83	1.85	1.90	2.15	2.41	2.47	2.58	2.63	2.86	4.01	5.68	5.88	5.96
Bi	$K\beta_5$	F	1	.4	83	6	87.888	0.14104	6		1.06	1.52	1.84	1.85	1.90	2.16	2.41	2.47	2.58	2.63	2.87	4.01	5.68	5.88	5.96
Ac	$K\alpha_2$	H	1	50	89	6	87.660	0.14141	5		1.07	1.52	1.84	1.85	1.90	2.16	2.42	2.48	2.58	2.64	2.87	4.03	5.69	5.90	5.98
Pb	$K\beta_4$	B	1	.2	82	6	87.573	0.14155	5		1.07	1.52	1.84	1.86	1.90	2.16	2.42	2.48	2.59	2.64	2.88	4.03	5.70	5.90	5.98
Ra	$K\alpha_{1,2}$	H	1	150	88	6	87.419	0.14180	5		1.07	1.53	1.84	1.86	1.91	2.17	2.42	2.49	2.59	2.65	2.88	4.04	5.71	5.91	5.99
Pb	$K\beta_2'$		1	11	82	6	87.351	0.14191	5		1.07	1.53	1.85	1.86	1.91	2.17	2.42	2.49	2.59	2.65	2.88	4.04	5.71	5.92	6.00
Bi	$K\beta_1$		1	89	83	6	87.328	0.14195	6		1.07	1.53	1.85	1.86	1.91	2.17	2.43	2.49	2.59	2.65	2.88	4.04	5.71	5.92	6.00
Pb	$K\beta_2''$		1	11	82	6	87.222	0.14212	5		1.07	1.53	1.85	1.86	1.91	2.17	2.43	2.49	2.60	2.65	2.89	4.05	5.72	5.93	6.01
Bi	$K\beta_3$		1	13	83	6	86.819	0.14278	6		1.08	1.54	1.86	1.87	1.92	2.18	2.44	2.50	2.61	2.66	2.90	4.06	5.75	5.95	6.04
Fr	$K\alpha_1$	H	1	100	87	6	86.089	0.14399	5		1.09	1.55	1.87	1.89	1.94	2.20	2.46	2.53	2.63	2.69	2.93	4.10	5.80	6.00	6.09
Pb	$K\beta_5'$	B	1	.4	82	6	85.519	0.14495	5		1.09	1.56	1.89	1.90	1.95	2.21	2.48	2.54	2.65	2.71	2.94	4.13	5.83	6.05	6.13
Tl	AK	H	1		81	6	85.519	0.14495	5		1.09	1.56	1.89	1.90	1.95	2.21	2.48	2.54	2.65	2.71	2.94	4.13	5.83	6.05	6.13
Tl	$K\text{-}O_{2,3}$		1	.01	81	6	85.437	0.14509	5		1.09	1.56	1.89	1.90	1.95	2.22	2.48	2.55	2.65	2.71	2.95	4.13	5.84	6.05	6.13
Pb	$K\beta_5''$	B	1	.4	82	6	85.419	0.14512	5		1.09	1.56	1.89	1.90	1.95	2.22	2.48	2.55	2.65	2.71	2.95	4.13	5.84	6.05	6.13
Ra	$K\alpha_2$	H	1	50	88	6	85.419	0.14512	5		1.09	1.56	1.89	1.90	1.95	2.22	2.48	2.55	2.65	2.71	2.95	4.13	5.84	6.05	6.13
Tl	$K\beta_4$	B	1	.2	81	6	85.178	0.14553	5		1.10	1.57	1.89	1.91	1.96	2.22	2.49	2.55	2.66	2.72	2.96	4.14	5.86	6.07	6.15
Fr	$K\alpha_{1,2}$	H	1	150	87	6	85.110	0.14565	5		1.10	1.57	1.89	1.91	1.96	2.23	2.49	2.56	2.66	2.72	2.96	4.15	5.86	6.07	6.16
Tl	$K\beta_2'$		1	10	81	6	84.933	0.14595	5		1.10	1.57	1.90	1.91	1.96	2.23	2.49	2.56	2.67	2.72	2.97	4.15	5.87	6.09	6.17
Pb	$K\beta_1$		1	88	82	6	84.922	0.14597	6		1.10	1.57	1.90	1.91	1.96	2.23	2.49	2.56	2.67	2.72	2.97	4.16	5.88	6.09	6.17
Tl	$K\beta_2''$		1	10	81	6	84.823	0.14614	5		1.10	1.57	1.90	1.92	1.97	2.23	2.50	2.56	2.67	2.73	2.97	4.16	5.88	6.09	6.18
Pb	$K\beta_3$		1	13	82	6	84.436	0.14681	6		1.11	1.58	1.91	1.92	1.97	2.24	2.51	2.58	2.68	2.74	2.98	4.18	5.91	6.12	6.21
Rn	$K\alpha_1$	H	1	100	86	6	83.768	0.14798	5		1.12	1.59	1.93	1.94	1.99	2.26	2.53	2.60	2.70	2.76	3.01	4.21	5.96	6.17	6.26
Fr	$K\alpha_2$	H	1	50	87	6	83.217	0.14896	5		1.12	1.60	1.94	1.95	2.00	2.28	2.54	2.61	2.72	2.78	3.03	4.24	6.00	6.21	6.30
Tl	$K\beta_5$	B	1	.4	81	6	83.100	0.14917	5		1.13	1.61	1.94	1.96	2.01	2.28	2.55	2.62	2.73	2.78	3.03	4.25	6.00	6.22	6.31
Hg	AK	H	1		80	6	83.094	0.14918	5		1.13	1.61	1.94	1.96	2.01	2.28	2.55	2.62	2.73	2.78	3.03	4.25	6.01	6.22	6.31
Hg	$K\text{-}O_{2,3}$		1	.01	80	6	83.022	0.14931	5		1.13	1.61	1.94	1.96	2.01	2.28	2.55	2.62	2.73	2.79	3.03	4.25	6.01	6.23	6.31
Rn	$K\alpha_{1,2}$	H	1	150	86	6	82.843	0.14963	5		1.13	1.61	1.95	1.96	2.01	2.29	2.56	2.63	2.73	2.79	3.04	4.26	6.02	6.24	6.33
Hg	$K\beta_4$	8	1	.2	80	6	82.761	0.14978	5		1.13	1.61	1.95	1.96	2.01	2.29	2.56	2.63	2.74	2.80	3.04	4.26	6.03	6.25	6.33
Tl	$K\beta_1$		1	78	81	6	82.562	0.15014	6		1.13	1.62	1.95	1.97	2.02	2.29	2.57	2.63	2.74	2.80	3.05	4.27	6.04	6.26	6.35
Hg	$K\beta_2'$		1	10	80	6	82.530	0.15020	5		1.13	1.62	1.95	1.97	2.02	2.30	2.57	2.64	2.74	2.80	3.05	4.28	6.05	6.26	6.35
Hg	$K\beta_2''$		1	10	80	6	82.420	0.15040	5		1.13	1.62	1.96	1.97	2.02	2.30	2.57	2.64	2.75	2.81	3.06	4.28	6.05	6.27	6.36
Tl	$K\beta_3$		1	13	81	6	82.104	0.15098	6		1.14	1.63	1.96	1.98	2.03	2.31	2.58	2.65	2.76	2.82	3.07	4.30	6.08	6.30	6.38
At	$K\alpha_1$	H	1	100	85	6	81.499	0.15210	5		1.15	1.64	1.98	1.99	2.05	2.32	2.60	2.67	2.78	2.84	3.09	4.33	6.12	6.34	6.43
Rn	$K\alpha_2$	H	1	50	86	6	81.051	0.15294	5		1.15	1.65	1.99	2.00	2.06	2.34	2.61	2.68	2.80	2.85	3.11	4.35	6.16	6.38	6.47
Hg	$K\beta_5$	8	1	.4	80	6	80.740	0.15353	5		1.16	1.65	2.00	2.01	2.07	2.35	2.62	2.69	2.81	2.87	3.12	4.37	6.18	6.40	6.49
Au	AK		1		79	6	80.707	0.15359	6		1.16	1.65	2.00	2.01	2.07	2.35	2.62	2.69	2.81	2.87	3.12	4.37	6.18	6.41	6.49
Au	$K\text{-}O_{2,3}$		1	.01	79	6	80.654	0.15369	6		1.16	1.66	2.00	2.01	2.07	2.35	2.63	2.70	2.81	2.87	3.12	4.37	6.19	6.41	6.50

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
At	$K\alpha_{1,2}$	H	1	150	85	6	80.624	0.15375	5		1.16	1.66	2.00	2.02	2.07	2.35	2.63	2.70	2.81	2.87	3.12	4.38	6.19	6.41	6.50
Au	$K\beta_4$	B	1	.2	79	6	80.377	0.15422	6		1.16	1.66	2.01	2.02	2.07	2.36	2.63	2.71	2.82	2.88	3.13	4.39	6.21	6.43	6.52
Hg	$K\beta_1$		1	28	80	6	80.240	0.15449	6		1.17	1.66	2.01	2.03	2.08	2.36	2.64	2.71	2.82	2.88	3.14	4.40	6.22	6.44	6.53
Au	$K\beta_2'$		1	10	79	6	80.172	0.15462	6		1.17	1.67	2.01	2.03	2.08	2.36	2.64	2.71	2.83	2.89	3.14	4.40	6.22	6.45	6.54
Au	$K\beta_2''$		1	10	79	6	80.062	0.15483	5		1.17	1.67	2.01	2.03	2.08	2.37	2.65	2.72	2.83	2.89	3.15	4.41	6.23	6.46	6.55
Hg	$K\beta_3$		1	13	80	6	79.809	0.15532	6		1.17	1.67	2.02	2.04	2.09	2.37	2.65	2.73	2.84	2.90	3.16	4.42	6.25	6.48	6.57
Po	$K\alpha_1$	H	1	100	84	6	79.279	0.15636	5		1.18	1.68	2.03	2.05	2.10	2.39	2.67	2.74	2.86	2.92	3.18	4.45	6.29	6.52	6.61
At	$K\alpha_2$	H	1	50	85	6	78.930	0.15705	5		1.18	1.69	2.04	2.06	2.11	2.40	2.68	2.76	2.87	2.93	3.19	4.47	6.32	6.55	6.64
Au	$K\beta_5'$	B	1	.3	79	6	78.515	0.15788	6		1.19	1.70	2.05	2.07	2.12	2.41	2.70	2.77	2.89	2.95	3.21	4.49	6.36	6.58	6.67
Po	$K\alpha_{1,2}$	H	1	150	84	6	78.452	0.15801	5		1.19	1.70	2.06	2.07	2.13	2.41	2.70	2.77	2.89	2.95	3.21	4.50	6.36	6.59	6.68
Au	$K\beta_5''$	B	1	.3	79	6	78.425	0.15806	6		1.19	1.70	2.06	2.07	2.13	2.42	2.70	2.77	2.89	2.95	3.21	4.50	6.36	6.59	6.68
Pt	AK		1		78	6	78.366	0.15818	5		1.19	1.70	2.06	2.07	2.13	2.42	2.70	2.78	2.89	2.95	3.21	4.50	6.37	6.60	6.69
Pt	$K\text{-}O_{2,3}$		1	.01	78	6	78.327	0.15826	5		1.19	1.70	2.06	2.07	2.13	2.42	2.70	2.78	2.89	2.95	3.22	4.51	6.37	6.60	6.69
Pt	$K\beta_4$	B	1	.2	78	6	78.056	0.15881	5		1.20	1.71	2.07	2.08	2.14	2.43	2.71	2.79	2.90	2.96	3.23	4.52	6.39	6.62	6.71
Pt	$K\beta_4$	B	1	.2	78	6	78.056	0.15881	5		1.20	1.71	2.07	2.08	2.14	2.43	2.71	2.79	2.90	2.96	3.23	4.52	6.39	6.62	6.71
Au	$K\beta_1$		1	27	79	6	77.971	0.15898	6		1.20	1.71	2.07	2.08	2.14	2.43	2.72	2.79	2.91	2.97	3.23	4.53	6.40	6.63	6.72
Pt	$K\beta_2'$		1	10	78	6	77.864	0.15920	5		1.20	1.71	2.07	2.09	2.14	2.43	2.72	2.79	2.91	2.97	3.23	4.53	6.41	6.64	6.73
Pt	$K\beta_2''$		1	10	78	6	77.772	0.15939	5		1.20	1.72	2.07	2.09	2.14	2.44	2.72	2.80	2.91	2.98	3.24	4.54	6.42	6.65	6.74
Au	$K\beta_3$		1	13	79	6	77.567	0.15981	6		1.21	1.72	2.08	2.09	2.15	2.44	2.73	2.80	2.92	2.98	3.25	4.55	6.43	6.67	6.76
Bi	$K\alpha_1$		1	100	83	6	77.095	0.16079	6		1.21	1.73	2.09	2.11	2.16	2.46	2.75	2.82	2.94	3.00	3.27	4.58	6.47	6.71	6.80
Po	$K\alpha_2$	H	1	50	84	6	76.851	0.16130	5		1.22	1.74	2.10	2.11	2.17	2.46	2.76	2.83	2.95	3.01	3.28	4.59	6.49	6.73	6.82
Bi	$K\alpha_{1,2}$		1	150	83	6	76.315	0.16243	6		1.23	1.75	2.11	2.13	2.18	2.48	2.78	2.85	2.97	3.03	3.30	4.62	6.54	6.77	6.87
Pt	$K\beta_5'$	B	1	.3	78	6	76.260	0.16255	5		1.23	1.75	2.11	2.13	2.19	2.48	2.78	2.85	2.97	3.03	3.30	4.63	6.54	6.78	6.87
Pt	$K\beta_5'$	B	1	.3	78	6	76.260	0.16255	5		1.23	1.75	2.11	2.13	2.19	2.48	2.78	2.85	2.97	3.03	3.30	4.63	6.54	6.78	6.87
Pt	$K\beta_5''$	B	1	.3	78	6	76.185	0.16271	5		1.23	1.75	2.12	2.13	2.19	2.49	2.78	2.85	2.97	3.04	3.31	4.63	6.55	6.79	6.88
Ir	AK	H	1		77	6	76.086	0.16292	5		1.23	1.75	2.12	2.14	2.19	2.49	2.78	2.86	2.98	3.04	3.31	4.64	6.56	6.80	6.89
Ir	$K\text{-}O_{2,3}$		1	.01	77	6	76.040	0.16302	6		1.23	1.76	2.12	2.14	2.19	2.49	2.79	2.86	2.98	3.04	3.31	4.64	6.56	6.80	6.89
Ir	$K\beta_4$	B	1	.2	77	6	75.807	0.16352	5		1.23	1.76	2.13	2.14	2.20	2.50	2.79	2.87	2.99	3.05	3.32	4.65	6.58	6.82	6.91
Pt	$K\beta_1$		1	27	78	6	75.735	0.16367	6		1.23	1.76	2.13	2.15	2.20	2.50	2.80	2.87	2.99	3.06	3.33	4.66	6.59	6.83	6.92
Ir	$K\beta_2'$		1	10	77	6	75.606	0.16396	6		1.24	1.77	2.13	2.15	2.21	2.51	2.80	2.88	3.00	3.06	3.33	4.67	6.60	6.84	6.93
Ir	$K\beta_2''$		1	10	77	6	75.516	0.16415	5		1.24	1.77	2.14	2.15	2.21	2.51	2.80	2.88	3.00	3.06	3.34	4.67	6.61	6.85	6.94
Pt	$K\beta_3$		1	12	78	6	75.355	0.16450	6		1.24	1.77	2.14	2.16	2.21	2.51	2.81	2.89	3.01	3.07	3.34	4.68	6.62	6.86	6.96
Pb	$K\alpha_1$		1	100	82	6	74.956	0.16538	6		1.25	1.78	2.15	2.17	2.22	2.53	2.83	2.90	3.02	3.09	3.36	4.71	6.66	6.90	6.99
Bi	$K\alpha_2$		1	50	83	6	74.802	0.16572	6		1.25	1.78	2.16	2.17	2.23	2.53	2.83	2.91	3.03	3.09	3.37	4.72	6.67	6.91	7.01
Pb	$K\alpha_{1,2}$		1	150	82	6	74.221	0.16701	6		1.26	1.80	2.17	2.19	2.25	2.55	2.85	2.93	3.05	3.12	3.39	4.75	6.72	6.97	7.06
Ir	$K\beta_5'$	8	1	.3	77	6	74.062	0.16737	6		1.26	1.80	2.18	2.19	2.25	2.56	2.86	2.94	3.06	3.12	3.40	4.76	6.74	6.98	7.08
Ir	$K\beta_5''$	B	1	.3	77	6	73.966	0.16759	5		1.26	1.80	2.18	2.20	2.25	2.56	2.86	2.94	3.06	3.13	3.40	4.77	6.75	6.99	7.09
Os	AK	H	1		76	6	73.843	0.16787	5		1.27	1.81	2.18	2.20	2.26	2.57	2.87	2.95	3.07	3.13	3.41	4.78	6.76	7.00	7.10
Os	$K\text{-}O_{2,3}$		1	.01	76	6	73.795	0.16798	5		1.27	1.81	2.19	2.20	2.26	2.57	2.87	2.95	3.07	3.14	3.41	4.78	6.76	7.01	7.10
Os	$K\beta_4$	8	1	.2	76	6	73.602	0.16842	5		1.27	1.81	2.19	2.21	2.27	2.57	2.88	2.95	3.08	3.14	3.42	4.79	6.78	7.02	7.12
Ir	$K\beta_1$		1	27	77	6	73.548	0.16854	6		1.27	1.82	2.19	2.21	2.27	2.58	2.88	2.96	3.08	3.15	3.42	4.80	6.79	7.03	7.13
Os	$K\beta_2'$		1	10	76	6	73.390	0.16891	6		1.27	1.82	2.20	2.21	2.27	2.58	2.89	2.96	3.09	3.15	3.43	4.81	6.80	7.05	7.14
Os	$K\beta_2''$		1	10	76	6	73.306	0.16910	5		1.28	1.82	2.20	2.22	2.27	2.58	2.89	2.97	3.09	3.16	3.44	4.81	6.81	7.05	7.15
Ir	$K\beta_3$		1	12	77	6	73.190	0.16937	6		1.28	1.82	2.20	2.22	2.28	2.59	2.89	2.97	3.10	3.16	3.44	4.82	6.82	7.06	7.16
Tl	$K\alpha_1$		1	100	81	6	72.859	0.17014	6		1.28	1.83	2.21	2.23	2.29	2.60	2.91	2.99	3.11	3.18	3.46	4.84	6.85	7.10	7.19
Pb	$K\alpha_2$		1	50	82	6	72.792	0.17029	6		1.28	1.83	2.22	2.23	2.29	2.60	2.91	2.99	3.11	3.18	3.46	4.85	6.86	7.10	7.20
Tl	$K\alpha_{1,2}$		1	150	81	6	72.167	0.17177	6		1.30	1.85	2.23	2.25	2.31	2.62	2.93	3.01	3.14	3.21	3.49	4.89	6.92	7.16	7.26
Os	$K\beta_5'$	B	1	.3	76	6	71.882	0.17245	5		1.30	1.86	2.24	2.26	2.32	2.64	2.95	3.03	3.15	3.22	3.50	4.91	6.94	7.19	7.29
Os	$K\beta_5''$	8	1	.3	76	6	71.811	0.17262	5		1.30	1.86	2.25	2.26	2.32	2.64	2.95	3.03	3.15	3.22	3.51	4.91	6.95	7.20	7.30
Re	AK		1		75	6	71.645	0.17302	5		1.31	1.86	2.25	2.27	2.33	2.64	2.96	3.04	3.16	3.23	3.52	4.93	6.97	7.22	7.32
Re	$K\text{-}O_{2,3}$		1	.01	75	6	71.620	0.17308	5		1.31	1.86	2.25	2.27	2.33	2.64	2.96	3.04	3.16	3.23	3.52	4.93	6.97	7.22	7.32
Os	$K\beta_1$		1	27	76	6	71.401	0.17361	6		1.31	1.87	2.26	2.28	2.34	2.65	2.97	3.05	3.17	3.24	3.53	4.94	6.99	7.24	7.34
Re	$K\beta_4$	B	1	.1	75	6	71.397	0.17362	5		1.31	1.87	2.26	2.28	2.34	2.65	2.97	3.05	3.17	3.24	3.53	4.94	6.99	7.24	7.34
Re	$K\beta_2'$		1	10	75	6	71.219	0.17405	6		1.31	1.87	2.26	2.28	2.34	2.66	2.97	3.05	3.18	3.25	3.54	4.95	7.01	7.26	7.36
Re	$K\beta_2''$		1	10	75	6	71.139	0.17425	5		1.31	1.88	2.27	2.28	2.34	2.66	2.98	3.06	3.18	3.25	3.54	4.96	7.02	7.27	7.37
Os	$K\beta_3$		1	12	76	6	71.065	0.17443	6		1.32	1.88	2.27	2.29	2.35	2.67	2.98	3.06	3.19	3.26	3.54	4.97	7.02	7.28	7.38
Tl	$K\alpha_2$		1	50	81	6	70.820	0.17504	6		1.32	1.89	2.28	2.29	2.35	2.67	2.99	3.07	3.20	3.27	3.56	4.98	7.05	7.30	7.40
Hg	$K\alpha_1$		1	100	80	6	70.807	0.17507	6		1.32	1.89	2.28	2.29	2.35	2.68	2.99	3.07	3.20	3.27	3.56	4.98	7.05	7.30	7.40
Hg	$K\alpha_{1,2}$		1	150	80	6	70.154	0.17670	6		1.33	1.90	2.30	2.32	2.38	2.70	3.02	3.10	3.23	3.30	3.59	5.03	7.11	7.37	7.47
Re	$K\beta_5'$	B	1	.3	75	6	69.774	0.17766	5		1.34	1.91	2.31	2.33	2.39	2.71	3.04	3.12	3.25	3.32	3.61	5.06	7.15	7.41	7.51
Re	$K\beta_5''$	B	1	.3	75	6	69.707	0.17783	5		1.34	1.92	2.31	2.33	2.39	2.72	3.04	3.12	3.25	3.32	3.61	5.06	7.16	7.42	7.52
W	AK		1		74	6	69.496	0.17837	5		1.35	1.92	2.32	2.34	2.40	2.73	3.05	3.13	3.26	3.33	3.62	5.08	7.18	7.44	7.54
W	$K\text{-}O_{2,3}$		1	.01	74	6	69.467	0.17844	6		1.35	1.92	2.32	2.34	2.40	2.73	3.05	3.13	3.26	3.33	3.63	5.08	7.18	7.44	7.55
Re	$K\beta_1$		1	26	75	6	69.298	0.17888	6		1.35	1.93	2.33	2.34	2.41	2.73	3.06	3.14	3.27	3.34	3.63	5.09	7.20	7.46	7.56
W	$K\beta_4$	B	1	.1	74	6	69.282	0.17892	5		1.35	1.93	2.33	2.35	2.41	2.73	3.06	3.14	3.27	3.34	3.64	5.09	7.20	7.46	7.57

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
W	$K\beta_2'$		1	10	74	6	69.089	0.17942	6		1.35	1.93	2.33	2.35	2.41	2.74	3.07	3.15	3.28	3.35	3.65	5.11	7.22	7.48	7.59
W	$K\beta_2''$		1	10	74	6	69.020	0.17960	5		1.35	1.93	2.34	2.35	2.42	2.74	3.07	3.15	3.28	3.35	3.65	5.11	7.23	7.49	7.59
Re	$K\beta_3$		1	12	75	6	68.983	0.17970	6		1.36	1.94	2.34	2.36	2.42	2.75	3.07	3.15	3.28	3.35	3.65	5.12	7.24	7.50	7.60
Hg	$K\alpha_2$		1	50	80	6	68.883	0.17996	6		1.36	1.94	2.34	2.36	2.42	2.75	3.07	3.16	3.29	3.36	3.66	5.12	7.25	7.51	7.61
Au	$K\alpha_1$		1	100	79	6	68.792	0.18019	6		1.36	1.94	2.34	2.36	2.42	2.75	3.08	3.16	3.29	3.36	3.66	5.13	7.26	7.52	7.62
Au	$K\alpha_{1,2}$		1	150	79	6	68.177	0.18182	6		1.37	1.96	2.37	2.38	2.45	2.78	3.11	3.19	3.32	3.39	3.69	5.18	7.32	7.58	7.69
W	$K\beta_5'$	B	1	.3	74	6	67.704	0.18309	6		1.38	1.97	2.38	2.40	2.46	2.80	3.13	3.21	3.35	3.42	3.72	5.21	7.37	7.64	7.74
W	$K\beta_5''$	B	1	.3	74	6	67.640	0.18326	6		1.38	1.97	2.38	2.40	2.47	2.80	3.13	3.22	3.35	3.42	3.72	5.22	7.38	7.64	7.75
Ta	AK		1		73	6	67.392	0.18394	5		1.39	1.98	2.39	2.41	2.47	2.81	3.14	3.23	3.36	3.43	3.74	5.24	7.41	7.67	7.78
Ta	$K-O_{2,3}$		1	.01	73	6	67.358	0.18403	6		1.39	1.98	2.39	2.41	2.48	2.81	3.14	3.23	3.36	3.44	3.74	5.24	7.41	7.68	7.78
W	$K\beta_1$		1	26	74	6	67.233	0.18437	6		1.39	1.99	2.40	2.42	2.48	2.82	3.15	3.23	3.37	3.44	3.75	5.25	7.42	7.69	7.80
Ta	$K\beta_4$	B	1	.08	73	6	67.183	0.18451	5		1.39	1.99	2.40	2.42	2.48	2.82	3.15	3.24	3.37	3.44	3.75	5.25	7.43	7.70	7.80
Ta	$K\beta_2'$		1	9	73	6	67.001	0.18501	6		1.40	1.99	2.41	2.43	2.49	2.83	3.16	3.25	3.38	3.45	3.76	5.27	7.45	7.72	7.82
Au	$K\alpha_2$		1	50	79	6	66.978	0.18507	6		1.40	1.99	2.41	2.43	2.49	2.83	3.16	3.25	3.38	3.45	3.76	5.27	7.45	7.72	7.83
W	$K\beta_3$		1	12	74	6	66.940	0.18518	6		1.40	1.99	2.41	2.43	2.49	2.83	3.16	3.25	3.38	3.46	3.76	5.27	7.46	7.73	7.83
Ta	$K\beta_2''$		1	9	73	6	66.937	0.18519	6		1.40	1.99	2.41	2.43	2.49	2.83	3.16	3.25	3.38	3.46	3.76	5.27	7.46	7.73	7.83
Pt	$K\alpha_1$		1	100	78	6	66.821	0.18551	6		1.40	2.00	2.41	2.43	2.50	2.83	3.17	3.25	3.39	3.46	3.77	5.28	7.47	7.74	7.84
Cf	$K\beta_2$		2	11	98	3	133.290	0.18600			1.40	2.00	2.42	2.44	2.50	2.84	3.18			3.47	3.78	5.30	7.49	7.76	7.87
Au	$K-L_1$	B	1	.01	79	6	66.388	0.18672	5		1.41	2.01	2.43	2.45	2.51	2.85	3.19	3.28	3.41	3.49	3.79	5.32	7.52	7.79	7.90
Pt	$K\alpha_{1,2}$		1	150	78	6	66.241	0.18713	6		1.41	2.02	2.43	2.45	2.52	2.86	3.20	3.28	3.42	3.49	3.80	5.33	7.53	7.81	7.91
Ta	$K\beta_5'$	B	1	.3	73	6	65.672	0.18876	6		1.42	2.03	2.46	2.47	2.54	2.88	3.22	3.31	3.45	3.52	3.84	5.37	7.60	7.87	7.98
Ta	$K\beta_5''$	B	1	.3	73	6	65.615	0.18892	6		1.43	2.03	2.46	2.48	2.54	2.89	3.23	3.31	3.45	3.53	3.84	5.38	7.61	7.88	7.99
Hf	AK		1		72	6	65.304	0.18982	5		1.43	2.04	2.47	2.49	2.55	2.90	3.24	3.33	3.47	3.54	3.86	5.40	7.64	7.92	8.03
Bk	$K\beta_2$		2	11	97	3	130.484	0.19000			1.43	2.05	2.47	2.49	2.56	2.90	3.25			3.55	3.86	5.41	7.65	7.93	8.03
Ta	$K\beta_1$		1	26	73	6	65.212	0.19009	6		1.43	2.05	2.47	2.49	2.56	2.90	3.25	3.34	3.47	3.55	3.86	5.41	7.65	7.93	8.04
Pt	$K\alpha_2$		1	50	78	6	65.112	0.19038	6		1.44	2.05	2.48	2.50	2.56	2.91	3.25	3.34	3.48	3.55	3.87	5.42	7.67	7.94	8.05
Hf	$K\beta_2$	H	1	9	72	6	64.969	0.19080	4		1.44	2.06	2.48	2.50	2.57	2.92	3.26	3.35	3.49	3.56	3.88	5.43	7.68	7.96	8.07
Ta	$K\beta_3$		1	12	73	6	64.938	0.19089	6		1.44	2.06	2.48	2.50	2.57	2.92	3.26	3.35	3.49	3.56	3.88	5.43	7.69	7.96	8.07
Ir	$K\alpha_1$		1	100	77	6	64.885	0.19105	6		1.44	2.06	2.49	2.50	2.57	2.92	3.26	3.35	3.49	3.57	3.88	5.44	7.69	7.97	8.08
Ir	$K\alpha_{1,2}$		1	150	77	6	64.339	0.19267	6		1.45	2.08	2.51	2.53	2.59	2.94	3.29	3.38	3.52	3.60	3.91	5.49	7.76	8.04	8.15
Cf	$K\beta_1$		2	30	98	3	127.794	0.19400			1.46	2.09	2.52	2.54	2.61	2.96	3.31			3.62	3.94	5.52	7.81	8.09	8.20
Lu	AK		1		71	6	63.293	0.19585	5		1.48	2.11	2.55	2.57	2.63	2.99	3.35	3.44	3.58	3.66	3.98	5.58	7.89	8.17	8.28
Lu	$K-O_{2,3}$		1	.01	71	6	63.280	0.19589	5		1.48	2.11	2.55	2.57	2.63	2.99	3.35	3.44	3.58	3.66	3.98	5.58	7.89	8.17	8.28
Ir	$K\alpha_2$		1	50	77	6	63.276	0.19590	6		1.48	2.11	2.55	2.57	2.64	2.99	3.35	3.44	3.58	3.66	3.98	5.58	7.89	8.17	8.28
Cm	$K\beta_2$		2	11	96	3	126.490	0.19600			1.48	2.11	2.55	2.57	2.64	3.00	3.35			3.66	3.98	5.58	7.89	8.18	8.29
Bk	$K\beta_1$		2	30	97	3	126.490	0.19600			1.48	2.11	2.55	2.57	2.64	3.00	3.35			3.66	3.98	5.58	7.89	8.18	8.29
Hf	$K\beta_1$	H	1	66	72	6	63.222	0.19607	5		1.48	2.11	2.55	2.57	2.64	3.00	3.35	3.44	3.58	3.66	3.98	5.58	7.90	8.18	8.29
Os	$K\alpha_1$		1	100	76	6	62.990	0.19679	6		1.48	2.12	2.56	2.58	2.65	3.01	3.36	3.45	3.60	3.67	4.00	5.60	7.92	8.21	8.32
Hf	$K\beta_3$	H	1	12	72	6	62.969	0.19686	5		1.49	2.12	2.56	2.58	2.65	3.01	3.36	3.45	3.60	3.67	4.00	5.60	7.93	8.21	8.33
Lu	$K\beta_2$	H	1	9	71	6	62.956	0.19690	4		1.49	2.12	2.56	2.58	2.65	3.01	3.36	3.45	3.60	3.68	4.00	5.61	7.93	8.21	8.33
Os	$K\alpha_{1,2}$		1	150	76	6	62.477	0.19841	6		1.50	2.14	2.58	2.60	2.67	3.03	3.39	3.48	3.63	3.70	4.03	5.65	7.99	8.28	8.39
Am	$K\beta_2$		2	11	95	3	123.960	0.20000			1.51	2.15	2.60	2.62	2.69	3.06	3.42			3.73	4.06	5.69	8.05	8.34	8.46
Lu	$K\beta_5$	B	1	.3	71	6	61.721	0.20084	5		1.52	2.16	2.61	2.63	2.70	3.07	3.43	3.52	3.67	3.75	4.08	5.72	8.09	8.38	8.49
Os	$K\alpha_2$		1	50	76	6	61.476	0.20164	6		1.52	2.17	2.62	2.64	2.71	3.08	3.45	3.54	3.69	3.76	4.10	5.74	8.12	8.41	8.53
Cm	$K\beta_1$		2	30	96	3	122.733	0.20200			1.52	2.18	2.63	2.65	2.72	3.09	3.45			3.77	4.10	5.75	8.13	8.43	8.54
Yb	AK		1		70	6	61.294	0.20224	5		1.53	2.18	2.63	2.65	2.72	3.09	3.46	3.55	3.70	3.78	4.11	5.76	8.14	8.44	8.55
Yb	$K-O_{2,3}$	B	1	.01	70	6	61.287	0.20226	5		1.53	2.18	2.63	2.65	2.72	3.09	3.46	3.55	3.70	3.78	4.11	5.76	8.14	8.44	8.55
Lu	$K\beta_1$	H	1	65	71	6	61.272	0.20231	5		1.53	2.18	2.63	2.65	2.72	3.09	3.46	3.55	3.70	3.78	4.11	5.76	8.15	8.44	8.56
Re	$K\alpha_1$		1	100	75	6	61.130	0.20278	6		1.53	2.18	2.64	2.66	2.73	3.10	3.46	3.56	3.71	3.79	4.12	5.77	8.17	8.46	8.58
Lu	$K\beta_3$	H	1	12	71	6	61.037	0.20309	5		1.53	2.19	2.64	2.66	2.73	3.10	3.47	3.56	3.71	3.79	4.13	5.78	8.18	8.47	8.59
Yb	$K\beta_2$	H	1	9	70	6	60.974	0.20330	4		1.53	2.19	2.65	2.67	2.73	3.11	3.47	3.57	3.72	3.79	4.13	5.79	8.19	8.48	8.60
Re	$K\alpha_{1,2}$		1	150	75	6	60.648	0.20439	6		1.54	2.20	2.66	2.68	2.75	3.12	3.49	3.59	3.74	3.82	4.15	5.82	8.23	8.53	8.64
Am	$K\beta_1$		2	30	95	3	120.350	0.20600			1.55	2.22	2.68	2.70	2.77	3.15	3.52			3.85	4.19	5.87	8.30	8.60	8.71
Pu	$K\beta_2$		2	11	94	3	120.350	0.20600			1.55	2.22	2.68	2.70	2.77	3.15	3.52			3.85	4.19	5.87	8.30	8.60	8.71
Yb	$K\beta_5$	B	1	.3	70	6	59.771	0.20739	5		1.56	2.23	2.70	2.72	2.79	3.17	3.54	3.64	3.79	3.87	4.21	5.90	8.35	8.65	8.77
Re	$K\alpha_2$		1	50	75	6	59.708	0.20761	6		1.57	2.24	2.70	2.72	2.79	3.17	3.55	3.64	3.79	3.88	4.22	5.91	8.36	8.66	8.78
Tm	AK	H	1		69	6	59.368	0.20880	5		1.58	2.25	2.72	2.74	2.81	3.19	3.57	3.66	3.82	3.90	4.24	5.94	8.41	8.71	8.83
Yb	$K\beta_1$		1	64	70	6	59.356	0.20884	5		1.58	2.25	2.72	2.74	2.81	3.19	3.57	3.66	3.82	3.90	4.24	5.95	8.41	8.71	8.83
Tm	$K-O_{2,3}$		1	.01	69	6	59.337	0.20891	5		1.58	2.25	2.72	2.74	2.81	3.19	3.57	3.67	3.82	3.90	4.24	5.95	8.41	8.72	8.84
W	$K\alpha_1$		1	100	74	6	59.308	0.20901	7		1.58	2.25	2.72	2.74	2.81	3.19	3.57	3.67	3.82	3.90	4.25	5.95	8.42	8.72	8.84
Yb	$K\beta_3$	H	1	12	70	6	59.141	0.20960	4		1.58	2.26	2.73	2.75	2.82	3.20	3.58	3.68	3.83	3.91	4.26	5.97	8.44	8.75	8.87
Tm	$K\beta_2$	H	1	9	69	6	59.085	0.20980	4		1.58	2.26	2.73	2.75	2.82	3.21	3.58	3.68	3.83	3.92	4.26	5.97	8.45	8.75	8.87
Np	$K\beta_2$		2	11	93	3	118.057	0.21000			1.58	2.26	2.73	2.75	2.82	3.21	3.59			3.92	4.27	5.98	8.46	8.76	8.88
W	$K\alpha_{1,2}$		1	150	74	6	58.856	0.21062	6		1.59	2.27	2.74	2.76	2.83	3.22	3.60	3.70	3.85	3.93	4.28	6.00	8.48	8.79	8.91
Pu	$K\beta_1$		2	30	94	3	116.943	0.21200			1.60	2.28	2.76	2.78	2.85	3.24	3.62			3.96	4.31	6.04	8.54	8.85	8.97

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
W	$K\alpha_2$		1	50	74	6	57.972	0.21383	6		1.61	2.30	2.78	2.80	2.88	3.27	3.65	3.75	3.91	3.99	4.34	6.09	8.61	8.92	9.04
Tm	$K\beta_5$	B	1	.2	69	6	57.914	0.21404	5		1.61	2.31	2.78	2.81	2.88	3.27	3.66	3.76	3.91	4.00	4.35	6.09	8.62	8.93	9.05
U	$K\text{-}O_{2,3}$		2	.01	92	6	115.376	0.21488	5		1.62	2.31	2.80	2.82	2.89	3.28	3.67			4.01	4.37	6.12	8.65	8.97	9.09
Ta	$K\alpha_1$		1	100	73	6	57.523	0.21550	6		1.63	2.32	2.80	2.83	2.90	3.29	3.68	3.78	3.94	4.02	4.38	6.14	8.68	8.99	9.12
Tm	$K\beta_1$		1	23	69	6	57.506	0.21556	5		1.63	2.32	2.80	2.83	2.90	3.29	3.68	3.78	3.94	4.02	4.38	6.14	8.68	8.99	9.12
Er	AK		1		68	6	57.477	0.21567	5		1.63	2.32	2.81	2.83	2.90	3.30	3.68	3.78	3.94	4.03	4.38	6.14	8.69	9.00	9.12
Er	$K\text{-}O_{2,3}$		1	.01	68	6	57.439	0.21581	5		1.63	2.32	2.81	2.83	2.90	3.30	3.69	3.79	3.94	4.03	4.39	6.14	8.69	9.01	9.13
U	$K\beta_4$	F	2	.4	92	6	114.832	0.21590	6		1.63	2.33	2.81	2.83	2.90	3.30	3.69			4.03	4.39	6.15	8.70	9.01	9.13
W	$K\text{-}L_1$	B	1	.01	74	6	57.410	0.21592	5		1.63	2.33	2.81	2.83	2.90	3.30	3.69	3.79	3.95	4.03	4.39	6.15	8.70	9.01	9.13
Cf	$K\alpha_1$		2	100	98	3	114.778	0.21600			1.63	2.33	2.81	2.83	2.91	3.30	3.69			4.03	4.39	6.15	8.70	9.01	9.14
U	$K\beta_2'$		2	11	92	6	114.587	0.21636	5		1.63	2.33	2.82	2.84	2.91	3.31	3.70			4.04	4.40	6.16	8.71	9.03	9.15
Tm	$K\beta_3$		1	11	69	6	57.293	0.21636	5		1.63	2.33	2.82	2.84	2.91	3.31	3.70	3.80	3.95	4.04	4.40	6.16	8.71	9.03	9.15
Er	$K\beta_2$	H	1	8	68	6	57.204	0.21670	4		1.63	2.33	2.82	2.84	2.91	3.31	3.70	3.80	3.96	4.05	4.40	6.17	8.73	9.04	9.17
U	$K\beta_2''$	D	2	11	92	6	114.314	0.21688	6		1.64	2.34	2.82	2.84	2.92	3.31	3.71			4.05	4.41	6.17	8.73	9.05	9.17
Ta	$K\alpha_{1,2}$		1	150	73	6	57.098	0.21710	6		1.64	2.34	2.82	2.85	2.92	3.32	3.71	3.81	3.97	4.05	4.41	6.18	8.74	9.06	9.18
Np	$K\beta_1$		2	30	93	3	113.725	0.21800			1.64	2.35	2.84	2.86	2.93	3.33	3.72			4.07	4.43	6.21	8.78	9.10	9.22
Cf	$K\alpha_{1,2}$		2	150	98	3	112.999	0.21940			1.66	2.36	2.85	2.88	2.95	3.35	3.75			4.10	4.46	6.25	8.84	9.16	9.28
Ta	$K\alpha_2$		1	50	73	6	56.267	0.22030	6		1.66	2.37	2.87	2.89	2.96	3.37	3.76	3.87	4.03	4.11	4.48	6.27	8.87	9.19	9.32
Er	$K\beta_5$	B	1	.2	68	6	56.030	0.22124	5		1.67	2.38	2.88	2.90	2.98	3.38	3.78	3.88	4.04	4.13	4.50	6.30	8.91	9.23	9.36
U	$K\beta_5$	B	2	.6	92	6	111.988	0.22138	5		1.67	2.38	2.88	2.90	2.98	3.38	3.78			4.13	4.50	6.30	8.92	9.24	9.36
Bk	$K\alpha_1$		2	100	97	3	111.676	0.22200			1.67	2.39	2.89	2.91	2.99	3.39	3.79			4.14	4.51	6.32	8.94	9.26	9.39
Pa	$K\beta_2'$	H	2	11	91	6	111.605	0.22214	5		1.68	2.39	2.89	2.91	2.99	3.39	3.80			4.15	4.51	6.33	8.95	9.27	9.40
8f	$K\alpha_1$		1	100	72	6	55.781	0.22223	6		1.68	2.39	2.89	2.91	2.99	3.40	3.80	3.90	4.06	4.15	4.52	6.33	8.95	9.27	9.40
Pa	$K\beta_2''$	H	2	11	91	6	111.385	0.22258	5		1.68	2.40	2.90	2.92	2.99	3.40	3.80			4.15	4.52	6.34	8.96	9.29	9.42
Er	$K\beta_1$		1	22	68	6	55.672	0.22266	5		1.68	2.40	2.90	2.92	3.00	3.40	3.80	3.91	4.07	4.16	4.52	6.34	8.97	9.29	9.42
U	$K\beta_1$		2	31	92	6	111.281	0.22279	6		1.68	2.40	2.90	2.92	3.00	3.40	3.81			4.16	4.53	6.34	8.97	9.30	9.42
8o	AK		1		67	6	55.610	0.22291	5		1.68	2.40	2.90	2.92	3.00	3.41	3.81	3.91	4.07	4.16	4.53	6.35	8.98	9.30	9.43
8o	$K\text{-}O_{2,3}$		1	.01	67	6	55.575	0.22305	5		1.68	2.40	2.90	2.92	3.00	3.41	3.81	3.91	4.08	4.16	4.53	6.35	8.98	9.31	9.44
Er	$K\beta_3$		1	12	68	6	55.485	0.22341	5		1.69	2.41	2.91	2.93	3.01	3.41	3.82	3.92	4.08	4.17	4.54	6.36	9.00	9.32	9.45
Hf	$K\alpha_{1,2}$		1	150	72	6	55.382	0.22383	6		1.69	2.41	2.91	2.93	3.01	3.42	3.82	3.93	4.09	4.18	4.55	6.37	9.02	9.34	9.47
Ho	$K\beta_2$	H	1	8	67	6	55.315	0.22410	4		1.69	2.41	2.92	2.94	3.01	3.42	3.83	3.93	4.10	4.18	4.55	6.38	9.03	9.35	9.48
U	$K\beta_3$		2	14	92	6	110.387	0.22459	6		1.69	2.42	2.92	2.94	3.02	3.43	3.84			4.19	4.56	6.39	9.05	9.37	9.50
Bk	$K\alpha_{1,2}$		2	150	97	3	109.991	0.22540			1.70	2.43	2.93	2.95	3.03	3.44	3.85			4.21	4.58	6.42	9.08	9.41	9.53
Cf	$K\alpha_2$		2	50	98	3	109.699	0.22600			1.70	2.43	2.94	2.96	3.04	3.45	3.86			4.22	4.59	6.44	9.10	9.43	9.56
Th	$K\text{-}O_{2,3}$		2	.01	90	6	109.486	0.22644	5		1.71	2.44	2.95	2.97	3.05	3.46	3.87			4.23	4.60	6.45	9.12	9.45	9.58
Hf	$K\alpha_2$		1	50	72	6	54.602	0.22702	6		1.71	2.45	2.95	2.98	3.05	3.47	3.88	3.98	4.15	4.24	4.61	6.46	9.14	9.47	9.60
Th	$K\beta_4$	F	2	.4	90	6	108.940	0.22757	6		1.72	2.45	2.96	2.98	3.06	3.48	3.89			4.25	4.62	6.48	9.17	9.50	9.63
Cm	$K\alpha_1$		2	100	96	3	108.737	0.22800			1.72	2.46	2.97	2.99	3.07	3.48	3.90			4.26	4.63	6.49	9.18	9.52	9.65
Th	$K\beta_2'$		2	11	90	6	108.699	0.22808	6		1.72	2.46	2.97	2.99	3.07	3.49	3.90			4.26	4.63	6.49	9.19	9.52	9.65
Th	$K\beta_2''$		2	11	90	6	108.489	0.22852	5		1.72	2.46	2.97	3.00	3.07	3.49	3.90			4.27	4.64	6.51	9.20	9.54	9.67
8o	$K\beta_5$	B	1	.2	67	6	54.238	0.22855	5		1.72	2.46	2.97	3.00	3.07	3.49	3.91	4.01	4.18	4.27	4.64	6.51	9.21	9.54	9.67
Pa	$K\beta_1$	H	2	30	91	6	108.409	0.22869	6		1.73	2.46	2.98	3.00	3.08	3.49	3.91			4.27	4.65	6.51	9.21	9.54	9.67
Lu	$K\alpha_1$		1	100	71	6	54.061	0.22930	6		1.73	2.47	2.98	3.01	3.08	3.50	3.92	4.02	4.19	4.28	4.66	6.53	9.24	9.57	9.70
Ho	$K\beta_1$		1	22	67	6	53.868	0.23012	5		1.74	2.48	2.99	3.02	3.10	3.52	3.93	4.04	4.21	4.30	4.68	6.55	9.27	9.60	9.74
Pa	$K\beta_3$	H	2	14	91	6	107.576	0.23046	5		1.74	2.48	3.00	3.02	3.10	3.52	3.94			4.30	4.68	6.56	9.28	9.62	9.75
Dy	AK		1		66	6	53.783	0.23048	5		1.74	2.48	3.00	3.02	3.10	3.52	3.94	4.04	4.21	4.30	4.68	6.56	9.28	9.62	9.75
Dy	$K\text{-}O_{2,3}$		1	.01	66	6	53.765	0.23056	5		1.74	2.48	3.00	3.02	3.10	3.52	3.94	4.05	4.21	4.30	4.68	6.57	9.29	9.62	9.75
Ho	$K\beta_3$		1	11	67	6	53.702	0.23083	5		1.74	2.49	3.00	3.03	3.10	3.53	3.94	4.05	4.22	4.31	4.69	6.57	9.30	9.63	9.77
Lu	$K\alpha_{1,2}$		1	150	71	6	53.687	0.23089	6		1.74	2.49	3.00	3.03	3.11	3.53	3.95	4.05	4.22	4.31	4.69	6.57	9.30	9.64	9.77
Cm	$K\alpha_{1,2}$		2	150	96	3	107.139	0.23140			1.75	2.49	3.01	3.03	3.11	3.54	3.95			4.32	4.70	6.59	9.32	9.66	9.79
Dy	$K\beta_2$	H	1	9	66	6	53.500	0.23170	4		1.75	2.50	3.01	3.04	3.12	3.54	3.96	4.07	4.23	4.33	4.71	6.60	9.33	9.67	9.80
Bk	$K\alpha_2$		2	50	97	3	106.862	0.23200			1.75	2.50	3.02	3.04	3.12	3.55	3.96			4.33	4.71	6.61	9.35	9.68	9.81
Th	$K\beta_5$	B	2	.5	90	6	106.251	0.23333	6		1.76	2.51	3.04	3.06	3.14	3.57	3.99			4.36	4.74	6.64	9.40	9.74	9.87
Am	$K\alpha_1$		2	100	95	3	105.949	0.23400			1.77	2.52	3.04	3.07	3.15	3.58	4.00			4.37	4.75	6.66	9.43	9.77	9.90
Lu	$K\alpha_2$		1	50	71	6	52.956	0.23408	6		1.77	2.52	3.05	3.07	3.15	3.58	4.00	4.11	4.28	4.37	4.76	6.67	9.43	9.77	9.90
Ac	$K\beta_2'$	H	2	11	89	6	105.849	0.23422	5		1.77	2.52	3.05	3.07	3.15	3.58	4.00			4.37	4.76	6.67	9.43	9.78	9.91
Ac	$K\beta_2''$	H	2	11	89	6	105.660	0.23464	5		1.77	2.53	3.05	3.08	3.16	3.59	4.01			4.38	4.77	6.68	9.45	9.79	9.93
Th	$K\beta_1$		2	30	90	6	105.591	0.23479	6		1.77	2.53	3.05	3.08	3.16	3.59	4.01			4.38	4.77	6.69	9.46	9.80	9.93
Dy	$K\beta_5$	B	1	.2	66	6	52.485	0.23618	5		1.78	2.54	3.07	3.10	3.18	3.61	4.04	4.14	4.32	4.41	4.80	6.73	9.51	9.86	9.99
Th	$K\beta_3$		2	14	90	6	104.813	0.23654	6		1.78	2.55	3.08	3.10	3.18	3.61	4.04			4.42	4.81	6.74	9.53	9.87	10.01
Yb	$K\alpha_1$		1	100	70	6	52.380	0.23665	6		1.79	2.55	3.08	3.10	3.18	3.62	4.04	4.15	4.33	4.42	4.81	6.74	9.53	9.88	10.01
Am	$K\alpha_{1,2}$		2	150	95	3	104.431	0.23740			1.79	2.56	3.09	3.11	3.19	3.63	4.06			4.43	4.82	6.76	9.56	9.91	10.04
Dy	$K\beta_1$		1	23	66	6	52.110	0.23788	5		1.79	2.56	3.10	3.12	3.20	3.64	4.06	4.17	4.35	4.44	4.83	6.77	9.58	9.93	10.06
Cm	$K\alpha_2$		2	50	96	3	104.168	0.23800			1.80	2.56	3.10	3.12	3.20	3.64	4.07			4.44	4.84	6.78	9.59	9.93	10.07
Yb	$K\alpha_{1,2}$		1	150	70	6	52.030	0.23824	6		1.80	2.57	3.10	3.12	3.20	3.64	4.07	4.18	4.35	4.45	4.84	6.78	9.60	9.94	10.08

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Tb	AK		1		65	6	51.994	0.23841	5		1.80	2.57	3.10	3.13	3.21	3.64	4.07	4.18	4.36	4.45	4.84	6.79	9.60	9.95	10.09
Tb	K-O$_{2,3}$		1	.01	65	6	51.957	0.23858	5		1.80	2.57	3.10	3.13	3.21	3.65	4.08	4.19	4.36	4.45	4.85	6.79	9.61	9.96	10.09
Dy	Kβ$_3$		1	11	66	6	51.949	0.23862	5		1.80	2.57	3.10	3.13	3.21	3.65	4.08	4.19	4.36	4.45	4.85	6.79	9.61	9.96	10.10
Tb	Kβ$_2$	H	1	8	65	6	51.715	0.23970	4		1.81	2.58	3.12	3.14	3.22	3.66	4.10	4.21	4.38	4.47	4.87	6.83	9.66	10.00	10.14
Pu	Kα$_1$		2	100	94	3	103.300	0.24000			1.81	2.58	3.12	3.15	3.23	3.67	4.10			4.48	4.88	6.83	9.67	10.02	10.15
Ra	Kβ$_2$'	H	2	11	88	6	103.051	0.24058	5		1.81	2.59	3.13	3.15	3.24	3.68	4.11			4.49	4.89	6.85	9.69	10.04	10.18
Ra	Kβ$_2$''	H	2	11	88	6	102.871	0.24100	5		1.82	2.60	3.14	3.16	3.24	3.68	4.12			4.50	4.90	6.86	9.71	10.06	10.20
Ac	Kβ$_1$	H	2	30	89	6	102.829	0.24110	5		1.82	2.60	3.14	3.16	3.24	3.68	4.12			4.50	4.90	6.87	9.71	10.06	10.20
Yb	Kα$_2$		1	50	70	6	51.345	0.24142	6		1.82	2.60	3.14	3.17	3.25	3.69	4.13	4.24	4.41	4.51	4.91	6.87	9.73	10.08	10.21
Ac	Kβ$_3$	H	2	14	89	6	102.084	0.24286	5		1.83	2.62	3.16	3.18	3.27	3.71	4.15			4.53	4.94	6.92	9.78	10.14	10.28
Pu	Kα$_{1,2}$		2	150	94	3	101.857	0.24340			1.84	2.62	3.17	3.19	3.27	3.72	4.16			4.54	4.95	6.93	9.81	10.16	10.30
Am	Kα$_2$		2	50	95	3	101.607	0.24400			1.84	2.63	3.17	3.20	3.28	3.73	4.17			4.56	4.96	6.95	9.83	10.18	10.32
Tm	Kα$_1$		1	100	69	6	50.733	0.24434	6		1.84	2.63	3.18	3.20	3.29	3.73	4.17	4.29	4.47	4.56	4.97	6.96	9.84	10.20	10.34
Tm	Kα$_{1,2}$		1	150	69	6	50.406	0.24592	6		1.86	2.65	3.20	3.22	3.31	3.76	4.20	4.32	4.50	4.59	5.00	7.00	9.91	10.27	10.41
Np	Kα$_1$		2	100	93	3	100.781	0.24600			1.86	2.65	3.20	3.23	3.31	3.76	4.20			4.59	5.00	7.01	9.91	10.27	10.41
Tb	Kβ$_1$		1	23	65	6	50.374	0.24608	5		1.86	2.65	3.20	3.23	3.31	3.76	4.20	4.32	4.50	4.59	5.00	7.01	9.91	10.27	10.41
Gd	AK		1		64	6	50.225	0.24681	5		1.86	2.66	3.21	3.24	3.32	3.77	4.22	4.33	4.51	4.61	5.02	7.03	9.94	10.30	10.44
Tb	Kβ$_3$		1	11	65	6	50.221	0.24683	5		1.86	2.66	3.21	3.24	3.32	3.77	4.22	4.33	4.51	4.61	5.02	7.03	9.94	10.30	10.44
Gd	K-O$_{2,3}$		1	.01	64	6	50.213	0.24687	5		1.86	2.66	3.21	3.24	3.32	3.77	4.22	4.33	4.51	4.61	5.02	7.03	9.95	10.30	10.45
Fr	Kβ$_2$'	H	2	11	87	6	100.307	0.24716	5		1.86	2.66	3.22	3.24	3.32	3.78	4.22			4.61	5.02	7.04	9.96	10.32	10.46
Fr	Kβ$_2$''	H	2	11	87	6	100.137	0.24758	5		1.87	2.67	3.22	3.25	3.33	3.78	4.23			4.62	5.03	7.05	9.97	10.33	10.48
Ra	Kβ$_1$	H	2	30	88	6	100.113	0.24764	5		1.87	2.67	3.22	3.25	3.33	3.78	4.23			4.62	5.03	7.05	9.98	10.34	10.48
Gd	Kβ$_2$		1	8	64	6	49.952	0.24816	5		1.87	2.67	3.23	3.25	3.34	3.79	4.24	4.35	4.54	4.63	5.04	7.07	10.00	10.36	10.50
Tm	Kα$_2$		1	50	69	6	49.764	0.24909	6		1.88	2.68	3.24	3.27	3.35	3.81	4.26	4.37	4.55	4.65	5.06	7.09	10.04	10.40	10.54
Ra	Kβ$_3$	H	2	14	88	6	99.415	0.24938	5		1.88	2.69	3.24	3.27	3.35	3.81	4.26			4.66	5.07	7.10	10.05	10.41	10.55
Np	Kα$_{1,2}$		2	150	93	3	99.407	0.24940			1.88	2.69	3.25	3.27	3.35	3.81	4.26			4.66	5.07	7.10	10.05	10.41	10.55
Pu	Kα$_2$		2	50	94	3	99.168	0.25000			1.89	2.69	3.25	3.28	3.36	3.82	4.27			4.67	5.08	7.12	10.07	10.44	10.58
U	Kα$_1$		2	100	92	6	98.422	0.25189	6		1.90	2.71	3.28	3.30	3.39	3.85	4.30			4.70	5.12	7.17	10.15	10.51	10.66
Er	Kα$_1$		1	100	68	6	49.119	0.25236	6		1.90	2.72	3.28	3.31	3.39	3.86	4.31	4.43	4.61	4.71	5.13	7.19	10.17	10.53	10.68
Gd	Kβ$_5$	8	1	.2	64	6	49.045	0.25275	5		1.91	2.72	3.29	3.31	3.40	3.86	4.32	4.44	4.62	4.72	5.14	7.20	10.18	10.55	10.70
Er	Kα$_{1,2}$		1	150	68	6	48.813	0.25395	6		1.92	2.74	3.30	3.33	3.42	3.88	4.34	4.46	4.64	4.74	5.16	7.23	10.23	10.60	10.75
Rn	Kβ$_2$'	H	2	11	86	6	97.622	0.25396	5		1.92	2.74	3.30	3.33	3.42	3.88	4.34			4.74	5.16	7.23	10.23	10.60	10.75
Rn	Kβ$_2$''	H	2	11	86	6	97.460	0.25438	5		1.92	2.74	3.31	3.33	3.42	3.89	4.35			4.75	5.17	7.24	10.25	10.62	10.76
Fr	Kβ$_1$	H	2	29	87	6	97.460	0.25438	5		1.92	2.74	3.31	3.33	3.42	3.89	4.35			4.75	5.17	7.24	10.25	10.62	10.76
Gd	Kβ$_1$		1	23	64	6	48.688	0.25460	5		1.92	2.74	3.31	3.34	3.42	3.89	4.35	4.47	4.65	4.75	5.17	7.25	10.26	10.63	10.77
U	Kα$_{1,2}$		2	150	92	6	97.131	0.25524	6		1.93	2.75	3.32	3.35	3.43	3.90	4.36			4.76	5.19	7.27	10.28	10.66	10.80
Gd	Kβ$_3$		1	11	64	6	48.547	0.25534	5		1.93	2.75	3.32	3.35	3.43	3.90	4.36	4.48	4.67	4.77	5.19	7.27	10.29	10.66	10.81
Eu	AK		1		63	6	48.511	0.25553	5		1.93	2.75	3.32	3.35	3.44	3.90	4.37	4.48	4.67	4.77	5.19	7.28	10.30	10.67	10.81
Eu	K-O$_{2,3}$		1	.01	63	6	48.489	0.25564	6		1.93	2.75	3.33	3.35	3.44	3.91	4.37	4.49	4.67	4.77	5.19	7.28	10.30	10.67	10.82
Np	Kα$_2$		2	50	93	3	96.844	0.25600			1.93	2.76	3.33	3.36	3.44	3.91	4.37			4.78	5.20	7.29	10.31	10.69	10.83
Fr	Kβ$_3$	H	2	14	87	6	96.791	0.25614	5		1.93	2.76	3.33	3.36	3.45	3.91	4.38			4.78	5.21	7.29	10.32	10.69	10.84
Eu	Kβ$_2$		1	8	63	6	48.248	0.25692	6		1.94	2.77	3.34	3.37	3.46	3.93	4.39	4.51	4.70	4.80	5.22	7.32	10.35	10.73	10.87
Er	Kα$_2$		1	50	68	6	48.213	0.25711	6		1.94	2.77	3.35	3.37	3.46	3.93	4.39	4.51	4.70	4.80	5.22	7.32	10.36	10.73	10.88
Pa	Kα$_1$	H	2	100	91	6	95.852	0.25865	6		1.95	2.79	3.37	3.39	3.48	3.95	4.42			4.83	5.26	7.37	10.42	10.80	10.95
Ho	Kα$_1$		1	100	67	6	47.539	0.26076	6		1.97	2.81	3.39	3.42	3.51	3.98	4.46	4.58	4.77	4.87	5.30	7.43	10.51	10.89	11.03
At	Kβ$_2$'	H	2	11	85	6	94.974	0.26104	5		1.97	2.81	3.40	3.42	3.51	3.99	4.46			4.87	5.30	7.43	10.52	10.90	11.05
Rn	Kβ$_1$	H	2	29	86	6	94.850	0.26138	5		1.97	2.82	3.40	3.43	3.52	3.99	4.47			4.88	5.31	7.44	10.53	10.91	11.06
At	Kβ$_2$''	H	2	11	85	6	94.829	0.26144	5		1.97	2.82	3.40	3.43	3.52	4.00	4.47			4.88	5.31	7.45	10.53	10.91	11.06
U	Kα$_2$		2	50	92	6	94.649	0.26194	6		1.98	2.82	3.41	3.43	3.52	4.00	4.48			4.89	5.32	7.46	10.55	10.94	11.08
Pa	Kα$_{1,2}$	H	2	150	91	6	94.627	0.26200	6		1.98	2.82	3.41	3.43	3.52	4.00	4.4H			4.89	5.32	7.46	10.56	10.94	11.09
Ho	Kα$_{1,2}$		1	150	67	6	47.253	0.26233	6		1.98	2.83	3.41	3.44	3.53	4.01	4.48	4.60	4.80	4.90	5.33	7.47	10.57	10.95	11.10
Rn	Kβ$_3$	H	2	13	86	6	94.230	0.26310	5		1.98	2.83	3.42	3.45	3.54	4.02	4.50			4.91	5.35	7.49	10.60	10.98	11.13
Eu	Kβ$_1$		1	23	63	6	47.030	0.26358	6		1.99	2.84	3.43	3.46	3.55	4.03	4.50	4.63	4.82	4.92	5.36	7.51	10.62	11.00	11.15
Eu	Kβ$_3$		1	11	63	6	46.896	0.26433	6		1.99	2.85	3.44	3.47	3.56	4.04	4.52	4.64	4.83	4.93	5.37	7.53	10.65	11.04	11.19
Sm	AK		1		62	6	46.841	0.26464	5		2.00	2.85	3.44	3.47	3.56	4.04	4.52	4.64	4.84	4.94	5.38	7.54	10.66	11.05	11.20
Sm	K-O$_{2,3}$		1	.01	62	6	46.793	0.26491	5		2.00	2.85	3.45	3.47	3.56	4.05	4.53	4.65	4.84	4.95	5.38	7.54	10.67	11.06	11.21
Ho	Kα$_2$		1	50	67	6	46.692	0.26549	6		2.00	2.86	3.45	3.48	3.57	4.06	4.54	4.66	4.85	4.96	5.40	7.56	10.70	11.08	11.24
Th	Kα$_1$		2	100	90	6	93.334	0.26563	6		2.00	2.86	3.46	3.48	3.57	4.06	4.54			4.96	5.40	7.56	10.70	11.09	11.24
Sm	Kβ$_2$	H	1	8	62	6	46.566	0.26620	4		2.01	2.87	3.46	3.49	3.58	4.07	4.55	4.67	4.87	4.97	5.41	7.58	10.73	11.11	11.27
Po	Kβ$_2$'	H	2	11	84	6	92.383	0.26836	5		2.02	2.89	3.49	3.52	3.61	4.10	4.59			5.01	5.45	7.64	10.81	11.20	11.36
At	Kβ$_1$	H	2	29	85	6	92.287	0.26864	5		2.03	2.89	3.50	3.52	3.61	4.11	4.59			5.02	5.46	7.65	10.83	11.22	11.37
Pa	Kα$_2$	H	2	50	91	6	92.271	0.26869	6		2.03	2.89	3.50	3.52	3.61	4.11	4.59			5.02	5.46	7.65	10.83	11.22	11.37
Po	Kβ$_2$''	H	2	11	84	6	92.246	0.26876	5		2.03	2.89	3.50	3.52	3.62	4.11	4.59			5.02	5.46	7.65	10.83	11.22	11.37
Th	Kα$_{1,2}$		2	150	90	6	92.174	0.26897	6		2.03	2.90	3.50	3.53	3.62	4.11	4.60			5.02	5.47	7.66	10.84	11.23	11.38
Dy	Kα$_1$		1	100	66	6	45.991	0.26953	6		2.03	2.90	3.51	3.53	3.63	4.12	4.61	4.73	4.93	5.03	5.48	7.68	10.86	11.25	11.41

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
At	$K\beta_3$	H	2	13	85	6	91.707	0.27034	5	2.04	2.91	3.52	3.54	3.64	4.13	4.62			5.05	5.49	7.70	10.89	11.29	11.44
Dy	$K\alpha_{1,2}$		1	150	66	6	45.724	0.27110	6	2.05	2.92	3.53	3.55	3.65	4.14	4.63	4.76	4.96	5.06	5.51	7.72	10.92	11.32	11.47
Sm	$K\beta_5$	B	1	.2	62	6	45.723	0.27111	5	2.05	2.92	3.53	3.55	3.65	4.14	4.63	4.76	4.96	5.06	5.51	7.72	10.92	11.32	11.47
Ac	$K\alpha_1$	H	2	100	89	6	90.868	0.27283	6	2.06	2.94	3.55	3.58	3.67	4.17	4.66			5.09	5.54	7.77	10.99	11.39	11.55
Sm	$K\beta_1$		1	22	62	6	45.405	0.27301	5	2.06	2.94	3.55	3.58	3.67	4.17	4.67	4.79	4.99	5.10	5.55	7.78	11.00	11.40	11.56
Sm	$K\beta_3$		1	10	62	6	45.281	0.27376	5	2.07	2.95	3.56	3.59	3.68	4.18	4.68	4.80	5.00	5.11	5.56	7.80	11.03	11.43	11.59
Bi	$K-O_{2,3}$		2	.01	83	6	90.422	0.27418	5	2.07	2.95	3.57	3.59	3.69	4.19	4.69			5.12	5.57	7.81	11.05	11.45	11.60
Dy	$K\alpha_2$		1	50	66	6	45.200	0.27425	6	2.07	2.95	3.57	3.60	3.69	4.19	4.69	4.81	5.01	5.12	5.57	7.81	11.05	11.45	11.61
Pm	AK	H	1		61	6	45.190	0.27431	5	2.07	2.95	3.57	3.60	3.69	4.19	4.69	4.81	5.01	5.12	5.57	7.81	11.05	11.45	11.61
Bi	$K\beta_4$	B	2	.3	83	6	90.094	0.27518	5	2.08	2.96	3.58	3.61	3.70	4.21	4.70			5.14	5.59	7.84	11.09	11.49	11.65
Th	$K\alpha_2$		2	50	90	6	89.938	0.27566	6	2.08	2.97	3.59	3.61	3.71	4.21	4.71			5.15	5.60	7.85	11.11	11.51	11.67
Pm	$K\beta_2$	H	1	8	61	6	44.929	0.27590	4	2.08	2.97	3.59	3.62	3.71	4.22	4.71	4.84	5.04	5.15	5.61	7.86	11.12	11.52	11.68
Bi	$K\beta_2'$		2	11	83	6	89.846	0.27594	5	2.08	2.97	3.59	3.62	3.71	4.22	4.72			5.15	5.61	7.86	11.12	11.52	11.68
Po	$K\beta_1$	H	2	89	84	6	89.781	0.27614	5	2.08	2.97	3.59	3.62	3.71	4.22	4.72			5.16	5.61	7.86	11.13	11.53	11.69
Ac	$K\alpha_{1,2}$	H	2	150	89	6	89.773	0.27616	5	2.08	2.97	3.59	3.62	3.71	4.22	4.72			5.16	5.61	7.87	11.13	11.53	11.69
Bi	$K\beta_2''$		2	11	83	6	89.716	0.27634	5	2.08	2.98	3.60	3.62	3.72	4.22	4.72			5.16	5.62	7.87	11.14	11.54	11.70
Po	$K\beta_3$	H	2	13	84	6	89.231	0.27784	5	2.10	2.99	3.62	3.64	3.74	4.25	4.75			5.19	5.65	7.91	11.20	11.60	11.76
Tb	$K\alpha_1$		1	100	65	6	44.474	0.27872	6	2.10	3.00	3.63	3.65	3.75	4.26	4.76	4.89	5.09	5.20	5.66	7.94	11.23	11.64	11.80
Cf	$K\beta_2$		3	11	98	3	133.290	0.27900		2.10	3.01	3.63	3.66	3.75	4.26	4.77	4.90	5.10	5.21	5.67	7.95	11.24	11.65	11.81
Ra	$K\alpha_1$	H	2	100	88	6	88.454	0.28028	5	2.11	3.02	3.65	3.67	3.77	4.28	4.79			5.23	5.70	7.98	11.30	11.70	11.86
Tb	$K\alpha_{1,2}$		1	150	65	6	44.226	0.28029	6	2.11	3.02	3.65	3.67	3.77	4.28	4.79	4.92	5.12	5.23	5.70	7.98	11.30	11.70	11.86
Pb	K-P		2	.01	82	6	88.040	0.28160	4	2.12	3.03	3.66	3.69	3.79	4.30	4.81			5.26	5.72	8.02	11.35	11.76	11.92
Pb	$K-O_{2,3}$		2	.01	82	6	87.907	0.28202	6	2.13	3.04	3.67	3.70	3.79	4.31	4.82			5.27	5.73	8.03	11.37	11.78	11.94
Bi	$K\beta_5$	F	2	.4	83	6	87.888	0.28209	6	2.13	3.04	3.67	3.70	3.79	4.31	4.82			5.27	5.73	8.03	11.37	11.78	11.94
Ac	$K\alpha_2$	H	2	50	89	6	87.660	0.28282	5	2.13	3.05	3.68	3.71	3.80	4.32	4.83			5.28	5.75	8.06	11.40	11.81	11.97
Pm	$K\beta_1$	H	1	22	61	6	43.818	0.28290	5	2.13	3.05	3.68	3.71	3.81	4.32	4.83	4.96	5.17	5.28	5.75	8.06	11.40	11.81	11.98
Pb	$K\beta_4$	B	2	.2	82	6	87.573	0.28310	5	2.14	3.05	3.68	3.71	3.81	4.33	4.84			5.29	5.75	8.06	11.41	11.82	11.98
Tb	$K\alpha_2$		1	50	65	6	43.737	0.28342	6	2.14	3.05	3.69	3.72	3.81	4.33	4.84	4.97	5.18	5.29	5.76	8.07	11.42	11.84	12.00
Ra	$K\alpha_{1,2}$	H	2	150	88	6	87.419	0.28360	5	2.14	3.05	3.69	3.72	3.82	4.33	4.85			5.29	5.76	8.08	11.43	11.84	12.01
Pm	$K\beta_3$	H	1	10	61	6	43.705	0.28363	5	2.14	3.06	3.69	3.72	3.82	4.33	4.85	4.98	5.18	5.30	5.76	8.08	11.43	11.84	12.01
Pb	$K\beta_2'$		2	11	82	6	87.351	0.28382	5	2.14	3.06	3.69	3.72	3.82	4.34	4.85			5.30	5.77	8.08	11.44	11.85	12.01
Bi	$K\beta_1$		2	89	83	6	87.328	0.28390	6	2.14	3.06	3.69	3.72	3.82	4.34	4.85			5.30	5.77	8.09	11.44	11.86	12.02
Pb	$K\beta_2''$		2	11	82	6	87.222	0.28424	5	2.14	3.06	3.70	3.73	3.82	4.34	4.86			5.31	5.78	8.10	11.46	11.87	12.03
Nd	AK		1		60	6	43.567	0.28453	5	2.15	3.06	3.70	3.73	3.83	4.35	4.86	4.99	5.20	5.31	5.78	8.10	11.47	11.88	12.04
Bk	$K\beta_2$		3	11	97	3	130.484	0.28500		2.15	3.07	3.71	3.74	3.83	4.36	4.87	5.00	5.21	5.32	5.79	8.12	11.49	11.90	12.06
Bi	$K\beta_3$		2	13	83	6	86.819	0.28556	6	2.15	3.08	3.72	3.74	3.84	4.36	4.88			5.33	5.80	8.13	11.51	11.92	12.09
Nd	$K\beta_2$	H	1	7	60	6	43.327	0.28610	4	2.16	3.08	3.72	3.75	3.85	4.37	4.89	5.02	5.23	5.34	5.81	8.15	11.53	11.95	12.11
Fr	$K\alpha_1$	H	2	100	87	6	86.089	0.28798	5	2.17	3.10	3.75	3.78	3.87	4.40	4.92			5.38	5.85	8.20	11.61	12.03	12.19
Gd	$K\alpha_1$		1	100	64	6	42.989	0.28835	6	2.18	3.11	3.75	3.78	3.88	4.41	4.93	5.06	5.27	5.38	5.86	8.21	11.62	12.04	12.21
Pb	$K\beta_5'$	B	2	.4	82	6	85.519	0.28990	5	2.19	3.12	3.77	3.80	3.90	4.43	4.95			5.41	5.89	8.26	11.68	12.11	12.27
Gd	$K\alpha_{1,2}$		1	150	64	6	42.757	0.28991	6	2.19	3.12	3.77	3.80	3.90	4.43	4.95	5.09	5.30	5.41	5.89	8.26	11.69	12.11	12.27
Tl	$K-O_{2,3}$		2	.01	81	6	85.437	0.29018	5	2.19	3.13	3.78	3.80	3.90	4.43	4.96			5.42	5.90	8.27	11.70	12.12	12.28
Pb	$K\beta_5''$	B	2	.4	82	6	85.419	0.29024	5	2.19	3.13	3.78	3.81	3.90	4.44	4.96			5.42	5.90	8.27	11.70	12.12	12.29
Ra	$K\alpha_2$	H	2	50	88	6	85.419	0.29024	5	2.19	3.13	3.78	3.81	3.90	4.44	4.96			5.42	5.90	8.27	11.70	12.12	12.29
Cf	$K\beta_1$		3	30	98	3	127.794	0.29100		2.20	3.13	3.79	3.82	3.91	4.45	4.97	5.11	5.32	5.43	5.91	8.29	11.73	12.15	12.32
Tl	$K\beta_4$	B	2	.2	81	6	85.178	0.29106	5	2.20	3.14	3.79	3.82	3.92	4.45	4.97			5.43	5.92	8.29	11.73	12.16	12.32
Fr	$K\alpha_{1,2}$	H	2	150	87	6	85.110	0.29129	5	2.20	3.14	3.79	3.82	3.92	4.45	4.98			5.44	5.92	8.30	11.74	12.17	12.33
Tl	$K\beta_2'$		2	10	81	6	84.933	0.29190	5	2.20	3.14	3.80	3.83	3.93	4.46	4.99			5.45	5.93	8.31	11.77	12.19	12.36
Pb	$K\beta_1$		2	88	82	6	84.922	0.29194	6	2.20	3.14	3.80	3.83	3.93	4.46	4.99			5.45	5.93	8.32	11.77	12.19	12.36
Tl	$K\beta_2''$		2	10	81	6	84.823	0.29228	5	2.21	3.15	3.80	3.83	3.93	4.47	4.99			5.46	5.94	8.33	11.78	12.21	12.37
Gd	$K\alpha_2$		1	50	64	6	42.302	0.29304	6	2.21	3.16	3.81	3.84	3.94	4.48	5.01	5.14	5.36	5.47	5.96	8.35	11.81	12.24	12.41
Nd	$K\beta_1$		1	22	60	6	42.264	0.29330	6	2.21	3.16	3.82	3.85	3.95	4.48	5.01	5.15	5.36	5.48	5.96	8.35	11.82	12.25	12.42
Pb	$K\beta_3$		2	13	82	6	84.436	0.29362	6	2.22	3.16	3.82	3.85	3.95	4.49	5.02			5.48	5.97	8.36	11.84	12.26	12.43
Bk	$K\beta_1$		3	30	97	3	126.490	0.29400		2.22	3.17	3.83	3.85	3.96	4.49	5.02	5.16	5.37	5.49	5.98	8.37	11.85	12.28	12.45
Cm	$K\beta_2$		3	11	96	3	126.490	0.29400		2.22	3.17	3.83	3.85	3.96	4.49	5.02	5.16	5.37	5.49	5.98	8.37	11.85	12.28	12.45
Nd	$K\beta_3$		1	10	60	6	42.159	0.29403	6	2.22	3.17	3.83	3.85	3.96	4.49	5.02	5.16	5.37	5.49	5.98	8.38	11.85	12.28	12.45
Pr	AK		1		59	6	41.995	0.29518	5	2.23	3.18	3.84	3.87	3.97	4.51	5.04	5.18	5.40	5.51	6.00	8.41	11.90	12.33	12.50
Rn	$K\alpha_1$	H	2	100	86	6	83.768	0.29596	5	2.23	3.19	3.85	3.88	3.98	4.52	5.06			5.53	6.01	8.43	11.93	12.36	12.53
Pr	$K\beta_2$		1	65	59	6	41.767	0.29679	5	2.24	3.20	3.86	3.89	3.99	4.54	5.07	5.21	5.43	5.54	6.03	8.45	11.96	12.40	12.57
Fr	$K\alpha_2$	H	2	50	87	6	83.217	0.29792	5	2.25	3.21	3.88	3.91	4.01	4.55	5.09			5.56	6.05	8.49	12.01	12.44	12.61
Tl	$K\beta_5$	B	2	.4	81	6	83.100	0.29834	5	2.25	3.21	3.88	3.91	4.01	4.56	5.10			5.57	6.06	8.50	12.03	12.46	12.63
Eu	$K\alpha_1$		1	100	63	6	41.535	0.29845	6	2.25	3.21	3.88	3.91	4.01	4.56	5.10	5.24	5.46	5.57	6.07	8.50	12.03	12.47	12.64
Hg	$K-O_{2,3}$		2	.01	80	6	83.022	0.29862	5	2.25	3.22	3.89	3.92	4.02	4.56	5.10			5.58	6.07	8.51	12.04	12.47	12.64
Rn	$K\alpha_{1,2}$	H	2	150	86	6	82.843	0.29927	5	2.26	3.22	3.89	3.92	4.03	4.57	5.11			5.59	6.08	8.52	12.06	12.50	12.67
Hg	$K\beta_4$	B	2	.2	80	6	82.761	0.29956	5	2.26	3.23	3.90	3.93	4.03	4.58	5.12			5.59	6.09	8.53	12.08	12.51	12.68

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Am	$K\beta_2$		3	11	95	3	123.960	0.30000			2.26	3.23	3.90	3.93	4.04	4.58	5.13	5.26	5.48	5.60	6.10	8.55	12.09	12.53	12.70
Eu	$K\alpha_{1,2}$		1	150	63	6	41.320	0.30000	6		2.26	3.23	3.90	3.93	4.04	4.58	5.13	5.26	5.48	5.60	6.10	8.55	12.09	12.53	12.70
Tl	$K\beta_1$		2	78	81	6	82.562	0.30028	6		2.27	3.23	3.91	3.94	4.04	4.59	5.13			5.61	6.10	8.55	12.10	12.54	12.71
Hg	$K\beta_2'$		2	10	80	6	82.530	0.30040	5		2.27	3.24	3.91	3.94	4.04	4.59	5.13			5.61	6.11	8.56	12.11	12.55	12.72
Hg	$K\beta_2''$		2	10	80	6	82.420	0.30080	5		2.27	3.24	3.91	3.94	4.05	4.60	5.14			5.62	6.11	8.57	12.13	12.56	12.74
Tl	$K\beta_3$		2	13	81	6	82.104	0.30196	6		2.28	3.25	3.93	3.96	4.06	4.61	5.16			5.64	6.14	8.60	12.17	12.61	12.79
Cm	$K\beta_1$		3	30	96	3	122.733	0.30300			2.29	3.26	3.94	3.97	4.08	4.63	5.18	5.32	5.54	5.66	6.16	8.63	12.21	12.66	12.83
Eu	$K\alpha_2$		1	50	63	6	40.895	0.30312	6		2.29	3.26	3.94	3.97	4.08	4.63	5.18	5.32	5.54	5.66	6.16	8.63	12.22	12.66	12.83
At	$K\alpha_1$	H	2	100	85	6	81.499	0.30420	5		2.30	3.28	3.96	3.99	4.09	4.65	5.20			5.68	6.18	8.67	12.26	12.71	12.88
Pr	$K\beta_1$		1	22	59	6	40.741	0.30426	6		2.30	3.28	3.96	3.99	4.09	4.65	5.20	5.34	5.56	5.68	6.18	8.67	12.27	12.71	12.88
Pr	$K\beta_3$		1	10	59	6	40.646	0.30497	6		2.30	3.28	3.97	4.00	4.10	4.66	5.21	5.35	5.58	5.69	6.20	8.69	12.29	12.74	12.91
Rn	$K\alpha_2$	H	2	50	86	6	81.051	0.30588	5		2.31	3.29	3.98	4.01	4.11	4.67	5.23			5.71	6.22	8.71	12.33	12.78	12.95
Ce	AK		1		58	6	40.446	0.30648	5		2.31	3.30	3.99	4.02	4.12	4.68	5.24	5.38	5.60	5.72	6.23	8.73	12.36	12.80	12.98
Ce	$K\text{-}O_{2,3}$		1	.01	58	6	40.420	0.30668	5		2.31	3.30	3.99	4.02	4.13	4.69	5.24	5.38	5.61	5.73	6.23	8.74	12.36	12.81	12.99
Hg	$K\beta_5$	B	2	.4	80	6	80.740	0.30706	5		2.32	3.31	4.00	4.03	4.13	4.69	5.25			5.73	6.24	8.75	12.38	12.83	13.00
Ce	$K\beta_4$	B	1	.01	58	6	40.329	0.30737	5		2.32	3.31	4.00	4.03	4.13	4.70	5.25	5.39	5.62	5.74	6.25	8.76	12.39	12.84	13.02
Au	$K\text{-}O_{2,3}$		2	.01	79	6	80.654	0.30739	6		2.32	3.31	4.00	4.03	4.14	4.70	5.25			5.74	6.25	8.76	12.39	12.84	13.02
At	$K\alpha_{1,2}$	H	2	150	85	6	80.624	0.30750	5		2.32	3.31	4.00	4.03	4.14	4.70	5.25			5.74	6.25	8.76	12.40	12.84	13.02
Ce	$K\beta_2$		1	7	58	6	40.226	0.30816	5		2.32	3.32	4.01	4.04	4.15	4.71	5.27	5.41	5.63	5.75	6.26	8.78	12.42	12.87	13.05
Au	$K\beta_4$	B	2	.2	79	6	80.377	0.30845	6		2.33	3.32	4.01	4.04	4.15	4.71	5.27			5.76	6.27	8.79	12.44	12.88	13.06
Hg	$K\beta_1$		2	28	80	6	80.240	0.30897	6		2.33	3.33	4.02	4.05	4.16	4.72	5.28			5.77	6.28	8.80	12.46	12.91	13.08
Am	$K\beta_1$		3	30	95	3	120.350	0.30900			2.33	3.33	4.02	4.05	4.16	4.72	5.28	5.42	5.65	5.77	6.28	8.80	12.46	12.91	13.08
Pu	$K\beta_2$		3	11	94	3	120.350	0.30900			2.33	3.33	4.02	4.05	4.16	4.72	5.28	5.42	5.65	5.77	6.28	8.80	12.46	12.91	13.08
Sm	$K\alpha_1$		1	100	62	6	40.111	0.30904	6		2.33	3.33	4.02	4.05	4.16	4.72	5.28	5.42	5.65	5.77	6.28	8.80	12.46	12.91	13.09
Au	$K\beta_2'$		2	10	79	6	80.172	0.30924	6		2.33	3.33	4.02	4.05	4.16	4.73	5.28			5.77	6.28	8.81	12.47	12.92	13.09
Au	$K\beta_2''$		2	10	79	6	80.062	0.30966	5		2.34	3.34	4.03	4.06	4.17	4.73	5.29			5.78	6.29	8.82	12.48	12.94	13.11
Sm	$K\alpha_{1,2}$		1	150	62	6	39.911	0.31059	6		2.34	3.35	4.04	4.07	4.18	4.75	5.31	5.45	5.68	5.80	6.31	8.85	12.52	12.97	13.15
Hg	$K\beta_3$		2	13	80	6	79.809	0.31064	6		2.34	3.35	4.04	4.07	4.18	4.75	5.31			5.80	6.31	8.85	12.52	12.98	13.15
Po	$K\alpha_1$	H	2	100	84	6	79.279	0.31272	5		2.36	3.37	4.07	4.10	4.21	4.78	5.34			5.84	6.36	8.91	12.61	13.06	13.24
Ce	$K\beta_5'$	B	1	.2	58	6	39.551	0.31342	5		2.36	3.38	4.08	4.11	4.22	4.79	5.36	5.50	5.73	5.85	6.37	8.93	12.64	13.09	13.27
Ce	$K\beta_5''$	B	1	.2	58	6	39.532	0.31357	5		2.37	3.38	4.08	4.11	4.22	4.79	5.36	5.50	5.73	5.85	6.37	8.93	12.64	13.10	13.28
Sm	$K\alpha_2$		1	50	62	6	39.516	0.31370	6		2.37	3.38	4.08	4.11	4.22	4.79	5.36	5.51	5.73	5.86	6.38	8.94	12.65	13.10	13.28
At	$K\alpha_2$	H	2	50	85	6	78.930	0.31410	5		2.37	3.38	4.09	4.12	4.23	4.80	5.37			5.86	6.38	8.95	12.66	13.12	13.30
Np	$K\beta_2$		3	11	93	3	118.057	0.31500			2.38	3.39	4.10	4.13	4.24	4.81	5.38	5.53	5.76	5.88	6.40	8.97	12.70	13.16	13.34
Au	$K\beta_5'$	B	2	.3	79	6	78.515	0.31576	6		2.38	3.40	4.11	4.14	4.25	4.83	5.40			5.90	6.42	9.00	12.73	13.19	13.37
Ce	$K\beta_1$		1	22	58	6	39.251	0.31582	6		2.38	3.40	4.11	4.14	4.25	4.83	5.40	5.54	5.77	5.90	6.42	9.00	12.73	13.19	13.37
Po	$K\alpha_{1,2}$	H	2	150	84	6	78.452	0.31601	5		2.38	3.40	4.11	4.14	4.25	4.83	5.40			5.90	6.42	9.00	12.74	13.20	13.38
Au	$K\beta_5''$	B	2	.3	79	6	78.425	0.31612	6		2.38	3.41	4.11	4.14	4.25	4.83	5.40			5.90	6.43	9.01	12.75	13.21	13.39
Pt	$K\text{-}O_{2,3}$		2	.01	78	6	78.327	0.31652	5		2.39	3.41	4.12	4.15	4.26	4.84	5.41			5.91	6.43	9.02	12.76	13.22	13.40
Ce	$K\beta_3$		1	10	58	6	39.163	0.31652	6		2.39	3.41	4.12	4.15	4.26	4.84	5.41	5.55	5.79	5.91	6.43	9.02	12.76	13.22	13.40
Pt	$K\beta_4$	B	2	.2	78	6	78.056	0.31762	5		2.40	3.42	4.13	4.16	4.27	4.85	5.43			5.93	6.46	9.05	12.81	13.27	13.45
Pt	$K\beta_4$	B	2	.2	78	6	78.056	0.31762	5		2.40	3.42	4.13	4.16	4.27	4.85	5.43			5.93	6.46	9.05	12.81	13.27	13.45
Au	$K\beta_1$		2	27	79	6	77.971	0.31796	6		2.40	3.42	4.14	4.17	4.28	4.86	5.43			5.94	6.46	9.06	12.82	13.28	13.47
Pu	$K\beta_1$		3	30	94	3	116.943	0.31800			2.40	3.43	4.14	4.17	4.28	4.86	5.43	5.58	5.81	5.94	6.46	9.06	12.82	13.29	13.47
Pt	$K\beta_2'$		2	10	78	6	77.864	0.31840	5		2.40	3.43	4.14	4.17	4.28	4.87	5.44			5.95	6.47	9.07	12.84	13.30	13.48
La	AK		1		57	6	38.927	0.31844	5		2.40	3.43	4.14	4.18	4.28	4.87	5.44	5.59	5.82	5.95	6.47	9.07	12.84	13.30	13.49
La	$K\text{-}O_{2,3}$		1	.01	57	6	38.903	0.31864	5		2.40	3.43	4.15	4.18	4.29	4.87	5.45	5.59	5.83	5.95	6.48	9.08	12.85	13.31	13.49
Pt	$K\beta_2''$		2	10	78	6	77.772	0.31878	5		2.41	3.43	4.15	4.18	4.29	4.87	5.45			5.95	6.48	9.08	12.85	13.32	13.50
La	$K\beta_4$	B	1	.03	57	6	38.821	0.31931	5		2.41	3.44	4.16	4.19	4.30	4.88	5.46	5.60	5.84	5.96	6.49	9.10	12.87	13.34	13.52
Au	$K\beta_3$		2	13	79	6	77.567	0.31962	6		2.41	3.44	4.16	4.19	4.30	4.88	5.46			5.97	6.50	9.11	12.89	13.35	13.54
La	$K\beta_2$		1	7	57	6	38.723	0.32012	6		2.42	3.45	4.17	4.20	4.31	4.89	5.47	5.62	5.85	5.98	6.51	9.12	12.91	13.37	13.56
Pm	$K\alpha_1$	H	1	100	61	6	38.718	0.32016	6		2.42	3.45	4.17	4.20	4.31	4.89	5.47	5.62	5.85	5.98	6.51	9.12	12.91	13.38	13.56
Bi	$K\alpha_1$		2	100	83	6	77.095	0.32158	6		2.43	3.46	4.18	4.22	4.33	4.91	5.50			6.00	6.54	9.16	12.97	13.44	13.62
Pm	$K\alpha_{1,2}$	H	1	150	61	6	38.532	0.32171	6		2.43	3.47	4.19	4.22	4.33	4.92	5.50	5.65	5.88	6.01	6.54	9.17	12.97	13.44	13.63
U	$K\text{-}O_{2,3}$		3	.01	92	6	115.376	0.32232	5		2.43	3.47	4.19	4.23	4.34	4.93	5.51	5.66	5.89	6.02	6.55	9.18	13.00	13.47	13.65
Po	$K\alpha_2$	H	2	50	84	6	76.851	0.32260	5		2.43	3.47	4.20	4.23	4.34	4.93	5.51			6.02	6.56	9.19	13.01	13.48	13.66
U	$K\beta_4$	F	3	.4	92	6	114.832	0.32385	6		2.44	3.49	4.21	4.25	4.36	4.95	5.53	5.68	5.92	6.05	6.58	9.23	13.06	13.53	13.72
Cf	$K\alpha_1$		3	100	98	3	114.778	0.32400			2.44	3.49	4.22	4.25	4.36	4.95	5.54	5.69	5.92	6.05	6.59	9.23	13.06	13.54	13.72
U	$K\beta_2'$		3	11	92	6	114.587	0.32454	5		2.45	3.50	4.22	4.26	4.37	4.96	5.55	5.70	5.93	6.06	6.60	9.25	13.09	13.56	13.75
Pm	$K\alpha_2$	H	1	50	61	6	38.165	0.32480	6		2.45	3.50	4.23	4.26	4.37	4.96	5.55	5.70	5.94	6.06	6.60	9.25	13.10	13.57	13.76
Bi	$K\alpha_{1,2}$		2	150	83	6	76.315	0.32486	6		2.45	3.50	4.23	4.26	4.37	4.97	5.55			6.07	6.60	9.26	13.10	13.57	13.76
Pt	$K\beta_5'$	B	2	.3	78	6	76.260	0.32510	5		2.45	3.50	4.23	4.26	4.37	4.97	5.56			6.07	6.61	9.26	13.11	13.58	13.77
Pt	$K\beta_5'$	B	2	.3	78	6	76.260	0.32510	5		2.45	3.50	4.23	4.26	4.37	4.97	5.56			6.07	6.61	9.26	13.11	13.58	13.77
U	$K\beta_2''$	D	3	11	92	6	114.314	0.32531	6		2.45	3.50	4.23	4.27	4.38	4.97	5.56	5.71	5.95	6.07	6.61	9.27	13.12	13.59	13.78
Pt	$K\beta_5''$	B	2	.3	78	6	76.185	0.32542	5		2.46	3.51	4.23	4.27	4.38	4.97	5.56			6.08	6.61	9.27	13.12	13.60	13.78

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
La	$K\beta_5'$	B	1	.2	57	6	38.088	0.32546	5	2.46	3.51	4.24	4.27	4.38	4.97	5.56	5.71	5.95	6.08	6.62	9.27	13.12	13.60	13.79
La	$K\beta_5''$	B	1	.1	57	6	38.068	0.32563	5	2.46	3.51	4.24	4.27	4.38	4.98	5.56	5.71	5.95	6.08	6.62	9.28	13.13	13.61	13.79
Ir	$K-O_{2,3}$		2	.01	77	6	76.040	0.32604	6	2.46	3.51	4.24	4.27	4.39	4.98	5.57			6.09	6.63	9.29	13.15	13.62	13.81
Np	$K\beta_1$		3	30	93	3	113.725	0.32700		2.47	3.52	4.26	4.29	4.40	5.00	5.59	5.74	5.98	6.11	6.65	9.32	13.19	13.66	13.85
Ir	$K\beta_4$	B	2	.2	77	6	75.807	0.32704	5	2.47	3.52	4.26	4.29	4.40	5.00	5.59			6.11	6.65	9.32	13.19	13.66	13.85
Pt	$K\beta_1$		2	27	78	6	75.735	0.32735	6	2.47	3.53	4.26	4.29	4.40	5.00	5.59			6.11	6.65	9.33	13.20	13.68	13.87
Ir	$K\beta_2'$		2	10	77	6	75.606	0.32791	6	2.47	3.53	4.27	4.30	4.41	5.01	5.60			6.12	6.66	9.34	13.22	13.70	13.89
La	$K\beta_1$		1	21	57	6	37.795	0.32798	6	2.47	3.53	4.27	4.30	4.41	5.01	5.61	5.76	6.00	6.12	6.67	9.34	13.23	13.70	13.89
Ir	$K\beta_2''$		2	10	77	6	75.516	0.32830	5	2.48	3.54	4.27	4.30	4.42	5.02	5.61			6.13	6.67	9.35	13.24	13.72	13.91
La	$K\beta_3$		1	9	57	6	37.714	0.32869	6	2.48	3.54	4.28	4.31	4.42	5.02	5.62	5.77	6.01	6.14	6.68	9.36	13.25	13.73	13.92
Pt	$K\beta_3$		2	12	78	6	75.355	0.32900	6	2.48	3.54	4.28	4.31	4.43	5.03	5.62			6.14	6.69	9.37	13.27	13.75	13.94
Cf	$K\alpha_{1,2}$		3	150	98	3	112.999	0.32910		2.48	3.54	4.28	4.31	4.43	5.03	5.62	5.78	6.02	6.14	6.69	9.38	13.27	13.75	13.94
Pb	$K\alpha_1$		2	100	82	6	74.956	0.33075	6	2.50	3.56	4.30	4.34	4.45	5.06	5.65			6.18	6.72	9.42	13.34	13.82	14.01
Ba	AK		1		56	6	37.446	0.33104	5	2.50	3.57	4.31	4.34	4.45	5.06	5.66	5.81	6.05	6.18	6.73	9.43	13.35	13.83	14.02
Ba	$K-O_{2,3}$		1	.01	56	6	37.420	0.33127	5	2.50	3.57	4.31	4.34	4.46	5.06	5.66	5.81	6.06	6.19	6.73	9.44	13.36	13.84	14.03
Bi	$K\alpha_2$		2	50	83	6	74.802	0.33143	6	2.50	3.57	4.31	4.35	4.46	5.07	5.66			6.19	6.74	9.44	13.37	13.85	14.04
Nd	$K\alpha_1$		1	100	60	6	37.355	0.33185	6	2.50	3.57	4.32	4.35	4.46	5.07	5.67	5.82	6.07	6.20	6.75	9.45	13.38	13.87	14.06
U	$K\beta_5$	B	3	.6	92	6	111.988	0.33207	5	2.51	3.58	4.32	4.35	4.47	5.08	5.68	5.83	6.07	6.20	6.75	9.46	13.39	13.88	14.07
Ba	$K\beta_4$	B	1	.02	56	6	37.305	0.33229	5	2.51	3.58	4.32	4.36	4.47	5.08	5.68	5.83	6.07	6.20	6.75	9.47	13.40	13.89	14.08
Ba	$K\beta_2$		1	7	56	6	37.251	0.33277	5	2.51	3.58	4.33	4.36	4.48	5.09	5.69	5.84	6.08	6.21	6.76	9.48	13.42	13.91	14.10
Bk	$K\alpha_1$		3	100	97	3	111.676	0.33300		2.51	3.59	4.33	4.37	4.48	5.09	5.69	5.84	6.09	6.22	6.77	9.49	13.43	13.92	14.11
Pa	$K\beta_2'$	H	3	11	91	6	111.605	0.33321	5	2.51	3.59	4.34	4.37	4.48	5.09	5.69	5.85	6.09	6.22	6.77	9.49	13.44	13.92	14.11
Nd	$K\alpha_{1,2}$		1	150	60	6	37.182	0.33339	6	2.52	3.59	4.34	4.37	4.49	5.10	5.70	5.85	6.10	6.23	6.78	9.50	13.44	13.93	14.12
Pa	$K\beta_2''$	H	3	11	91	6	111.385	0.33387	5	2.52	3.60	4.34	4.38	4.49	5.10	5.71	5.86	6.10	6.23	6.79	9.51	13.46	13.95	14.14
Pb	$K\alpha_{1,2}$		2	150	82	6	74.221	0.33403	6	2.52	3.60	4.35	4.38	4.49	5.11	5.71			6.24	6.79	9.52	13.47	13.96	14.15
O	$K\beta_1$		3	31	92	6	111.281	0.33418	6	2.52	3.60	4.35	4.38	4.50	5.11	5.71	5.87	6.11	6.24	6.79	9.52	13.48	13.96	14.16
Ir	$K\beta_5'$		8	2	.3	77	6	74.062	0.33475	6	2.53	3.61	4.36	4.39	4.50	5.12	5.72			6.25	6.80	9.54	13.50	13.99	14.18
Ir	$K\beta_5''$	B	2	.3	77	6	73.966	0.33518	5	2.53	3.61	4.36	4.39	4.51	5.12	5.73			6.26	6.81	9.55	13.52	14.01	14.20
Os	$K-O_{2,3}$		2	.01	76	6	73.795	0.33596	5	2.53	3.62	4.37	4.40	4.52	5.13	5.74			6.27	6.83	9.57	13.55	14.04	14.23
Nd	$K\alpha_2$		1	50	60	6	36.841	0.33647	6	2.54	3.62	4.38	4.41	4.53	5.14	5.75	5.91	6.15	6.28	6.84	9.59	13.57	14.06	14.25
Os	$K\beta_4$	B	2	.2	76	6	73.602	0.33684	5	2.54	3.63	4.38	4.42	4.53	5.15	5.76			6.29	6.85	9.60	13.58	14.08	14.27
O	$K\beta_3$		3	14	92	6	110.387	0.33689	6	2.54	3.63	4.38	4.42	4.53	5.15	5.76	5.91	6.16	6.29	6.85	9.60	13.59	14.08	14.27
Ir	$K\beta_1$		2	27	77	6	73.548	0.33708	6	2.54	3.63	4.39	4.42	4.53	5.15	5.76			6.29	6.85	9.60	13.59	14.09	14.28
Os	$K\beta_2'$		2	10	76	6	73.390	0.33781	6	2.55	3.64	4.40	4.43	4.54	5.16	5.77			6.31	6.87	9.62	13.62	14.12	14.31
Bk	$K\alpha_{1,2}$		3	150	97	3	109.991	0.33810		2.55	3.64	4.40	4.43	4.55	5.17	5.78	5.93	6.18	6.31	6.87	9.63	13.64	14.13	14.32
Ba	$K\beta_5'$	B	1	.1	56	6	36.659	0.33814	5	2.55	3.64	4.40	4.43	4.55	5.17	5.78	5.93	6.18	6.31	6.87	9.63	13.64	14.13	14.32
Os	$K\beta_2''$		2	10	76	6	73.306	0.33820	5	2.55	3.64	4.40	4.43	4.55	5.17	5.78			6.32	6.87	9.64	13.64	14.13	14.33
Ba	$K\beta_5''$	B	1	.1	56	6	36.637	0.33835	5	2.55	3.64	4.40	4.44	4.55	5.17	5.78	5.94	6.19	6.32	6.88	9.64	13.65	14.14	14.33
Ir	$K\beta_3$		2	12	77	6	73.190	0.33873	6	2.56	3.65	4.41	4.44	4.56	5.18	5.79			6.33	6.89	9.65	13.66	14.16	14.35
Cf	$K\alpha_2$		3	50	98	3	109.699	0.33900		2.56	3.65	4.41	4.44	4.56	5.18	5.79	5.95	6.20	6.33	6.89	9.66	13.67	14.17	14.36
Th	$K-O_{2,3}$		3	.01	90	6	109.486	0.33966	5	2.55	3.66	4.42	4.45	4.57	5.19	5.80	5.96	6.21	6.34	6.90	9.68	13.70	14.19	14.39
Tl	$K\alpha_1$		2	100	81	6	72.859	0.34027	6	2.57	3.67	4.43	4.46	4.58	5.20	5.82			6.35	6.92	9.70	13.72	14.22	14.42
Pb	$K\alpha_2$		2	50	82	6	72.792	0.34059	6	2.57	3.67	4.43	4.47	4.58	5.21	5.82			6.36	6.92	9.70	13.74	14.23	14.43
Ba	$K\beta_1$		1	21	56	6	36.372	0.34081	6	2.57	3.67	4.44	4.47	4.59	5.21	5.82	5.98	6.23	6.36	6.93	9.71	13.75	14.24	14.44
Th	$K\beta_4$	F	3	.4	90	6	108.940	0.34136	6	2.58	3.68	4.44	4.48	4.59	5.22	5.83	5.99	6.24	6.37	6.94	9.73	13.77	14.27	14.46
Ba	$K\beta_3$		1	7	56	6	36.298	0.34151	6	2.58	3.68	4.44	4.48	4.59	5.22	5.84	5.99	6.24	6.38	6.94	9.73	13.77	14.27	14.47
Cm	$K\alpha_1$		3	100	96	3	108.737	0.34200		2.58	3.68	4.45	4.48	4.60	5.23	5.84	6.00	6.25	6.39	6.95	9.74	13.79	14.29	14.49
Th	$K\beta_2'$		3	11	90	6	108.699	0.34212	6	2.58	3.69	4.45	4.49	4.60	5.23	5.85	6.00	6.25	6.39	6.95	9.75	13.80	14.30	14.49
Th	$K\beta_2''$		3	11	90	6	108.489	0.34278	5	2.59	3.69	4.46	4.49	4.61	5.24	5.86	6.02	6.27	6.40	6.97	9.77	13.83	14.33	14.52
Pa	$K\beta_1$	H	3	30	91	6	108.409	0.34303	6	2.59	3.70	4.46	4.50	4.61	5.24	5.86	6.02	6.27	6.41	6.97	9.77	13.84	14.34	14.53
Tl	$K\alpha_{1,2}$		2	150	81	6	72.167	0.34354	6	2.59	3.70	4.47	4.50	4.62	5.25	5.87			6.41	6.98	9.79	13.86	14.36	14.55
Pr	$K\alpha_1$		1	100	59	6	36.020	0.34414	6	2.60	3.71	4.48	4.51	4.63	5.26	5.88	6.04	6.29	6.43	7.00	9.81	13.88	14.38	14.58
Cs	AK		1		55	6	35.982	0.34451	5	2.60	3.71	4.48	4.52	4.63	5.27	5.89	6.05	6.30	6.43	7.00	9.82	13.90	14.40	14.60
Os	$K\beta_5'$	B	2	.3	76	6	71.882	0.34490	5	2.60	3.72	4.49	4.52	4.64	5.27	5.89			6.44	7.01	9.83	13.91	14.42	14.61
Os	$K\beta_5''$	B	2	.3	76	6	71.811	0.34524	5	2.60	3.72	4.49	4.53	4.64	5.28	5.90			6.45	7.02	9.84	13.93	14.43	14.63
Pr	$K\alpha_{1,2}$		1	150	59	6	35.860	0.34568	6	2.61	3.72	4.50	4.53	4.65	5.28	5.91	6.07	6.32	6.45	7.03	9.85	13.94	14.45	14.65
Pa	$K\beta_3$	H	3	14	91	6	107.576	0.34569	5	2.61	3.72	4.50	4.53	4.65	5.28	5.91	6.07	6.32	6.46	7.03	9.85	13.94	14.45	14.65
Cs	$K\beta_2$		1	6	55	6	35.815	0.34611	5	2.61	3.73	4.50	4.54	4.66	5.29	5.92	6.07	6.33	6.46	7.04	9.86	13.96	14.47	14.66
Re	$K-O_{2,3}$		2	.01	75	6	71.620	0.34616	5	2.61	3.73	4.50	4.54	4.66	5.29	5.92			6.46	7.04	9.86	13.96	14.47	14.67
Cm	$K\alpha_{1,2}$		3	150	96	3	107.139	0.34710		2.62	3.74	4.52	4.55	4.67	5.31	5.93	6.09	6.35	6.48	7.06	9.89	14.00	14.51	14.71
Os	$K\beta_1$		2	27	76	6	71.401	0.34722	6	2.62	3.74	4.52	4.55	4.67	5.31	5.93			6.48	7.06	9.89	14.01	14.51	14.71
Re	$K\beta_4$		8	2	.1	75	6	71.397	0.34724	5	2.62	3.74	4.52	4.55	4.67	5.31	5.93			6.48	7.06	9.89	14.01	14.51	14.71
Bk	$K\alpha_2$		3	50	97	3	106.862	0.34800		2.63	3.75	4.53	4.56	4.68	5.32	5.95	6.11	6.36	6.50	7.07	9.92	14.04	14.55	14.74
Re	$K\beta_2'$		2	10	75	6	71.219	0.34811	6	2.63	3.75	4.53	4.56	4.68	5.32	5.95			6.50	7.08	9.92	14.04	14.55	14.75
Re	$K\beta_2''$		2	10	75	6	71.139	0.34850	5	2.63	3.75	4.54	4.57	4.69	5.33	5.96			6.51	7.08	9.93	14.06	14.57	14.77

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pr	$K\alpha_2$		1	50	59	6	35.544	0.34875	6		2.63	3.76	4.54	4.57	4.69	5.33	5.96	6.12	6.38	6.51	7.09	9.94	14.07	14.58	14.78
Os	$K\beta_3$		2	12	76	6	71.065	0.34886	6		2.63	3.76	4.54	4.57	4.69	5.33	5.96			6.51	7.09	9.94	14.07	14.58	14.78
Th	$K\beta_5$	8	3	.5	90	6	106.251	0.35000	6		2.64	3.77	4.55	4.59	4.71	5.35	5.98	6.14	6.40	6.54	7.11	9.97	14.12	14.63	14.83
Tl	$K\alpha_2$		2	50	81	6	70.820	0.35007	6		2.64	3.77	4.56	4.59	4.71	5.35	5.98			6.54	7.12	9.98	14.12	14.63	14.83
Hg	$K\alpha_1$		2	100	80	6	70.807	0.35014	6		2.64	3.77	4.56	4.59	4.71	5.35	5.98			6.54	7.12	9.98	14.12	14.64	14.84
Am	$K\alpha_1$		3	100	95	3	105.949	0.35100			2.65	3.78	4.57	4.60	4.72	5.36	6.00	6.16	6.42	6.55	7.13	10.00	14.16	14.67	14.87
Ac	$K\beta_2'$	H	3	11	89	6	105.849	0.35133	5		2.65	3.78	4.57	4.61	4.73	5.37	6.00	6.17	6.42	6.56	7.14	10.01	14.17	14.69	14.89
Ac	$K\beta_2''$	H	3	11	89	6	105.660	0.35196	5		2.66	3.79	4.58	4.61	4.74	5.38	6.02	6.18	6.43	6.57	7.15	10.03	14.20	14.71	14.91
Th	$K\beta_1$		3	30	90	6	105.591	0.35219	6		2.66	3.79	4.58	4.62	4.74	5.38	6.02	6.18	6.44	6.58	7.16	10.04	14.21	14.72	14.92
Hg	$K\alpha_{1,2}$		2	150	80	6	70.154	0.35340	6		2.67	3.81	4.60	4.63	4.75	5.40	6.04			6.60	7.18	10.07	14.26	14.77	14.97
Cs	$K\beta_1$		1	21	55	6	34.981	0.35436	6		2.67	3.82	4.61	4.65	4.77	5.42	6.06	6.22	6.48	6.62	7.20	10.10	14.30	14.81	15.02
Th	$K\beta_3$		3	14	90	6	104.813	0.35480	6		2.68	3.82	4.62	4.65	4.77	5.42	6.06	6.23	6.49	6.63	7.21	10.11	14.31	14.83	15.03
Cs	$K\beta_3$		1	9	55	6	34.913	0.35505	6		2.68	3.82	4.62	4.66	4.78	5.43	6.07	6.23	6.49	6.63	7.22	10.12	14.32	14.84	15.05
Re	$K\beta_5'$	B	2	.3	75	6	69.774	0.35532	5		2.68	3.83	4.62	4.66	4.78	5.43	6.07			6.64	7.22	10.13	14.33	14.85	15.06
Re	$K\beta_5''$	B	2	.3	75	6	69.707	0.35566	5		2.68	3.83	4.63	4.66	4.78	5.44	6.08			6.64	7.23	10.13	14.35	14.87	15.07
Am	$K\alpha_{1,2}$		3	150	95	3	104.431	0.35610			2.69	3.84	4.63	4.67	4.79	5.44	6.09	6.25	6.51	6.65	7.24	10.15	14.37	14.89	15.09
W	$K\text{-}O_{2,3}$		2	.01	74	6	69.467	0.35689	6		2.69	3.84	4.64	4.68	4.80	5.45	6.10			6.66	7.25	10.17	14.40	14.92	15.12
Cm	$K\alpha_2$		3	50	96	3	104.168	0.35700			2.69	3.85	4.65	4.68	4.80	5.46	6.10	6.27	6.53	6.67	7.26	10.17	14.40	14.92	15.13
Ce	$K\alpha_1$		1	100	58	6	34.714	0.35709	6		2.69	3.85	4.65	4.68	4.80	5.46	6.10	6.27	6.53	6.67	7.26	10.18	14.41	14.93	15.13
Re	$K\beta_1$		2	26	75	6	69.298	0.35776	6		2.70	3.85	4.66	4.69	4.81	5.47	6.11			6.68	7.27	10.19	14.43	14.96	15.16
W	$K\beta_4$	B	2	.1	74	6	69.282	0.35784	5		2.70	3.85	4.66	4.69	4.81	5.47	6.12			6.68	7.27	10.20	14.44	14.96	15.16
Xe	AK		1		54	6	34.587	0.35840	4		2.70	3.86	4.66	4.70	4.82	5.48	6.13	6.29	6.55	6.69	7.29	10.21	14.46	14.98	15.19
Ce	$K\alpha_{1,2}$		1	150	58	6	34.566	0.35862	6		2.71	3.86	4.67	4.70	4.82	5.48	6.13	6.29	6.56	6.70	7.29	10.22	14.47	14.99	15.20
W	$K\beta_2'$		2	10	74	6	69.089	0.35884	6		2.71	3.87	4.67	4.71	4.83	5.48	6.13			6.70	7.29	10.23	14.48	15.00	15.21
W	$K\beta_2''$		2	10	74	6	69.020	0.35920	5		2.71	3.87	4.67	4.71	4.83	5.49	6.14			6.71	7.30	10.24	14.49	15.02	15.22
Re	$K\beta_3$		2	12	75	6	68.983	0.35939	6		2.71	3.87	4.68	4.71	4.84	5.49	6.14			6.71	7.31	10.24	14.50	15.02	15.23
Hg	$K\alpha_2$		2	50	80	6	68.883	0.35992	6		2.72	3.88	4.68	4.72	4.84	5.50	6.15			6.72	7.32	10.26	14.52	15.05	15.25
Pu	$K\alpha_1$		3	100	94	3	103.300	0.36000			2.72	3.88	4.68	4.72	4.84	5.50	6.15	6.32	6.58	6.72	7.32	10.26	14.52	15.05	15.26
Xe	$K\beta_2$	H	1	6	54	6	34.408	0.36026	5		2.72	3.88	4.69	4.72	4.85	5.51	6.16	6.32	6.59	6.73	7.32	10.27	14.53	15.06	15.27
Au	$K\alpha_1$		2	100	79	6	68.792	0.36039	6		2.72	3.88	4.69	4.73	4.85	5.51	6.16			6.73	7.33	10.27	14.54	15.07	15.27
Ra	$K\beta_2'$	H	3	11	88	6	103.051	0.36087	5		2.72	3.89	4.70	4.73	4.86	5.52	6.17	6.33	6.60	6.74	7.34	10.28	14.56	15.09	15.29
Ra	$K\beta_2''$	H	3	11	88	6	102.871	0.36150	5		2.73	3.89	4.70	4.74	4.86	5.53	6.18	6.35	6.61	6.75	7.35	10.30	14.58	15.11	15.32
Ac	$K\beta_1$	H	3	30	89	6	102.829	0.36165	5		2.73	3.90	4.71	4.74	4.87	5.53	6.18	6.35	6.61	6.75	7.35	10.31	14.59	15.12	15.33
Ce	$K\alpha_2$		1	50	58	6	34.273	0.36168	6		2.73	3.90	4.71	4.74	4.87	5.53	6.18	6.35	6.61	6.75	7.35	10.31	14.59	15.12	15.33
Au	$K\alpha_{1,2}$		2	150	79	6	68.177	0.36364	6		2.74	3.92	4.73	4.77	4.89	5.56	6.22			6.79	7.39	10.36	14.67	15.20	15.41
Ac	$K\beta_3$	H	3	14	89	6	102.084	0.36429	5		2.75	3.92	4.74	4.78	4.90	5.57	6.23	6.39	6.66	6.80	7.41	10.38	14.70	15.23	15.44
Pu	$K\alpha_{1,2}$		3	150	94	3	101.857	0.36510			2.75	3.93	4.75	4.79	4.91	5.58	6.24	6.41	6.68	6.82	7.42	10.40	14.73	15.26	15.47
Am	$K\alpha_2$		3	50	95	3	101.607	0.36600			2.76	3.94	4.76	4.80	4.92	5.59	6.26	6.42	6.69	6.83	7.44	10.43	14.77	15.30	15.51
W	$K\beta_5'$	8	2	.3	74	6	67.704	0.36618	6		2.76	3.94	4.77	4.80	4.93	5.60	6.26			6.84	7.44	10.44	14.77	15.31	15.52
W	$K\beta_5''$	8	2	.3	74	6	67.640	0.36653	6		2.77	3.95	4.77	4.81	4.93	5.60	6.26			6.84	7.45	10.45	14.79	15.32	15.53
Ta	$K\text{-}O_{2,3}$		2	.01	73	6	67.358	0.36806	6		2.78	3.96	4.79	4.83	4.95	5.63	6.29			6.87	7.48	10.49	14.85	15.39	15.60
Xe	$K\beta_1$	H	1	20	54	6	33.619	0.36872	5		2.78	3.97	4.80	4.83	4.96	5.64	6.30	6.47	6.74	6.89	7.50	10.51	14.88	15.42	15.63
W	$K\beta_1$		2	26	74	6	67.233	0.36875	6		2.78	3.97	4.80	4.84	4.96	5.64	6.30			6.89	7.50	10.51	14.88	15.42	15.63
Np	$K\alpha_1$		3	100	93	3	100.781	0.36900			2.78	3.97	4.80	4.84	4.96	5.64	6.31	6.48	6.75	6.89	7.50	10.52	14.89	15.43	15.64
Ta	$K\beta_4$	B	2	.08	73	6	67.183	0.36902	5		2.78	3.98	4.80	4.84	4.96	5.64	6.31			6.89	7.50	10.52	14.89	15.43	15.64
Xe	$K\beta_3$	H	1	9	54	6	33.556	0.36941	5		2.79	3.98	4.81	4.84	4.97	5.65	6.31	6.48	6.75	6.90	7.51	10.53	14.91	15.45	15.66
Ta	$K\beta_2'$		2	9	73	6	67.001	0.37002	6		2.79	3.99	4.82	4.85	4.98	5.66	6.32			6.91	7.52	10.55	14.93	15.47	15.68
Au	$K\alpha_2$		2	50	79	6	66.978	0.37015	6		2.79	3.99	4.82	4.85	4.98	5.66	6.33			6.91	7.52	10.55	14.94	15.48	15.69
W	$K\beta_3$		2	12	74	6	66.940	0.37036	6		2.79	3.99	4.82	4.86	4.98	5.66	6.33			6.92	7.53	10.55	14.94	15.49	15.70
Ta	$K\beta_2''$		2	9	73	6	66.937	0.37038	6		2.79	3.99	4.82	4.86	4.98	5.66	6.33			6.92	7.53	10.56	14.94	15.49	15.70
La	$K\alpha_1$		1	100	57	6	33.436	0.37074	6		2.80	3.99	4.82	4.86	4.99	5.67	6.34	6.51	6.78	6.92	7.54	10.57	14.96	15.50	15.71
Fr	$K\beta_2'$	H	3	11	87	6	100.307	0.37074	5		2.80	3.99	4.82	4.86	4.99	5.67	6.34	6.51	6.78	6.92	7.54	10.57	14.96	15.50	15.71
Pt	$K\alpha_1$		2	100	78	6	66.821	0.37102	6		2.80	4.00	4.83	4.86	4.99	5.67	6.34			6.93	7.54	10.57	14.97	15.51	15.73
Fr	$K\beta_2''$	H	3	11	87	6	100.137	0.37137	5		2.80	4.00	4.83	4.87	5.00	5.68	6.35	6.52	6.79	6.94	7.55	10.58	14.99	15.53	15.74
Ra	$K\beta_1$	H	3	30	88	6	100.113	0.37146	5		2.80	4.00	4.83	4.87	5.00	5.68	6.35	6.52	6.79	6.94	7.55	10.59	14.99	15.53	15.74
Cf	$K\beta_2$		4	11	98	3	133.290	0.37200			2.81	4.01	4.84	4.88	5.00	5.69	6.36	6.53	6.80	6.95	7.56	10.60	15.01	15.55	15.77
La	$K\alpha_{1,2}$		1	150	57	6	33.299	0.37226	6		2.81	4.01	4.84	4.88	5.01	5.69	6.36	6.53	6.81	6.95	7.57	10.61	15.02	15.57	15.78
Au	$K\text{-}L_1$	B	2	.01	79	6	66.388	0.37344	5		2.82	4.02	4.86	4.90	5.02	5.71	6.38			6.97	7.59	10.64	15.07	15.62	15.83
I	AK		1		53	6	33.161	0.37381	5		2.82	4.03	4.86	4.90	5.03	5.71	6.39	6.56	6.83	6.98	7.60	10.65	15.08	15.63	15.85
Ra	$K\beta_3$	H	3	14	88	6	99.415	0.37407	5		2.82	4.03	4.87	4.90	5.03	5.72	6.39	6.57	6.84	6.99	7.60	10.66	15.09	15.64	15.86
Np	$K\alpha_{1,2}$		3	150	93	3	99.407	0.37410			2.82	4.03	4.87	4.91	5.03	5.72	6.39	6.57	6.84	6.99	7.61	10.66	15.10	15.64	15.86
Pt	$K\alpha_{1,2}$		2	150	78	6	66.241	0.37427	6		2.82	4.03	4.87	4.91	5.04	5.72	6.40			6.99	7.61	10.67	15.10	15.65	15.86
Pu	$K\alpha_2$		3	50	94	3	99.168	0.37500			2.83	4.04	4.88	4.92	5.05	5.73	6.41	6.58	6.86	7.00	7.62	10.69	15.13	15.68	15.90
I	$K\beta_2$	H	1	6	53	6	33.036	0.37523	5		2.83	4.04	4.88	4.92	5.05	5.74	6.41	6.59	6.86	7.01	7.63	10.69	15.14	15.69	15.91
La	$K\alpha_2$		1	50	57	6	33.028	0.37531	6		2.83	4.04	4.88	4.92	5.05	5.74	6.41	6.59	6.86	7.01	7.63	10.70	15.15	15.69	15.91

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																
Ta	$K\beta_5'$	B	2	.3	73	6	65.672	0.37751	6	2.85	4.07	4.91	4.95	5.08	5.77	6.45			7.05	7.67	10.76	15.23	15.79	16.00
Ta	$K\beta_5''$	8	2	.3	73	6	65.615	0.37784	6	2.85	4.07	4.92	4.95	5.08	5.78	6.46			7.06	7.68	10.77	15.25	15.80	16.02
U	$K\alpha_1$		3	100	92	6	98.422	0.37784	6	2.85	4.07	4.92	4.95	5.08	5.78	6.46	6.63	6.91	7.06	7.68	10.77	15.25	15.80	16.02
Bk	$K\beta_2$		4	11	97	3	130.484	0.38000		2.87	4.09	4.95	4.98	5.11	5.81	6.49	6.67	6.95	7.10	7.73	10.83	15.34	15.89	16.11
Ta	$K\beta_1$		2	26	73	6	65.212	0.38018	6	2.87	4.10	4.95	4.99	5.11	5.81	6.50			7.10	7.73	10.84	15.34	15.90	16.12
Pt	$K\alpha_2$		2	50	78	6	65.112	0.38076	6	2.87	4.10	4.96	4.99	5.12	5.82	6.51			7.11	7.74	10.85	15.37	15.92	16.14
Rn	$K\beta_2'$	H	3	11	86	6	97.622	0.38094	5	2.87	4.10	4.96	5.00	5.13	5.82	6.51	6.69	6.97	7.11	7.74	10.86	15.37	15.93	16.15
Fr	$K\beta_1$	H	3	29	87	6	97.460	0.38157	5	2.88	4.11	4.97	5.00	5.13	5.83	6.52	6.70	6.98	7.13	7.76	10.88	15.40	15.96	16.18
Rn	$K\beta_2''$	H	3	11	86	6	97.460	0.38157	5	2.88	4.11	4.97	5.00	5.13	5.83	6.52	6.70	6.98	7.13	7.76	10.88	15.40	15.96	16.18
Hf	$K\beta_2$	H	2	9	72	6	64.969	0.38160	4	2.88	4.11	4.97	5.00	5.13	5.83	6.52			7.13	7.76	10.88	15.40	15.96	16.18
Ta	$K\beta_3$		2	12	73	6	64.938	0.38178	6	2.88	4.11	4.97	5.01	5.14	5.84	6.53			7.13	7.76	10.88	15.41	15.97	16.19
Ir	$K\alpha_1$		2	100	77	6	64.885	0.38209	6	2.88	4.12	4.97	5.01	5.14	5.84	6.53			7.14	7.77	10.89	15.42	15.98	16.20
U	$K\alpha_{1,2}$		3	150	92	6	97.131	0.38286	6	2.89	4.12	4.98	5.02	5.15	5.85	6.54	6.72	7.00	7.15	7.78	10.91	15.45	16.01	16.23
I	$K\beta_1$		1	20	53	6	32.289	0.38390	6	2.90	4.14	5.00	5.03	5.17	5.87	6.56	6.74	7.02	7.17	7.80	10.94	15.49	16.06	16.28
Np	$K\alpha_2$		3	50	93	3	96.844	0.38400		2.90	4.14	5.00	5.04	5.17	5.87	6.56	6.74	7.02	7.17	7.81	10.94	15.50	16.06	16.28
Fr	$K\beta_3$	H	3	14	87	6	96.791	0.38421	5	2.90	4.14	5.00	5.04	5.17	5.87	6.57	6.74	7.03	7.18	7.81	10.95	15.51	16.07	16.29
I	$K\beta_3$		1	9	53	6	32.234	0.38456	6	2.90	4.14	5.00	5.04	5.17	5.88	6.57	6.75	7.03	7.18	7.82	10.96	15.52	16.08	16.30
Ba	$K\alpha_1$		1	100	56	6	32.188	0.38511	6	2.91	4.15	5.01	5.05	5.18	5.89	6.58	6.76	7.04	7.19	7.83	10.98	15.54	16.11	16.33
Ir	$K\alpha_{1,2}$		2	150	77	6	64.339	0.38533	6	2.91	4.15	5.01	5.05	5.18	5.89	6.59			7.20	7.83	10.98	15.55	16.12	16.34
Ba	$K\alpha_{1,2}$		1	150	56	6	32.062	0.38663	6	2.92	4.16	5.03	5.07	5.20	5.91	6.61	6.79	7.07	7.22	7.86	11.02	15.60	16.17	16.39
Pa	$K\alpha_1$	H	3	100	91	6	95.852	0.38797	6	2.93	4.18	5.05	5.09	5.22	5.93	6.63	6.81	7.09	7.25	7.89	11.06	15.66	16.23	16.45
Cf	$K\beta_1$		4	30	98	3	127.794	0.38800		2.93	4.18	5.05	5.09	5.22	5.93	6.63	6.81	7.09	7.25	7.89	11.06	15.66	16.23	16.45
Ba	$K\alpha_2$		1	50	56	6	31.812	0.38967	6	2.94	4.20	5.07	5.11	5.24	5.96	6.66	6.84	7.13	7.28	7.92	11.11	15.73	16.30	16.52
Te	$K\text{-}O_{2,3}$		1	.01	52	6	31.806	0.38974	5	2.94	4.20	5.07	5.11	5.24	5.96	6.66	6.84	7.13	7.28	7.92	11.11	15.73	16.30	16.53
Te	AK		1		52	6	31.806	0.38974	5	2.94	4.20	5.07	5.11	5.24	5.96	6.66	6.84	7.13	7.28	7.92	11.11	15.73	16.30	16.53
Te	$K\beta_2$	D	1	6	52	6	31.698	0.39106	6	2.95	4.21	5.09	5.13	5.26	5.98	6.68	6.86	7.15	7.30	7.95	11.15	15.78	16.36	16.58
At	$K\beta_2'$	H	3	11	85	6	94.974	0.39156	5	2.95	4.22	5.10	5.13	5.27	5.99	6.69	6.87	7.16	7.31	7.96	11.16	15.80	16.38	16.60
Lu	$K\text{-}O_{2,3}$		2	.01	71	6	63.280	0.39178	5	2.96	4.22	5.10	5.14	5.27	5.99	6.70			7.32	7.97	11.17	15.81	16.39	16.61
Ir	$K\alpha_2$		2	50	77	6	63.276	0.39181	6	2.96	4.22	5.10	5.14	5.27	5.99	6.70			7.32	7.97	11.17	15.81	16.39	16.61
Cm	$K\beta_2$		4	11	96	3	126.490	0.39200		2.96	4.22	5.10	5.14	5.27	5.99	6.70	6.88	7.17	7.32	7.97	11.17	15.82	16.40	16.62
Bk	$K\beta_1$		4	30	97	3	126.490	0.39200		2.96	4.22	5.10	5.14	5.27	5.99	6.70	6.88	7.17	7.32	7.97	11.17	15.82	16.40	16.62
Rn	$K\beta_1$	H	3	29	86	6	94.850	0.39207	5	2.96	4.22	5.10	5.14	5.28	5.99	6.70	6.88	7.17	7.32	7.97	11.18	15.83	16.40	16.62
Hf	$K\beta_1$	H	2	66	72	6	63.222	0.39214	5	2.96	4.22	5.10	5.14	5.28	5.99	6.70			7.32	7.97	11.18	15.83	16.40	16.63
At	$K\beta_2''$	H	3	11	85	6	94.829	0.39216	5	2.96	4.22	5.10	5.14	5.28	5.99	6.70	6.88	7.17	7.32	7.97	11.18	15.83	16.40	16.63
U	$K\alpha_2$		3	50	92	6	94.649	0.39290	6	2.96	4.23	5.11	5.15	5.29	6.01	6.72	6.90	7.18	7.34	7.99	11.20	15.86	16.43	16.66
Pa	$K\alpha_{1,2}$	H	3	150	91	6	94.627	0.39299	6	2.97	4.23	5.11	5.15	5.29	6.01	6.72	6.90	7.19	7.34	7.99	11.20	15.86	16.44	16.66
Os	$K\alpha_1$		2	100	76	6	62.990	0.39359	6	2.97	4.24	5.12	5.16	5.30	6.02	6.73			7.35	8.00	11.22	15.89	16.46	16.69
Hf	$K\beta_3$	H	2	12	72	6	62.969	0.39372	5	2.97	4.24	5.12	5.16	5.30	6.02	6.73			7.35	8.00	11.22	15.89	16.47	16.70
Lu	$K\beta_2$	H	2	9	71	6	62.956	0.39380	4	2.97	4.24	5.13	5.16	5.30	6.02	6.73			7.35	8.01	11.22	15.90	16.47	16.70
Rn	$K\beta_3$	H	3	13	86	6	94.230	0.39465	5	2.98	4.25	5.14	5.17	5.31	6.03	6.75	6.93	7.22	7.37	8.02	11.25	15.93	16.51	16.73
Os	$K\alpha_{1,2}$		2	150	76	6	62.477	0.39682	6	2.99	4.27	5.16	5.20	5.34	6.07	6.78			7.41	8.07	11.31	16.02	16.60	16.83
Th	$K\alpha_1$		3	100	90	6	93.334	0.39844	6	3.01	4.29	5.19	5.22	5.36	6.09	6.81	6.99	7.29	7.44	8.10	11.36	16.08	16.67	16.90
Te	$K\beta_1$		1	20	52	6	30.990	0.39999	6	3.02	4.31	5.21	5.25	5.38	6.11	6.84	7.02	7.31	7.47	8.13	11.40	16.15	16.73	16.96
Am	$K\beta_2$		4	11	95	3	123.960	0.40000		3.02	4.31	5.21	5.25	5.38	6.11	6.84	7.02	7.31	7.47	8.13	11.40	16.15	16.73	16.96
Cs	$K\alpha_1$		1	100	55	6	30.968	0.40029	6	3.02	4.31	5.21	5.25	5.39	6.12	6.84	7.03	7.32	7.48	8.14	11.41	16.16	16.75	16.98
Te	$K\beta_3$		1	9	52	6	30.939	0.40066	6	3.02	4.32	5.21	5.25	5.39	6.12	6.85	7.03	7.33	7.48	8.15	11.42	16.17	16.76	16.99
Lu	$K\beta_5$	8	2	.3	71	6	61.721	0.40168	5	3.03	4.33	5.23	5.27	5.40	6.14	6.87			7.50	8.17	11.45	16.22	16.80	17.04
Cs	$K\alpha_{1,2}$		1	150	55	6	30.851	0.40180	6	3.03	4.33	5.23	5.27	5.41	6.14	6.87	7.05	7.35	7.50	8.17	11.45	16.22	16.81	17.04
Po	$K\beta_2'$	H	3	11	84	6	92.383	0.40254	5	3.04	4.34	5.24	5.28	5.42	6.15	6.88	7.07	7.36	7.52	8.18	11.47	16.25	16.84	17.07
At	$K\beta_1$	H	3	29	85	6	92.287	0.40296	5	3.04	4.34	5.24	5.28	5.42	6.16	6.89	7.07	7.37	7.53	8.19	11.49	16.27	16.86	17.09
Pa	$K\alpha_2$	H	3	50	91	6	92.271	0.40303	6	3.04	4.34	5.25	5.28	5.42	6.16	6.89	7.07	7.37	7.53	8.19	11.49	16.27	16.86	17.09
Po	$K\beta_2''$	H	3	11	84	6	92.246	0.40314	5	3.04	4.34	5.25	5.29	5.42	6.16	6.89	7.08	7.37	7.53	8.20	11.49	16.28	16.87	17.10
Os	$K\alpha_2$		2	50	76	6	61.476	0.40328	6	3.04	4.34	5.25	5.29	5.43	6.16	6.89			7.53	8.20	11.50	16.28	16.87	17.10
Th	$K\alpha_{1,2}$		3	150	90	6	92.174	0.40345	6	3.04	4.35	5.25	5.29	5.43	6.17	6.90	7.08	7.38	7.54	8.20	11.50	16.29	16.88	17.11
Cm	$K\beta_1$		4	30	96	3	122.733	0.40400		3.05	4.35	5.26	5.30	5.44	6.18	6.91	7.09	7.39	7.55	8.21	11.52	16.31	16.90	17.13
Yb	$K\text{-}O_{2,3}$	B	2	.01	70	6	61.287	0.40452	5	3.05	4.36	5.26	5.30	5.44	6.18	6.91			7.56	8.22	11.53	16.33	16.92	17.16
Lu	$K\beta_1$	H	2	65	71	6	61.272	0.40462	5	3.05	4.36	5.27	5.31	5.44	6.19	6.92			7.56	8.23	11.53	16.34	16.93	17.16
Cs	$K\alpha_2$		1	50	55	6	30.620	0.40483	6	3.05	4.36	5.27	5.31	5.45	6.19	6.92	7.11	7.40	7.56	8.23	11.54	16.34	16.94	17.17
At	$K\beta_3$	H	3	13	85	6	91.707	0.40551	5	3.06	4.37	5.28	5.32	5.46	6.20	6.93	7.12	7.42	7.57	8.24	11.56	16.37	16.97	17.20
Re	$K\alpha_1$		2	100	75	6	61.130	0.40556	6	3.06	4.37	5.28	5.32	5.46	6.20	6.93			7.57	8.25	11.56	16.37	16.97	17.20
Lu	$K\beta_3$	H	2	12	71	6	61.037	0.40618	5	3.06	4.38	5.29	5.33	5.47	6.21	6.94			7.59	8.26	11.58	16.40	16.99	17.23
Yb	$K\beta_2$	H	2	9	70	6	60.974	0.40660	4	3.07	4.38	5.29	5.33	5.47	6.22	6.95			7.59	8.27	11.59	16.42	17.01	17.25
Sb	$K\text{-}O_{2,3}$		1	.01	51	6	30.482	0.40666	5	3.07	4.38	5.29	5.33	5.47	6.22	6.95	7.14	7.44	7.60	8.27	11.59	16.42	17.01	17.25
Sb	AK		1		51	6	30.481	0.40668	5	3.07	4.38	5.29	5.33	5.47	6.22	6.95	7.14	7.44	7.60	8.27	11.59	16.42	17.01	17.25
Sb	$K\beta_4$	B	1	.01	51	6	30.456	0.40702	5	3.07	4.38	5.30	5.34	5.48	6.22	6.96	7.15	7.44	7.60	8.28	11.60	16.43	17.03	17.26

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Sb	$K\beta_2$	D	1	5	51	6	30.388	0.40793	6	3.08	4.39	5.31	5.35	5.49	6.24	6.97	7.16	7.46	7.62	8.29	11.63	16.47	17.07	17.30
Re	$K\alpha_{1,2}$		2	150	75	6	60.648	0.40878	6	3.08	4.40	5.32	5.36	5.50	6.25	6.99			7.63	8.31	11.65	16.50	17.10	17.34
Ac	$K\alpha_1$	H	3	100	89	6	90.868	0.40925	6	3.09	4.41	5.33	5.37	5.51	6.26	7.00	7.18	7.48	7.64	8.32	11.67	16.52	17.12	17.36
Bi	$K-O_{2,3}$		3	.01	83	6	90.422	0.41127	5	3.10	4.43	5.35	5.39	5.53	6.29	7.03	7.22	7.52	7.68	8.36	11.72	16.61	17.21	17.44
Pn	$K\beta_2$		4	11	94	3	120.350	0.41200		3.11	4.44	5.36	5.40	5.54	6.30	7.04	7.23	7.53	7.69	8.38	11.75	16.64	17.24	17.48
Am	$K\beta_1$		4	30	95	3	120.350	0.41200		3.11	4.44	5.36	5.40	5.54	6.30	7.04	7.23	7.53	7.69	8.38	11.75	16.64	17.24	17.48
Bi	$K\beta_4$	B	3	.3	83	6	90.094	0.41277	5	3.11	4.45	5.37	5.41	5.55	6.31	7.06	7.25	7.55	7.71	8.39	11.77	16.67	17.27	17.51
Th	$K\alpha_2$		3	50	90	6	89.938	0.41349	6	3.12	4.45	5.38	5.42	5.56	6.32	7.07	7.26	7.56	7.72	8.41	11.79	16.70	17.30	17.54
Sb	$K\beta_5'$	B	1	.1	51	6	29.958	0.41378	5	3.12	4.46	5.39	5.43	5.57	6.33	7.07	7.26	7.57	7.73	8.41	11.80	16.71	17.31	17.55
Sb	$K\beta_5''$	B	1	.1	51	6	29.951	0.41388	5	3.12	4.46	5.39	5.43	5.57	6.33	7.07	7.27	7.57	7.73	8.42	11.80	16.71	17.32	17.56
Bi	$K\beta_2'$		3	11	83	6	89.846	0.41391	5	3.12	4.46	5.39	5.43	5.57	6.33	7.08	7.27	7.57	7.73	8.42	11.80	16.71	17.32	17.56
Po	$K\beta_1$	H	3	89	84	6	89.781	0.41421	5	3.13	4.46	5.39	5.43	5.57	6.33	7.08	7.27	7.57	7.74	8.42	11.81	16.73	17.33	17.57
Ac	$K\alpha_{1,2}$	H	3	150	89	6	89.773	0.41424	5	3.13	4.46	5.39	5.43	5.57	6.33	7.08	7.27	7.58	7.74	8.42	11.81	16.73	17.33	17.57
Bi	$K\beta_2''$		3	11	83	6	89.716	0.41451	5	3.13	4.47	5.39	5.44	5.58	6.34	7.09	7.28	7.58	7.74	8.43	11.82	16.74	17.34	17.58
Yb	$K\beta_5$	B	2	.3	70	6	59.771	0.41478	5	3.13	4.47	5.40	5.44	5.58	6.34	7.09			7.75	8.43	11.83	16.75	17.36	17.59
Re	$K\alpha_2$		2	50	75	6	59.708	0.41522	6	3.13	4.47	5.40	5.44	5.59	6.35	7.10			7.76	8.44	11.84	16.77	17.37	17.61
Xe	$K\alpha_1$	H	1	100	54	6	29.774	0.41634	5	3.14	4.49	5.42	5.46	5.60	6.36	7.12	7.31	7.61	7.78	8.47	11.87	16.81	17.42	17.66
Po	$K\beta_3$	H	3	13	84	6	89.231	0.41676	5	3.14	4.49	5.42	5.47	5.61	6.37	7.12	7.32	7.62	7.78	8.47	11.88	16.83	17.44	17.68
Sb	$K\beta_1$		1	20	51	6	29.721	0.41708	6	3.15	4.49	5.43	5.47	5.61	6.38	7.13	7.32	7.63	7.79	8.48	11.89	16.84	17.45	17.69
Yb	$K\beta_1$		2	64	70	6	59.356	0.41768	5	3.15	4.50	5.44	5.48	5.62	6.38	7.14			7.80	8.49	11.91	16.87	17.48	17.72
Sb	$K\beta_3$		1	9	51	6	29.574	0.41774	6	3.15	4.50	5.44	5.48	5.62	6.39	7.14	7.33	7.64	7.80	8.49	11.91	16.87	17.48	17.72
Tm	$K-O_{2,3}$		2	.01	69	6	59.337	0.41782	5	3.15	4.50	5.44	5.48	5.62	6.39	7.14			7.80	8.50	11.91	16.87	17.48	17.72
Xe	$K\alpha_{1,2}$	H	1	150	54	6	29.666	0.41785	5	3.15	4.50	5.44	5.48	5.62	6.39	7.14	7.34	7.64	7.80	8.50	11.91	16.87	17.49	17.73
W	$K\alpha_1$		2	100	74	6	59.308	0.41802	7	3.15	4.50	5.44	5.48	5.62	6.39	7.15			7.81	8.50	11.92	16.88	17.49	17.73
Yb	$K\beta_3$	H	2	12	70	6	59.141	0.41920	4	3.16	4.52	5.46	5.50	5.64	6.41	7.17			7.83	8.52	11.95	16.93	17.54	17.78
Tm	$K\beta_2$	H	2	9	69	6	59.085	0.41960	4	3.17	4.52	5.46	5.50	5.65	6.41	7.17			7.84	8.53	11.96	16.94	17.56	17.80
Np	$K\beta_2$		4	11	93	3	118.057	0.42000		3.17	4.52	5.47	5.51	5.65	6.42	7.18	7.37	7.68	7.84	8.54	11.97	16.96	17.58	17.82
Ra	$K\alpha_1$	H	3	100	88	6	88.454	0.42042	5	3.17	4.53	5.47	5.51	5.66	6.43	7.19	7.38	7.69	7.85	8.55	11.99	16.98	17.59	17.84
Xe	$K\alpha_2$	H	1	50	54	6	29.453	0.42087	5	3.18	4.53	5.48	5.52	5.66	6.43	7.19	7.39	7.70	7.86	8.56	12.00	17.00	17.61	17.86
W	$K\alpha_{1,2}$		2	150	74	6	58.856	0.42123	6	3.18	4.54	5.48	5.52	5.67	6.44	7.20			7.87	8.56	12.01	17.01	17.63	17.87
Pb	K-P		3	.01	82	6	88.040	0.42240	4	3.19	4.55	5.50	5.54	5.68	6.46	7.22	7.42	7.72	7.89	8.59	12.04	17.06	17.68	17.92
Pb	$K-O_{2,3}$		3	.01	82	6	87.907	0.42304	6	3.19	4.56	5.51	5.55	5.69	6.47	7.23	7.43	7.74	7.90	8.60	12.06	17.08	17.70	17.95
Bi	$K\beta_5$	F	3	.4	83	6	87.888	0.42313	6	3.19	4.56	5.51	5.55	5.69	6.47	7.23	7.43	7.74	7.90	8.60	12.06	17.09	17.71	17.95
Pu	$K\beta_1$		4	30	94	3	116.943	0.42400		3.20	4.57	5.52	5.56	5.71	6.48	7.25	7.44	7.75	7.92	8.62	12.09	17.12	17.75	17.99
Ac	$K\alpha_2$	H	3	50	89	6	87.660	0.42423	5	3.20	4.57	5.52	5.56	5.71	6.49	7.25	7.45	7.76	7.92	8.63	12.10	17.13	17.75	18.00
Pb	$K\beta_4$	B	3	.2	82	6	87.573	0.42465	5	3.20	4.57	5.53	5.57	5.71	6.49	7.26	7.45	7.77	7.93	8.63	12.11	17.15	17.77	18.02
Sn	$K-O_{2,3}$		1	.01	50	6	29.190	0.42467	5	3.20	4.57	5.53	5.57	5.71	6.49	7.26	7.46	7.77	7.93	8.63	12.11	17.15	17.77	18.02
Sn	AK		1		50	6	29.190	0.42467	5	3.20	4.57	5.53	5.57	5.71	6.49	7.26	7.46	7.77	7.93	8.63	12.11	17.15	17.77	18.02
Sn	$K\beta_4$	B	1	.01	50	6	29.170	0.42495	5	3.21	4.58	5.53	5.57	5.72	6.50	7.26	7.46	7.77	7.94	8.64	12.12	17.16	17.79	18.03
Ra	$K\alpha_{1,2}$	H	3	150	88	6	87.419	0.42540	5	3.21	4.58	5.54	5.58	5.72	6.50	7.27	7.47	7.78	7.95	8.65	12.13	17.18	17.80	18.05
Pb	$K\beta_2'$		3	11	82	6	87.351	0.42573	5	3.21	4.59	5.54	5.58	5.73	6.51	7.28	7.47	7.79	7.95	8.66	12.14	17.19	17.82	18.06
Bi	$K\beta_1$		3	89	83	6	87.328	0.42584	6	3.21	4.59	5.54	5.58	5.73	6.51	7.28	7.48	7.79	7.95	8.66	12.14	17.20	17.82	18.07
Sn	$K\beta_2$		1	5	50	6	29.104	0.42591	6	3.21	4.59	5.54	5.59	5.73	6.51	7.28	7.48	7.79	7.96	8.66	12.14	17.20	17.83	18.07
Pb	$K\beta_2''$		3	11	82	6	87.222	0.42636	5	3.22	4.59	5.55	5.59	5.74	6.52	7.29	7.48	7.80	7.96	8.67	12.16	17.22	17.84	18.09
W	$K\alpha_2$		2	50	74	6	57.972	0.42766	6	3.23	4.61	5.57	5.61	5.75	6.54	7.31			7.99	8.70	12.19	17.27	17.90	18.15
Tm	$K\beta_5$	B	2	.2	69	6	57.914	0.42808	5	3.23	4.61	5.57	5.61	5.76	6.54	7.32			8.00	8.70	12.21	17.29	17.92	18.16
Bi	$K\beta_3$		3	13	83	6	86.819	0.42834	6	3.23	4.61	5.57	5.62	5.76	6.55	7.32	7.52	7.83	8.00	8.71	12.21	17.30	17.93	18.17
Ta	$K\alpha_1$		2	100	73	6	57.523	0.43099	6	3.25	4.64	5.61	5.65	5.80	6.59	7.37			8.05	8.75	12.29	17.41	18.04	18.29
Tm	$K\beta_1$		2	23	69	6	57.506	0.43112	5	3.25	4.64	5.61	5.65	5.80	6.59	7.37			8.05	8.77	12.29	17.41	18.05	18.29
Er	$K-O_{2,3}$		2	.01	68	6	57.439	0.43162	5	3.26	4.65	5.62	5.66	5.81	6.60	7.38			8.06	8.78	12.31	17.43	18.07	18.32
Sn	$K\beta_5'$	B	1	.1	50	6	28.711	0.43175	5	3.26	4.65	5.62	5.66	5.81	6.60	7.38	7.58	7.90	8.06	8.78	12.31	17.44	18.07	18.32
Sn	$K\beta_5''$	B	1	.1	50	6	28.705	0.43184	5	3.26	4.65	5.62	5.66	5.81	6.60	7.38	7.58	7.90	8.07	8.78	12.31	17.44	18.08	18.32
W	$K-L_1$	B	2	.01	74	6	57.410	0.43184	5	3.26	4.65	5.62	5.66	5.81	6.60	7.38			8.07	8.78	12.31	17.44	18.08	18.32
Fr	$K\alpha_1$	H	3	100	87	6	86.089	0.43197	5	3.26	4.65	5.62	5.66	5.81	6.60	7.38	7.58	7.90	8.07	8.78	12.32	17.45	18.08	18.33
Cf	$K\alpha_1$		4	100	98	3	114.778	0.43200		3.26	4.65	5.62	5.67	5.81	6.60	7.38	7.58	7.90	8.07	8.78	12.32	17.45	18.08	18.33
U	$K\beta_2'$		4	11	92	6	114.587	0.43272	5	3.26	4.66	5.63	5.67	5.82	6.62	7.40	7.60	7.91	8.08	8.80	12.34	17.48	18.11	18.36
Tm	$K\beta_3$		2	11	69	6	57.293	0.43272	5	3.25	4.66	5.63	5.67	5.82	6.62	7.40			8.08	8.80	12.34	17.48	18.11	18.36
I	$K\alpha_1$		1	100	53	6	28.607	0.43332	6	3.27	4.67	5.64	5.68	5.83	6.62	7.41	7.61	7.92	8.09	8.81	12.36	17.50	18.14	18.39
Er	$K\beta_2$	H	2	8	68	6	57.204	0.43340	4	3.27	4.67	5.64	5.68	5.83	6.63	7.41			8.10	8.81	12.36	17.51	18.14	18.39
U	$K\beta_2''$	D	4	11	92	6	114.314	0.43375	6	3.27	4.67	5.65	5.69	5.84	6.63	7.41	7.61	7.93	8.10	8.82	12.37	17.52	18.16	18.41
Ta	$K\alpha_{1,2}$		2	150	73	6	57.098	0.43420	6	3.28	4.68	5.65	5.69	5.84	6.64	7.42			8.11	8.83	12.38	17.54	18.18	18.43
I	$K\alpha_{1,2}$		1	150	53	6	28.508	0.43482	6	3.28	4.68	5.66	5.70	5.85	6.65	7.43	7.63	7.95	8.12	8.84	12.40	17.56	18.20	18.45
Pb	$K\beta_5'$	B	3	.4	82	6	85.519	0.43485	5	3.28	4.68	5.66	5.70	5.85	6.65	7.43	7.63	7.95	8.12	8.84	12.40	17.57	18.20	18.45
Sn	$K\beta_1$		1	19	50	6	28.481	0.43524	6	3.28	4.69	5.66	5.71	5.86	6.65	7.44	7.64	7.96	8.13	8.85	12.41	17.58	18.22	18.47
Tl	$K-O_{2,3}$		3	.01	81	6	85.437	0.43527	5	3.28	4.69	5.67	5.71	5.86	6.65	7.44	7.64	7.96	8.13	8.85	12.41	17.58	18.22	18.47

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pb	$K\beta_5''$	B	3	.4	82	6	85.419	0.43536	5	3.28	4.69	5.67	5.71	5.86	6.66	7.44	7.64	7.96	8.13	8.85	12.41	17.59	18.22	18.48
Ra	$K\alpha_2$	H	3	50	88	6	85.419	0.43536	5	3.28	4.69	5.67	5.71	5.86	6.66	7.44	7.64	7.96	8.13	8.85	12.41	17.59	18.22	18.48
Sn	$K\beta_3$		1	9	50	6	28.439	0.43588	6	3.29	4.70	5.67	5.72	5.86	6.66	7.45	7.65	7.97	8.14	8.86	12.43	17.61	18.25	18.50
Np	$K8_1$		4	30	93	3	113.725	0.43600		3.29	4.70	5.67	5.72	5.87	6.67	7.45	7.65	7.97	8.14	8.87	12.43	17.61	18.25	18.50
Tl	$K\beta_4$	B	3	.2	81	6	85.178	0.43659	5	3.29	4.70	5.68	5.73	5.87	6.67	7.46	7.66	7.98	8.16	8.88	12.45	17.64	18.28	18.53
Fr	$K\alpha_{1,2}$	H	3	150	87	6	85.110	0.43694	5	3.30	4.71	5.69	5.73	5.88	6.68	7.47	7.67	7.99	8.16	8.88	12.46	17.65	18.29	18.54
I	$K\alpha_2$		1	50	53	6	28.312	0.43783	6	3.30	4.72	5.70	5.74	5.89	6.69	7.48	7.69	8.01	8.18	8.90	12.48	17.69	18.33	18.58
Tl	$K\beta_2'$		3	10	81	6	84.933	0.43785	5	3.30	4.72	5.70	5.74	5.89	6.69	7.49	7.69	8.01	8.18	8.90	12.49	17.69	18.33	18.58
Pb	$K\beta_1$		3	88	82	6	84.922	0.43791	6	3.30	4.72	5.70	5.74	5.89	6.69	7.49	7.69	8.01	8.18	8.90	12.49	17.69	18.33	18.58
Tl	$K\beta_2''$		3	10	81	6	84.823	0.43842	5	3.31	4.72	5.71	5.75	5.90	6.70	7.49	7.70	8.02	8.19	8.92	12.50	17.71	18.35	18.61
Cf	$K\alpha_{1,2}$		4	150	98	3	112.999	0.43880		3.31	4.73	5.71	5.75	5.90	6.71	7.50	7.70	8.02	8.20	8.92	12.51	17.73	18.37	18.62
Pb	$K\beta_3$		3	13	82	6	84.436	0.44043	6	3.32	4.74	5.73	5.78	5.93	6.73	7.53	7.73	8.05	8.23	8.96	12.56	17.79	18.44	18.69
Ta	$K\alpha_2$		2	50	73	6	56.267	0.44061	6	3.32	4.75	5.73	5.78	5.93	6.74	7.53			8.23	8.96	12.56	17.80	18.45	18.70
Er	$K\beta_5$	B	2	.2	68	6	56.030	0.44248	5	3.34	4.77	5.76	5.80	5.95	6.76	7.56			8.27	9.00	12.62	17.88	18.53	18.78
In	AK	H	1		49	6	27.937	0.44371	5	3.35	4.78	5.78	5.82	5.97	6.78	7.59	7.79	8.11	8.29	9.02	12.65	17.93	18.58	18.83
In	$K-O_{2,3}$		1	.01	49	6	27.935	0.44374	5	3.35	4.78	5.78	5.82	5.97	6.78	7.59	7.79	8.12	8.29	9.02	12.65	17.93	18.58	18.83
In	$K\beta_4$	B	1	.01	49	6	27.923	0.44393	5	3.35	4.78	5.78	5.82	5.97	6.79	7.59	7.79	8.12	8.29	9.03	12.66	17.94	18.59	18.84
Rn	$K\alpha_1$	H	3	100	86	6	83.768	0.44394	5	3.35	4.78	5.78	5.82	5.97	6.79	7.59	7.79	8.12	8.29	9.03	12.66	17.94	18.59	18.84
Bk	$K\alpha_1$		4	100	97	3	111.676	0.44400		3.35	4.78	5.78	5.82	5.97	6.79	7.59	7.80	8.12	8.29	9.03	12.66	17.94	18.59	18.85
Pa	$K8_2'$	H	4	11	91	6	111.605	0.44428	5	3.35	4.79	5.78	5.83	5.98	6.79	7.60	7.80	8.13	8.30	9.03	12.67	17.95	18.60	18.86
Hf	$K\alpha_1$		2	100	72	6	55.781	0.44445	6	3.35	4.79	5.78	5.83	5.98	6.79	7.60			8.30	9.04	12.67	17.96	18.61	18.86
In	$K\beta_2$		1	5	49	6	27.856	0.44500	5	3.36	4.79	5.79	5.84	5.99	6.80	7.61	7.81	8.14	8.31	9.05	12.69	17.98	18.63	18.89
Pa	$K\beta_2''$	H	4	11	91	6	111.385	0.44516	5	3.36	4.80	5.79	5.84	5.99	6.81	7.61	7.82	8.14	8.32	9.05	12.69	17.99	18.64	18.90
Er	$K\beta_1$		2	22	68	6	55.672	0.44532	5	3.36	4.80	5.80	5.84	5.99	6.81	7.61			8.32	9.06	12.70	17.99	18.65	18.90
U	$K8_1$		4	31	92	6	111.281	0.44558	6	3.36	4.80	5.80	5.84	6.00	6.81	7.62	7.82	8.15	8.32	9.06	12.71	18.00	18.66	18.91
Ho	$K-O_{2,3}$		2	.01	67	6	55.575	0.44610	5	3.37	4.81	5.81	5.85	6.00	6.82	7.63			8.33	9.07	12.72	18.02	18.68	18.94
Er	$K8_3$		2	12	68	6	55.485	0.44682	5	3.37	4.81	5.82	5.86	6.01	6.83	7.64			8.35	9.09	12.74	18.05	18.71	18.97
Fr	$K\alpha_2$	H	3	50	87	6	83.217	0.44688	5	3.37	4.81	5.82	5.86	6.01	6.83	7.64	7.85	8.17	8.35	9.09	12.74	18.06	18.71	18.97
Tl	$K\beta_5$	B	3	.4	81	6	83.100	0.44751	5	3.38	4.82	5.82	5.87	6.02	6.84	7.65	7.86	8.18	8.36	9.10	12.76	18.08	18.74	19.00
Hf	$K\alpha_{1,2}$		2	150	72	6	55.382	0.44765	6	3.38	4.82	5.83	5.87	6.02	6.84	7.65			8.36	9.10	12.77	18.09	18.74	19.00
Hg	$K-O_{2,3}$		3	.01	80	6	83.022	0.44793	5	3.38	4.83	5.83	5.87	6.03	6.85	7.66	7.86	8.19	8.37	9.11	12.77	18.10	18.76	19.01
Ho	$K8_2$	H	2	8	67	6	55.315	0.44820	4	3.38	4.83	5.83	5.88	6.03	6.85	7.66			8.37	9.11	12.78	18.11	18.77	19.03
Rn	$K\alpha_{1,2}$	H	3	150	86	6	82.843	0.44890	5	3.39	4.84	5.84	5.89	6.04	6.86	7.67	7.88	8.21	8.39	9.13	12.80	18.14	18.80	19.06
U	$K\beta_3$		4	14	92	6	110.387	0.44918	6	3.39	4.84	5.85	5.89	6.04	6.87	7.68	7.89	8.22	8.39	9.13	12.81	18.15	18.81	19.07
Hg	$K8_4$	8	3	.2	80	6	82.761	0.44934	5	3.39	4.84	5.85	5.89	6.05	6.87	7.68	7.89	8.22	8.39	9.14	12.81	18.16	18.82	19.07
Tl	$K8_1$		3	78	81	6	82.562	0.45043	6	3.40	4.85	5.86	5.91	6.06	6.89	7.70	7.91	8.24	8.41	9.16	12.85	18.20	18.86	19.12
Hg	$K\beta_2'$		3	10	80	6	82.530	0.45060	5	3.40	4.85	5.86	5.91	6.06	6.89	7.70	7.91	8.24	8.42	9.16	12.85	18.21	18.87	19.13
Bk	$K\alpha_{1,2}$		4	150	97	3	109.991	0.45080		3.40	4.86	5.87	5.91	6.07	6.89	7.71	7.91	8.24	8.42	9.17	12.86	18.21	18.88	19.14
In	$K\beta_5'$	B	1	.1	49	6	27.494	0.45086	5	3.40	4.86	5.87	5.91	6.07	6.89	7.71	7.92	8.25	8.42	9.17	12.86	18.22	18.88	19.14
In	$K\beta_5''$	B	1	.1	49	6	27.487	0.45098	5	3.40	4.86	5.87	5.91	6.07	6.89	7.71	7.92	8.25	8.42	9.17	12.86	18.22	18.88	19.14
Hg	$K\beta_2''$		3	10	80	6	82.420	0.45120	5	3.40	4.86	5.87	5.92	6.07	6.90	7.71	7.92	8.25	8.43	9.18	12.87	18.23	18.89	19.15
Te	$K\alpha_1$		1	100	52	6	27.468	0.45129	6	3.41	4.86	5.87	5.92	6.07	6.90	7.72	7.92	8.25	8.43	9.18	12.87	18.24	18.90	19.16
Cf	$K\alpha_2$		4	50	98	3	109.699	0.45200		3.41	4.87	5.88	5.93	6.08	6.91	7.73	7.94	8.27	8.44	9.19	12.89	18.26	18.93	19.19
Te	$K\alpha_{1,2}$		1	150	52	6	27.377	0.45279	6	3.42	4.88	5.89	5.94	6.09	6.92	7.74	7.95	8.28	8.46	9.21	12.91	18.30	18.96	19.22
Tl	$K\beta_3$		3	13	81	6	82.104	0.45294	6	3.42	4.88	5.90	5.94	6.09	6.92	7.74	7.95	8.28	8.46	9.21	12.92	18.30	18.97	19.23
Hf	$K\alpha_2$		2	50	72	6	54.602	0.45405	6	3.43	4.89	5.91	5.95	6.11	6.94	7.76			8.48	9.23	12.95	18.35	19.01	19.28
In	$K\beta_1$		1	19	49	6	27.271	0.45454	6	3.43	4.90	5.92	5.96	6.12	6.95	7.77	7.98	8.31	8.49	9.24	12.96	18.37	19.04	19.30
In	$K\beta_3$		1	8	49	6	27.233	0.45518	6	3.43	4.90	5.92	5.97	6.12	6.96	7.78	7.99	8.33	8.50	9.26	12.98	18.39	19.06	19.32
Te	$K\alpha_2$		1	50	52	6	27.197	0.45578	6	3.44	4.91	5.93	5.98	6.13	6.97	7.79	8.00	8.34	8.51	9.27	13.00	18.42	19.09	19.35
Cm	$K\alpha_1$		4	100	96	3	108.737	0.45600		3.44	4.91	5.94	5.98	6.14	6.97	7.80	8.01	8.34	8.52	9.27	13.01	18.43	19.10	19.36
Th	$K8_2'$		4	11	90	6	108.699	0.45616	6	3.44	4.91	5.94	5.98	6.14	6.97	7.80	8.01	8.34	8.52	9.28	13.01	18.43	19.10	19.37
At	$K\alpha_1$	H	3	100	85	6	81.499	0.45630	5	3.44	4.92	5.94	5.98	6.14	6.98	7.80	8.01	8.35	8.52	9.28	13.01	18.44	19.11	19.37
Th	$K\beta_2''$		4	11	90	6	108.489	0.45704	5	3.45	4.92	5.95	5.99	6.15	6.99	7.81	8.02	8.36	8.54	9.29	13.03	18.47	19.14	19.40
Ho	$K8_5$	8	2	.2	67	6	54.238	0.45710	5	3.45	4.92	5.95	5.99	6.15	6.99	7.81			8.54	9.30	13.04	18.47	19.14	19.41
Pa	$K\beta_1$	H	4	30	91	6	108.409	0.45738	6	3.45	4.93	5.95	6.00	6.15	6.99	7.82	8.03	8.37	8.54	9.30	13.04	18.48	19.15	19.42
Lu	$K\alpha_1$		2	100	71	6	54.061	0.45860	6	3.46	4.94	5.97	6.01	6.17	7.01	7.84			8.57	9.33	13.08	18.53	19.21	19.47
Rn	$K\alpha_2$	H	3	50	86	6	81.051	0.45882	5	3.46	4.94	5.97	6.02	6.17	7.01	7.84	8.06	8.39	8.57	9.33	13.09	18.54	19.22	19.48
Ho	$K\beta_1$		2	22	67	6	53.868	0.46024	5	3.47	4.96	5.99	6.04	6.19	7.04	7.87			8.60	9.36	13.13	18.60	19.28	19.54
Hg	$K\beta_5$	B	3	.4	80	6	80.740	0.46059	5	3.48	4.96	5.99	6.04	6.20	7.04	7.87	8.09	8.42	8.60	9.37	13.14	18.61	19.29	19.56
Pa	$K\beta_3$	H	4	14	91	6	107.576	0.46092	5	3.48	4.97	6.00	6.04	6.20	7.05	7.88	8.09	8.43	8.61	9.37	13.15	18.63	19.30	19.57
Au	$K-O_{2,3}$		3	.01	79	6	80.654	0.46108	6	3.48	4.97	6.00	6.05	6.20	7.05	7.88	8.10	8.43	8.61	9.38	13.15	18.63	19.31	19.58
Dy	$K-O_{2,3}$		2	.01	66	6	53.765	0.46112	5	3.48	4.97	6.00	6.05	6.20	7.05	7.88			8.61	9.38	13.15	18.64	19.31	19.58
At	$K\alpha_{1,2}$	H	3	150	85	6	80.624	0.46125	5	3.48	4.97	6.00	6.05	6.21	7.05	7.89	8.10	8.44	8.62	9.38	13.16	18.64	19.32	19.58
Ho	$K\beta_3$		2	11	67	6	53.702	0.46166	5	3.48	4.97	6.01	6.05	6.21	7.06	7.89			8.62	9.39	13.17	18.66	19.34	19.60
Lu	$K\alpha_{1,2}$		2	150	71	6	53.687	0.46178	6	3.48	4.97	6.01	6.06	6.21	7.06	7.89			8.63	9.39	13.17	18.66	19.34	19.61

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Au	$K\beta_4$	B	3	.2	79	6	80.377	0.46267	6		3.49	4.98	6.02	6.07	6.23	7.07	7.91	8.12	8.46	8.64	9.41	13.20	18.70	19.38	19.65
Cm	$K\alpha_{1,2}$		4	150	96	3	107.139	0.46280			3.49	4.99	6.02	6.07	6.23	7.08	7.91	8.13	8.46	8.65	9.41	13.20	18.70	19.38	19.65
Dy	$K\beta_2$	H	2	9	66	6	53.500	0.46340	4		3.50	4.99	6.03	6.08	6.24	7.08	7.92			8.66	9.42	13.22	18.73	19.41	19.68
Hg	$K\beta_1$		3	28	80	6	80.240	0.46346	6		3.50	4.99	6.03	6.08	6.24	7.09	7.92	8.14	8.48	8.66	9.43	13.22	18.73	19.41	19.68
Au	$K\beta_2'$		3	10	79	6	80.172	0.46385	6		3.50	5.00	6.04	6.08	6.24	7.09	7.93	8.14	8.48	8.67	9.43	13.23	18.75	19.43	19.70
Bk	$K\alpha_2$		4	50	97	3	106.862	0.46400			3.50	5.00	6.04	6.09	6.24	7.09	7.93	8.15	8.49	8.67	9.44	13.23	18.75	19.43	19.70
Cd	AK		1		48	6	26.711	0.46407	5		3.50	5.00	6.04	6.09	6.24	7.10	7.93	8.15	8.49	8.67	9.44	13.24	18.76	19.44	19.71
Au	$K\beta_2''$		3	10	79	6	80.062	0.46449	5		3.50	5.00	6.05	6.09	6.25	7.10	7.94	8.16	8.50	8.68	9.45	13.25	18.77	19.46	19.72
Cf	$K\beta_2$		5	11	98	3	133.290	0.46500			3.51	5.01	6.05	6.10	6.26	7.11	7.95	8.16	8.50	8.69	9.46	13.26	18.79	19.48	19.75
Cd	$K\beta_2$		1	5	48	6	26.639	0.46533	6		3.51	5.01	6.06	6.10	6.26	7.11	7.96	8.17	8.51	8.69	9.46	13.27	18.81	19.49	19.76
Hg	$K\beta_3$		3	13	80	6	79.809	0.46596	6		3.52	5.02	6.06	6.11	6.27	7.12	7.97	8.18	8.52	8.70	9.48	13.29	18.83	19.52	19.79
Am	$K\alpha_1$		4	100	95	3	105.949	0.46800			3.53	5.04	6.09	6.14	6.30	7.16	8.00	8.22	8.56	8.74	9.52	13.35	18.92	19.60	19.87
Lu	$K\alpha_2$		2	50	71	6	52.956	0.46816	6		3.53	5.04	6.09	6.14	6.30	7.16	8.00			8.75	9.52	13.35	18.92	19.61	19.88
Ac	$K\beta_2'$	H	4	11	89	6	105.849	0.46844	5		3.53	5.05	6.10	6.14	6.30	7.16	8.01	8.22	8.57	8.75	9.53	13.36	18.93	19.62	19.89
Po	$K\alpha_1$	H	3	100	84	6	79.279	0.46908	5		3.54	5.05	6.11	6.15	6.31	7.17	8.02	8.24	8.58	8.76	9.54	13.38	18.96	19.65	19.92
Ac	$K\beta_2''$	H	4	11	89	6	105.660	0.46928	5		3.54	5.06	6.11	6.15	6.31	7.17	8.02	8.24	8.58	8.77	9.54	13.39	18.97	19.66	19.93
Th	$K\beta_1$		4	30	90	6	105.591	0.46958	6		3.54	5.06	6.11	6.16	6.32	7.18	8.03	8.25	8.59	8.77	9.55	13.39	18.98	19.67	19.94
Sb	$K\alpha_1$		1	100	51	6	26.355	0.47035	6		3.55	5.07	6.12	6.17	6.33	7.19	8.04	8.26	8.60	8.79	9.57	13.42	19.01	19.70	19.98
At	$K\alpha_2$	H	3	50	85	6	78.930	0.47115	5		3.55	5.08	6.13	6.18	6.34	7.20	8.06	8.27	8.62	8.80	9.58	13.44	19.04	19.74	20.01
Sb	$K\alpha_{1,2}$		1	150	51	6	26.271	0.47184	6		3.56	5.08	6.14	6.19	6.35	7.21	8.07	8.28	8.63	8.81	9.60	13.46	19.07	19.77	20.04
Dy	$K\beta_5$	B	2	.2	66	6	52.485	0.47236	5		3.56	5.09	6.15	6.19	6.36	7.22	8.08			8.82	9.61	13.47	19.09	19.79	20.06
Th	$K\beta_3$		4	14	90	6	104.813	0.47307	6		3.57	5.10	6.16	6.20	6.37	7.23	8.09	8.31	8.65	8.84	9.62	13.49	19.12	19.82	20.09
Yb	$K\alpha_1$		2	100	70	6	52.380	0.47331	6		3.57	5.10	6.16	6.21	6.37	7.24	8.09			8.84	9.63	13.50	19.13	19.83	20.10
Au	$K\beta_5'$	B	3	.3	79	6	78.515	0.47364	6		3.57	5.10	6.17	6.21	6.37	7.24	8.10	8.32	8.66	8.85	9.63	13.51	19.15	19.84	20.12
Po	$K\alpha_{1,2}$	H	3	150	84	6	78.452	0.47402	5		3.58	5.11	6.17	6.22	6.38	7.25	8.10	8.32	8.67	8.86	9.64	13.52	19.16	19.86	20.13
Au	$K\beta_5''$	8	3	.3	79	6	78.425	0.47419	6		3.58	5.11	6.17	6.22	6.38	7.25	8.11	8.33	8.67	8.86	9.64	13.53	19.17	19.87	20.14
Pt	$K\text{-}O_{2,3}$		3	.01	78	6	78.327	0.47478	5		3.58	5.12	6.18	6.23	6.39	7.26	8.12	8.34	8.68	8.87	9.66	13.54	19.19	19.89	20.17
Am	$K\alpha_{1,2}$		4	150	95	3	104.431	0.47480			3.58	5.12	6.18	6.23	6.39	7.26	8.12	8.34	8.68	8.87	9.66	13.54	19.19	19.89	20.17
Sb	$K\alpha_2$		1	50	51	6	26.106	0.47483	6		3.58	5.12	6.18	6.23	6.39	7.26	8.12	8.34	8.69	8.87	9.66	13.54	19.19	19.89	20.17
Bk	$K\beta_2$		5	11	97	3	130.484	0.47500			3.58	5.12	6.18	6.23	6.39	7.26	8.12	8.34	8.69	8.87	9.66	13.55	19.20	19.90	20.17
Cd	$K\beta_1$		1	19	48	6	26.091	0.47510	6		3.58	5.12	6.18	6.23	6.39	7.26	8.12	8.34	8.69	8.88	9.66	13.55	19.21	19.90	20.18
Cd	$K\beta_3$		1	8	48	6	26.057	0.47573	6		3.59	5.13	6.19	6.24	6.40	7.27	8.13	8.35	8.70	8.89	9.68	13.57	19.23	19.93	20.21
Dy	$K\beta_1$		2	23	66	6	52.110	0.47576	5		3.59	5.13	6.19	6.24	6.40	7.27	8.13			8.89	9.68	13.57	19.23	19.93	20.21
Cm	$K\alpha_2$		4	50	96	3	104.168	0.47600			3.59	5.13	6.20	6.24	6.41	7.28	8.14	8.36	8.71	8.89	9.68	13.58	19.24	19.94	20.22
Pt	$K\beta_4$	B	3	.2	78	6	78.056	0.47643	5		3.59	5.13	6.20	6.25	6.41	7.28	8.15	8.37	8.71	8.90	9.69	13.59	19.26	19.96	20.24
Pt	$K\beta_4$	B	3	.2	78	6	78.056	0.47643	5		3.59	5.13	6.20	6.25	6.41	7.28	8.15	8.37	8.71	8.90	9.69	13.59	19.26	19.96	20.24
Yb	$K\alpha_{1,2}$		2	150	70	6	52.030	0.47649	6		3.60	5.13	6.20	6.25	6.41	7.29	8.15			8.90	9.69	13.59	19.26	19.96	20.24
Au	$K\beta_1$		3	27	79	6	77.971	0.47695	6		3.60	5.14	6.21	6.25	6.42	7.29	8.15	8.37	8.72	8.91	9.70	13.61	19.28	19.98	20.26
Tb	$K\text{-}O_{2,3}$		2	.01	65	6	51.957	0.47716	5		3.60	5.14	6.21	6.26	6.42	7.30	8.16			8.91	9.70	13.61	19.29	19.99	20.27
Dy	$K\beta_3$		2	11	66	6	51.949	0.47724	5		3.60	5.14	6.21	6.26	6.42	7.30	8.16			8.92	9.71	13.61	19.29	19.99	20.27
Pt	$K\beta_2'$		3	10	78	6	77.864	0.47760	5		3.60	5.15	6.22	6.26	6.43	7.30	8.17	8.39	8.74	8.92	9.71	13.62	19.31	20.01	20.29
Pt	$K\beta_2''$		3	10	78	6	77.772	0.47817	5		3.61	5.15	6.22	6.27	6.43	7.31	8.18	8.40	8.75	8.93	9.73	13.64	19.33	20.03	20.31
Tb	$K\beta_2$	H	2	8	65	6	51.715	0.47940	4		3.62	5.16	6.24	6.29	6.45	7.33	8.20			8.96	9.75	13.68	19.38	20.09	20.36
Au	$K\beta_3$		3	13	79	6	77.567	0.47943	6		3.62	5.17	6.24	6.29	6.45	7.33	8.20	8.42	8.77	8.96	9.75	13.68	19.38	20.09	20.36
Pu	$K\alpha_1$		4	100	94	3	103.300	0.48000			3.62	5.17	6.25	6.30	6.46	7.34	8.21	8.43	8.78	8.97	9.76	13.69	19.41	20.11	20.39
Ra	$K\beta_2'$	H	4	11	88	6	103.051	0.48116	5		3.63	5.18	6.26	6.31	6.47	7.36	8.23	8.45	8.80	8.99	9.79	13.73	19.45	20.16	20.44
Ra	$K\beta_2''$	H	4	11	88	6	102.871	0.48200	5		3.64	5.19	6.27	6.32	6.49	7.37	8.24	8.46	8.82	9.00	9.80	13.75	19.49	20.20	20.47
Ac	$K\beta_1$	H	4	30	89	6	102.829	0.48220	5		3.64	5.20	6.28	6.32	6.49	7.37	8.24	8.47	8.82	9.01	9.81	13.76	19.50	20.20	20.48
Bi	$K\alpha_1$		3	100	83	6	77.095	0.48237	6		3.64	5.20	6.28	6.33	6.49	7.38	8.25	8.47	8.82	9.01	9.81	13.76	19.50	20.21	20.49
Yb	$K\alpha_2$		2	50	70	6	51.345	0.48285	6		3.64	5.20	6.28	6.33	6.50	7.38	8.26			9.02	9.82	13.77	19.52	20.23	20.51
Po	$K\alpha_2$	H	3	50	84	6	76.851	0.48390	5		3.65	5.21	6.30	6.35	6.51	7.40	8.27	8.50	8.85	9.04	9.84	13.80	19.57	20.28	20.56
Cf	$K\beta_1$		5	30	98	3	127.794	0.48500			3.66	5.23	6.31	6.36	6.53	7.42	8.29	8.52	8.87	9.06	9.86	13.84	19.61	20.32	20.60
Ac	$K\beta_3$	H	4	14	89	6	102.084	0.48572	5		3.66	5.23	6.32	6.37	6.54	7.43	8.30	8.53	8.88	9.07	9.88	13.86	19.64	20.35	20.63
Ag	AK		1		47	6	25.512	0.48589	5		3.67	5.23	6.32	6.37	6.54	7.43	8.31	8.53	8.89	9.08	9.88	13.86	19.65	20.36	20.64
Ag	$K\beta_4$	B	1	.01	47	6	25.507	0.48598	5		3.67	5.24	6.33	6.37	6.54	7.43	8.31	8.53	8.89	9.08	9.88	13.86	19.65	20.37	20.65
Pu	$K\alpha_{1,2}$		4	150	94	3	101.857	0.48680			3.67	5.24	6.34	6.38	6.55	7.44	8.32	8.55	8.90	9.09	9.90	13.89	19.68	20.40	20.68
Ag	$K\beta_2$		1	5	47	6	25.452	0.48703	6		3.67	5.25	6.34	6.39	6.55	7.45	8.33	8.55	8.91	9.10	9.91	13.89	19.69	20.41	20.69
Bi	$K\alpha_{1,2}$		3	150	83	6	76.315	0.48730	6		3.68	5.25	6.34	6.39	6.56	7.45	8.33	8.56	8.91	9.10	9.91	13.90	19.70	20.42	20.70
Pt	$K\beta_5'$	8	3	.3	78	6	76.260	0.48765	5		3.68	5.25	6.35	6.40	6.56	7.46	8.34	8.56	8.92	9.11	9.92	13.91	19.72	20.44	20.72
Pt	$K\beta_5'$	8	3	.3	78	6	76.260	0.48765	5		3.68	5.25	6.35	6.40	6.56	7.46	8.34	8.56	8.92	9.11	9.92	13.91	19.72	20.44	20.72
Am	$K\alpha_2$		4	50	95	3	101.607	0.48800			3.68	5.26	6.35	6.40	6.57	7.46	8.34	8.57	8.93	9.12	9.93	13.92	19.73	20.45	20.73
Pt	$K\beta_5''$	8	3	.3	78	6	76.185	0.48813	5		3.68	5.26	6.35	6.40	6.57	7.46	8.35	8.57	8.93	9.12	9.93	13.93	19.74	20.46	20.74
Tm	$K\alpha_1$		2	100	69	6	50.733	0.48868	6		3.69	5.26	6.36	6.41	6.58	7.47	8.36			9.13	9.94	13.94	19.76	20.48	20.76
Ir	$K\text{-}O_{2,3}$		3	.01	77	6	76.040	0.48906	6		3.69	5.27	6.37	6.41	6.58	7.48	8.36	8.59	8.95	9.14	9.95	13.95	19.78	20.50	20.78
Bk	$K\beta_1$		5	30	97	3	126.490	0.49000			3.70	5.28	6.38	6.43	6.59	7.49	8.38	8.60	8.96	9.15	9.97	13.98	19.81	20.54	20.82

El	Line	C	N	I	Z	R	Kev	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)	Ge (111)	Si (111)	AOP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Cm	$K\beta_2$		5	11	96	3	126.490	0.49000		3.70	5.28	6.38	6.43	6.59	7.49	8.38	8.60	8.96	9.15	9.97	13.98	19.81	20.54	20.82
Ir	$K\beta_4$	8	3	.2	77	6	75.807	0.49056	5	3.70	5.29	6.39	6.43	6.60	7.50	8.39	8.61	8.97	9.17	9.98	14.00	19.84	20.56	20.84
Sn	$K\alpha_1$		1	100	50	6	25.267	0.49060	6	3.70	5.29	6.39	6.43	6.60	7.50	8.39	8.61	8.97	9.17	9.98	14.00	19.84	20.56	20.84
Pt	$K\beta_1$		3	27	78	6	75.735	0.49102	6	3.70	5.29	6.39	6.44	6.61	7.51	8.40	8.62	8.98	9.17	9.99	14.01	19.86	20.58	20.86
Tm	$K\alpha_{1,2}$		2	150	69	6	50.406	0.49185	6	3.71	5.30	6.40	6.45	6.62	7.52	8.41			9.19	10.00	14.03	19.89	20.61	20.90
Ir	$K\beta_2'$		3	10	77	6	75.606	0.49187	6	3.71	5.30	6.40	6.45	6.62	7.52	8.41	8.64	9.00	9.19	10.00	14.03	19.89	20.61	20.90
Np	$K\alpha_1$		4	100	93	3	100.781	0.49200		3.71	5.30	6.40	6.45	6.62	7.52	8.41	8.64	9.00	9.19	10.01	14.04	19.90	20.62	20.90
Sn	$K\alpha_{1,2}$		1	150	50	6	25.191	0.49208	6	3.71	5.30	6.41	6.45	6.62	7.52	8.41	8.64	9.00	9.19	10.01	14.04	19.90	20.62	20.91
Tb	$K\beta_1$		2	23	65	6	50.374	0.49216	5	3.71	5.30	6.41	6.45	6.62	7.53	8.42			9.20	10.01	14.04	19.90	20.63	20.91
Ir	$K\beta_2''$		3	10	77	6	75.516	0.49245	5	3.72	5.31	6.41	6.46	6.63	7.53	8.42	8.65	9.01	9.20	10.02	14.05	19.91	20.64	20.92
Ag	$K\beta_5$	8	1	.1	47	6	25.141	0.49306	5	3.72	5.31	6.42	6.47	6.64	7.54	8.43	8.66	9.02	9.21	10.03	14.07	19.94	20.66	20.95
Pt	$K\beta_3$		3	12	78	6	75.355	0.49350	6	3.72	5.32	6.42	6.47	6.64	7.55	8.44	8.67	9.03	9.22	10.04	14.08	19.96	20.68	20.97
Tb	$K\beta_3$		2	11	65	6	50.221	0.49366	5	3.72	5.32	6.43	6.47	6.64	7.55	8.44			9.22	10.04	14.08	19.96	20.69	20.98
Gd	$K-O_{2,3}$		2	.01	64	6	50.213	0.49374	5	3.73	5.32	6.43	6.48	6.64	7.55	8.44			9.22	10.04	14.09	19.97	20.69	20.98
Pr	$K\beta_2'$	H	4	11	87	6	100.307	0.49432	5	3.73	5.33	6.43	6.48	6.65	7.56	8.45	8.68	9.04	9.24	10.05	14.10	19.99	20.72	21.00
Sn	$K\alpha_2$		1	50	50	6	25.040	0.49505	6	3.74	5.33	6.44	6.49	6.66	7.57	8.46	8.69	9.06	9.25	10.07	14.12	20.02	20.75	21.04
Pr	$K\beta_2''$	H	4	11	87	6	100.137	0.49516	5	3.74	5.33	6.45	6.49	6.66	7.57	8.47	8.69	9.06	9.25	10.07	14.13	20.02	20.75	21.04
Ra	$K\beta_4$	H	4	30	88	6	100.113	0.49528	5	3.74	5.34	6.45	6.50	6.67	7.57	8.47	8.70	9.06	9.25	10.07	14.13	20.03	20.76	21.05
Pb	$K\alpha_1$		3	100	82	6	74.956	0.49613	6	3.74	5.35	6.46	6.51	6.68	7.59	8.48	8.71	9.08	9.27	10.09	14.16	20.06	20.79	21.08
Gd	$K\beta_2$		2	8	64	6	49.952	0.49632	5	3.74	5.35	6.46	6.51	6.68	7.59	8.49			9.27	10.10	14.16	20.07	20.80	21.09
Ag	$K\beta_1$		1	18	47	6	24.938	0.49707	6	3.75	5.36	6.47	6.52	6.69	7.60	8.50	8.73	9.09	9.29	10.11	14.18	20.10	20.83	21.12
Bi	$K\alpha_2$		3	50	83	6	74.802	0.49715	6	3.75	5.36	6.47	6.52	6.69	7.60	8.50	8.73	9.09	9.29	10.11	14.18	20.11	20.84	21.13
Ag	$K\beta_3$		1	8	47	6	24.907	0.49768	6	3.76	5.36	6.48	6.53	6.70	7.61	8.51	8.74	9.10	9.30	10.12	14.20	20.13	20.86	21.15
Tm	$K\alpha_2$		2	50	69	6	49.764	0.49819	6	3.76	5.37	6.48	6.53	6.70	7.62	8.52			9.31	10.13	14.21	20.15	20.88	21.17
Ra	$K\beta_3$	H	4	14	88	6	99.415	0.49876	5	3.76	5.37	6.49	6.54	6.71	7.63	8.53	8.76	9.12	9.32	10.15	14.23	20.17	20.91	21.20
Np	$K\alpha_{1,2}$		4	150	93	3	99.407	0.49880		3.76	5.37	6.49	6.54	6.71	7.63	8.53	8.76	9.12	9.32	10.15	14.23	20.17	20.91	21.20
Am	$K\beta_2$		5	11	95	3	123.960	0.50000		3.77	5.39	6.51	6.56	6.73	7.65	8.55	8.78	9.15	9.34	10.17	14.27	20.22	20.96	21.25
Pu	$K\alpha_2$		4	50	94	3	99.168	0.50000		3.77	5.39	6.51	6.56	6.73	7.65	8.55	8.78	9.15	9.34	10.17	14.27	20.22	20.96	21.25
Pb	$K\alpha_{1,2}$		3	150	82	6	74.221	0.50104	6	3.78	5.40	6.52	6.57	6.74	7.66	8.57	8.80	9.17	9.36	10.19	14.30	20.27	21.00	21.29
Ir	$K\beta_5'$	B	3	.3	77	6	74.062	0.50212	6	3.79	5.41	6.54	6.59	6.76	7.68	8.59	8.82	9.19	9.38	10.21	14.33	20.31	21.05	21.34
Ir	$K\beta_5''$	8	3	.3	77	6	73.966	0.50277	5	3.79	5.42	6.54	6.59	6.77	7.69	8.60	8.83	9.20	9.39	10.23	14.35	20.34	21.08	21.37
U	$K\alpha_1$		4	100	92	6	98.422	0.50379	6	3.80	5.43	6.56	6.61	6.78	7.70	8.61	8.85	9.22	9.41	10.25	14.37	20.38	21.12	21.41
Os	$K-O_{2,3}$		3	.01	76	6	73.795	0.50394	5	3.80	5.43	6.56	6.61	6.78	7.71	8.62	8.85	9.22	9.42	10.25	14.38	20.38	21.13	21.42
Er	$K\alpha_1$		2	100	68	6	49.119	0.50473	6	3.81	5.44	6.57	6.62	6.79	7.72	8.63			9.43	10.27	14.40	20.42	21.16	21.45
Cm	$K\beta_1$		5	30	96	3	122.733	0.50500		3.81	5.44	6.57	6.62	6.80	7.72	8.63	8.87	9.24	9.44	10.27	14.41	20.43	21.17	21.46
Os	$K\beta_4$	8	3	.2	76	6	73.602	0.50526	5	3.81	5.44	6.58	6.63	6.80	7.73	8.64	8.87	9.24	9.44	10.28	14.42	20.44	21.18	21.47
Gd	$K\beta_5$	8	2	.2	64	6	49.045	0.50550	5	3.81	5.45	6.58	6.63	6.80	7.73	8.64			9.44	10.28	14.42	20.45	21.19	21.48
Ir	$K\beta_1$		3	27	77	6	73.548	0.50563	6	3.82	5.45	6.58	6.63	6.80	7.73	8.65	8.88	9.25	9.45	10.29	14.43	20.45	21.20	21.49
Os	$K\beta_2'$		3	10	76	6	73.390	0.50672	6	3.82	5.46	6.60	6.65	6.82	7.75	8.66	8.90	9.27	9.47	10.31	14.46	20.50	21.24	21.54
Os	$K\beta_2''$		3	10	76	6	73.306	0.50730	5	3.83	5.47	6.60	6.65	6.83	7.76	8.67	8.91	9.28	9.48	10.32	14.48	20.52	21.27	21.56
Er	$K\alpha_{1,2}$		2	150	68	6	48.813	0.50789	6	3.83	5.47	6.61	6.66	6.84	7.77	8.68			9.49	10.33	14.49	20.55	21.29	21.59
Rn	$K\beta_2'$	H	4	11	86	6	97.622	0.50792	5	3.83	5.47	6.61	6.66	6.84	7.77	8.69	8.92	9.29	9.49	10.33	14.49	20.55	21.29	21.59
Ir	$K\beta_3$		3	12	77	6	73.190	0.50810	6	3.83	5.47	6.61	6.66	6.84	7.77	8.69	8.92	9.29	9.49	10.34	14.50	20.55	21.30	21.60
Rn	$K\beta_2''$	H	4	11	86	6	97.460	0.50876	5	3.84	5.48	6.62	6.67	6.85	7.78	8.70	8.93	9.31	9.51	10.35	14.52	20.58	21.33	21.63
Fr	$K\beta_1$	H	4	29	87	6	97.460	0.50876	5	3.84	5.48	6.62	6.67	6.85	7.78	8.70	8.93	9.31	9.51	10.35	14.52	20.58	21.33	21.63
Gd	$K\beta_1$		2	23	64	6	48.688	0.50920	5	3.84	5.49	6.63	6.68	6.85	7.79	8.71			9.51	10.36	14.53	20.60	21.35	21.64
Pd	AK		1		46	6	24.344	0.50920	5	3.84	5.49	6.63	6.68	6.85	7.79	8.71	8.94	9.32	9.51	10.36	14.53	20.60	21.35	21.64
Pd	$K\beta_4$	B	1	.01	46	6	24.339	0.50930	4	3.84	5.49	6.63	6.68	6.85	7.79	8.71	8.94	9.32	9.52	10.36	14.53	20.60	21.35	21.65
Pd	$K\beta_2$		1	3	46	6	24.295	0.51023	6	3.85	5.50	6.64	6.69	6.87	7.80	8.72	8.96	9.33	9.53	10.38	14.56	20.64	21.39	21.69
Tl	$K\alpha_1$		3	100	81	6	72.859	0.51041	6	3.85	5.50	6.64	6.69	6.87	7.80	8.73	8.96	9.34	9.54	10.38	14.56	20.65	21.40	21.70
U	$K\alpha_{1,2}$		4	150	92	6	97.131	0.51048	6	3.85	5.50	6.65	6.70	6.87	7.81	8.73	8.96	9.34	9.54	10.38	14.57	20.65	21.40	21.70
Gd	$K\beta_3$		2	11	64	6	48.547	0.51068	5	3.85	5.50	6.65	6.70	6.87	7.81	8.73			9.54	10.39	14.57	20.66	21.41	21.71
Pb	$K\alpha_2$		3	50	82	6	72.792	0.51088	6	3.85	5.50	6.65	6.70	6.88	7.81	8.74	8.97	9.35	9.55	10.39	14.58	20.67	21.42	21.72
Eu	$K-O_{2,3}$		2	.01	63	6	48.489	0.51129	6	3.86	5.51	6.66	6.71	6.88	7.82	8.74			9.55	10.40	14.59	20.68	21.44	21.73
Np	$K\alpha_2$		4	50	93	3	96.844	0.51200		3.86	5.52	6.66	6.72	6.89	7.83	8.75	8.99	9.37	9.57	10.42	14.61	20.71	21.47	21.76
In	$K\alpha_1$		1	100	49	6	24.206	0.51211	6	3.86	5.52	6.67	6.72	6.89	7.83	8.76	8.99	9.37	9.57	10.42	14.61	20.72	21.47	21.77
Pr	$K\beta_3$	H	4	14	87	6	96.791	0.51228	5	3.87	5.52	6.67	6.72	6.89	7.83	8.76	9.00	9.37	9.57	10.42	14.62	20.72	21.48	21.78
In	$K\alpha_{1,2}$		1	150	49	6	24.136	0.51359	6	3.88	5.53	6.69	6.74	6.91	7.85	8.78	9.02	9.40	9.60	10.45	14.66	20.78	21.54	21.83
Eu	$K\beta_2$		2	8	63	6	48.248	0.51385	6	3.88	5.54	6.69	6.74	6.92	7.86	8.79			9.60	10.45	14.66	20.79	21.55	21.84
Er	$K\alpha_2$		2	50	68	6	48.213	0.51422	6	3.88	5.54	6.69	6.74	6.92	7.86	8.79			9.61	10.46	14.67	20.80	21.56	21.86
Pu	$K\beta_2$		5	11	94	3	120.350	0.51500		3.89	5.55	6.70	6.75	6.93	7.87	8.81	9.04	9.42	9.62	10.48	14.70	20.84	21.60	21.89
Am	$K\beta_1$		5	30	95	3	120.350	0.51500		3.89	5.55	6.70	6.75	6.93	7.87	8.81	9.04	9.42	9.62	10.48	14.70	20.84	21.60	21.89
Cf	$L\gamma_1$		1	10	98	3	24.070	0.51500		3.89	5.55	6.70	6.75	6.93	7.87	8.81	9.04	9.42	9.62	10.48	14.70	20.84	21.60	21.89
Tl	$K\alpha_{1,2}$		3	150	81	6	72.167	0.51531	6	3.89	5.55	6.71	6.76	6.93	7.88	8.81	9.05	9.43	9.63	10.48	14.71	20.85	21.61	21.91
In	$K\alpha_2$		1	50	49	6	23.998	0.51654	6	3.90	5.57	6.72	6.77	6.95	7.90	8.83	9.07	9.45	9.65	10.51	14.74	20.90	21.66	21.96

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pd	$K\beta_5$	8	1	.1	46	6	23.991	0.51670	5		3.90	5.57	6.73	6.78	6.95	7.90	8.84	9.07	9.45	9.65	10.51	14.75	20.91	21.67	21.97
Pa	$K\alpha_1$	H	4	100	91	6	95.852	0.51730	6		3.90	5.57	6.73	6.78	6.96	7.91	8.85	9.08	9.46	9.67	10.52	14.76	20.93	21.69	21.99
Os	$K\beta_5'$	B	3	.3	76	6	71.882	0.51735	5		3.90	5.57	6.73	6.79	6.96	7.91	8.85	9.09	9.46	9.67	10.52	14.76	20.93	21.70	21.99
Os	$K\beta_5''$	8	3	.3	76	6	71.811	0.51786	5		3.91	5.58	6.74	6.79	6.97	7.92	8.86	9.09	9.47	9.68	10.53	14.78	20.95	21.72	22.02
Re	$K-O_{2,3}$		3	.01	75	6	71.620	0.51924	5		3.92	5.59	6.76	6.81	6.99	7.94	8.88	9.12	9.50	9.70	10.56	14.82	21.01	21.78	22.08
Pd	$K\beta_1$		1	18	46	6	23.815	0.52052	6		3.93	5.61	6.78	6.83	7.01	7.96	8.90	9.14	9.52	9.73	10.59	14.85	21.06	21.83	22.13
Os	$K\beta_1$		3	27	76	6	71.401	0.52083	6		3.93	5.61	6.78	6.83	7.01	7.96	8.91	9.15	9.53	9.73	10.60	14.86	21.07	21.84	22.14
Re	$K\beta_4$	8	3	.1	75	6	71.397	0.52086	5		3.93	5.61	6.78	6.83	7.01	7.96	8.91	9.15	9.53	9.73	10.60	14.86	21.08	21.84	22.15
Pd	$K\beta_3$		1	8	46	6	23.787	0.52112	6		3.93	5.61	6.78	6.84	7.01	7.97	8.91	9.15	9.53	9.74	10.60	14.87	21.09	21.86	22.16
Ho	$K\alpha_1$		2	100	67	6	47.539	0.52151	6		3.94	5.62	6.79	6.84	7.02	7.97	8.92			9.74	10.61	14.88	21.10	21.87	22.17
At	$K\beta_2'$	H	4	11	85	6	94.974	0.52208	5		3.94	5.63	6.80	6.85	7.03	7.98	8.93	9.17	9.55	9.76	10.62	14.90	21.13	21.90	22.20
Re	$K\beta_2'$		3	10	75	6	71.219	0.52216	6		3.94	5.63	6.80	6.85	7.03	7.98	8.93	9.17	9.55	9.76	10.62	14.90	21.13	21.90	22.20
Re	$K\beta_2''$		3	10	75	6	71.139	0.52275	5		3.94	5.63	6.80	6.86	7.04	7.99	8.94	9.18	9.56	9.77	10.63	14.92	21.15	21.92	22.23
Rn	$K\beta_1$	H	4	29	86	6	94.850	0.52276	5		3.94	5.63	6.81	6.86	7.04	7.99	8.94	9.18	9.56	9.77	10.63	14.92	21.15	21.92	22.23
At	$K\beta_2''$	H	4	11	85	6	94.829	0.52288	5		3.95	5.63	6.81	6.86	7.04	8.00	8.94	9.18	9.57	9.77	10.64	14.92	21.16	21.93	22.23
Os	$K\beta_3$		3	12	76	6	71.065	0.52329	6		3.95	5.64	6.81	6.86	7.04	8.00	8.95	9.19	9.57	9.78	10.65	14.93	21.18	21.95	22.25
O	$K\alpha_2$		4	50	92	6	94.649	0.52387	6		3.95	5.64	6.82	6.87	7.05	8.01	8.96	9.20	9.58	9.79	10.66	14.95	21.20	21.97	22.28
Pa	$K\alpha_{1,2}$	H	4	150	91	6	94.627	0.52399	6		3.95	5.65	6.82	6.87	7.05	8.01	8.96	9.20	9.59	9.79	10.66	14.95	21.20	21.98	22.28
Ho	$K\alpha_{1,2}$		2	150	67	6	47.253	0.52467	6		3.96	5.65	6.83	6.88	7.06	8.02	8.97			9.80	10.67	14.97	21.23	22.01	22.31
Np	$K\beta_2$		5	11	93	3	118.057	0.52500			3.96	5.66	6.83	6.89	7.07	8.03	8.98	9.22	9.60	9.81	10.68	14.98	21.25	22.02	22.32
Tl	$K\alpha_2$		3	50	81	6	70.820	0.52511	6		3.96	5.66	6.84	6.89	7.07	8.03	8.98	9.22	9.61	9.81	10.68	14.99	21.25	22.02	22.33
Hg	$K\alpha_1$		3	100	80	6	70.807	0.52520	6		3.96	5.66	6.84	6.89	7.07	8.03	8.98	9.22	9.61	9.81	10.68	14.99	21.25	22.03	22.33
Rn	$K\beta_3$	H	4	13	86	6	94.230	0.52620	5		3.97	5.67	6.85	6.90	7.08	8.05	9.00	9.24	9.63	9.83	10.70	15.02	21.29	22.07	22.38
Eu	$K\beta_1$		2	23	63	6	47.030	0.52715	6		3.98	5.68	6.86	6.91	7.09	8.06	9.01			9.85	10.72	15.05	21.33	22.11	22.42
Eu	$K\beta_3$		2	11	63	6	46.896	0.52866	6		3.99	5.70	6.88	6.93	7.11	8.08	9.04			9.88	10.76	15.09	21.40	22.18	22.48
Sm	$K-O_{2,3}$		2	.01	62	6	46.793	0.52982	5		4.00	5.71	6.90	6.95	7.13	8.10	9.06			9.90	10.78	15.12	21.44	22.22	22.53
Pu	$K\beta_1$		5	30	94	3	116.943	0.53000			4.00	5.71	6.90	6.95	7.13	8.10	9.06	9.31	9.70	9.90	10.78	15.13	21.45	22.23	22.54
Bk	$L\gamma_1$		1	10	97	3	23.389	0.53000			4.00	5.71	6.90	6.95	7.13	8.10	9.06	9.31	9.70	9.90	10.78	15.13	21.45	22.23	22.54
Hg	$K\alpha_{1,2}$		3	150	80	6	70.154	0.53009	6		4.00	5.71	6.90	6.95	7.13	8.11	9.06	9.31	9.70	9.91	10.78	15.13	21.45	22.24	22.54
Ho	$K\alpha_2$		2	50	67	6	46.692	0.53097	6		4.01	5.72	6.91	6.96	7.15	8.12	9.08			9.92	10.80	15.15	21.49	22.27	22.58
Th	$K\alpha_1$		4	100	90	6	93.334	0.53125	6		4.01	5.72	6.92	6.97	7.15	8.12	9.08	9.33	9.72	9.93	10.81	15.16	21.50	22.29	22.59
Sm	$K\beta_2$	H	2	8	62	6	46.566	0.53240	4		4.02	5.74	6.93	6.98	7.17	8.14	9.10			9.95	10.83	15.20	21.55	22.33	22.64
Re	$K\beta_5'$	8	3	.3	75	6	69.774	0.53298	5		4.02	5.74	6.94	6.99	7.17	8.15	9.11	9.36	9.75	9.96	10.84	15.21	21.57	22.36	22.67
Re	$K\beta_5''$	B	3	.3	75	6	69.707	0.53349	5		4.03	5.75	6.94	7.00	7.18	8.16	9.12	9.37	9.76	9.97	10.85	15.23	21.59	22.38	22.69
Rh	AK		1		45	6	23.216	0.53395	5		4.03	5.75	6.95	7.00	7.19	8.17	9.13	9.38	9.77	9.98	10.86	15.24	21.61	22.40	22.71
Rh	$K\beta_4$	8	1	.01	45	6	23.213	0.53401	5		4.03	5.75	6.95	7.00	7.19	8.17	9.13	9.38	9.77	9.98	10.86	15.24	21.61	22.40	22.71
Cd	$K\alpha_1$		1	100	48	6	23.170	0.53501	6		4.04	5.76	6.96	7.02	7.20	8.18	9.15	9.40	9.79	10.00	10.88	15.27	21.66	22.45	22.76
Rh	$K\beta_2$		1	4	45	6	23.169	0.53503	5		4.04	5.76	6.97	7.02	7.20	8.18	9.15	9.40	9.79	10.00	10.88	15.27	21.66	22.45	22.76
Rh	$K\beta_2''$		1	.1	45	6	23.164	0.53513	5		4.04	5.77	6.97	7.02	7.20	8.18	9.15	9.40	9.79	10.00	10.89	15.27	21.66	22.45	22.76
W	$K-O_{2,3}$		3	.01	74	6	69.467	0.53533	6		4.04	5.77	6.97	7.02	7.20	8.19	9.15	9.40	9.79	10.00	10.89	15.28	21.67	22.46	22.77
Cd	$K\alpha_{1,2}$		1	150	48	6	23.106	0.53648	6		4.05	5.78	6.98	7.04	7.22	8.20	9.17	9.42	9.82	10.03	10.91	15.31	21.72	22.51	22.82
Pu	AL_1		1		94	6	23.105	0.53650	4		4.05	5.78	6.98	7.04	7.22	8.20	9.17	9.42	9.82	10.03	10.91	15.31	21.72	22.51	22.82
Re	$K\beta_1$		3	26	75	6	69.298	0.53664	6		4.05	5.78	6.99	7.04	7.22	8.21	9.18	9.42	9.82	10.03	10.92	15.32	21.72	22.51	22.83
Po	$K\beta_2'$	H	4	11	84	6	92.383	0.53672	5		4.05	5.78	6.99	7.04	7.22	8.21	9.18	9.43	9.82	10.03	10.92	15.32	21.73	22.52	22.83
W	$K\beta_4$	8	3	.1	74	6	69.282	0.53676	5		4.05	5.78	6.99	7.04	7.22	8.21	9.18	9.43	9.82	10.03	10.92	15.32	21.73	22.52	22.83
At	$K8_1$	H	4	29	85	6	92.287	0.53728	5		4.05	5.79	6.99	7.05	7.23	8.22	9.19	9.44	9.83	10.04	10.93	15.34	21.75	22.54	22.85
Pa	$K\alpha_2$	H	4	50	91	6	92.271	0.53737	6		4.05	5.79	7.00	7.05	7.23	8.22	9.19	9.44	9.83	10.04	10.93	15.34	21.75	22.55	22.86
Po	$K\beta_2''$	H	4	11	84	6	92.246	0.53752	5		4.06	5.79	7.00	7.05	7.23	8.22	9.19	9.44	9.83	10.04	10.94	15.34	21.76	22.55	22.86
Th	$K\alpha_{1,2}$		4	150	90	6	92.174	0.53794	6		4.06	5.80	7.00	7.06	7.24	8.23	9.20	9.45	9.84	10.05	10.94	15.35	21.78	22.57	22.88
W	$K\beta_2'$		3	10	74	6	69.089	0.53826	6		4.06	5.80	7.01	7.06	7.24	8.23	9.20	9.45	9.85	10.06	10.95	15.36	21.79	22.58	22.90
W	$K\beta_2''$		3	10	74	6	69.020	0.53880	5		4.07	5.81	7.01	7.07	7.25	8.24	9.21	9.46	9.86	10.07	10.96	15.38	21.81	22.61	22.92
Dy	$K\alpha_1$		2	100	66	6	45.991	0.53907	6		4.07	5.81	7.02	7.07	7.26	8.24	9.22			10.07	10.97	15.39	21.82	22.62	22.93
Re	$K\beta_3$		3	12	75	6	68.983	0.53909	6		4.07	5.81	7.02	7.07	7.26	8.24	9.22	9.47	9.86	10.07	10.97	15.39	21.82	22.62	22.93
Cd	$K\alpha_2$		1	50	48	6	22.980	0.53942	6		4.07	5.81	7.02	7.08	7.26	8.25	9.22	9.47	9.87	10.08	10.97	15.40	21.84	22.63	22.95
Hg	$K\alpha_2$		3	50	80	6	68.883	0.53987	6		4.07	5.82	7.03	7.08	7.27	8.26	9.23	9.48	9.88	10.09	10.98	15.41	21.85	22.65	22.96
Cf	$K\alpha_1$		5	100	98	3	114.778	0.54000			4.07	5.82	7.03	7.08	7.27	8.26	9.23	9.48	9.88	10.09	10.99	15.41	21.86	22.66	22.97
Au	$K\alpha_1$		3	100	79	6	68.792	0.54058	6		4.08	5.82	7.04	7.09	7.28	8.27	9.24	9.49	9.89	10.10	11.00	15.43	21.88	22.68	23.00
At	$K\beta_3$	H	4	13	85	6	91.707	0.54068	5		4.08	5.83	7.04	7.09	7.28	8.27	9.25	9.50	9.89	10.10	11.00	15.43	21.89	22.69	23.00
U	$K\beta_2'$		5	11	92	6	114.587	0.54090	5		4.08	5.83	7.04	7.09	7.28	8.27	9.25	9.50	9.90	10.11	11.00	15.44	21.90	22.70	23.01
Rh	$K\beta_5'$	8	1	.05	45	6	22.913	0.54101	5		4.08	5.83	7.04	7.10	7.28	8.27	9.25	9.50	9.90	10.11	11.01	15.44	21.90	22.70	23.01
Rh	$K\beta_5''$	8	1	.05	45	6	22.906	0.54118	5		4.08	5.83	7.05	7.10	7.28	8.28	9.25	9.50	9.90	10.11	11.01	15.45	21.91	22.71	23.02
Pu	$L\gamma_4$		1	.1	94	6	22.888	0.54160	4		4.09	5.84	7.05	7.10	7.29	8.28	9.26	9.51	9.91	10.12	11.02	15.46	21.93	22.73	23.04
U	$K8_2''$	D	5	11	92	6	114.314	0.54219	6		4.09	5.84	7.06	7.11	7.30	8.29	9.27	9.52	9.92	10.13	11.03	15.48	21.95	22.75	23.06
Dy	$K\alpha_{1,2}$		2	150	66	6	45.724	0.54221	6		4.09	5.84	7.06	7.11	7.30	8.29	9.27			10.13	11.03	15.48	21.95	22.75	23.07
Sm	$K\beta_5$	B	2	.2	62	6	45.723	0.54222	5		4.09	5.84	7.06	7.11	7.30	8.29	9.27			10.13	11.03	15.48	21.95	22.75	23.07

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Am	$L\gamma_6$		1	.01	95	6	22.824	0.54311	5		4.10	5.85	7.07	7.12	7.31	8.31	9.29	9.54	9.94	10.15	11.05	15.50	21.99	22.79	23.10
Pu	$L\gamma_4 p$		1	.1	94	6	22.820	0.54320	4		4.10	5.85	7.07	7.12	7.31	8.31	9.29	9.54	9.94	10.15	11.05	15.51	21.99	22.79	23.11
Np	$K\beta_1$		5	30	93	3	113.725	0.54500			4.11	5.87	7.09	7.15	7.34	8.33	9.32	9.57	9.97	10.18	11.09	15.56	22.06	22.87	23.19
Au	$K\alpha_{1,2}$		3	150	79	6	68.177	0.54547	6		4.12	5.88	7.10	7.15	7.34	8.34	9.33	9.58	9.98	10.19	11.10	15.57	22.08	22.89	23.21
Rh	$K\beta_1$		1	16	45	6	22.720	0.54560	6		4.12	5.88	7.10	7.16	7.34	8.34	9.33	9.58	9.98	10.20	11.10	15.58	22.09	22.90	23.21
Ac	$K\alpha_1$	H	4	100	89	6	90.868	0.54567	6		4.12	5.88	7.10	7.16	7.34	8.34	9.33	9.58	9.98	10.20	11.10	15.58	22.09	22.90	23.21
Cm	$L\gamma_1$		1	10	96	3	22.703	0.54600			4.12	5.88	7.11	7.16	7.35	8.35	9.34	9.59	9.99	10.20	11.11	15.59	22.11	22.91	23.23
Sm	$K\beta_1$		2	22	62	6	45.405	0.54602	5		4.12	5.88	7.11	7.16	7.35	8.35	9.34			10.20	11.11	15.59	22.11	22.91	23.23
Rh	$K\beta_3$		1	8	45	6	22.695	0.54620	6		4.12	5.89	7.11	7.16	7.35	8.35	9.34	9.59	9.99	10.21	11.11	15.59	22.11	22.92	23.24
Sm	$K\beta_3$		2	10	62	6	45.281	0.54752	5		4.13	5.90	7.13	7.18	7.37	8.37	9.36			10.23	11.14	15.63	22.17	22.98	23.29
Dy	$K\alpha_2$		2	50	66	6	45.200	0.54849	6		4.14	5.91	7.14	7.19	7.38	8.39	9.38			10.25	11.16	15.66	22.21	23.02	23.34
Cf	$K\alpha_{1,2}$		5	150	98	3	112.999	0.54850			4.14	5.91	7.14	7.19	7.38	8.39	9.38	9.63	10.04	10.25	11.16	15.66	22.21	23.02	23.34
W	$K\beta_5'$	B	3	.3	74	6	67.704	0.54928	6		4.14	5.92	7.15	7.20	7.39	8.40	9.39	9.65	10.05	10.26	11.18	15.68	22.24	23.05	23.37
W	$K\beta_5''$	B	3	.3	74	6	67.640	0.54979	6		4.15	5.92	7.16	7.21	7.40	8.41	9.40	9.66	10.06	10.27	11.19	15.70	22.26	23.07	23.39
Th	$K\alpha_2$		4	50	90	6	89.938	0.55132	6		4.16	5.94	7.18	7.23	7.42	8.43	9.43	9.68	10.09	10.30	11.22	15.74	22.32	23.14	23.46
Pm	$K\beta_2$	H	2	8	61	6	44.929	0.55180	4		4.16	5.95	7.18	7.24	7.43	8.44	9.44			10.31	11.23	15.75	22.34	23.16	23.48
Bi	$K\beta_2'$		4	11	83	6	89.846	0.55188	5		4.16	5.95	7.18	7.24	7.43	8.44	9.44	9.69	10.10	10.31	11.23	15.76	22.35	23.16	23.48
Ta	$K\text{-}O_{2,3}$		3	.01	73	6	67.358	0.55209	6		4.17	5.95	7.19	7.24	7.43	8.44	9.44	9.70	10.10	10.32	11.23	15.76	22.36	23.17	23.49
Po	$K\beta_1$	H	4	89	84	6	89.781	0.55228	5		4.17	5.95	7.19	7.24	7.43	8.45	9.45	9.70	10.11	10.32	11.24	15.77	22.36	23.18	23.50
Ac	$K\alpha_{1,2}$	H	4	150	89	6	89.773	0.55232	5		4.17	5.95	7.19	7.24	7.43	8.45	9.45	9.70	10.11	10.32	11.24	15.77	22.36	23.18	23.50
Bi	$K\beta_2''$		4	11	83	6	89.716	0.55268	5		4.17	5.95	7.20	7.25	7.44	8.45	9.45	9.71	10.11	10.33	11.25	15.78	22.38	23.20	23.52
Np	AL_1		1		93	6	22.428	0.55270	4		4.17	5.96	7.20	7.25	7.44	8.45	9.45	9.71	10.11	10.33	11.25	15.78	22.38	23.20	23.52
W	$K\beta_1$		3	26	74	6	67.233	0.55312	6		4.17	5.96	7.20	7.26	7.44	8.46	9.46	9.72	10.12	10.34	11.25	15.79	22.40	23.22	23.54
Ta	$K\beta_4$	B	3	.08	73	6	67.183	0.55353	5		4.18	5.96	7.21	7.26	7.45	8.47	9.47	9.72	10.13	10.34	11.26	15.80	22.41	23.23	23.55
Am	$L\gamma_2$		1	1	95	6	22.359	0.55440	4		4.18	5.97	7.22	7.27	7.46	8.48	9.48	9.74	10.14	10.36	11.28	15.83	22.45	23.27	23.59
Bk	$K\alpha_1$		5	100	97	3	111.676	0.55500			4.19	5.98	7.23	7.28	7.47	8.49	9.49	9.75	10.16	10.37	11.29	15.84	22.47	23.30	23.62
Ta	$K\beta_2'$		3	9	73	6	67.001	0.55503	6		4.19	5.98	7.23	7.28	7.47	8.49	9.49	9.75	10.16	10.37	11.29	15.85	22.48	23.30	23.62
Au	$K\alpha_2$		3	50	79	6	66.978	0.55522	6		4.19	5.98	7.23	7.28	7.47	8.49	9.50	9.75	10.16	10.38	11.30	15.85	22.48	23.30	23.63
Pa	$K\beta_2'$	H	5	11	91	6	111.605	0.55535	5		4.19	5.98	7.23	7.28	7.47	8.49	9.50	9.75	10.16	10.38	11.30	15.86	22.49	23.31	23.63
W	$K\beta_3$		3	12	74	6	66.940	0.55554	6		4.19	5.99	7.23	7.29	7.48	8.50	9.50	9.76	10.17	10.38	11.30	15.86	22.50	23.32	23.64
Ta	$K\beta_2''$		3	9	73	6	66.937	0.55556	6		4.19	5.99	7.23	7.29	7.48	8.50	9.50	9.76	10.17	10.38	11.30	15.86	22.50	23.32	23.64
Po	$K\beta_3$	H	4	13	84	6	89.231	0.55568	5		4.19	5.99	7.23	7.29	7.48	8.50	9.50	9.76	10.17	10.38	11.31	15.86	22.50	23.32	23.65
Pa	$K\beta_2''$	H	5	11	91	6	111.385	0.55645	5		4.20	6.00	7.24	7.30	7.49	8.51	9.52	9.77	10.18	10.40	11.32	15.89	22.53	23.36	23.68
Pt	$K\alpha_1$		3	100	78	6	66.821	0.55653	6		4.20	6.00	7.25	7.30	7.49	8.51	9.52	9.78	10.18	10.40	11.32	15.89	22.54	23.36	23.68
U	$K\beta_1$		5	31	92	6	111.281	0.55697	6		4.20	6.00	7.25	7.31	7.50	8.52	9.53	9.78	10.19	10.41	11.33	15.90	22.56	23.38	23.70
Pu	AL_2		1		94	6	22.247	0.55720	4		4.20	6.00	7.25	7.31	7.50	8.52	9.53	9.79	10.20	10.41	11.34	15.91	22.56	23.39	23.71
Tb	$K\alpha_1$		2	100	65	6	44.474	0.55745	6		4.21	6.01	7.26	7.31	7.50	8.53	9.53			10.42	11.34	15.92	22.58	23.40	23.72
Cf	$K\beta_2$		6	11	98	3	133.290	0.55800			4.21	6.01	7.26	7.32	7.51	8.53	9.54	9.80	10.21	10.43	11.35	15.93	22.60	23.42	23.75
Np	$L\gamma_4$		1	.1	93	6	22.195	0.55850	4		4.21	6.02	7.27	7.33	7.52	8.54	9.55	9.81	10.22	10.44	11.36	15.95	22.62	23.44	23.77
Ag	$K\alpha_1$		1	100	47	6	22.159	0.55941	7		4.22	6.03	7.28	7.34	7.53	8.56	9.57	9.83	10.24	10.45	11.38	15.97	22.66	23.48	23.81
Pu	$L\gamma_6$		1	.01	94	6	22.146	0.55973	5		4.22	6.03	7.29	7.34	7.53	8.56	9.57	9.83	10.24	10.46	11.39	15.98	22.67	23.50	23.82
Au	$K\text{-}L_1$	B	3	.01	79	6	66.388	0.56016	5		4.23	6.04	7.29	7.35	7.54	8.57	9.58	9.84	10.25	10.47	11.40	15.99	22.69	23.51	23.84
Ru	AK		1		44	6	22.116	0.56051	5		4.23	6.04	7.30	7.35	7.54	8.57	9.59	9.85	10.26	10.48	11.41	16.00	22.70	23.53	23.86
Ra	$K\alpha_1$	H	4	100	88	6	88.454	0.56056	5		4.23	6.04	7.30	7.35	7.54	8.57	9.59	9.85	10.26	10.48	11.41	16.00	22.70	23.53	23.86
Tb	$K\alpha_{1,2}$		2	150	65	6	44.226	0.56058	6		4.23	6.04	7.30	7.35	7.55	8.57	9.59			10.48	11.41	16.01	22.70	23.53	23.86
Ag	$K\alpha_{1,2}$		1	150	47	6	22.101	0.56087	6		4.23	6.04	7.30	7.36	7.55	8.58	9.59	9.85	10.26	10.48	11.41	16.01	22.72	23.55	23.87
Ru	$K\beta_4$	8	1	.01	44	6	22.101	0.56089	5		4.23	6.04	7.30	7.36	7.55	8.58	9.59	9.85	10.26	10.48	11.41	16.01	22.72	23.55	23.87
Pt	$K\alpha_{1,2}$		3	150	78	6	66.241	0.56140	6		4.24	6.05	7.31	7.36	7.56	8.59	9.60	9.86	10.27	10.49	11.42	16.03	22.74	23.57	23.89
U	$K\beta_3$		5	14	92	6	110.387	0.56148	6		4.24	6.05	7.31	7.37	7.56	8.59	9.60	9.86	10.27	10.49	11.42	16.03	22.74	23.57	23.90
Ru	$K\beta_2$		1	3	44	6	22.070	0.56166	5		4.24	6.05	7.31	7.37	7.56	8.59	9.61	9.87	10.28	10.50	11.43	16.04	22.75	23.58	23.91
Am	$L\gamma_1$		1	10	95	6	22.061	0.56189	6		4.24	6.05	7.32	7.37	7.56	8.59	9.61	9.87	10.28	10.50	11.43	16.04	22.76	23.59	23.91
Bk	$K\alpha_{1,2}$		5	150	97	3	109.991	0.56350			4.25	6.07	7.34	7.39	7.58	8.62	9.64	9.90	10.31	10.53	11.47	16.09	22.82	23.66	23.98
Ag	$K\alpha_2$		1	50	47	6	21.987	0.56380	6		4.25	6.07	7.34	7.40	7.59	8.62	9.64	9.90	10.32	10.54	11.47	16.10	22.84	23.67	24.00
Pu	$L\gamma_3$		1	2	94	6	21.979	0.56400	6		4.26	6.08	7.34	7.40	7.59	8.63	9.65	9.91	10.32	10.54	11.48	16.10	22.84	23.68	24.01
Cf	$K\alpha_2$		5	50	98	3	109.699	0.56500			4.26	6.09	7.36	7.41	7.60	8.64	9.66	9.92	10.34	10.56	11.50	16.13	22.89	23.72	24.05
Ac	$K\alpha_2$	H	4	50	89	6	87.660	0.56564	5		4.27	6.09	7.36	7.42	7.61	8.65	9.67	9.94	10.35	10.57	11.51	16.15	22.91	23.75	24.08
Pm	$K\beta_1$	H	2	22	61	6	43.818	0.56580	5		4.27	6.10	7.37	7.42	7.62	8.65	9.68			10.57	11.51	16.16	22.92	23.76	24.08
Pu	$L\gamma_5$		1	.1	94	6	21.909	0.56580	4		4.27	6.10	7.37	7.42	7.62	8.65	9.68	9.94	10.35	10.57	11.51	16.16	22.92	23.76	24.08
Ta	$K\beta_5'$	B	3	.3	73	6	65.672	0.56627	6		4.27	6.10	7.37	7.43	7.62	8.66	9.69	9.95	10.36	10.58	11.52	16.17	22.94	23.78	24.10
Ta	$K\beta_5''$	B	3	.3	73	6	65.615	0.56676	6		4.28	6.11	7.38	7.43	7.63	8.67	9.69	9.96	10.37	10.59	11.53	16.18	22.96	23.80	24.13
Tb	$K\alpha_2$		2	50	65	6	43.737	0.56685	6		4.28	6.11	7.38	7.44	7.63	8.67	9.69			10.59	11.53	16.19	22.96	23.80	24.13
Ra	$K\alpha_{1,2}$	H	4	150	88	6	87.419	0.56720	5		4.28	6.11	7.38	7.44	7.63	8.67	9.70	9.96	10.38	10.60	11.54	16.20	22.98	23.81	24.14
Pm	$K\beta_3$	H	2	10	61	6	43.705	0.56726	5		4.28	6.11	7.39	7.44	7.64	8.68	9.70			10.60	11.54	16.20	22.98	23.82	24.15
Pb	$K\beta_2'$		4	11	82	6	87.351	0.56764	5		4.28	6.12	7.39	7.45	7.64	8.68	9.71	9.97	10.39	10.61	11.55	16.21	22.99	23.83	24.16
Bi	$K\beta_1$		4	89	83	6	87.328	0.56779	6		4.28	6.12	7.39	7.45	7.64	8.68	9.71	9.97	10.39	10.61	11.55	16.21	23.00	23.84	24.17

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Ru	$K\beta_5'$	B	1	.08	44	6	21.830	0.56785	5		4.28	6.12	7.39	7.45	7.64	8.68	9.71	9.97	10.39	10.61	11.55	16.21	23.00	23.84	24.17
Ru	$K\beta_5''$	B	1	.5	44	6	21.824	0.56800	4		4.29	6.12	7.39	7.45	7.65	8.69	9.71	9.98	10.39	10.62	11.56	16.22	23.01	23.85	24.18
Pb	$K\beta_2''$		4	11	82	6	87.222	0.56848	5		4.29	6.13	7.40	7.46	7.65	8.69	9.72	9.99	10.40	10.62	11.57	16.23	23.03	23.87	24.20
U	AL_1		1		92	6	21.766	0.56950	4		4.30	6.14	7.41	7.47	7.67	8.71	9.74	10.00	10.42	10.64	11.59	16.26	23.07	23.91	24.24
Cm	$K\alpha_1$		5	100	96	3	108.737	0.57000			4.30	6.14	7.42	7.48	7.67	8.72	9.75	10.01	10.43	10.65	11.60	16.28	23.09	23.93	24.27
Bk	$K\beta_2$		6	11	97	3	130.484	0.57000			4.30	6.14	7.42	7.48	7.67	8.72	9.75	10.01	10.43	10.65	11.60	16.28	23.09	23.93	24.27
Th	$K\beta_2'$		5	11	90	6	108.699	0.57020	6		4.30	6.14	7.42	7.48	7.67	8.72	9.75	10.02	10.43	10.66	11.60	16.28	23.10	23.94	24.27
Ta	$K\beta_1$		3	26	73	6	65.212	0.57027	6		4.30	6.14	7.42	7.48	7.68	8.72	9.75	10.02	10.44	10.66	11.60	16.28	23.10	23.95	24.28
O	$L\gamma_{13}$		1	.01	92	6	21.724	0.57060	4		4.31	6.15	7.43	7.48	7.68	8.73	9.76	10.02	10.44	10.66	11.61	16.29	23.11	23.96	24.29
Pu	$L\gamma_2$		1	1	94	6	21.721	0.57068	5		4.31	6.15	7.43	7.49	7.68	8.73	9.76	10.02	10.44	10.67	11.61	16.30	23.12	23.96	24.29
Bi	$K\beta_3$		4	13	83	6	86.819	0.57112	6		4.31	6.15	7.44	7.49	7.69	8.73	9.77	10.03	10.45	10.67	11.62	16.31	23.14	23.98	24.31
Pt	$K\alpha_2$		3	50	78	6	65.112	0.57114	6		4.31	6.15	7.44	7.49	7.69	8.73	9.77	10.03	10.45	10.67	11.62	16.31	23.14	23.98	24.31
Th	$K\beta_2''$		5	11	90	6	108.489	0.57130	5		4.31	6.16	7.44	7.49	7.69	8.74	9.77	10.04	10.45	10.68	11.63	16.31	23.14	23.99	24.32
Pa	$K\beta_1$	H	5	30	91	6	108.409	0.57172	6		4.31	6.16	7.44	7.50	7.70	8.74	9.78	10.04	10.46	10.69	11.63	16.33	23.16	24.01	24.34
Nd	$K\beta_2$	H	2	7	60	6	43.327	0.57220	4		4.32	6.17	7.45	7.51	7.70	8.75	9.79			10.69	11.64	16.34	23.18	24.03	24.36
Hf	$K\beta_2$	H	3	9	72	6	64.969	0.57240	4		4.32	6.17	7.45	7.51	7.70	8.75	9.79	10.05	10.47	10.70	11.65	16.35	23.19	24.04	24.37
Ru	$K\beta_1$		1	16	44	6	21.653	0.57248	6		4.32	6.17	7.45	7.51	7.71	8.76	9.79	10.06	10.48	10.70	11.65	16.35	23.19	24.04	24.37
U	L_1-$O_{4,5}$	B	1	.01	92	6	21.652	0.57250	4		4.32	6.17	7.45	7.51	7.71	8.76	9.79	10.06	10.48	10.70	11.65	16.35	23.19	24.04	24.37
Ta	$K\beta_3$		3	12	73	6	64.938	0.57267	6		4.32	6.17	7.46	7.51	7.71	8.76	9.79	10.06	10.48	10.70	11.65	16.35	23.20	24.05	24.38
Ru	$K\beta_3$		1	8	44	6	21.631	0.57307	6		4.32	6.17	7.46	7.52	7.71	8.76	9.80	10.07	10.49	10.71	11.66	16.36	23.22	24.06	24.40
Ir	$K\alpha_1$		3	100	77	6	64.885	0.57314	6		4.32	6.18	7.46	7.52	7.71	8.77	9.80	10.07	10.49	10.71	11.66	16.37	23.22	24.07	24.40
Np	AL_2		1		93	6	21.592	0.57410	4		4.33	6.19	7.47	7.53	7.73	8.78	9.82	10.08	10.51	10.73	11.68	16.39	23.26	24.11	24.44
O	$L\gamma_4$		1	.1	92	6	21.559	0.57499	5		4.34	6.20	7.49	7.54	7.74	8.79	9.83	10.10	10.52	10.75	11.70	16.42	23.30	24.15	24.48
Fr	$K\alpha_1$	H	4	100	87	6	86.089	0.57596	5		4.35	6.21	7.50	7.56	7.75	8.81	9.85	10.12	10.54	10.77	11.72	16.45	23.34	24.19	24.52
Pa	$K\beta_3$	H	5	14	91	6	107.576	0.57615	5		4.35	6.21	7.50	7.56	7.75	8.81	9.85	10.12	10.54	10.77	11.72	16.45	23.34	24.20	24.53
U	$L\gamma_4p$		1	.1	92	6	21.495	0.57670	6		4.35	6.21	7.51	7.56	7.76	8.82	9.86	10.13	10.55	10.78	11.74	16.47	23.37	24.22	24.56
Gd	$K\alpha_1$		2	100	64	6	42.989	0.57671	6		4.35	6.21	7.51	7.57	7.76	8.82	9.86			10.78	11.74	16.47	23.37	24.22	24.56
Np	$L\gamma_6$		1	.01	93	6	21.484	0.57699	5		4.35	6.22	7.51	7.57	7.77	8.82	9.87	10.14	10.56	10.78	11.74	16.48	23.38	24.23	24.57
Ir	$K\alpha_{1,2}$		3	150	77	6	64.339	0.57800	6		4.36	6.23	7.53	7.58	7.78	8.84	9.89	10.15	10.58	10.80	11.76	16.51	23.42	24.27	24.61
Cm	$K\alpha_{1,2}$		5	150	96	3	107.139	0.57850			4.37	6.23	7.53	7.59	7.79	8.85	9.89	10.16	10.59	10.81	11.77	16.52	23.44	24.30	24.63
Pu	$L\gamma_1$		1	10	94	6	21.414	0.57888	6		4.37	6.24	7.54	7.59	7.79	8.85	9.90	10.17	10.59	10.82	11.78	16.53	23.46	24.31	24.65
Gd	$K\alpha_{1,2}$		2	150	64	6	42.757	0.57983	6		4.38	6.25	7.55	7.61	7.80	8.87	9.92			10.84	11.80	16.56	23.49	24.35	24.69
Bk	$K\alpha_2$		5	50	97	3	106.862	0.58000			4.38	6.25	7.55	7.61	7.81	8.87	9.92	10.19	10.61	10.84	11.80	16.56	23.50	24.36	24.70
Ra	$K\alpha_2$	H	4	50	88	6	85.419	0.58048	5		4.38	6.25	7.56	7.61	7.81	8.88	9.93	10.20	10.62	10.85	11.81	16.58	23.52	24.38	24.72
Np	$L\gamma_3$		1	2	93	6	21.336	0.58100	4		4.38	6.26	7.56	7.62	7.82	8.89	9.94	10.21	10.63	10.86	11.82	16.59	23.54	24.40	24.74
Cf	$K\beta_1$		6	30	98	3	127.794	0.58200			4.39	6.27	7.58	7.63	7.83	8.90	9.95	10.22	10.65	10.88	11.84	16.62	23.58	24.45	24.78
Fr	$K\alpha_{1,2}$	H	4	150	87	6	85.110	0.58259	5		4.40	6.28	7.58	7.64	7.84	8.91	9.96	10.23	10.66	10.89	11.86	16.64	23.61	24.47	24.81
Tl	$K\beta_2'$		4	10	81	6	84.933	0.58380	5		4.41	6.29	7.60	7.66	7.86	8.93	9.99	10.26	10.68	10.91	11.88	16.67	23.66	24.52	24.86
Pb	$K\beta_1$		4	88	82	6	84.922	0.58388	6		4.41	6.29	7.60	7.66	7.86	8.93	9.99	10.26	10.69	10.91	11.88	16.68	23.66	24.53	24.87
Tl	$K\beta_2''$		4	10	81	6	84.823	0.58456	5		4.41	6.30	7.61	7.67	7.87	8.94	10.00	10.27	10.70	10.93	11.90	16.69	23.69	24.55	24.90
Am	$K\alpha_1$		5	100	95	3	105.949	0.58500			4.41	6.30	7.62	7.67	7.87	8.95	10.01	10.28	10.71	10.93	11.91	16.71	23.71	24.57	24.91
Pd	$K\alpha_1$		1	100	46	6	21.174	0.58545	6		4.42	6.31	7.62	7.68	7.88	8.95	10.01	10.28	10.71	10.94	11.91	16.72	23.73	24.59	24.93
Ac	$K\beta_2'$	H	5	11	89	6	105.849	0.58555	5		4.42	6.31	7.62	7.68	7.88	8.96	10.02	10.29	10.72	10.94	11.92	16.72	23.73	24.60	24.94
Pa	AL_1		1		91	6	21.168	0.58560	4		4.42	6.31	7.62	7.68	7.88	8.96	10.02	10.29	10.72	10.95	11.92	16.72	23.73	24.60	24.94
Gd	$K\alpha_2$		2	50	64	6	42.302	0.58608	6		4.42	6.32	7.63	7.69	7.89	8.96	10.02			10.95	11.93	16.74	23.75	24.62	24.96
Nd	$K\beta_1$		2	22	60	6	42.264	0.58660	6		4.43	6.32	7.64	7.70	7.90	8.97	10.03			10.96	11.94	16.75	23.77	24.64	24.98
Ac	$K\beta_2''$	H	5	11	89	6	105.660	0.58660	5		4.43	6.32	7.64	7.70	7.90	8.97	10.03	10.30	10.73	10.96	11.94	16.75	23.77	24.64	24.98
Pd	$K\alpha_{1,2}$		1	150	46	6	21.121	0.58690	6		4.43	6.32	7.64	7.70	7.90	8.98	10.04	10.31	10.74	10.97	11.94	16.76	23.79	24.65	25.00
Th	$K\beta_1$		5	30	90	6	105.591	0.58698	6		4.43	6.32	7.64	7.70	7.90	8.98	10.04	10.31	10.74	10.97	11.95	16.76	23.79	24.66	25.00
Pb	$K\beta_3$		4	13	82	6	84.436	0.58724	6		4.43	6.33	7.65	7.70	7.90	8.98	10.04	10.32	10.75	10.98	11.95	16.77	23.80	24.67	25.01
Np	$L\gamma_2$		1	1	93	6	21.107	0.58730	4		4.43	6.33	7.65	7.70	7.91	8.98	10.05	10.32	10.75	10.98	11.95	16.77	23.80	24.67	25.01
Lu	K-$O_{2,3}$		3	.01	71	6	63.280	0.58767	5		4.43	6.33	7.65	7.71	7.91	8.99	10.05	10.32	10.75	10.98	11.96	16.78	23.82	24.69	25.03
Ir	$K\alpha_2$		3	50	77	6	63.276	0.58771	6		4.43	6.33	7.65	7.71	7.91	8.99	10.05	10.32	10.76	10.99	11.96	16.79	23.82	24.69	25.03
Cm	$K\beta_2$		6	11	96	3	126.490	0.58800			4.44	6.34	7.66	7.71	7.91	8.99	10.06	10.33	10.76	10.99	11.97	16.79	23.83	24.70	25.04
Bk	$K\beta_1$		6	30	97	3	126.490	0.58800			4.44	6.34	7.66	7.71	7.91	8.99	10.06	10.33	10.76	10.99	11.97	16.79	23.83	24.70	25.04
Nd	$K\beta_3$		2	10	60	6	42.159	0.58805	6		4.44	6.34	7.66	7.71	7.92	8.99	10.06			10.99	11.97	16.80	23.83	24.70	25.05
Hf	$K\beta_1$	H	3	66	72	6	63.222	0.58821	5		4.44	6.34	7.66	7.72	7.92	9.00	10.06	10.33	10.76	10.99	11.97	16.80	23.84	24.71	25.05
Tc	AK	H	1		43	6	21.044	0.58906	5		4.44	6.35	7.67	7.73	7.93	9.01	10.08	10.35	10.78	11.01	11.99	16.82	23.87	24.75	25.09
Pd	$K\alpha_2$		1	50	46	6	21.017	0.58982	6		4.45	6.36	7.68	7.74	7.94	9.02	10.09	10.36	10.79	11.02	12.00	16.85	23.90	24.78	25.12
U	$L\gamma_{11}$	B	1	.01	92	6	21.015	0.58986	5		4.45	6.36	7.68	7.74	7.94	9.02	10.09	10.36	10.79	11.03	12.00	16.85	23.91	24.78	25.12
Tc	$K\beta_2$	H	1	3	43	6	21.002	0.59024	5		4.45	6.36	7.68	7.74	7.94	9.03	10.10	10.37	10.80	11.03	12.01	16.86	23.92	24.80	25.14
Os	$K\alpha_1$		3	100	76	6	62.990	0.59038	6		4.45	6.36	7.69	7.74	7.95	9.03	10.10	10.37	10.80	11.04	12.02	16.86	23.93	24.80	25.15
Hf	$K\beta_3$	H	3	12	72	6	62.969	0.59058	5		4.46	6.36	7.69	7.75	7.95	9.03	10.10	10.37	10.81	11.04	12.02	16.87	23.94	24.81	25.16
Lu	$K\beta_2$	H	3	9	71	6	62.956	0.59070	4		4.46	6.37	7.69	7.75	7.95	9.03	10.10	10.38	10.81	11.04	12.02	16.87	23.94	24.82	25.16
U	L_1-N_4	B	1	.01	92	6	20.976	0.59096	5		4.46	6.37	7.69	7.75	7.95	9.04	10.11	10.38	10.81	11.05	12.03	16.88	23.95	24.83	25.17

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Th	$K\beta_3$		5	14	90	6	104.813	0.59134	6		4.46	6.37	7.70	7.76	7.96	9.04	10.11	10.39	10.82	11.05	12.03	16.89	23.97	24.84	25.19
O	AL_2		1		92	6	20.943	0.59190	4		4.47	6.38	7.71	7.76	7.97	9.05	10.12	10.40	10.83	11.06	12.05	16.91	23.99	24.87	25.21
Rn	$K\alpha_1$	H	4	100	86	6	83.768	0.59192	5		4.47	6.38	7.71	7.76	7.97	9.05	10.12	10.40	10.83	11.06	12.05	16.91	23.99	24.87	25.21
U	L_2-P_4		1	.01	92	6	20.938	0.59203	5		4.47	6.38	7.71	7.77	7.97	9.05	10.13	10.40	10.83	11.07	12.05	16.91	24.00	24.87	25.22
O	$L_2-P_{2,3}$	B	1	.01	92	6	20.904	0.59300	4		4.47	6.39	7.72	7.78	7.98	9.07	10.14	10.42	10.85	11.08	12.07	16.94	24.04	24.91	25.26
Am	$K\alpha_{1,2}$		5	150	95	3	104.431	0.59350			4.48	6.40	7.73	7.79	7.99	9.08	10.15	10.43	10.86	11.09	12.08	16.95	24.06	24.94	25.28
Pr	$K\beta_2$		2	65	59	6	41.767	0.59358	5		4.48	6.40	7.73	7.79	7.99	9.08	10.15			11.10	12.08	16.95	24.06	24.94	25.29
Pa	$L\gamma_4$		1	.1	91	6	20.879	0.59370	4		4.48	6.40	7.73	7.79	7.99	9.08	10.16	10.43	10.87	11.10	12.08	16.96	24.06	24.94	25.29
U	$L\gamma_6$		1	.01	92	6	20.839	0.59484	6		4.49	6.41	7.74	7.80	8.01	9.10	10.17	10.45	10.89	11.12	12.11	16.99	24.11	24.99	25.34
Cm	$K\alpha_2$		5	50	96	3	104.168	0.59500			4.49	6.41	7.75	7.81	8.01	9.10	10.18	10.45	10.89	11.12	12.11	17.00	24.12	25.00	25.35
Os	$K\alpha_{1,2}$		3	150	76	6	62.477	0.59523	6		4.49	6.41	7.75	7.81	8.01	9.10	10.18	10.46	10.89	11.13	12.11	17.00	24.13	25.01	25.36
Fr	$K\alpha_2$	H	4	50	87	6	83.217	0.59584	5		4.50	6.42	7.76	7.82	8.02	9.11	10.19	10.47	10.90	11.14	12.13	17.02	24.15	25.04	25.38
Np	$L\gamma_1$		1	10	93	6	20.781	0.59650	6		4.50	6.43	7.77	7.83	8.03	9.12	10.20	10.48	10.92	11.15	12.14	17.04	24.18	25.06	25.41
Eu	$K\alpha_1$		2	100	63	6	41.535	0.59689	6		4.50	6.43	7.77	7.83	8.03	9.13	10.21			11.16	12.15	17.05	24.20	25.08	25.43
O	L_2-O_3	B	1	.01	92	6	20.754	0.59728	5		4.51	6.44	7.78	7.84	8.04	9.14	10.22	10.49	10.93	11.16	12.16	17.06	24.21	25.10	25.45
Rn	$K\alpha_{1,2}$	H	4	150	86	6	82.843	0.59853	5		4.52	6.45	7.79	7.85	8.06	9.15	10.24	10.51	10.95	11.19	12.18	17.10	24.26	25.15	25.50
U	$L\gamma_3$		1	2	92	6	20.709	0.59857	6		4.52	6.45	7.79	7.85	8.06	9.16	10.24	10.52	10.95	11.19	12.18	17.10	24.27	25.15	25.50
Pu	$L\gamma_5$		1	.1	94	6	20.701	0.59880	4		4.52	6.45	7.80	7.86	8.06	9.16	10.24	10.52	10.96	11.19	12.19	17.10	24.27	25.16	25.51
Pu	$K\alpha_1$		5	100	94	3	103.300	0.60000			4.53	6.47	7.81	7.87	8.08	9.18	10.26	10.54	10.98	11.22	12.21	17.14	24.32	25.21	25.56
Am	$K\beta_2$		6	11	95	3	123.960	0.60000			4.53	6.47	7.81	7.87	8.08	9.18	10.26	10.54	10.98	11.22	12.21	17.14	24.32	25.21	25.56
Eu	$K\alpha_{1,2}$		2	150	63	6	41.320	0.60001	6		4.53	6.47	7.81	7.87	8.08	9.18	10.26			11.22	12.21	17.14	24.32	25.21	25.56
Tl	$K\beta_1$		4	78	81	6	82.562	0.60057	6		4.53	6.47	7.82	7.88	8.08	9.19	10.27	10.55	10.99	11.23	12.22	17.16	24.35	25.24	25.59
Hg	$K\beta_2'$		4	10	80	6	82.530	0.60080	5		4.53	6.47	7.82	7.88	8.09	9.19	10.28	10.55	11.00	11.23	12.23	17.16	24.36	25.25	25.60
O	$L\gamma_6$		1	.1	92	6	20.617	0.60125	5		4.54	6.48	7.83	7.89	8.09	9.20	10.28	10.56	11.00	11.24	12.24	17.17	24.38	25.27	25.62
Tc	$K\beta_1$	H	1	16	43	6	20.615	0.60130	5		4.54	6.48	7.83	7.89	8.09	9.20	10.29	10.56	11.00	11.24	12.24	17.18	24.38	25.27	25.62
Ra	$K\beta_2'$	H	5	11	88	6	103.051	0.60145	5		4.54	6.48	7.83	7.89	8.10	9.20	10.29	10.57	11.01	11.24	12.24	17.18	24.38	25.28	25.63
Hg	$K\beta_2''$		4	10	80	6	82.420	0.60160	5		4.54	6.48	7.83	7.89	8.10	9.20	10.29	10.57	11.01	11.25	12.24	17.19	24.39	25.28	25.63
Tc	$K\beta_3$	H	1	8	43	6	20.595	0.60188	5		4.54	6.49	7.84	7.90	8.10	9.21	10.30	10.57	11.02	11.25	12.25	17.19	24.40	25.29	25.65
Ra	$K\beta_2''$	H	5	11	88	6	102.871	0.60250	5		4.55	6.49	7.84	7.90	8.11	9.22	10.31	10.58	11.03	11.26	12.26	17.21	24.43	25.32	25.67
Lu	$K\beta_5$	B	3	.3	71	6	61.721	0.60252	5		4.55	6.49	7.84	7.90	8.11	9.22	10.31	10.59	11.03	11.26	12.26	17.21	24.43	25.32	25.67
Ac	$K\beta_1$	H	5	30	89	6	102.829	0.60275	5		4.55	6.50	7.85	7.91	8.11	9.22	10.31	10.59	11.03	11.27	12.27	17.22	24.44	25.33	25.68
Cf	$L\beta_1$		1	50	98	3	20.557	0.60300			4.55	6.50	7.85	7.91	8.12	9.22	10.31	10.59	11.04	11.27	12.27	17.23	24.45	25.34	25.69
U	Lv	B	1	.01	92	6	20.554	0.60310	4		4.55	6.50	7.85	7.91	8.12	9.22	10.32	10.60	11.04	11.27	12.27	17.23	24.45	25.35	25.70
Tl	$K\beta_3$		4	13	81	6	82.104	0.60392	6		4.56	6.51	7.86	7.92	8.13	9.24	10.33	10.61	11.05	11.29	12.29	17.25	24.49	25.38	25.73
Os	$K\alpha_2$		3	50	76	6	61.476	0.60492	6		4.56	6.52	7.88	7.94	8.14	9.25	10.35	10.63	11.07	11.31	12.31	17.28	24.53	25.42	25.78
U	$L\gamma_2$		1	1	92	6	20.481	0.60524	6		4.57	6.52	7.88	7.94	8.15	9.26	10.35	10.63	11.08	11.31	12.32	17.29	24.54	25.44	25.79
Th	AL_1		1		90	6	20.459	0.60590	4		4.57	6.53	7.89	7.95	8.16	9.27	10.36	10.64	11.09	11.33	12.33	17.31	24.57	25.47	25.82
Cm	$K\beta_1$		6	30	96	3	122.733	0.60600			4.57	6.53	7.89	7.95	8.16	9.27	10.37	10.65	11.09	11.33	12.33	17.31	24.57	25.47	25.82
Eu	$K\alpha_2$		2	50	63	6	40.895	0.60624	6		4.57	6.53	7.89	7.95	8.16	9.27	10.37			11.33	12.34	17.32	24.58	25.48	25.83
Yb	$K-O_{2,3}$	B	3	.01	70	6	61.287	0.60678	5		4.58	6.54	7.90	7.96	8.17	9.28	10.38	10.66	11.11	11.34	12.35	17.33	24.60	25.50	25.86
Lu	$K\beta_1$	H	3	55	71	6	61.272	0.60693	5		4.58	6.54	7.90	7.96	8.17	9.28	10.38	10.66	11.11	11.35	12.35	17.34	24.61	25.51	25.86
Th	$L\gamma_{13}$		1	.01	90	6	20.420	0.60705	5		4.58	6.54	7.90	7.96	8.17	9.29	10.38	10.66	11.11	11.35	12.36	17.34	24.61	25.52	25.87
Ac	$K\beta_3$	H	5	14	89	6	102.084	0.60715	5		4.58	6.54	7.91	7.97	8.17	9.29	10.39	10.67	11.11	11.35	12.36	17.34	24.62	25.52	25.87
Th	$L_1-O_{4,5}$	B	1	.01	90	6	20.378	0.60830	4		4.59	6.55	7.92	7.98	8.19	9.30	10.41	10.69	11.13	11.37	12.38	17.38	24.67	25.57	25.92
Re	$K\alpha_1$		3	100	75	6	61.130	0.60834	6		4.59	6.56	7.92	7.98	8.19	9.31	10.41	10.69	11.13	11.37	12.38	17.38	24.67	25.57	25.93
At	$K\alpha_1$	H	4	100	85	6	81.499	0.60840	5		4.59	6.56	7.92	7.98	8.19	9.31	10.41	10.69	11.14	11.37	12.38	17.38	24.67	25.57	25.93
Pu	$K\alpha_{1,2}$		5	150	94	3	101.857	0.60850			4.59	6.56	7.92	7.98	8.19	9.31	10.41	10.69	11.14	11.38	12.39	17.38	24.67	25.58	25.93
Pr	$K\beta_1$		2	22	59	6	40.741	0.60852	6		4.59	6.56	7.92	7.98	8.19	9.31	10.41			11.38	12.39	17.38	24.67	25.58	25.93
Pa	AL_2		1		91	6	20.358	0.60890	4		4.59	6.56	7.93	7.99	8.20	9.31	10.42	10.70	11.14	11.38	12.39	17.40	24.69	25.59	25.95
Lu	$K\beta_3$	H	3	12	71	6	61.037	0.60927	5		4.60	6.57	7.93	7.99	8.20	9.32	10.42	10.70	11.15	11.39	12.40	17.41	24.71	25.61	25.97
Yb	$K\beta_2$	H	3	9	70	6	60.974	0.60990	4		4.60	6.57	7.94	8.00	8.21	9.33	10.43	10.72	11.16	11.40	12.41	17.42	24.73	25.64	25.99
Pr	$K\beta_3$		2	10	59	6	40.646	0.60995	6		4.60	6.57	7.94	8.00	8.21	9.33	10.43			11.40	12.41	17.43	24.73	25.64	25.99
Am	$K\alpha_2$		5	50	95	3	101.607	0.61000			4.60	6.57	7.94	8.00	8.21	9.33	10.43	10.72	11.16	11.40	12.42	17.43	24.74	25.64	26.00
Th	$L\gamma_4$		1	.1	90	6	20.289	0.61098	5		4.61	6.58	7.96	8.02	8.22	9.35	10.45	10.73	11.18	11.42	12.44	17.46	24.78	25.68	26.04
Rn	$K\alpha_2$	H	4	50	86	6	81.051	0.61176	5		4.62	6.59	7.97	8.03	8.24	9.36	10.47	10.75	11.20	11.44	12.45	17.48	24.81	25.72	26.07
Th	$L\gamma_4p$		1	.1	90	6	20.238	0.61251	5		4.62	6.60	7.98	8.04	8.25	9.37	10.48	10.76	11.21	11.45	12.47	17.50	24.84	25.75	26.11
Re	$K\alpha_{1,2}$		3	150	75	6	60.648	0.61317	6		4.63	6.61	7.98	8.04	8.25	9.38	10.49	10.77	11.22	11.46	12.48	17.52	24.87	25.78	26.13
Rh	$K\alpha_1$		1	100	45	6	20.213	0.61328	6		4.63	6.61	7.99	8.05	H.26	9.38	10.49	10.77	11.22	11.46	12.48	17.52	24.87	25.78	26.14
Pa	$L\gamma_6$		1	.01	91	6	20.212	0.61330	4		4.63	6.61	7.99	8.05	8.26	9.38	10.49	10.78	11.23	11.47	12.48	17.52	24.87	25.78	26.14
Ce	$K-O_{2,3}$		2	.01	58	6	40.420	0.61336	5		4.63	6.61	7.99	8.05	8.26	9.38	10.49			11.47	12.48	17.52	24.87	25.78	26.14
Th	L_1-O_1	B	1	.01	90	6	20.169	0.61460	4		4.64	6.62	8.00	8.06	8.27	9.40	10.51	10.80	11.25	11.49	12.51	17.56	24.93	25.84	26.20
Rh	$K\alpha_{1,2}$		1	150	45	6	20.165	0.61473	6		4.64	6.62	8.00	8.06	8.28	9.40	10.52	10.80	11.25	11.49	12.51	17.56	24.93	25.84	26.20
Ce	$K\beta_4$	B	2	.01	5H	6	40.329	0.61474	5		4.64	6.62	8.00	8.06	8.28	9.40	10.52			11.49	12.51	17.56	24.93	25.84	26.20
O	$L\gamma_1$		1	10	92	6	20.164	0.61477	6		4.64	6.62	8.00	8.07	8.28	9.40	10.52	10.H0	11.25	11.49	12.51	17.56	24.93	25.85	26.20
At	$K\alpha_{1,2}$	H	4	150	85	6	80.624	0.61500	5		4.64	6.63	8.01	8.07	8.28	9.41	10.52	10.81	11.26	11.50	12.52	17.57	24.94	25.85	26.21

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Np	$K\alpha_1$		5	100	93	3	100.781	0.61500			4.64	6.63	8.01	8.07	8.28	9.41	10.52	10.81	11.26	11.50	12.52	17.57	24.94	25.85	26.21
Np	$L\gamma_5$		1	.1	93	6	20.123	0.61600	3		4.65	6.64	8.02	8.08	8.29	9.42	10.54	10.82	11.27	11.52	12.54	17.60	24.98	25.90	26.26
Th	L_1-$N_{6,7}$	B	1	.01	90	6	20.123	0.61600	4		4.65	6.64	8.02	8.08	8.29	9.42	10.54	10.82	11.27	11.52	12.54	17.60	24.98	25.90	26.26
Ce	$K\beta_2$		2	7	58	6	40.226	0.61632	5		4.65	6.64	8.02	8.09	8.30	9.43	10.54			11.52	12.55	17.61	25.00	25.91	26.27
Pa	$L\gamma_3$		1	2	91	6	20.094	0.61690	4		4.66	6.65	8.03	8.09	8.30	9.44	10.55	10.84	11.29	11.53	12.56	17.63	25.02	25.94	26.30
Rh	$K\alpha_2$		1	50	45	6	20.070	0.61763	6		4.66	6.66	8.04	8.10	8.31	9.45	10.57	10.85	11.30	11.55	12.57	17.65	25.05	25.97	26.33
Fr	$K\beta_2'$	H	5	11	87	6	100.307	0.61790	5		4.66	6.66	8.05	8.11	8.32	9.45	10.57	10.86	11.31	11.55	12.58	17.65	25.06	25.98	26.34
Hg	$K\beta_1$		4	28	80	6	80.240	0.61795	6		4.66	6.66	8.05	8.11	8.32	9.45	10.57	10.86	11.31	11.55	12.58	17.66	25.06	25.98	26.34
Pu	$K\beta_2$		6	11	94	3	120.350	0.61800			4.66	6.66	8.05	8.11	8.32	9.45	10.57	10.86	11.31	11.55	12.58	17.66	25.07	25.98	26.34
Am	$K\beta_1$		6	30	95	3	120.350	0.61800			4.66	6.66	8.05	8.11	8.32	9.45	10.57	10.86	11.31	11.55	12.58	17.66	25.07	25.98	26.34
Sm	$K\alpha_1$		2	100	62	6	40.111	0.61808	6		4.66	6.66	8.05	8.11	8.32	9.45	10.57			11.55	12.58	17.66	25.07	25.99	26.35
Au	$K\beta_2'$		4	10	79	6	80.172	0.61847	6		4.67	6.66	8.05	8.11	8.33	9.46	10.58	10.87	11.32	11.56	12.59	17.67	25.08	26.00	26.36
Fr	$K\beta_2''$	H	5	11	87	6	100.137	0.61895	5		4.67	6.67	8.06	8.12	8.33	9.47	10.59	10.87	11.33	11.57	12.60	17.68	25.10	26.02	26.39
Ra	$K\beta_1$	H	5	30	88	6	100.113	0.61910	5		4.67	6.67	8.06	8.12	8.33	9.47	10.59	10.88	11.33	11.57	12.60	17.69	25.11	26.03	26.39
Au	$K8_2''$		4	10	79	6	80.062	0.61932	5		4.67	6.67	8.06	8.12	8.34	9.47	10.59	10.88	11.34	11.58	12.61	17.70	25.12	26.04	26.40
Mo	AK		1		42	6	20.001	0.61978	5		4.68	6.68	8.07	8.13	8.34	9.48	10.60	10.89	11.34	11.59	12.62	17.71	25.14	26.06	26.42
Mo	$K\beta_4$	B	1	.01	42	6	19.993	0.62001	5		4.68	6.68	8.07	8.13	8.35	9.48	10.61	10.89	11.35	11.59	12.62	17.72	25.15	26.07	26.43
Mo	$K\beta_2$		1	4	42	6	19.962	0.62099	5		4.69	6.69	8.09	8.15	8.36	9.50	10.62	10.91	11.37	11.61	12.64	17.74	25.19	26.11	26.47
Bk	$L\beta_1$		1	50	97	3	19.961	0.62100			4.69	6.69	8.09	8.15	8.36	9.50	10.62	10.91	11.37	11.61	12.64	17.74	25.19	26.11	26.47
Mo	$K\beta_2''$		1	.1	42	6	19.959	0.62107	5		4.69	6.69	8.09	8.15	8.36	9.50	10.62	10.91	11.37	11.61	12.64	17.75	25.19	26.11	26.48
Sm	$K\alpha_{1,2}$		2	150	62	6	39.911	0.62119	6		4.69	6.69	8.09	8.15	8.36	9.50	10.63			11.61	12.64	17.75	25.20	26.12	26.48
Hg	$K8_3$		4	13	80	6	79.809	0.62128	6		4.69	6.69	8.09	8.15	8.36	9.50	10.63	10.92	11.37	11.61	12.65	17.75	25.20	26.12	26.49
Yb	$K\beta_5$	B	3	.3	70	6	59.771	0.62217	5		4.69	6.70	8.10	8.16	8.38	9.52	10.64	10.93	11.39	11.63	12.66	17.78	25.24	26.16	26.53
O	L_2-N_3	B	1	.01	92	6	19.904	0.62280	4		4.70	6.71	8.11	8.17	8.38	9.53	10.65	10.94	11.40	11.64	12.68	17.80	25.26	26.19	26.55
Re	$K\alpha_2$		3	50	75	6	59.708	0.62283	6		4.70	6.71	8.11	8.17	8.38	9.53	10.66	10.94	11.40	11.64	12.68	17.80	25.26	26.19	26.55
Ra	$K\beta_3$	H	5	14	88	6	99.415	0.62345	5		4.70	6.72	8.12	8.18	8.39	9.54	10.67	10.95	11.41	11.66	12.69	17.81	25.29	26.22	26.58
Np	$K\alpha_{1,2}$		5	150	93	3	99.407	0.62350			4.70	6.72	8.12	8.18	8.39	9.54	10.67	10.95	11.41	11.66	12.69	17.82	25.29	26.22	26.58
Pa	$L\gamma_2$		1	1	91	6	19.869	0.62390	4		4.71	6.72	8.12	8.19	8.40	9.54	10.67	10.96	11.42	11.66	12.70	17.83	25.31	26.24	26.60
Pu	$K\alpha_2$		5	50	94	3	99.168	0.62500			4.72	6.74	8.14	8.20	8.41	9.56	10.69	10.98	11.44	11.68	12.72	17.86	25.35	26.28	26.65
Po	$K\alpha_1$	H	4	100	84	6	79.279	0.62544	5		4.72	6.74	8.14	8.21	8.42	9.57	10.70	10.99	11.45	11.69	12.73	17.87	25.37	26.30	26.67
Th	$L\gamma_{11}$	B	1	.01	90	6	19.791	0.62636	5		4.73	6.75	8.16	8.22	8.43	9.58	10.72	11.01	11.46	11.71	12.75	17.90	25.41	26.34	26.71
Yb	$K\beta_1$		3	64	70	6	59.356	0.62652	5		4.73	6.75	8.16	8.22	8.43	9.58	10.72	11.01	11.47	11.71	12.75	17.90	25.42	26.35	26.71
Tm	$K-O_{2,3}$		3	.01	69	6	59.337	0.62673	5		4.73	6.75	8.16	8.22	8.44	9.59	10.72	11.01	11.47	11.72	12.76	17.91	25.43	26.36	26.72
Ce	$K\beta_5'$	B	2	.2	58	6	39.551	0.62684	5		4.73	6.75	8.16	8.22	8.44	9.59	10.72			11.72	12.76	17.91	25.43	26.36	26.73
Mo	$K\beta_5'$	B	1	.8	42	6	19.773	0.62692	5		4.73	6.76	8.16	8.22	8.44	9.59	10.73	11.02	11.48	11.72	12.76	17.91	25.43	26.37	26.73
W	$K\alpha_1$		3	100	74	6	59.308	0.62703	7		4.73	6.76	8.16	8.23	8.44	9.59	10.73	11.02	11.48	11.72	12.76	17.92	25.44	26.37	26.74
Mo	$K\beta_5''$	B	1	.4	42	6	19.768	0.62708	5		4.73	6.76	8.17	8.23	8.44	9.59	10.73	11.02	11.48	11.72	12.76	17.92	25.44	26.37	26.74
Ce	$K\beta_5''$	B	2	.2	58	6	39.532	0.62714	5		4.73	6.76	8.17	8.23	8.44	9.59	10.73			11.72	12.77	17.92	25.44	26.37	26.74
Sm	$K\alpha_2$		2	50	62	6	39.516	0.62740	6		4.73	6.76	8.17	8.23	8.45	9.60	10.73			11.73	12.77	17.93	25.45	26.39	26.75
Th	L_1-N_4	B	1	.01	90	6	19.751	0.62760	4		4.74	6.76	8.17	8.23	8.45	9.60	10.74	11.03	11.49	11.73	12.78	17.93	25.46	26.39	26.76
At	$K\alpha_2$	H	4	50	85	6	78.930	0.62820	5		4.74	6.77	8.18	8.24	8.46	9.61	10.75	11.04	11.50	11.74	12.79	17.95	25.49	26.42	26.79
Yb	$K\beta_3$	H	3	12	70	6	59.141	0.62880	4		4.74	6.78	8.19	8.25	8.46	9.62	10.76	11.05	11.51	11.76	12.80	17.97	25.51	26.45	26.81
Tm	$K\beta_2$	H	3	9	69	6	59.085	0.62940	4		4.75	6.78	8.20	8.26	8.47	9.63	10.77	11.06	11.52	11.77	12.81	17.99	25.54	26.47	26.84
U	$K\alpha_1$		5	100	92	6	98.422	0.62973	6		4.75	6.79	8.20	8.26	8.48	9.63	10.77	11.06	11.53	11.77	12.82	18.00	25.55	26.49	26.85
Th	AL_2		1		90	6	19.679	0.62990	4		4.75	6.79	8.20	8.26	8.48	9.64	10.78	11.07	11.53	11.78	12.82	18.00	25.56	26.49	26.86
Th	L_2-P_4		1	.01	90	6	19.679	0.62991	5		4.75	6.79	8.20	8.26	8.48	9.64	10.78	11.07	11.53	11.78	12.82	18.00	25.56	26.49	26.86
Np	$K\beta_2$		6	11	93	3	118.057	0.63000			4.75	6.79	8.20	8.27	8.48	9.64	10.78	11.07	11.53	11.78	12.82	18.00	25.56	26.50	26.87
Th	L_2-$P_{2,3}$	B	1	.01	90	6	19.639	0.63120	4		4.76	6.80	8.22	8.28	8.50	9.66	10.80	11.09	11.55	11.80	12.85	18.04	25.61	26.55	26.92
Th	L_2-P_1		1	.01	90	6	19.626	0.63160	4		4.77	6.81	8.22	8.29	8.50	9.66	10.81	11.10	11.56	11.81	12.86	18.05	25.63	26.57	26.93
Ce	$K\beta_1$		2	22	58	6	39.251	0.63163	6		4.77	6.81	8.22	8.29	8.50	9.66	10.81			11.81	12.86	18.05	25.63	26.57	26.94
W	$K\alpha_{1,2}$		3	150	74	6	58.856	0.63185	6		4.77	6.81	8.23	8.29	8.51	9.67	10.81	11.10	11.57	11.81	12.86	18.06	25.64	26.58	26.95
Po	$K\alpha_{1,2}$	H	4	150	84	6	78.452	0.63203	5		4.77	6.81	8.23	8.29	8.51	9.67	10.81	11.11	11.57	11.82	12.87	18.06	25.64	26.58	26.95
Mo	$K\beta_1$		1	17	42	6	19.605	0.63229	6		4.77	6.81	8.23	8.30	8.51	9.67	10.82	11.11	11.57	11.82	12.87	18.07	25.65	26.59	26.96
Th	$L\gamma_6$		1	.01	90	6	19.596	0.63258	5		4.77	6.82	8.24	8.30	8.52	9.68	10.82	11.11	11.58	11.83	12.88	18.08	25.67	26.61	26.98
Mo	$K\beta_3$		1	7	42	6	19.587	0.63287	6		4.78	6.82	8.24	8.30	8.52	9.68	10.83	11.12	11.58	11.83	12.88	18.09	25.68	26.62	26.99
Ce	$K\beta_3$		2	10	58	6	39.163	0.63304	6		4.78	6.82	8.24	8.31	8.52	9.68	10.83			11.84	12.89	18.09	25.69	26.63	27.00
Pa	$L\gamma_1$	H	1	10	91	6	19.565	0.63358	5		4.78	6.83	8.25	8.31	8.53	9.69	10.84	11.13	11.60	11.85	12.90	18.11	25.71	26.65	27.02
Rn	$K\beta_2'$	H	5	11	86	6	97.622	0.63490	5		4.79	6.84	8.27	8.33	8.55	9.71	10.86	11.16	11.62	11.87	12.92	18.14	25.76	26.71	27.08
U	$L\gamma_5$		1	.1	92	6	19.504	0.63557	5		4.80	6.85	8.28	8.34	8.56	9.72	10.87	11.17	11.63	11.88	12.94	18.16	25.79	26.74	27.11
Th	$L\gamma_3$		1	2	90	6	19.503	0.63559	5		4.80	6.85	8.28	8.34	8.56	9.72	10.87	11.17	11.63	11.88	12.94	18.16	25.79	26.74	27.11
Th	L_2-O_3	B	1	.01	90	6	19.503	0.63560	4		4.80	6.85	8.28	8.34	8.56	9.72	10.87	11.17	11.63	11.88	12.94	18.16	25.79	26.74	27.11
Au	$K8_1$		4	27	79	6	77.971	0.63593	6		4.80	6.85	8.28	8.34	8.56	9.73	10.88	11.17	11.64	11.89	12.95	18.17	25.80	26.75	27.12
Rn	$K8_2''$	H	5	11	86	6	97.460	0.63595	5		4.80	6.85	8.28	8.34	8.56	9.73	10.88	11.17	11.64	11.89	12.95	18.17	25.81	26.75	27.12
Fr	$K\beta_1$	H	5	29	87	6	97.460	0.63595	5		4.80	6.85	8.28	8.34	8.56	9.73	10.88	11.17	11.64	11.89	12.95	18.17	25.81	26.75	27.12
Pu	$K\beta_1$		6	30	94	3	116.943	0.63600			4.80	6.85	8.28	8.34	8.56	9.73	10.88	11.18	11.64	11.89	12.95	18.18	25.81	26.75	27.13

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pt	$K\beta_2'$		4	10	78	6	77.864	0.63680	5	4.81	6.86	8.29	8.35	8.57	9.74	10.89	11.19	11.66	11.91	12.96	18.20	25.84	26.79	27.16
Th	L_2-O_2	B	1	.01	90	6	19.463	0.63690	4	4.81	6.86	8.29	8.36	8.57	9.74	10.90	11.19	11.66	11.91	12.97	18.20	25.84	26.79	27.16
La	K-$O_{2,3}$		2	.01	57	6	38.903	0.63728	5	4.81	6.87	8.30	8.36	8.58	9.75	10.90			11.92	12.97	18.21	25.86	26.81	27.18
Pt	$K\beta_2''$		4	10	78	6	77.772	0.63756	5	4.81	6.87	8.30	8.36	8.58	9.75	10.91	11.20	11.67	11.92	12.98	18.22	25.87	26.82	27.19
U	$K\alpha_{1,2}$		5	150	92	6	97.131	0.63810	6	4.82	6.88	8.31	8.37	8.59	9.76	10.92	11.21	11.68	11.93	12.99	18.24	25.89	26.84	27.22
La	$K\beta_4$	B	2	.03	57	6	38.821	0.63862	5	4.82	6.88	8.32	8.38	8.60	9.77	10.93			11.94	13.00	18.25	25.92	26.87	27.24
Th	$L\gamma_8$		1	.1	90	6	19.400	0.63898	5	4.82	6.89	8.32	8.38	8.60	9.77	10.93	11.23	11.70	11.95	13.01	18.26	25.93	26.88	27.26
Cm	$L\beta_1$		1	50	96	3	19.399	0.63900		4.82	6.89	8.32	8.38	8.60	9.78	10.93	11.23	11.70	11.95	13.01	18.26	25.93	26.88	27.26
Au	$K\beta_3$		4	13	79	6	77.567	0.63924	6	4.82	6.89	8.32	8.39	8.61	9.78	10.94	11.23	11.70	11.95	13.01	18.27	25.94	26.89	27.27
Np	$K\alpha_2$		5	50	93	3	96.844	0.64000		4.83	6.90	8.33	8.40	8.62	9.79	10.95	11.25	11.72	11.97	13.03	18.29	25.97	26.93	27.30
La	$K\beta_2$		2	7	57	6	38.723	0.64023	6	4.83	6.90	8.34	8.40	8.62	9.79	10.95			11.97	13.03	18.30	25.98	26.94	27.31
Pm	$K\alpha_1$	H	2	100	61	6	38.718	0.64032	6	4.83	6.90	8.34	8.40	8.62	9.80	10.96			11.97	13.04	18.30	25.99	26.94	27.31
Fr	$K\beta_3$	H	5	14	87	6	96.791	0.64035	5	4.83	6.90	8.34	8.40	8.62	9.80	10.96	11.25	11.72	11.97	13.04	18.30	25.99	26.94	27.31
Th	$L\nu$		8	1	.01	90	6	19.349	0.64064	5	4.83	6.90	8.34	8.41	8.62	9.80	10.96	11.26	11.73	11.98	13.04	18.31	26.00	26.95	27.33
W	$K\alpha_2$		3	50	74	6	57.972	0.64148	6	4.84	6.91	8.35	8.42	8.64	9.81	10.98	11.27	11.74	11.99	13.06	18.33	26.03	26.99	27.36
Pu	$L\beta_9$	B	1	.01	94	6	19.320	0.64160	4	4.84	6.91	8.35	8.42	8.64	9.81	10.98	11.27	11.74	12.00	13.06	18.34	26.04	26.99	27.37
Tm	$K\beta_5$	B	3	.2	69	6	57.914	0.64212	5	4.85	6.92	8.36	8.42	8.64	9.82	10.99	11.28	11.75	12.01	13.07	18.35	26.06	27.02	27.39
Th	$L\gamma_2$		1	1	90	6	19.302	0.64221	5	4.85	6.92	8.36	8.43	8.65	9.82	10.99	11.28	11.76	12.01	13.07	18.35	26.06	27.02	27.40
Ru	$K\alpha_1$		1	100	44	6	19.276	0.64308	6	4.85	6.93	8.37	8.44	8.66	9.84	11.00	11.30	11.77	12.02	13.09	18.38	26.10	27.06	27.43
Bi	$K\alpha_1$		4	100	83	6	77.095	0.64316	6	4.85	6.93	8.37	8.44	8.66	9.84	11.00	11.30	11.77	12.03	13.09	18.38	26.10	27.06	27.44
Pm	$K\alpha_{1,2}$	8	2	150	61	6	38.532	0.64342	6	4.86	6.93	8.38	8.44	8.66	9.84	11.01			12.03	13.10	18.39	26.11	27.07	27.45
Ra	AL_1		1		88	6	19.234	0.64450	4	4.86	6.95	8.39	8.46	8.68	9.86	11.03	11.32	11.80	12.05	13.12	18.42	26.16	27.12	27.50
Ru	$K\alpha_{1,2}$		1	150	44	6	19.233	0.64452	6	4.86	6.95	8.39	8.46	8.68	9.86	11.03	11.33	11.80	12.05	13.12	18.42	26.16	27.12	27.50
Ra	$L\gamma_{13}$		1	.01	88	6	19.215	0.64513	5	4.87	6.95	8.40	8.46	8.69	9.87	11.04	11.34	11.81	12.06	13.13	18.44	26.18	27.15	27.52
Po	$K\alpha_2$	H	4	50	84	6	76.851	0.64520	5	4.87	6.95	8.40	8.47	8.69	9.87	11.04	11.34	11.81	12.06	13.14	18.44	26.19	27.15	27.53
Ta	$K\alpha_1$		3	100	73	6	57.523	0.64649	6	4.88	6.97	8.42	8.48	8.70	9.89	11.06	11.36	11.83	12.09	13.16	18.48	26.24	27.20	27.58
Pa	$K\alpha_1$		8	5	100	91	6	95.852	0.64662	6	4.88	6.97	8.42	8.48	8.71	9.89	11.06	11.36	11.84	12.09	13.16	18.48	26.25	27.21	27.59
Tm	$K\beta_1$		3	23	69	6	57.506	0.64668	5	4.88	6.97	8.42	8.48	8.71	9.89	11.06	11.36	11.84	12.09	13.17	18.48	26.25	27.21	27.59
Ra	L_1-$O_{4,5}$	B	1	.01	88	6	19.165	0.64680	4	4.88	6.97	8.42	8.49	8.71	9.89	11.07	11.37	11.84	12.09	13.17	18.49	26.25	27.22	27.60
Ru	$K\alpha_2$		1	50	44	6	19.147	0.64741	6	4.89	6.98	8.43	8.49	8.72	9.90	11.08	11.38	11.85	12.11	13.18	18.50	26.28	27.24	27.62
Er	K-$O_{2,3}$		3	.01	68	6	57.439	0.64743	5	4.89	6.98	8.43	8.49	8.72	9.90	11.08	11.38	11.85	12.11	13.18	18.51	26.28	27.24	27.62
Th	L_1-N_1	B	1	.01	90	6	19.143	0.64755	5	4.89	6.98	8.43	8.50	8.72	9.91	11.08	11.38	11.85	12.11	13.18	18.51	26.28	27.25	27.63
W	K-L_1	B	3	.01	74	6	57.410	0.64776	5	4.89	6.98	8.43	8.50	8.72	9.91	11.08	11.38	11.86	12.11	13.19	18.51	26.29	27.26	27.64
Cf	$K\alpha_1$		6	100	98	3	114.778	0.64800		4.89	6.98	8.44	8.50	8.72	9.91	11.09	11.39	11.86	12.12	13.19	18.52	26.30	27.27	27.65
Pu	$L\beta_{10}$	B	1	.01	94	6	19.124	0.64820	4	4.89	6.99	8.44	8.50	8.73	9.92	11.09	11.39	11.87	12.12	13.20	18.53	26.31	27.28	27.66
Am	$L\beta_3$		1	6	95	6	19.103	0.64891	5	4.90	6.99	8.45	8.51	8.74	9.93	11.10	11.40	11.88	12.13	13.21	18.55	26.34	27.31	27.69
Tm	$K\beta_3$		3	11	69	6	57.293	0.64908	5	4.90	6.99	8.45	8.52	8.74	9.93	11.11	11.41	11.88	12.14	13.21	18.55	26.35	27.31	27.69
U	$K\beta_2'$		6	11	92	6	114.587	0.64908	5	4.90	6.99	8.45	8.52	8.74	9.93	11.11	11.41	11.88	12.14	13.21	18.55	26.35	27.31	27.69
Pm	$K\alpha_2$	H	2	50	61	6	38.165	0.64961	6	4.90	7.00	8.46	8.52	8.75	9.94	11.11			12.15	13.23	18.57	26.37	27.34	27.72
Ra	$L\gamma_4$		1	.1	88	6	19.081	0.64965	5	4.90	7.00	8.46	8.52	8.75	9.94	11.12	11.42	11.89	12.15	13.23	18.57	26.37	27.34	27.72
Bi	$K\alpha_{1,2}$		4	150	83	6	76.315	0.64973	6	4.90	7.00	8.46	8.52	8.75	9.94	11.12	11.42	11.89	12.15	13.23	18.57	26.37	27.34	27.72
Er	$K\beta_2$		8	3	8	68	6	57.204	0.65010	4	4.91	7.01	8.47	8.53	8.75	9.95	11.12	11.42	11.90	12.16	13.24	18.58	26.39	27.36	27.74
U	$K\beta_2''$		D	6	11	92	6	114.314	0.65063	6	4.91	7.01	8.47	8.54	8.76	9.95	11.13	11.43	11.91	12.17	13.25	18.60	26.41	27.38	27.76
La	$K\beta_5'$	B	2	.2	57	6	38.088	0.65092	5	4.91	7.01	8.48	8.54	8.76	9.96	11.14			12.17	13.25	18.61	26.42	27.39	27.77
Cf	$K\beta_2$		7	11	98	3	133.290	0.65100		4.91	7.02	8.48	8.54	8.76	9.96	11.14	11.44	11.92	12.17	13.25	18.61	26.43	27.40	27.78
La	$K\beta_5''$	B	2	.1	57	6	38.068	0.65126	5	4.91	7.02	8.48	8.54	8.77	9.96	11.14			12.18	13.26	18.62	26.44	27.41	27.79
Ta	$K\alpha_{1,2}$		3	150	73	6	57.098	0.65130	6	4.91	7.02	8.48	8.55	8.77	9.96	11.14	11.44	11.92	12.18	13.26	18.62	26.44	27.41	27.79
Ra	$L\gamma_4p$		1	.1	88	6	19.032	0.65131	5	4.91	7.02	8.48	8.55	8.77	9.96	11.14	11.45	11.92	12.18	13.26	18.62	26.44	27.41	27.79
Th	L_2-N_5	B	1	.01	90	6	19.009	0.65210	4	4.92	7.03	8.49	8.56	8.78	9.98	11.16	11.46	11.94	12.19	13.28	18.64	26.47	27.44	27.83
At	$K\beta_2'$	H	5	11	85	6	94.974	0.65260	5	4.92	7.03	8.50	8.56	8.79	9.98	11.17	11.47	11.95	12.20	13.29	18.65	26.49	27.47	27.85
Nb	AK		1		41	6	18.984	0.65298	5	4.93	7.04	8.50	8.57	8.79	9.99	11.17	11.47	11.95	12.21	13.29	18.67	26.51	27.48	27.86
Cf	$L\beta_2$		1	20	98	3	18.983	0.65300		4.93	7.04	8.50	8.57	8.79	9.99	11.17	11.47	11.95	12.21	13.29	18.67	26.51	27.48	27.87
Th	$L\gamma_1$		1	10	90	6	18.979	0.65313	5	4.93	7.04	8.50	8.57	8.79	9.99	11.18	11.48	11.96	12.21	13.30	18.67	26.52	27.49	27.87
Nb	$K\beta_4$	B	1	.01	41	6	18.978	0.65318	5	4.93	7.04	8.51	8.57	8.79	9.99	11.18	11.48	11.96	12.21	13.30	18.67	26.52	27.49	27.87
Rn	$K\beta_1$	8	5	29	86	6	94.850	0.65345	5	4.93	7.04	8.51	8.57	8.80	10.00	11.18	11.48	11.96	12.22	13.30	18.68	26.53	27.50	27.88
At	$K\beta_2''$	H	5	11	85	6	94.829	0.65360	5	4.93	7.04	8.51	8.58	8.80	10.00	11.18	11.49	11.97	12.22	13.31	18.68	26.53	27.51	27.89
Np	$K\beta_1$		6	30	93	3	113.725	0.65400		4.94	7.05	8.52	8.58	8.80	10.01	11.19	11.49	11.97	12.23	13.32	18.69	26.55	27.53	27.91
Nb	$K\beta_2$		1	4	41	6	18.949	0.65416	5	4.94	7.05	8.52	8.58	8.81	10.01	11.19	11.50	11.98	12.23	13.32	18.70	26.56	27.53	27.92
Pt	$K\beta_1$		4	27	78	6	75.735	0.65470	6	4.94	7.06	8.53	8.59	8.81	10.02	11.20	11.50	11.99	12.24	13.33	18.71	26.58	27.56	27.94
U	$K\alpha_2$		5	50	92	6	94.649	0.65484	6	4.94	7.06	8.53	8.59	8.82	10.02	11.20	11.51	11.99	12.24	13.33	18.72	26.59	27.56	27.95
Pa	$K\alpha_{1,2}$	H	5	150	91	6	94.627	0.65499	6	4.94	7.06	8.53	8.59	8.82	10.02	11.21	11.51	11.99	12.25	13.34	18.72	26.59	27.57	27.95
Pa	$L\gamma_5$		1	.1	91	6	18.925	0.65500	4	4.94	7.06	8.53	8.59	8.82	10.02	11.21	11.51	11.99	12.25	13.34	18.72	26.59	27.57	27.95
Ir	$K\beta_2'$		4	10	77	6	75.606	0.65582	6	4.95	7.07	8.54	8.60	8.83	10.03	11.22	11.52	12.01	12.26	13.35	18.75	26.63	27.60	27.99
La	$K\beta_1$		2	21	57	6	37.795	0.65597	6	4.95	7.07	8.54	8.61	8.83	10.04	11.22			12.27	13.36	18.75	26.63	27.61	27.99
Ir	$K\beta_2''$		4	10	77	6	75.516	0.65660	5	4.95	7.08	8.55	8.61	8.84	10.04	11.23	11.54	12.02	12.28	13.37	18.77	26.66	27.64	28.02

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
La	$K\beta_3$		2	9	57	6	37.714	0.65737	6	4.96	7.08	8.56	8.63	8.85	10.06	11.25			12.29	13.38	18.79	26.69	27.67	28.06
Am	$L\beta_1$		1	50	95	6	18.849	0.65765	6	4.96	7.09	8.56	8.63	8.85	10.06	11.25	11.56	12.04	12.30	13.39	18.80	26.70	27.68	28.07
Rn	$K\beta_3$	H	5	13	86	6	94.230	0.65775	5	4.96	7.09	8.57	8.63	8.86	10.06	11.25	11.56	12.04	12.30	13.39	18.80	26.71	27.69	28.07
Pt	$K\beta_3$		4	12	78	6	75.355	0.65800	6	4.97	7.09	8.57	8.63	8.86	10.07	11.26	11.56	12.05	12.30	13.40	18.81	26.72	27.70	28.08
Cf	$K\alpha_{1,2}$		6	150	98	3	112.999	0.65820		4.97	7.09	8.57	8.64	8.86	10.07	11.26	11.57	12.05	12.31	13.40	18.82	26.72	27.71	28.09
Ta	$K\alpha_2$		3	50	73	6	56.267	0.66091	6	4.99	7.12	8.61	8.67	8.90	10.11	11.31	11.61	12.10	12.36	13.46	18.89	26.84	27.82	28.21
Pb	$K\alpha_1$		4	100	82	6	74.956	0.66150	6	4.99	7.13	8.61	8.68	8.91	10.12	11.32	11.62	12.11	12.37	13.47	18.91	26.86	27.85	28.24
Th	L_2-N_3	B	1	.01	90	6	18.725	0.66200	4	5.00	7.13	8.62	8.69	8.91	10.13	11.33	11.63	12.12	12.38	13.48	18.93	26.88	27.87	28.26
Ba	K-$O_{2,3}$		2	.01	56	6	37.420	0.66254	5	5.00	7.14	8.63	8.69	8.92	10.14	11.34			12.39	13.49	18.94	26.90	27.89	28.28
Bi	$K\alpha_2$		4	50	83	6	74.802	0.66287	6	5.00	7.14	8.63	8.70	8.92	10.14	11.34	11.65	12.14	12.40	13.50	18.95	26.92	27.91	28.30
Nd	$K\alpha_1$		2	100	60	6	37.355	0.66369	6	5.01	7.15	8.64	8.71	8.94	10.15	11.36			12.41	13.51	18.97	26.95	27.94	28.33
Er	$K\beta_5$	B	3	.2	68	6	56.030	0.66372	5	5.01	7.15	8.64	8.71	8.94	10.15	11.36	11.66	12.15	12.41	13.51	18.98	26.95	27.94	28.33
Th	$K\alpha_1$		5	100	90	6	93.334	0.66406	6	5.01	7.16	8.65	8.71	8.94	10.16	11.36	11.67	12.16	12.42	13.52	18.99	26.97	27.96	28.35
Ba	$K\beta_4$	B	2	.02	56	6	37.305	0.66458	5	5.02	7.16	8.65	8.72	8.95	10.17	11.37			12.43	13.53	19.00	26.99	27.98	28.37
Bk	$K\beta_2$		7	11	97	3	130.484	0.66500		5.02	7.17	8.66	8.73	8.95	10.17	11.38	11.69	12.17	12.44	13.54	19.01	27.01	28.00	28.39
Ra	$L\gamma_{11}$	8	1	.01	88	6	18.629	0.66540	4	5.02	7.17	8.67	8.73	8.96	10.18	11.39	11.69	12.18	12.44	13.55	19.02	27.02	28.02	28.41
Ba	$K\beta_2$		2	7	56	6	37.251	0.66554	5	5.02	7.17	8.67	8.73	8.96	10.18	11.39			12.45	13.55	19.03	27.03	28.02	28.41
Nb	$K\beta_1$		1	.6	41	6	18.619	0.66576	5	5.02	7.17	8.67	8.74	8.96	10.19	11.39	11.70	12.19	12.45	13.56	19.03	27.04	28.03	28.42
8k	$K\alpha_1$		6	100	97	3	111.676	0.66600		5.03	7.18	8.67	8.74	8.97	10.19	11.40	11.70	12.19	12.45	13.56	19.04	27.05	28.04	28.43
Nb	$K\beta_3$		1	7	41	6	18.603	0.66634	5	5.03	7.18	8.68	8.74	8.97	10.19	11.40	11.71	12.20	12.46	13.57	19.05	27.06	28.06	28.45
Pa	$K\beta_2'$	H	6	11	91	6	111.605	0.66642	5	5.03	7.18	8.68	8.74	8.97	10.20	11.40	11.71	12.20	12.46	13.57	19.05	27.06	28.06	28.45
Ra	L_1-N_4	B	1	.01	88	6	18.596	0.66660	4	5.03	7.18	8.68	8.75	8.97	10.20	11.41	11.71	12.20	12.47	13.57	19.06	27.07	28.07	28.46
Hf	$K\alpha_1$		3	100	72	6	55.781	0.66668	6	5.03	7.18	8.68	8.75	8.98	10.20	11.41	11.72	12.21	12.47	13.57	19.06	27.08	28.07	28.46
Nd	$K\alpha_{1,2}$		2	150	60	6	37.182	0.66678	6	5.03	7.19	8.68	8.75	8.98	10.20	11.41			12.47	13.58	19.06	27.08	28.07	28.47
Pa	$K\beta_2''$	H	6	11	91	6	111.385	0.66774	5	5.04	7.20	8.70	8.76	8.99	10.22	11.43	11.73	12.23	12.49	13.60	19.09	27.12	28.12	28.51
Er	$K\beta_1$		3	22	68	6	55.672	0.66798	5	5.04	7.20	8.70	8.76	8.99	10.22	11.43	11.74	12.23	12.49	13.60	19.10	27.13	28.13	28.52
Pb	$K\alpha_{1,2}$		4	150	82	6	74.221	0.66806	6	5.04	7.20	8.70	8.77	8.99	10.22	11.43	11.74	12.23	12.49	13.60	19.10	27.13	28.13	28.52
U	$K\beta_1$		6	31	92	6	111.281	0.66836	6	5.04	7.20	8.70	8.77	9.00	10.23	11.44	11.75	12.24	12.50	13.61	19.11	27.15	28.14	28.53
Pu	$L\beta_3$		1	6	94	6	18.537	0.66871	5	5.05	7.21	8.71	8.77	9.00	10.23	11.44	11.75	12.24	12.51	13.62	19.12	27.16	28.16	28.55
8k	$L\beta_2$		1	20	97	3	18.529	0.66900		5.05	7.21	8.71	8.78	9.01	10.24	11.45	11.76	12.25	12.51	13.62	19.13	27.17	28.17	28.56
Ho	K-$O_{2,3}$		3	.01	67	6	55.575	0.66915	5	5.05	7.21	8.71	8.78	9.01	10.24	11.45	11.76	12.25	12.51	13.63	19.13	27.18	28.18	28.57
Am	AL_3		1		95	6	18.501	0.67002	5	5.06	7.22	8.73	8.79	9.02	10.25	11.46	11.77	12.27	12.53	13.64	19.16	27.21	28.21	28.61
Er	$K\beta_3$		3	12	68	6	55.485	0.67023	5	5.06	7.22	8.73	8.79	9.02	10.25	11.47	11.78	12.27	12.53	13.65	19.16	27.22	28.22	28.62
Ra	AL_2		1		88	6	18.482	0.67070	4	5.06	7.23	8.73	8.80	9.03	10.26	11.48	11.79	12.28	12.54	13.66	19.18	27.24	28.24	28.64
Po	$K\beta_2'$	H	5	11	84	6	92.383	0.67090	5	5.06	7.23	8.74	8.80	9.03	10.26	11.48	11.79	12.28	12.55	13.66	19.18	27.25	28.25	28.65
Ra	L_2-$P_{2,3}$	8	1	.01	88	6	18.463	0.67140	4	5.07	7.24	8.74	8.81	9.04	10.27	11.49	11.80	12.29	12.56	13.67	19.20	27.27	28.27	28.67
Hf	$K\alpha_{1,2}$		3	150	72	6	55.382	0.67148	6	5.07	7.24	8.74	8.81	9.04	10.27	11.49	11.80	12.29	12.56	13.67	19.20	27.27	28.28	28.67
At	$K\beta_1$	H	5	29	85	6	92.287	0.67160	5	5.07	7.24	8.75	8.81	9.04	10.28	11.49	11.80	12.30	12.56	13.68	19.20	27.28	28.28	28.68
Pa	$K\alpha_2$	H	5	50	91	6	92.271	0.67171	6	5.07	7.24	8.75	8.81	9.04	10.28	11.49	11.80	12.30	12.56	13.68	19.21	27.28	28.29	28.68
Po	$K\beta_2''$	H	5	11	84	6	92.246	0.67190	5	5.07	7.24	8.75	8.82	9.05	10.28	11.50	11.81	12.30	12.56	13.68	19.21	27.29	28.29	28.69
Ho	$K\beta_2$	H	3	8	67	6	55.315	0.67230	4	5.07	7.25	8.76	8.82	9.05	10.29	11.50	11.82	12.31	12.57	13.69	19.22	27.31	28.31	28.71
Ra	L_2-P_1		1	.01	88	6	18.435	0.67240	4	5.07	7.25	8.76	8.82	9.05	10.29	11.51	11.82	12.31	12.57	13.69	19.23	27.31	28.32	28.71
Th	$K\alpha_{1,2}$		5	150	90	6	92.174	0.67242	6	5.07	7.25	8.76	8.82	9.05	10.29	11.51	11.82	12.31	12.57	13.69	19.23	27.31	28.32	28.71
Nd	$K\alpha_2$		2	50	60	6	36.841	0.67294	6	5.08	7.25	8.76	8.83	9.06	10.30	11.52			12.58	13.70	19.24	27.33	28.34	28.73
Ra	$L\gamma_6$		1	.01	88	6	18.411	0.67328	5	5.08	7.26	8.77	8.83	9.06	10.30	11.52	11.83	12.33	12.59	13.71	19.25	27.35	28.35	28.75
Ac	$L\gamma_1$	H	1	10	89	6	18.405	0.67351	5	5.08	7.26	8.77	8.84	9.07	10.30	11.52	11.84	12.33	12.60	13.71	19.26	27.36	28.36	28.76
U	$K\beta_3$		6	14	92	6	110.387	0.67378	6	5.08	7.26	8.77	8.84	9.07	10.31	11.53	11.84	12.34	12.60	13.72	19.27	27.37	28.38	28.77
Am	$L\beta_5$		1	1	95	6	18.396	0.67383	5	5.08	7.26	8.78	8.84	9.07	10.31	11.53	11.84	12.34	12.60	13.72	19.27	27.37	28.38	28.77
Ir	$K\beta_1$		4	27	77	6	73.548	0.67417	6	5.09	7.27	8.78	8.85	9.08	10.31	11.54	11.85	12.34	12.61	13.73	19.28	27.39	28.39	28.79
Tc	$K\alpha_1$	H	1	100	43	6	18.364	0.67502	5	5.09	7.27	8.79	8.86	9.09	10.33	11.55	11.86	12.36	12.62	13.75	19.30	27.42	28.43	28.82
Th	$L\gamma_5$	D	1	.1	90	6	18.361	0.67514	5	5.09	7.28	8.79	8.86	9.09	10.33	11.55	11.87	12.36	12.63	13.75	19.30	27.43	28.43	28.83
Ra	$L\gamma_3$		1	2	88	6	18.354	0.67538	5	5.10	7.28	8.80	8.86	9.09	10.33	11.56	11.87	12.37	12.63	13.75	19.31	27.44	28.44	28.84
Os	$K\beta_2'$		4	10	76	6	73.390	0.67562	6	5.10	7.28	8.80	8.87	9.10	10.34	11.56	11.87	12.37	12.63	13.76	19.32	27.45	28.45	28.85
At	$K\beta_3$	H	5	13	85	6	91.707	0.67585	5	5.10	7.28	8.80	8.87	9.10	10.34	11.57	11.88	12.37	12.64	13.76	19.33	27.46	28.46	28.86
Bk	$K\alpha_{1,2}$		6	150	97	3	109.991	0.67620		5.10	7.29	8.81	8.87	9.10	10.35	11.57	11.88	12.38	12.65	13.77	19.34	27.47	28.48	28.88
Ba	$K\beta_5'$	B	2	.1	56	6	36.659	0.67628	5	5.10	7.29	8.81	8.87	9.11	10.35	11.57			12.65	13.77	19.34	27.47	28.48	28.88
Os	$K\beta_2''$		4	10	76	6	73.306	0.67640	5	5.10	7.29	8.81	8.88	9.11	10.35	11.57	11.89	12.38	12.65	13.77	19.34	27.48	28.49	28.89
Ra	L_2-O_3	B	1	.01	88	6	18.326	0.67640	4	5.10	7.29	8.81	8.88	9.11	10.35	11.57	11.89	12.38	12.65	13.77	19.34	27.48	28.49	28.89
Tc	$K\alpha_{1,2}$	H	1	150	43	6	18.325	0.67645	5	5.10	7.29	8.81	8.88	9.11	10.35	11.58	11.89	12.39	12.65	13.77	19.34	27.48	28.49	28.89
8a	$K\beta_5''$	B	2	.1	56	6	36.637	0.67670	5	5.11	7.29	8.81	8.88	9.11	10.35	11.58			12.66	13.78	19.35	27.49	28.50	28.90
Ir	$K\beta_3$		4	12	77	6	73.190	0.67747	6	5.11	7.30	8.82	8.89	9.12	10.37	11.59	11.91	12.40	12.67	13.80	19.37	27.52	28.53	28.93
Pu	$L\beta_1$		1	50	94	6	18.291	0.67772	5	5.11	7.30	8.83	8.89	9.12	10.37	11.60	11.91	12.41	12.67	13.80	19.38	27.53	28.54	28.94
Cf	$K\alpha_2$		6	50	98	3	109.699	0.67800		5.12	7.31	8.83	8.90	9.13	10.37	11.60	11.92	12.41	12.68	13.81	19.39	27.54	28.56	28.96
Ra	L_2-O_2	B	1	.01	88	6	18.283	0.67800	4	5.12	7.31	8.83	8.90	9.13	10.37	11.60	11.92	12.41	12.68	13.81	19.39	27.54	28.56	28.96
Cf	$K\beta_1$		7	30	98	3	127.794	0.67900		5.12	7.32	8.84	8.91	9.14	10.39	11.62	11.93	12.43	12.70	13.83	19.42	27.59	28.60	29.00

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Tc	$K\alpha_2$	H	1	50	43	6	18.248	0.67932	5	5.13	7.32	8.85	8.91	9.15	10.39	11.62	11.94	12.44	12.70	13.83	19.43	27.60	28.61	29.01
Ra	$L\gamma_8$		1	.1	88	6	18.227	0.68010	4	5.13	7.33	8.86	8.92	9.16	10.41	11.64	11.95	12.45	12.72	13.85	19.45	27.63	28.65	29.05
Tl	$K\alpha_1$		4	100	81	6	72.859	0.68054	6	5.14	7.33	8.86	8.93	9.16	10.41	11.65	11.96	12.46	12.73	13.86	19.46	27.65	28.67	29.07
U	$L\beta_9$	8	1	.01	92	6	18.202	0.68101	6	5.14	7.34	8.87	8.94	9.17	10.42	11.65	11.97	12.47	12.74	13.87	19.47	27.67	28.69	29.09
Hf	$K\alpha_2$		3	50	72	6	54.602	0.68107	6	5.14	7.34	8.87	8.94	9.17	10.42	11.65	11.97	12.47	12.74	13.87	19.48	27.67	28.69	29.09
Pb	$K\alpha_2$		4	50	82	6	72.792	0.68118	6	5.14	7.34	8.87	8.94	9.17	10.42	11.66	11.97	12.47	12.74	13.87	19.48	27.68	28.69	29.09
Ba	$K\beta_1$		2	21	56	6	36.372	0.68162	6	5.14	7.35	8.88	8.94	9.18	10.43	11.66			12.75	13.88	19.49	27.69	28.71	29.11
Ra	$L\gamma_2$		1	1	88	6	18.176	0.68199	5	5.15	7.35	8.88	8.95	9.18	10.43	11.67	11.99	12.49	12.75	13.89	19.50	27.71	28.73	29.13
Ac	$K\alpha_1$	H	5	100	89	6	90.868	0.68208	6	5.15	7.35	8.88	8.95	9.18	10.44	11.67	11.99	12.49	12.76	13.89	19.51	27.71	28.73	29.13
Ba	$K\beta_3$		2	7	56	6	36.298	0.68301	6	5.15	7.36	8.89	8.96	9.20	10.45	11.69			12.77	13.91	19.53	27.75	28.77	29.17
Cm	$K\alpha_1$		6	100	96	3	108.737	0.68400		5.16	7.37	8.91	8.98	9.21	10.47	11.70	12.02	12.52	12.79	13.93	19.56	27.79	28.82	29.22
Th	$K\beta_2'$		6	11	90	6	108.699	0.68424	6	5.16	7.37	8.91	8.98	9.21	10.47	11.71	12.03	12.53	12.80	13.93	19.57	27.80	28.83	29.23
Cm	$L\beta_2$		1	20	96	3	18.096	0.68500		5.17	7.38	8.92	8.99	9.22	10.48	11.72	12.04	12.54	12.81	13.95	19.59	27.83	28.86	29.26
Th	$K\beta_2''$		6	11	90	6	108.489	0.68556	5	5.17	7.39	8.93	9.00	9.23	10.49	11.73	12.05	12.55	12.82	13.96	19.61	27.86	28.88	29.29
Ho	$K\beta_5$	8	3	.2	67	6	54.238	0.68565	5	5.17	7.39	8.93	9.00	9.23	10.49	11.73	12.05	12.55	12.82	13.96	19.61	27.86	28.89	29.29
Cm	$K\beta_2$		7	11	96	3	126.490	0.68600		5.18	7.39	8.93	9.00	9.24	10.50	11.74	12.06	12.56	12.83	13.97	19.62	27.88	28.90	29.30
Bk	$K\beta_1$		7	30	97	3	126.490	0.68600		5.18	7.39	8.93	9.00	9.24	10.50	11.74	12.06	12.56	12.83	13.97	19.62	27.88	28.90	29.30
Pa	$K\beta_1$	H	6	30	91	6	108.409	0.68607	6	5.18	7.39	8.93	9.00	9.24	10.50	11.74	12.06	12.56	12.83	13.97	19.62	27.88	28.90	29.31
Am	$L\beta_4$		1	4	95	6	18.060	0.68639	5	5.18	7.40	8.94	9.01	9.24	10.50	11.75	12.06	12.57	12.84	13.98	19.63	27.89	28.92	29.32
Pu	AL_3		1		94	6	18.050	0.68675	5	5.18	7.40	8.94	9.01	9.25	10.51	11.75	12.07	12.57	12.84	13.99	19.64	27.91	28.93	29.34
Tl	$K\alpha_{1,2}$		4	150	81	6	72.167	0.68708	6	5.18	7.40	8.95	9.02	9.25	10.51	11.76	12.08	12.58	12.85	13.99	19.65	27.92	28.95	29.35
Ra	L_1-N_1	8	1	.01	88	6	18.033	0.68740	4	5.19	7.41	8.95	9.02	9.26	10.52	11.76	12.08	12.59	12.86	14.00	19.66	27.93	28.96	29.37
U	$L\beta_{10}$	8	1	.01	92	6	18.028	0.68760	5	5.19	7.41	8.95	9.02	9.26	10.52	11.77	12.09	12.59	12.86	14.00	19.66	27.94	28.97	29.37
Lu	$K\alpha_1$		3	100	71	6	54.961	0.68789	6	5.19	7.41	8.96	9.03	9.26	10.53	11.77	12.09	12.60	12.87	14.01	19.67	27.95	28.98	29.39
Pr	$K\alpha_1$		2	100	59	6	36.020	0.68828	6	5.19	7.42	8.96	9.03	9.27	10.53	11.78			12.87	14.02	19.68	27.97	29.00	29.40
Zr	AK		1		40	6	17.996	0.68883	5	5.20	7.42	8.97	9.04	9.27	10.54	11.79	12.11	12.61	12.88	14.03	19.70	27.99	29.02	29.43
Zr	$K\beta_4$	B	1	.01	40	6	17.991	0.68901	5	5.20	7.43	8.97	9.04	9.28	10.54	11.79	12.11	12.62	12.89	14.03	19.71	28.00	29.03	29.44
Th	$K\alpha_2$		5	50	90	6	89.938	0.68914	6	5.20	7.43	8.97	9.04	9.28	10.54	11.79	12.11	12.62	12.89	14.03	19.71	28.01	29.04	29.44
Np	$L\beta_3$	H	1	6	93	6	17.986	0.68920	5	5.20	7.43	8.98	9.04	9.28	10.55	11.79	12.11	12.62	12.89	14.04	19.71	28.01	29.04	29.44
Bi	$K\beta_2'$		5	11	83	6	89.846	0.68985	5	5.21	7.43	8.98	9.05	9.29	10.56	11.81	12.12	12.63	12.90	14.05	19.73	28.04	29.07	29.47
Zr	$K\beta_2$		1	4	40	6	17.967	0.68993	5	5.21	7.44	8.99	9.05	9.29	10.56	11.81	12.13	12.63	12.90	14.05	19.73	28.04	29.07	29.48
Po	$K\beta_1$	H	5	89	84	6	89.781	0.69035	5	5.21	7.44	8.99	9.06	9.30	10.56	11.81	12.13	12.64	12.91	14.06	19.74	28.06	29.09	29.49
Ho	$K\beta_1$		3	22	67	6	53.868	0.69036	5	5.21	7.44	8.99	9.06	9.30	10.56	11.81	12.13	12.64	12.91	14.06	19.74	28.06	29.09	29.49
Ac	$K\alpha_{1,2}$	H	5	150	89	6	89.773	0.69040	5	5.21	7.44	8.99	9.06	9.30	10.56	11.81	12.13	12.64	12.91	14.06	19.75	28.06	29.09	29.50
Pu	$L\beta_5$		1	1	94	6	17.948	0.69068	5	5.21	7.44	8.99	9.06	9.30	10.57	11.82	12.14	12.65	12.92	14.07	19.75	28.07	29.10	29.51
Bi	$K\beta_2''$		5	11	83	6	89.716	0.69085	5	5.21	7.45	9.00	9.07	9.30	10.57	11.82	12.14	12.65	12.92	14.07	19.76	28.08	29.11	29.52
Pr	$K\alpha_{1,2}$		2	150	59	6	35.860	0.69135	6	5.22	7.45	9.00	9.07	9.31	10.58	11.83			12.93	14.08	19.77	28.10	29.13	29.54
Pa	$K\beta_3$	H	6	14	91	6	107.576	0.69138	5	5.22	7.45	9.00	9.07	9.31	10.58	11.83	12.15	12.66	12.93	14.08	19.77	28.10	29.13	29.54
Dy	$K-O_{2,3}$		3	.01	66	6	53.765	0.69168	5	5.22	7.45	9.01	9.08	9.31	10.58	11.84	12.16	12.67	12.94	14.09	19.78	28.11	29.15	29.55
Cs	$K\beta_2$		2	6	55	6	35.815	0.69222	5	5.22	7.46	9.02	9.08	9.32	10.59	11.85			12.95	14.10	19.80	28.13	29.17	29.58
Ho	$K\beta_3$		3	11	67	6	53.702	0.69249	5	5.23	7.46	9.02	9.09	9.32	10.60	11.85	12.17	12.68	12.95	14.10	19.81	28.15	29.18	29.59
Lu	$K\alpha_{1,2}$		3	150	71	6	53.687	0.69268	6	5.23	7.47	9.02	9.09	9.33	10.60	11.85	12.17	12.68	12.96	14.11	19.81	28.15	29.19	29.60
Ra	L_2-N_5	8	1	.01	88	6	17.882	0.69320	4	5.23	7.47	9.03	9.10	9.33	10.61	11.86	12.18	12.69	12.96	14.12	19.83	28.17	29.21	29.62
Cm	$K\alpha_{1,2}$		6	150	96	3	107.139	0.69420		5.24	7.48	9.04	9.11	9.35	10.62	11.88	12.20	12.71	12.98	14.14	19.86	28.22	29.25	29.66
Os	$K\beta_1$		4	27	76	6	71.401	0.69444	6	5.24	7.48	9.04	9.11	9.35	10.63	11.88	12.21	12.72	12.99	14.14	19.86	28.23	29.26	29.67
Po	$K\beta_3$	H	5	13	84	6	89.231	0.69460	5	5.24	7.49	9.05	9.11	9.35	10.63	11.89	12.21	12.72	12.99	14.15	19.87	28.23	29.27	29.68
Ra	$L\gamma_1$		1	10	88	6	17.845	0.69463	5	5.24	7.49	9.05	9.11	9.35	10.63	11.89	12.21	12.72	12.99	14.15	19.87	28.23	29.27	29.68
Dy	$K\beta_2$	H	3	9	66	6	53.500	0.69510	4	5.25	7.49	9.05	9.12	9.36	10.64	11.90	12.22	12.73	13.00	14.16	19.88	28.25	29.29	29.70
Zr	$K\beta_5$		1	.08	40	6	17.813	0.69590	4	5.25	7.50	9.06	9.13	9.37	10.65	11.91	12.23	12.74	13.02	14.17	19.90	28.29	29.33	29.74
Bk	$K\alpha_2$		6	50	97	3	106.862	0.69600		5.25	7.50	9.06	9.13	9.37	10.65	11.91	12.23	12.74	13.02	14.17	19.91	28.29	29.33	29.74
Re	$K\beta_2'$		4	10	75	6	71.219	0.69622	6	5.25	7.50	9.07	9.14	9.37	10.65	11.91	12.24	12.75	13.02	14.18	19.91	28.30	29.34	29.75
Re	$K\beta_2''$		4	10	75	6	71.139	0.69700	5	5.26	7.51	9.08	9.15	9.38	10.66	11.93	12.25	12.76	13.04	14.20	19.94	28.33	29.37	29.78
Pr	$K\alpha_2$		2	50	59	6	35.544	0.69750	6	5.26	7.52	9.08	9.15	9.39	10.67	11.94			13.05	14.21	19.95	28.35	29.40	29.81
Os	$K\beta_3$		4	12	76	6	71.065	0.69772	6	5.27	7.52	9.09	9.16	9.39	10.68	11.94	12.26	12.78	13.05	14.21	19.96	28.36	29.41	29.82
Np	$L\beta_1$		1	50	93	6	17.747	0.69848	6	5.27	7.53	9.10	9.17	9.40	10.69	11.95	12.28	12.79	13.06	14.23	19.98	28.39	29.44	29.85
Am	$K\beta_2$		7	11	95	3	123.960	0.70000		5.28	7.54	9.12	9.19	9.43	10.71	11.98	12.30	12.82	13.09	14.26	20.02	28.46	29.50	29.92
Tl	$K\alpha_2$		4	50	81	6	70.820	0.70014	6	5.28	7.55	9.12	9.19	9.43	10.71	11.98	12.31	12.82	13.10	14.26	20.03	28.46	29.51	29.92
Hg	$K\alpha_1$		4	100	80	6	70.807	0.70027	6	5.28	7.55	9.12	9.19	9.43	10.71	11.98	12.31	12.82	13.10	14.26	20.03	28.47	29.52	29.93
Pu	$L\beta_7$		1	.1	94	6	17.701	0.70030	4	5.28	7.55	9.12	9.19	9.43	10.72	11.98	12.31	12.82	13.10	14.26	20.03	28.47	29.52	29.93
Ra	$K\alpha_1$	H	5	100	88	6	88.454	0.70070	5	5.29	7.55	9.13	9.19	9.43	10.72	11.99	12.32	12.83	13.11	14.27	20.04	28.49	29.53	29.95
Am	$L\beta_2$		1	20	95	6	17.673	0.70139	6	5.29	7.56	9.13	9.20	9.44	10.73	12.00	12.33	12.84	13.12	14.29	20.06	28.51	29.56	29.98
Zr	$K\beta_1$		1	18	40	6	17.665	0.70173	5	5.30	7.56	9.14	9.21	9.45	10.74	12.01	12.33	12.85	13.13	14.29	20.07	28.53	29.58	29.99
Pa	$L\beta_9$	8	1	.01	91	6	17.663	0.70180	4	5.30	7.56	9.14	9.21	9.45	10.74	12.01	12.34	12.85	13.13	14.29	20.07	28.53	29.58	29.99
Am	$K\alpha_1$		6	100	95	3	105.949	0.70200		5.30	7.57	9.14	9.21	9.45	10.74	12.01	12.34	12.85	13.13	14.30	20.08	28.54	29.59	30.00
Lu	$K\alpha_2$		3	50	71	6	52.956	0.70224	6	5.30	7.57	9.15	9.22	9.46	10.75	12.02	12.34	12.86	13.13	14.30	20.09	28.55	29.60	30.01

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Zr	$K\beta_3$		1	9	40	6	17.651	0.70228	5	5.30	7.57	9.15	9.22	9.46	10.75	12.02	12.34	12.86	13.14	14.30	20.09	28.55	29.60	30.02
Ac	$K\beta_2'$	H	6	11	89	6	105.849	0.70266	5	5.30	7.57	9.15	9.22	9.46	10.75	12.03	12.35	12.87	13.14	14.31	20.10	28.57	29.62	30.03
Pu	Lu	8	1	.01	94	6	17.630	0.70310	4	5.31	7.58	9.16	9.23	9.47	10.76	12.03	12.36	12.88	13.15	14.32	20.11	28.59	29.64	30.05
Am	$L\beta_{15}$		1	1	95	6	17.623	0.70341	5	5.31	7.58	9.16	9.23	9.47	10.76	12.04	12.36	12.88	13.16	14.33	20.12	28.60	29.65	30.07
Ac	$K\beta_2''$	H	6	11	89	6	105.660	0.70392	5	5.31	7.59	9.17	9.24	9.48	10.77	12.05	12.37	12.89	13.17	14.34	20.14	28.62	29.67	30.09
Ra	L_2-N_3	B	1	.01	88	6	17.600	0.70430	4	5.32	7.59	9.17	9.24	9.48	10.78	12.05	12.38	12.90	13.17	14.34	20.15	28.64	29.69	30.10
Th	$K\beta_1$		6	30	90	6	105.591	0.70438	6	5.32	7.59	9.17	9.24	9.48	10.78	12.05	12.38	12.90	13.17	14.35	20.15	28.64	29.69	30.11
Pu	$L\beta_4$		1	4	94	6	17.553	0.70620	5	5.33	7.61	9.20	9.27	9.51	10.81	12.09	12.41	12.93	13.21	14.38	20.20	28.71	29.77	30.19
Hg	$K\alpha_{1,2}$		4	150	80	6	70.154	0.70679	6	5.33	7.62	9.21	9.27	9.52	10.82	12.10	12.42	12.94	13.22	14.40	20.22	28.74	29.80	30.21
Cm	$K\beta_1$		7	30	96	3	122.733	0.70700		5.34	7.62	9.21	9.28	9.52	10.82	12.10	12.43	12.95	13.22	14.40	20.23	28.75	29.81	30.22
Ac	$K\alpha_2$	H	5	50	89	6	87.660	0.70705	5	5.34	7.62	9.21	9.28	9.52	10.82	12.10	12.43	12.95	13.23	14.40	20.23	28.75	29.81	30.22
Np	$L\beta_5$		1	1	93	6	17.505	0.70814	5	5.34	7.63	9.22	9.29	9.54	10.84	12.12	12.45	12.97	13.25	14.42	20.26	28.79	29.86	30.27
Dy	$K\beta_5$	8	3	.2	66	6	52.485	0.70854	5	5.35	7.64	9.23	9.30	9.54	10.84	12.13	12.45	12.98	13.25	14.43	20.27	28.81	29.87	30.29
Cs	$K\beta_1$		2	21	55	6	34.981	0.70873	6	5.35	7.64	9.23	9.30	9.54	10.84	12.13			13.26	14.44	20.28	28.82	29.88	30.30
Pa	$L\beta_{10}$	8	1	.01	91	6	17.489	0.70880	4	5.35	7.64	9.23	9.30	9.54	10.85	12.13	12.46	12.98	13.26	14.44	20.28	28.82	29.88	30.30
Ra	$K\alpha_{1,2}$	H	5	150	88	6	87.419	0.70900	5	5.35	7.64	9.23	9.30	9.55	10.85	12.13	12.46	12.98	13.26	14.44	20.28	28.83	29.89	30.31
Np	AL_3		1		93	6	17.479	0.70920	5	5.35	7.64	9.24	9.31	9.55	10.85	12.14	12.47	12.99	13.27	14.44	20.29	28.84	29.90	30.32
Mo	$K\alpha_1$		1	100	42	6	17.476	0.70930	6	5.35	7.64	9.24	9.31	9.55	10.85	12.14	12.47	12.99	13.27	14.45	20.29	28.84	29.91	30.32
Pb	$K\beta_2'$		5	11	82	6	87.351	0.70955	5	5.35	7.65	9.24	9.31	9.55	10.86	12.14	12.47	12.99	13.27	14.45	20.30	28.85	29.92	30.33
Th	$K\beta_3$		6	14	90	6	104.813	0.70961	6	5.36	7.65	9.24	9.31	9.56	10.86	12.14	12.47	12.99	13.27	14.45	20.30	28.86	29.92	30.34
Bi	$K\beta_1$		5	89	83	6	87.328	0.70974	6	5.36	7.65	9.24	9.31	9.56	10.86	12.15	12.48	13.00	13.28	14.46	20.30	28.86	29.92	30.34
Yb	$K\alpha_1$		3	100	70	6	52.380	0.70996	6	5.36	7.65	9.25	9.32	9.56	10.86	12.15	12.48	13.00	13.28	14.46	20.31	28.87	29.93	30.35
Cs	$K\beta_3$		2	9	55	6	34.913	0.71010	6	5.36	7.65	9.25	9.32	9.56	10.87	12.15			13.28	14.46	20.31	28.88	29.94	30.36
U	$L\beta_3$		1	6	92	6	17.452	0.71029	5	5.36	7.66	9.25	9.32	9.56	10.87	12.16	12.49	13.01	13.29	14.47	20.32	28.88	29.95	30.37
Pb	$K\beta_2''$		5	11	82	6	87.222	0.71060	5	5.36	7.66	9.25	9.32	9.57	10.87	12.16	12.49	13.01	13.29	14.47	20.33	28.90	29.96	30.38
Mo	$K\alpha_{1,2}$		1	150	42	6	17.441	0.71073	6	5.36	7.66	9.26	9.33	9.57	10.88	12.16	12.49	13.02	13.29	14.48	20.33	28.90	29.97	30.39
Am	$K\alpha_{1,2}$		6	150	95	3	104.431	0.71220		5.37	7.68	9.28	9.35	9.59	10.90	12.19	12.52	13.04	13.32	14.51	20.38	28.96	30.03	30.45
Mo	$K\alpha_2$		1	50	42	6	17.371	0.71359	6	5.39	7.69	9.29	9.36	9.61	10.92	12.21	12.54	13.07	13.35	14.53	20.42	29.02	30.09	30.51
Dy	$K\beta_1$		3	23	66	6	52.110	0.71364	5	5.39	7.69	9.29	9.36	9.61	10.92	12.21	12.54	13.07	13.35	14.54	20.42	29.02	30.09	30.51
Bi	$K\beta_3$		5	13	83	6	86.819	0.71389	6	5.39	7.69	9.30	9.37	9.61	10.92	12.22	12.55	13.07	13.35	14.54	20.42	29.03	30.10	30.52
Cm	$K\alpha_2$		6	50	96	3	104.168	0.71400		5.39	7.70	9.30	9.37	9.61	10.93	12.22	12.55	13.08	13.36	14.54	20.43	29.04	30.11	30.53
Ce	$K\alpha_1$		2	100	58	6	34.714	0.71418	6	5.39	7.70	9.30	9.37	9.62	10.93	12.22			13.36	14.55	20.43	29.05	30.12	30.54
Yb	$K\alpha_{1,2}$		3	150	70	6	52.030	0.71473	6	5.39	7.70	9.31	9.38	9.62	10.94	12.23	12.56	13.09	13.37	14.56	20.45	29.07	30.14	30.56
Re	$K\beta_1$		4	26	75	6	69.298	0.71552	6	5.40	7.71	9.32	9.39	9.63	10.95	12.25	12.58	13.10	13.38	14.57	20.47	29.10	30.17	30.60
Tb	$K-O_{2,3}$		3	.01	65	6	51.957	0.71574	5	5.40	7.71	9.32	9.39	9.64	10.95	12.25	12.58	13.11	13.39	14.58	20.48	29.11	30.18	30.61
Dy	$K\beta_3$		3	11	66	6	51.949	0.71586	5	5.40	7.72	9.32	9.39	9.64	10.95	12.25	12.58	13.11	13.39	14.58	20.48	29.12	30.19	30.61
Fr	$L\gamma_1$	H	1	10	87	6	17.300	0.71652	5	5.41	7.72	9.33	9.40	9.65	10.96	12.26	12.60	13.12	13.40	14.59	20.50	29.14	30.22	30.64
Ce	$K\alpha_{1,2}$		2	150	58	6	34.566	0.71724	6	5.41	7.73	9.34	9.41	9.66	10.98	12.28			13.42	14.61	20.52	29.17	30.25	30.67
W	$K\beta_2'$		4	10	74	6	69.089	0.71768	6	5.42	7.74	9.35	9.42	9.66	10.98	12.28	12.62	13.14	13.42	14.62	20.53	29.19	30.27	30.69
Ra	$L\gamma_5$		1	.1	88	6	17.271	0.71774	5	5.42	7.74	9.35	9.42	9.66	10.98	12.28	12.62	13.14	13.43	14.62	20.54	29.19	30.27	30.69
W	$K\beta_2''$		4	10	74	6	69.020	0.71840	5	5.42	7.74	9.36	9.43	9.67	10.99	12.30	12.63	13.16	13.44	14.63	20.55	29.22	30.30	30.72
Pu	$L\beta_2$		1	20	94	6	17.252	0.71851	5	5.42	7.74	9.36	9.43	9.68	10.99	12.30	12.63	13.16	13.44	14.64	20.56	29.23	30.30	30.73
Re	$K\beta_3$		4	12	75	6	68.983	0.71879	6	5.42	7.75	9.36	9.43	9.68	11.00	12.30	12.64	13.16	13.45	14.64	20.57	29.24	30.31	30.74
Tb	$K\beta_2$	H	3	8	65	6	51.715	0.71910	4	5.43	7.75	9.37	9.44	9.68	11.00	12.31	12.64	13.17	13.45	14.65	20.57	29.25	30.33	30.75
Hg	$K\alpha_2$		4	50	80	6	68.883	0.71983	6	5.43	7.76	9.38	9.45	9.69	11.02	12.32	12.65	13.18	13.47	14.66	20.60	29.28	30.36	30.78
Fr	$K\alpha_1$	H	5	100	87	6	86.089	0.71995	5	5.43	7.76	9.38	9.45	9.69	11.02	12.32	12.66	13.19	13.47	14.67	20.60	29.29	30.37	30.79
U	$L\beta_1$		1	50	92	6	17.217	0.71998	6	5.43	7.76	9.38	9.45	9.70	11.02	12.32	12.66	13.19	13.47	14.67	20.60	29.29	30.37	30.79
Pu	$K\alpha_1$		6	100	94	3	103.300	0.72000		5.43	7.76	9.38	9.45	9.70	11.02	12.32	12.66	13.19	13.47	14.67	20.60	29.29	30.37	30.79
Pu	$L\beta_{15}$		1	1	94	6	17.205	0.72050	4	5.44	7.77	9.38	9.46	9.70	11.03	12.33	12.67	13.20	13.48	14.68	20.62	29.31	30.39	30.81
Xe	$K\beta_2$	H	2	6	54	6	34.408	0.72052	5	5.44	7.77	9.38	9.46	9.70	11.03	12.33			13.48	14.68	20.62	29.31	30.39	30.81
Au	$K\alpha_1$		4	100	79	6	68.792	0.72078	6	5.44	7.77	9.39	9.46	9.71	11.03	12.34	12.67	13.20	13.48	14.68	20.62	29.32	30.40	30.83
Pu	$K\beta_2$		7	11	94	3	120.350	0.72100		5.44	7.77	9.39	9.46	9.71	11.03	12.34	12.67	13.20	13.49	14.69	20.63	29.33	30.41	30.84
Am	$K\beta_1$		7	30	95	3	120.350	0.72100		5.44	7.77	9.39	9.46	9.71	11.03	12.34	12.67	13.20	13.49	14.69	20.63	29.33	30.41	30.84
Ra	$K\beta_2'$	H	6	11	88	6	103.051	0.72174	5	5.45	7.78	9.40	9.47	9.72	11.04	12.35	12.69	13.22	13.50	14.70	20.65	29.36	30.44	30.87
U	AL_3		1		92	6	17.162	0.72230	4	5.45	7.79	9.41	9.48	9.73	11.05	12.36	12.70	13.23	13.51	14.71	20.67	29.38	30.47	30.89
U	$L_3-P_{4,5}$		1	.01	92	6	17.159	0.72240	5	5.45	7.79	9.41	9.48	9.73	11.05	12.36	12.70	13.23	13.51	14.72	20.67	29.39	30.47	30.90
Ra	$K8_2''$	H	6	11	88	6	102.871	0.72300	5	5.46	7.79	9.42	9.49	9.74	11.06	12.37	12.71	13.24	13.52	14.73	20.69	29.41	30.50	30.92
Ac	$K8_1$	H	6	30	89	6	102.829	0.72330	5	5.46	7.80	9.42	9.49	9.74	11.07	12.38	12.72	13.25	13.53	14.73	20.70	29.42	30.51	30.94
Ce	$K\alpha_2$		2	50	58	6	34.273	0.72337	6	5.46	7.80	9.42	9.49	9.74	11.07	12.38			13.53	14.74	20.70	29.43	30.51	30.94
Th	$L\beta_9$	8	1	.01	90	6	17.136	0.72340	4	5.46	7.80	9.42	9.49	9.74	11.07	12.38	12.72	13.25	13.53	14.74	20.70	29.43	30.51	30.94
U	$L_3-P_{2,3}$	8	1	.01	92	6	17.115	0.72426	5	5.47	7.81	9.43	9.50	9.75	11.08	12.40	12.73	13.26	13.55	14.75	20.72	29.46	30.55	30.98
Yb	$K\alpha_2$		3	50	70	6	51.345	0.72427	6	5.47	7.81	9.43	9.50	9.75	11.08	12.40	12.73	13.26	13.55	14.75	20.72	29.47	30.55	30.98
U	L_3-P_1		1	.01	92	6	17.093	0.72521	5	5.47	7.82	9.45	9.52	9.77	11.10	12.41	12.75	13.28	13.57	14.77	20.75	29.50	30.59	31.02
Ra	$K\alpha_2$	H	5	50	88	6	85.419	0.72560	5	5.48	7.82	9.45	9.52	9.77	11.10	12.42	12.76	13.29	13.57	14.78	20.76	29.52	30.61	31.04
U	$L\beta_5$		1	1	92	6	17.067	0.72630	6	5.48	7.83	9.46	9.53	9.78	11.11	12.43	12.77	13.30	13.59	14.80	20.78	29.55	30.64	31.07

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Np	$L\beta_4$		1	4	93	6	17.058	0.72671	5		5.48	7.83	9.47	9.54	9.79	11.12	12.44	12.78	13.31	13.59	14.80	20.80	29.57	30.66	31.09
Au	$K\alpha_{1,2}$		4	150	79	6	68.177	0.72729	6		5.49	7.84	9.47	9.54	9.79	11.13	12.45	12.79	13.32	13.61	14.82	20.81	29.59	30.68	31.11
Y	AK		1		39	6	17.035	0.72766	5		5.49	7.84	9.48	9.55	9.80	11.14	12.46	12.79	13.33	13.61	14.82	20.82	29.61	30.70	31.13
Y	$K\beta_4$		1	.01	39	6	17.033	0.72776	5		5.49	7.84	9.48	9.55	9.80	11.14	12.46	12.79	13.33	13.61	14.83	20.83	29.61	30.70	31.13
Fr	$K\alpha_{1,2}$	H	5	150	87	6	85.110	0.72823	5		5.50	7.85	9.49	9.56	9.81	11.14	12.46	12.80	13.34	13.62	14.83	20.84	29.63	30.72	31.15
Ac	$K\beta_3$	H	6	14	89	6	102.084	0.72858	5		5.50	7.85	9.49	9.56	9.81	11.15	12.47	12.81	13.34	13.63	14.84	20.85	29.64	30.74	31.17
Y	$K\beta_2$		1	4	39	6	17.013	0.72864	5		5.50	7.85	9.49	9.56	9.81	11.15	12.47	12.81	13.34	13.63	14.84	20.85	29.65	30.74	31.17
Tl	$K\beta_2'$		5	10	81	6	84.933	0.72975	5		5.51	7.87	9.50	9.58	9.83	11.17	12.49	12.83	13.37	13.65	14.87	20.88	29.69	30.79	31.22
Pb	$K\beta_1$		5	88	82	6	84.922	0.72985	6		5.51	7.87	9.51	9.58	9.83	11.17	12.49	12.83	13.37	13.65	14.87	20.89	29.70	30.79	31.22
Th	$L\beta_{10}$	8	1	.01	90	6	16.978	0.73010	4		5.51	7.87	9.51	9.58	9.83	11.17	12.50	12.84	13.37	13.66	14.87	20.89	29.71	30.80	31.23
Pu	$K\alpha_{1,2}$		6	150	94	3	101.857	0.73020			5.51	7.87	9.51	9.58	9.83	11.17	12.50	12.84	13.37	13.66	14.88	20.90	29.71	30.81	31.24
Tl	$K\beta_2''$		5	10	81	6	84.823	0.73070	5		5.51	7.88	9.52	9.59	9.84	11.18	12.51	12.85	13.38	13.67	14.89	20.91	29.73	30.83	31.26
U	L_3-O_3	8	1	.01	92	6	16.960	0.73090	4		5.52	7.88	9.52	9.59	9.84	11.19	12.51	12.85	13.39	13.67	14.89	20.92	29.74	30.84	31.27
Am	$K\alpha_2$		6	50	95	3	101.607	0.73200			5.52	7.89	9.53	9.61	9.86	11.20	12.53	12.87	13.41	13.69	14.91	20.95	29.79	30.89	31.32
Pa	$L\beta_3$		1	6	91	6	16.927	0.73230	5		5.53	7.89	9.54	9.61	9.86	11.21	12.53	12.87	13.41	13.70	14.92	20.96	29.80	30.90	31.33
Tm	$K\alpha_1$		3	100	69	6	50.733	0.73301	6		5.53	7.90	9.55	9.62	9.87	11.22	12.55	12.89	13.43	13.71	14.93	20.98	29.83	30.93	31.36
O	L_3-O_2	8	1	.01	92	6	16.904	0.73330	4		5.53	7.90	9.55	9.62	9.87	11.22	12.55	12.89	13.43	13.72	14.94	20.99	29.84	30.94	31.38
Pb	$K\beta_3$		5	13	82	6	84.436	0.73405	6		5.54	7.91	9.56	9.63	9.89	11.23	12.56	12.90	13.44	13.73	14.95	21.01	29.87	30.97	31.41
Am	$L\beta_6$		1	.1	95	6	16.884	0.73418	5		5.54	7.91	9.56	9.64	9.89	11.24	12.57	12.91	13.45	13.73	14.96	21.01	29.88	30.98	31.41
Y	$K\beta_5$		1	.07	39	6	16.877	0.73450	4		5.54	7.92	9.57	9.64	9.89	11.24	12.57	12.91	13.45	13.74	14.96	21.02	29.89	30.99	31.43
Np	$K\beta_2$		7	11	93	3	118.057	0.73500			5.55	7.92	9.57	9.65	9.90	11.25	12.58	12.92	13.46	13.75	14.97	21.04	29.91	31.02	31.45
U	$L\beta_7$		1	.1	92	6	16.842	0.73602	5		5.55	7.93	9.59	9.66	9.91	11.26	12.60	12.94	13.48	13.77	14.99	21.06	29.95	31.06	31.49
Np	$L\beta_2$		1	20	93	6	16.837	0.73623	6		5.56	7.94	9.59	9.66	9.91	11.27	12.60	12.94	13.48	13.77	15.00	21.07	29.96	31.07	31.50
Xe	$K\beta_1$	H	2	20	54	6	33.619	0.73744	5		5.57	7.95	9.61	9.68	9.93	11.29	12.62			13.80	15.02	21.11	30.01	31.12	31.56
W	$K\beta_1$		4	26	74	6	67.233	0.73750	6		5.57	7.95	9.61	9.68	9.93	11.29	12.62	12.97	13.51	13.80	15.02	21.11	30.02	31.12	31.56
Tm	$K\alpha_{1,2}$		3	150	69	6	50.406	0.73777	6		5.57	7.95	9.61	9.68	9.94	11.29	12.63	12.97	13.51	13.80	15.03	21.12	30.03	31.14	31.57
Np	$K\alpha_1$		6	100	93	3	100.781	0.73800			5.57	7.95	9.61	9.69	9.94	11.29	12.63	12.97	13.52	13.81	15.03	21.12	30.04	31.15	31.58
Tb	$K\beta_1$		3	23	65	6	50.374	0.73824	5		5.57	7.96	9.62	9.69	9.94	11.30	12.64	12.98	13.52	13.81	15.04	21.13	30.05	31.16	31.59
O	Lu	8	1	.01	92	6	16.783	0.73860	6		5.57	7.96	9.62	9.69	9.95	11.30	12.64	12.99	13.53	13.82	15.05	21.14	30.06	31.17	31.61
Xe	$K\beta_3$	H	2	9	54	6	33.556	0.73882	5		5.58	7.96	9.62	9.70	9.95	11.31	12.65			13.82	15.05	21.15	30.07	31.18	31.62
Rn	$L\gamma_1$	H	1	10	86	6	16.768	0.73928	5		5.58	7.97	9.63	9.70	9.96	11.31	12.65	13.00	13.54	13.83	15.06	21.16	30.09	31.20	31.64
Pa	AL_3		1		91	6	16.765	0.73940	4		5.58	7.97	9.63	9.70	9.96	11.32	12.66	13.00	13.54	13.83	15.06	21.16	30.10	31.21	31.64
Rn	$K\alpha_1$	H	5	100	86	6	83.768	0.73990	5		5.58	7.98	9.64	9.71	9.96	11.32	12.67	13.01	13.55	13.84	15.07	21.18	30.12	31.23	31.66
Ta	$K\beta_2'$		4	9	73	6	67.001	0.74004	6		5.59	7.98	9.64	9.71	9.97	11.33	12.67	13.01	13.55	13.85	15.08	21.18	30.12	31.23	31.67
Au	$K\alpha_2$		4	50	79	6	66.978	0.74030	6		5.59	7.98	9.64	9.72	9.97	11.33	12.67	13.02	13.56	13.85	15.08	21.19	30.13	31.25	31.68
Tb	$K\beta_3$		3	11	65	6	50.221	0.74049	5		5.59	7.98	9.65	9.72	9.97	11.33	12.68	13.02	13.56	13.85	15.09	21.19	30.14	31.25	31.69
Gd	K-$O_{2,3}$		3	.01	64	6	50.213	0.74061	5		5.59	7.98	9.65	9.72	9.97	11.33	12.68	13.02	13.57	13.86	15.09	21.20	30.15	31.26	31.70
Y	$K\beta_1$		1	16	39	6	16.735	0.74072	5		5.59	7.98	9.65	9.72	9.98	11.34	12.68	13.02	13.57	13.86	15.09	21.20	30.15	31.26	31.70
W	$K\beta_3$		4	12	74	6	66.940	0.74072	6		5.59	7.98	9.65	9.72	9.98	11.34	12.68	13.02	13.57	13.86	15.09	21.20	30.15	31.26	31.70
Ta	$K\beta_2''$		4	9	73	6	66.937	0.74075	6		5.59	7.98	9.65	9.72	9.98	11.34	12.68	13.02	13.57	13.86	15.09	21.20	30.15	31.26	31.70
Y	$K\beta_3$		1	8	39	6	16.723	0.74125	5		5.59	7.99	9.66	9.73	9.98	11.34	12.69	13.03	13.58	13.87	15.10	21.22	30.17	31.29	31.72
La	$K\alpha_1$		2	100	57	6	33.436	0.74147	6		5.60	7.99	9.66	9.73	9.99	11.35	12.69			13.87	15.11	21.22	30.18	31.30	31.73
Fr	$K\beta_2'$	H	6	11	87	6	100.307	0.74148	5		5.60	7.99	9.66	9.73	9.99	11.35	12.69	13.04	13.58	13.87	15.11	21.22	30.18	31.30	31.73
Pu	$K\beta_1$		7	30	94	3	116.943	0.74200			5.60	8.00	9.66	9.74	9.99	11.36	12.70	13.05	13.59	13.88	15.12	21.24	30.20	31.32	31.76
Pt	$K\alpha_1$		4	100	78	6	66.821	0.74204	6		5.60	8.00	9.67	9.74	9.99	11.36	12.70	13.05	13.59	13.88	15.12	21.24	30.21	31.32	31.76
Pa	$L\beta_1$		1	50	91	6	16.699	0.74232	5		5.60	8.00	9.67	9.74	10.00	11.36	12.71	13.05	13.60	13.89	15.12	21.25	30.22	31.33	31.77
Fr	$K\beta_2''$	8	6	11	87	6	100.137	0.74274	5		5.61	8.01	9.67	9.75	10.00	11.37	12.71	13.06	13.60	13.90	15.13	21.26	30.23	31.35	31.79
Ra	$K\beta_1$	H	6	30	88	6	100.113	0.74292	5		5.61	8.01	9.68	9.75	10.00	11.37	12.72	13.06	13.61	13.90	15.14	21.26	30.24	31.36	31.80
Cf	$K\beta_2$		8	11	98	3	133.290	0.74400			5.61	8.02	9.69	9.76	10.02	11.39	12.74	13.08	13.63	13.92	15.16	21.30	30.29	31.41	31.84
Gd	$K\beta_2$		3	8	64	6	49.952	0.74448	5		5.62	8.02	9.70	9.77	10.03	11.39	12.74	13.09	13.64	13.93	15.17	21.31	30.31	31.43	31.87
La	$K\alpha_{1,2}$		2	150	57	6	33.299	0.74452	6		5.62	8.02	9.70	9.77	10.03	11.39	12.74			13.93	15.17	21.31	30.31	31.43	31.87
Fr	$K\alpha_2$	H	5	50	87	6	83.217	0.74480	5		5.52	8.03	9.70	9.77	10.03	11.40	12.75	13.09	13.64	13.93	15.17	21.32	30.32	31.44	31.88
U	$L\beta_{17}$	8	1	.01	92	6	16.638	0.74503	5		5.62	8.03	9.70	9.78	10.03	11.40	12.75	13.10	13.65	13.94	15.18	21.33	30.33	31.45	31.89
Pa	$L\beta_5$		1	1	91	6	16.634	0.74520	4		5.62	8.03	9.71	9.78	10.04	11.40	12.76	13.10	13.65	13.94	15.18	21.33	30.34	31.46	31.90
Nb	$K\alpha_1$		1	100	41	6	16.612	0.74620	5		5.63	8.04	9.72	9.79	10.05	11.42	12.77	13.12	13.67	13.96	15.20	21.36	30.38	31.50	31.94
Tm	$K\alpha_2$		3	50	69	6	49.764	0.74728	6		5.54	8.05	9.73	9.81	10.06	11.44	12.79	13.14	13.69	13.98	15.23	21.39	30.42	31.55	31.99
Nb	$K\alpha_{1,2}$		1	150	41	6	16.581	0.74761	5		5.64	8.06	9.74	9.81	10.07	11.44	12.80	13.14	13.69	13.99	15.23	21.40	30.44	31.56	32.00
O	$L\beta_4$		1	4	92	6	16.573	0.74798	6		5.64	8.06	9.74	9.82	10.07	11.45	12.80	13.15	13.70	13.99	15.24	21.41	30.45	31.58	32.02
Ra	$K\beta_3$	H	6	14	88	6	99.415	0.74814	5		5.65	8.06	9.75	9.82	10.08	11.45	12.81	13.15	13.70	14.00	15.24	21.42	30.46	31.58	32.03
Rn	$K\alpha_{1,2}$	H	5	150	86	6	82.843	0.74816	5		5.65	8.06	9.75	9.82	10.08	11.45	12.81	13.15	13.70	14.00	15.24	21.42	30.46	31.59	32.03
Np	$K\alpha_{1,2}$		6	150	93	3	99.407	0.74820			5.65	8.06	9.75	9.82	10.08	11.45	12.81	13.15	13.70	14.00	15.24	21.42	30.46	31.59	32.03
Pt	$K\alpha_{1,2}$		4	150	78	6	66.241	0.74854	6		5.65	8.07	9.75	9.82	10.08	11.46	12.81	13.16	13.71	14.00	15.25	21.43	30.48	31.60	32.04
Pu	$K\alpha_2$		6	50	94	3	99.168	0.75000			5.66	8.08	9.77	9.84	10.10	11.48	12.84	13.19	13.74	14.03	15.28	21.47	30.54	31.67	32.11
Nb	$K\alpha_2$		1	50	41	6	16.518	0.75044	5		5.66	8.09	9.78	9.85	10.11	11.49	12.85	13.19	13.75	14.04	15.29	21.48	30.56	31.68	32.13
I	$K\beta_2$	H	2	6	53	6	33.036	0.75046	5		5.66	8.09	9.78	9.85	10.11	11.49	12.85			14.04	15.29	21.48	30.56	31.68	32.13

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADI (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
La	$K\alpha_2$		2	50	57	6	33.028	0.75063	6		5.66	8.09	9.78	9.85	10.11	11.49	12.85			14.04	15.29	21.49	30.56	31.69	32.14
Tl	$K\beta_1$		5	78	81	6	82.562	0.75071	6		5.67	8.09	9.78	9.85	10.11	11.49	12.85	13.20	13.75	14.05	15.30	21.49	30.57	31.70	32.14
Hg	$K\beta_2'$		5	10	80	6	82.530	0.75100	5		5.67	8.09	9.78	9.86	10.11	11.49	12.86	13.20	13.76	14.05	15.30	21.50	30.58	31.71	32.15
Pu	$L\beta_6$		1	.1	94	6	16.495	0.75148	5		5.67	8.10	9.79	9.86	10.12	11.50	12.86	13.21	13.77	14.06	15.31	21.51	30.60	31.73	32.17
Hg	$K\beta_2''$		5	10	80	6	82.420	0.75200	5		5.68	8.11	9.80	9.87	10.13	11.51	12.87	13.22	13.77	14.07	15.32	21.53	30.62	31.75	32.20
Pa	$L\beta_7$		1	.1	91	6	16.427	0.75460	4		5.69	8.13	9.83	9.90	10.16	11.55	12.92	13.27	13.82	14.12	15.38	21.60	30.73	31.86	32.31
U	$L\beta_2$		1	20	92	6	16.425	0.75468	6		5.70	8.13	9.83	9.90	10.16	11.55	12.92	13.27	13.82	14.12	15.38	21.60	30.73	31.87	32.31
Th	$L\beta_3$		1	6	90	6	16.423	0.75479	5		5.70	8.14	9.83	9.91	10.17	11.55	12.92	13.27	13.83	14.12	15.38	21.61	30.74	31.87	32.32
Tl	$K\beta_3$		5	13	81	6	82.104	0.75490	6		5.70	8.14	9.83	9.91	10.17	11.55	12.92	13.27	13.83	14.12	15.38	21.61	30.74	31.88	32.32
U	$K\alpha_1$		6	100	92	6	98.422	0.75568	6		5.70	8.15	9.84	9.92	10.18	11.57	12.94	13.29	13.84	14.14	15.40	21.63	30.77	31.91	32.36
Cf	$K\alpha_1$		7	100	98	3	114.778	0.75600			5.71	8.15	9.85	9.92	10.18	11.57	12.94	13.29	13.85	14.15	15.40	21.64	30.79	31.93	32.37
O	$L\beta_{15}$		1	1	92	6	16.383	0.75664	6		5.71	8.16	9.86	9.93	10.19	11.58	12.95	13.30	13.86	14.16	15.42	21.66	30.81	31.95	32.40
8i	$L\gamma_{13}$	D	1	.01	83	6	16.382	0.75668	5		5.71	8.16	9.86	9.93	10.19	11.58	12.95	13.30	13.86	14.16	15.42	21.66	30.82	31.95	32.40
Er	$K\alpha_1$		3	100	68	6	49.119	0.75709	6		5.71	8.16	9.86	9.94	10.20	11.59	12.96	13.31	13.87	14.17	15.43	21.67	30.83	31.97	32.42
8i	AL_1		1		83	6	16.373	0.75710	4		5.71	8.16	9.86	9.94	10.20	11.59	12.96	13.31	13.87	14.17	15.43	21.68	30.83	31.97	32.42
U	$K\beta_2'$		7	11	92	6	114.587	0.75726	5		5.72	8.16	9.86	9.94	10.20	11.59	12.96	13.31	13.87	14.17	15.43	21.68	30.84	31.98	32.43
Th	L_2-M_5		8	1	.01	90	6	16.356	0.75790	4		5.72	8.17	9.87	9.95	10.21	11.60	12.97	13.33	13.88	14.18	15.44	21.70	30.87	32.01	32.46
8i	$L_1-O_{4,5}$		8	1	.01	83	6	16.355	0.75791	5		5.72	8.17	9.87	9.95	10.21	11.60	12.97	13.33	13.88	14.18	15.44	21.70	30.87	32.01	32.46
Gd	$K\beta_5$		B	3	.2	64	6	49.045	0.75825	5		5.72	8.17	9.88	9.95	10.21	11.61	12.98	13.33	13.89	14.19	15.45	21.71	30.88	32.02	32.47
U	$K\beta_2''$		D	7	11	92	6	114.314	0.75907	6		5.73	8.18	9.89	9.96	10.22	11.62	12.99	13.35	13.90	14.20	15.47	21.73	30.92	32.06	32.51
Pu	Ln			1	1	94	6	16.330	0.75910	4		5.73	8.18	9.89	9.96	10.22	11.62	13.00	13.35	13.91	14.20	15.47	21.73	30.92	32.06	32.51
8k	$K\beta_2$			8	11	97	3	130.484	0.76000			5.74	8.19	9.90	9.97	10.24	11.63	13.01	13.36	13.92	14.22	15.49	21.76	30.95	32.10	32.55
Ta	$K\beta_1$			4	26	73	6	65.212	0.76036	6		5.74	8.20	9.90	9.98	10.24	11.64	13.02	13.37	13.93	14.23	15.49	21.77	30.97	32.11	32.56
At	$K\alpha_1$	H	5	100	85	6	81.499	0.76050	5		5.74	8.20	9.91	9.98	10.24	11.64	13.02	13.37	13.93	14.23	15.50	21.77	30.98	32.12	32.57
Th	AL_3			1		90	6	16.296	0.76070	4		5.74	8.20	9.91	9.98	10.24	11.64	13.02	13.38	13.94	14.23	15.50	21.78	30.98	32.13	32.58
Th	$L_3-P_{4,5}$			1	.01	90	6	16.292	0.76087	5		5.74	8.20	9.91	9.99	10.25	11.65	13.03	13.38	13.94	14.24	15.50	21.78	30.99	32.14	32.59
8i	$L\gamma_4$			1	.1	83	6	16.292	0.76087	5		5.74	8.20	9.91	9.99	10.25	11.65	13.03	13.38	13.94	14.24	15.50	21.78	30.99	32.14	32.59
Pt	$K\alpha_2$			4	50	78	6	65.112	0.76152	6		5.75	8.21	9.92	9.99	10.26	11.66	13.04	13.39	13.95	14.25	15.52	21.80	31.02	32.16	32.62
Er	$K\alpha_{1,2}$			3	150	68	6	48.813	0.76184	6		5.75	8.21	9.92	10.00	10.26	11.66	13.04	13.40	13.96	14.26	15.52	21.81	31.03	32.18	32.63
Rn	$K\beta_2'$		8	6	11	86	6	97.622	0.76188	5		5.75	8.21	9.92	10.00	10.26	11.66	13.04	13.40	13.96	14.26	15.52	21.81	31.03	32.18	32.63
8i	$L\gamma_4p$			1	.1	83	6	16.268	0.76198	5		5.75	8.21	9.93	10.00	10.26	11.66	13.04	13.40	13.96	14.26	15.53	21.82	31.04	32.18	32.64
Th	$L_3-P_{2,3}$		8	1	.01	90	6	16.257	0.76250	4		5.75	8.22	9.93	10.01	10.27	11.67	13.05	13.41	13.97	14.27	15.54	21.83	31.06	32.21	32.66
At	$L\gamma_1$	H	1	10	85	6	16.249	0.76289	5		5.76	8.22	9.94	10.01	10.27	11.68	13.06	13.41	13.98	14.27	15.55	21.84	31.07	32.22	32.68
Np	$K\beta_1$			7	30	93	3	113.725	0.76300			5.76	8.22	9.94	10.01	10.28	11.68	13.06	13.42	13.98	14.28	15.55	21.85	31.08	32.23	32.68
Fr	$K\beta_1$	H	6	29	87	6	97.460	0.76314	5		5.76	8.23	9.94	10.02	10.28	11.68	13.06	13.42	13.98	14.28	15.55	21.85	31.09	32.23	32.69
Rn	$K\beta_2''$	H	6	11	86	6	97.460	0.76314	5		5.76	8.23	9.94	10.02	10.28	11.68	13.06	13.42	13.98	14.28	15.55	21.85	31.09	32.23	32.69
Hf	$K\beta_2$	H	4	9	72	6	64.969	0.76320	4		5.76	8.23	9.94	10.02	10.28	11.68	13.07	13.42	13.98	14.28	15.55	21.85	31.09	32.24	32.69
Th	L_3-P_1			1	.01	90	6	16.238	0.76338	5		5.76	8.23	9.94	10.02	10.28	11.68	13.07	13.42	13.98	14.28	15.56	21.86	31.10	32.25	32.70
Ta	$K\beta_3$			4	12	73	6	64.938	0.76356	6		5.76	8.23	9.95	10.02	10.28	11.69	13.07	13.43	13.99	14.29	15.56	21.86	31.10	32.25	32.71
Gd	$K\beta_1$			3	23	64	6	48.688	0.76380	5		5.76	8.23	9.95	10.02	10.29	11.69	13.08	13.43	13.99	14.29	15.56	21.87	31.11	32.26	32.72
8i	$L_1-N_{6,7}$		B	1	.01	83	6	16.223	0.76410	4		5.77	8.24	9.95	10.03	10.29	11.69	13.08	13.44	14.00	14.30	15.57	21.88	31.13	32.28	32.73
Ir	$K\alpha_1$			4	100	77	6	64.885	0.76419	6		5.77	8.24	9.95	10.03	10.29	11.70	13.08	13.44	14.00	14.30	15.57	21.88	31.13	32.28	32.73
Po	$L\gamma_6$			1	.01	84	6	16.215	0.76450	4		5.77	8.24	9.96	10.03	10.30	11.70	13.09	13.44	14.00	14.31	15.58	21.89	31.14	32.29	32.75
Th	$L\beta_5$			1	1	90	6	16.211	0.76468	5		5.77	8.24	9.96	10.04	10.30	11.70	13.09	13.45	14.01	14.31	15.58	21.89	31.15	32.30	32.75
Rn	$K\alpha_2$	H	5	50	86	6	81.051	0.76470	5		5.77	8.24	9.96	10.04	10.30	11.70	13.09	13.45	14.01	14.31	15.58	21.90	31.15	32.30	32.76
Th	$L\beta_1$			1	50	90	6	16.199	0.76521	6		5.78	8.25	9.97	10.04	10.31	11.71	13.10	13.46	14.02	14.32	15.59	21.91	31.17	32.32	32.78
U	$K\alpha_{1,2}$			6	150	92	6	97.131	0.76573	6		5.78	8.25	9.97	10.05	10.31	11.72	13.11	13.46	14.03	14.33	15.60	21.93	31.19	32.35	32.80
Gd	$K\beta_3$			3	11	64	6	48.547	0.76602	5		5.78	8.26	9.98	10.05	10.32	11.72	13.11	13.47	14.03	14.33	15.61	21.93	31.21	32.36	32.81
Eu	$K-O_{2,3}$			3	.01	63	6	48.489	0.76693	6		5.79	8.27	9.99	10.07	10.33	11.74	13.13	13.49	14.05	14.35	15.63	21.96	31.24	32.40	32.85
I	$K\beta_1$			2	20	53	6	32.289	0.76781	6		5.79	8.28	10.00	10.08	10.34	11.75	13.15			14.37	15.65	21.99	31.28	32.44	32.89
Cf	$K\alpha_{1,2}$			7	150	98	3	112.999	0.76790			5.80	8.28	10.00	10.08	10.34	11.75	13.15	13.50	14.07	14.37	15.65	21.99	31.28	32.44	32.90
Np	$K\alpha_2$			6	50	93	3	96.844	0.76800			5.80	8.28	10.00	10.08	10.34	11.75	13.15	13.50	14.07	14.37	15.65	21.99	31.29	32.45	32.90
Fr	$K\beta_3$	H	6	14	87	6	96.791	0.76842	5		5.80	8.28	10.01	10.09	10.35	11.76	13.16	13.51	14.08	14.38	15.66	22.00	31.31	32.46	32.92
Ra	$L\beta_9$		8	1	.01	88	6	16.129	0.76857	5		5.80	8.28	10.01	10.09	10.35	11.76	13.16	13.51	14.08	14.38	15.66	22.01	31.31	32.47	32.93
At	$K\alpha_{1,2}$	H	5	150	85	6	80.624	0.76875	5		5.80	8.29	10.01	10.09	10.35	11.77	13.16	13.52	14.08	14.39	15.67	22.01	31.32	32.48	32.93
Th	L_3-O_3		8	1	.01	90	6	16.120	0.76900	4		5.80	8.29	10.02	10.09	10.36	11.77	13.17	13.52	14.09	14.39	15.67	22.02	31.33	32.49	32.94
Np	$L\beta_6$			1	.1	93	6	16.120	0.76900	3		5.80	8.29	10.02	10.09	10.36	11.77	13.17	13.52	14.09	14.39	15.67	22.02	31.33	32.49	32.94
U	L_3-N_3		B	1	.01	92	6	16.118	0.76910	4		5.80	8.29	10.02	10.09	10.36	11.77	13.17	13.52	14.09	14.39	15.67	22.02	31.33	32.49	32.95
I	$K\beta_3$			2	9	53	6	32.234	0.76913	6		5.80	8.29	10.02	10.09	10.36	11.77	13.17			14.39	15.67	22.02	31.34	32.49	32.95
Sr	AK			1		38	6	16.104	0.76973	5		5.81	8.30	10.03	10.10	10.37	11.78	13.18	13.53	14.10	14.40	15.69	22.04	31.36	32.52	32.98
Sr	$K8_4$		C	1	.00	38	6	16.101	0.76989	5		5.81	8.30	10.03	10.10	10.37	11.78	13.18	13.54	14.10	14.41	15.69	22.05	31.37	32.53	32.98
Pa	$L\beta_4$			1	4	91	6	16.101	0.76990	4		5.81	8.30	10.03	10.11	10.37	11.78	13.18	13.54	14.10	14.41	15.69	22.05	31.37	32.53	32.98
8a	$K\alpha_1$			2	100	56	6	32.188	0.77022	6		5.81	8.30	10.03	10.11	10.37	11.79	13.19			14.41	15.70	22.06	31.38	32.54	33.00
Ir	$K\alpha_{1,2}$			4	150	77	6	64.339	0.77066	6		5.82	8.31	10.04	10.12	10.38	11.80	13.19	13.55	14.12	14.42	15.70	22.07	31.40	32.56	33.02
Eu	$K\beta_2$			3	8	63	6	48.248	0.77077	6		5.82	8.31	10.04	10.12	10.38	11.80	13.20	13.55	14.12	14.42	15.71	22.07	31.40	32.57	33.02

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Sr	$K\beta_2$		1	3	38	6	16.082	0.77081	5	5.82	8.31	10.04	10.12	10.38	11.80	13.20	13.55	14.12	14.42	15.71	22.07	31.41	32.57	33.02
Th	L_3-O_2	B	1	.01	90	6	16.072	0.77130	4	5.82	8.31	10.05	10.12	10.39	11.81	13.21	13.56	14.13	14.43	15.72	22.09	31.43	32.59	33.05
Er	$K\alpha_2$		3	50	68	6	48.213	0.77133	6	5.82	8.31	10.05	10.12	10.39	11.81	13.21	13.56	14.13	14.43	15.72	22.09	31.43	32.59	33.05
Po	$L\gamma_2$		1	1	84	6	16.057	0.77200	3	5.83	8.32	10.06	10.13	10.40	11.82	13.22	13.58	14.14	14.45	15.73	22.11	31.46	32.62	33.08
Hg	$K\beta_1$		5	28	80	6	80.240	0.77243	6	5.83	8.33	10.06	10.14	10.40	11.82	13.22	13.58	14.15	14.45	15.74	22.12	31.47	32.64	33.10
Au	$K\beta_2'$		5	10	79	6	80.172	0.77309	6	5.83	8.33	10.07	10.15	10.41	11.83	13.24	13.59	14.16	14.47	15.75	22.14	31.50	32.67	33.13
Ba	$K\alpha_{1,2}$		2	150	56	6	32.062	0.77326	6	5.84	8.34	10.07	10.15	10.41	11.84	13.24			14.47	15.76	22.14	31.51	32.67	33.13
Pa	$L\beta_2$		1	20	91	6	16.022	0.77370	4	5.84	8.34	10.08	10.16	10.42	11.84	13.25	13.61	14.17	14.48	15.77	22.16	31.53	32.69	33.15
Au	$K\beta_2''$		5	10	79	6	80.062	0.77415	5	5.84	8.34	10.08	10.16	10.43	11.85	13.25	13.61	14.18	14.49	15.78	22.17	31.55	32.71	33.17
Th	$L\beta_7$		1	.1	90	6	16.008	0.77437	5	5.84	8.35	10.09	10.16	10.43	11.85	13.26	13.62	14.19	14.49	15.78	22.18	31.55	32.72	33.18
Ra	$L\beta_{10}$	B	1	.01	88	6	15.985	0.77546	5	5.85	8.36	10.10	10.18	10.44	11.87	13.28	13.64	14.21	14.51	15.80	22.21	31.60	32.77	33.23
Pa	$K\alpha_1$	H	6	100	91	6	95.852	0.77595	6	5.86	8.36	10.11	10.18	10.45	11.88	13.29	13.64	14.22	14.52	15.81	22.22	31.62	32.79	33.25
Cf	$K\beta_1$		8	30	98	3	127.794	0.77600		5.86	8.36	10.11	10.19	10.45	11.88	13.29	13.65	14.22	14.52	15.81	22.22	31.62	32.79	33.25
Sr	$K\beta_5$		1	.07	38	6	15.966	0.77640	4	5.86	8.37	10.11	10.19	10.46	11.88	13.29	13.65	14.22	14.53	15.82	22.23	31.64	32.81	33.27
Hg	$K\beta_3$		5	13	80	6	79.809	0.77660	6	5.86	8.37	10.12	10.19	10.46	11.89	13.30	13.66	14.23	14.53	15.83	22.24	31.65	32.82	33.28
Th	Lu	B	1	.01	90	6	15.962	0.77661	5	5.86	8.37	10.12	10.19	10.46	11.89	13.30	13.66	14.23	14.53	15.83	22.24	31.65	32.82	33.28
Bk	$K\alpha_1$		7	100	97	3	111.676	0.77700		5.86	8.38	10.12	10.20	10.46	11.89	13.30	13.66	14.24	14.54	15.83	22.25	31.66	32.84	33.30
Bi	$L\gamma_{11}$	B	1	.01	83	6	15.948	0.77728	5	5.87	8.38	10.13	10.20	10.47	11.90	13.31	13.67	14.24	14.55	15.84	22.26	31.68	32.85	33.31
Pa	$K\beta_2'$	H	7	11	91	6	111.605	0.77749	5	5.87	8.38	10.13	10.20	10.47	11.90	13.31	13.67	14.24	14.55	15.84	22.27	31.69	32.86	33.32
Ac	$L\beta_3$	H	1	10	89	6	15.929	0.77822	5	5.87	8.39	10.14	10.21	10.48	11.91	13.32	13.68	14.26	14.56	15.86	22.29	31.72	32.89	33.35
Bi	L_1-N_4	B	1	.01	83	6	15.922	0.77854	5	5.88	8.39	10.14	10.22	10.49	11.92	13.33	13.69	14.26	14.57	15.87	22.30	31.73	32.90	33.37
Pa	$K\beta_2''$	H	7	11	91	6	111.385	0.77903	5	5.88	8.40	10.15	10.23	10.49	11.92	13.34	13.70	14.27	14.58	15.88	22.31	31.75	32.92	33.39
Ba	$K\alpha_2$		2	50	56	6	31.812	0.77934	6	5.88	8.40	10.15	10.23	10.50	11.93	13.34			14.58	15.88	22.32	31.76	32.94	33.40
Te	K-$O_{2,3}$		2	.01	52	6	31.806	0.77948	5	5.88	8.40	10.15	10.23	10.50	11.93	13.35			14.59	15.89	22.32	31.77	32.94	33.41
U	$K\beta_1$		7	31	92	6	111.281	0.77976	6	5.88	8.41	10.16	10.23	10.50	11.94	13.35	13.71	14.29	14.59	15.89	22.33	31.78	32.96	33.42
U	L_3-N_2	B	1	.01	92	6	15.889	0.78017	5	5.89	8.41	10.16	10.24	10.51	11.94	13.36	13.72	14.29	14.60	15.90	22.34	31.80	32.97	33.44
Np	Ln		1	1	93	6	15.874	0.78090	4	5.89	8.42	10.17	10.25	10.52	11.95	13.37	13.73	14.31	14.61	15.91	22.37	31.83	33.01	33.47
Po	$K\alpha_1$	H	5	100	84	6	79.279	0.78180	5	5.90	8.43	10.18	10.26	10.53	11.97	13.39	13.75	14.32	14.63	15.93	22.39	31.87	33.05	33.51
Pb	AL_1		1		82	6	15.852	0.78196	5	5.90	8.43	10.19	10.26	10.53	11.97	13.39	13.75	14.33	14.63	15.94	22.40	31.87	33.05	33.52
Te	$K\beta_2$	D	2	6	52	6	31.698	0.78213	6	5.90	8.43	10.19	10.27	10.53	11.97	13.39			14.64	15.94	22.40	31.88	33.06	33.52
Ho	$K\alpha_1$		3	100	67	6	47.539	0.78227	6	5.90	8.43	10.19	10.27	10.54	11.97	13.39	13.76	14.33	14.64	15.94	22.40	31.89	33.07	33.53
Pb	L_1-$O_{4,5}$	B	1	.01	82	6	15.840	0.78257	5	5.91	8.44	10.19	10.27	10.54	11.98	13.40	13.76	14.34	14.65	15.95	22.41	31.90	33.08	33.54
Sr	$K\beta_1$		1	16	38	6	15.833	0.78292	5	5.91	8.44	10.20	10.28	10.54	11.98	13.41	13.77	14.34	14.65	15.96	22.42	31.91	33.09	33.56
At	$K\beta_2'$	H	6	11	85	6	94.974	0.78312	5	5.91	8.44	10.20	10.28	10.55	11.99	13.41	13.77	14.35	14.66	15.96	22.43	31.92	33.10	33.57
Sr	$K\beta_3$		1	8	38	6	15.822	0.78345	5	5.91	8.45	10.21	10.28	10.55	11.99	13.41	13.78	14.35	14.66	15.97	22.44	31.93	33.12	33.58
Ir	$K\alpha_2$		4	50	77	6	63.276	0.78362	6	5.91	8.45	10.21	10.29	10.55	11.99	13.42	13.78	14.36	14.66	15.97	22.44	31.94	33.12	33.59
Cm	KB_2		8	11	96	3	126.490	0.78400		5.92	8.45	10.21	10.29	10.56	12.00	13.42	13.79	14.36	14.67	15.98	22.46	31.96	33.14	33.61
Bk	$K\beta_1$		8	30	97	3	126.490	0.78400		5.92	8.45	10.21	10.29	10.56	12.00	13.42	13.79	14.36	14.67	15.98	22.46	31.96	33.14	33.61
Rn	$K\beta_1$	H	6	29	86	6	94.850	0.78414	5	5.92	8.45	10.22	10.29	10.56	12.00	13.43	13.79	14.37	14.67	15.98	22.46	31.96	33.15	33.61
Hf	$K\beta_1$	H	4	66	72	6	63.222	0.78428	5	5.92	8.45	10.22	10.29	10.56	12.00	13.43	13.79	14.37	14.68	15.98	22.46	31.97	33.15	33.62
At	$K\beta_2''$	H	6	11	85	6	94.829	0.78432	5	5.92	8.45	10.22	10.29	10.56	12.01	13.43	13.79	14.37	14.68	15.98	22.46	31.97	33.15	33.62
At	$K\alpha_2$	H	5	50	85	6	78.930	0.78525	5	5.93	8.46	10.23	10.31	10.58	12.02	13.45	13.81	14.39	14.70	16.00	22.49	32.01	33.20	33.66
Pb	$L\gamma_4$		1	.1	82	6	15.775	0.78580	4	5.93	8.47	10.24	10.31	10.58	12.03	13.45	13.82	14.40	14.71	16.01	22.51	32.03	33.22	33.69
U	$K\alpha_2$		6	50	92	6	94.649	0.78581	6	5.93	8.47	10.24	10.31	10.58	12.03	13.45	13.82	14.40	14.71	16.02	22.51	32.03	33.22	33.69
Zr	$K\alpha_1$		1	100	40	6	15.772	0.78593	5	5.93	8.47	10.24	10.32	10.59	12.03	13.46	13.82	14.40	14.71	16.02	22.51	32.04	33.22	33.69
Pa	$K\alpha_{1,2}$	H	6	150	91	6	94.627	0.78599	6	5.93	8.47	10.24	10.32	10.59	12.03	13.46	13.82	14.40	14.71	16.02	22.51	32.04	33.23	33.69
U	$K\beta_3$		7	14	92	6	110.387	0.78607	6	5.93	8.47	10.24	10.32	10.59	12.03	13.46	13.82	14.40	14.71	16.02	22.52	32.04	33.23	33.70
Ho	$K\alpha_{1,2}$		3	150	67	6	47.253	0.78700	6	5.94	8.48	10.25	10.33	10.60	12.05	13.48	13.84	14.42	14.73	16.04	22.54	32.08	33.27	33.74
Pb	$L\gamma_4p$		1	.1	82	6	15.750	0.78706	5	5.94	8.48	10.25	10.33	10.60	12.05	13.48	13.84	14.42	14.73	16.04	22.54	32.09	33.27	33.74
Os	$K\alpha_1$		4	100	76	6	62.990	0.78718	6	5.94	8.49	10.25	10.33	10.60	12.05	13.48	13.84	14.42	14.73	16.04	22.55	32.09	33.28	33.75
Zr	$K\alpha_{1,2}$		1	150	40	6	15.744	0.78734	5	5.94	8.49	10.26	10.33	10.60	12.05	13.48	13.85	14.43	14.73	16.05	22.55	32.10	33.29	33.75
Hf	$K\beta_3$	H	4	12	72	6	62.969	0.78744	5	5.94	8.49	10.26	10.34	10.61	12.05	13.48	13.85	14.43	14.74	16.05	22.55	32.10	33.29	33.76
Po	$L\gamma_1$		1	10	84	6	15.741	0.78748	5	5.94	8.49	10.26	10.34	10.61	12.05	13.48	13.85	14.43	14.74	16.05	22.56	32.10	33.29	33.76
Lu	$K\beta_2$	H	4	9	71	6	62.956	0.78760	4	5.94	8.49	10.26	10.34	10.61	12.06	13.49	13.85	14.43	14.74	16.05	22.56	32.11	33.30	33.77
U	$L\beta_6$		1	.1	92	6	15.723	0.78838	5	5.95	8.50	10.27	10.35	10.62	12.07	13.50	13.86	14.44	14.75	16.07	22.58	32.14	33.33	33.80
Pb	L_1-$N_{6,7}$	B	1	.01	82	6	15.723	0.78840	4	5.95	8.50	10.27	10.35	10.62	12.07	13.50	13.86	14.45	14.75	16.07	22.58	32.14	33.33	33.80
Bi	AL_2		1		83	6	15.717	0.78870	4	5.95	8.50	10.27	10.35	10.62	12.07	13.50	13.87	14.45	14.76	16.07	22.59	32.15	33.35	33.81
Bk	$K\alpha_{1,2}$		7	150	97	3	109.991	0.78890		5.95	8.50	10.28	10.36	10.63	12.08	13.51	13.87	14.45	14.76	16.08	22.60	32.16	33.35	33.82
Pb	L_1-O_1	F	1	.01	82	6	15.711	0.78901	5	5.95	8.51	10.28	10.36	10.63	12.08	13.51	13.88	14.46	14.77	16.08	22.60	32.17	33.36	33.83
Ac	$L\beta_1$	H	1	50	89	6	15.710	0.78903	5	5.96	8.51	10.28	10.36	10.63	12.08	13.51	13.88	14.46	14.77	16.08	22.60	32.17	33.36	33.83
Bi	$L\gamma_3$		1	2	83	6	15.708	0.78917	5	5.96	8.51	10.28	10.36	10.63	12.08	13.51	13.88	14.46	14.77	16.08	22.61	32.17	33.37	33.83
Rn	$K\beta_3$	H	6	13	86	6	94.230	0.78930	5	5.96	8.51	10.28	10.36	10.63	12.08	13.51	13.88	14.46	14.77	16.09	22.61	32.18	33.37	33.84
Po	$K\alpha_{1,2}$	H	5	150	84	6	78.452	0.79003	5	5.96	8.52	10.29	10.37	10.64	12.09	13.53	13.89	14.48	14.79	16.10	22.63	32.21	33.40	33.87
Zr	$K\alpha_2$		1	50	40	6	15.688	0.79015	5	5.96	8.52	10.29	10.37	10.64	12.10	13.53	13.90	14.48	14.79	16.10	22.63	32.21	33.41	33.88
Bi	$L\gamma_6$		1	.01	83	6	15.683	0.79043	5	5.97	8.52	10.30	10.38	10.65	12.10	13.53	13.90	14.48	14.79	16.11	22.64	32.23	33.42	33.89

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Eu	$K\beta_1$		3	23	63	6	47.030	0.79073	6		5.97	8.52	10.30	10.38	10.65	12.10	13.54	13.91	14.49	14.80	16.12	22.65	32.24	33.43	33.90
Cf	$K\alpha_2$		7	50	98	3	109.699	0.79100			5.97	8.53	10.30	10.38	10.65	12.11	13.54	13.91	14.49	14.80	16.12	22.66	32.25	33.45	33.92
Cf	$L\alpha_1$		1	100	98	3	15.652	0.79200			5.98	8.54	10.32	10.40	10.67	12.12	13.56	13.93	14.51	14.82	16.14	22.69	32.29	33.49	33.96
Th	$L\beta_{17}$	F	1	.01	90	6	15.644	0.79236	5		5.98	8.54	10.32	10.40	10.67	12.13	13.57	13.93	14.52	14.83	16.15	22.70	32.31	33.50	33.98
Th	$L\beta_4$		1	4	90	6	15.640	0.79257	5		5.98	8.54	10.33	10.40	10.68	12.13	13.57	13.94	14.52	14.83	16.15	22.70	32.32	33.51	33.98
Eu	$K\beta_3$		3	11	63	6	46.896	0.79300	6		5.98	8.55	10.33	10.41	10.68	12.14	13.58	13.95	14.53	14.84	16.16	22.72	32.33	33.53	34.00
Th	$L\beta_2$		1	20	90	6	15.621	0.79354	5		5.99	8.55	10.34	10.42	10.69	12.15	13.59	13.96	14.54	14.85	16.17	22.73	32.36	33.56	34.03
Os	$K\alpha_{1,2}$		4	150	76	6	62.477	0.79364	6		5.99	8.56	10.34	10.42	10.69	12.15	13.59	13.96	14.54	14.85	16.18	22.73	32.36	33.56	34.03
Bi	L_2-O_3	B	1	.01	83	6	15.615	0.79384	5		5.99	8.56	10.34	10.42	10.69	12.15	13.59	13.96	14.55	14.86	16.18	22.74	32.37	33.57	34.04
Sm	$K-O_{2,3}$		3	.01	62	6	46.793	0.79473	5		6.00	8.57	10.35	10.43	10.70	12.17	13.61	13.98	14.56	14.87	16.20	22.77	32.41	33.61	34.08
Au	$K\beta_1$		5	27	79	6	77.971	0.79491	6		6.00	8.57	10.36	10.43	10.71	12.17	13.61	13.98	14.57	14.88	16.20	22.77	32.41	33.62	34.09
Th	$L\beta_{15}$		1	1	90	6	15.585	0.79539	5		6.00	8.57	10.36	10.44	10.71	12.18	13.62	13.99	14.57	14.89	16.21	22.79	32.43	33.64	34.11
Bi	$L\gamma_2$		1	1	83	6	15.580	0.79565	5		6.01	8.58	10.37	10.44	10.72	12.18	13.62	13.99	14.58	14.89	16.22	22.79	32.45	33.65	34.12
Pt	$K\beta_2'$		5	10	78	6	77.864	0.79600	5		6.01	8.58	10.37	10.45	10.72	12.18	13.63	14.00	14.59	14.90	16.22	22.80	32.46	33.66	34.14
Ho	$K\alpha_2$		3	50	67	6	46.692	0.79646	6		6.01	8.59	10.38	10.45	10.73	12.19	13.64	14.01	14.59	14.91	16.23	22.82	32.48	33.68	34.16
Th	$K\alpha_1$		6	100	90	6	93.334	0.79688	6		6.01	8.59	10.38	10.46	10.73	12.20	13.65	14.01	14.60	14.91	16.24	22.83	32.50	33.70	34.18
Pt	$K\beta_2''$		5	10	78	6	77.772	0.79695	5		6.01	8.59	10.38	10.46	10.73	12.20	13.65	14.02	14.60	14.92	16.24	22.83	32.50	33.70	34.18
Bi	Lv	B	1	.01	83	6	15.549	0.79721	5		6.02	8.59	10.39	10.46	10.74	12.20	13.65	14.02	14.61	14.92	16.25	22.84	32.51	33.72	34.19
Bi	$L\gamma_8$		1	.1	83	6	15.547	0.79730	4		6.02	8.59	10.39	10.47	10.74	12.20	13.65	14.02	14.61	14.92	16.25	22.84	32.51	33.72	34.19
Cm	$K\alpha_1$		7	100	96	3	108.737	0.79800			6.02	8.60	10.40	10.47	10.75	12.22	13.66	14.03	14.62	14.94	16.27	22.86	32.54	33.75	34.22
Th	$K\beta_2'$		7	11	90	6	108.699	0.79828	6		6.02	8.61	10.40	10.48	10.75	12.22	13.67	14.04	14.63	14.94	16.27	22.87	32.56	33.76	34.24
Sm	$K\beta_2$	H	3	8	62	6	46.566	0.79860	4		6.03	8.61	10.40	10.48	10.76	12.22	13.67	14.05	14.63	14.95	16.28	22.88	32.57	33.78	34.25
Au	$K\beta_3$		5	13	79	6	77.567	0.79905	6		6.03	8.61	10.41	10.49	10.76	12.23	13.68	14.05	14.64	14.96	16.29	22.89	32.59	33.80	34.27
Th	$K\beta_2''$		7	11	90	6	108.489	0.79982	5		6.04	8.62	10.42	10.50	10.77	12.24	13.70	14.07	14.66	14.97	16.30	22.91	32.62	33.83	34.31
Te	$K\beta_1$		2	20	52	6	30.990	0.79999	6		6.04	8.62	10.42	10.50	10.78	12.25	13.70			14.97	16.31	22.92	32.63	33.84	34.31
Am	$K\beta_2$		8	11	95	3	123.960	0.80000			6.04	8.62	10.42	10.50	10.78	12.25	13.70	14.07	14.66	14.97	16.31	22.92	32.63	33.84	34.31
Pa	$K\beta_1$	H	7	30	91	6	108.409	0.80041	6		6.04	8.63	10.43	10.51	10.78	12.25	13.71	14.08	14.67	14.98	16.31	22.93	32.65	33.86	34.33
Cs	$K\alpha_1$		2	100	55	6	30.968	0.80058	6		6.04	8.63	10.43	10.51	10.78	12.26	13.71			14.98	16.32	22.94	32.65	33.86	34.34
Te	$K\beta_3$		2	9	52	6	30.939	0.80132	6		6.05	8.64	10.44	10.52	10.79	12.27	13.72			15.00	16.33	22.96	32.68	33.89	34.37
Bi	L_1-N_1	8	1	.01	83	6	15.453	0.80220	4		6.05	8.65	10.45	10.53	10.81	12.28	13.74	14.11	14.70	15.01	16.35	22.98	32.72	33.93	34.41
Pb	$L\gamma_{11}$	B	1	.01	82	6	15.450	0.80233	5		6.06	8.65	10.45	10.53	10.81	12.28	13.74	14.11	14.70	15.02	16.35	22.99	32.73	33.94	34.42
Ra	$L\beta_3$		1	6	88	6	15.442	0.80273	5		6.06	8.65	10.46	10.54	10.81	12.29	13.75	14.12	14.71	15.02	16.36	23.00	32.74	33.96	34.43
Ra	AL_3		1		88	6	15.441	0.80280	4		6.06	8.65	10.46	10.54	10.81	12.29	13.75	14.12	14.71	15.03	16.36	23.00	32.75	33.96	34.44
Cs	$K\alpha_{1,2}$		2	150	55	6	30.851	0.80361	6		6.07	8.66	10.47	10.55	10.82	12.30	13.76			15.04	16.38	23.02	32.78	33.99	34.47
Pb	L_1-N_4	B	1	.01	82	6	15.425	0.80364	5		6.07	8.66	10.47	10.55	10.82	12.30	13.76	14.13	14.73	15.04	16.38	23.03	32.78	34.00	34.47
Ra	$L_3-P_{2,3}$	B	1	.01	88	6	15.422	0.80380	4		6.07	8.67	10.47	10.55	10.83	12.30	13.76	14.14	14.73	15.04	16.38	23.03	32.79	34.00	34.48
Bi	$K\alpha_1$		5	100	83	6	77.095	0.80394	6		6.07	8.67	10.47	10.55	10.83	12.31	13.77	14.14	14.73	15.05	16.39	23.03	32.79	34.01	34.49
Cf	$L\alpha_2$		1	10	98	3	15.418	0.80400			6.07	8.67	10.47	10.55	10.83	12.31	13.77	14.14	14.73	15.05	16.39	23.04	32.80	34.01	34.49
Ra	L_3-P_1		1	.01	88	6	15.399	0.80500	4		6.08	8.68	10.49	10.57	10.84	12.32	13.78	14.16	14.75	15.07	16.41	23.06	32.84	34.06	34.53
Po	$K\beta_2'$	H	6	11	84	6	92.383	0.80508	5		6.08	8.68	10.49	10.57	10.84	12.32	13.79	14.16	14.75	15.07	16.41	23.07	32.84	34.06	34.54
U	Ln		1	1	92	6	15.397	0.80509	5		6.08	8.68	10.49	10.57	10.84	12.32	13.79	14.16	14.75	15.07	16.41	23.07	32.84	34.06	34.54
At	$K\beta_1$	H	6	29	85	6	92.287	0.80592	5		6.08	8.69	10.50	10.58	10.86	12.34	13.80	14.17	14.77	15.08	16.43	23.09	32.88	34.10	34.58
Pa	$K\alpha_2$	H	6	50	91	6	92.271	0.80606	6		6.08	8.69	10.50	10.58	10.86	12.34	13.80	14.18	14.77	15.09	16.43	23.10	32.88	34.10	34.58
Ra	$L\beta_5$		1	1	88	6	15.375	0.80627	5		6.09	8.69	10.50	10.58	10.86	12.34	13.81	14.18	14.77	15.09	16.43	23.10	32.89	34.11	34.59
Po	$K\beta_2''$	H	6	11	84	6	92.246	0.80628	5		6.09	8.69	10.50	10.58	10.86	12.34	13.81	14.18	14.77	15.09	16.44	23.10	32.89	34.11	34.59
Po	$K\alpha_2$	H	5	50	84	6	76.851	0.80650	5		6.09	8.69	10.51	10.59	10.86	12.35	13.81	14.18	14.78	15.10	16.44	23.11	32.90	34.12	34.60
Os	$K\alpha_2$		4	50	76	6	61.476	0.80656	6		6.09	8.69	10.51	10.59	10.86	12.35	13.81	14.19	14.78	15.10	16.44	23.11	32.90	34.12	34.60
Pa	$K\beta_3$	H	7	14	91	6	107.576	0.80661	5		6.09	8.70	10.51	10.59	10.86	12.35	13.81	14.19	14.78	15.10	16.44	23.11	32.90	34.13	34.61
Th	$K\alpha_{1,2}$		6	150	90	6	92.174	0.80691	6		6.09	8.70	10.51	10.59	10.87	12.35	13.82	14.19	14.79	15.10	16.45	23.12	32.92	34.14	34.62
Pa	$L\beta_6$		1	.1	91	6	15.343	0.80790	4		6.10	8.71	10.53	10.61	10.88	12.37	13.83	14.21	14.80	15.12	16.47	23.15	32.96	34.18	34.66
Cm	$K\beta_1$		8	30	96	3	122.733	0.80800			6.10	8.71	10.53	10.61	10.88	12.37	13.84	14.21	14.81	15.12	16.47	23.15	32.96	34.19	34.67
Tl	AL_1		1		81	6	15.340	0.80810	4		6.10	8.71	10.53	10.61	10.89	12.37	13.84	14.21	14.81	15.13	16.47	23.15	32.97	34.19	34.67
Th	L_3-N_3	B	1	.01	90	6	15.338	0.80820	4		6.10	8.71	10.53	10.61	10.89	12.37	13.84	14.21	14.81	15.13	16.47	23.16	32.97	34.19	34.68
Dy	$K\alpha_1$		3	100	66	6	45.991	0.80860	6		6.10	8.72	10.53	10.61	10.89	12.38	13.85	14.22	14.82	15.13	16.48	23.17	32.99	34.21	34.69
Tl	$L_1-O_{4,5}$	B	1	.01	81	6	15.330	0.80861	5		6.10	8.72	10.53	10.61	10.89	12.38	13.85	14.22	14.82	15.14	16.48	23.17	32.99	34.21	34.69
Lu	$K\beta_1$	H	4	65	71	6	61.272	0.80924	5		6.11	8.72	10.54	10.62	10.90	12.39	13.86	14.23	14.83	15.15	16.50	23.19	33.02	34.24	34.72
Cs	$K\alpha_2$		2	50	55	6	30.620	0.80967	6		6.11	8.73	10.55	10.63	10.91	12.40	13.87			15.16	16.50	23.20	33.03	34.26	34.74
Cm	$K\alpha_{1,2}$		7	150	96	3	107.139	0.80990			6.11	8.73	10.55	10.63	10.91	12.40	13.87	14.24	14.84	15.16	16.51	23.21	33.04	34.27	34.75
Bk	$L\alpha_1$		1	100	97	3	15.304	0.81000			6.11	8.73	10.55	10.63	10.91	12.40	13.87	14.25	14.84	15.16	16.51	23.21	33.05	34.27	34.76
Th	L_1-M_1	F	1	.01	90	6	15.287	0.81087	5		6.12	8.74	10.56	10.64	10.92	12.41	13.89	14.26	14.86	15.18	16.53	23.24	33.08	34.31	34.79
At	$K\beta_3$	H	6	13	85	6	91.707	0.81102	5		6.12	8.74	10.57	10.65	10.92	12.42	13.89	14.26	14.86	15.18	16.53	23.24	33.09	34.32	34.80
Re	$K\alpha_1$		4	100	75	6	61.130	0.81112	6		6.12	8.74	10.57	10.65	10.93	12.42	13.89	14.27	14.86	15.18	16.53	23.24	33.09	34.32	34.81
Tl	$L\gamma_4$		1	.1	81	6	15.269	0.81184	5		6.13	8.75	10.58	10.66	10.94	12.43	13.90	14.28	14.88	15.20	16.55	23.26	33.12	34.35	34.84
Bk	$K\alpha_2$		7	50	97	3	106.862	0.81200			6.13	8.75	10.58	10.66	10.94	12.43	13.91	14.28	14.88	15.20	16.55	23.27	33.13	34.36	34.84
Bi	$K\alpha_{1,2}$		5	150	83	6	76.315	0.81216	6		6.13	8.76	10.58	10.66	10.94	12.43	13.91	14.28	14.88	15.20	16.56	23.27	33.14	34.37	34.85

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Lu	$K\beta_3$	H	4	12	71	6	61.037	0.81236	5		6.13	8.76	10.58	10.66	10.94	12.44	13.91	14.29	14.89	15.21	16.56	23.28	33.15	34.38	34.86
Tl	$L\gamma_4 p$		1	.1	81	6	15.246	0.81308	5		6.14	8.77	10.59	10.67	10.95	12.45	13.92	14.30	14.90	15.22	16.57	23.30	33.18	34.41	34.89
Bi	$L\gamma_1$		1	10	83	6	15.245	0.81311	5		6.14	8.77	10.59	10.67	10.95	12.45	13.92	14.30	14.90	15.22	16.58	23.30	33.18	34.41	34.89
Yb	$K\beta_2$	H	4	9	70	6	60.974	0.81320	4		6.14	8.77	10.59	10.67	10.95	12.45	13.93	14.30	14.90	15.22	16.58	23.30	33.18	34.41	34.90
Dy	$K\alpha_{1,2}$		3	150	66	6	45.724	0.81331	6		6.14	8.77	10.60	10.68	10.96	12.45	13.93	14.31	14.90	15.22	16.58	23.31	33.19	34.42	34.90
Sb	$K-O_{2,3}$		2	.01	51	6	30.482	0.81332	5		6.14	8.77	10.60	10.68	10.96	12.45	13.93			15.22	16.58	23.31	33.19	34.42	34.90
Sm	$K\beta_5$	B	3	.2	62	6	45.723	0.81333	5		6.14	8.77	10.60	10.68	10.96	12.45	13.93	14.31	14.90	15.22	16.58	23.31	33.19	34.42	34.90
Ra	$L8_1$		1	50	88	6	15.233	0.81375	5		6.14	8.77	10.60	10.68	10.96	12.46	13.94	14.31	14.91	15.23	16.59	23.32	33.20	34.44	34.92
Sb	$K\beta_4$	B	2	.01	51	6	30.456	0.81404	5		6.14	8.78	10.61	10.69	10.97	12.46	13.94			15.24	16.59	23.33	33.22	34.45	34.93
Pb	$L\gamma_3$		1	2	82	6	15.215	0.81470	4		6.15	8.78	10.61	10.69	10.97	12.47	13.95	14.33	14.93	15.25	16.61	23.35	33.24	34.48	34.96
Tl	L_1-O_1	F	1	.01	81	6	15.208	0.81511	5		6.15	8.79	10.62	10.70	10.98	12.48	13.96	14.34	14.94	15.26	16.62	23.36	33.26	34.50	34.98
Pb	AL_2		1		82	6	15.203	0.81538	5		6.15	8.79	10.62	10.70	10.98	12.48	13.96	14.34	14.94	15.26	16.62	23.37	33.27	34.51	34.99
Rb	$K\beta_4$	C	1	.00	37	6	15.202	0.81540	4		6.15	8.79	10.62	10.70	10.98	12.48	13.96	14.34	14.94	15.26	16.62	23.37	33.27	34.51	34.99
Rb	AK		1		37	6	15.200	0.81554	5		6.16	8.79	10.63	10.71	10.99	12.49	13.97	14.34	14.95	15.27	16.63	23.37	33.28	34.52	35.00
Pb	L_2-P_1		1	.1	82	6	15.194	0.81583	5		6.16	8.80	10.63	10.71	10.99	12.49	13.97	14.35	14.95	15.27	16.63	23.38	33.29	34.53	35.01
Sb	$K\beta_2$	D	2	5	51	6	30.388	0.81586	6		6.16	8.80	10.63	10.71	10.99	12.49	13.97			15.27	16.63	23.38	33.29	34.53	35.02
Ra	$L\beta_7$		1	.1	88	6	15.187	0.81620	4		6.16	8.80	10.63	10.71	10.99	12.50	13.98	14.36	14.96	15.28	16.64	23.39	33.31	34.54	35.03
Rb	$K8_2$		1	3	37	6	15.183	0.81645	5		6.16	8.80	10.64	10.72	11.00	12.50	13.98	14.36	14.96	15.28	16.64	23.40	33.32	34.55	35.04
Pb	$L\gamma_6$		1	.01	82	6	15.176	0.81683	5		6.17	8.81	10.64	10.72	11.00	12.51	13.99	14.37	14.97	15.29	16.65	23.41	33.33	34.57	35.06
Re	$K\alpha_{1,2}$		4	150	75	6	60.648	0.81756	6		6.17	8.81	10.65	10.73	11.01	12.52	14.00	14.38	14.98	15.30	16.67	23.43	33.36	34.60	35.09
Pt	$K\beta_1$		5	27	78	6	75.735	0.81837	6		6.18	8.82	10.66	10.74	11.02	12.53	14.02	14.39	15.00	15.32	16.68	23.45	33.40	34.64	35.13
Ac	$K\alpha_1$	H	6	100	89	6	90.868	0.81850	6		6.18	8.82	10.66	10.74	11.03	12.53	14.02	14.40	15.00	15.32	16.69	23.46	33.40	34.64	35.13
Ra	Lu	B	1	.01	88	6	15.143	0.81860	4		6.18	8.82	10.67	10.75	11.03	12.53	14.02	14.40	15.00	15.32	16.69	23.46	33.41	34.65	35.14
Am	$K\alpha_1$		7	100	95	3	105.949	0.81900			6.18	8.83	10.67	10.75	11.03	12.54	14.03	14.41	15.01	15.33	16.70	23.47	33.43	34.67	35.15
Th	L_3-N_2	8	1	.01	90	6	15.136	0.81900	4		6.18	8.83	10.67	10.75	11.03	12.54	14.03	14.41	15.01	15.33	16.70	23.47	33.43	34.67	35.15
Sm	$K\beta_1$		3	22	62	6	45.405	0.81903	5		6.18	8.83	10.67	10.75	11.03	12.54	14.03	14.41	15.01	15.33	16.70	23.47	33.43	34.67	35.16
Ac	$K\beta_2'$	H	7	11	89	6	105.849	0.81977	5		6.19	8.84	10.68	10.76	11.04	12.55	14.04	14.42	15.02	15.35	16.71	23.49	33.46	34.70	35.19
Ir	$K8_2'$		5	10	77	6	75.606	0.81978	6		6.19	8.84	10.68	10.76	11.04	12.55	14.04	14.42	15.02	15.35	16.71	23.49	33.46	34.70	35.19
Pb	L_2-O_3	B	1	.01	82	6	15.117	0.82000	4		6.19	8.84	10.68	10.76	11.05	12.55	14.04	14.42	15.03	15.35	16.72	23.50	33.47	34.71	35.20
Ir	$K\beta_2''$		5	10	77	6	75.516	0.82075	5		6.19	8.85	10.69	10.77	11.06	12.57	14.06	14.44	15.04	15.36	16.73	23.52	33.50	34.74	35.23
Pb	$L\gamma_2$		1	1	82	6	15.099	0.82100	4		6.20	8.85	10.70	10.78	11.06	12.57	14.06	14.44	15.05	15.37	16.74	23.53	33.51	34.75	35.24
Ac	$K8_2''$	H	7	11	89	6	105.660	0.82124	5		6.20	8.85	10.70	10.78	11.06	12.57	14.06	14.45	15.05	15.37	16.74	23.54	33.52	34.76	35.25
Sm	$K\beta_3$		3	10	62	6	45.281	0.82128	5		6.20	8.85	10.70	10.78	11.06	12.57	14.07	14.45	15.05	15.37	16.74	23.54	33.52	34.77	35.26
Th	$K\beta_1$		7	30	90	6	105.591	0.82177	6		6.20	8.86	10.71	10.79	11.07	12.58	14.07	14.45	15.06	15.38	16.75	23.55	33.54	34.79	35.28
Rb	$K\beta_5$		1	.06	37	6	15.082	0.82190	4		6.20	8.86	10.71	10.79	11.07	12.58	14.08	14.46	15.06	15.39	16.76	23.56	33.55	34.79	35.28
Bk	$L\alpha_2$		1	10	97	3	15.080	0.82200			6.20	8.86	10.71	10.79	11.07	12.58	14.08	14.46	15.06	15.39	16.76	23.56	33.55	34.80	35.29
Pt	$K8_3$		5	12	78	6	75.355	0.82250	6		6.21	8.87	10.72	10.80	11.08	12.59	14.09	14.47	15.07	15.40	16.77	23.57	33.57	34.82	35.31
Dy	$K\alpha_2$		3	50	66	6	45.200	0.82274	6		6.21	8.87	10.72	10.80	11.08	12.60	14.09	14.47	15.08	15.40	16.77	23.58	33.58	34.83	35.32
Pb	Lv	8	1	.01	82	6	15.057	0.82327	5		6.21	8.88	10.73	10.81	11.09	12.60	14.10	14.48	15.09	15.41	16.78	23.60	33.60	34.85	35.34
Pb	$L\gamma_8$		1	.1	82	6	15.050	0.82365	5		6.22	8.88	10.73	10.81	11.10	12.61	14.11	14.49	15.09	15.42	16.79	23.61	33.62	34.87	35.36
Am	$K8_1$		8	30	95	3	120.350	0.82400			6.22	8.88	10.74	10.82	11.10	12.62	14.11	14.49	15.10	15.42	16.80	23.62	33.64	34.88	35.38
Pu	$K8_2$		8	11	94	3	120.350	0.82400			6.22	8.88	10.74	10.82	11.10	12.62	14.11	14.49	15.10	15.42	16.80	23.62	33.64	34.88	35.38
Bi	L_2-N_3	8	1	.01	83	6	15.029	0.82480	4		6.23	8.89	10.75	10.83	11.11	12.63	14.13	14.51	15.12	15.44	16.82	23.64	33.67	34.92	35.41
Pb	$K\alpha_1$		5	100	82	6	74.956	0.82688	6		6.24	8.91	10.77	10.86	11.14	12.66	14.16	14.55	15.15	15.48	16.86	23.70	33.76	35.01	35.50
Th	$K\alpha_2$		6	50	90	6	89.938	0.82697	6		6.24	8.92	10.77	10.86	11.14	12.66	14.16	14.55	15.16	15.48	16.86	23.70	33.76	35.01	35.51
Sb	$K\beta_5'$	8	2	.1	51	6	29.958	0.82756	5		6.25	8.92	10.78	10.86	11.15	12.67	14.17			15.49	16.87	23.72	33.78	35.04	35.53
Pm	$K\beta_2$	H	3	8	61	6	44.929	0.82770	4		6.25	8.92	10.78	10.87	11.15	12.67	14.18	14.56	15.17	15.49	16.87	23.72	33.79	35.05	35.54
Sb	$K\beta_5''$	8	2	.1	51	6	29.951	0.82776	5		6.25	8.92	10.79	10.87	11.15	12.67	14.18			15.50	16.88	23.73	33.79	35.05	35.54
Bi	$K\beta_2'$		6	11	83	6	89.846	0.82782	5		6.25	8.92	10.79	10.87	11.15	12.67	14.18	14.56	15.17	15.50	16.88	23.73	33.80	35.05	35.55
Th	$K\beta_3$		7	14	90	6	104.813	0.82788	6		6.25	8.93	10.79	10.87	11.15	12.67	14.18	14.56	15.17	15.50	16.88	23.73	33.80	35.05	35.55
Fr	$L\beta_3$	H	1	10	87	6	14.973	0.82789	5		6.25	8.93	10.79	10.87	11.15	12.68	14.18	14.56	15.17	15.50	16.88	23.73	33.80	35.05	35.55
Th	$L\beta_6$		1	.1	90	6	14.973	0.82790	5		6.25	8.93	10.79	10.87	11.15	12.68	14.18	14.56	15.17	15.50	16.88	23.73	33.80	35.06	35.55
Po	$K8_1$	H	6	89	84	6	89.781	0.82842	5		6.25	8.93	10.79	10.88	11.16	12.68	14.19	14.57	15.18	15.51	16.89	23.75	33.82	35.08	35.57
Ac	$K\alpha_{1,2}$	H	6	150	89	6	89.773	0.82849	5		6.25	8.93	10.79	10.88	11.16	12.68	14.19	14.57	15.18	15.51	16.89	23.75	33.82	35.08	35.58
Bi	$K\alpha_2$		5	50	83	6	74.802	0.82858	6		6.25	8.93	10.80	10.88	11.16	12.69	14.19	14.58	15.19	15.51	16.89	23.75	33.83	35.09	35.58
Pb	L_1-N_1	B	1	.01	82	6	14.960	0.82859	5		6.25	8.93	10.80	10.88	11.16	12.69	14.19	14.58	15.19	15.51	16.89	23.75	33.83	35.09	35.58
Rb	$K8_1$		1	16	37	6	14.959	0.82868	5		6.25	8.93	10.80	10.88	11.16	12.69	14.19	14.58	15.19	15.51	16.89	23.75	33.83	35.09	35.58
Tl	$L\gamma_{11}$	8	1	.01	81	6	14.957	0.82879	5		6.26	8.94	10.80	10.88	11.16	12.69	14.19	14.58	15.19	15.52	16.90	23.76	33.84	35.09	35.59
Y	$K\alpha_1$		1	100	39	6	14.956	0.82884	5		6.26	8.94	10.80	10.88	11.17	12.69	14.20	14.58	15.19	15.52	16.90	23.76	33.84	35.10	35.59
Cm	$L\alpha_1$		1	100	96	3	14.953	0.82900			6.26	8.94	10.80	10.88	11.17	12.69	14.20	14.58	15.19	15.52	16.90	23.76	33.85	35.10	35.60
Bi	$K\beta_2''$		6	11	83	6	89.716	0.82902	5		6.26	8.94	10.80	10.88	11.17	12.69	14.20	14.58	15.19	15.52	16.90	23.76	33.85	35.10	35.60
Rb	$K8_3$		1	8	37	6	14.949	0.82921	5		6.26	8.94	10.80	10.89	11.17	12.70	14.20	14.59	15.20	15.52	16.91	23.77	33.85	35.11	35.61
Pa	Ln		1	1	91	6	14.944	0.82950	4		6.26	8.94	10.81	10.89	11.17	12.70	14.21	14.59	15.20	15.53	16.91	23.78	33.87	35.13	35.62
Tl	L_1-N_4	B	1	.01	81	6	14.935	0.83001	5		6.26	8.95	10.81	10.90	11.18	12.71	14.22	14.60	15.21	15.54	16.92	23.79	33.89	35.15	35.64
Y	$K\alpha_{1,2}$		1	150	39	6	14.931	0.83024	5		6.27	8.95	10.82	10.90	11.18	12.71	14.22	14.60	15.22	15.54	16.93	23.80	33.90	35.16	35.65

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Re	$K\alpha_2$		4	50	75	6	59.708	0.83044	6		6.27	8.95	10.82	10.90	11.19	12.71	14.22	14.61	15.22	15.55	16.93	23.80	33.91	35.17	35.66
Am	$K\alpha_{1,2}$		7	150	95	3	104.431	0.83090			6.27	8.96	10.83	10.91	11.19	12.72	14.23	14.62	15.23	15.55	16.94	23.82	33.93	35.19	35.68
Xe	$K\alpha_1$	H	2	100	54	6	29.774	0.83268	5		6.28	8.98	10.85	10.93	11.22	12.75	14.26			15.59	16.98	23.87	34.00	35.26	35.76
Cm	$K\alpha_2$		7	50	96	3	104.168	0.83300			6.29	8.98	10.85	10.94	11.22	12.75	14.27	14.65	15.27	15.59	16.98	23.88	34.01	35.28	35.78
Y	$K\alpha_2$		1	50	39	6	14.880	0.83305	5		6.29	8.98	10.85	10.94	11.22	12.75	14.27	14.65	15.27	15.60	16.98	23.88	34.02	35.28	35.78
Po	$K\beta_3$	H	6	13	84	6	89.231	0.83352	5		6.29	8.99	10.86	10.94	11.23	12.76	14.28	14.66	15.28	15.60	16.99	23.89	34.04	35.30	35.80
Th	L_2-M_2		8	1	.01	90	6	14.867	0.83380	4		6.29	8.99	10.86	10.95	11.23	12.77	14.28	14.67	15.28	15.61	17.00	23.90	34.05	35.31	35.81
Sb	$K\beta_1$			2	20	51	6	29.721	0.83417	6		6.30	8.99	10.87	10.95	11.24	12.77	14.29			15.62	17.01	23.91	34.06	35.33	35.83
Bi	L_2-N_2	B	1	.01	83	6	14.856	0.83440	4		6.30	9.00	10.87	10.95	11.24	12.78	14.29	14.68	15.29	15.62	17.01	23.92	34.07	35.34	35.84
Hg	L_1-$O_{4,5}$		8	1	.01	80	6	14.846	0.83500	4		6.30	9.00	10.88	10.96	11.25	12.78	14.30	14.69	15.30	15.63	17.02	23.94	34.10	35.37	35.86
Pb	$K\alpha_{1,2}$		5	150	82	6	74.221	0.83507	6		6.30	9.00	10.88	10.96	11.25	12.79	14.30	14.69	15.31	15.63	17.03	23.94	34.10	35.37	35.87
Hg	AL_1		1		80	6	14.840	0.83530	4		6.30	9.01	10.88	10.97	11.25	12.79	14.31	14.69	15.31	15.64	17.03	23.95	34.11	35.38	35.88
Yb	$K\beta_1$		4	64	70	6	59.356	0.83536	5		6.31	9.01	10.88	10.97	11.25	12.79	14.31	14.70	15.31	15.64	17.03	23.95	34.11	35.38	35.88
Ra	$L\beta_2$		1	20	88	6	14.839	0.83537	5		6.31	9.01	10.88	10.97	11.25	12.79	14.31	14.70	15.31	15.64	17.03	23.95	34.11	35.38	35.88
Sb	$K\beta_3$		2	9	51	6	29.674	0.83547	6		6.31	9.01	10.89	10.97	11.25	12.79	14.31			15.64	17.03	23.95	34.12	35.39	35.89
Xe	$K\alpha_{1,2}$	H	2	150	54	6	29.666	0.83570	5		6.31	9.01	10.89	10.97	11.26	12.80	14.31			15.65	17.04	23.96	34.13	35.40	35.90
W	$K\alpha_1$		4	100	74	6	59.308	0.83604	7		6.31	9.01	10.89	10.98	11.26	12.80	14.32	14.71	15.32	15.65	17.05	23.97	34.14	35.41	35.91
Tb	$K\alpha_1$		3	100	65	6	44.474	0.83617	6		6.31	9.01	10.89	10.98	11.26	12.80	14.32	14.71	15.33	15.65	17.05	23.97	34.15	35.42	35.92
Cf	$K\beta_2$		9	11	98	3	133.290	0.83700			6.32	9.02	10.91	10.99	11.28	12.82	14.34	14.72	15.34	15.67	17.07	23.99	34.18	35.45	35.95
Ra	$L8_{1,5}$		1	1	88	6	14.806	0.83722	5		6.32	9.03	10.91	10.99	11.28	12.82	14.34	14.73	15.34	15.67	17.07	24.00	34.19	35.46	35.96
Pb	L_2-N_5		8	1	.01	82	6	14.789	0.83820	4		6.33	9.04	10.92	11.00	11.29	12.83	14.36	14.75	15.36	15.69	17.09	24.03	34.23	35.51	36.01
Yb	$K8_3$	H	4	12	70	6	59.141	0.83840	4		6.33	9.04	10.92	11.01	11.29	12.84	14.36	14.75	15.37	15.70	17.09	24.04	34.24	35.51	36.02
Hg	$L\gamma_4$		1	.1	80	6	14.776	0.83894	5		6.33	9.04	10.93	11.01	11.30	12.84	14.37	14.76	15.38	15.71	17.11	24.05	34.26	35.54	36.04
Tm	$K8_2$	H	4	9	69	6	59.085	0.83920	4		6.33	9.05	10.93	11.02	11.31	12.85	14.37	14.76	15.38	15.71	17.11	24.06	34.27	35.55	36.05
8i	$L\gamma_5$		1	.1	83	6	14.771	0.83923	5		6.33	9.05	10.93	11.02	11.31	12.85	14.37	14.76	15.38	15.71	17.11	24.06	34.28	35.55	36.05
Fr	$L\beta_1$	H	1	50	87	6	14.768	0.83940	5		6.34	9.05	10.94	11.02	11.31	12.85	14.38	14.77	15.38	15.72	17.12	24.06	34.28	35.56	36.06
Pb	$L\gamma_1$		1	10	82	6	14.762	0.83973	5		6.34	9.05	10.94	11.02	11.31	12.86	14.38	14.77	15.39	15.72	17.12	24.07	34.30	35.57	36.07
Pu	$K\alpha_2$		7	100	94	3	103.300	0.84000			6.34	9.06	10.94	11.03	11.32	12.86	14.39	14.78	15.40	15.73	17.13	24.08	34.31	35.58	36.09
Np	$K\beta_2$		8	11	93	3	118.057	0.84000			6.34	9.06	10.94	11.03	11.32	12.86	14.39	14.78	15.40	15.73	17.13	24.08	34.31	35.58	36.09
Hg	$L\gamma_4p$		1	.1	80	6	14.755	0.84013	5		6.34	9.06	10.95	11.03	11.32	12.86	14.39	14.78	15.40	15.73	17.13	24.09	34.31	35.59	36.09
Ra	$L\beta_4$		1	4	88	6	14.745	0.84071	5		6.35	9.06	10.95	11.04	11.33	12.87	14.40	14.79	15.41	15.74	17.14	24.10	34.34	35.62	36.12
Ra	$K\alpha_1$	H	6	100	88	6	88.454	0.84084	5		6.35	9.07	10.96	11.04	11.33	12.87	14.40	14.79	15.41	15.74	17.14	24.11	34.34	35.62	36.12
Tb	$K\alpha_{1,2}$		3	150	65	6	44.226	0.84087	6		6.35	9.07	10.96	11.04	11.33	12.87	14.40	14.79	15.41	15.74	17.15	24.11	34.34	35.62	36.13
Cm	$L\alpha_2$		1	10	96	3	14.740	0.84100			6.35	9.07	10.96	11.04	11.33	12.88	14.40	14.79	15.41	15.75	17.15	24.11	34.35	35.63	36.13
Tl	$L\gamma_3$		1	2	81	6	14.734	0.84130	5		6.35	9.07	10.96	11.04	11.33	12.88	14.41	14.80	15.42	15.75	17.15	24.12	34.36	35.64	36.14
Xe	$K\alpha_2$	H	2	50	54	6	29.453	0.84174	5		6.35	9.07	10.97	11.05	11.34	12.89	14.42			15.76	17.16	24.13	34.38	35.66	36.16
Ra	$K8_2'$	H	7	11	88	6	103.051	0.84203	5		6.36	9.08	10.97	11.05	11.34	12.89	14.42	14.81	15.43	15.76	17.17	24.14	34.39	35.67	36.18
Hg	L_1-O_1	F	1	.01	80	6	14.716	0.84232	5		6.36	9.08	10.98	11.06	11.35	12.90	14.43	14.82	15.44	15.77	17.18	24.15	34.41	35.69	36.19
W	$K\alpha_{1,2}$		4	150	74	6	58.856	0.84246	6		6.36	9.08	10.98	11.06	11.35	12.90	14.43	14.82	15.44	15.77	17.18	24.15	34.41	35.69	36.20
Ir	$K\beta_1$		5	27	77	6	73.548	0.84271	6		6.36	9.09	10.98	11.06	11.35	12.90	14.43	14.83	15.45	15.78	17.18	24.16	34.42	35.70	36.21
Tl	AL_2		1		81	6	14.698	0.84340	4		6.37	9.09	10.99	11.07	11.36	12.91	14.45	14.84	15.46	15.79	17.20	24.18	34.45	35.73	36.24
Ra	$K\beta_2''$	H	7	11	88	6	102.871	0.84350	5		6.37	9.09	10.99	11.07	11.36	12.92	14.45	14.84	15.46	15.79	17.20	24.18	34.46	35.74	36.24
Ra	$L8_{1,7}$	R	1	.01	88	6	14.691	0.84380	4		6.37	9.10	10.99	11.08	11.37	12.92	14.45	14.84	15.47	15.80	17.21	24.19	34.47	35.75	36.26
Ac	$K8_1$	H	7	30	89	6	102.829	0.84385	5		6.37	9.10	11.00	11.08	11.37	12.92	14.45	14.85	15.47	15.80	17.21	24.19	34.47	35.75	36.26
Tl	$L\gamma_6$		1	.01	81	6	14.684	0.84420	4		6.37	9.10	11.00	11.08	11.37	12.93	14.46	14.85	15.47	15.81	17.21	24.20	34.49	35.77	36.27
Os	$K\beta_2'$		5	10	76	6	73.390	0.84453	6		6.37	9.11	11.00	11.09	11.38	12.93	14.47	14.86	15.48	15.81	17.22	24.21	34.50	35.78	36.29
Os	$K8_2''$		5	10	76	6	73.306	0.84550	5		6.38	9.12	11.02	11.10	11.39	12.95	14.48	14.87	15.50	15.83	17.24	24.24	34.54	35.83	36.33
Ir	$K\beta_3$		5	12	77	6	73.190	0.84683	6		6.39	9.13	11.03	11.12	11.41	12.97	14.51	14.90	15.52	15.86	17.27	24.28	34.60	35.88	36.39
Tl	$L\gamma_2$		1	1	81	6	14.623	0.84773	5		6.40	9.14	11.05	11.13	11.42	12.98	14.52	14.91	15.54	15.87	17.29	24.31	34.63	35.92	36.43
Pu	$K8_1$		8	30	94	3	116.943	0.84800			6.40	9.14	11.05	11.13	11.42	12.98	14.53	14.92	15.54	15.88	17.29	24.31	34.65	35.93	36.44
Am	$L\alpha_1$		1	100	95	6	14.615	0.84819	6		6.40	9.14	11.05	11.14	11.43	12.99	14.53	14.92	15.55	15.88	17.30	24.32	34.65	35.94	36.45
Ac	$K\alpha_2$	H	6	50	89	6	87.660	0.84846	5		6.40	9.15	11.06	11.14	11.43	12.99	14.53	14.93	15.55	15.89	17.30	24.33	34.66	35.95	36.46
Pm	$K\beta_1$	H	3	22	61	6	43.818	0.84870	5		6.41	9.15	11.06	11.14	11.43	13.00	14.54	14.93	15.56	15.89	17.31	24.34	34.67	35.97	36.47
Tl	L_2-O_2	B	1	.01	81	6	14.601	0.84900	4		6.41	9.15	11.06	11.15	11.44	13.00	14.54	14.94	15.56	15.90	17.31	24.34	34.69	35.98	36.49
Sn	K-$O_{2,3}$		2	.01	50	6	29.190	0.84934	5		6.41	9.16	11.07	11.15	11.44	13.00	14.55			15.90	17.32	24.35	34.70	35.99	36.50
Sn	$K\beta_4$	B	2	.01	50	6	29.170	0.84990	5		6.41	9.16	11.07	11.16	11.45	13.01	14.56			15.91	17.33	24.37	34.73	36.02	36.53
Ac	$K8_3$	H	7	14	89	6	102.084	0.85001	5		6.42	9.16	11.08	11.16	11.45	13.02	14.56	14.95	15.58	15.91	17.33	24.37	34.73	36.02	36.53
Tb	$K\alpha_2$		3	50	65	6	43.737	0.85027	6		6.42	9.17	11.08	11.16	11.45	13.02	14.56	14.96	15.59	15.92	17.34	24.38	34.74	36.03	36.54
Tl	Lv	B	1	.01	81	6	14.575	0.85048	5		6.42	9.17	11.08	11.17	11.46	13.02	14.57	14.96	15.59	15.92	17.34	24.39	34.75	36.04	36.55
Tl	$K\alpha_1$		5	100	81	6	72.859	0.85068	6		6.42	9.17	11.08	11.17	11.46	13.03	14.57	14.97	15.59	15.93	17.35	24.39	34.76	36.05	36.56
Ra	$K\alpha_{1,2}$	H	6	150	88	6	87.419	0.85080	5		6.42	9.17	11.09	11.17	11.46	13.03	14.57	14.97	15.60	15.93	17.35	24.40	34.76	36.06	36.57
Pm	$K8_3$	H	3	10	61	6	43.705	0.85089	5		6.42	9.17	11.09	11.17	11.46	13.03	14.57	14.97	15.60	15.93	17.35	24.40	34.77	36.06	36.57
Ra	L_3-N_3	8	1	.01	88	6	14.563	0.85120	4		6.42	9.18	11.09	11.18	11.47	13.03	14.58	14.98	15.60	15.94	17.36	24.41	34.78	36.08	36.58
Tl	$L\gamma_8$		1	.1	81	6	14.561	0.85130	4		6.43	9.18	11.09	11.18	11.47	13.04	14.58	14.98	15.60	15.94	17.36	24.41	34.78	36.08	36.59
Pb	$K8_2'$		6	11	82	6	87.351	0.85146	5		6.43	9.18	11.09	11.18	11.47	13.04	14.58	14.98	15.61	15.94	17.36	24.42	34.79	36.09	36.60

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pb	$K\alpha_2$		5	50	82	6	72.792	0.85147	6		6.43	9.18	11.09	11.18	11.47	13.04	14.58	14.98	15.61	15.94	17.36	24.42	34.79	36.09	36.60
Bi	$K\beta_1$		6	89	83	6	87.328	0.85169	6		6.43	9.18	11.10	11.18	11.47	13.04	14.59	14.98	15.61	15.95	17.37	24.42	34.80	36.10	36.61
Sn	$K\beta_2$		2	5	50	6	29.104	0.85183	6		6.43	9.18	11.10	11.18	11.48	13.04	14.59			15.95	17.37	24.43	34.81	36.10	36.61
Pu	$K\alpha_{1,2}$		7	150	94	3	101.857	0.85190			6.43	9.18	11.10	11.18	11.48	13.04	14.59	14.99	15.62	15.95	17.37	24.43	34.81	36.11	36.62
Pb	L_2-N_3	B	1	.01	82	6	14.551	0.85192	5		6.43	9.18	11.10	11.18	11.48	13.04	14.59	14.99	15.62	15.95	17.37	24.43	34.81	36.11	36.62
Pb	$K\beta_2$''		6	11	82	6	87.222	0.85272	5		6.44	9.19	11.11	11.20	11.49	13.06	14.61	15.00	15.63	15.97	17.39	24.45	34.84	36.14	36.65
Am	$K\alpha_2$		7	50	95	3	101.607	0.85400			6.45	9.21	11.13	11.21	11.51	13.08	14.63	15.02	15.65	15.99	17.42	24.49	34.90	36.20	36.71
Rn	$L\beta_3$	H	1	10	86	6	14.509	0.85436	5		6.45	9.21	11.13	11.22	11.51	13.08	14.63	15.03	15.66	16.00	17.42	24.50	34.91	36.21	36.73
Th	Ln		1	1	90	6	14.507	0.85446	5		6.45	9.21	11.13	11.22	11.51	13.08	14.64	15.03	15.66	16.00	17.42	24.50	34.92	36.22	36.73
Tl	L_1-N_1	B	1	.01	81	6	14.500	0.85490	4		6.45	9.22	11.14	11.22	11.52	13.09	14.64	15.04	15.67	16.01	17.43	24.52	34.94	36.24	36.75
Bk	$K\beta_2$		9	11	97	3	130.484	0.85500			6.45	9.22	11.14	11.23	11.52	13.09	14.65	15.04	15.67	16.01	17.44	24.52	34.94	36.24	36.75
W	$K\alpha_2$		4	50	74	6	57.972	0.85531	6		6.46	9.22	11.15	11.23	11.52	13.10	14.65	15.05	15.68	16.01	17.44	24.53	34.95	36.26	36.77
Hg	$L\gamma_{1,1}$	B	1	.01	80	6	14.472	0.85657	5		6.47	9.24	11.16	11.25	11.54	13.12	14.67	15.07	15.70	16.04	17.47	24.56	35.01	36.31	36.82
Bi	$K\beta_3$		6	13	83	6	86.819	0.85667	6		6.47	9.24	11.16	11.25	11.54	13.12	14.67	15.07	15.70	16.04	17.47	24.57	35.01	36.32	36.83
Pr	$L\beta_2$		1	20	87	6	14.448	0.85800	3		6.48	9.25	11.18	11.26	11.56	13.14	14.70	15.10	15.73	16.07	17.50	24.61	35.07	36.37	36.89
Nd	$K\beta_2$	H	3	7	60	6	43.327	0.85830	4		6.48	9.25	11.18	11.27	11.56	13.14	14.70	15.10	15.73	16.07	17.50	24.61	35.08	36.39	36.90
Pb	L_2-N_2	B	1	.01	82	6	14.439	0.85850	4		6.48	9.26	11.19	11.27	11.57	13.15	14.71	15.10	15.74	16.07	17.51	24.62	35.09	36.40	36.91
Tl	$K\alpha_{1,2}$		5	150	81	6	72.167	0.85884	6		6.48	9.26	11.19	11.28	11.57	13.15	14.71	15.11	15.74	16.08	17.51	24.63	35.10	36.41	36.92
Am	$L\alpha_2$		1	10	95	6	14.409	0.86027	6		6.49	9.28	11.21	11.29	11.59	13.17	14.74	15.14	15.77	16.11	17.54	24.67	35.16	36.47	36.99
Np	$K\alpha_1$		7	100	93	3	100.781	0.86100			6.50	9.28	11.22	11.30	11.60	13.18	14.75	15.15	15.78	16.12	17.56	24.69	35.19	36.50	37.02
Ra	L_3-N_2	B	1	.01	88	6	14.384	0.86180	4		6.50	9.29	11.23	11.31	11.61	13.20	14.76	15.16	15.80	16.14	17.58	24.72	35.23	36.54	37.06
Ta	$K\alpha_1$		4	100	73	6	57.523	0.86199	6		6.51	9.29	11.23	11.32	11.61	13.20	14.77	15.17	15.80	16.14	17.58	24.72	35.24	36.55	37.06
Tm	$K\beta_1$		4	23	69	6	57.506	0.86224	5		6.51	9.30	11.24	11.32	11.62	13.20	14.77	15.17	15.81	16.15	17.58	24.73	35.25	36.56	37.08
Sn	$K\beta_5$'	B	2	.1	50	6	28.711	0.86350	5		6.52	9.31	11.25	11.34	11.63	13.22	14.79			16.17	17.61	24.77	35.30	36.61	37.13
Sn	$K\beta_5$''	B	2	.1	50	6	28.705	0.86368	5		6.52	9.31	11.25	11.34	11.64	13.23	14.80			16.17	17.61	24.77	35.31	36.62	37.14
Au	AL_1		1		79	6	14.351	0.86376	5		6.52	9.31	11.26	11.34	11.64	13.23	14.80	15.20	15.83	16.17	17.62	24.77	35.31	36.63	37.14
Fr	$K\alpha_1$	H	6	100	87	6	86.089	0.86394	5		6.52	9.31	11.26	11.34	11.64	13.23	14.80	15.20	15.84	16.18	17.62	24.78	35.32	36.63	37.15
Cf	$K\alpha_1$		8	100	98	3	114.778	0.86400			6.52	9.32	11.26	11.34	11.64	13.23	14.80	15.20	15.84	16.18	17.62	24.78	35.32	36.64	37.15
Au	L_1-$O_{4,5}$	B	1	.01	79	6	14.347	0.86400	5		6.52	9.32	11.26	11.34	11.64	13.23	14.80	15.20	15.84	16.18	17.62	24.78	35.32	36.64	37.15
Gd	$K\alpha_1$		3	100	64	6	42.989	0.86506	6		6.53	9.33	11.27	11.36	11.65	13.25	14.82	15.22	15.86	16.20	17.64	24.81	35.37	36.68	37.20
Pr	$K\beta_2$'	H	7	11	87	6	100.307	0.86506	5		6.53	9.33	11.27	11.36	11.65	13.25	14.82	15.22	15.86	16.20	17.64	24.81	35.37	36.68	37.20
Tm	$K\beta_3$		4	11	69	6	57.293	0.86544	5		6.53	9.33	11.28	11.36	11.66	13.25	14.83	15.23	15.87	16.21	17.65	24.82	35.38	36.70	37.22
U	$K\beta_2$'		8	11	92	6	114.587	0.86544	5		6.53	9.33	11.28	11.36	11.66	13.25	14.83	15.23	15.87	16.21	17.65	24.82	35.38	36.70	37.22
Kr	AK		1		36	6	14.322	0.86552	5		6.53	9.33	11.28	11.36	11.66	13.25	14.83	15.23	15.87	16.21	17.65	24.83	35.38	36.70	37.22
Rn	$L8_1$	H	1	50	86	6	14.313	0.86605	5		6.54	9.34	11.29	11.37	11.67	13.26	14.84	15.24	15.88	16.22	17.66	24.84	35.41	36.73	37.25
Kr	$K\beta_2$		1	3	36	6	14.312	0.86610	4		6.54	9.34	11.29	11.37	11.67	13.26	14.84	15.24	15.88	16.22	17.66	24.84	35.41	36.73	37.25
Fr	$K\beta_2$''	H	7	11	87	6	100.137	0.86653	5		6.54	9.34	11.29	11.38	11.67	13.27	14.84	15.25	15.89	16.23	17.67	24.85	35.43	36.75	37.27
Pb	$L\gamma_5$		1	.1	82	6	14.305	0.86655	5		6.54	9.34	11.29	11.38	11.68	13.27	14.84	15.25	15.89	16.23	17.67	24.86	35.43	36.75	37.27
I	$K\alpha_1$		2	100	53	6	28.607	0.86664	6		6.54	9.34	11.29	11.38	11.68	13.27	14.85			16.23	17.67	24.86	35.43	36.75	37.27
Ra	$K\beta_1$	H	7	30	88	6	100.113	0.86674	5		6.54	9.35	11.29	11.38	11.68	13.27	14.85	15.25	15.89	16.23	17.68	24.86	35.44	36.76	37.28
Er	$K\beta_2$	H	4	8	68	6	57.204	0.86680	4		6.54	9.35	11.30	11.38	11.68	13.27	14.85	15.25	15.89	16.23	17.68	24.86	35.44	36.76	37.28
Au	$L\gamma_4$		1	.1	79	6	14.297	0.86703	5		6.54	9.35	11.30	11.38	11.68	13.28	14.85	15.26	15.89	16.24	17.68	24.87	35.45	36.77	37.29
U	$K\beta_2$''	D	8	11	92	6	114.314	0.86750	6		6.55	9.35	11.30	11.39	11.69	13.28	14.86	15.26	15.90	16.24	17.69	24.88	35.47	36.79	37.31
Tl	$L\gamma_1$		1	10	81	6	14.289	0.86752	5		6.55	9.35	11.30	11.39	11.69	13.28	14.86	15.26	15.90	16.24	17.69	24.88	35.47	36.79	37.31
Os	$K\beta_1$		5	27	76	6	71.401	0.86805	6		6.55	9.36	11.31	11.40	11.70	13.29	14.87	15.27	15.91	16.26	17.70	24.90	35.49	36.81	37.34
Au	$L\gamma_4p$		1	.1	79	6	14.278	0.86816	5		6.55	9.36	11.31	11.40	11.70	13.29	14.87	15.28	15.92	16.26	17.71	24.90	35.50	36.82	37.34
Pu	$L\alpha_1$		1	100	94	6	14.276	0.86830	5		6.55	9.36	11.31	11.40	11.70	13.30	14.87	15.28	15.92	16.26	17.71	24.91	35.50	36.83	37.35
Ta	$K\alpha_{1,2}$		4	150	73	6	57.098	0.86840	6		6.55	9.36	11.32	11.40	11.70	13.30	14.88	15.28	15.92	16.26	17.71	24.91	35.51	36.83	37.35
Hg	$L\gamma_3$		1	2	80	6	14.262	0.86915	5		6.56	9.37	11.33	11.41	11.71	13.31	14.89	15.29	15.93	16.28	17.73	24.93	35.54	36.86	37.38
I	$K\alpha_{1,2}$		2	150	53	6	28.508	0.86964	6		6.56	9.38	11.33	11.42	11.72	13.32	14.90			16.28	17.74	24.95	35.56	36.88	37.41
Gd	$K\alpha_{1,2}$		3	150	64	6	42.757	0.86974	6		6.56	9.38	11.33	11.42	11.72	13.32	14.90	15.30	15.94	16.29	17.74	24.95	35.56	36.89	37.41
Re	$K\beta_2$'		5	10	75	6	71.219	0.87027	6		6.57	9.38	11.34	11.43	11.73	13.33	14.91	15.31	15.95	16.30	17.75	24.96	35.59	36.91	37.43
Au	L_1-O_1	P	1	.01	79	6	14.243	0.87034	5		6.57	9.38	11.34	11.43	11.73	13.33	14.91	15.31	15.96	16.30	17.75	24.97	35.59	36.92	37.44
Sn	$K\beta_1$		2	19	50	6	28.481	0.87047	6		6.57	9.39	11.34	11.43	11.73	13.33	14.91			16.30	17.75	24.97	35.59	36.92	37.44
Ra	$K\alpha_2$	H	6	50	88	6	85.419	0.87072	5		6.57	9.39	11.35	11.43	11.73	13.33	14.92	15.32	15.96	16.31	17.76	24.98	35.60	36.93	37.45
Kr	$K\beta_5$	8	1	.06	36	6	14.235	0.87080	4		6.57	9.39	11.35	11.43	11.73	13.33	14.92	15.32	15.96	16.31	17.76	24.98	35.61	36.94	37.46
Ra	$L\beta_6$		1	.1	88	6	14.234	0.87088	5		6.57	9.39	11.35	11.43	11.73	13.34	14.92	15.32	15.97	16.31	17.76	24.98	35.61	36.94	37.46
Re	$K\beta_2$''		5	10	75	6	71.139	0.87125	5		6.58	9.39	11.35	11.44	11.74	13.34	14.93	15.33	15.97	16.32	17.77	24.99	35.63	36.96	37.48
Sn	$K\beta_3$		2	9	50	6	28.439	0.87175	6		6.58	9.40	11.36	11.45	11.75	13.35	14.93			16.32	17.78	25.01	35.65	36.98	37.50
Np	$K\beta_1$		8	30	93	3	113.725	0.87200			6.58	9.40	11.36	11.45	11.75	13.35	14.94	15.34	15.99	16.33	17.79	25.01	35.66	36.99	37.51
Os	$K\beta_3$		5	12	76	6	71.065	0.87215	6		6.58	9.40	11.37	11.45	11.75	13.36	14.94	15.35	15.99	16.33	17.79	25.02	35.66	36.99	37.52
Hg	AL_2		1		80	6	14.212	0.87220	4		6.58	9.40	11.37	11.45	11.75	13.36	14.94	15.35	15.99	16.33	17.79	25.02	35.67	37.00	37.52
Ra	$K\beta_3$	H	7	14	88	6	99.415	0.87283	5		6.59	9.41	11.37	11.46	11.76	13.37	14.95	15.36	16.00	16.35	17.80	25.04	35.69	37.02	37.55
Np	$K\alpha_{1,2}$		7	150	93	3	99.407	0.87290			6.59	9.41	11.38	11.46	11.76	13.37	14.95	15.36	16.00	16.35	17.80	25.04	35.70	37.03	37.55
Cf	$K\beta_1$		9	30	98	3	127.794	0.87300			6.59	9.41	11.38	11.46	11.76	13.37	14.96	15.36	16.00	16.35	17.81	25.04	35.70	37.03	37.56

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hg	$L\gamma_6$		1	.01	80	6	14.196	0.87319	5		6.59	9.41	11.38	11.47	11.76	13.37	14.96	15.36	16.01	16.35	17.81	25.05	35.71	37.04	37.56
Fr	$K\alpha_{1,2}$	H	6	150	87	6	85.110	0.87388	5		6.60	9.42	11.39	11.47	11.77	13.38	14.97	15.38	16.02	16.36	17.82	25.07	35.74	37.07	37.60
Pu	$K\alpha_2$		7	50	94	3	99.168	0.87500			6.60	9.43	11.40	11.49	11.79	13.40	14.99	15.40	16.04	16.39	17.85	25.10	35.79	37.12	37.65
Tl	$K\alpha_2$		5	50	81	6	70.820	0.87518	6		6.61	9.44	11.40	11.49	11.79	13.40	14.99	15.40	16.05	16.39	17.85	25.11	35.79	37.13	37.65
Sr	$K\alpha_1$		1	100	38	6	14.163	0.87526	5		6.61	9.44	11.41	11.49	11.79	13.40	14.99	15.40	16.05	16.39	17.85	25.11	35.80	37.13	37.66
Hg	$K\alpha_1$		5	100	80	6	70.807	0.87534	6		6.61	9.44	11.41	11.49	11.79	13.40	15.00	15.40	16.05	16.39	17.85	25.11	35.80	37.13	37.66
Hg	$L\gamma_2$		1	1	80	6	14.160	0.87544	5		6.61	9.44	11.41	11.49	11.80	13.41	15.00	15.40	16.05	16.39	17.86	25.11	35.80	37.14	37.66
I	$K\alpha_2$		2	50	53	6	28.312	0.87566	6		6.61	9.44	11.41	11.50	11.80	13.41	15.00			16.40	17.86	25.12	35.81	37.15	37.67
Tl	$K\beta_2'$		6	10	81	6	84.933	0.87570	5		6.61	9.44	11.41	11.50	11.80	13.41	15.00	15.41	16.05	16.40	17.86	25.12	35.81	37.15	37.68
Hg	L_2-O_3	B	1	.01	80	6	14.154	0.87580	4		6.61	9.44	11.41	11.50	11.80	13.41	15.00	15.41	16.06	16.40	17.86	25.12	35.82	37.16	37.68
Pb	$K\beta_1$		6	88	82	6	84.922	0.87582	6		6.61	9.44	11.41	11.50	11.80	13.41	15.00	15.41	16.06	16.40	17.86	25.13	35.82	37.16	37.68
Sr	$K\alpha_{1,2}$		1	150	38	6	14.140	0.87665	5		6.62	9.45	11.42	11.51	11.81	13.42	15.02	15.43	16.07	16.42	17.88	25.15	35.85	37.19	37.72
Tl	$K\beta_2''$		6	10	81	6	84.823	0.87684	5		6.62	9.45	11.43	11.51	11.81	13.43	15.02	15.43	16.08	16.42	17.88	25.16	35.86	37.20	37.73
Cf	$K\alpha_{1,2}$		8	150	98	3	112.999	0.87760			6.62	9.46	11.44	11.52	11.82	13.44	15.03	15.44	16.09	16.44	17.90	25.18	35.90	37.23	37.76
Hg	L_2-O_2	B	1	.01	80	6	14.112	0.87840	4		6.63	9.47	11.45	11.53	11.84	13.45	15.05	15.46	16.10	16.45	17.92	25.20	35.93	37.27	37.80
Kr	$K\beta_1$		1	16	36	6	14.110	0.87850	4		6.63	9.47	11.45	11.53	11.84	13.45	15.05	15.46	16.11	16.45	17.92	25.20	35.93	37.27	37.80
Hg	Lv	B	1	.01	80	6	14.105	0.87885	5		6.63	9.48	11.45	11.54	11.84	13.46	15.06	15.46	16.11	16.46	17.93	25.21	35.95	37.29	37.82
Kr	$K\beta_3$		1	8	36	6	14.102	0.87900	4		6.63	9.48	11.45	11.54	11.84	13.46	15.06	15.47	16.12	16.46	17.93	25.22	35.95	37.30	37.82
Gd	$K\alpha_2$		3	50	64	6	42.302	0.87911	6		6.64	9.48	11.46	11.54	11.84	13.46	15.06	15.47	16.12	16.46	17.93	25.22	35.96	37.30	37.83
Sr	$K\alpha_2$		1	50	38	6	14.095	0.87943	5		6.64	9.48	11.46	11.55	11.85	13.47	15.07	15.47	16.12	16.47	17.94	25.23	35.97	37.31	37.84
Nd	$K\beta_1$		3	22	60	6	42.264	0.87990	6		6.64	9.49	11.47	11.55	11.86	13.47	15.07	15.48	16.13	16.48	17.95	25.24	35.99	37.34	37.86
Hg	$L\gamma_8$		1	.1	80	6	14.087	0.87995	5		6.64	9.49	11.47	11.55	11.86	13.48	15.08	15.48	16.13	16.48	17.95	25.25	35.99	37.34	37.87
Tl	L_2-N_3	B	1	.01	81	6	14.087	0.87996	5		6.64	9.49	11.47	11.55	11.86	13.48	15.08	15.48	16.13	16.48	17.95	25.25	35.99	37.34	37.87
Pu	$L\alpha_2$		1	10	94	6	14.082	0.88028	5		6.64	9.49	11.47	11.56	11.86	13.48	15.08	15.49	16.14	16.49	17.96	25.26	36.01	37.35	37.88
Pb	$K\beta_3$		6	13	82	6	84.436	0.88086	6		6.65	9.50	11.48	11.57	11.87	13.49	15.09	15.50	16.15	16.50	17.97	25.27	36.03	37.38	37.91
Ta	$K\alpha_2$		4	50	73	6	56.267	0.88122	6		6.65	9.50	11.48	11.57	11.87	13.50	15.10	15.51	16.16	16.50	17.97	25.28	36.05	37.39	37.92
At	$L\beta_3$	H	1	10	85	6	14.065	0.88135	5		6.65	9.50	11.49	11.57	11.88	13.50	15.10	15.51	16.16	16.51	17.98	25.29	36.05	37.40	37.93
O	$K\alpha_1$		7	100	92	6	98.422	0.88163	6		6.65	9.51	11.49	11.58	11.88	13.50	15.10	15.51	16.16	16.51	17.98	25.29	36.07	37.41	37.94
Cm	$K\beta_2$		9	11	96	3	126.490	0.88200			6.66	9.51	11.49	11.58	11.88	13.51	15.11	15.52	16.17	16.52	17.99	25.31	36.08	37.43	37.96
Bk	$K\beta_1$		9	30	97	3	126.490	0.88200			6.66	9.51	11.49	11.58	11.88	13.51	15.11	15.52	16.17	16.52	17.99	25.31	36.08	37.43	37.96
Nd	$K\beta_3$		3	10	60	6	42.159	0.88208	6		6.66	9.51	11.50	11.58	11.89	13.51	15.11	15.52	16.17	16.52	17.99	25.31	36.08	37.43	37.96
Hg	L_1-N_1		8	1	.01	80	6	14.043	0.88270	4		6.66	9.52	11.50	11.59	11.89	13.52	15.12	15.53	16.18	16.53	18.01	25.33	36.11	37.46	37.99
Hg	$K\alpha_{1,2}$		5	150	80	6	70.154	0.88349	6		6.67	9.53	11.51	11.60	11.90	13.53	15.14	15.55	16.20	16.55	18.02	25.35	36.14	37.49	38.02
Au	$L\gamma_{11}$	B	1	.01	79	6	14.017	0.88433	5		6.68	9.54	11.52	11.61	11.92	13.54	15.15	15.56	16.21	16.56	18.04	25.37	36.18	37.53	3B.06
Au	L_1-N_4	B	1	.01	79	6	13.997	0.88563	5		6.68	9.55	11.54	11.63	11.93	13.56	15.17	15.58	16.24	16.59	18.07	25.41	36.23	37.59	38.12
Tl	L_2-N_2	F	1	.01	81	6	13.974	0.88706	5		6.70	9.56	11.56	11.65	11.95	13.59	15.20	15.61	16.26	16.61	18.09	25.45	36.30	37.65	38.18
In	K-$O_{2,3}$		2	.01	49	6	27.935	0.88748	5		6.70	9.57	11.57	11.65	11.96	13.59	15.21			16.62	18.10	25.47	36.31	37.67	38.20
In	$K\beta_4$	B	2	.01	49	6	27.923	0.88786	5		6.70	9.57	11.57	11.66	11.96	13.60	15.21			16.63	18.11	25.48	36.33	37.69	38.22
Rn	$K\alpha_1$	H	6	100	86	6	83.768	0.88788	5		6.70	9.57	11.57	11.66	11.96	13.60	15.21	15.62	16.28	16.63	18.11	25.48	36.33	37.69	38.22
Bk	$K\alpha_1$		8	100	97	3	111.676	0.88800			6.70	9.57	11.57	11.66	11.97	13.60	15.21	15.63	16.28	16.63	18.11	25.48	36.34	37.69	38.23
Pa	$K\beta_2'$	H	8	11	91	6	111.605	0.88856	5		6.71	9.58	11.58	11.67	11.97	13.61	15.22	15.64	16.29	16.64	18.13	25.50	36.36	37.72	38.25
Rn	$K\beta_2'$	H	7	11	86	6	97.622	0.88886	5		6.71	9.58	11.58	11.67	11.98	13.61	15.23	15.64	16.30	16.65	18.13	25.51	36.37	37.73	38.26
Hf	$K\alpha_1$		4	100	72	6	55.781	0.88891	6		6.71	9.58	11.58	11.67	11.98	13.61	15.23	15.64	16.30	16.65	18.13	25.51	36.37	37.73	38.27
Np	$L\alpha_1$		1	100	93	6	13.942	0.88913	6		6.71	9.59	11.59	11.68	11.98	13.62	15.23	15.65	16.30	16.65	18.14	25.51	36.38	37.74	38.28
In	$K\beta_2$		2	5	49	6	27.856	0.89000	5		6.72	9.60	11.60	11.69	11.99	13.63	15.25			16.67	18.16	25.54	36.42	37.78	3B.32
Pa	$K\beta_2''$	H	8	11	91	6	111.385	0.89032	5		6.72	9.60	11.60	11.69	12.00	13.64	15.25	15.67	16.32	16.67	18.16	25.55	36.43	37.79	38.33
Fr	$K\beta_1$	H	7	29	87	6	97.460	0.89033	5		6.72	9.60	11.60	11.69	12.00	13.64	15.25	15.67	16.32	16.68	18.16	25.55	36.43	37.79	38.33
Rn	$K\beta_2''$	H	7	11	86	6	97.460	0.89033	5		6.72	9.60	11.60	11.69	12.00	13.64	15.25	15.67	16.32	16.68	18.16	25.55	36.43	37.79	38.33
Pr	$K\beta_2$		3	65	59	6	41.767	0.89037	5		6.72	9.60	11.60	11.69	12.00	13.64	15.26	15.67	16.33	16.68	18.16	25.55	36.44	37.80	38.33
Er	$K\beta_1$		4	22	68	6	55.672	0.89064	5		6.72	9.60	11.61	11.69	12.00	13.64	15.26	15.67	16.33	16.68	18.17	25.56	36.45	37.81	3B.34
U	$K\beta_1$		B	31	92	6	111.281	0.89115	6		6.73	9.61	11.61	11.70	12.01	13.65	15.27	15.68	16.34	16.69	18.18	25.57	36.47	37.83	38.37
Pt	AL_1		1		78	6	13.880	0.89310	4		6.74	9.63	11.64	11.73	12.03	13.68	15.30	15.72	16.38	16.73	18.22	25.63	36.55	37.92	38.45
U	$K\alpha_{1,2}$		7	150	92	6	97.131	0.89335	6		6.74	9.63	11.64	11.73	12.04	13.68	15.31	15.72	16.38	16.73	18.22	25.64	36.56	37.93	38.47
Pt	L_1-$O_{4,5}$	B	1	.01	78	6	13.875	0.89340	4		6.74	9.63	11.64	11.73	12.04	13.68	15.31	15.72	16.38	16.73	18.23	25.64	36.56	37.93	38.47
At	$L\beta_1$	H	1	50	85	6	13.874	0.89349	5		6.74	9.63	11.64	11.73	12.04	13.68	15.31	15.72	16.38	16.73	18.23	25.64	36.57	37.93	38.47
Er	$K\beta_3$		4	12	68	6	55.485	0.89364	5		6.75	9.64	11.65	11.73	12.04	13.69	15.31	15.73	16.39	16.74	18.23	25.65	36.57	37.94	38.48
Fr	$K\alpha_2$	H	6	50	87	6	83.217	0.89376	5		6.75	9.64	11.65	11.74	12.04	13.69	15.31	15.73	16.39	16.74	18.23	25.65	36.58	37.95	38.48
Re	$K\beta_1$		5	26	75	6	69.298	0.89440	6		6.75	9.64	11.66	11.74	12.05	13.70	15.32	15.74	16.40	16.75	18.25	25.67	36.61	37.97	38.51
Tl	$L\gamma_5$		1	.1	81	6	13.850	0.89500	5		6.76	9.65	11.66	11.75	12.06	13.71	15.33	15.75	16.41	16.76	18.26	25.69	36.63	38.00	38.54
Hf	$K\alpha_{1,2}$		4	150	72	6	55.382	0.89530	6		6.76	9.65	11.67	11.76	12.06	13.71	15.34	15.76	16.42	16.77	18.26	25.69	36.64	38.01	38.55
Eu	$K\alpha_1$		3	100	63	6	41.535	0.89534	6		6.76	9.65	11.67	11.76	12.06	13.71	15.34	15.76	16.42	16.77	18.27	25.69	36.65	38.02	38.55
Np	$K\alpha_2$		7	50	93	3	96.844	0.89600			6.75	9.66	11.68	11.77	12.07	13.72	15.35	15.77	16.43	16.78	18.28	25.71	36.67	38.04	38.58
Ho	$K\beta_2$	H	4	8	67	6	55.315	0.89640	4		6.77	9.67	11.68	11.77	12.08	13.73	15.36	15.78	16.44	16.79	18.29	25.73	36.69	38.06	38.60
Hg	$L\gamma_1$		1	10	80	6	13.828	0.89646	5		6.77	9.67	11.68	11.77	12.08	13.73	15.36	15.78	16.44	16.79	18.29	25.73	36.69	38.06	38.60
Fr	$K\beta_3$	H	7	14	87	6	96.791	0.89649	5		6.77	9.67	11.68	11.77	12.08	13.73	15.36	15.78	16.44	16.79	18.29	25.73	36.69	38.07	3B.61

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Pt	$L\gamma_4$		1	.1	78	6	13.826	0.89659	5		6.77	9.67	11.68	11.77	12.08	13.73	15.36	15.78	16.44	16.79	18.29	25.73	36.70	38.07	38.61
W	$K\beta_2'$		5	10	74	6	69.089	0.89710	6		6.77	9.67	11.69	11.78	12.09	13.74	15.37	15.79	16.45	16.80	18.30	25.75	36.72	38.09	38.63
Pt	$L\gamma_4p$		1	.1	78	6	13.812	0.89747	5		6.77	9.68	11.70	11.78	12.09	13.75	15.38	15.79	16.46	16.81	18.31	25.76	36.74	38.11	38.65
Rn	$K\alpha_{1,2}$	H	6	150	86	6	82.843	0.89780	5		6.78	9.68	11.70	11.79	12.10	13.75	15.38	15.80	16.46	16.82	18.32	25.77	36.75	38.12	38.66
Au	$L\gamma_3$		1	2	79	6	13.807	0.89783	5		6.78	9.68	11.70	11.79	12.10	13.75	15.38	15.80	16.46	16.82	18.32	25.77	36.75	38.13	38.67
8i	$L\beta_9$	8	1	.01	83	6	13.805	0.89791	5		6.78	9.68	11.70	11.79	12.10	13.75	15.39	15.80	16.46	16.82	18.32	25.77	36.76	38.13	38.67
W	$K\beta_2''$		5	10	74	6	69.020	0.89800	5		6.78	9.68	11.70	11.79	12.10	13.75	15.39	15.80	16.47	16.82	18.32	25.77	36.76	38.13	38.67
U	$K\beta_3$		8	14	92	6	110.387	0.89837	6		6.78	9.69	11.71	11.80	12.11	13.76	15.39	15.81	16.47	16.83	18.33	25.78	36.77	38.15	38.69
Re	$K\beta_3$		5	12	75	6	68.983	0.89848	6		6.78	9.69	11.71	11.80	12.11	13.76	15.39	15.81	16.48	16.83	18.33	25.79	36.78	38.15	38.70
Pt	L_1-O_1	8	1	.01	78	6	13.781	0.89950	4		6.79	9.70	11.72	11.81	12.12	13.78	15.41	15.83	16.49	16.85	18.35	25.82	36.82	38.20	38.74
Po	$L\beta_5$		1	1	84	6	13.779	0.89960	4		6.79	9.70	11.72	11.81	12.12	13.78	15.41	15.83	16.50	16.85	18.35	25.82	36.83	38.20	38.75
Hg	$K\alpha_2$		5	50	80	6	68.883	0.89979	6		6.79	9.70	11.73	11.82	12.12	13.78	15.42	15.84	16.50	16.85	18.36	25.82	36.83	38.21	38.75
Am	$K\beta_2$		9	11	95	3	123.960	0.90000			6.79	9.70	11.73	11.82	12.13	13.78	15.42	15.84	16.50	16.86	18.36	25.83	36.84	38.22	38.76
Eu	$K\alpha_{1,2}$		3	150	63	6	41.320	0.90001	6		6.79	9.70	11.73	11.82	12.13	13.78	15.42	15.84	16.50	16.86	18.36	25.83	36.84	38.22	38.76
Tl	$K\beta_1$		6	78	81	6	82.562	0.90085	6		6.80	9.71	11.74	11.83	12.14	13.80	15.44	15.85	16.52	16.87	18.38	25.86	36.88	38.26	38.80
Au	$K\alpha_1$		5	100	79	6	68.792	0.90097	6		6.80	9.72	11.74	11.83	12.14	13.80	15.44	15.86	16.52	16.88	18.38	25.86	36.89	38.26	38.81
Np	$L\alpha_2$		1	10	93	6	13.757	0.90104	6		6.80	9.72	11.74	11.83	12.14	13.80	15.44	15.86	16.52	16.88	18.38	25.86	36.89	38.27	38.81
Hg	$K\beta_2'$		6	10	80	6	82.530	0.90120	5		6.80	9.72	11.75	11.83	12.14	13.80	15.44	15.86	16.53	16.88	18.39	25.87	36.89	38.27	38.82
8k	$K\alpha_{1,2}$		8	150	97	3	109.991	0.90160			6.81	9.72	11.75	11.84	12.15	13.81	15.45	15.87	16.53	16.89	18.39	25.88	36.91	38.29	38.83
In	$K\beta_5'$	8	2	.1	49	6	27.494	0.90172	5		6.81	9.72	11.75	11.84	12.15	13.81	15.45			16.89	18.40	25.88	36.92	38.30	38.84
In	$K\beta_5''$	8	2	.1	49	6	27.487	0.90196	5		6.81	9.73	11.76	11.84	12.15	13.81	15.45			16.89	18.40	25.89	36.93	38.31	38.85
Hg	$K\beta_2''$		6	10	80	6	82.420	0.90240	5		6.81	9.73	11.76	11.85	12.16	13.82	15.46	15.88	16.55	16.90	18.41	25.90	36.95	38.33	38.87
Te	$K\alpha_1$		2	100	52	6	27.468	0.90259	6		6.81	9.73	11.76	11.85	12.16	13.82	15.47			16.91	18.41	25.91	36.95	38.34	38.88
Au	AL_2		1		79	6	13.734	0.90259	5		6.81	9.73	11.76	11.85	12.16	13.82	15.47	15.89	16.55	16.91	18.41	25.91	36.95	38.34	38.88
Au	$L\gamma_6$		1	.01	79	6	13.728	0.90297	5		6.82	9.74	11.77	11.86	12.17	13.83	15.47	15.89	16.56	16.91	18.42	25.92	36.97	38.35	38.90
Cf	$K\alpha_2$		8	50	98	3	109.699	0.90400			6.82	9.75	11.78	11.87	12.18	13.85	15.49	15.91	16.58	16.93	18.44	25.95	37.01	38.40	38.94
Au	$L\gamma_2$		1	1	79	6	13.707	0.90434	5		6.83	9.75	11.79	11.88	12.19	13.85	15.50	15.92	16.58	16.94	18.45	25.96	37.03	38.41	38.96
Bi	$L\beta_{10}$	B	1	.01	83	6	13.698	0.90495	5		6.83	9.76	11.79	11.88	12.19	13.86	15.51	15.93	16.59	16.95	18.46	25.98	37.05	38.44	38.99
Pa	$K\alpha_1$	H	7	100	91	6	95.852	0.90527	6		6.83	9.76	11.80	11.89	12.20	13.87	15.51	15.93	16.60	16.96	18.47	25.99	37.07	38.45	39.00
Te	$K\alpha_{1,2}$		2	150	52	6	27.377	0.90558	6		6.84	9.76	11.80	11.89	12.20	13.87	15.52			16.96	18.48	25.99	37.08	38.47	39.01
Tl	$K\beta_3$		6	13	81	6	82.104	0.90588	6		6.84	9.77	11.81	11.90	12.21	13.87	15.52	15.94	16.61	16.97	18.48	26.00	37.09	38.48	39.03
Au	L_2-O_3	8	1	.01	79	6	13.676	0.90638	5		6.84	9.77	11.81	11.90	12.21	13.88	15.53	15.95	16.62	16.98	18.49	26.02	37.11	38.50	39.05
Ra	Ln		1	1	88	6	13.661	0.90742	5		6.85	9.78	11.83	11.92	12.23	13.90	15.55	15.97	16.64	17.00	18.51	26.05	37.16	38.55	39.10
Au	L_2-O_2	8	1	.01	79	6	13.660	0.90746	5		6.85	9.79	11.83	11.92	12.23	13.90	15.55	15.97	16.64	17.00	18.51	26.05	37.16	38.55	39.10
Hf	$K\alpha_2$		4	50	72	6	54.602	0.90810	6		6.85	9.79	11.84	11.92	12.24	13.91	15.56	15.98	16.65	17.01	18.53	26.07	37.19	38.58	39.13
Au	Lv	B	1	.01	79	6	13.646	0.90837	5		6.86	9.79	11.84	11.93	12.24	13.91	15.57	15.99	16.66	17.02	18.53	26.08	37.20	38.59	39.14
Hg	L_2-N_3	8	1	.01	80	6	13.638	0.90894	5		6.86	9.80	11.85	11.94	12.25	13.92	15.58	16.00	16.67	17.03	18.55	26.09	37.22	38.62	39.16
Cm	$K8_1$		9	30	96	3	122.733	0.90900			6.86	9.80	11.85	11.94	12.25	13.92	15.58	16.00	16.67	17.03	18.55	26.09	37.23	38.62	39.17
In	$K8_1$		2	19	49	6	27.271	0.90909	6		6.86	9.80	11.85	11.94	12.25	13.92	15.58			17.03	18.55	26.10	37.23	38.62	39.17
Po	$L\beta_3$		1	6	84	6	13.635	0.90910	4		6.86	9.80	11.85	11.94	12.25	13.92	15.58	16.00	16.67	17.03	18.55	26.10	37.23	38.62	39.17
Au	$K\alpha_{1,2}$		5	150	79	6	68.177	0.90911	6		6.86	9.80	11.85	11.94	12.25	13.92	15.58	16.00	16.67	17.03	18.55	26.10	37.23	38.62	39.17
Eu	$K\alpha_2$		3	50	63	6	40.895	0.90935	6		6.86	9.81	11.85	11.94	12.25	13.93	15.58	16.00	16.68	17.03	18.55	26.10	37.24	38.63	39.18
Au	$L\gamma_8$		1	.1	79	6	13.624	0.90989	5		6.87	9.81	11.86	11.95	12.26	13.94	15.59	16.01	16.69	17.04	18.56	26.12	37.26	38.66	39.21
In	$K\beta_3$		2	8	49	6	27.233	0.91036	6		6.87	9.82	11.86	11.95	12.27	13.94	15.60			17.05	18.57	26.13	37.28	38.68	39.23
U	$L\alpha_1$		1	100	92	6	13.612	0.91064	6		6.87	9.82	11.87	11.96	12.27	13.95	15.60	16.03	16.70	17.06	18.58	26.14	37.30	38.69	39.24
Te	$K\alpha_2$		2	50	52	6	27.197	0.91157	6		6.88	9.83	11.88	11.97	12.28	13.96	15.62			17.08	18.60	26.17	37.33	38.73	39.28
Cm	$K\alpha_1$		8	100	96	3	108.737	0.91200			6.88	9.83	11.89	11.98	12.29	13.97	15.63	16.05	16.72	17.08	18.61	26.18	37.35	38.75	39.30
Au	L_1-N_1	F	1	.01	79	6	13.592	0.91202	5		6.88	9.83	11.89	11.98	12.29	13.97	15.63	16.05	16.73	17.08	18.61	26.18	37.35	38.75	39.30
Th	$K\beta_2'$		8	11	90	6	108.699	0.91232	6		6.89	9.84	11.89	11.98	12.29	13.97	15.63	16.06	16.73	17.09	18.61	26.19	37.37	38.77	39.32
At	$K\alpha_1$	H	6	100	85	6	81.499	0.91260	5		6.89	9.84	11.89	11.98	12.30	13.98	15.64	16.06	16.74	17.10	18.62	26.20	37.38	38.78	39.33
Pr	$K\beta_1$		3	22	59	6	40.741	0.91278	6		6.89	9.84	11.90	11.99	12.30	13.98	15.64	16.07	16.74	17.10	18.62	26.20	37.39	38.79	39.34
At	$K\beta_2'$	H	7	11	85	6	94.974	0.91364	5		6.90	9.85	11.91	12.00	12.31	13.99	15.66	16.08	16.76	17.11	18.64	26.23	37.42	38.82	39.37
Th	$K\beta_2''$		8	11	90	6	108.489	0.91408	5		6.90	9.86	11.91	12.00	12.32	14.00	15.66	16.09	16.76	17.12	18.65	26.24	37.44	38.84	39.39
Pt	$L\gamma_{11}$	8	1	.01	78	6	13.558	0.91430	4		6.90	9.86	11.92	12.01	12.32	14.00	15.67	16.09	16.77	17.13	18.66	26.25	37.45	38.85	39.40
Pa	$K\beta_1$	H	8	30	91	6	108.409	0.91476	6		6.91	9.86	11.92	12.01	12.33	14.01	15.68	16.10	16.78	17.14	18.66	26.26	37.47	38.87	39.43
Rn	$K\beta_1$	H	7	29	86	6	94.850	0.91483	5		6.91	9.86	11.92	12.01	12.33	14.01	15.68	16.10	16.78	17.14	18.67	26.26	37.47	38.88	39.43
Pr	$K\beta_3$		3	10	59	6	40.646	0.91492	6		6.91	9.87	11.92	12.01	12.33	14.01	15.68	16.10	16.78	17.14	18.67	26.27	37.48	38.88	39.43
At	$K\beta_2''$	H	7	11	85	6	94.829	0.91504	5		6.91	9.87	11.93	12.02	12.33	14.02	15.68	16.11	16.78	17.14	18.67	26.27	37.48	38.89	39.44
U	$K\alpha_2$		7	50	92	6	94.649	0.91678	6		6.92	9.89	11.95	12.04	12.35	14.04	15.71	16.14	16.81	17.17	18.71	26.32	37.56	38.96	39.52
Pa	$K\alpha_{1,2}$	H	7	150	91	6	94.627	0.91699	6		6.92	9.89	11.95	12.04	12.36	14.05	15.71	16.14	16.82	17.18	18.71	26.33	37.56	38.97	39.52
Lu	$K\alpha_1$		4	100	71	6	54.061	0.91719	6		6.92	9.89	11.95	12.04	12.36	14.05	15.72	16.14	16.82	17.18	18.71	26.33	37.57	38.98	39.53
Rn	$K\alpha_2$	H	6	50	86	6	81.051	0.91764	5		6.93	9.90	11.96	12.05	12.37	14.06	15.73	16.15	16.83	17.19	18.72	26.35	37.59	39.00	39.55
Ce	$K-O_{2,3}$		3	.01	58	6	40.420	0.92004	5		6.94	9.92	11.99	12.08	12.40	14.09	15.77	16.19	16.87	17.24	18.77	26.42	37.69	39.11	39.66
Br	AK		1		35	6	13.468	0.92040	4		6.95	9.93	12.00	12.09	12.40	14.10	15.77	16.20	16.88	17.24	18.78	26.43	37.71	39.12	39.68
Br	$K\beta_2$		1	2	35	6	13.467	0.92046	5		6.95	9.93	12.00	12.09	12.40	14.10	15.77	16.20	16.88	17.24	18.78	26.43	37.71	39.12	39.68

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Ho	$K\beta_1$		4	22	67	6	53.868	0.92048	5		6.95	9.93	12.00	12.09	12.40	14.10	15.77	16.20	16.88	17.24	18.78	26.43	37.71	39.13	39.68
Rn	$K\beta_3$	H	7	13	86	6	94.230	0.92085	5		6.95	9.93	12.00	12.09	12.41	14.11	15.78	16.21	16.89	17.25	18.79	26.44	37.73	39.14	39.70
Pa	$K\beta_3$	H	8	14	91	6	107.576	0.92184	5		6.96	9.94	12.02	12.11	12.42	14.12	15.80	16.23	16.91	17.27	18.81	26.47	37.77	39.19	39.74
W	$K\beta_1$		5	26	74	6	67.233	0.92187	6		6.96	9.94	12.02	12.11	12.42	14.12	15.80	16.23	16.91	17.27	18.81	26.47	37.77	39.19	39.74
Po	$L\beta_1$		1	50	84	6	13.445	0.92200	4		6.96	9.94	12.02	12.11	12.42	14.12	15.80	16.23	16.91	17.27	18.81	26.47	37.78	39.19	39.75
Ce	$K\beta_4$	B	3	.01	58	6	40.329	0.92211	5		6.96	9.94	12.02	12.11	12.43	14.12	15.80	16.23	16.91	17.27	18.82	26.48	37.78	39.20	39.76
At	$K\alpha_{1,2}$	H	6	150	85	6	80.624	0.92250	5		6.96	9.95	12.02	12.11	12.43	14.13	15.81	16.24	16.92	17.28	18.82	26.49	37.80	39.22	39.77
U	$L\alpha_2$		1	10	92	6	13.437	0.92256	6		6.96	9.95	12.02	12.12	12.43	14.13	15.81	16.24	16.92	17.28	18.83	26.49	37.80	39.22	39.78
Ho	$K\beta_3$		4	11	67	6	53.702	0.92332	5		6.97	9.96	12.03	12.13	12.44	14.14	15.82	16.25	16.93	17.30	18.84	26.51	37.83	39.25	39.81
Bi	AL_3		1		83	6	13.424	0.92340	4		6.97	9.96	12.04	12.13	12.44	14.14	15.82	16.25	16.94	17.30	18.84	26.51	37.84	39.26	39.81
Lu	$K\alpha_{1,2}$		4	150	71	6	53.687	0.92357	6		6.97	9.96	12.04	12.13	12.45	14.15	15.83	16.26	16.94	17.30	18.85	26.52	37.84	39.26	39.82
Ir	AL_1		1		77	6	13.421	0.92360	4		6.97	9.96	12.04	12.13	12.45	14.15	15.83	16.26	16.94	17.30	18.85	26.52	37.85	39.26	39.82
Bi	$L_3-P_{2,3}$	B	1	.01	83	6	13.414	0.92413	5		6.98	9.97	12.05	12.14	12.45	14.16	15.84	16.27	16.95	17.31	18.86	26.54	37.87	39.29	39.85
Ir	$L_1-O_{4,5}$	B	1	.01	77	6	13.411	0.92430	4		6.98	9.97	12.05	12.14	12.46	14.16	15.84	16.27	16.95	17.32	18.86	26.54	37.88	39.29	39.85
Ce	$K\beta_2$		3	7	58	6	40.226	0.92448	5		6.98	9.97	12.05	12.14	12.46	14.16	15.84	16.27	16.96	17.32	18.87	26.55	37.88	39.30	39.86
Hg	$L\gamma_5$		1	.1	80	6	13.408	0.92453	5		6.98	9.97	12.05	12.14	12.46	14.16	15.84	16.27	16.96	17.32	18.87	26.55	37.89	39.31	39.86
Br	$K8_5$	8	1	.06	35	6	13.402	0.92493	5		6.98	9.97	12.06	12.15	12.46	14.17	15.85	16.28	16.96	17.33	18.87	26.56	37.90	39.32	39.88
Ta	$K\beta_2'$		5	9	73	6	67.001	0.92505	6		6.98	9.98	12.06	12.15	12.47	14.17	15.85	16.28	16.97	17.33	18.88	26.56	37.91	39.33	39.89
Au	$K\alpha_2$		5	50	79	6	66.978	0.92537	6		6.99	9.98	12.06	12.15	12.47	14.17	15.86	16.29	16.97	17.34	18.88	26.57	37.92	39.34	39.90
Rb	$K\alpha_1$		1	100	37	6	13.393	0.92555	6		6.99	9.98	12.06	12.16	12.47	14.18	15.86	16.29	16.98	17.34	18.89	26.58	37.93	39.35	39.91
Bi	$L\beta_5$		1	1	83	6	13.393	0.92556	5		6.99	9.98	12.06	12.16	12.47	14.18	15.86	16.29	16.98	17.34	18.89	26.58	37.93	39.35	39.91
Cm	$K\alpha_{1,2}$		8	150	96	3	107.139	0.92560			6.99	9.98	12.06	12.16	12.47	14.18	15.86	16.29	16.98	17.34	18.89	26.58	37.93	39.35	39.91
W	$K\beta_3$		5	12	74	6	66.940	0.92590	6		6.99	9.98	12.07	12.16	12.48	14.18	15.87	16.30	16.98	17.35	18.89	26.59	37.94	39.37	39.93
Ta	$K\beta_2''$		5	9	73	6	66.937	0.92594	6		6.99	9.98	12.07	12.16	12.48	14.18	15.87	16.30	16.98	17.35	18.90	26.59	37.95	39.37	39.93
Au	$L\gamma_1$		1	10	79	6	13.379	0.92650	5		6.99	9.99	12.08	12.17	12.49	14.19	15.88	16.31	16.99	17.36	18.91	26.61	37.97	39.39	39.95
Dy	$K\beta_2$	H	4	9	66	6	53.500	0.92680	4		7.00	9.99	12.08	12.17	12.49	14.20	15.88	16.31	17.00	17.36	18.91	26.61	37.98	39.41	39.97
Pb	$L\beta_9$	B	1	.01	82	6	13.375	0.92680	4		7.00	9.99	12.08	12.17	12.49	14.20	15.88	16.31	17.00	17.36	18.91	26.61	37.98	39.41	39.97
Hg	$K\beta_1$		6	28	80	6	80.240	0.92692	6		7.00	10.00	12.08	12.17	12.49	14.20	15.89	16.32	17.00	17.37	18.92	26.62	37.99	39.41	39.97
Rb	$K\alpha_{1,2}$		1	150	37	6	13.373	0.92693	5		7.00	10.00	12.08	12.17	12.49	14.20	15.89	16.32	17.00	17.37	18.92	26.62	37.99	39.41	39.97
Pu	$K\beta_2$		9	11	94	3	120.350	0.92700			7.00	10.00	12.08	12.17	12.49	14.20	15.89	16.32	17.00	17.37	18.92	26.62	37.99	39.41	39.97
Am	$K\beta_1$		9	30	95	3	120.350	0.92700			7.00	10.00	12.08	12.17	12.49	14.20	15.89	16.32	17.00	17.37	18.92	26.62	37.99	39.41	39.97
Sm	$K\alpha_1$		3	100	62	6	40.111	0.92712	6		7.00	10.00	12.08	12.18	12.49	14.20	15.89	16.32	17.00	17.37	18.92	26.62	38.00	39.42	39.98
Ir	$L\gamma_4$		1	.1	77	6	13.366	0.92744	5		7.00	10.00	12.09	12.18	12.50	14.21	15.89	16.33	17.01	17.38	18.93	26.63	38.01	39.43	39.99
Pt	$K\alpha_1$		5	100	78	6	66.821	0.92755	6		7.00	10.00	12.09	12.18	12.50	14.21	15.90	16.33	17.01	17.38	18.93	26.64	38.01	39.44	40.00
Au	$K8_2'$		6	10	79	6	80.172	0.92771	6		7.00	10.00	12.09	12.18	12.50	14.21	15.90	16.33	17.01	17.38	18.93	26.64	38.02	39.45	40.01
Pt	$L\gamma_3$		1	2	78	6	13.359	0.92791	5		7.00	10.01	12.09	12.19	12.50	14.21	15.90	16.33	17.02	17.38	18.94	26.65	38.03	39.45	40.02
Bk	$K\alpha_2$		8	50	97	3	106.862	0.92800			7.01	10.01	12.10	12.19	12.51	14.22	15.90	16.34	17.02	17.39	18.94	26.65	38.03	39.46	40.02
Ir	$L\gamma_4p$		1	.1	77	6	13.353	0.92831	5		7.01	10.01	12.10	12.19	12.51	14.22	15.91	16.34	17.03	17.39	18.94	26.66	38.05	39.47	40.03
Au	$K\beta_2''$		6	10	79	6	80.062	0.92898	5		7.01	10.02	12.11	12.20	12.52	14.23	15.92	16.35	17.04	17.40	18.96	26.68	38.07	39.50	40.06
Po	$L\beta_2$		1	20	84	6	13.338	0.92937	5		7.02	10.02	12.11	12.21	12.52	14.24	15.93	16.36	17.05	17.41	18.97	26.69	38.09	39.52	40.08
Rb	$K\alpha_2$		1	50	37	6	13.333	0.92969	5		7.02	10.03	12.12	12.21	12.53	14.24	15.93	16.37	17.05	17.42	18.97	26.70	38.11	39.53	40.10
Th	$K\alpha_1$		7	100	90	6	93.334	0.92969	6		7.02	10.03	12.12	12.21	12.53	14.24	15.93	16.37	17.05	17.42	18.97	26.70	38.11	39.53	40.10
Cf	$K8_2$		10	11	98	3	133.290	0.93000			7.02	10.03	12.12	12.21	12.53	14.25	15.94	16.37	17.06	17.42	18.98	26.71	38.12	39.55	40.11
Bi	L_3-O_3	B	1	.01	83	6	13.326	0.93020	4		7.02	10.03	12.12	12.22	12.54	14.25	15.94	16.37	17.06	17.43	18.98	26.71	38.13	39.56	40.12
Cd	$K\beta_2$		2	5	48	6	26.639	0.93066	6		7.03	10.04	12.13	12.22	12.54	14.26	15.95			17.44	18.99	26.73	38.15	39.58	40.14
Po	$L8_{1,5}$		1	1	84	6	13.312	0.93120	4		7.03	10.04	12.14	12.23	12.55	14.26	15.96	16.39	17.08	17.45	19.00	26.74	38.17	39.60	40.16
Sm	$K\alpha_{1,2}$		3	150	62	6	39.911	0.93178	6		7.03	10.05	12.15	12.24	12.56	14.27	15.97	16.40	17.09	17.46	19.02	26.76	38.19	39.63	40.19
Hg	$K8_3$		6	13	80	6	79.809	0.93193	6		7.03	10.05	12.15	12.24	12.56	14.28	15.97	16.40	17.09	17.46	19.02	26.76	38.20	39.63	40.20
Bi	L_3-O_2	B	1	.01	83	6	13.296	0.93230	4		7.04	10.05	12.15	12.24	12.56	14.28	15.98	16.41	17.10	17.47	19.03	26.77	38.22	39.65	40.21
Br	$K\beta_1$		1	16	35	6	13.289	0.93279	5		7.04	10.06	12.16	12.25	12.57	14.29	15.99	16.42	17.11	17.48	19.04	26.79	38.24	39.67	40.24
Pa	$L\alpha_1$		1	100	91	6	13.288	0.93284	5		7.04	10.06	12.16	12.25	12.57	14.29	15.99	16.42	17.11	17.48	19.04	26.79	38.24	39.67	40.24
Br	$K8_3$		1	8	35	6	13.282	0.93327	5		7.04	10.06	12.16	12.26	12.58	14.30	15.99	16.43	17.12	17.49	19.05	26.80	38.26	39.69	40.26
Pb	$L8_{10}$	B	1	.01	82	6	13.273	0.93390	4		7.05	10.07	12.17	12.27	12.59	14.31	16.01	16.44	17.13	17.50	19.06	26.82	38.28	39.72	40.29
Pt	AL_2		1		78	6	13.270	0.93414	5		7.05	10.07	12.18	12.27	12.59	14.31	16.01	16.44	17.13	17.50	19.06	26.83	38.29	39.73	40.30
Pt	$L\gamma_6$		1	.01	78	6	13.269	0.93420	4		7.05	10.07	12.18	12.27	12.59	14.31	16.01	16.45	17.13	17.50	19.07	26.83	38.30	39.73	40.30
Pt	$L\gamma_2$		1	1	78	6	13.268	0.93427	5		7.05	10.07	12.18	12.27	12.59	14.31	16.01	16.45	17.14	17.50	19.07	26.83	38.30	39.74	40.30
Bi	Lu	B	1	.01	83	6	13.257	0.93505	5		7.06	10.08	12.19	12.28	12.60	14.32	16.03	16.46	17.15	17.52	19.08	26.86	38.33	39.77	40.34
Bi	$L\beta_7$		1	.1	83	6	13.257	0.93505	5		7.06	10.08	12.19	12.28	12.60	14.32	16.03	16.46	17.15	17.52	19.08	26.86	38.33	39.77	40.34
Pt	$K\alpha_{1,2}$		5	150	78	6	66.241	0.93567	6		7.06	10.09	12.20	12.29	12.61	14.33	16.04	16.47	17.16	17.53	19.10	26.87	38.36	39.80	40.36
Am	$K\alpha_1$		8	100	95	3	105.949	0.93600			7.07	10.09	12.20	12.29	12.61	14.34	16.04	16.48	17.17	17.54	19.10	26.88	38.37	39.81	40.38
Lu	$K\alpha_2$		4	50	71	6	52.956	0.93632	6		7.07	10.10	12.20	12.30	12.62	14.34	16.05	16.48	17.17	17.54	19.11	26.89	38.39	39.83	40.39
Ac	$K\beta_2'$	H	8	11	89	6	105.849	0.93688	5		7.07	10.10	12.21	12.30	12.63	14.35	16.06	16.49	17.18	17.55	19.12	26.91	38.41	39.85	40.42
Po	$K\alpha_1$	H	6	100	84	6	79.279	0.93816	5		7.08	10.12	12.23	12.32	12.64	14.37	16.08	16.52	17.21	17.58	19.15	26.95	38.47	39.91	40.48
Bi	$L\beta_3$		1	6	83	6	13.208	0.93855	5		7.08	10.12	12.23	12.33	12.65	14.38	16.09	16.52	17.22	17.59	19.15	26.96	38.48	39.93	40.49
Ac	$K\beta_2''$	H	8	11	89	6	105.660	0.93856	5		7.08	10.12	12.23	12.33	12.65	14.38	16.09	16.52	17.22	17.59	19.16	26.96	38.48	39.93	40.50

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Th	$K\beta_1$		8	30	90	6	105.591	0.93917	6	7.09	10.13	12.24	12.33	12.66	14.39	16.10	16.53	17.23	17.60	19.17	26.98	38.51	39.95	40.52
Po	$K\beta_2'$	H	7	11	84	6	92.383	0.93926	5	7.09	10.13	12.24	12.34	12.66	14.39	16.10	16.53	17.23	17.60	19.17	26.98	38.51	39.96	40.53
Pt	Lv	B	1	.01	78	6	13.197	0.93931	5	7.09	10.13	12.24	12.34	12.66	14.39	16.10	16.54	17.23	17.60	19.17	26.98	38.51	39.96	40.53
Au	L_2-N_3	B	1	.01	79	6	13.184	0.94020	4	7.10	10.14	12.26	12.35	12.67	14.40	16.11	16.55	17.25	17.62	19.19	27.01	38.55	40.00	40.57
At	$K\beta_1$	H	7	29	85	6	92.287	0.94024	5	7.10	10.14	12.26	12.35	12.67	14.40	16.12	16.55	17.25	17.62	19.19	27.01	38.55	40.00	40.57
Ce	$K\beta_5'$	B	3	.2	58	6	39.551	0.94026	5	7.10	10.14	12.26	12.35	12.67	14.40	16.12	16.55	17.25	17.62	19.19	27.01	38.56	40.00	40.57
Pa	$K\alpha_2$	H	7	50	91	6	92.271	0.94040	6	7.10	10.14	12.26	12.35	12.67	14.41	16.12	16.56	17.25	17.62	19.19	27.01	38.56	40.01	40.58
Po	$K\beta_2''$	H	7	11	84	6	92.246	0.94066	5	7.10	10.14	12.26	12.35	12.68	14.41	16.12	16.56	17.25	17.63	19.20	27.02	38.57	40.02	40.59
Sb	$K\alpha_1$		2	100	51	6	26.355	0.94071	6	7.10	10.14	12.26	12.35	12.68	14.41	16.12			17.63	19.20	27.02	38.57	40.02	40.59
Ce	$K\beta_5''$	B	3	.2	58	6	39.532	0.94071	5	7.10	10.14	12.26	12.35	12.68	14.41	16.12	16.56	17.26	17.63	19.20	27.02	38.57	40.02	40.59
Sm	$K\alpha_2$		3	50	62	6	39.516	0.94109	6	7.10	10.15	12.27	12.36	12.68	14.42	16.13	16.57	17.26	17.63	19.21	27.03	38.59	40.04	40.61
Pt	$L\gamma_8$		1	.1	78	6	13.172	0.94110	4	7.10	10.15	12.27	12.36	12.68	14.42	16.13	16.57	17.26	17.63	19.21	27.03	38.59	40.04	40.61
Th	$K\alpha_{1,2}$		7	150	90	6	92.174	0.94139	6	7.11	10.15	12.27	12.36	12.69	14.42	16.13	16.57	17.27	17.64	19.21	27.04	38.60	40.05	40.62
Pt	L_1-N_1	F	1	.01	78	6	13.156	0.94226	5	7.11	10.16	12.28	12.38	12.70	14.43	16.15	16.59	17.28	17.66	19.23	27.07	38.64	40.09	40.66
At	$K\alpha_2$	H	6	50	85	6	78.930	0.94230	5	7.11	10.16	12.28	12.38	12.70	14.44	16.15	16.59	17.28	17.66	19.23	27.07	38.64	40.09	40.66
Sb	$K\alpha_{1,2}$		2	150	51	6	26.271	0.94369	6	7.12	10.18	12.30	12.39	12.72	14.46	16.17			17.68	19.26	27.11	38.70	40.15	40.73
Bi	L_2-M_5	B	1	.01	83	6	13.129	0.94419	5	7.13	10.18	12.31	12.40	12.73	14.46	16.18	16.62	17.32	17.69	19.27	27.12	38.72	40.18	40.75
Ir	$L\gamma_{11}$	B	1	.01	77	6	13.123	0.94460	4	7.13	10.19	12.31	12.41	12.73	14.47	16.19	16.63	17.33	17.70	19.28	27.13	38.74	40.19	40.77
Pa	$L\alpha_2$	H	1	10	91	6	13.120	0.94482	5	7.13	10.19	12.32	12.41	12.73	14.47	16.19	16.63	17.33	17.70	19.28	27.14	38.75	40.20	40.78
Np	$K\beta_2$		9	11	93	3	118.057	0.94500		7.13	10.19	12.32	12.41	12.74	14.48	16.20	16.64	17.33	17.71	19.29	27.15	38.76	40.21	40.79
Ir	L_1-N_4	B	1	.01	77	6	13.105	0.94590	4	7.14	10.20	12.33	12.42	12.75	14.49	16.21	16.65	17.35	17.72	19.31	27.17	38.80	40.25	40.83
Th	$K\beta_3$		8	14	90	6	104.813	0.94614	6	7.14	10.20	12.33	12.43	12.75	14.49	16.22	16.66	17.36	17.73	19.31	27.18	38.81	40.26	40.84
At	$K\beta_3$	H	7	13	85	6	91.707	0.94619	5	7.14	10.20	12.33	12.43	12.75	14.50	16.22	16.66	17.36	17.73	19.31	27.18	38.81	40.27	40.84
Yb	$K\alpha_1$		4	100	70	6	52.380	0.94662	6	7.15	10.21	12.34	12.43	12.76	14.50	16.23	16.67	17.36	17.74	19.32	27.19	38.83	40.28	40.86
Ce	$K\beta_1$		3	22	58	6	39.251	0.94745	6	7.15	10.22	12.35	12.44	12.77	14.51	16.24	16.68	17.38	17.75	19.34	27.22	38.86	40.32	40.90
Po	$L\beta_4$		1	4	84	6	13.083	0.94750	4	7.15	10.22	12.35	12.44	12.77	14.52	16.24	16.68	17.38	17.75	19.34	27.22	38.86	40.32	40.90
Po	$K\alpha_{1,2}$	H	6	150	84	6	78.452	0.94804	5	7.16	10.22	12.36	12.45	12.78	14.52	16.25	16.69	17.39	17.76	19.35	27.24	38.89	40.35	40.92
Ce	$K8_3$		3	10	58	6	39.163	0.94956	6	7.17	10.24	12.38	12.47	12.80	14.55	16.28	16.72	17.42	17.79	19.38	27.28	38.95	40.41	40.99
Am	$K\alpha_{1,2}$		8	150	95	3	104.431	0.94960		7.17	10.24	12.38	12.47	12.80	14.55	16.28	16.72	17.42	17.79	19.38	27.28	38.95	40.42	40.99
Sb	$K\alpha_2$		2	50	51	6	26.106	0.94965	6	7.17	10.24	12.38	12.47	12.80	14.55	16.28			17.79	19.38	27.28	38.96	40.42	41.00
Bk	$K\beta_2$		10	11	97	3	130.484	0.95000		7.17	10.25	12.38	12.48	12.80	14.55	16.28	16.73	17.43	17.80	19.39	27.29	38.97	40.43	41.01
Cd	$K\beta_1$		2	19	48	6	26.091	0.95021	6	7.17	10.25	12.39	12.48	12.81	14.56	16.29			17.81	19.40	27.30	38.98	40.44	41.02
Ta	$K\beta_1$		5	26	73	6	65.212	0.95044	6	7.17	10.25	12.39	12.48	12.81	14.56	16.29	16.73	17.44	17.81	19.40	27.31	38.99	40.45	41.03
Pb	AL_3		1		82	6	13.038	0.95073	5	7.18	10.25	12.39	12.49	12.81	14.57	16.30	16.74	17.44	17.82	19.41	27.31	39.00	40.47	41.04
Pb	L_3-$P_{2,3}$	B	1	.01	82	6	13.032	0.95118	5	7.18	10.26	12.40	12.49	12.82	14.57	16.30	16.75	17.45	17.82	19.42	27.33	39.02	40.49	41.06
Cd	$K\beta_3$		2	8	48	6	26.057	0.95146	6	7.18	10.26	12.40	12.50	12.82	14.58	16.31			17.83	19.42	27.34	39.03	40.50	41.08
Dy	$K\beta_1$		4	23	66	6	52.110	0.95152	5	7.18	10.26	12.40	12.50	12.82	14.58	16.31	16.75	17.46	17.83	19.42	27.34	39.04	40.50	41.08
Pt	$K\alpha_2$		5	50	78	6	65.112	0.95190	6	7.19	10.27	12.41	12.50	12.83	14.58	16.32	16.76	17.46	17.84	19.43	27.35	39.05	40.52	41.10
Bi	$L\beta_1$		1	50	83	6	13.021	0.95198	6	7.19	10.27	12.41	12.50	12.83	14.58	16.32	16.76	17.46	17.84	19.43	27.35	39.06	40.52	41.10
Cm	$K\alpha_2$		8	50	96	3	104.168	0.95200		7.19	10.27	12.41	12.50	12.83	14.58	16.32	16.76	17.46	17.84	19.43	27.35	39.06	40.52	41.10
Pb	$L8_5$		1	1	82	6	13.013	0.95260	4	7.19	10.27	12.42	12.51	12.84	14.59	16.33	16.77	17.48	17.85	19.44	27.37	39.08	40.55	41.13
Yb	$K\alpha_{1,2}$		4	150	70	6	52.030	0.95298	6	7.19	10.28	12.42	12.52	12.84	14.60	16.33	16.78	17.48	17.86	19.45	27.38	39.10	40.57	41.15
Au	$K\beta_1$		6	27	79	6	77.971	0.95389	6	7.20	10.29	12.43	12.53	12.86	14.61	16.35	16.79	17.50	17.88	19.47	27.41	39.14	40.61	41.19
Pu	$K8_1$		9	30	94	3	116.943	0.95400		7.20	10.29	12.44	12.53	12.86	14.62	16.35	16.80	17.50	17.88	19.47	27.41	39.14	40.61	41.19
Hf	$K8_2$	H	5	9	72	6	64.969	0.95400	4	7.20	10.29	12.44	12.53	12.86	14.62	16.35	16.80	17.50	17.88	19.47	27.41	39.14	40.61	41.19
Ta	$K\beta_3$		5	12	73	6	64.938	0.95445	6	7.21	10.29	12.44	12.54	12.86	14.62	16.36	16.80	17.51	17.89	19.48	27.42	39.16	40.63	41.21
Dy	$K8_3$		4	11	66	6	51.949	0.95448	5	7.21	10.29	12.44	12.54	12.86	14.62	16.36	16.80	17.51	17.89	19.48	27.42	39.16	40.63	41.21
Ac	$K\alpha_1$	H	7	100	89	6	90.868	0.95492	6	7.21	10.30	12.45	12.54	12.87	14.63	16.37	16.81	17.52	17.89	19.49	27.44	39.18	40.65	41.23
Bi	$L\beta_2$		1	20	83	6	12.978	0.95518	5	7.21	10.30	12.45	12.55	12.87	14.63	16.37	16.82	17.52	17.90	19.50	27.44	39.19	40.66	41.24
Pt	$K\beta_2'$		6	10	78	6	77.864	0.95520	5	7.21	10.30	12.45	12.55	12.87	14.63	16.37	16.82	17.52	17.90	19.50	27.45	39.19	40.67	41.25
Ir	$K\alpha_1$		5	100	77	6	64.885	0.95523	6	7.21	10.30	12.45	12.55	12.87	14.63	16.37	16.82	17.52	17.90	19.50	27.45	39.19	40.67	41.25
Au	$L\gamma_5$		1	.1	79	6	12.972	0.95559	5	7.21	10.31	12.46	12.55	12.88	14.64	16.38	16.82	17.53	17.91	19.51	27.46	39.21	40.68	41.26
Os	AL_1		1		76	6	12.969	0.95580	4	7.22	10.31	12.46	12.55	12.88	14.64	16.38	16.83	17.53	17.91	19.51	27.46	39.22	40.69	41.27
La	$K-O_{2,3}$		3	.01	57	6	38.903	0.95592	5	7.22	10.31	12.46	12.56	12.88	14.65	16.39	16.83	17.54	17.91	19.51	27.47	39.22	40.70	41.28
Th	$L\alpha_1$		1	100	90	6	12.967	0.95600	5	7.22	10.31	12.46	12.56	12.89	14.65	16.39	16.83	17.54	17.91	19.51	27.47	39.23	40.70	41.28
Os	L_1-$O_{4,5}$	B	1	.01	76	6	12.966	0.95603	5	7.22	10.31	12.46	12.56	12.89	14.65	16.39	16.83	17.54	17.92	19.52	27.47	39.23	40.70	41.28
Pt	$K8_2''$		6	10	78	6	77.772	0.95634	5	7.22	10.31	12.47	12.56	12.89	14.65	16.39	16.84	17.54	17.92	19.52	27.48	39.24	40.72	41.30
Tl	$L\beta_9$	B	1	.01	81	6	12.956	0.95675	5	7.22	10.32	12.47	12.57	12.90	14.66	16.40	16.84	17.55	17.93	19.53	27.49	39.26	40.73	41.32
Bi	$L\beta_{15}$		1	1	83	6	12.953	0.95702	5	7.22	10.32	12.48	12.57	12.90	14.66	16.40	16.85	17.56	17.93	19.54	27.50	39.27	40.75	41.33
Pb	L_3-O_3	B	1	.01	82	6	12.942	0.95780	4	7.23	10.33	12.49	12.58	12.91	14.67	16.42	16.86	17.57	17.95	19.55	27.52	39.30	40.78	41.36
La	$K\beta_4$	B	3	.03	57	6	38.821	0.95793	5	7.23	10.33	12.49	12.58	12.91	14.68	16.42	16.87	17.57	17.95	19.55	27.53	39.31	40.79	41.37
Pt	$L\gamma_1$		1	10	78	6	12.940	0.95797	5	7.23	10.33	12.49	12.58	12.91	14.68	16.42	16.87	17.57	17.95	19.56	27.53	39.31	40.79	41.37
Pb	L_3-O_2	B	1	.01	82	6	12.931	0.95860	4	7.24	10.34	12.50	12.59	12.92	14.69	16.43	16.88	17.59	17.96	19.57	27.54	39.34	40.82	41.40
Tb	$K\beta_2$	H	4	8	65	6	51.715	0.95880	4	7.24	10.34	12.50	12.59	12.92	14.69	16.44	16.88	17.59	17.97	19.57	27.55	39.35	40.83	41.41
Au	$K\beta_3$		6	13	79	6	77.567	0.95886	6	7.24	10.34	12.50	12.59	12.92	14.69	16.44	16.88	17.59	17.97	19.57	27.55	39.35	40.83	41.41

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Gypm (020)	ADP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	AOP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Ir	$L\gamma_3$		1	2	77	6	12.922	0.95931	5		7.24	10.35	12.51	12.60	12.93	14.70	16.44	16.89	17.60	17.98	19.58	27.57	39.37	40.85	41.43
Os	$L\gamma_4$		1	.1	76	6	12.921	0.95938	5		7.24	10.35	12.51	12.60	12.93	14.70	16.45	16.89	17.60	17.98	19.58	27.57	39.37	40.85	41.43
Pu	$K\alpha_1$		8	100	94	3	103.300	0.96000			7.25	10.35	12.51	12.61	12.94	14.71	16.46	16.90	17.61	17.99	19.60	27.59	39.40	40.88	41.46
Os	$L\gamma_4p$		1	.1	76	6	12.908	0.96033	5		7.25	10.36	12.52	12.61	12.94	14.71	16.46	16.91	17.62	18.00	19.60	27.60	39.41	40.89	41.48
La	$K\beta_2$		3	7	57	6	38.723	0.96035	6		7.25	10.36	12.52	12.61	12.94	14.71	16.46	16.91	17.62	18.00	19.60	27.60	39.41	40.89	41.48
Pm	$K\alpha_1$	H	3	100	61	6	38.718	0.96048	6		7.25	10.36	12.52	12.62	12.95	14.72	16.46	16.91	17.62	18.00	19.61	27.60	39.42	40.90	41.48
Pb	Lu		8	1	.01	82	6	12.895	0.96133	5		7.26	10.37	12.53	12.63	12.96	14.73	16.48	16.93	17.64	18.02	19.62	27.62	39.45	40.94	41.52
Pb	$L\beta_7$			1	.1	82	6	12.886	0.96200	4		7.26	10.37	12.54	12.64	12.97	14.74	16.49	16.94	17.65	18.03	19.64	27.64	39.48	40.97	41.55
Os	L_1-O_1	F	1	.01	76	6	12.882	0.96227	5		7.26	10.38	12.54	12.64	12.97	14.74	16.50	16.94	17.65	18.03	19.64	27.65	39.50	40.98	41.56
Ra	$K\beta_2'$	H	8	11	88	6	103.051	0.96232	5		7.26	10.38	12.54	12.64	12.97	14.74	16.50	16.94	17.65	18.03	19.64	27.65	39.50	40.98	41.57
Ir	$K\alpha_{1,2}$		5	150	77	6	64.339	0.96333	6		7.27	10.39	12.56	12.65	12.98	14.76	16.51	16.96	17.67	18.05	19.67	27.68	39.54	41.03	41.61
U	Ls	B	1	.01	92	6	12.864	0.96360	4		7.27	10.39	12.56	12.66	12.99	14.76	16.52	16.97	17.68	18.06	19.67	27.69	39.55	41.04	41.62
Tl	$L\beta_{10}$		8	1	.01	81	6	12.860	0.96389	5		7.28	10.40	12.57	12.66	12.99	14.77	16.52	16.97	17.68	18.06	19.68	27.70	39.56	41.05	41.64
Ra	$K\beta_2''$	H	8	11	88	6	102.871	0.96400	5		7.28	10.40	12.57	12.66	12.99	14.77	16.53	16.97	17.69	18.07	19.68	27.70	39.57	41.06	41.64
Ac	$K\beta_1$	H	8	30	89	6	102.829	0.96440	5		7.28	10.40	12.57	12.67	13.00	14.78	16.53	16.98	17.69	18.07	19.69	27.71	39.59	41.07	41.66
Si	$K\alpha_1$		6	100	83	6	77.095	0.96473	6		7.28	10.40	12.58	12.67	13.00	14.78	16.54	16.99	17.70	18.08	19.69	27.72	39.60	41.09	41.68
Th	$K\alpha_2$		7	50	90	6	89.938	0.96480	6		7.28	10.41	12.58	12.67	13.00	14.78	16.54	16.99	17.70	18.08	19.70	27.73	39.60	41.09	41.68
Pm	$K\alpha_{1,2}$	H	3	150	61	6	38.532	0.96512	6		7.29	10.41	12.58	12.68	13.01	14.79	16.54	16.99	17.71	18.09	19.70	27.74	39.62	41.11	41.69
Ir	$L\gamma_2$		1	1	77	6	12.840	0.96545	5		7.29	10.41	12.59	12.68	13.01	14.79	16.55	17.00	17.71	18.09	19.71	27.75	39.63	41.12	41.71
Yb	$K\alpha_2$		4	50	70	6	51.345	0.96570	6		7.29	10.41	12.59	12.68	13.02	14.80	16.55	17.00	17.72	18.10	19.71	27.75	39.64	41.13	41.72
Bi	$K\beta_2'$		7	11	83	6	89.846	0.96579	5		7.29	10.42	12.59	12.69	13.02	14.80	16.56	17.01	17.72	18.10	19.72	27.76	39.65	41.14	41.72
Po	$K\beta_1$	H	7	89	84	6	89.781	0.96649	5		7.30	10.42	12.60	12.69	13.03	14.81	16.57	17.02	17.73	18.11	19.73	27.78	39.68	41.17	41.76
Ac	$K\alpha_{1,2}$	H	7	150	89	6	89.773	0.96657	5		7.30	10.42	12.60	12.70	13.03	14.81	16.57	17.02	17.73	18.11	19.73	27.78	39.68	41.17	41.76
Ir	$L\gamma_6$		1	.01	77	6	12.818	0.96708	5		7.30	10.43	12.61	12.70	13.04	14.82	16.58	17.03	17.74	18.12	19.74	27.79	39.70	41.19	41.78
Ir	AL_2		1		77	6	12.818	0.96710	4		7.30	10.43	12.61	12.70	13.04	14.82	16.58	17.03	17.74	18.12	19.74	27.79	39.70	41.20	41.78
Si	$K\beta_2''$		7	11	83	6	89.716	0.96719	5		7.30	10.43	12.61	12.70	13.04	14.82	16.58	17.03	17.74	18.13	19.75	27.80	39.71	41.20	41.79
Po	$L\beta_6$		1	.1	84	6	12.816	0.96720	4		7.30	10.43	12.61	12.70	13.04	14.82	16.58	17.03	17.74	18.13	19.75	27.80	39.71	41.20	41.79
Po	$K\alpha_2$	H	6	50	84	6	76.851	0.96780	5		7.31	10.44	12.62	12.71	13.04	14.83	16.59	17.04	17.76	18.14	19.76	27.81	39.73	41.23	41.81
Th	$L\alpha_2$		1	10	90	6	12.807	0.96788	5		7.31	10.44	12.62	12.71	13.05	14.83	16.59	17.04	17.76	18.14	19.76	27.82	39.73	41.23	41.82
Pb	$L\beta_3$		1	6	82	6	12.791	0.96911	5		7.32	10.45	12.63	12.73	13.06	14.85	16.61	17.06	17.78	18.16	19.78	27.85	39.79	41.28	41.87
Cf	$K\beta_1$		10	30	98	3	127.794	0.97000			7.32	10.46	12.65	12.74	13.07	14.86	16.63	17.08	17.80	18.18	19.80	27.88	39.83	41.32	41.91
Ir	L_2-O_3	F	1	.01	77	6	12.771	0.97061	5		7.33	10.47	12.65	12.75	13.08	14.87	16.64	17.09	17.81	18.19	19.82	27.90	39.85	41.35	41.94
Ac	$K\beta_3$	H	8	14	89	6	102.084	0.97144	5		7.33	10.48	12.66	12.76	13.09	14.88	16.65	17.11	17.82	18.21	19.83	27.92	39.89	41.39	41.98
Ir	Lv	B	1	.01	77	6	12.758	0.97161	5		7.33	10.48	12.67	12.76	13.10	14.89	16.66	17.11	17.83	18.21	19.84	27.93	39.89	41.40	41.99
Ag	$K\beta_4$		8	2	.01	47	6	25.507	0.97196	5		7.34	10.48	12.67	12.77	13.10	14.89	16.66			18.22	19.84	27.94	39.91	41.41	42.00
Cf	$K\alpha_1$		9	100	98	3	114.778	0.97200			7.34	10.48	12.67	12.77	13.10	14.89	16.66	17.12	17.83	18.22	19.84	27.94	39.91	41.41	42.00
Pt	L_2-N_3	F	1	.01	78	6	12.751	0.97213	5		7.34	10.48	12.67	12.77	13.10	14.89	16.67	17.12	17.84	18.22	19.85	27.94	39.92	41.42	42.01
Po	$K\beta_3$	H	7	13	84	6	89.231	0.97244	5		7.34	10.49	12.68	12.77	13.11	14.90	16.67	17.12	17.84	18.23	19.85	27.95	39.93	41.43	42.02
Si	L_3-N_3		8	1	.01	83	6	12.737	0.97321	5		7.35	10.50	12.69	12.78	13.12	14.91	16.68	17.14	17.86	18.24	19.87	27.97	39.96	41.47	42.06
Pu	$K\alpha_{1,2}$		8	150	94	3	101.857	0.97360			7.35	10.50	12.69	12.79	13.12	14.92	16.69	17.14	17.86	18.25	19.88	27.98	39.98	41.48	42.08
U	$K\beta_2'$		9	11	92	6	114.587	0.97362	5		7.35	10.50	12.69	12.79	13.12	14.92	16.69	17.14	17.86	18.25	19.88	27.99	39.98	41.49	42.08
Ir	L_1-N_1	F	1	.01	77	6	12.726	0.97405	5		7.35	10.51	12.70	12.79	13.13	14.92	16.70	17.15	17.87	18.26	19.89	28.00	40.00	41.50	42.10
Ag	$K\beta_2$		2	5	47	6	25.452	0.97406	6		7.35	10.51	12.70	12.79	13.13	14.92	16.70			18.26	19.89	28.00	40.00	41.51	42.10
Ir	$L\gamma_8$		1	.1	77	6	12.726	0.97409	5		7.35	10.51	12.70	12.80	13.13	14.93	16.70	17.15	17.87	18.26	19.89	28.00	40.00	41.51	42.10
Pm	$K\alpha_2$	H	3	50	61	6	38.165	0.97441	6		7.36	10.51	12.70	12.80	13.13	14.93	16.70	17.16	17.88	18.26	19.89	28.01	40.01	41.52	42.11
Si	$K\alpha_{1,2}$		6	150	83	6	76.315	0.97459	6		7.36	10.51	12.71	12.80	13.14	14.93	16.71	17.16	17.88	18.27	19.90	28.01	40.02	41.53	42.12
Pb	L_2-M_5		8	1	.01	82	6	12.718	0.97470	4		7.36	10.51	12.71	12.80	13.14	14.93	16.71	17.16	17.88	18.27	19.90	28.02	40.03	41.53	42.13
U	$K\beta_2''$	D	9	11	92	6	114.314	0.97594	6		7.37	10.53	12.72	12.82	13.16	14.95	16.73	17.19	17.91	18.29	19.93	28.05	40.08	41.59	42.18
Am	$K\alpha_2$		8	50	95	3	101.607	0.97600			7.37	10.53	12.72	12.82	13.16	14.95	16.73	17.19	17.91	18.29	19.93	28.06	40.08	41.59	42.19
La	$K\beta_5'$		8	3	.2	57	6	38.088	0.97638	5		7.37	10.53	12.73	12.83	13.16	14.96	16.74	17.19	17.91	18.30	19.93	28.07	40.10	41.61	42.20
Os	$L\gamma_{11}$		8	1	.01	76	6	12.694	0.97650	4		7.37	10.53	12.73	12.83	13.16	14.96	16.74	17.20	17.92	18.30	19.94	28.07	40.10	41.61	42.21
La	$K\beta_5''$		8	3	.1	57	6	38.068	0.97689	5		7.37	10.54	12.74	12.83	13.17	14.97	16.75	17.20	17.92	18.31	19.95	28.08	40.12	41.63	42.23
Si	$L8_4$			1	4	83	6	12.689	0.97690	5		7.37	10.54	12.74	12.83	13.17	14.97	16.75	17.20	17.92	18.31	19.95	28.08	40.12	41.63	42.23
Os	L_1-N_4	B	1	.01	76	6	12.685	0.97720	4		7.38	10.54	12.74	12.84	13.17	14.97	16.75	17.21	17.93	18.32	19.95	28.09	40.13	41.65	42.24
Tm	$K\alpha_1$		4	100	69	6	50.733	0.97735	6		7.38	10.54	12.74	12.84	13.17	14.98	16.76	17.21	17.93	18.32	19.95	28.09	40.14	41.65	42.25
Pt	L_2-N_2		8	1	.01	78	6	12.659	0.97920	4		7.39	10.56	12.77	12.86	13.20	15.00	16.79	17.24	17.97	18.35	19.99	28.15	40.22	41.73	42.33
Tl	L_3-$P_{2,3}$		8	1	.01	81	6	12.659	0.97926	5		7.39	10.56	12.77	12.86	13.20	15.00	16.79	17.24	17.97	18.35	19.99	28.15	40.22	41.74	42.33
Tl	AL_3			1		81	6	12.658	0.97930	4		7.39	10.56	12.77	12.86	13.20	15.01	16.79	17.24	17.97	18.36	19.99	28.15	40.22	41.74	42.34
Ir	$K\alpha_2$		5	50	77	6	63.276	0.97952	6		7.39	10.56	12.77	12.87	13.20	15.01	16.79	17.25	17.97	18.36	20.00	28.16	40.23	41.75	42.35
Se	AK		1		34	6	12.652	0.97974	5		7.40	10.57	12.77	12.87	13.21	15.01	16.80	17.25	17.98	18.36	20.00	28.16	40.24	41.76	42.36
Se	$K\beta_2$		1	1	34	6	12.650	0.97992	5		7.40	10.57	12.78	12.87	13.21	15.02	16.80	17.26	17.98	18.37	20.01	28.17	40.25	41.77	42.36
Ac	$L\alpha_1$	H	1	100	89	6	12.650	0.97993	5		7.40	10.57	12.78	12.87	13.21	15.02	16.80	17.26	17.98	18.37	20.01	28.17	40.25	41.77	42.36
8k	$K8_1$		10	30	97	3	126.490	0.98000			7.40	10.57	12.78	12.87	13.21	15.02	16.80	17.26	17.98	18.37	20.01	28.17	40.25	41.77	42.37
Cm	$K\beta_2$		10	11	96	3	126.490	0.98000			7.40	10.57	12.78	12.87	13.21	15.02	16.80	17.26	17.98	18.37	20.01	28.17	40.25	41.77	42.37
Kr	$K\alpha_1$		1	100	36	6	12.648	0.98010	4		7.40	10.57	12.78	12.87	13.21	15.02	16.80	17.26	17.98	18.37	20.01	28.18	40.26	41.77	42.37

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	AOP (101)	EODT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hf	$K\beta_1$	H	5	66	72	6	63.222	0.98035	5		7.40	10.57	12.78	12.88	13.21	15.02	16.81	17.26	17.99	18.38	20.02	28.18	40.27	41.79	42.38
Tl	$L\beta_5$		1	1	81	6	12.641	0.98058	5		7.40	10.58	12.78	12.88	13.22	15.03	16.81	17.27	17.99	18.38	20.02	28.19	40.28	41.80	42.39
Ra	$K\alpha_1$	H	7	100	88	6	88.454	0.98098	5		7.41	10.58	12.79	12.89	13.22	15.03	16.82	17.27	18.00	18.39	20.03	28.20	40.30	41.81	42.41
Np	$K\beta_1$		9	30	93	3	113.725	0.98100			7.41	10.58	12.79	12.89	13.22	15.03	16.82	17.28	18.00	18.39	20.03	28.20	40.30	41.81	42.41
Sn	$K\alpha_1$		2	100	50	6	25.267	0.98120	6		7.41	10.58	12.79	12.89	13.23	15.03	16.82			18.39	20.03	28.21	40.31	41.82	42.42
Kr	$K\alpha_{1,2}$		1	150	36	6	12.631	0.98143	4		7.41	10.58	12.79	12.89	13.23	15.04	16.83	17.28	18.01	18.40	20.04	28.21	40.32	41.83	42.43
Pt	$K\beta_1$		6	27	78	6	75.735	0.98205	6		7.41	10.59	12.80	12.90	13.24	15.05	16.84	17.29	18.02	18.41	20.05	28.23	40.34	41.86	42.46
Pb	$L\beta_2$		1	20	82	6	12.621	0.98221	5		7.41	10.59	12.81	12.90	13.24	15.05	16.84	17.30	18.02	18.41	20.05	28.24	40.35	41.87	42.47
Si	L_3-N_2	S	1	.01	83	6	12.613	0.98280	5		7.42	10.60	12.81	12.91	13.25	15.06	16.85	17.31	18.03	18.42	20.07	28.25	40.37	41.89	42.49
Pb	$L\beta_1$		1	50	82	6	12.612	0.98291	5		7.42	10.60	12.81	12.91	13.25	15.06	16.85	17.31	18.04	18.42	20.07	28.26	40.38	41.90	42.50
Tm	$K\alpha_{1,2}$		4	150	69	6	50.406	0.98370	6		7.43	10.61	12.82	12.92	13.26	15.07	16.87	17.32	18.05	18.44	20.09	28.28	40.41	41.93	42.53
Ir	$K\beta_2'$		6	10	77	6	75.606	0.98374	6		7.43	10.61	12.83	12.92	13.26	15.07	16.87	17.32	18.05	18.44	20.09	28.28	40.41	41.94	42.54
Pb	$L\beta_{15}$		1	1	82	6	12.599	0.98389	5		7.43	10.61	12.83	12.92	13.26	15.08	16.87	17.33	18.05	18.44	20.09	28.29	40.42	41.94	42.54
La	$K\beta_1$		3	21	57	6	37.795	0.98395	6		7.43	10.61	12.83	12.93	13.26	15.08	16.87	17.33	18.05	18.44	20.09	28.29	40.42	41.95	42.55
Os	$K\alpha_1$		5	100	76	6	62.990	0.98397	6		7.43	10.61	12.83	12.93	13.26	15.08	16.87	17.33	18.06	18.44	20.09	28.29	40.42	41.95	42.55
Np	$K\alpha_1$		8	100	93	3	100.781	0.98400			7.43	10.61	12.83	12.93	13.26	15.08	16.87	17.33	18.06	18.44	20.09	28.29	40.43	41.95	42.55
Kr	$K\alpha_2$		1	50	36	6	12.596	0.98410	4		7.43	10.61	12.83	12.93	13.27	15.08	16.87	17.33	18.06	18.45	20.09	28.29	40.43	41.95	42.55
Sn	$K\alpha_{1,2}$		2	150	50	6	25.191	0.98417	6		7.43	10.61	12.83	12.93	13.27	15.08	16.87			18.45	20.10	28.29	40.43	41.96	42.56
Hf	$K\beta_3$	H	5	12	72	6	62.969	0.98430	5		7.43	10.62	12.83	12.93	13.27	15.08	16.88	17.33	18.06	18.45	20.10	28.30	40.44	41.96	42.56
Se	$K\beta_5$		1	.05	34	6	12.594	0.98430	4		7.43	10.62	12.83	12.93	13.27	15.08	16.88	17.33	18.06	18.45	20.10	28.30	40.44	41.96	42.56
Tb	$K\beta_1$		4	23	65	6	50.374	0.98432	5		7.43	10.62	12.83	12.93	13.27	15.08	16.88	17.33	18.06	18.45	20.10	28.30	40.44	41.96	42.56
Lu	$K\beta_2$	H	5	9	71	6	62.956	0.98450	4		7.43	10.62	12.84	12.93	13.27	15.09	16.88	17.34	18.07	18.45	20.10	28.30	40.45	41.97	42.57
Ir	$K\beta_2''$		6	10	77	6	75.516	0.98490	5		7.44	10.62	12.84	12.94	13.28	15.09	16.89	17.34	18.07	18.46	20.11	28.32	40.46	41.99	42.59
Tl	L_3-O_3	B	1	.01	81	6	12.580	0.98538	5		7.44	10.63	12.85	12.94	13.28	15.10	16.89	17.35	18.08	18.47	20.12	28.33	40.48	42.01	42.61
La	$K\beta_3$		3	9	57	6	37.714	0.98606	6		7.44	10.63	12.86	12.95	13.29	15.11	16.91	17.36	18.09	18.48	20.13	28.35	40.51	42.04	42.64
Ag	$K\beta_5$	B	2	.1	47	6	25.141	0.98612	5		7.44	10.64	12.86	12.95	13.29	15.11	16.91			18.48	20.14	28.35	40.52	42.04	42.64
Pt	$K\beta_3$		6	12	78	6	75.355	0.98701	6		7.45	10.65	12.87	12.97	13.30	15.12	16.92	17.38	18.11	18.50	20.15	28.38	40.55	42.08	42.68
Hg	$L\beta_9$	S	1	.01	80	6	12.558	0.98710	4		7.45	10.65	12.87	12.97	13.31	15.13	16.92	17.38	18.11	18.50	20.16	28.38	40.56	42.09	42.69
Cf	$K\alpha_{1,2}$		9	150	98	3	112.999	0.98730			7.45	10.65	12.87	12.97	13.31	15.13	16.93	17.39	18.12	18.51	20.16	28.39	40.57	42.10	42.70
Tb	$K\beta_3$		4	11	65	6	50.221	0.98732	5		7.45	10.65	12.87	12.97	13.31	15.13	16.93	17.39	18.12	18.51	20.16	28.39	40.57	42.10	42.70
Tl	L_3-O_2	B	1	.01	81	6	12.554	0.98738	5		7.45	10.65	12.87	12.97	13.31	15.13	16.93	17.39	18.12	18.51	20.16	28.39	40.57	42.10	42.70
Pt	$L\gamma_5$		1	.1	78	6	12.550	0.98770	4		7.45	10.65	12.88	12.97	13.31	15.13	16.93	17.39	18.12	18.51	20.17	28.40	40.58	42.11	42.72
Fr	$K\beta_2'$	H	8	11	87	6	100.307	0.98864	5		7.46	10.66	12.89	12.99	13.33	15.15	16.95	17.41	18.14	18.53	20.19	28.43	40.62	42.16	42.76
Tl	Lu	B	1	.01	81	6	12.536	0.98880	4		7.46	10.66	12.89	12.99	13.33	15.15	16.95	17.41	18.14	18.53	20.19	28.43	40.63	42.16	42.77
Si	$L\beta_{17}$	S	1	.01	83	6	12.532	0.98913	5		7.47	10.67	12.90	12.99	13.33	15.16	16.96	17.42	18.15	18.54	20.20	28.44	40.65	42.18	42.78
Re	AL_1		1		75	6	12.529	0.98940	4		7.47	10.67	12.90	13.00	13.34	15.16	16.96	17.42	18.16	18.55	20.20	28.45	40.66	42.19	42.79
Ac	$K\alpha_2$	H	7	50	89	6	87.660	0.98987	5		7.47	10.68	12.91	13.00	13.34	15.17	16.97	17.43	18.16	18.56	20.21	28.46	40.68	42.21	42.81
Re	L_1-$O_{4,5}$	S	1	.01	75	6	12.521	0.99000	4		7.47	10.68	12.91	13.00	13.35	15.17	16.97	17.43	18.17	18.56	20.22	28.47	40.68	42.22	42.82
Sn	$K\alpha_2$		2	50	50	6	25.040	0.99011	6		7.47	10.68	12.91	13.01	13.35	15.17	16.98			18.56	20.22	28.47	40.69	42.22	42.83
Tl	$L\beta_7$		1	.1	81	6	12.519	0.99017	5		7.48	10.68	12.91	13.01	13.35	15.17	16.98	17.44	18.17	18.56	20.22	28.47	40.69	42.22	42.83
Fr	$K\beta_2''$	H	8	11	87	6	100.137	0.99032	5		7.48	10.68	12.91	13.01	13.35	15.18	16.98	17.44	18.17	18.56	20.22	28.48	40.70	42.23	42.84
Ra	$K\beta_1$	H	8	30	88	6	100.113	0.99056	5		7.48	10.68	12.91	13.01	13.35	15.18	16.98	17.44	18.18	18.57	20.23	28.48	40.71	42.24	42.85
Ir	$L\gamma_1$		1	10	77	6	12.510	0.99085	5		7.48	10.69	12.92	13.02	13.36	15.18	16.99	17.45	18.18	18.57	20.23	28.49	40.72	42.25	42.86
Ac	$L\alpha_2$	H	1	10	89	6	12.499	0.99178	5		7.49	10.70	12.93	13.03	13.37	15.20	17.00	17.47	18.20	18.59	20.25	28.52	40.76	42.30	42.90
Os	$L\gamma_3$		1	2	76	6	12.498	0.99186	5		7.49	10.70	12.93	13.03	13.37	15.20	17.01	17.47	18.20	18.59	20.25	28.52	40.76	42.30	42.91
Os	$K\alpha_{1,2}$		5	150	76	6	62.477	0.99204	6		7.49	10.70	12.93	13.03	13.37	15.20	17.01	17.47	18.20	18.60	20.26	28.53	40.77	42.31	42.91
Se	$K\beta_1$		1	16	34	6	12.494	0.99218	5		7.49	10.70	12.94	13.03	13.37	15.20	17.01	17.47	18.21	18.60	20.26	28.53	40.78	42.31	42.92
Pb	$K\alpha_1$		6	100	82	6	74.956	0.99226	6		7.49	10.70	12.94	13.03	13.38	15.21	17.01	17.47	18.21	18.60	20.26	28.53	40.78	42.32	42.92
Re	$L\gamma_4$		1	.1	75	6	12.490	0.99249	5		7.49	10.70	12.94	13.04	13.38	15.21	17.02	17.48	18.21	18.60	20.27	28.54	40.79	42.33	42.93
Ba	$K\alpha_{1,2}$	H	7	150	88	6	87.419	0.99260	5		7.49	10.71	12.94	13.04	13.38	15.21	17.02	17.48	18.21	18.61	20.27	28.54	40.79	42.33	42.94
Gd	$K\beta_2$		4	8	64	6	49.952	0.99264	5		7.49	10.71	12.94	13.04	13.38	15.21	17.02	17.48	18.22	18.61	20.27	28.54	40.80	42.33	42.94
Se	$K\beta_3$		1	8	34	6	12.487	0.99268	5		7.49	10.71	12.94	13.04	13.38	15.21	17.02	17.48	18.22	18.61	20.27	28.54	40.80	42.34	42.94
Si	$L\beta_6$		1	.1	83	6	12.479	0.99331	5		7.50	10.71	12.95	13.05	13.39	15.22	17.03	17.49	18.23	18.62	20.28	28.56	40.82	42.36	42.97
Re	$L\gamma_4p$		1	.1	75	6	12.479	0.99334	5		7.50	10.71	12.95	13.05	13.39	15.22	17.03	17.49	18.23	18.62	20.28	28.56	40.83	42.37	42.97
Pb	$K\beta_2'$		7	11	82	6	87.351	0.99337	5		7.50	10.71	12.95	13.05	13.39	15.22	17.03	17.49	18.23	18.62	20.29	28.56	40.83	42.37	42.97
Si	$K\beta_1$		7	89	83	6	87.328	0.99364	6		7.50	10.72	12.95	13.05	13.39	15.23	17.04	17.50	18.23	18.63	20.29	28.57	40.84	42.38	42.99
Sa	K-$O_{2,3}$		3	.01	55	6	37.420	0.99381	5		7.50	10.72	12.96	13.06	13.40	15.23	17.04	17.50	18.24	18.63	20.29	28.58	40.85	42.39	42.99
Ag	$K\beta_1$		2	18	47	6	24.938	0.99414	6		7.51	10.72	12.96	13.06	13.40	15.23	17.05			18.64	20.30	28.59	40.86	42.40	43.01
Si	$K\alpha_2$		6	50	83	6	74.802	0.99430	6		7.51	10.72	12.96	13.06	13.40	15.24	17.05	17.51	18.25	18.64	20.30	28.59	40.87	42.41	43.02
Pb	$K\beta_2''$		7	11	82	6	87.222	0.99484	5		7.51	10.73	12.97	13.07	13.41	15.24	17.06	17.52	18.26	18.65	20.32	28.61	40.89	42.43	43.04
Ag	$K\beta_3$		2	8	47	6	24.907	0.99537	6		7.51	10.74	12.98	13.08	13.42	15.25	17.07			18.66	20.33	28.62	40.91	42.46	43.06
Nd	$K\alpha_1$		3	100	60	6	37.355	0.99554	6		7.52	10.74	12.98	13.08	13.42	15.26	17.07	17.53	18.27	18.66	20.33	28.63	40.92	42.46	43.07
Hg	$L\beta_{10}$	S	1	.01	80	6	12.443	0.99620	4		7.52	10.74	12.99	13.09	13.43	15.27	17.08	17.54	18.28	18.67	20.34	28.65	40.95	42.49	43.10
Tm	$K\alpha_2$		4	50	69	6	49.764	0.99638	6		7.52	10.75	12.99	13.09	13.43	15.27	17.08	17.55	18.28	18.68	20.35	28.65	40.96	42.50	43.11
Re	L_1-O_1	B	1	.01	75	6	12.440	0.99650	4		7.52	10.75	12.99	13.09	13.43	15.27	17.09	17.55	18.29	18.68	20.35	28.66	40.96	42.51	43.12

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
8a	$K\beta_4$	B	3	.02	56	6	37.305	0.99687	5		7.53	10.75	13.00	13.10	13.44	15.28	17.09	17.56	18.29	18.69	20.36	28.67	40.98	42.52	43.13
Ra	$K\beta_3$	H	8	14	88	6	99.415	0.99752	5		7.53	10.76	13.01	13.10	13.45	15.29	17.10	17.57	18.31	18.70	20.37	28.69	41.01	42.55	43.16
Np	$K\alpha_{1,2}$		8	150	93	3	99.407	0.99760			7.53	10.76	13.01	13.11	13.45	15.29	17.11	17.57	18.31	18.70	20.37	28.69	41.01	42.56	43.17
Os	$L\gamma_2$		1	1	76	6	12.420	0.99805	5		7.53	10.76	13.01	13.11	13.45	15.29	17.11	17.58	18.32	18.71	20.38	28.70	41.03	42.58	43.19
Ba	$K\beta_2$		3	7	56	6	37.251	0.99831	5		7.54	10.77	13.02	13.11	13.46	15.30	17.12	17.58	18.32	18.71	20.39	28.71	41.04	42.59	43.20
8k	$K\alpha_1$		9	100	97	3	111.676	0.99900			7.54	10.77	13.02	13.12	13.47	15.31	17.13	17.59	18.33	18.73	20.40	28.73	41.07	42.62	43.23
8i	$K\beta_3$		7	13	83	6	86.819	0.99945	6		7.55	10.78	13.03	13.13	13.47	15.32	17.14	17.60	18.34	18.74	20.41	28.74	41.09	42.64	43.25
Pa	$K\beta_2'$	H	9	11	91	6	111.605	0.99963	5		7.55	10.78	13.03	13.13	13.48	15.32	17.14	17.61	18.35	18.74	20.41	28.75	41.10	42.65	43.26
Am	$K\beta_2$		10	11	95	3	123.960	1.00000			7.55	10.79	13.04	13.14	13.48	15.32	17.15	17.61	18.35	18.75	20.42	28.76	41.11	42.66	43.27
Pu	$K\alpha_2$		8	50	94	3	99.168	1.00000			7.55	10.79	13.04	13.14	13.48	15.32	17.15	17.61	18.35	18.75	20.42	28.76	41.11	42.66	43.27
Nd	$K\alpha_{1,2}$		3	150	60	6	37.182	1.00016	6		7.55	10.79	13.04	13.14	13.48	15.33	17.15	17.62	18.35	18.75	20.43	28.76	41.12	42.67	43.28
Pb	L_3-N_3	B	1	.01	82	6	12.390	1.00050	4		7.55	10.79	13.04	13.14	13.49	15.33	17.16	17.62	18.36	18.76	20.43	28.77	41.13	42.69	43.30
8i	L_1-M_1	B	1	.01	83	6	12.390	1.00050	4		7.55	10.79	13.04	13.14	13.49	15.33	17.16	17.62	18.36	18.76	20.43	28.77	41.13	42.69	43.30
Tl	$L\beta_3$		1	6	81	6	12.388	1.00062	5		7.55	10.79	13.05	13.15	13.49	15.33	17.16	17.62	18.36	18.76	20.43	28.78	41.14	42.69	43.30
Os	$L\gamma_6$		1	.01	76	6	12.383	1.00107	5		7.56	10.80	13.05	13.15	13.50	15.34	17.17	17.63	18.37	18.77	20.44	28.79	41.16	42.71	43.32
Am	Ll		1	3	95	6	12.381	1.00120	4		7.55	10.80	13.05	13.15	13.50	15.34	17.17	17.63	18.37	18.77	20.45	28.79	41.16	42.72	43.33
Os	AL_2		1		76	6	12.379	1.00140	4		7.56	10.80	13.06	13.16	13.50	15.35	17.17	17.64	18.38	18.77	20.45	28.80	41.17	42.73	43.34
Pa	$K\beta_2''$	H	9	11	91	6	111.385	1.00161	5		7.56	10.80	13.06	13.16	13.50	15.35	17.17	17.64	18.38	18.78	20.46	28.81	41.18	42.74	43.35
Pb	$K\alpha_{1,2}$		6	150	82	6	74.221	1.00209	6		7.57	10.81	13.07	13.16	13.51	15.36	17.18	17.65	18.39	18.79	20.47	28.82	41.20	42.76	43.37
U	$K8_1$		9	31	92	6	111.281	1.00255	6		7.57	10.81	13.07	13.17	13.52	15.36	17.19	17.66	18.40	18.79	20.47	28.83	41.22	42.78	43.39
Os	L_2-O_3	B	1	.01	76	6	12.338	1.00470	4		7.58	10.84	13.10	13.20	13.54	15.40	17.23	17.70	18.44	18.84	20.52	28.90	41.31	42.87	43.49
Ra	$L\alpha_1$		1	100	88	6	12.338	1.00473	5		7.59	10.84	13.10	13.20	13.54	15.40	17.23	17.70	18.44	18.84	20.52	28.90	41.32	42.88	43.49
Os	Lv	B	1	.01	76	6	12.334	1.00500	4		7.59	10.84	13.10	13.20	13.55	15.40	17.23	17.70	18.44	18.84	20.53	28.91	41.33	42.89	43.50
Ir	L_2-N_3	B	1	.01	77	6	12.329	1.00540	4		7.59	10.84	13.11	13.21	13.55	15.41	17.24	17.71	18.45	18.85	20.53	28.92	41.34	42.91	43.52
Tl	L_2-M_5	B	1	.01	81	6	12.307	1.00722	5		7.60	10.86	13.13	13.23	13.58	15.44	17.27	17.74	18.49	18.88	20.57	28.97	41.42	42.99	43.60
Pb	$L8_4$		1	4	82	6	12.304	1.00750	4		7.61	10.87	13.14	13.24	13.58	15.44	17.28	17.75	18.49	18.89	20.58	28.98	41.43	43.00	43.62
U	$K\alpha_1$		8	100	92	6	98.422	1.00758	6		7.61	10.87	13.14	13.24	13.58	15.44	17.28	17.75	18.49	18.89	20.58	28.98	41.44	43.00	43.62
Os	$L\gamma_8$		1	.1	76	6	12.299	1.00788	5		7.61	10.87	13.14	13.24	13.59	15.45	17.28	17.75	18.50	18.90	20.58	28.99	41.45	43.02	43.63
Fr	$K\alpha_1$	H	7	100	87	6	86.089	1.00793	5		7.61	10.87	13.14	13.24	13.59	15.45	17.28	17.75	18.50	18.90	20.59	28.99	41.45	43.02	43.64
Os	$K\alpha_2$		5	50	76	6	61.476	1.00819	6		7.61	10.87	13.15	13.25	13.59	15.45	17.29	17.76	18.50	18.90	20.59	29.00	41.46	43.03	43.65
Hg	AL_3		1		80	6	12.284	1.00910	4		7.62	10.88	13.16	13.26	13.60	15.46	17.30	17.77	18.52	18.92	20.61	29.03	41.50	43.07	43.69
Nd	$K\alpha_2$		3	50	60	6	36.841	1.00942	6		7.62	10.89	13.16	13.26	13.61	15.47	17.31	17.78	18.53	18.92	20.62	29.04	41.52	43.09	43.70
Er	$K\alpha_1$		4	100	68	6	49.119	1.00946	6		7.62	10.89	13.16	13.26	13.61	15.47	17.31	17.78	18.53	18.93	20.62	29.04	41.52	43.09	43.71
Hg	$L\beta_5$		1	1	80	6	12.275	1.00987	5		7.62	10.89	13.17	13.27	13.61	15.48	17.32	17.79	18.53	18.93	20.63	29.05	41.54	43.11	43.72
Cm	$K8_1$		10	30	96	3	122.733	1.01000			7.62	10.89	13.17	13.27	13.62	15.48	17.32	17.79	18.54	18.94	20.63	29.05	41.54	43.11	43.73
Tl	$L8_2$		1	20	81	6	12.270	1.01031	5		7.63	10.90	13.17	13.27	13.62	15.48	17.32	17.80	18.54	18.94	20.63	29.06	41.56	43.13	43.74
Pb	L_3-N_2		8	1	.01	82	6	12.268	1.01040	5	7.63	10.90	13.17	13.27	13.62	15.48	17.33	17.80	18.54	18.94	20.64	29.07	41.56	43.13	43.75
O	$K\beta_3$		9	14	92	6	110.387	1.01066	6		7.63	10.90	13.18	13.28	13.63	15.49	17.33	17.80	18.55	18.95	20.64	29.07	41.57	43.14	43.76
Re	$L\gamma_{11}$	B	1	.01	75	6	12.264	1.01080	4		7.63	10.90	13.18	13.28	13.63	15.49	17.33	17.80	18.55	18.95	20.64	29.08	41.58	43.15	43.77
Ir	$K\beta_1$		6	27	77	6	73.548	1.01125	6		7.63	10.91	13.19	13.29	13.63	15.50	17.34	17.81	18.56	18.96	20.65	29.09	41.60	43.17	43.79
Lu	$K8_1$	H	5	65	71	6	61.272	1.01155	5		7.64	10.91	13.19	13.29	13.64	15.50	17.35	17.82	18.57	18.97	20.66	29.10	41.61	43.18	43.80
Th	Ls	F	1	.01	90	6	12.252	1.01175	5		7.64	10.91	13.19	13.29	13.64	15.51	17.35	17.82	18.57	18.97	20.66	29.10	41.62	43.19	43.81
Re	L_1-N_4	B	1	.01	75	6	12.250	1.01190	4		7.64	10.91	13.19	13.29	13.64	15.51	17.35	17.82	18.57	18.97	20.67	29.11	41.62	43.20	43.82
Ir	L_2-N_2	B	1	.01	77	6	12.249	1.01200	4		7.64	10.92	13.20	13.30	13.64	15.51	17.35	17.83	18.57	18.97	20.67	29.11	41.63	43.20	43.82
Tl	$L8_{15}$		1	1	81	6	12.249	1.01201	5		7.64	10.92	13.20	13.30	13.64	15.51	17.35	17.83	18.57	18.97	20.67	29.11	41.63	43.20	43.82
Os	$K8_2'$		6	10	76	6	73.390	1.01344	6		7.65	10.93	13.21	13.31	13.66	15.53	17.38	17.85	18.60	19.00	20.70	29.15	41.69	43.27	43.89
Re	$K\alpha_1$		5	100	75	6	61.130	1.01390	6		7.65	10.94	13.22	13.32	13.67	15.54	17.39	17.86	18.61	19.01	20.71	29.17	41.71	43.29	43.91
Hg	L_3-O_3	B	1	.01	80	6	12.224	1.01404	5		7.66	10.94	13.22	13.32	13.67	15.54	17.39	17.86	18.61	19.01	20.71	29.17	41.72	43.29	43.91
Bk	$K\alpha_{1,2}$		9	150	97	3	109.991	1.01430			7.66	10.94	13.23	13.33	13.67	15.54	17.39	17.87	18.62	19.02	20.72	29.18	41.73	43.30	43.93
Ba	$K8_5'$	B	3	.1	56	6	36.659	1.01442	5		7.66	10.94	13.23	13.33	13.68	15.55	17.40	17.87	18.62	19.02	20.72	29.18	41.73	43.31	43.93
Os	$K8_2''$		6	10	76	6	73.306	1.01460	5		7.66	10.94	13.23	13.33	13.68	15.55	17.40	17.87	18.62	19.02	20.72	29.19	41.74	43.32	43.94
8a	$K8_5''$	B	3	.1	56	6	36.637	1.01505	5		7.66	10.95	13.24	13.34	13.68	15.56	17.41	17.88	18.63	19.03	20.73	29.20	41.76	43.34	43.96
Tl	$L\beta_1$		1	50	81	6	12.211	1.01513	5		7.66	10.95	13.24	13.34	13.69	15.56	17.41	17.88	18.63	19.03	20.73	29.20	41.76	43.34	43.96
Lu	$K8_3$	H	5	12	71	6	61.037	1.01545	5		7.67	10.95	13.24	13.34	13.69	15.56	17.41	17.89	18.64	19.04	20.74	29.21	41.78	43.36	43.98
Hg	L_3-O_2	B	1	.01	80	6	12.206	1.01558	5		7.67	10.95	13.24	13.34	13.69	15.56	17.42	17.89	18.64	19.04	20.74	29.22	41.78	43.36	43.98
Er	$K\alpha_{1,2}$		4	150	68	6	48.813	1.01579	6		7.67	10.96	13.24	13.35	13.69	15.57	17.42	17.89	18.64	19.05	20.75	29.22	41.79	43.37	43.99
Ra	$K\alpha_2$	H	7	50	88	6	85.419	1.01584	5		7.67	10.96	13.25	13.35	13.70	15.57	17.42	17.89	18.65	19.05	20.75	29.23	41.79	43.37	44.00
Rn	$K8_2'$	H	8	11	86	6	97.622	1.01584	5		7.67	10.96	13.25	13.35	13.70	15.57	17.42	17.89	18.65	19.05	20.75	29.23	41.79	43.37	44.00
Ir	$K\beta_3$		6	12	77	6	73.190	1.01620	6		7.67	10.96	13.25	13.35	13.70	15.57	17.43	17.90	18.65	19.05	20.76	29.24	41.81	43.39	44.01
Yb	$K\beta_2$	H	5	9	70	6	60.974	1.01650	4		7.67	10.96	13.25	13.35	13.70	15.58	17.43	17.91	18.66	19.06	20.76	29.24	41.82	43.40	44.03
Ra	$L\alpha_2$		1	10	88	6	12.194	1.01656	5		7.67	10.96	13.25	13.36	13.71	15.58	17.43	17.91	18.66	19.06	20.76	29.25	41.82	43.41	44.03
Cf	$K\alpha_2$		9	50	98	3	109.699	1.01700			7.68	10.97	13.26	13.36	13.71	15.59	17.44	17.91	18.67	19.07	20.77	29.26	41.84	43.43	44.05
Hg	Lu	F	1	.01	80	6	12.183	1.01746	5		7.68	10.97	13.27	13.37	13.72	15.59	17.45	17.92	18.68	19.08	20.78	29.27	41.86	43.45	44.07
Fr	$K8_1$	H	8	29	87	6	97.460	1.01752	5		7.68	10.98	13.27	13.37	13.72	15.59	17.45	17.92	18.68	19.08	20.78	29.27	41.87	43.45	44.07
Rn	$K8_2''$	H	8	11	86	6	97.460	1.01752	5		7.68	10.98	13.27	13.37	13.72	15.59	17.45	17.92	18.68	19.08	20.78	29.27	41.87	43.45	44.07

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hg	Lup	8	1	.01	80	6	12.181	1.01769	5	7.68	10.98	13.27	13.37	13.72	15.60	17.45	17.93	18.68	19.08	20.79	29.28	41.87	43.46	44.08
Gd	$K\beta_1$		4	23	64	6	48.688	1.01840	5	7.69	10.98	13.28	13.38	13.73	15.61	17.46	17.94	18.69	19.09	20.80	29.30	41.90	43.49	44.11
Pd	$K\beta_4$	8	2	.01	46	6	24.339	1.01860	4	7.69	10.99	13.28	13.38	13.73	15.61	17.47			19.10	20.81	29.31	41.91	43.50	44.12
Hg	$L\beta_7$		1	.1	80	6	12.160	1.01937	5	7.70	11.00	13.29	13.39	13.74	15.62	17.48	17.96	18.71	19.11	20.82	29.33	41.95	43.53	44.16
Fr	$K\alpha_{1,2}$	H	7	150	87	6	85.110	1.01953	5	7.70	11.00	13.29	13.39	13.75	15.63	17.48	17.96	18.71	19.12	20.83	29.33	41.95	43.54	44.16
Pd	$K\beta_2$		2	3	46	6	24.295	1.02046	6	7.70	11.01	13.31	13.41	13.76	15.64	17.50			19.13	20.84	29.36	41.99	43.58	44.21
Au	$L\beta_9$	8	1	.01	79	6	12.145	1.02063	5	7.71	11.01	13.31	13.41	13.76	15.64	17.50	17.98	18.73	19.14	20.85	29.37	42.00	43.59	44.21
Tl	$K\alpha_1$		6	100	81	6	72.859	1.02082	6	7.71	11.01	13.31	13.41	13.76	15.65	17.51	17.98	18.74	19.14	20.85	29.37	42.01	43.60	44.22
U	$K\alpha_{1,2}$		8	150	92	6	97.131	1.02097	6	7.71	11.01	13.31	13.41	13.76	15.65	17.51	17.98	18.74	19.14	20.85	29.38	42.01	43.60	44.23
Pb	$L\beta_6$		1	.1	82	6	12.141	1.02100	4	7.71	11.01	13.31	13.41	13.77	15.65	17.51	17.99	18.74	19.14	20.86	29.38	42.02	43.60	44.23
Gd	$K8_3$		4	11	64	6	48.547	1.02136	5	7.71	11.02	13.32	13.42	13.77	15.65	17.52	17.99	18.75	19.15	20.86	29.39	42.03	43.62	44.25
Tl	$K\beta_2'$		7	10	81	6	84.933	1.02165	5	7.71	11.02	13.32	13.42	13.77	15.66	17.52	18.00	18.75	19.16	20.87	29.40	42.04	43.63	44.26
Ir	$L\gamma_5$		1	.1	77	6	12.132	1.02175	5	7.71	11.02	13.32	13.42	13.78	15.66	17.52	18.00	18.75	19.16	20.87	29.40	42.05	43.64	44.27
Pb	$K\alpha_2$		6	50	82	6	72.792	1.02176	6	7.71	11.02	13.32	13.42	13.78	15.66	17.52	18.00	18.75	19.16	20.87	29.40	42.05	43.64	44.27
Pb	$K8_1$		7	88	82	6	84.922	1.02179	6	7.71	11.02	13.32	13.42	13.78	15.66	17.52	18.00	18.76	19.16	20.87	29.40	42.05	43.64	44.27
Pb	$L\beta_{17}$	F	1	.01	82	6	12.132	1.02183	5	7.71	11.02	13.32	13.42	13.78	15.66	17.52	18.00	18.76	19.16	20.87	29.40	42.05	43.64	44.27
Re	$K\alpha_{1,2}$		5	150	75	6	60.648	1.02195	6	7.72	11.02	13.33	13.43	13.78	15.66	17.53	18.00	18.76	19.16	20.88	29.41	42.06	43.65	44.27
Ba	$K\beta_1$		3	21	56	6	36.372	1.02243	6	7.72	11.03	13.33	13.43	13.78	15.67	17.53	18.01	18.77	19.17	20.89	29.42	42.08	43.67	44.30
Pu	Ll		1	3	94	6	12.122	1.02260	4	7.72	11.03	13.33	13.44	13.79	15.67	17.54	18.01	18.77	19.17	20.89	29.42	42.08	43.68	44.30
Tl	$K\beta_2''$		7	10	81	6	84.823	1.02298	5	7.72	11.03	13.34	13.44	13.79	15.68	17.54	18.02	18.78	19.18	20.90	29.44	42.10	43.69	44.32
Np	$K\alpha_2$		8	50	93	3	96.844	1.02400		7.73	11.05	13.35	13.45	13.81	15.69	17.56	18.04	18.80	19.20	20.92	29.47	42.15	43.74	44.37
In	$K\alpha_1$		2	100	49	6	24.206	1.02423	6	7.73	11.05	13.36	13.46	13.81	15.70	17.57			19.21	20.92	29.47	42.15	43.75	44.38
Ba	$K\beta_3$		3	7	56	6	36.298	1.02452	6	7.73	11.05	13.36	13.46	13.81	15.70	17.57	18.05	18.81	19.21	20.93	29.48	42.17	43.76	44.39
Fr	$K\beta_3$	H	8	14	87	6	96.791	1.02456	5	7.74	11.05	13.36	13.46	13.81	15.70	17.57	18.05	18.81	19.21	20.93	29.48	42.17	43.76	44.39
W	AL_1		1		74	6	12.098	1.02467	5	7.74	11.05	13.36	13.46	13.81	15.70	17.57	18.05	18.81	19.21	20.93	29.48	42.17	43.77	44.40
W	L_1-$O_{4,5}$	8	1	.01	74	6	12.094	1.02500	4	7.74	11.06	13.37	13.47	13.82	15.71	17.58	18.06	18.81	19.22	20.94	29.49	42.19	43.78	44.41
Os	$L\gamma_1$		1	10	76	6	12.093	1.02503	5	7.74	11.06	13.37	13.47	13.82	15.71	17.58	18.06	18.82	19.22	20.94	29.50	42.19	43.79	44.41
Cm	$K\alpha_1$		9	100	96	3	108.737	1.02600		7.75	11.07	13.38	13.48	13.83	15.73	17.60	18.07	18.83	19.24	20.96	29.52	42.23	43.83	44.46
Re	$L\gamma_3$		1	2	75	6	12.080	1.02613	5	7.75	11.07	13.38	13.48	13.83	15.73	17.60	18.08	18.84	19.24	20.96	29.53	42.24	43.84	44.47
Th	$K\beta_2'$		9	11	90	6	108.699	1.02636	6	7.75	11.07	13.38	13.48	13.84	15.73	17.60	18.08	18.84	19.25	20.97	29.53	42.25	43.85	44.48
In	$K\alpha_{1,2}$		2	150	49	6	24.136	1.02718	6	7.75	11.08	13.39	13.50	13.85	15.74	17.62			19.26	20.98	29.56	42.28	43.88	44.51
Pb	$K\beta_3$		7	13	82	6	84.436	1.02767	6	7.76	11.09	13.40	13.50	13.86	15.75	17.62	18.10	18.86	19.27	20.99	29.57	42.30	43.90	44.54
Eu	$K\beta_2$		4	8	63	6	48.248	1.02769	6	7.76	11.09	13.40	13.50	13.86	15.75	17.63	18.10	18.86	19.27	20.99	29.57	42.30	43.91	44.54
W	$L\gamma_4$		1	.1	74	6	12.061	1.02775	5	7.76	11.09	13.40	13.50	13.86	15.75	17.63	18.11	18.87	19.27	21.00	29.58	42.31	43.91	44.54
Au	$L\beta_{10}$	8	1	.01	79	6	12.060	1.02789	5	7.76	11.09	13.40	13.50	13.86	15.75	17.63	18.11	18.87	19.27	21.00	29.58	42.31	43.91	44.55
Th	$K\beta_2''$		9	11	90	6	108.489	1.02834	5	7.75	11.09	13.41	13.51	13.86	15.76	17.64	18.12	18.88	19.28	21.01	29.59	42.33	43.93	44.57
Er	$K\alpha_2$		4	50	68	6	48.213	1.02844	6	7.76	11.09	13.41	13.51	13.87	15.76	17.64	18.12	18.88	19.28	21.01	29.60	42.34	43.94	44.57
Tl	L_3-N_3	8	1	.01	81	6	12.051	1.02860	4	7.77	11.10	13.41	13.51	13.87	15.77	17.64	18.12	18.88	19.29	21.01	29.60	42.34	43.95	44.58
W	$L\gamma_4p$		1	.1	74	6	12.051	1.02863	5	7.77	11.10	13.41	13.51	13.87	15.77	17.64	18.12	18.88	19.29	21.01	29.60	42.34	43.95	44.58
Pa	$K\beta_1$	H	9	30	91	6	108.409	1.02910	6	7.77	11.10	13.42	13.52	13.88	15.77	17.65	18.13	18.89	19.30	21.02	29.62	42.37	43.97	44.60
Am	$K\beta_1$		10	30	95	3	120.350	1.03000		7.78	11.11	13.43	13.53	13.89	15.79	17.67	18.15	18.91	19.31	21.04	29.64	42.40	44.01	44.64
Pu	$K\beta_2$		10	11	94	3	120.350	1.03000		7.78	11.11	13.43	13.53	13.89	15.79	17.67	18.15	18.91	19.31	21.04	29.64	42.40	44.01	44.64
Cf	$L\gamma_1$		2	10	98	3	24.070	1.03000		7.78	11.11	13.43	13.53	13.89	15.79	17.67			19.31	21.04	29.64	42.40	44.01	44.64
Fr	$L\alpha_1$	H	1	100	87	6	12.029	1.03049	5	7.78	11.12	13.44	13.54	13.89	15.79	17.67	18.15	18.92	19.32	21.05	29.66	42.43	44.03	44.66
Tl	$K\alpha_{1,2}$		6	150	81	6	72.167	1.03061	6	7.78	11.12	13.44	13.54	13.90	15.80	17.68	18.16	18.92	19.33	21.05	29.66	42.43	44.04	44.67
W	L_1-O_1	8	1	.01	74	6	12.015	1.03170	4	7.79	11.13	13.45	13.56	13.91	15.81	17.69	18.18	18.94	19.35	21.08	29.69	42.48	44.09	44.72
Pb	L_1-M_1	8	1	.01	82	6	12.008	1.03230	4	7.79	11.14	13.46	13.56	13.92	15.82	17.70	18.19	18.95	19.36	21.09	29.71	42.50	44.11	44.75
Re	$L\gamma_2$		1	1	75	6	12.008	1.03233	5	7.79	11.14	13.46	13.56	13.92	15.82	17.71	18.19	18.95	19.36	21.09	29.71	42.50	44.11	44.75
Pr	$K\alpha_1$		3	100	59	6	36.020	1.03242	6	7.79	11.14	13.46	13.56	13.92	15.82	17.71	18.19	18.95	19.36	21.09	29.71	42.51	44.12	44.75
In	$K\alpha_2$		2	50	49	6	23.998	1.03309	6	7.80	11.14	13.47	13.57	13.93	15.83	17.72			19.37	21.11	29.73	42.54	44.15	44.78
Pd	$K\beta_5$	8	2	.1	46	6	23.991	1.03340	5	7.80	11.15	13.48	13.58	13.93	15.84	17.72			19.38	21.11	29.74	42.55	44.16	44.80
Hg	$L\beta_3$		1	6	80	6	11.993	1.03358	5	7.80	11.15	13.48	13.58	13.94	15.84	17.73	18.21	18.97	19.38	21.12	29.75	42.56	44.17	44.81
Bi	L_2-M_2	8	1	.01	83	6	11.981	1.03460	4	7.81	11.16	13.49	13.59	13.95	15.86	17.74	18.23	18.99	19.40	21.14	29.78	42.60	44.22	44.85
Pa	$K\alpha_1$	H	8	100	91	6	95.852	1.03460	6	7.81	11.16	13.49	13.59	13.95	15.86	17.74	18.23	18.99	19.40	21.14	29.78	42.60	44.22	44.85
U	Lt	8	1	.01	92	6	11.980	1.03470	4	7.81	11.16	13.49	13.59	13.95	15.86	17.75	18.23	18.99	19.40	21.14	29.78	42.61	44.22	44.86
Rn	$K\alpha_1$	H	7	100	86	6	83.768	1.03586	5	7.82	11.17	13.51	13.61	13.97	15.88	17.77	18.25	19.02	19.43	21.16	29.81	42.66	44.27	44.91
Re	$L\gamma_6$		1	.01	75	6	11.954	1.03699	5	7.83	11.19	13.52	13.63	13.98	15.89	17.79	18.27	19.04	19.45	21.19	29.85	42.71	44.32	44.96
Pr	$K\alpha_{1,2}$		3	150	59	6	35.860	1.03703	6	7.83	11.19	13.52	13.63	13.98	15.90	17.79	18.27	19.04	19.45	21.19	29.85	42.71	44.33	44.96
Pa	$K\beta_3$	H	9	14	91	6	107.576	1.03707	5	7.83	11.19	13.52	13.63	13.98	15.90	17.79	18.27	19.04	19.45	21.19	29.85	42.71	44.33	44.96
Re	AL_2		1		75	6	11.953	1.03710	4	7.83	11.19	13.52	13.63	13.98	15.90	17.79	18.27	19.04	19.45	21.19	29.85	42.71	44.33	44.97
Re	$K\alpha_2$		5	50	75	6	59.708	1.03805	6	7.84	11.20	13.54	13.64	14.00	15.91	17.80	18.29	19.06	19.47	21.21	29.88	42.75	44.37	45.01
Cs	$K\beta_2$		3	6	55	6	35.815	1.03833	5	7.84	11.20	13.54	13.64	14.00	15.92	17.81	18.29	19.06	19.47	21.21	29.89	42.76	44.38	45.02
Au	L_3-$P_{2,3}$	C	1	.01	79	6	11.933	1.03876	5	7.84	11.21	13.55	13.65	14.01	15.92	17.82	18.30	19.07	19.48	21.22	29.90	42.78	44.40	45.04
Tl	$L\beta_4$		1	4	81	6	11.929	1.03918	5	7.85	11.21	13.55	13.65	14.01	15.93	17.82	18.31	19.08	19.49	21.23	29.91	42.80	44.42	45.06
Re	L_2-O_3	B	1	.01	75	6	11.923	1.03970	4	7.85	11.22	13.56	13.66	14.02	15.94	17.83	18.32	19.09	19.50	21.24	29.93	42.82	44.45	45.09

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	AOP (101)	EODT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
8r	$K\alpha_1$		1	100	35	6	11.922	1.03974	5	7.85	11.22	13.56	13.66	14.02	15.94	17.83	18.32	19.09	19.50	21.24	29.93	42.82	44.45	45.09
Hg	$L\beta_2$		1	20	80	6	11.922	1.03975	5	7.85	11.22	13.56	13.66	14.02	15.94	17.83	18.32	19.09	19.50	21.24	29.93	42.83	44.45	45.09
Au	AL_3		1		79	6	11.919	1.04000	5	7.85	11.22	13.56	13.66	14.02	15.94	17.84	18.32	19.09	19.50	21.25	29.94	42.84	44.46	45.10
Os	L_2-N_3	F	1	.01	76	6	11.915	1.04039	5	7.85	11.22	13.57	13.67	14.03	15.95	17.84	18.33	19.10	19.51	21.26	29.95	42.85	44.48	45.12
Re	Lv	8	1	.01	75	6	11.915	1.04040	4	7.85	11.22	13.57	13.67	14.03	15.95	17.85	18.33	19.10	19.51	21.26	29.95	42.85	44.48	45.12
Au	$L\beta_5$		1	1	79	6	11.914	1.04044	5	7.85	11.22	13.57	13.67	14.03	15.95	17.85	18.33	19.10	19.51	21.26	29.95	42.85	44.48	45.12
Pd	$K8_1$		2	18	46	6	23.815	1.04104	6	7.86	11.23	13.58	13.68	14.04	15.96	17.86			19.52	21.27	29.97	42.88	44.51	45.15
8r	$K\alpha_{1,2}$		1	150	35	6	11.907	1.04110	5	7.86	11.23	13.58	13.68	14.04	15.96	17.86	18.34	19.11	19.52	21.27	29.97	42.88	44.51	45.15
Cm	$K\alpha_{1,2}$		9	150	96	3	107.139	1.04130		7.86	11.23	13.58	13.68	14.04	15.96	17.86	18.35	19.12	19.53	21.28	29.97	42.89	44.52	45.16
Hg	$L\beta_{15}$		1	1	80	6	11.902	1.04151	5	7.86	11.23	13.58	13.68	14.04	15.96	17.86	18.35	19.12	19.53	21.28	29.98	42.90	44.53	45.17
Os	$K\beta_1$		6	27	75	6	71.401	1.04167	6	7.86	11.24	13.58	13.69	14.05	15.97	17.87	18.35	19.12	19.54	21.28	29.99	42.91	44.53	45.18
Re	L_1-N_1	8	1	.01	75	6	11.896	1.04200	4	7.87	11.24	13.59	13.69	14.05	15.97	17.87	18.36	19.13	19.54	21.29	30.00	42.92	44.55	45.19
Pd	$K\beta_3$		2	8	46	6	23.787	1.04225	6	7.87	11.24	13.59	13.69	14.05	15.98	17.8H			19.55	21.29	30.00	42.93	44.56	45.20
Fr	$L\alpha_2$	H	1	10	87	6	11.893	1.04230	5	7.87	11.24	13.59	13.70	14.05	15.98	17.88	18.36	19.14	19.55	21.30	30.00	42.94	44.56	45.20
Fr	$K\alpha_2$	H	7	50	87	6	83.217	1.04272	5	7.87	11.25	13.60	13.70	14.06	15.98	17.89	18.37	19.14	19.56	21.30	30.02	42.95	44.58	45.22
Np	Ll		1	3	93	6	11.887	1.04280	4	7.87	11.25	13.60	13.70	14.06	15.98	17.89	18.37	19.14	19.56	21.31	30.02	42.96	44.59	45.23
Ho	$K\alpha_1$		4	100	67	6	47.539	1.04302	6	7.87	11.25	13.60	13.70	14.06	15.99	17.89	18.38	19.15	19.56	21.31	30.03	42.97	44.60	45.24
8r	$K\alpha_2$		1	50	35	6	11.876	1.04382	5	7.88	11.26	13.61	13.72	14.07	16.00	17.90	18.39	19.16	19.58	21.33	30.05	43.00	44.63	45.27
Re	$L\gamma_8$		1	.1	75	6	11.874	1.04398	5	7.88	11.26	13.61	13.72	14.0H	16.00	17.91	18.39	19.17	19.58	21.33	30.05	43.01	44.64	45.28
Bk	$K\alpha_2$		9	50	97	3	106.862	1.04400		7.88	11.26	13.61	13.72	14.08	16.00	17.91	18.39	19.17	19.58	21.33	30.05	43.01	44.64	45.28
At	$K8_2$'	H	8	11	85	6	94.974	1.04416	5	7.88	11.26	13.62	13.72	14.08	16.01	17.91	18.40	19.17	19.58	21.33	30.06	43.02	44.65	45.29
Yb	$K\beta_1$		5	64	70	6	59.356	1.04420	5	7.88	11.26	13.62	13.72	14.08	16.01	17.91	18.40	19.17	19.58	21.33	30.06	43.02	44.65	45.29
Re	$K\beta_2$'		6	10	75	6	71.219	1.04432	6	7.88	11.27	13.62	13.72	14.08	16.01	17.91	18.40	19.17	19.59	21.34	30.06	43.02	44.65	45.30
As	AK		1		33	6	11.862	1.04500	4	7.89	11.27	13.63	13.73	14.09	16.02	17.92	18.41	19.19	19.60	21.35	30.08	43.05	44.68	45.33
Au	L_3-$O_{2,3}$	8	1	.01	79	6	11.862	1.04500	4	7.89	11.27	13.63	13.73	14.09	16.02	17.92	18.41	19.19	19.60	21.35	30.08	43.05	44.68	45.33
As	$K\beta_2$		1	1	33	6	11.862	1.04500	5	7.89	11.27	13.63	13.73	14.09	16.02	17.92	18.41	19.19	19.60	21.35	30.08	43.05	44.68	45.33
W	$K\alpha_1$		5	100	74	6	59.308	1.04505	7	7.89	11.27	13.63	13.73	14.09	16.02	17.93	18.41	19.19	19.60	21.35	30.09	43.05	44.69	45.33
Re	$K\beta_2$''		6	10	75	6	71.139	1.04550	5	7.89	11.28	13.63	13.74	14.10	16.03	17.93	18.42	19.19	19.61	21.35	30.10	43.07	44.71	45.35
Rn	$K\beta_1$	H	8	29	86	6	94.850	1.04552	5	7.89	11.28	13.63	13.74	14.10	16.03	17.93	18.42	19.19	19.61	21.36	30.10	43.07	44.71	45.35
At	$K\beta_2$''	H	8	11	H5	6	94.829	1.04576	5	7.90	11.28	13.64	13.74	14.10	16.03	17.94	18.43	19.20	19.61	21.37	30.11	43.08	44.72	45.36
W	$L\gamma_{11}$	B	1	.01	74	6	11.853	1.04583	4	7.90	11.28	13.64	13.74	14.10	16.03	17.94	18.43	19.20	19.61	21.37	30.11	43.09	44.72	45.36
Pr	$K\alpha_2$		3	50	59	6	35.544	1.04625	6	7.90	11.29	13.64	13.75	14.11	16.04	17.95	18.43	19.21	19.62	21.38	30.12	43.11	44.74	45.38
Os	$K\beta_3$		6	12	76	6	71.065	1.04659	6	7.90	11.29	13.65	13.75	14.11	16.04	17.95	18.44	19.21	19.63	21.38	30.13	43.12	44.76	45.40
W	L_1-N_4	8	1	.01	74	6	11.842	1.04680	4	7.90	11.29	13.65	13.75	14.11	16.05	17.96	18.44	19.22	19.63	21.39	30.14	43.13	44.77	45.41
Rn	$K\alpha_{1,2}$	H	7	150	86	6	H2.843	1.04743	5	7.91	11.30	13.66	13.76	14.12	16.06	17.97	18.45	19.23	19.64	21.40	30.16	43.16	44.79	45.44
Au	Lu	8	1	.01	79	6	11.834	1.04752	5	7.91	11.30	13.66	13.76	14.12	16.06	17.97	18.46	19.23	19.65	21.40	30.16	43.16	44.80	45.44
U	$K\alpha_2$		8	50	92	6	94.649	1.04774	6	7.91	11.30	13.66	13.77	14.13	16.06	17.97	18.46	19.24	19.65	21.41	30.16	43.17	44.81	45.45
Pa	$K\alpha_{1,2}$	H	8	150	91	6	94.627	1.04798	6	7.91	11.30	13.67	13.77	14.13	16.06	17.98	18.46	19.24	19.65	21.41	30.17	43.18	44.82	45.46
Yb	$K\beta_3$	H	5	12	70	6	59.141	1.04800	4	7.91	11.31	13.67	13.77	14.13	16.06	17.98	18.46	19.24	19.66	21.41	30.17	43.18	44.82	45.47
Hg	$L\beta_1$		1	50	80	6	11.H21	1.04868	5	7.92	11.31	13.68	13.78	14.14	16.08	17.99	18.48	19.25	19.67	21.43	30.19	43.21	44.85	45.50
As	$K\beta_5$	8	1	.05	33	6	11.819	1.04880	4	7.92	11.31	13.68	13.78	14.14	16.08	17.99	18.48	19.26	19.67	21.43	30.20	43.22	44.86	45.50
Tm	$K\beta_2$	H	5	9	69	6	59.085	1.04900	4	7.92	11.32	13.68	13.78	14.14	16.08	17.99	18.48	19.26	19.67	21.43	30.20	43.23	44.86	45.51
Ho	$K\alpha_{1,2}$		4	150	67	6	47.253	1.04933	6	7.92	11.32	13.68	13.79	14.15	16.09	18.00	18.49	19.27	19.68	21.44	30.21	43.24	44.88	45.53
Tl	$L\beta_6$		1	.1	81	6	11.810	1.04963	5	7.92	11.32	13.69	13.79	14.15	16.09	1H.00	18.49	19.27	19.69	21.45	30.22	43.25	44.89	45.54
Au	$L\beta_7$		1	.1	79	6	11.809	1.04974	5	7.93	11.32	13.69	13.79	14.15	16.09	18.01	18.50	19.27	19.69	21.45	30.22	43.26	44.90	45.54
Np	$K8_2$		10	11	93	3	118.057	1.05000		7.93	11.33	13.69	13.80	14.16	16.10	18.01	18.50	19.28	19.69	21.45	30.23	43.27	44.91	45.56
Tl	$K\alpha_2$		6	50	81	6	70.820	1.05022	6	7.93	11.33	13.70	13.80	14.16	16.10	18.01	18.50	19.28	19.70	21.46	30.24	43.28	44.92	45.57
Hg	$K\alpha_1$		6	100	80	6	70.807	1.05041	6	7.93	11.33	13.70	13.80	14.16	16.10	18.02	18.51	19.29	19.70	21.46	30.24	43.29	44.93	45.58
Tl	$K8_1$		7	78	81	6	82.562	1.05099	6	7.93	11.34	13.71	13.81	14.17	16.11	18.03	18.52	19.30	19.71	21.48	30.26	43.31	44.95	45.60
Hg	$K\beta_2$'		7	10	80	6	82.530	1.05140	5	7.94	11.34	13.71	13.82	14.18	16.12	18.04	18.53	19.30	19.72	21.48	30.27	43.33	44.97	45.62
Rn	$K\beta_3$	H	H	13	86	6	94.230	1.05240	5	7.95	11.35	13.72	13.83	14.19	16.13	18.05	18.54	19.32	19.74	21.50	30.30	43.37	45.02	45.67
Hg	$K\beta_2$''		7	10	80	6	82.420	1.05280	5	7.95	11.36	13.73	13.83	14.20	16.14	18.06	18.55	19.33	19.75	21.51	30.31	43.39	45.04	45.69
Am	$K\alpha_1$		9	100	95	3	105.949	1.05300		7.95	11.36	13.73	13.84	14.20	16.14	18.06	18.55	19.33	19.75	21.52	30.32	43.40	45.05	45.69
W	$K\alpha_{1,2}$		5	150	74	6	58.856	1.05308	6	7.95	11.36	13.73	13.84	14.20	16.14	18.06	18.56	19.34	19.75	21.52	30.32	43.40	45.05	45.70
Ac	$K8_2$'	H	9	11	89	6	105.849	1.05399	5	7.96	11.37	13.75	13.85	14.21	16.16	18.08	18.57	19.35	19.77	21.54	30.35	43.44	45.09	45.74
Eu	$K8_1$		4	23	63	6	47.030	1.05431	6	7.96	11.37	13.75	13.85	14.22	16.16	18.09	18.58	19.36	19.77	21.54	30.36	43.45	45.10	45.75
Pt	$L8_9$	B	1	.01	78	6	11.756	1.05446	5	7.96	11.38	13.75	13.86	14.22	16.16	18.09	18.58	19.36	19.78	21.55	30.36	43.46	45.11	45.76
Ac	$K\beta_2$''	H	9	11	89	6	105.660	1.05588	5	7.97	11.39	13.77	13.87	14.24	16.19	18.11	18.61	19.39	19.80	21.5H	30.40	43.52	45.18	45.83
Tl	$L8_{17}$	8	1	.01	81	6	11.738	1.05609	5	7.97	11.39	13.77	13.88	14.24	16.19	18.12	18.61	19.39	19.81	21.58	30.41	43.53	45.18	45.84
Th	$K\beta_1$		9	30	90	6	105.591	1.05656	6	7.98	11.40	13.78	13.88	14.25	16.20	18.12	18.62	19.40	19.82	21.59	30.42	43.55	45.21	45.86
Tl	$K\beta_3$		7	13	81	6	82.104	1.05686	6	7.98	11.40	13.78	13.89	14.25	16.20	18.13	18.62	19.41	19.82	21.60	30.43	43.57	45.22	45.87
Os	$L\gamma_5$		1	.1	76	6	11.728	1.05693	5	7.98	11.40	13.78	13.89	14.25	16.20	18.13	18.62	19.41	19.82	21.60	30.44	43.57	45.22	45.87
Rn	$L\alpha_1$	H	1	100	86	6	11.725	1.05723	5	7.98	11.41	13.79	13.89	14.26	16.21	18.14	18.63	19.41	19.83	21.60	30.44	43.58	45.24	45.89
As	$K\beta_1$		1	15	33	6	11.724	1.05730	5	7.98	11.41	13.79	13.89	14.26	16.21	18.14	18.63	19.41	19.83	21.61	30.45	43.58	45.24	45.89
Eu	$K8_3$		4	11	63	6	46.896	1.05733	6	7.98	11.41	13.79	13.89	14.26	16.21	18.14	18.63	19.41	19.83	21.61	30.45	43.59	45.24	45.89

El	Line	C	N	I	Z	R	KeV	Lambda	P $\Delta 10^{-}$	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
As	$K\beta_3$		1	7	33	6	11.718	1.05783	5	7.99	11.41	13.80	13.90	14.26	16.22	18.15	18.64	19.42	19.84	21.62	30.46	43.61	45.26	45.92
Hg	L_3-N_3	B	1	.01	80	6	11.711	1.05850	4	7.99	11.42	13.80	13.91	14.27	16.23	18.16	18.65	19.44	19.85	21.63	30.48	43.64	45.29	45.95
Bi	Ln		1	1	83	6	11.710	1.05856	5	7.99	11.42	13.81	13.91	14.27	16.23	18.16	18.65	19.44	19.86	21.63	30.48	43.64	45.30	45.95
Pu	$K\beta_1$		10	30	94	3	116.943	1.06000		8.00	11.44	13.82	13.93	14.29	16.25	18.18	18.68	19.46	19.88	21.66	30.53	43.70	45.36	46.02
Bk	$L\gamma_1$		2	10	97	3	23.389	1.06000		8.00	11.44	13.82	13.93	14.29	16.25	18.18			19.88	21.66	30.53	43.70	45.36	46.02
Hg	$K\alpha_{1,2}$		6	150	80	6	70.154	1.06019	6	8.00	11.44	13.83	13.93	14.30	16.25	18.19	18.68	19.47	19.89	21.67	30.53	43.71	45.37	46.02
Re	$L\gamma_1$		1	10	75	6	11.683	1.06099	5	8.01	11.45	13.84	13.94	14.31	16.27	18.20	18.70	19.48	19.90	21.68	30.56	43.74	45.41	46.06
Ta	AL_1		1		73	6	11.680	1.06130	4	8.01	11.45	13.84	13.95	14.31	16.27	18.21	18.70	19.49	19.91	21.69	30.56	43.76	45.42	46.08
Pt	$L\beta_{10}$	8	1	.01	78	6	11.674	1.06183	5	8.02	11.45	13.85	13.95	14.32	16.28	18.22	18.71	19.50	19.92	21.70	30.58	43.78	45.44	46.10
Ta	L_1-$O_{4,5}$	B	1	.01	73	6	11.673	1.06192	5	8.02	11.46	13.85	13.95	14.32	16.28	18.22	18.71	19.50	19.92	21.70	30.58	43.78	45.45	46.10
Ho	$K\alpha_2$		4	50	67	6	46.692	1.06194	6	8.02	11.46	13.85	13.95	14.32	16.28	18.22	18.71	19.50	19.92	21.70	30.58	43.79	45.45	46.10
W	$L\gamma_3$		1	2	74	6	11.672	1.06200	5	8.02	11.46	13.85	13.96	14.32	16.28	18.22	18.71	19.50	19.92	21.70	30.58	43.79	45.45	46.11
Th	$K\alpha_1$		8	100	90	6	93.334	1.06250	6	8.02	11.46	13.86	13.96	14.33	16.29	18.23	18.72	19.51	19.93	21.71	30.60	43.81	45.47	46.13
Cs	$K\beta_1$		3	21	55	6	34.981	1.06309	6	8.03	11.47	13.86	13.97	14.34	16.30	18.24	18.73	19.52	19.94	21.73	30.62	43.84	45.50	46.16
Ta	L_1-$N_{6,7}$	B	1	.01	73	6	11.655	1.06357	5	8.03	11.47	13.87	13.98	14.34	16.31	18.25	18.74	19.53	19.95	21.74	30.63	43.86	45.52	46.18
Pb	L_2-M_2	B	1	.01	82	6	11.646	1.06440	4	8.04	11.48	13.88	13.99	14.35	16.32	18.26	18.76	19.54	19.97	21.75	30.66	43.89	45.56	46.22
Tl	L_1-M_1	B	1	.01	81	6	11.646	1.06440	4	8.04	11.48	13.88	13.99	14.35	16.32	18.26	18.76	19.54	19.97	21.75	30.66	43.89	45.56	46.22
Th	$K\beta_3$		9	14	90	6	104.813	1.06441	6	8.04	11.48	13.88	13.99	14.35	16.32	18.26	18.76	19.55	19.97	21.75	30.66	43.89	45.56	46.22
Ta	$L\gamma_4$		1	.1	73	6	11.643	1.06467	5	8.04	11.49	13.89	13.99	14.36	16.32	18.26	18.76	19.55	19.97	21.76	30.66	43.90	45.57	46.23
At	$K\alpha_1$	H	7	100	85	6	81.499	1.06470	5	8.04	11.49	13.89	13.99	14.36	16.32	18.27	18.76	19.55	19.97	21.76	30.66	43.91	45.57	46.23
Sm	$K\beta_2$	H	4	8	62	6	46.566	1.06480	4	8.04	11.49	13.89	13.99	14.36	16.32	18.27	18.76	19.55	19.97	21.76	30.67	43.91	45.58	46.24
Cs	$K\beta_3$		3	9	55	6	34.913	1.06515	6	8.04	11.49	13.89	14.00	14.36	16.33	18.27	18.77	19.56	19.98	21.77	30.68	43.92	45.59	46.25
Ta	$L\gamma_4 p$		1	.1	73	6	11.635	1.06544	5	8.04	11.49	13.90	14.00	14.37	16.33	18.28	18.77	19.56	19.99	21.77	30.69	43.94	45.61	46.27
U	Ll		1	3	92	6	11.616	1.06712	5	8.06	11.51	13.92	14.02	14.39	16.36	18.31	18.80	19.60	20.02	21.81	30.74	44.01	45.68	46.34
Ta	L_1-O_1	B	1	.01	73	6	11.610	1.06771	5	8.06	11.52	13.93	14.03	14.40	16.37	18.32	18.82	19.61	20.03	21.82	30.75	44.04	45.71	46.37
Au	$L\beta_3$		1	6	79	6	11.608	1.06785	5	8.06	11.52	13.93	14.03	14.40	16.37	18.32	18.82	19.61	20.03	21.82	30.76	44.04	45.72	46.38
Rh	$K\beta_4$	B	2	.01	45	6	23.213	1.06802	5	8.06	11.52	13.93	14.03	14.40	16.37	18.32			20.03	21.83	30.76	44.05	45.72	46.38
W	$L\gamma_2$		1	1	74	6	11.606	1.06806	5	8.06	11.52	13.93	14.04	14.40	16.37	18.32	18.82	19.61	20.04	21.83	30.76	44.05	45.73	46.39
Hg	L_3-N_2	F	1	.01	80	6	11.605	1.06820	4	8.07	11.52	13.93	14.04	14.40	16.38	18.33	18.82	19.62	20.04	21.83	30.77	44.06	45.73	46.39
Am	$K\alpha_{1,2}$		9	150	95	3	104.431	1.06830		8.07	11.52	13.93	14.04	14.41	16.38	18.33	18.83	19.62	20.04	21.83	30.77	44.06	45.74	46.40
Rn	$L\alpha_2$	H	1	10	86	6	11.596	1.06899	5	8.07	11.53	13.94	14.05	14.42	16.39	18.34	18.84	19.63	20.05	21.85	30.79	44.09	45.77	46.43
W	$K\alpha_2$		5	50	74	6	57.972	1.06914	6	8.07	11.53	13.94	14.05	14.42	16.39	18.34	18.84	19.63	20.06	21.85	30.80	44.10	45.77	46.44
Cd	$K\alpha_1$		2	100	48	6	23.170	1.07002	6	8.08	11.54	13.96	14.06	14.43	16.40	18.36			20.07	21.87	30.82	44.14	45.81	46.48
Rh	$K\beta_2$		2	4	45	6	23.169	1.07006	5	8.08	11.54	13.96	14.06	14.43	16.41	18.36			20.07	21.87	30.82	44.14	45.82	46.48
Au	$L\beta_2$		1	20	79	6	11.583	1.07022	5	8.08	11.55	13.96	14.06	14.43	16.41	18.36	18.86	19.65	20.08	21.87	30.83	44.15	45.82	46.49
Rh	$K\beta_2''$		2	.1	45	6	23.164	1.07026	5	8.08	11.55	13.96	14.06	14.43	16.41	18.36			20.08	21.87	30.83	44.15	45.83	46.49
Rn	$K\alpha_2$	H	7	50	86	6	81.051	1.07058	5	8.08	11.55	13.96	14.07	14.44	16.41	18.37	18.87	19.66	20.08	21.88	30.84	44.16	45.84	46.50
Cm	$K\alpha_2$		9	50	96	3	104.168	1.07100		8.09	11.55	13.97	14.07	14.44	16.42	18.37	18.87	19.67	20.09	21.89	30.85	44.18	45.86	46.52
Ce	$K\alpha_1$		3	100	58	6	34.714	1.07128	6	8.09	11.56	13.97	14.08	14.45	16.42	18.38	18.88	19.67	20.10	21.89	30.86	44.19	45.87	46.53
Au	$L\beta_{15}$		1	1	79	6	11.565	1.07188	5	8.09	11.56	13.98	14.09	14.45	16.43	18.39	18.89	19.68	20.11	21.91	30.88	44.22	45.90	46.56
Hg	$L\beta_4$		1	4	80	6	11.561	1.07222	5	8.10	11.57	13.98	14.09	14.46	16.44	18.40	18.90	19.69	20.11	21.91	30.89	44.23	45.91	46.58
Pt	AL_3		1		78	6	11.560	1.07230	4	8.10	11.57	13.99	14.09	14.46	16.44	18.40	18.90	19.69	20.12	21.92	30.89	44.24	45.92	46.58
Pt	$L\beta_5$		1	1	78	6	11.559	1.07240	4	8.10	11.57	13.99	14.09	14.46	16.44	18.40	18.90	19.69	20.12	21.92	30.89	44.24	45.92	46.59
Cd	$K\alpha_{1,2}$		2	150	48	6	23.106	1.07296	6	8.10	11.58	13.99	14.10	14.47	16.45	18.41			20.13	21.93	30.91	44.26	45.95	46.61
Re	$K\beta_1$		6	26	75	6	69.298	1.07328	6	8.10	11.58	14.00	14.10	14.47	16.45	18.41	18.91	19.71	20.13	21.94	30.92	44.28	45.96	46.63
Po	$K\beta_2'$	H	8	11	84	6	92.383	1.07344	5	8.10	11.58	14.00	14.11	14.48	16.46	18.42	18.92	19.71	20.14	21.94	30.92	44.28	45.97	46.63
W	$L\gamma_6$		1	.01	74	6	11.537	1.07448	5	8.11	11.59	14.01	14.12	14.49	16.47	18.43	18.94	19.73	20.16	21.96	30.95	44.33	46.02	46.68
W	AL_2		1		74	6	11.537	1.07450	4	8.11	11.59	14.01	14.12	14.49	16.47	18.43	18.94	19.73	20.16	21.96	30.95	44.33	46.02	46.68
At	$K\beta_1$	H	8	29	85	6	92.287	1.07456	5	8.11	11.59	14.01	14.12	14.49	16.47	18.44	18.94	19.73	20.16	21.96	30.96	44.33	46.02	46.68
Pa	$K\alpha_2$	H	8	50	91	6	92.271	1.07474	6	8.11	11.59	14.02	14.12	14.49	16.48	18.44	18.94	19.74	20.16	21.97	30.96	44.34	46.03	46.69
Po	$K\beta_2''$	H	8	11	84	6	92.246	1.07504	5	8.12	11.60	14.02	14.13	14.50	16.48	18.44	18.95	19.74	20.17	21.97	30.97	44.35	46.04	46.71
Au	L_2-M_5	B	1	.01	79	6	11.525	1.07560	4	8.12	11.60	14.03	14.13	14.51	16.49	18.45	18.96	19.75	20.18	21.98	30.99	44.38	46.07	46.73
Ce	$K\alpha_{1,2}$		3	150	58	6	34.566	1.07587	6	8.12	11.61	14.03	14.14	14.51	16.49	18.46	18.96	19.76	20.18	21.99	30.99	44.39	46.08	46.74
Th	$K\alpha_{1,2}$		8	150	90	6	92.174	1.07588	6	8.12	11.61	14.03	14.14	14.51	16.50	18.46	18.96	19.76	20.18	21.99	30.99	44.39	46.08	46.75
Pt	L_3-$O_{2,3}$	B	1	.01	78	6	11.519	1.07610	4	8.12	11.61	14.04	14.14	14.51	16.50	18.46	18.96	19.76	20.19	21.99	31.00	44.40	46.09	46.76
At	$K\alpha_{1,2}$	H	7	150	85	6	80.624	1.07625	5	8.13	11.61	14.04	14.14	14.51	16.50	18.47	18.97	19.76	20.19	22.00	31.01	44.41	46.10	46.76
W	$K\beta_2'$		6	10	74	6	69.089	1.07653	6	8.13	11.61	14.04	14.15	14.52	16.51	18.47	18.97	19.77	20.20	22.00	31.01	44.42	46.11	46.78
Re	L_2-N_3	B	1	.01	75	6	11.513	1.07670	4	8.13	11.62	14.04	14.15	14.52	16.51	18.47	18.98	19.77	20.20	22.01	31.02	44.43	46.12	46.78
W	Lv	B	1	.01	74	6	11.509	1.07710	4	8.13	11.62	14.05	14.15	14.53	16.51	18.48	18.98	19.78	20.21	22.02	31.03	44.44	46.14	46.80
W	L_2-O_3	F	1	.01	74	6	11.505	1.07740	5	8.13	11.62	14.05	14.16	14.53	16.52	18.49	18.99	19.79	20.21	22.02	31.04	44.46	46.15	46.82
Ta	$K\alpha_1$		5	100	73	6	57.523	1.07748	6	8.14	11.62	14.05	14.16	14.53	16.52	18.49	18.99	19.79	20.21	22.02	31.04	44.46	46.15	46.82
W	$K8_2''$		6	10	74	6	69.020	1.07760	5	8.14	11.63	14.05	14.16	14.53	16.52	18.49	18.99	19.79	20.22	22.03	31.05	44.47	46.16	46.82
Tm	$K\beta_1$		5	23	69	6	57.506	1.07780	5	8.14	11.63	14.06	14.16	14.54	16.52	18.49	18.99	19.79	20.22	22.03	31.05	44.47	46.17	46.83
Dy	$K\alpha_1$		4	100	66	6	45.991	1.07813	6	8.14	11.63	14.06	14.17	14.54	16.53	18.50	19.00	19.80	20.23	22.04	31.06	44.49	46.18	46.85
Re	$K\beta_3$		6	12	75	6	68.983	1.07818	6	8.14	11.63	14.06	14.17	14.54	16.53	18.50	19.00	19.80	20.23	22.04	31.06	44.49	46.18	46.85

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Cd	$K\alpha_2$		2	50	48	6	22.980	1.07884	6		8.15	11.64	14.07	14.18	14.55	16.54	18.51			20.24	22.05	31.08	44.52	46.21	46.88
Pt	Lu	B	1	.01	78	6	11.489	1.07896	5		8.15	11.64	14.07	14.18	14.55	16.54	18.51	19.02	19.82	20.24	22.05	31.09	44.52	46.22	46.89
Hg	$K\alpha_2$		6	50	80	6	68.883	1.07975	5		8.15	11.65	14.08	14.19	14.56	16.55	18.53	19.03	19.83	20.26	22.07	31.11	44.56	46.25	46.92
Hg	$L\beta_6$		1	.1	80	6	11.480	1.07975	5		8.15	11.65	14.08	14.19	14.56	16.55	18.53	19.03	19.83	20.26	22.07	31.11	44.56	46.26	46.92
Pu	$K\alpha_1$		9	100	94	3	103.300	1.08000			8.15	11.65	14.09	14.19	14.56	16.56	18.53	19.03	19.83	20.26	22.08	31.12	44.57	46.27	46.94
Cf	$K\alpha_1$		10	100	98	3	114.778	1.08000			8.15	11.65	14.09	14.19	14.56	16.56	18.53	19.03	19.83	20.26	22.08	31.12	44.57	46.27	46.94
Xe	$K\beta_2$	H	3	6	54	6	34.408	1.08078	5		8.16	11.66	14.10	14.20	14.58	16.57	18.54	19.05	19.85	20.28	22.09	31.14	44.60	46.30	46.97
Th	Lt	F	1	.01	90	6	11.468	1.08093	5		8.16	11.66	14.10	14.21	14.58	16.57	18.55	19.05	19.85	20.28	22.09	31.14	44.61	46.31	46.98
W	$L\gamma_8$		1	.1	74	6	11.466	1.08113	5		8.16	11.66	14.10	14.21	14.58	16.58	18.55	19.05	19.86	20.28	22.10	31.15	44.62	46.32	46.99
Au	$K\alpha_1$		6	100	79	6	68.792	1.08117	6		8.16	11.66	14.10	14.21	14.58	16.58	18.55	19.05	19.86	20.28	22.10	31.15	44.62	46.32	46.99
At	$K\beta_3$	H	8	13	85	6	91.707	1.08136	5		8.16	11.67	14.10	14.21	14.58	16.58	18.55	19.06	19.86	20.29	22.10	31.16	44.63	46.33	47.00
Hg	$K\beta_1$		7	28	80	6	80.240	1.08141	6		8.16	11.67	14.10	14.21	14.58	16.58	18.55	19.06	19.86	20.29	22.10	31.16	44.63	46.33	47.00
Pt	$L\beta_7$		1	.1	78	6	11.460	1.08168	5		8.17	11.67	14.11	14.22	14.59	16.58	18.56	19.06	19.87	20.29	22.11	31.17	44.64	46.34	47.01
Tm	$K\beta_3$		5	11	69	6	57.293	1.08180	5		8.17	11.67	14.11	14.22	14.59	16.59	18.56	19.07	19.87	20.30	22.11	31.17	44.65	46.35	47.02
U	$K\beta_2'$		10	11	92	6	114.587	1.08180	5		8.17	11.67	14.11	14.22	14.59	16.59	18.56	19.07	19.87	20.30	22.11	31.17	44.65	46.35	47.02
Rh	$K\beta_5'$	B	2	.05	45	6	22.913	1.08202	5		8.17	11.67	14.11	14.22	14.59	16.59	18.57			20.30	22.12	31.18	44.66	46.36	47.03
Au	$K\beta_2'$		7	10	79	6	80.172	1.08232	6		8.17	11.68	14.12	14.22	14.60	16.59	18.57	19.08	19.88	20.31	22.12	31.19	44.67	46.37	47.04
Rh	$K\beta_5''$	B	2	.05	45	6	22.906	1.08236	5		8.17	11.68	14.12	14.22	14.60	16.60	18.57			20.31	22.12	31.19	44.67	46.37	47.04
Ta	$L\gamma_{11}$	F	1	.01	73	6	11.450	1.08260	5		8.17	11.68	14.12	14.23	14.60	16.60	18.58	19.08	19.88	20.31	22.13	31.19	44.68	46.38	47.05
Ra	$K\beta_2'$	H	9	11	88	6	103.051	1.08261	5		8.17	11.68	14.12	14.23	14.60	16.60	18.58	19.08	19.88	20.31	22.13	31.19	44.68	46.38	47.06
Pu	$L\gamma_4$		2	.1	94	6	22.888	1.08320	4		8.18	11.69	14.13	14.24	14.61	16.61	18.59			20.32	22.14	31.21	44.71	46.41	47.08
Er	$K\beta_2$	H	5	8	68	6	57.204	1.08350	4		8.18	11.69	14.13	14.24	14.61	16.61	18.59	19.10	19.90	20.33	22.15	31.22	44.72	46.43	47.10
Au	$L\beta_1$		1	50	79	6	11.440	1.08353	5		8.18	11.69	14.13	14.24	14.61	16.61	18.59	19.10	19.90	20.33	22.15	31.22	44.72	46.43	47.10
Ta	L_1-N_4	B	1	.01	73	6	11.438	1.08377	5		8.18	11.69	14.14	14.24	14.62	16.62	18.60	19.10	19.90	20.33	22.15	31.23	44.73	46.44	47.11
Au	$K\beta_2''$		7	10	79	6	80.062	1.08381	5		8.18	11.69	14.14	14.24	14.62	16.62	18.60	19.10	19.90	20.33	22.15	31.23	44.74	46.44	47.11
Re	L_2-N_2	B	1	.01	75	6	11.436	1.08390	4		8.18	11.69	14.14	14.24	14.62	16.62	18.60	19.10	19.91	20.34	22.16	31.23	44.74	46.44	47.11
U	$K\beta_2''$	D	10	11	92	6	114.314	1.08438	6		8.19	11.70	14.14	14.25	14.62	16.63	18.61	19.11	19.92	20.34	22.17	31.25	44.76	46.47	47.14
Dy	$K\alpha_{1,2}$		4	150	66	6	45.724	1.08442	6		8.19	11.70	14.14	14.25	14.62	16.63	18.61	19.11	19.92	20.35	22.17	31.25	44.76	46.47	47.14
Ra	$K\beta_2''$	H	9	11	88	6	102.871	1.08450	5		8.19	11.70	14.15	14.25	14.63	16.63	18.61	19.11	19.92	20.35	22.17	31.25	44.77	46.47	47.14
Ac	$K\beta_1$	H	9	30	89	6	102.829	1.08495	5		8.19	11.71	14.15	14.26	14.63	16.64	18.62	19.12	19.93	20.36	22.18	31.26	44.79	46.49	47.16
At	$L\alpha_1$	H	1	100	85	6	11.425	1.08500	5		8.19	11.71	14.15	14.26	14.63	16.64	18.62	19.12	19.93	20.36	22.18	31.26	44.79	46.49	47.17
Ce	$K\alpha_2$		3	50	58	6	34.273	1.08505	6		8.19	11.71	14.15	14.26	14.63	16.64	18.62	19.12	19.93	20.36	22.18	31.27	44.79	46.50	47.17
Ta	$K\alpha_{1,2}$		5	150	73	6	57.098	1.08550	6		8.20	11.71	14.16	14.27	14.64	16.64	18.63	19.13	19.94	20.37	22.19	31.28	44.81	46.52	47.19
Am	$L\gamma_6$		2	.01	95	6	22.824	1.08622	5		8.20	11.72	14.17	14.28	14.65	16.65	18.64			20.38	22.20	31.30	44.84	46.55	47.22
Pu	$L\gamma_4P$		2	.1	94	6	22.820	1.08640	4		8.20	11.72	14.17	14.28	14.65	16.66	18.64			20.38	22.21	31.31	44.85	46.56	47.23
Hg	$K\beta_3$		7	13	80	6	79.809	1.08725	6		8.21	11.73	14.18	14.29	14.66	16.67	18.66	19.16	19.97	20.40	22.23	31.33	44.89	46.60	47.27
Ir	$L\beta_9$	B	1	.01	77	6	11.375	1.08975	5		8.23	11.76	14.21	14.32	14.70	16.71	18.70	19.21	20.02	20.45	22.28	31.40	44.99	46.71	47.38
Np	$K\beta_1$		10	30	93	3	113.725	1.09000			8.23	11.76	14.22	14.33	14.70	16.71	18.70	19.21	20.02	20.45	22.28	31.41	45.01	46.72	47.40
Au	L_3-N_3	B	1	.01	79	6	11.370	1.09026	5		8.23	11.76	14.22	14.33	14.70	16.72	18.71	19.22	20.02	20.46	22.29	31.42	45.02	46.73	47.41
Pa	Ll		1	3	91	6	11.364	1.09080	4		8.24	11.77	14.23	14.34	14.71	16.73	18.72	19.23	20.03	20.47	22.30	31.44	45.04	46.76	47.43
Au	$K\alpha_{1,2}$		6	150	79	6	68.177	1.09093	6		8.24	11.77	14.23	14.34	14.71	16.73	18.72	19.23	20.04	20.47	22.30	31.44	45.05	46.76	47.44
Rh	$K8_1$		2	16	45	6	22.720	1.09121	6		8.24	11.77	14.23	14.34	14.72	16.73	18.72			20.47	22.31	31.45	45.06	46.78	47.45
Ac	$K\alpha_1$	H	8	100	89	6	90.868	1.09134	6		8.24	11.77	14.23	14.34	14.72	16.73	18.73	19.24	20.04	20.48	22.31	31.45	45.06	46.78	47.46
Hg	$L\beta_{17}$	B	1	.01	80	6	11.356	1.09160	4		8.24	11.78	14.24	14.35	14.72	16.74	18.73	19.24	20.05	20.48	22.32	31.46	45.07	46.79	47.47
Cm	$L\gamma_1$		2	10	96	3	22.703	1.09200			8.25	11.78	14.24	14.35	14.73	16.74	18.74			20.49	22.32	31.47	45.09	46.81	47.49
Sm	$K8_1$		4	22	62	6	45.405	1.09204	5		8.25	11.78	14.24	14.35	14.73	16.74	18.74	19.25	20.06	20.49	22.32	31.47	45.09	46.81	47.49
Rh	$K\beta_3$		2	8	45	6	22.695	1.09240	6		8.25	11.79	14.25	14.36	14.73	16.75	18.74			20.50	22.33	31.48	45.11	46.83	47.51
Pb	Ln		1	1	82	6	11.347	1.09241	5		8.25	11.79	14.25	14.36	14.73	16.75	18.74	19.25	20.06	20.50	22.33	31.48	45.11	46.83	47.51
Ac	$K\beta_3$	H	9	14	89	6	102.084	1.09287	5		8.25	11.79	14.25	14.36	14.74	16.76	18.75	19.26	20.07	20.51	22.34	31.50	45.13	46.85	47.53
Re	$L\gamma_5$		1	.1	75	6	11.332	1.09388	5		8.26	11.80	14.27	14.38	14.75	16.77	18.77	19.28	20.09	20.52	22.36	31.53	45.17	46.90	47.58
Po	$K\alpha_1$	H	7	100	84	6	79.279	1.09452	5		8.26	11.81	14.28	14.38	14.76	16.78	18.78	19.29	20.10	20.54	22.38	31.55	45.20	46.93	47.60
Sm	$K8_3$		4	10	62	6	45.281	1.09504	5		8.27	11.81	14.28	14.39	14.77	16.79	18.79	19.30	20.11	20.55	22.39	31.56	45.22	46.95	47.63
Pu	$K\alpha_{1,2}$		9	150	94	3	101.857	1.09530			8.27	11.82	14.29	14.40	14.77	16.80	18.79	19.31	20.12	20.55	22.39	31.57	45.24	46.96	47.64
At	$L\alpha_2$	H	1	10	85	6	11.303	1.09671	5		8.28	11.83	14.31	14.41	14.79	16.82	18.82	19.33	20.14	20.58	22.42	31.61	45.30	47.02	47.71
Dy	$K\alpha_2$		4	50	66	6	45.200	1.09699	6		8.28	11.84	14.31	14.42	14.80	16.82	18.82	19.34	20.15	20.58	22.43	31.62	45.31	47.04	47.72
Cf	$K\alpha_{1,2}$		10	150	98	3	112.999	1.09700			8.28	11.84	14.31	14.42	14.80	16.82	18.82	19.34	20.15	20.58	22.43	31.62	45.31	47.04	47.72
Ir	$L\beta_{10}$	B	1	.01	77	6	11.300	1.09702	5		8.28	11.84	14.31	14.42	14.80	16.82	18.82	19.34	20.15	20.58	22.43	31.62	45.31	47.04	47.72
Am	$K\alpha_2$		9	50	95	3	101.607	1.09800			8.29	11.85	14.32	14.43	14.81	16.84	18.84	19.35	20.17	20.60	22.45	31.65	45.35	47.08	47.77
W	$L\gamma_1$		1	10	74	6	11.284	1.09855	5		8.29	11.85	14.33	14.44	14.82	16.85	18.85	19.36	20.18	20.61	22.46	31.66	45.38	47.11	47.79
Tl	L_2-M_2	F	1	.01	81	6	11.280	1.09891	5		8.30	11.86	14.33	14.44	14.82	16.85	18.86	19.37	20.19	20.62	22.47	31.68	45.39	47.13	47.81
At	$K\alpha_2$	H	7	50	85	6	78.930	1.09935	5		8.30	11.86	14.34	14.45	14.83	16.86	18.87	19.38	20.19	20.63	22.48	31.69	45.41	47.14	47.83
Ta	$L\gamma_3$		1	2	73	6	11.276	1.09936	5		8.30	11.86	14.34	14.45	14.83	16.86	18.87	19.38	20.19	20.63	22.48	31.69	45.41	47.15	47.83
Au	L_3-N_2	B	1	.01	79	6	11.272	1.09968	5		8.30	11.86	14.34	14.45	14.83	16.86	18.87	19.38	20.20	20.63	22.48	31.70	45.43	47.16	47.84
Hf	AL_1		1		72	6	11.272	1.09970	4		8.30	11.86	14.34	14.45	14.83	16.86	18.87	19.38	20.20	20.64	22.48	31.70	45.43	47.16	47.84
Hg	L_1-M_1	B	1	.01	80	6	11.270	1.09990	4		8.30	11.87	14.35	14.46	14.83	16.87	18.87	19.39	20.20	20.64	22.49	31.70	45.44	47.17	47.85

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hf	L_1-O_4	B	1	.01	72	6	11.260	1.10086	5		8.31	11.88	14.36	14.47	14.85	16.88	18.89	19.41	20.22	20.66	22.51	31.73	45.48	47.21	47.90
Ta	$K\alpha_2$		5	50	73	6	56.267	1.10152	6		8.32	11.88	14.37	14.48	14.86	16.89	18.90	19.42	20.23	20.67	22.52	31.75	45.51	47.24	47.93
Pt	$L\beta_2$		1	20	78	6	11.249	1.10200	5		8.32	11.89	14.37	14.48	14.86	16.90	18.91	19.43	20.24	20.68	22.53	31.77	45.53	47.27	47.95
Th	$K\alpha_2$		8	50	90	6	89.938	1.10263	6		8.33	11.90	14.38	14.49	14.87	16.91	18.92	19.44	20.25	20.69	22.54	31.79	45.56	47.29	47.98
Hf	$L\gamma_4$		1	.1	72	6	11.238	1.10303	5		8.33	11.90	14.39	14.50	14.88	16.91	18.93	19.44	20.26	20.70	22.55	31.80	45.57	47.31	48.00
Pt	$L\beta_3$	D	1	6	78	6	11.233	1.10358	5		8.33	11.91	14.40	14.50	14.88	16.92	18.94	19.45	20.27	20.71	22.56	31.81	45.60	47.34	48.02
Pm	$K\beta_2$	H	4	8	61	6	44.929	1.10360	4		8.33	11.91	14.40	14.50	14.88	16.92	18.94	19.45	20.27	20.71	22.56	31.81	45.60	47.34	48.02
Bi	$K\beta_2'$		8	11	83	6	89.846	1.10376	5		8.33	11.91	14.40	14.51	14.89	16.93	18.94	19.46	20.28	20.71	22.57	31.82	45.61	47.35	48.03
Hf	$L\gamma_4$p		1	.1	72	6	11.231	1.10376	5		8.33	11.91	14.40	14.51	14.89	16.93	18.94	19.46	20.28	20.71	22.57	31.82	45.61	47.35	48.03
Po	$K\beta_1$	H	8	89	84	6	89.781	1.10456	5		8.34	11.92	14.41	14.52	14.90	16.94	18.96	19.47	20.29	20.73	22.58	31.84	45.64	47.38	48.07
Ac	$K\alpha_{1,2}$	H	8	150	89	6	89.773	1.10465	5		8.34	11.92	14.41	14.52	14.90	16.94	18.96	19.47	20.29	20.73	22.59	31.85	45.64	47.39	48.07
Se	$K\alpha_1$		1	100	34	6	11.220	1.10477	5		8.34	11.92	14.41	14.52	14.90	16.94	18.96	19.47	20.29	20.73	22.59	31.85	45.65	47.39	48.08
Ta	$L\gamma_2$		1	1	73	6	11.215	1.10530	4		8.35	11.93	14.42	14.53	14.91	16.95	18.97	19.48	20.30	20.74	22.60	31.86	45.67	47.42	48.10
Bi	$K\beta_2''$		8	11	83	6	89.716	1.10536	5		8.35	11.93	14.42	14.53	14.91	16.95	18.97	19.49	20.30	20.74	22.60	31.87	45.67	47.42	48.11
Ir	AL_3		1		77	6	11.210	1.10580	4		8.35	11.93	14.42	14.53	14.91	16.96	18.98	19.49	20.31	20.75	22.61	31.88	45.69	47.44	48.13
Ir	$L\beta_5$		1	.1	77	6	11.209	1.10585	5		8.35	11.93	14.43	14.53	14.92	16.96	18.98	19.49	20.31	20.75	22.61	31.88	45.70	47.44	48.13
Po	$K\alpha_{1,2}$	H	7	150	84	6	78.452	1.10605	5		8.35	11.93	14.43	14.54	14.92	16.96	18.98	19.50	20.32	20.76	22.61	31.89	45.70	47.45	48.14
Se	$K\alpha_{1,2}$		1	150	34	6	11.207	1.10612	5		8.35	11.93	14.43	14.54	14.92	16.96	18.98	19.50	20.32	20.76	22.62	31.89	45.71	47.45	48.14
Xe	$K\beta_1$	H	3	20	54	6	33.619	1.10616	5		8.35	11.93	14.43	14.54	14.92	16.96	18.98	19.50	20.32	20.76	22.62	31.89	45.71	47.45	48.14
W	$K\beta_1$		6	26	74	6	67.233	1.10624	6		8.35	11.94	14.43	14.54	14.92	16.96	18.98	19.50	20.32	20.76	22.62	31.89	45.71	47.46	48.15
Au	$L\beta_4$		1	4	79	6	11.203	1.10651	5		8.35	11.94	14.43	14.54	14.92	16.97	18.99	19.51	20.33	20.76	22.62	31.90	45.73	47.47	48.16
Hf	L_1-O_1	B	1	.01	72	6	11.201	1.10664	5		8.36	11.94	14.44	14.55	14.93	16.97	18.99	19.51	20.33	20.77	22.63	31.90	45.73	47.48	48.17
Np	$K\alpha_1$		9	100	93	3	100.781	1.10700			8.36	11.94	14.44	14.55	14.93	16.98	19.00	19.51	20.34	20.77	22.63	31.91	45.75	47.49	48.18
Xe	$K\beta_3$	H	3	9	54	6	33.556	1.10823	5		8.37	11.96	14.46	14.57	14.95	16.99	19.02	19.54	20.36	20.80	22.66	31.95	45.80	47.55	48.24
Am	$L\gamma_2$		2	1	95	6	22.359	1.10880	4		8.37	11.96	14.46	14.57	14.96	17.00	19.03			20.81	22.67	31.97	45.83	47.58	48.27
Se	$K\alpha_2$		1	50	34	6	11.179	1.10882	5		8.37	11.96	14.46	14.57	14.96	17.00	19.03	19.55	20.37	20.81	22.67	31.97	45.83	47.58	48.27
Ir	L_3-$O_{2,3}$	B	1	.01	77	6	11.175	1.10923	5		8.38	11.97	14.47	14.58	14.96	17.01	19.04	19.55	20.38	20.82	22.68	31.98	45.84	47.59	48.29
Bk	$K\alpha_1$		10	100	97	3	111.676	1.11000			8.38	11.98	14.48	14.59	14.97	17.02	19.05	19.57	20.39	20.83	22.70	32.00	45.88	47.63	48.32
Ta	$K\beta_2'$		6	9	73	6	67.001	1.11007	6		8.38	11.98	14.48	14.59	14.97	17.02	19.05	19.57	20.39	20.83	22.70	32.01	45.88	47.63	48.32
Au	$K\alpha_2$		6	50	79	6	66.978	1.11045	6		8.38	11.98	14.49	14.60	14.98	17.03	19.06	19.58	20.40	20.84	22.71	32.02	45.90	47.65	48.34
Pa	$K\beta_2'$	H	10	11	91	6	111.605	1.11070	5		8.39	11.98	14.49	14.60	14.98	17.03	19.06	19.58	20.40	20.84	22.71	32.02	45.91	47.66	48.35
Au	$L\beta_6$		1	.1	79	6	11.158	1.11092	5		8.39	11.99	14.49	14.60	14.98	17.04	19.07	19.58	20.41	20.85	22.72	32.03	45.92	47.67	48.36
W	$K\beta_3$		6	12	74	6	66.940	1.11108	6		8.39	11.99	14.49	14.60	14.99	17.04	19.07	19.59	20.41	20.85	22.72	32.04	45.92	47.68	48.37
Ta	$K\beta_2''$		6	9	73	6	66.937	1.11113	6		8.39	11.99	14.49	14.60	14.99	17.04	19.07	19.59	20.41	20.85	22.72	32.04	45.93	47.68	48.37
Hf	$K\alpha_1$		5	100	72	6	55.781	1.11113	6		8.39	11.99	14.49	14.60	14.99	17.04	19.07	19.59	20.41	20.85	22.72	32.04	45.93	47.68	48.37
Po	$K\beta_3$	H	8	13	84	6	89.231	1.11136	5		8.39	11.99	14.50	14.61	14.99	17.04	19.07	19.59	20.42	20.86	22.72	32.04	45.94	47.69	48.38
Ir	Lu	B	1	.01	77	6	11.153	1.11145	5		8.39	11.99	14.50	14.61	14.99	17.04	19.07	19.59	20.42	20.86	22.73	32.05	45.94	47.70	48.39
Pt	L_2-M_5	F	1	.01	78	6	11.149	1.11183	5		8.40	12.00	14.50	14.61	15.00	17.05	19.08	19.60	20.43	20.87	22.73	32.06	45.96	47.71	48.41
La	$K\alpha_1$		3	100	57	6	33.436	1.11221	6		8.40	12.00	14.51	14.62	15.00	17.06	19.09	19.61	20.43	20.87	22.74	32.07	45.97	47.73	48.42
Fr	$K\beta_2'$	H	9	11	87	6	100.307	1.11222	5		8.40	12.00	14.51	14.62	15.00	17.06	19.09	19.61	20.43	20.87	22.74	32.07	45.97	47.73	48.42
Au	$K\beta_1$		7	27	79	6	77.971	1.11287	6		8.40	12.01	14.52	14.63	15.01	17.07	19.10	19.62	20.44	20.89	22.76	32.09	46.00	47.76	48.45
Pa	$K\beta_2''$	H	10	11	91	6	111.385	1.11290	5		8.40	12.01	14.52	14.63	15.01	17.07	19.10	19.62	20.44	20.89	22.76	32.09	46.00	47.76	48.46
Pt	$K\alpha_1$		6	100	78	6	66.821	1.11307	6		8.40	12.01	14.52	14.63	15.01	17.07	19.10	19.62	20.45	20.89	22.76	32.09	46.01	47.77	48.46
Er	$K\beta_1$		5	22	68	6	55.672	1.11330	5		8.41	12.01	14.52	14.63	15.02	17.07	19.11	19.63	20.45	20.89	22.77	32.10	46.02	47.78	48.47
Ta	AL_2		1		73	6	11.130	1.11370	4		8.41	12.02	14.53	14.64	15.02	17.08	19.11	19.63	20.46	20.90	22.77	32.11	46.04	47.80	48.49
Po	$L\alpha_1$		1	100	84	6	11.129	1.11386	5		8.41	12.02	14.53	14.64	15.02	17.08	19.12	19.64	20.46	20.90	22.78	32.12	46.05	47.81	48.50
Ta	$L\gamma_6$		1	.01	73	6	11.129	1.11388	5		8.41	12.02	14.53	14.64	15.02	17.08	19.12	19.64	20.46	20.90	22.78	32.12	46.05	47.81	48.50
U	$K\beta_1$		10	31	92	6	111.281	1.11394	6		8.41	12.02	14.53	14.64	15.03	17.08	19.12	19.64	20.46	20.91	22.78	32.12	46.05	47.81	48.50
Fr	$K\beta_2''$	H	9	11	87	6	100.137	1.11411	5		8.41	12.02	14.53	14.64	15.03	17.09	19.12	19.64	20.47	20.91	22.78	32.13	46.06	47.82	48.51
Ra	$K\beta_1$	H	9	30	88	6	100.113	1.11438	5		8.41	12.02	14.54	14.65	15.03	17.09	19.13	19.65	20.47	20.91	22.79	32.13	46.07	47.83	48.52
Pt	$K\beta_2'$		7	10	78	6	77.864	1.11440	5		8.41	12.02	14.54	14.65	15.03	17.09	19.13	19.65	20.47	20.91	22.79	32.13	46.07	47.83	48.52
Ir	$L\beta_7$		1	.1	77	6	11.119	1.11489	5		8.42	12.03	14.54	14.65	15.04	17.10	19.13	19.65	20.48	20.92	22.80	32.15	46.09	47.85	48.55
Tb	$K\alpha_1$		4	100	65	6	44.474	1.11490	6		8.42	12.03	14.54	14.65	15.04	17.10	19.13	19.65	20.48	20.92	22.80	32.15	46.09	47.85	48.55
W	L_2-N_3	B	1	.01	74	6	11.118	1.11490	4		8.42	12.03	14.54	14.65	15.04	17.10	19.13	19.66	20.48	20.92	22.80	32.15	46.09	47.85	48.55
Th	Ll		1	1	90	6	11.117	1.11508	5		8.42	12.03	14.55	14.66	15.04	17.10	19.14	19.66	20.49	20.93	22.80	32.15	46.10	47.86	48.56
Ta	L_1-N_1	B	1	.01	73	6	11.115	1.11521	5		8.42	12.03	14.55	14.66	15.04	17.10	19.14	19.66	20.49	20.93	22.80	32.16	46.11	47.87	48.56
Pt	$K\beta_2''$		7	10	78	6	77.772	1.11573	5		8.42	12.04	14.55	14.67	15.05	17.11	19.15	19.67	20.50	20.94	22.82	32.17	46.13	47.89	48.59
Ta	Lv	B	1	.01	73	6	11.110	1.11580	4		8.43	12.04	14.56	14.67	15.05	17.11	19.15	19.67	20.50	20.94	22.82	32.18	46.13	47.89	48.59
Ge	AK		1		32	6	11.102	1.11658	5		8.43	12.05	14.57	14.68	15.06	17.12	19.16	19.68	20.51	20.96	22.83	32.20	46.17	47.93	48.63
La	$K\alpha_{1,2}$		3	150	57	6	33.299	1.11679	6		8.43	12.05	14.57	14.68	15.06	17.13	19.17	19.69	20.52	20.96	22.84	32.20	46.17	47.94	48.64
Ge	$K\beta_2$		1	.5	32	6	11.099	1.11686	5		8.43	12.05	14.57	14.68	15.06	17.13	19.17	19.69	20.52	20.96	22.84	32.21	46.18	47.94	48.64
Ta	L_2-O_3	B	1	.01	73	6	11.098	1.11693	5		8.43	12.05	14.57	14.68	15.07	17.13	19.17	19.69	20.52	20.96	22.84	32.21	46.18	47.95	48.64
Np	$L\gamma_4$		2	.1	93	6	22.195	1.11700	4		8.43	12.05	14.57	14.68	15.07	17.13	19.17			20.96	22.84	32.21	46.18	47.95	48.65
Er	$K\beta_3$		5	12	68	6	55.485	1.11705	5		8.43	12.05	14.57	14.68	15.07	17.13	19.17	19.69	20.52	20.96	22.84	32.21	46.19	47.95	48.65
Ta	L_2-O_2	B	1	.01	73	6	11.089	1.11789	5		8.44	12.06	14.58	14.69	15.08	17.14	19.19	19.71	20.54	20.98	22.86	32.24	46.22	47.99	48.69

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Au	$K\beta_3$		7	13	79	6	77.567	1.11867	6		8.45	12.07	14.59	14.70	15.09	17.16	19.20	19.72	20.55	21.00	22.88	32.26	46.26	48.03	48.72
Ag	$K\alpha_1$		2	100	47	6	22.159	1.11881	7		8.45	12.07	14.60	14.71	15.09	17.16	19.20			21.00	22.88	32.26	46.26	48.03	48.73
Hf	$K\alpha_{1,2}$		5	150	72	6	55.382	1.11913	6		8.45	12.08	14.60	14.71	15.10	17.16	19.21	19.73	20.56	21.00	22.89	32.27	46.28	48.05	48.74
Pu	$L\gamma_6$		2	.01	94	6	22.146	1.11946	5		8.45	12.08	14.60	14.71	15.10	17.17	19.21			21.01	22.89	32.28	46.29	48.06	48.76
Ge	$K\beta_5$		8 1	.05	32	6	11.073	1.11950	4		8.45	12.08	14.60	14.72	15.10	17.17	19.21	19.74	20.57	21.01	22.89	32.28	46.29	48.06	48.76
Pt	$L\beta_1$		1	50	78	6	11.069	1.11990	5		8.46	12.08	14.61	14.72	15.11	17.18	19.22	19.74	20.57	21.02	22.90	32.30	46.31	48.08	48.78
Ta	$L\gamma_8$		1	.1	73	6	11.063	1.12050	4		8.46	12.09	14.62	14.73	15.11	17.18	19.23	19.75	20.59	21.03	22.91	32.31	46.34	48.11	48.81
Ho	$K\beta_2$	H	5	8	67	6	55.315	1.12050	4		8.46	12.09	14.62	14.73	15.11	17.18	19.23	19.75	20.59	21.03	22.91	32.31	46.34	48.11	48.81
Ra	$K\alpha_1$	H	8	100	88	6	88.454	1.12112	5		8.47	12.10	14.63	14.74	15.12	17.19	19.24	19.77	20.60	21.04	22.93	32.33	46.36	48.14	48.84
Tb	$K\alpha_{1,2}$		4	150	65	6	44.226	1.12116	6		8.47	12.10	14.63	14.74	15.12	17.19	19.24	19.77	20.60	21.04	22.93	32.33	46.37	48.14	48.84
Hf	$L\gamma_{11}$		8 1	.01	72	6	11.053	1.12146	5		8.47	12.10	14.63	14.74	15.13	17.20	19.25	19.77	20.60	21.05	22.93	32.34	46.38	48.15	48.85
Ag	$K\alpha_{1,2}$		2	150	47	6	22.101	1.12174	6		8.47	12.10	14.63	14.74	15.13	17.20	19.25			21.05	22.94	32.35	46.39	48.17	48.87
Ru	$K\beta_4$		8 2	.01	44	6	22.101	1.12178	5		8.47	12.10	14.63	14.75	15.13	17.20	19.25			21.05	22.94	32.35	46.39	48.17	48.87
W	L_2-N_2	B	1	.01	74	6	11.050	1.12180	4		8.47	12.10	14.63	14.75	15.13	17.20	19.25	19.78	20.61	21.05	22.94	32.35	46.39	48.17	48.87
Ra	$K\beta_3$	H	9	14	88	6	99.415	1.12221	5		8.47	12.11	14.64	14.75	15.14	17.21	19.26	19.79	20.62	21.06	22.95	32.37	46.41	48.19	48.89
Np	$K\alpha_{1,2}$		9	150	93	3	99.407	1.12230			8.47	12.11	14.64	14.75	15.14	17.21	19.26	19.79	20.62	21.06	22.95	32.37	46.42	48.19	48.89
Hf	L_1-N_4	B	1	.01	72	6	11.043	1.12250	5		8.48	12.11	14.64	14.75	15.14	17.22	19.27	19.79	20.62	21.07	22.96	32.37	46.42	48.20	48.90
Pt	L_3-N_3	B	1	.01	78	6	11.042	1.12260	4		8.48	12.11	14.64	14.76	15.14	17.22	19.27	19.79	20.63	21.07	22.96	32.38	46.43	48.20	48.90
Pt	$K\alpha_{1,2}$		6	150	78	6	66.241	1.12280	6		8.48	12.12	14.65	14.76	15.15	17.22	19.27	19.80	20.63	21.07	22.96	32.38	46.44	48.21	48.91
U	$K\beta_3$		10	14	92	6	110.387	1.12296	6		8.48	12.12	14.65	14.76	15.15	17.22	19.27	19.80	20.63	21.08	22.97	32.39	46.44	48.22	48.92
Ru	$K\beta_2$		2	3	44	6	22.070	1.12332	5		8.48	12.12	14.65	14.77	15.15	17.23	19.28			21.08	22.97	32.40	46.46	48.24	48.94
Am	$L\gamma_1$		2	10	95	6	22.061	1.12377	6		8.49	12.13	14.66	14.77	15.16	17.23	19.29			21.09	22.98	32.41	46.48	48.26	48.96
Pu	$K\alpha_2$		9	50	94	3	99.168	1.12500			8.49	12.14	14.68	14.79	15.18	17.25	19.31	19.83	20.67	21.12	23.01	32.45	46.53	48.31	49.02
Po	$L\alpha_2$	H	1	10	84	6	11.014	1.12548	5		8.50	12.14	14.68	14.79	15.18	17.26	19.32	19.84	20.68	21.12	23.02	32.46	46.55	48.34	49.04
Bi	$K\alpha_1$		7	100	83	6	77.095	1.12552	6		8.50	12.14	14.68	14.79	15.18	17.26	19.32	19.84	20.68	21.13	23.02	32.46	46.56	48.34	49.04
I	$K\beta_2$	H	3	6	53	6	33.036	1.12569	5		8.50	12.15	14.69	14.80	15.18	17.26	19.32	19.85	20.68	21.13	23.02	32.47	46.56	48.35	49.05
La	$K\alpha_2$		3	50	57	6	33.028	1.12594	6		8.50	12.15	14.69	14.80	15.19	17.27	19.33	19.85	20.69	21.13	23.03	32.48	46.57	48.36	49.06
Os	$L\beta_9$	B	1	.01	76	6	11.005	1.12637	5		8.51	12.15	14.69	14.81	15.19	17.28	19.33	19.86	20.70	21.14	23.04	32.49	46.59	48.38	49.08
Bk	$K\alpha_{1,2}$		10	150	97	3	109.991	1.12700			8.51	12.16	14.70	14.81	15.20	17.28	19.34	19.87	20.71	21.15	23.05	32.51	46.62	48.41	49.11
Ag	$K\alpha_2$		2	50	47	6	21.987	1.12760	6		8.51	12.17	14.71	14.82	15.21	17.29	19.35			21.16	23.06	32.52	46.65	48.43	49.14
Tl	Ln		1	1	81	6	10.992	1.12769	5		8.51	12.17	14.71	14.82	15.21	17.30	19.36	19.88	20.72	21.17	23.06	32.53	46.65	48.44	49.14
Au	$L\beta_{17}$		8 1	.01	79	6	10.990	1.12798	5		8.52	12.17	14.72	14.83	15.22	17.30	19.36	19.89	20.72	21.17	23.07	32.54	46.66	48.45	49.15
Pu	$L\gamma_3$		2	2	94	6	21.979	1.12800	6		8.52	12.17	14.72	14.83	15.22	17.30	19.36			21.17	23.07	32.54	46.67	48.45	49.16
Ge	$K\beta_1$		1	14	32	6	10.980	1.12894	5		8.52	12.18	14.73	14.84	15.23	17.31	19.38	19.91	20.74	21.19	23.09	32.56	46.71	48.49	49.20
Po	$K\alpha_2$	H	7	50	84	6	76.851	1.12910	5		8.53	12.18	14.73	14.84	15.23	17.32	19.38	19.91	20.75	21.19	23.09	32.57	46.71	48.50	49.21
Ge	$K\beta_3$		1	7	32	6	10.976	1.12936	5		8.53	12.19	14.73	14.85	15.23	17.32	19.38	19.91	20.75	21.20	23.10	32.58	46.72	48.51	49.22
Cf	$K\alpha_2$		10	50	98	3	109.699	1.13000			8.53	12.19	14.74	14.85	15.24	17.33	19.40	19.92	20.76	21.21	23.11	32.60	46.75	48.54	49.25
Pt	L_3-N_2	B	1	.01	78	6	10.960	1.13100	4		8.54	12.20	14.75	14.87	15.26	17.35	19.41	19.94	20.78	21.23	23.13	32.63	46.80	48.59	49.30
Ac	$K\alpha_2$	H	8	50	89	6	87.660	1.13128	5		8.54	12.21	14.76	14.87	15.26	17.35	19.42	19.95	20.79	21.23	23.14	32.63	46.81	48.60	49.31
Pm	$K\beta_1$	H	4	22	61	6	43.818	1.13160	5		8.54	12.21	14.76	14.87	15.26	17.36	19.42	19.95	20.79	21.24	23.14	32.64	46.82	48.62	49.32
Pu	$L\gamma_8$		2	.1	94	6	21.909	1.13160	4		8.54	12.21	14.76	14.87	15.26	17.36	19.42			21.24	23.14	32.64	46.82	48.62	49.32
W	$L\gamma_5$		1	.1	74	6	10.947	1.13235	5		8.55	12.22	14.77	14.88	15.27	17.37	19.44	19.97	20.81	21.25	23.16	32.67	46.86	48.65	49.36
O	$K\alpha_1$		9	100	92	6	98.422	1.13352	6		8.56	12.23	14.79	14.90	15.29	17.39	19.46	19.99	20.83	21.28	23.18	32.70	46.91	48.70	49.41
Os	$L\beta_{10}$		8 1	.01	76	6	10.936	1.13353	5		8.56	12.23	14.79	14.90	15.29	17.39	19.46	19.99	20.83	21.28	23.18	32.70	46.91	48.70	49.41
Tb	$K\alpha_2$		4	50	65	6	43.737	1.13369	6		8.56	12.23	14.79	14.90	15.29	17.39	19.46	19.99	20.83	21.28	23.19	32.71	46.91	48.71	49.42
Ra	$K\alpha_{1,2}$	H	8	150	88	6	87.419	1.13440	5		8.57	12.24	14.80	14.91	15.30	17.40	19.47	20.00	20.84	21.29	23.20	32.73	46.95	48.74	49.45
Pm	$K\beta_3$	H	4	10	61	6	43.705	1.13452	5		8.57	12.24	14.80	14.91	15.30	17.40	19.47	20.00	20.85	21.30	23.20	32.73	46.95	48.75	49.46
Au	L_1-M_1	F	1	.01	79	6	10.926	1.13453	5		8.57	12.24	14.80	14.91	15.30	17.40	19.47	20.00	20.85	21.30	23.21	32.73	46.95	48.75	49.46
Hf	$K\alpha_2$		5	50	72	6	54.602	1.13512	6		8.57	12.25	14.81	14.92	15.31	17.41	19.48	20.02	20.86	21.31	23.22	32.75	46.98	48.78	49.49
Pb	$K\beta_2'$		8	11	82	6	87.351	1.13528	5		8.57	12.25	14.81	14.92	15.31	17.41	19.49	20.02	20.86	21.31	23.22	32.75	46.98	48.78	49.49
Ir	$L\beta_2$		1	20	77	6	10.919	1.13532	5		8.57	12.25	14.81	14.92	15.32	17.41	19.49	20.02	20.86	21.31	23.22	32.75	46.99	48.79	49.50
Bi	$K\beta_1$		8	89	83	6	87.328	1.13558	6		8.57	12.25	14.82	14.93	15.32	17.42	19.49	20.02	20.87	21.32	23.23	32.76	47.00	48.80	49.51
Ru	$K\beta_5'$	8	2	.08	44	6	21.830	1.13570	5		8.58	12.25	14.82	14.93	15.32	17.42	19.49			21.32	23.23	32.77	47.00	48.80	49.51
Ru	$K\beta_5''$	8	2	.5	44	6	21.824	1.13600	4		8.58	12.26	14.82	14.93	15.32	17.42	19.50			21.32	23.24	32.77	47.02	48.82	49.53
Ta	L_2-N_5	B	1	.01	73	6	10.904	1.13687	5		8.58	12.27	14.83	14.94	15.34	17.44	19.52	20.05	20.89	21.34	23.25	32.80	47.05	48.86	49.57
Pb	$K\beta_2''$		8	11	82	6	87.222	1.13696	5		8.59	12.27	14.83	14.95	15.34	17.44	19.52	20.05	20.89	21.34	23.26	32.80	47.06	48.86	49.57
Bi	$K\alpha_{1,2}$		7	150	83	6	76.315	1.13702	6		8.59	12.27	14.83	14.95	15.34	17.44	19.52	20.05	20.89	21.34	23.26	32.80	47.06	48.86	49.58
Ir	$L\beta_{15}$		1	1	77	6	10.902	1.13707	5		8.59	12.27	14.83	14.95	15.34	17.44	19.52	20.05	20.89	21.34	23.26	32.81	47.06	48.87	49.58
Ta	$L\gamma_1$		1	10	73	6	10.893	1.13794	5		8.59	12.28	14.85	14.96	15.35	17.45	19.53	20.07	20.91	21.36	23.28	32.83	47.10	48.91	49.62
Hf	$L\gamma_3$		1	2	72	6	10.889	1.13841	5		8.60	12.28	14.85	14.96	15.36	17.46	19.54	20.07	20.92	21.37	23.29	32.85	47.12	48.93	49.64
Hg	L_2-M_2	8	1	.01	80	6	10.886	1.13870	4		8.60	12.29	14.86	14.97	15.36	17.47	19.55	20.08	20.92	21.38	23.29	32.85	47.13	48.94	49.65
Cm	$K\alpha_1$		10	100	96	3	108.737	1.14000			8.61	12.30	14.87	14.99	15.38	17.49	19.57	20.10	20.95	21.40	23.32	32.89	47.19	49.00	49.71
Lu	AL_1		1		71	6	10.872	1.14020	4		8.61	12.30	14.88	14.99	15.38	17.49	19.57	20.11	20.95	21.40	23.32	32.90	47.20	49.01	49.72
Th	$K\beta_2'$		10	11	90	6	108.699	1.14040	6		8.61	12.31	14.88	14.99	15.38	17.49	19.58	20.11	20.96	21.41	23.33	32.90	47.21	49.02	49.73
Os	$L\beta_5$		1	.1	76	6	10.869	1.14050	4		8.61	12.31	14.88	14.99	15.39	17.49	19.58	20.11	20.96	21.41	23.33	32.91	47.21	49.02	49.74

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Ta	$K\beta_1$		6	26	73	6	65.212	1.14053	6		8.61	12.31	14.88	14.99	15.39	17.49	19.58	20.11	20.96	21.41	23.33	32.91	47.21	49.02	49.74
Os	AL_3		1		76	6	10.866	1.14080	4		8.61	12.31	14.88	15.00	15.39	17.50	19.58	20.12	20.96	21.42	23.34	32.92	47.23	49.04	49.75
Ir	$L\beta_3$		1	6	77	6	10.866	1.14085	5		8.61	12.31	14.88	15.00	15.39	17.50	19.58	20.12	20.96	21.42	23.34	32.92	47.23	49.04	49.75
U	$L\gamma_{13}$		2	.01	92	6	21.724	1.14120	4		8.62	12.31	14.89	15.00	15.40	17.50	19.59			21.42	23.34	32.93	47.24	49.06	49.77
Pu	$L\gamma_2$		2	1	94	6	21.721	1.14136	5		8.62	12.32	14.89	15.00	15.40	17.51	19.59			21.43	23.35	32.93	47.25	49.06	49.78
Pt	$L\beta_4$		1	4	78	6	10.852	1.14223	5		8.62	12.33	14.90	15.02	15.41	17.52	19.61	20.14	20.99	21.44	23.36	32.96	47.29	49.10	49.82
Bi	$K\beta_3$		8	13	83	6	86.819	1.14223	6		8.63	12.33	14.90	15.02	15.41	17.52	19.61	20.14	20.99	21.44	23.36	32.96	47.29	49.10	49.82
Pt	$K\alpha_2$		6	50	78	6	65.112	1.14229	6		8.63	12.33	14.90	15.02	15.41	17.52	19.61	20.14	20.99	21.44	23.37	32.96	47.29	49.11	49.82
Th	$K\beta_2''$		10	11	90	6	108.489	1.14260	5		8.63	12.33	14.91	15.02	15.41	17.53	19.61	20.15	21.00	21.45	23.37	32.97	47.31	49.12	49.83
Rn	$K\beta_2'$	H	9	11	86	6	97.622	1.14282	5		8.63	12.33	14.91	15.02	15.42	17.53	19.62	20.15	21.00	21.45	23.38	32.98	47.32	49.13	49.85
Pa	$K\beta_1$	H	10	30	91	6	108.409	1.14345	6		8.63	12.34	14.92	15.03	15.43	17.54	19.63	20.16	21.01	21.47	23.39	33.00	47.34	49.16	49.87
Lu	$L\gamma_4$		1	.1	71	6	10.840	1.14350	4		8.63	12.34	14.92	15.03	15.43	17.54	19.63	20.16	21.01	21.47	23.39	33.00	47.35	49.16	49.88
Pt	$L\beta_6$		1	.1	78	6	10.840	1.14355	5		8.63	12.34	14.92	15.03	15.43	17.54	19.63	20.17	21.01	21.47	23.39	33.00	47.35	49.16	49.88
Bi	$L\alpha_1$		1	100	83	6	10.837	1.14386	5		8.64	12.34	14.92	15.04	15.43	17.55	19.64	20.17	21.02	21.47	23.40	33.01	47.36	49.18	49.89
Nd	$K\beta_2$	H	4	7	60	6	43.327	1.14440	4		8.64	12.35	14.93	15.04	15.44	17.55	19.65	20.18	21.03	21.48	23.41	33.02	47.38	49.20	49.92
Hf	$L\gamma_2$		1	1	72	6	10.832	1.14442	5		8.64	12.35	14.93	15.04	15.44	17.55	19.65	20.18	21.03	21.48	23.41	33.02	47.39	49.20	49.92
Fr	$K\beta_1$	H	9	29	87	6	97.460	1.14471	5		8.64	12.35	14.93	15.05	15.44	17.56	19.65	20.19	21.04	21.49	23.42	33.03	47.40	49.22	49.93
Rn	$K\beta_2''$	H	9	11	86	6	97.460	1.14471	5		8.64	12.35	14.93	15.05	15.44	17.56	19.65	20.19	21.04	21.49	23.42	33.03	47.40	49.22	49.93
Hf	$K\beta_2$	H	6	9	72	6	64.969	1.14480	4		8.64	12.35	14.94	15.05	15.44	17.56	19.65	20.19	21.04	21.49	23.42	33.04	47.40	49.22	49.94
Ru	$K\beta_1$		2	16	44	6	21.653	1.14496	6		8.65	12.36	14.94	15.05	15.45	17.56	19.66			21.49	23.42	33.04	47.41	49.23	49.95
U	L_1-$O_{4,5}$	B	2	.01	92	6	21.652	1.14500	4		8.65	12.36	14.94	15.05	15.45	17.56	19.66			21.50	23.42	33.04	47.41	49.23	49.95
Ta	$K\beta_3$		6	12	73	6	64.938	1.14534	6		8.65	12.36	14.94	15.06	15.45	17.57	19.66	20.20	21.05	21.50	23.43	33.05	47.43	49.25	49.96
Os	Lu	8	1	.01	76	6	10.823	1.14537	5		8.65	12.36	14.94	15.06	15.45	17.57	19.66	20.20	21.05	21.50	23.43	33.05	47.43	49.25	49.96
Pt	$K\beta_1$		7	27	78	6	75.735	1.14572	6		8.65	12.36	14.95	15.06	15.46	17.57	19.67	20.20	21.05	21.51	23.44	33.06	47.44	49.26	49.98
Ru	$K\beta_3$		2	8	44	6	21.631	1.14613	6		8.65	12.37	14.95	15.07	15.46	17.58	19.68			21.52	23.45	33.07	47.46	49.28	50.00
Ir	$K\alpha_1$		6	100	77	6	64.885	1.14628	6		8.66	12.37	14.96	15.07	15.46	17.58	19.68	20.21	21.07	21.52	23.45	33.08	47.47	49.29	50.01
Lu	$K\alpha_1$		5	100	71	6	54.061	1.14649	6		8.66	12.37	14.96	15.07	15.47	17.59	19.68	20.22	21.07	21.52	23.45	33.09	47.48	49.30	50.02
Ir	$K\beta_2'$		7	10	77	6	75.606	1.14769	6		8.67	12.38	14.97	15.09	15.48	17.60	19.70	20.24	21.09	21.55	23.48	33.12	47.53	49.35	50.07
U	$K\alpha_{1,2}$		9	150	92	6	97.131	1.14859	6		8.67	12.39	14.99	15.10	15.50	17.62	19.72	20.26	21.11	21.56	23.50	33.15	47.57	49.39	50.11
Ir	L_2-M_5	8	1	.01	77	6	10.789	1.14890	4		8.68	12.40	14.99	15.10	15.50	17.62	19.72	20.26	21.11	21.57	23.50	33.16	47.58	49.41	50.13
Ir	$K\beta_2''$		7	10	77	6	75.516	1.14905	5		8.68	12.40	14.99	15.11	15.50	17.63	19.73	20.26	21.12	21.57	23.51	33.16	47.59	49.42	50.14
Os	$L\beta_7$		1	7	76	6	10.785	1.14933	5		8.68	12.40	15.00	15.11	15.51	17.63	19.73	20.27	21.12	21.58	23.51	33.17	47.60	49.43	50.15
U	$L\gamma_4$		2	.1	92	6	21.559	1.14998	5		8.68	12.41	15.00	15.12	15.51	17.64	19.74			21.59	23.53	33.19	47.63	49.46	50.18
Ho	$K\beta_1$		5	22	67	6	53.868	1.15060	5		8.69	12.42	15.01	15.13	15.52	17.65	19.75	20.29	21.15	21.60	23.54	33.21	47.66	49.49	50.21
Pt	$K\beta_3$		7	12	78	6	75.355	1.15151	6		8.70	12.43	15.02	15.14	15.53	17.66	19.77	20.31	21.16	21.62	23.56	33.23	47.70	49.53	50.25
I	$K\beta_1$		3	20	53	6	32.289	1.15171	6		8.70	12.43	15.03	15.14	15.54	17.67	19.77	20.31	21.17	21.62	23.56	33.24	47.71	49.54	50.26
Fr	$K\alpha_1$	H	8	100	87	6	86.089	1.15192	5		8.70	12.43	15.03	15.14	15.54	17.67	19.78	20.31	21.17	21.63	23.57	33.25	47.72	49.55	50.27
Np	$K\alpha_2$		9	50	93	3	96.844	1.15200			8.70	12.43	15.03	15.14	15.54	17.67	19.78	20.32	21.17	21.63	23.57	33.25	47.72	49.55	50.27
Pa	$K\beta_3$	H	10	14	91	6	107.576	1.15230	5		8.70	12.43	15.03	15.15	15.55	17.68	19.78	20.32	21.18	21.63	23.57	33.26	47.73	49.56	50.29
Fr	$K\beta_3$	H	9	14	87	6	96.791	1.15263	5		8.70	12.44	15.04	15.15	15.55	17.68	19.79	20.33	21.18	21.64	23.58	33.27	47.75	49.58	50.30
U	$L\gamma_4p$		2	.1	92	6	21.495	1.15340	6		8.71	12.45	15.05	15.16	15.56	17.69	19.80			21.65	23.60	33.29	47.78	49.62	50.34
Gd	$K\alpha_1$		4	100	64	6	42.989	1.15341	6		8.71	12.45	15.05	15.16	15.56	17.69	19.80	20.34	21.20	21.65	23.60	33.29	47.78	49.62	50.34
I	$K\beta_3$		3	9	53	6	32.234	1.15369	6		8.71	12.45	15.05	15.17	15.56	17.70	19.81	20.35	21.20	21.66	23.60	33.30	47.79	49.63	50.35
Np	$L\gamma_6$		2	.01	93	6	21.484	1.15398	5		8.71	12.45	15.06	15.17	15.57	17.70	19.81			21.67	23.61	33.31	47.81	49.64	50.37
Ho	$K\beta_3$		5	11	67	6	53.702	1.15415	5		8.72	12.45	15.06	15.17	15.57	17.70	19.81	20.35	21.21	21.67	23.61	33.31	47.81	49.65	50.37
Lu	$K\alpha_{1,2}$		5	150	71	6	53.687	1.15446	6		8.72	12.46	15.06	15.18	15.58	17.71	19.82	20.36	21.22	21.67	23.62	33.32	47.83	49.66	50.39
Hf	AL_2		1		72	6	10.734	1.15480	4		8.72	12.46	15.07	15.18	15.58	17.71	19.83	20.37	21.22	21.68	23.63	33.33	47.84	49.68	50.40
Hf	$L\gamma_6$		1	.01	72	6	10.731	1.15519	5		8.72	12.47	15.07	15.19	15.58	17.72	19.83	20.37	21.23	21.69	23.63	33.34	47.86	49.70	50.42
Ta	L_2-N_3	8	1	.01	73	6	10.730	1.15530	4		8.72	12.47	15.07	15.19	15.59	17.72	19.83	20.37	21.23	21.69	23.64	33.35	47.86	49.70	50.43
Ba	$K\alpha_1$		3	100	56	6	32.188	1.15533	6		8.72	12.47	15.07	15.19	15.59	17.72	19.84	20.38	21.23	21.69	23.64	33.35	47.87	49.70	50.43
Bi	$L\alpha_2$		1	10	83	6	10.729	1.15536	5		8.72	12.47	15.07	15.19	15.59	17.72	19.84	20.38	21.23	21.69	23.64	33.35	47.87	49.71	50.43
Ir	$K\alpha_{1,2}$		6	150	77	6	64.339	1.15600	6		8.73	12.47	15.08	15.20	15.60	17.73	19.85	20.39	21.25	21.70	23.65	33.37	47.89	49.73	50.46
Ir	L_3-N_3	8	1	.01	77	6	10.723	1.15600	4		8.73	12.47	15.08	15.20	15.60	17.73	19.85	20.39	21.25	21.70	23.65	33.37	47.89	49.73	50.46
Cm	$K\alpha_{1,2}$		10	150	96	3	107.139	1.15700			8.74	12.49	15.10	15.21	15.61	17.75	19.86	20.41	21.26	21.72	23.67	33.40	47.94	49.78	50.51
Pb	$K\alpha_1$		7	100	82	6	74.956	1.15763	6		8.74	12.49	15.10	15.22	15.62	17.76	19.88	20.42	21.28	21.74	23.68	33.42	47.97	49.81	50.54
Pu	$L\gamma_1$		2	10	94	6	21.414	1.15776	6		8.74	12.49	15.11	15.22	15.62	17.76	19.88			21.74	23.69	33.42	47.97	49.82	50.54
Ir	$L\beta_1$		1	50	77	6	10.706	1.15781	5		8.74	12.49	15.11	15.22	15.62	17.76	19.88	20.42	21.28	21.74	23.69	33.42	47.97	49.82	50.54
Hf	Lv	8	1	.01	72	6	10.702	1.15830	5		8.75	12.50	15.11	15.23	15.63	17.77	19.89	20.43	21.29	21.75	23.70	33.44	48.00	49.84	50.57
Dy	$K\beta_2$	H	5	9	66	6	53.500	1.15850	4		8.75	12.50	15.12	15.23	15.63	17.77	19.89	20.43	21.29	21.75	23.70	33.44	48.01	49.85	50.58
Gd	$K\alpha_{1,2}$		4	150	64	6	42.757	1.15966	6		8.76	12.51	15.13	15.25	15.65	17.79	19.91	20.45	21.31	21.77	23.73	33.48	48.06	49.90	50.63
Ba	$K\alpha_{1,2}$		3	150	56	6	32.062	1.15989	6		8.76	12.52	15.13	15.25	15.65	17.79	19.91	20.46	21.32	21.78	23.73	33.48	48.07	49.91	50.64
Bk	$K\alpha_2$		10	50	97	3	106.862	1.16000			8.76	12.52	15.14	15.25	15.65	17.79	19.92	20.46	21.32	21.78	23.73	33.49	48.07	49.92	50.65
Bi	$K\alpha_2$		7	50	83	6	74.802	1.16002	6		8.76	12.52	15.14	15.25	15.65	17.80	19.92	20.46	21.32	21.78	23.73	33.49	48.07	49.92	50.65
Ra	$K\alpha_2$	H	8	50	88	6	85.419	1.16096	5		8.77	12.53	15.15	15.26	15.66	17.81	19.93	20.48	21.34	21.80	23.75	33.52	48.11	49.96	50.69
Lu	$L\gamma_{11}$	8	1	.01	71	6	10.676	1.16107	5		8.77	12.53	15.15	15.26	15.66	17.81	19.93	20.48	21.34	21.80	23.76	33.52	48.12	49.97	50.70

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hf	$L\gamma_8$		1	.8	72	6	10.674	1.16138	5		8.77	12.53	15.15	15.27	15.67	17.82	19.94	20.48	21.35	21.81	23.76	33.53	48.13	49.98	50.71
Ta	L_2-N_2	F	1	.01	73	6	10.670	1.16181	5		8.77	12.54	15.16	15.27	15.67	17.82	19.95	20.49	21.35	21.81	23.77	33.54	48.15	50.00	50.73
Np	$L\gamma_3$		2	2	93	6	21.336	1.16200	4		8.77	12.54	15.16	15.28	15.68	17.83	19.95			21.82	23.78	33.55	48.16	50.01	50.74
Lu	L_1-N_4	8	1	.01	71	6	10.665	1.16227	5		8.78	12.54	15.17	15.28	15.68	17.83	19.96	20.50	21.36	21.82	23.78	33.55	48.17	50.02	50.75
Pa	$K\alpha_1$	H	9	100	91	6	95.852	1.16392	6		8.79	12.56	15.19	15.30	15.70	17.86	19.98	20.53	21.39	21.85	23.82	33.60	48.24	50.10	50.83
Hg	Ln		1	1	80	6	10.649	1.16400	4		8.79	12.56	15.19	15.30	15.70	17.86	19.99	20.53	21.39	21.86	23.82	33.61	48.25	50.10	50.83
Re	$L\beta_9$	B	1	.01	75	6	10.642	1.16487	5		8.80	12.57	15.20	15.31	15.72	17.87	20.00	20.55	21.41	21.87	23.83	33.63	48.29	50.14	50.87
Fr	$K\alpha_{1,2}$	H	8	150	87	6	85.110	1.16518	5		8.80	12.57	15.20	15.32	15.72	17.87	20.01	20.55	21.42	21.88	23.84	33.64	48.30	50.16	50.89
Ir	L_3-N_2	B	1	.01	77	6	10.636	1.16545	5		8.80	12.58	15.21	15.32	15.72	17.88	20.01	20.56	21.42	21.88	23.85	33.65	48.31	50.17	50.90
Pt	$L\beta_{17}$	B	1	.01	78	6	10.625	1.16670	4		8.81	12.59	15.22	15.34	15.74	17.90	20.03	20.58	21.44	21.91	23.87	33.69	48.37	50.23	50.96
Ra	Ll		1	3	88	6	10.620	1.16719	5		8.81	12.60	15.23	15.35	15.75	17.91	20.04	20.59	21.45	21.92	23.88	33.70	48.39	50.25	50.98
Tl	$K\beta_2'$		8	10	81	6	84.933	1.16760	5		8.82	12.60	15.24	15.35	15.75	17.91	20.05	20.59	21.46	21.92	23.89	33.71	48.41	50.27	51.00
Pb	$K\beta_1$		8	88	82	6	84.922	1.16776	6		8.82	12.60	15.24	15.35	15.76	17.91	20.05	20.60	21.46	21.93	23.89	33.72	48.41	50.28	51.01
Ba	$K\alpha_2$		3	50	56	6	31.812	1.16900	6		8.83	12.62	15.25	15.37	15.77	17.93	20.07	20.62	21.49	21.95	23.92	33.75	48.47	50.33	51.07
Pb	$K\alpha_{1,2}$		7	150	82	6	74.221	1.16910	6		8.83	12.62	15.26	15.37	15.77	17.94	20.07	20.62	21.49	21.95	23.92	33.76	48.47	50.34	51.07
Tl	$K\beta_2''$		8	10	81	6	84.823	1.16912	5		8.83	12.62	15.26	15.37	15.77	17.94	20.07	20.62	21.49	21.95	23.92	33.76	48.47	50.34	51.07
Te	K-$O_{2,3}$		3	.01	52	6	31.806	1.16922	5		8.83	12.62	15.26	15.37	15.78	17.94	20.08	20.62	21.49	21.96	23.93	33.76	48.48	50.34	51.08
Pt	L_1-M_1	8	1	.01	78	6	10.598	1.16962	5		8.83	12.62	15.26	15.38	15.78	17.94	20.08	20.63	21.50	21.96	23.93	33.77	48.50	50.36	51.10
Os	$L\beta_2$		1	20	76	6	10.597	1.16979	5		8.83	12.62	15.26	15.38	15.78	17.95	20.09	20.63	21.50	21.97	23.94	33.78	48.50	50.37	51.11
Am	$K\alpha_1$		10	100	95	3	105.949	1.17000			8.84	12.63	15.27	15.38	15.79	17.95	20.09	20.64	21.51	21.97	23.94	33.78	48.51	50.38	51.11
Lu	$K\alpha_2$		5	50	71	6	52.956	1.17040	6		8.84	12.63	15.27	15.39	15.79	17.96	20.10	20.64	21.51	21.98	23.95	33.80	48.53	50.40	51.13
Au	L_2-M_2	B	1	.01	79	6	10.588	1.17080	4		8.84	12.63	15.28	15.39	15.80	17.96	20.10	20.65	21.52	21.99	23.96	33.81	48.55	50.42	51.15
Pd	$K\alpha_1$		2	100	46	6	21.174	1.17090	6		8.84	12.64	15.28	15.39	15.80	17.96	20.11			21.99	23.96	33.81	48.55	50.42	51.16
Ac	$K\beta_2'$	H	10	11	89	6	105.849	1.17110	5		8.84	12.64	15.28	15.40	15.80	17.97	20.11	20.66	21.53	21.99	23.96	33.82	48.56	50.43	51.17
Os	$L8_{1s}$		1	1	76	6	10.580	1.17167	5		8.85	12.64	15.29	15.40	15.81	17.98	20.12	20.67	21.54	22.00	23.98	33.83	48.59	50.46	51.19
Gd	$K\alpha_2$		4	50	64	6	42.302	1.17215	6		8.85	12.65	15.30	15.41	15.82	17.98	20.13	20.68	21.55	22.01	23.99	33.85	48.61	50.48	51.22
Re	$L\beta_{10}$	8	1	.01	75	6	10.575	1.17218	5		8.85	12.65	15.30	15.41	15.82	17.98	20.13	20.68	21.55	22.01	23.99	33.85	48.61	50.48	51.22
Ta	$L\gamma_5$		1	.1	73	6	10.569	1.17290	4		8.86	12.66	15.30	15.42	15.83	17.99	20.14	20.69	21.56	22.03	24.00	33.87	48.64	50.51	51.25
Te	$K\beta_2$	D	3	6	52	6	31.698	1.17319	6		8.86	12.66	15.31	15.42	15.83	18.00	20.14	20.69	21.57	22.03	24.01	33.88	48.65	50.53	51.26
Nd	$K\beta_1$		4	22	60	6	42.264	1.17320	6		8.86	12.66	15.31	15.42	15.83	18.00	20.15	20.69	21.57	22.03	24.01	33.88	48.65	50.53	51.26
Ac	$K\beta_2''$	H	10	11	89	6	105.660	1.17320	5		8.86	12.66	15.31	15.43	15.83	18.00	20.15	20.69	21.57	22.03	24.01	33.88	48.65	50.53	51.26
Pd	$K\alpha_{1,2}$		2	150	46	6	21.121	1.17381	6		8.86	12.67	15.32	15.43	15.84	18.01	20.16			22.04	24.02	33.90	48.68	50.55	51.29
Th	$K\beta_1$		10	30	90	6	105.591	1.17396	6		8.87	12.67	15.32	15.44	15.84	18.01	20.16	20.71	21.58	22.05	24.02	33.90	48.69	50.56	51.30
Pb	$K\beta_3$		8	13	82	6	84.436	1.17448	6		8.87	12.67	15.33	15.44	15.85	18.02	20.17	20.72	21.59	22.06	24.03	33.92	48.71	50.58	51.32
Nb	$L\gamma_2$		2	1	93	6	21.107	1.17460	4		8.87	12.68	15.33	15.44	15.85	18.02	20.17			22.06	24.04	33.92	48.72	50.59	51.33
At	$K\beta_2'$	H	9	11	85	6	94.974	1.17468	5		8.87	12.68	15.33	15.44	15.85	18.02	20.17	20.72	21.59	22.06	24.04	33.92	48.72	50.59	51.33
Pb	$L\alpha_1$		1	100	82	6	10.550	1.17501	5		8.87	12.68	15.33	15.45	15.85	18.03	20.18	20.73	21.60	22.07	24.05	33.93	48.73	50.61	51.35
Ir	$K\alpha_2$		6	50	77	6	63.276	1.17542	6		8.88	12.69	15.34	15.45	15.86	18.03	20.18	20.73	21.61	22.07	24.05	33.95	48.75	50.63	51.37
As	$K\alpha_1$		1	100	33	6	10.542	1.17588	5		8.88	12.69	15.34	15.46	15.87	18.04	20.19	20.74	21.62	22.08	24.06	33.96	48.77	50.65	51.39
Nd	$K\beta_3$		4	10	60	6	42.159	1.17611	6		8.88	12.69	15.35	15.46	15.87	18.04	20.20	20.75	21.62	22.09	24.07	33.97	48.78	50.66	51.40
Rn	$K\beta_1$	H	9	29	86	6	94.850	1.17621	5		8.88	12.69	15.35	15.46	15.87	18.05	20.20	20.75	21.62	22.09	24.07	33.97	48.79	50.66	51.41
Hf	$K\beta_1$	H	6	66	72	6	63.222	1.17642	5		8.88	12.70	15.35	15.47	15.87	18.05	20.20	20.75	21.63	22.09	24.07	33.97	48.80	50.67	51.42
At	$K\beta_2''$	H	9	11	85	6	94.829	1.17648	5		8.88	12.70	15.35	15.47	15.87	18.05	20.20	20.75	21.63	22.09	24.08	33.98	48.80	50.68	51.42
As	$K\alpha_{1,2}$		1	150	33	6	10.530	1.17721	5		8.89	12.70	15.36	15.48	15.88	18.06	20.21	20.77	21.64	22.11	24.09	34.00	48.83	50.71	51.45
Re	$L\beta_5$		1	.1	75	6	10.530	1.17721	5		8.89	12.70	15.36	15.48	15.88	18.06	20.21	20.77	21.64	22.11	24.09	34.00	48.83	50.71	51.45
Re	AL_3		1		75	6	10.529	1.17730	4		8.89	12.71	15.36	15.48	15.89	18.06	20.22	20.77	21.64	22.11	24.09	34.00	48.83	50.72	51.46
Hf	L_2-N_5	8	1	.01	72	6	10.524	1.17788	5		8.89	12.71	15.37	15.49	15.89	18.07	20.23	20.78	21.65	22.12	24.10	34.02	48.86	50.74	51.48
Ir	$L8_6$		1	.1	77	6	10.523	1.17796	5		8.90	12.71	15.37	15.49	15.89	18.07	20.23	20.78	21.65	22.12	24.11	34.02	48.86	50.75	51.49
U	$K\alpha_2$		9	50	92	6	94.649	1.17871	6		8.90	12.72	15.38	15.50	15.90	18.08	20.24	20.79	21.67	22.14	24.12	34.04	48.90	50.78	51.52
Pa	$K\alpha_{1,2}$	H	9	150	91	6	94.627	1.17898	6		8.90	12.72	15.38	15.50	15.91	18.09	20.25	20.80	21.67	22.14	24.13	34.05	48.91	50.79	51.54
Hf	$L\gamma_1$		1	10	72	6	10.514	1.17900	5		8.90	12.72	15.38	15.50	15.91	18.09	20.25	20.80	21.67	22.14	24.13	34.05	48.91	50.79	51.54
Lu	$L\gamma_3$		1	1	71	6	10.509	1.17953	5		8.91	12.73	15.39	15.51	15.92	18.10	20.26	20.81	21.68	22.15	24.14	34.07	48.93	50.82	51.56
Os	$L\beta_3$		1	6	76	6	10.509	1.17955	5		8.91	12.73	15.39	15.51	15.92	18.10	20.26	20.81	21.68	22.15	24.14	34.07	48.93	50.82	51.56
Ir	$L\beta_4$		1	4	77	6	10.509	1.17958	5		8.91	12.73	15.39	15.51	15.92	18.10	20.26	20.81	21.68	22.15	24.14	34.07	48.94	50.82	51.56
Pd	$K\alpha_2$		2	50	46	6	21.017	1.17964	6		8.91	12.73	15.39	15.51	15.92	18.10	20.26			22.15	24.14	34.07	48.94	50.82	51.57
U	$L\gamma_{11}$	8	2	.01	92	6	21.015	1.17972	5		8.91	12.73	15.39	15.51	15.92	18.10	20.26			22.16	24.14	34.07	48.94	50.83	51.57
Ir	$K\beta_1$		7	27	77	6	73.548	1.17979	6		8.91	12.73	15.40	15.51	15.92	18.10	20.26	20.81	21.69	22.16	24.14	34.08	48.94	50.83	51.57
As	$K\alpha_2$		1	50	33	6	10.506	1.17987	5		8.91	12.73	15.40	15.51	15.92	18.10	20.26	20.81	21.69	22.16	24.15	34.08	48.95	50.83	51.58
Tc	$K8_2$	H	2	3	43	6	21.002	1.18048	5		8.91	12.74	15.40	15.52	15.93	18.11	20.27			22.17	24.16	34.10	48.97	50.86	51.61
Os	$K\alpha_1$		6	100	76	6	62.990	1.18076	6		8.92	12.74	15.41	15.53	15.93	18.12	20.28	20.83	21.71	22.17	24.16	34.10	48.99	50.87	51.62
Hf	$K8_3$	H	6	12	72	6	62.969	1.18116	5		8.92	12.75	15.41	15.53	15.94	18.12	20.28	20.84	21.71	22.18	24.17	34.12	49.01	50.89	51.64
Lu	$K\beta_2$	H	6	9	71	6	62.956	1.18140	4		8.92	12.75	15.42	15.53	15.94	18.13	20.29	20.84	21.72	22.19	24.18	34.12	49.02	50.90	51.65
Re	Lu	8	1	.01	75	6	10.492	1.18150	4		8.92	12.75	15.42	15.53	15.94	18.13	20.29	20.84	21.72	22.19	24.18	34.13	49.02	50.91	51.65
Yb	AL_1		1		70	6	10.489	1.18180	4		8.92	12.75	15.42	15.54	15.95	18.13	20.29	20.85	21.73	22.19	24.19	34.14	49.03	50.92	51.67
U	L_1-N_4	8	2	.01	92	6	20.976	1.18192	5		8.93	12.76	15.42	15.54	15.95	18.13	20.30			22.20	24.19	34.14	49.04	50.93	51.67

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Os	$K\beta_2'$		7	10	76	6	73.390	1.18234	6		8.93	12.76	15.43	15.55	15.95	18.14	20.30	20.86	21.74	22.20	24.20	34.15	49.06	50.95	51.69
Th	$K\beta_3$		10	14	90	6	104.813	1.18268	6		8.93	12.76	15.43	15.55	15.96	18.15	20.31	20.86	21.74	22.21	24.20	34.16	49.07	50.96	51.71
Yb	L_1-$O_{4,5}$	B	1	.01	70	6	10.481	1.18270	4		8.93	12.76	15.43	15.55	15.96	18.15	20.31	20.86	21.74	22.21	24.21	34.16	49.07	50.96	51.71
Yb	$K\alpha_1$		5	100	70	6	52.380	1.18327	6		8.94	12.77	15.44	15.56	15.97	18.15	20.32	20.87	21.75	22.22	24.22	34.18	49.10	50.99	51.74
Os	$K\beta_2''$		7	10	76	6	73.306	1.18370	5		8.94	12.77	15.45	15.56	15.97	18.16	20.33	20.88	21.76	22.23	24.23	34.19	49.12	51.01	51.76
Rn	$K\alpha_1$	H	8	100	86	6	83.768	1.18384	5		8.94	12.78	15.45	15.57	15.97	18.16	20.33	20.88	21.76	22.23	24.23	34.20	49.12	51.02	51.76
Rn	$K\beta_3$	H	9	13	86	6	94.230	1.18395	5		8.94	12.78	15.45	15.57	15.98	18.17	20.33	20.89	21.77	22.24	24.23	34.20	49.13	51.02	51.77
U	L_2-P_4		2	.01	92	6	20.938	1.18406	5		8.94	12.78	15.45	15.57	15.98	18.17	20.33			22.24	24.23	34.20	49.13	51.03	51.77
Lu	$L\gamma_2$		1	1	71	6	10.458	1.18530	4		8.95	12.79	15.47	15.59	15.99	18.19	20.36	20.91	21.79	22.26	24.26	34.24	49.19	51.08	51.83
Yb	$L\gamma_4$		1	.1	70	6	10.458	1.18530	4		8.95	12.79	15.47	15.59	15.99	18.19	20.36	20.91	21.79	22.26	24.26	34.24	49.19	51.08	51.83
Ir	$K\beta_3$		7	12	77	6	73.190	1.18557	6		8.95	12.80	15.47	15.59	16.00	18.19	20.36	20.91	21.80	22.27	24.26	34.25	49.20	51.10	51.85
U	L_2-$P_{2,3}$	B	2	.01	92	6	20.904	1.18600	4		8.96	12.80	15.48	15.59	16.00	18.20	20.37			22.27	24.27	34.26	49.22	51.12	51.87
Re	$L\beta_7$		1	.1	75	6	10.451	1.18610	5		8.96	12.80	15.48	15.60	16.00	18.20	20.37	20.92	21.81	22.28	24.28	34.26	49.22	51.12	51.87
Pb	$L\alpha_2$		1	10	82	6	10.448	1.18648	5		8.96	12.80	15.48	15.60	16.01	18.20	20.38	20.93	21.81	22.28	24.28	34.27	49.24	51.14	51.89
Am	$K\alpha_{1,2}$		10	150	95	3	104.431	1.18700			8.96	12.81	15.49	15.61	16.02	18.21	20.38	20.94	21.82	22.29	24.29	34.29	49.26	51.16	51.91
Pr	$K\beta_2$		4	65	59	6	41.767	1.18716	5		8.96	12.81	15.49	15.61	16.02	18.22	20.39	20.94	21.83	22.30	24.30	34.29	49.27	51.17	51.92
Pa	$L\gamma_4$		2	.1	91	6	20.879	1.18740	4		8.97	12.81	15.50	15.61	16.02	18.22	20.39			22.30	24.30	34.30	49.28	51.18	51.93
Yb	L_1-O_1	B	1	.01	70	6	10.429	1.18860	4		8.98	12.83	15.51	15.63	16.04	18.24	20.41	20.97	21.85	22.32	24.33	34.34	49.33	51.24	51.99
Os	L_2-M_5	F	1	.01	76	6	10.423	1.18928	5		8.98	12.84	15.52	15.64	16.05	18.25	20.42	20.98	21.86	22.34	24.34	34.36	49.36	51.27	52.02
Dy	$K\beta_1$		5	23	66	6	52.110	1.18940	5		8.98	12.84	15.52	15.64	16.05	18.25	20.43	20.98	21.87	22.34	24.34	34.36	49.37	51.27	52.03
U	$L\gamma_6$		2	.01	92	6	20.839	1.18969	6		8.98	12.84	15.53	15.64	16.05	18.25	20.43			22.34	24.35	34.37	49.38	51.29	52.04
Cm	$K\alpha_2$		10	50	96	3	104.168	1.19000			8.99	12.84	15.53	15.65	16.06	18.26	20.44	20.99	21.88	22.35	24.36	34.38	49.40	51.30	52.05
Os	$K\alpha_{1,2}$		6	150	76	6	62.477	1.19045	6		8.99	12.85	15.54	15.65	16.06	18.27	20.44	21.00	21.89	22.36	24.37	34.39	49.42	51.32	52.07
Tl	$K\alpha_1$		7	100	81	6	72.859	1.19095	6		8.99	12.85	15.54	15.66	16.07	18.27	20.45	21.01	21.90	22.37	24.38	34.41	49.44	51.35	52.10
Yb	$K\alpha_{1,2}$		5	150	70	6	52.030	1.19122	6		9.00	12.86	15.55	15.66	16.07	18.28	20.46	21.02	21.90	22.37	24.38	34.42	49.45	51.36	52.11
Fr	$K\alpha_2$	H	8	50	87	6	83.217	1.19168	5		9.00	12.86	15.55	15.67	16.08	18.29	20.47	21.02	21.91	22.38	24.39	34.43	49.47	51.38	52.13
Pb	$K\alpha_2$		7	50	82	6	72.792	1.19206	6		9.00	12.87	15.56	15.67	16.09	18.29	20.47	21.03	21.92	22.39	24.40	34.44	49.49	51.40	52.15
Nb	$L\gamma_1$		2	10	93	6	20.781	1.19300	6		9.01	12.88	15.57	15.69	16.10	18.31	20.49			22.41	24.42	34.47	49.53	51.44	52.19
Dy	$K\beta_3$		5	11	66	6	51.949	1.19310	5		9.01	12.88	15.57	15.69	16.10	18.31	20.49	21.05	21.94	22.41	24.42	34.47	49.53	51.44	52.20
Eu	$K\alpha_1$		4	100	63	6	41.535	1.19378	6		9.02	12.88	15.58	15.70	16.11	18.32	20.50	21.06	21.95	22.42	24.44	34.49	49.56	51.48	52.23
U	L_2-O_3	B	2	.01	92	6	20.754	1.19456	5		9.02	12.89	15.59	15.71	16.12	18.33	20.52			22.44	24.45	34.52	49.60	51.51	52.27
Th	$K\alpha_1$		9	100	90	6	93.334	1.19532	6		9.03	12.90	15.60	15.72	16.13	18.34	20.53	21.09	21.98	22.45	24.47	34.54	49.63	51.55	52.30
Ga	AK		1		31	6	10.366	1.19580	4		9.03	12.91	15.61	15.72	16.14	18.35	20.54	21.10	21.99	22.46	24.48	34.55	49.65	51.57	52.33
Ga	$K\beta_2$		1	.3	31	6	10.365	1.19600	5		9.03	12.91	15.61	15.73	16.14	18.35	20.54	21.10	21.99	22.46	24.48	34.56	49.66	51.58	52.34
Rn	$K\alpha_{1,2}$	H	8	150	86	6	82.843	1.19706	5		9.04	12.92	15.62	15.74	16.15	18.37	20.56	21.12	22.01	22.48	24.50	34.59	49.71	51.63	52.39
U	$L\gamma_3$		2	2	92	6	20.709	1.19715	6		9.04	12.92	15.62	15.74	16.15	18.37	20.56			22.49	24.51	34.59	49.71	51.63	52.39
Os	$L\beta_1$		1	50	76	6	10.354	1.19727	5		9.04	12.92	15.62	15.74	16.16	18.37	20.56	21.12	22.01	22.49	24.51	34.60	49.72	51.64	52.40
Pu	$L\gamma_5$		2	.1	94	6	20.701	1.19760	4		9.04	12.93	15.63	15.75	16.16	18.38	20.57			22.50	24.51	34.61	49.73	51.65	52.41
Ga	$K\beta_5$	B	1	.04	31	6	10.346	1.19810	4		9.05	12.93	15.64	15.75	16.17	18.38	20.58	21.14	22.03	22.50	24.53	34.62	49.76	51.68	52.43
Lu	AL_2		1		71	6	10.343	1.19850	4		9.05	12.94	15.64	15.76	16.17	18.39	20.58	21.15	22.04	22.51	24.53	34.63	49.77	51.69	52.45
Tb	$K\beta_2$	H	5	8	65	6	51.715	1.19850	4		9.05	12.94	15.64	15.76	16.17	18.39	20.58	21.15	22.04	22.51	24.53	34.63	49.77	51.69	52.45
Lu	$L\gamma_6$		1	.01	71	6	10.341	1.19870	4		9.05	12.94	15.64	15.76	16.18	18.39	20.59	21.15	22.04	22.52	24.54	34.64	49.78	51.70	52.46
Te	$K\beta_1$		3	20	52	6	30.990	1.19998	6		9.06	12.95	15.66	15.78	16.19	18.41	20.61	21.17	22.06	22.54	24.56	34.68	49.84	51.76	52.52
Pu	$K\alpha_1$		10	100	94	3	103.300	1.20000			9.06	12.95	15.66	15.78	16.19	18.41	20.61	21.17	22.06	22.54	24.56	34.68	49.84	51.76	52.52
Eu	$K\alpha_{1,2}$		4	150	63	6	41.320	1.20001	6		9.06	12.95	15.66	15.78	16.19	18.41	20.61	21.17	22.06	22.54	24.56	34.68	49.84	51.76	52.52
Os	L_3-N_2	B	1	.01	76	6	10.323	1.20086	5		9.07	12.96	15.67	15.79	16.21	18.43	20.63	21.19	22.08	22.56	24.58	34.70	49.88	51.80	52.56
Cs	$K\alpha_1$		3	100	55	6	30.968	1.20087	6		9.07	12.96	15.67	15.79	16.21	18.43	20.63	21.19	22.08	22.56	24.58	34.70	49.88	51.80	52.57
Tl	$K\beta_1$		8	78	81	6	82.562	1.20114	6		9.07	12.96	15.68	15.79	16.21	18.43	20.63	21.19	22.09	22.56	24.59	34.71	49.89	51.82	52.58
Lu	L_2-$O_{2,3}$	B	1	.01	71	6	10.318	1.20140	4		9.07	12.97	15.68	15.80	16.21	18.44	20.63	21.20	22.09	22.57	24.59	34.72	49.90	51.83	52.59
Hg	$K\beta_2'$		8	10	80	6	82.530	1.20160	5		9.07	12.97	15.68	15.80	16.22	18.44	20.64	21.20	22.09	22.57	24.60	34.72	49.91	51.84	52.60
Te	$K\beta_3$		3	9	52	6	30.939	1.20198	6		9.08	12.97	15.69	15.81	16.22	18.44	20.64	21.21	22.10	22.58	24.61	34.74	49.93	51.86	52.62
Tl	$K\alpha_{1,2}$		7	150	81	6	72.167	1.20238	6		9.08	12.98	15.69	15.81	16.23	18.45	20.65	21.21	22.11	22.59	24.61	34.75	49.95	51.87	52.64
U	$L\gamma_8$		2	.1	92	6	20.617	1.20250	5		9.08	12.98	15.69	15.81	16.23	18.45	20.65			22.59	24.62	34.75	49.95	51.88	52.64
Tc	$K\beta_1$	H	2	16	43	6	20.615	1.20260	5		9.08	12.98	15.69	15.81	16.23	18.45	20.66			22.59	24.62	34.75	49.95	51.88	52.65
Au	Ln		1	1	79	6	10.307	1.20273	5		9.08	12.98	15.70	15.82	16.23	18.46	20.66	21.22	22.12	22.59	24.62	34.76	49.96	51.89	52.65
Ra	$K\beta_2'$	H	10	11	88	6	103.051	1.20290	5		9.08	12.98	15.70	15.82	16.23	18.46	20.66	21.22	22.12	22.60	24.62	34.76	49.97	51.90	52.66
Hg	$K\beta_2''$		8	10	80	6	82.420	1.20320	5		9.09	12.99	15.70	15.82	16.24	18.46	20.67	21.23	22.12	22.60	24.63	34.77	49.98	51.91	52.67
Tc	$K\beta_3$	H	2	8	43	6	20.595	1.20376	5		9.09	12.99	15.71	15.83	16.24	18.47	20.68			22.61	24.64	34.79	50.01	51.94	52.70
Lu	$L\gamma_8$		1	.1	71	6	10.290	1.20470	4		9.10	13.00	15.72	15.84	16.26	18.49	20.69	21.26	22.15	22.63	24.66	34.82	50.05	51.98	52.75
W	$L\beta_9$	B	1	.01	74	6	10.289	1.20479	5		9.10	13.00	15.72	15.84	16.26	18.49	20.69	21.26	22.15	22.63	24.66	34.82	50.05	51.99	52.75
Ra	$K\beta_2''$	H	10	11	88	6	102.871	1.20500	5		9.10	13.01	15.73	15.85	16.26	18.49	20.70	21.26	22.16	22.64	24.67	34.83	50.06	52.00	52.76
Cs	$K\alpha_{1,2}$		3	150	55	6	30.851	1.20541	6		9.10	13.01	15.73	15.85	16.27	18.50	20.70	21.27	22.17	22.64	24.68	34.84	50.08	52.02	52.78
Ac	$K\beta_1$	H	10	30	89	6	102.829	1.20550	5		9.10	13.01	15.73	15.85	16.27	18.50	20.71	21.27	22.17	22.65	24.68	34.84	50.08	52.02	52.78
Cf	$L\beta_1$		2	50	98	3	20.557	1.20600			9.11	13.02	15.74	15.86	16.28	18.51	20.71			22.66	24.69	34.86	50.11	52.04	52.81
U	Lv	B	2	.01	92	6	20.554	1.20620	4		9.11	13.02	15.74	15.86	16.28	18.51	20.72			22.66	24.69	34.86	50.11	52.05	52.82

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Re	$L\beta_2$		1	20	75	6	10.274	1.20660	5		9.11	13.02	15.75	15.87	16.28	18.52	20.72	21.29	22.19	22.67	24.70	34.87	50.13	52.07	52.84
Ir	$L\beta_{17}$	B	1	.01	77	6	10.271	1.20690	4		9.11	13.03	15.75	15.87	16.29	18.52	20.73	21.30	22.19	22.67	24.71	34.88	50.15	52.08	52.85
Yb	$K\alpha_2$		5	50	70	6	51.345	1.20712	6		9.12	13.03	15.75	15.87	16.29	18.52	20.73	21.30	22.20	22.68	24.71	34.89	50.16	52.09	52.86
Tl	$L\alpha_1$		1	100	81	6	10.267	1.20739	5		9.12	13.03	15.76	15.88	16.29	18.53	20.74	21.30	22.20	22.68	24.72	34.90	50.17	52.11	52.87
Po	$K\beta_2'$	H	9	11	84	6	92.383	1.20762	5		9.12	13.03	15.76	15.88	16.30	18.53	20.74	21.31	22.21	22.69	24.72	34.90	50.18	52.12	52.88
Tl	$K\beta_3$		8	13	81	6	82.104	1.20784	6		9.12	13.04	15.76	15.88	16.30	18.54	20.75	21.31	22.21	22.69	24.73	34.91	50.19	52.13	52.89
Ga	$K\beta_1$		1	14	31	6	10.263	1.20789	5		9.12	13.04	15.76	15.88	16.30	18.54	20.75	21.31	22.21	22.69	24.73	34.91	50.19	52.13	52.90
Re	$L\beta_{15}$		1	1	75	6	10.260	1.20819	5		9.12	13.04	15.77	15.89	16.30	18.54	20.75	21.32	22.22	22.70	24.73	34.92	50.20	52.14	52.91
Ga	$K\beta_3$		1	7	31	6	10.259	1.20835	5		9.13	13.04	15.77	15.89	16.31	18.54	20.76	21.32	22.22	22.70	24.74	34.93	50.21	52.15	52.92
At	$K\beta_1$	H	9	29	85	6	92.287	1.20888	5		9.13	13.05	15.78	15.90	16.31	18.55	20.76	21.33	22.23	22.71	24.75	34.94	50.23	52.18	52.94
Pa	$K\alpha_2$	H	9	50	91	6	92.271	1.20909	6		9.13	13.05	15.78	15.90	16.32	18.55	20.77	21.33	22.23	22.71	24.75	34.95	50.24	52.19	52.95
Po	$K\beta_2''$	H	9	11	84	6	92.246	1.20942	5		9.13	13.05	15.78	15.90	16.32	18.56	20.77	21.34	22.24	22.72	24.76	34.96	50.26	52.20	52.97
Os	$K\alpha_2$		6	50	76	6	61.476	1.20983	6		9.14	13.06	15.79	15.91	16.33	18.57	20.78	21.35	22.25	22.73	24.77	34.97	50.28	52.22	52.99
Ir	L_1-M_1	B	1	.01	77	6	10.243	1.21020	4		9.14	13.06	15.79	15.91	16.33	18.57	20.79	21.35	22.25	22.73	24.78	34.98	50.29	52.24	53.01
Th	$K\alpha_{1,2}$		9	150	90	6	92.174	1.21036	6		9.14	13.06	15.80	15.92	16.33	18.57	20.79	21.36	22.26	22.74	24.78	34.99	50.30	52.25	53.01
U	$L\gamma_2$		2	1	92	6	20.481	1.21047	6		9.14	13.06	15.80	15.92	16.34	18.58	20.79			22.74	24.78	34.99	50.30	52.25	53.02
8i	Ls	B	1	.01	83	6	10.240	1.21050	4		9.14	13.07	15.80	15.92	16.34	18.58	20.79	21.36	22.26	22.74	24.78	34.99	50.31	52.25	53.02
W	$L\beta_{10}$	8	1	.01	74	6	10.226	1.21218	5		9.15	13.08	15.82	15.94	16.36	18.60	20.82	21.39	22.29	22.77	24.82	35.04	50.38	52.33	53.10
Eu	$K\alpha_2$		4	50	63	6	40.895	1.21247	6		9.16	13.09	15.82	15.94	16.36	18.61	20.83	21.39	22.30	22.78	24.82	35.05	50.39	52.34	53.11
Pt	L_2-M_2	B	1	.01	78	6	10.219	1.21300	3		9.16	13.09	15.83	15.95	16.37	18.62	20.84	21.40	22.31	22.79	24.83	35.07	50.42	52.37	53.14
Os	$L\beta_6$		1	.1	76	6	10.215	1.21349	5		9.16	13.10	15.84	15.96	16.38	18.62	20.84	21.41	22.32	22.80	24.85	35.08	50.44	52.39	53.16
Lu	$K\beta_1$	H	6	65	71	6	61.272	1.21386	5		9.17	13.10	15.84	15.96	16.38	18.63	20.85	21.42	22.32	22.80	24.85	35.09	50.46	52.41	53.18
Th	$L\gamma_{13}$		2	.01	90	6	20.420	1.21410	5		9.17	13.10	15.85	15.97	16.39	18.63	20.86			22.81	24.85	35.10	50.47	52.42	53.19
Ac	$K\beta_3$	H	10	14	89	6	102.084	1.21430	5		9.17	13.11	15.85	15.97	16.39	18.64	20.86	21.43	22.33	22.81	24.86	35.10	50.47	52.43	53.20
Cs	$K\alpha_2$		3	50	55	6	30.620	1.21450	6		9.17	13.11	15.85	15.97	16.39	18.64	20.86	21.43	22.33	22.82	24.87	35.11	50.48	52.44	53.21
Os	$K\beta_1$		7	27	76	6	71.401	1.21528	6		9.18	13.12	15.86	15.98	16.40	18.65	20.88	21.44	22.35	22.83	24.88	35.13	50.52	52.47	53.25
Hf	$L\gamma_5$		1	.1	72	6	10.199	1.21537	5		9.18	13.12	15.86	15.98	16.40	18.65	20.88	21.45	22.35	22.83	24.88	35.14	50.52	52.48	53.25
W	$L\beta_5$		1	.1	74	6	10.199	1.21545	5		9.18	13.12	15.86	15.98	16.40	18.65	20.88	21.45	22.35	22.83	24.89	35.14	50.53	52.48	53.25
W	AL_3		1		74	6	10.198	1.21550	4		9.18	13.12	15.86	15.98	16.40	18.65	20.88	21.45	22.35	22.84	24.89	35.14	50.53	52.48	53.26
At	$K\beta_3$	H	9	13	85	6	91.707	1.21653	5		9.19	13.13	15.88	16.00	16.42	18.67	20.90	21.47	22.37	22.86	24.91	35.17	50.57	52.53	53.30
Th	L_1-$O_{4,5}$	B	2	.01	90	6	20.378	1.21660	4		9.19	13.13	15.88	16.00	16.42	18.67	20.90			22.86	24.91	35.17	50.58	52.53	53.31
Re	$K\alpha_1$		6	100	75	6	61.130	1.21669	6		9.19	13.13	15.88	16.00	16.42	18.67	20.90	21.47	22.38	22.86	24.91	35.18	50.58	52.54	53.31
At	$K\alpha_1$	H	8	100	85	6	81.499	1.21680	5		9.19	13.13	15.88	16.00	16.42	18.67	20.90	21.47	22.38	22.86	24.91	35.18	50.59	52.54	53.32
Pu	$K\alpha_{1,2}$		10	150	94	3	101.857	1.21700			9.19	13.14	15.88	16.00	16.42	18.68	20.91	21.48	22.38	22.86	24.92	35.18	50.59	52.55	53.33
Pr	$K\beta_1$		4	22	59	6	40.741	1.21704	6		9.19	13.14	15.88	16.01	16.43	18.68	20.91	21.48	22.38	22.87	24.92	35.19	50.60	52.56	53.33
Re	$K\beta_2'$		7	10	75	6	71.219	1.21838	6		9.20	13.15	15.90	16.02	16.44	18.70	20.93	21.50	22.41	22.89	24.95	35.23	50.66	52.62	53.39
Os	$L\beta_4$		1	4	76	6	10.174	1.21844	5		9.20	13.15	15.90	16.02	16.44	18.70	20.93	21.50	22.41	22.89	24.95	35.23	50.66	52.62	53.39
Lu	$K\beta_3$	H	6	12	71	6	61.037	1.21854	5		9.20	13.15	15.90	16.02	16.45	18.70	20.93	21.50	22.41	22.89	24.95	35.23	50.66	52.63	53.40
W	Lu	8	1	.01	74	6	10.172	1.21868	5		9.20	13.15	15.91	16.03	16.45	18.70	20.93	21.51	22.41	22.90	24.95	35.23	50.67	52.63	53.41
Tl	$L\alpha_2$		1	10	81	6	10.171	1.21875	5		9.20	13.15	15.91	16.03	16.45	18.70	20.94	21.51	22.41	22.90	24.95	35.24	50.67	52.63	53.41
Re	$K\beta_2''$		7	10	75	6	71.139	1.21975	5		9.21	13.17	15.92	16.04	16.46	18.72	20.95	21.52	22.43	22.92	24.98	35.27	50.72	52.68	53.46
Yb	$K\beta_2$	H	6	9	70	6	60.974	1.21980	4		9.21	13.17	15.92	16.04	16.46	18.72	20.95	21.53	22.43	22.92	24.98	35.27	50.72	52.68	53.46
Pr	$K\beta_3$		4	10	59	6	40.646	1.21990	6		9.21	13.17	15.92	16.04	16.46	18.72	20.96	21.53	22.43	22.92	24.98	35.27	50.72	52.69	53.46
Sb	$K-O_{2,3}$		3	.01	51	6	30.482	1.21998	5		9.21	13.17	15.92	16.04	16.46	18.72	20.96	21.53	22.44	22.92	24.98	35.27	50.73	52.69	53.47
Am	$K\alpha_2$		10	50	95	3	101.607	1.22000			9.21	13.17	15.92	16.04	16.47	18.72	20.96	21.53	22.44	22.92	24.98	35.27	50.73	52.69	53.47
Re	$L\beta_3$		1	6	75	6	10.158	1.22031	5		9.22	13.17	15.93	16.05	16.47	18.73	20.96	21.53	22.44	22.93	24.99	35.28	50.74	52.71	53.48
Os	$K\beta_3$		7	12	76	6	71.065	1.22102	6		9.22	13.18	15.94	16.06	16.48	18.74	20.98	21.55	22.46	22.94	25.00	35.30	50.77	52.74	53.52
Sb	$K\beta_4$	B	3	.01	51	6	30.456	1.22106	5		9.22	13.18	15.94	16.06	16.48	18.74	20.98	21.55	22.46	22.94	25.00	35.31	50.78	52.74	53.52
W	L_3-$O_{2,3}$	8	1	.01	74	6	10.152	1.22110	4		9.22	13.18	15.94	16.06	16.48	18.74	20.98	21.55	22.46	22.94	25.00	35.31	50.78	52.74	53.52
Tm	$K\alpha_1$		5	100	69	6	50.733	1.22169	6		9.23	13.19	15.95	16.07	16.49	18.75	20.99	21.56	22.47	22.95	25.02	35.32	50.80	52.77	53.55
Th	$L\gamma_4$		2	.1	90	6	20.289	1.22195	5		9.23	13.19	15.95	16.07	16.49	18.75	20.99			22.96	25.02	35.33	50.82	52.78	53.56
Lu	$L\gamma_1$		1	5	71	6	10.142	1.22228	5		9.23	13.19	15.95	16.07	16.50	18.76	21.00	21.57	22.48	22.96	25.03	35.34	50.83	52.80	53.58
Yb	$L\gamma_3$		1	1	70	6	10.141	1.22232	5		9.23	13.19	15.95	16.08	16.50	18.76	21.00	21.57	22.48	22.97	25.03	35.34	50.83	52.80	53.58
Rn	$K\alpha_2$	H	8	50	86	6	81.051	1.22352	5		9.24	13.21	15.97	16.09	16.51	18.78	21.02	21.59	22.50	22.99	25.05	35.38	50.89	52.86	53.64
Sb	$K\beta_2$	D	3	5	51	6	30.388	1.22379	6		9.24	13.21	15.97	16.09	16.52	18.78	21.02	21.60	22.51	22.99	25.06	35.39	50.90	52.87	53.65
W	$L\beta_7$		1	.1	74	6	10.127	1.22400	5		9.24	13.21	15.98	16.10	16.52	18.79	21.03	21.60	22.51	23.00	25.06	35.39	50.91	52.88	53.66
Tm	AL_1		1		69	6	10.119	1.22500	4		9.25	13.22	15.99	16.11	16.53	18.80	21.04	21.62	22.53	23.02	25.08	35.42	50.95	52.93	53.71
Th	$L\gamma_4p$		2	.1	90	6	20.238	1.22502	5		9.25	13.22	15.99	16.11	16.53	18.80	21.04			23.02	25.08	35.42	50.95	52.93	53.71
Tl	$K\alpha_2$		7	50	81	6	70.820	1.22525	6		9.25	13.23	15.99	16.11	16.54	18.80	21.05	21.62	22.53	23.02	25.09	35.43	50.96	52.94	53.72
Hg	$K\alpha_1$		7	100	80	6	70.807	1.22548	6		9.25	13.23	16.00	16.12	16.54	18.81	21.05	21.63	22.54	23.03	25.09	35.44	50.97	52.95	53.73
Tm	L_1-$O_{4,5}$	B	1	.01	69	6	10.108	1.22630	4		9.26	13.24	16.01	16.13	16.55	18.82	21.07	21.64	22.55	23.04	25.11	35.46	51.01	52.99	53.77
Re	$K\alpha_{1,2}$		6	150	75	6	60.648	1.22635	6		9.26	13.24	16.01	16.13	16.55	18.82	21.07	21.64	22.56	23.04	25.11	35.46	51.01	52.99	53.77
Rh	$K\alpha_1$		2	100	45	6	20.213	1.22656	6		9.26	13.24	16.01	16.13	16.55	18.82	21.07			23.05	25.12	35.47	51.02	53.00	53.78
Pa	$L\gamma_6$		2	.01	91	6	20.212	1.22660	4		9.26	13.24	16.01	16.13	16.55	18.83	21.07			23.05	25.12	35.47	51.02	53.00	53.78
Ac	$K\alpha_1$	H	9	100	89	6	90.868	1.22775	6		9.27	13.25	16.03	16.15	16.57	18.84	21.09	21.67	22.58	23.07	25.14	35.51	51.07	53.05	53.84

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Re	L_3-N_3	B	1	.01	75	6	10.092	1.22830	4		9.28	13.26	16.03	16.15	16.58	18.85	21.10	21.68	22.59	23.08	25.15	35.52	51.10	53.08	53.86
Yb	$L\gamma_2$		1	1	70	6	10.088	1.22879	5		9.28	13.26	16.04	16.16	16.58	18.86	21.11	21.69	22.60	23.09	25.16	35.54	51.12	53.10	53.88
Th	L_1-O_1	B	2	.01	90	6	20.169	1.22920	4		9.28	13.27	16.04	16.17	16.59	18.87	21.12			23.10	25.17	35.55	51.14	53.12	53.90
Tm	$L\gamma_4$		1	.1	69	6	10.083	1.22940	4		9.28	13.27	16.05	16.17	16.59	18.87	21.12	21.70	22.61	23.10	25.18	35.55	51.15	53.13	53.91
Rh	$K\alpha_{1,2}$		2	150	45	6	20.165	1.22946	6		9.29	13.27	16.05	16.17	16.59	18.87	21.12			23.10	25.18	35.56	51.15	53.13	53.92
U	$L\gamma_1$		2	10	92	6	20.164	1.22954	6		9.29	13.27	16.05	16.17	16.59	18.87	21.12			23.10	25.18	35.56	51.15	53.14	53.92
Tm	$K\alpha_{1,2}$		5	150	69	6	50.406	1.22962	6		9.29	13.27	16.05	16.17	16.60	18.87	21.12	21.70	22.62	23.10	25.18	35.56	51.16	53.14	53.92
At	$K\alpha_{1,2}$	H	8	150	85	6	80.624	1.23000	5		9.29	13.28	16.05	16.18	16.60	18.88	21.13	21.71	22.62	23.11	25.19	35.57	51.17	53.16	53.94
Np	$K\alpha_1$		10	100	93	3	100.781	1.23000			9.29	13.28	16.05	16.18	16.60	18.88	21.13	21.71	22.62	23.11	25.19	35.57	51.17	53.16	53.94
Tb	$K\beta_1$		5	23	65	6	50.374	1.23040	5		9.29	13.28	16.06	16.18	16.61	18.88	21.14	21.71	22.63	23.12	25.20	35.58	51.19	53.18	53.96
Re	L_2-M_5	B	1	.01	75	6	10.074	1.23050	4		9.29	13.28	16.06	16.18	16.61	18.89	21.14	21.72	22.63	23.12	25.20	35.59	51.20	53.18	53.97
Th	L_1-$N_{6,7}$	B	2	.01	90	6	20.123	1.23200	4		9.30	13.30	16.08	16.20	16.63	18.91	21.17			23.15	25.23	35.63	51.26	53.25	54.04
Np	$L\gamma_5$		2	.1	93	6	20.123	1.23200	3		9.30	13.30	16.08	16.20	16.63	18.91	21.17			23.15	25.23	35.63	51.26	53.25	54.04
Ce	$K\beta_2$		4	7	58	6	40.226	1.23264	5		9.31	13.31	16.09	16.21	16.64	18.92	21.18	21.75	22.67	23.16	25.24	35.65	51.29	53.28	54.07
Pa	$L\gamma_3$		2	2	91	6	20.094	1.23380	4		9.32	13.32	16.10	16.23	16.65	18.94	21.20			23.18	25.27	35.69	51.34	53.34	54.12
Tb	$K\beta_3$		5	11	65	6	50.221	1.23415	5		9.32	13.32	16.11	16.23	16.66	18.94	21.20	21.78	22.70	23.19	25.28	35.70	51.36	53.35	54.14
Rh	$K\alpha_2$		2	50	45	6	20.070	1.23526	6		9.33	13.33	16.12	16.25	16.67	18.96	21.22			23.21	25.30	35.73	51.41	53.40	54.19
Fr	$K\beta_2'$	H	10	11	87	6	100.307	1.23580	5		9.33	13.34	16.13	16.25	16.68	18.97	21.23	21.81	22.73	23.22	25.31	35.75	51.43	53.43	54.22
Hg	$K\beta_1$		8	28	80	6	80.240	1.23590	6		9.33	13.34	16.13	16.25	16.68	18.97	21.23	21.81	22.73	23.22	25.31	35.75	51.44	53.43	54.22
Sm	$K\alpha_1$		4	100	62	6	40.111	1.23616	6		9.34	13.34	16.14	16.26	16.68	18.97	21.24	21.82	22.74	23.23	25.32	35.76	51.45	53.45	54.23
Hg	$K\alpha_{1,2}$		7	150	80	6	70.154	1.23689	6		9.34	13.35	16.15	16.27	16.69	18.98	21.25	21.83	22.75	23.24	25.33	35.78	51.48	53.48	54.27
Au	$K\beta_2'$		8	10	79	6	80.172	1.23694	6		9.34	13.35	16.15	16.27	16.70	18.99	21.25	21.83	22.75	23.24	25.33	35.78	51.48	53.48	54.27
Fr	$K\beta_2''$	H	10	11	87	6	100.137	1.23790	5		9.35	13.36	16.16	16.28	16.71	19.00	21.27	21.85	22.77	23.26	25.35	35.81	51.53	53.53	54.32
Ra	$K\beta_1$	H	10	30	88	6	100.113	1.23820	5		9.35	13.37	16.16	16.29	16.71	19.01	21.27	21.85	22.78	23.27	25.36	35.82	51.54	53.54	54.33
Re	$L\beta_1$		1	50	75	6	10.008	1.23858	5		9.35	13.37	16.17	16.29	16.72	19.01	21.28	21.86	22.78	23.28	25.37	35.83	51.56	53.56	54.35
Au	$K\beta_2''$		8	10	79	6	80.062	1.23864	5		9.35	13.37	16.17	16.29	16.72	19.01	21.28	21.86	22.78	23.28	25.37	35.83	51.56	53.56	54.35
Mo	$K\beta_4$	B	2	.01	42	6	19.993	1.24002	5		9.36	13.39	16.19	16.31	16.74	19.03	21.31			23.30	25.40	35.87	51.62	53.63	54.42
Th	$K\alpha_2$		9	50	90	6	89.938	1.24046	6		9.37	13.39	16.19	16.32	16.74	19.04	21.31	21.89	22.82	23.31	25.41	35.89	51.64	53.65	54.44
Gd	$K\beta_2$		5	8	64	6	49.952	1.24080	5		9.37	13.39	16.20	16.32	16.75	19.05	21.32	21.90	22.82	23.32	25.41	35.90	51.66	53.66	54.45
Hg	$L\alpha_1$		1	100	80	6	9.987	1.24120	5		9.37	13.40	16.20	16.33	16.75	19.05	21.33	21.91	22.83	23.33	25.42	35.91	51.67	53.68	54.47
Sb	$K\beta_5'$	B	3	.1	51	6	29.958	1.24134	5		9.37	13.40	16.20	16.33	16.76	19.05	21.33	21.91	22.83	23.33	25.42	35.91	51.68	53.69	54.48
Sb	$K\beta_5''$	B	3	.1	51	6	29.951	1.24164	5		9.38	13.40	16.21	16.33	16.76	19.06	21.33	21.92	22.84	23.33	25.43	35.92	51.69	53.70	54.49
Bi	$K\beta_2'$		9	11	83	6	89.846	1.24173	5		9.38	13.40	16.21	16.33	16.76	19.06	21.34	21.92	22.84	23.34	25.43	35.92	51.70	53.71	54.50
Mo	$K\beta_2$		2	4	42	6	19.962	1.24198	5		9.38	13.41	16.21	16.34	16.76	19.06	21.34			23.34	25.44	35.93	51.71	53.72	54.51
Bk	$L\beta_1$		2	50	97	3	19.961	1.24200			9.38	13.41	16.21	16.34	16.76	19.06	21.34			23.34	25.44	35.93	51.71	53.72	54.51
Mo	$K\beta_2''$		2	.1	42	6	19.959	1.24214	5		9.38	13.41	16.21	16.34	16.77	19.07	21.34			23.34	25.44	35.94	51.72	53.73	54.52
Sm	$K\alpha_{1,2}$		4	150	62	6	39.911	1.24237	6		9.38	13.41	16.22	16.34	16.77	19.07	21.35	21.93	22.85	23.35	25.45	35.94	51.73	53.74	54.53
Hg	$K\beta_3$		8	13	80	6	79.809	1.24257	6		9.38	13.41	16.22	16.34	16.77	19.07	21.35	21.93	22.86	23.35	25.45	35.95	51.74	53.75	54.54
Po	$K\beta_1$	H	9	89	84	6	89.781	1.24263	5		9.38	13.41	16.22	16.34	16.77	19.07	21.35	21.93	22.86	23.35	25.45	35.95	51.74	53.75	54.54
Yb	$L\gamma_6$		1	.01	70	6	9.975	1.24271	5		9.39	13.41	16.22	16.35	16.77	19.08	21.35	21.93	22.86	23.35	25.45	35.95	51.74	53.75	54.55
Ac	$K\alpha_{1,2}$	H	9	150	89	6	89.773	1.24273	5		9.39	13.41	16.22	16.35	16.77	19.08	21.35	21.94	22.86	23.35	25.45	35.95	51.74	53.75	54.55
Yb	AL_2		1		70	6	9.974	1.24280	4		9.39	13.42	16.22	16.35	16.78	19.08	21.35	21.94	22.86	23.36	25.46	35.96	51.75	53.76	54.55
Pt	Ln		1	1	78	6	9.973	1.24290	4		9.39	13.42	16.22	16.35	16.78	19.08	21.36	21.94	22.86	23.36	25.46	35.96	51.75	53.76	54.55
Bi	$K\beta_2''$		9	11	83	6	89.716	1.24353	5		9.39	13.42	16.23	16.36	16.79	19.09	21.37	21.95	22.88	23.37	25.47	35.98	51.78	53.79	54.58
Pb	Ls		8	1	.01	82	6	9.966	1.24385	5		9.39	13.43	16.24	16.36	16.79	19.09	21.37	21.96	22.88	23.38	25.48	35.99	51.79	53.81	54.60
W	$L\beta_2$		1	20	74	6	9.960	1.24460	5		9.40	13.43	16.25	16.37	16.80	19.10	21.39	21.97	22.90	23.39	25.49	36.01	51.83	53.84	54.64
Yb	L_2-$O_{2,3}$	8	1	.01	70	6	9.954	1.24530	4		9.40	13.44	16.26	16.38	16.81	19.12	21.40	21.98	22.91	23.40	25.51	36.03	51.86	53.87	54.67
Tm	$K\alpha_2$		5	50	69	6	49.764	1.24547	6		9.41	13.44	16.26	16.38	16.81	19.12	21.40	21.98	22.91	23.41	25.51	36.04	51.87	53.88	54.68
U	L_2-N_3	8	2	.01	92	6	19.904	1.24560	4		9.41	13.45	16.26	16.38	16.81	19.12	21.40			23.41	25.51	36.04	51.87	53.89	54.68
Re	$K\alpha_2$		6	50	75	6	59.708	1.24567	6		9.41	13.45	16.26	16.38	16.81	19.12	21.40	21.99	22.92	23.41	25.51	36.04	51.87	53.89	54.69
W	$L\beta_{15}$		1	1	74	6	9.946	1.24631	5		9.41	13.45	16.27	16.39	16.82	19.13	21.41	22.00	22.93	23.42	25.53	36.06	51.90	53.92	54.72
Ta	$L\beta_9$	B	1	.01	73	6	9.944	1.24660	4		9.41	13.46	16.27	16.40	16.83	19.14	21.42	22.00	22.93	23.43	25.53	36.07	51.92	53.93	54.73
Ra	$K\beta_3$	H	10	14	88	6	99.415	1.24690	5		9.42	13.46	16.28	16.40	16.83	19.14	21.43	22.01	22.94	23.43	25.54	36.08	51.93	53.95	54.74
Np	$K\alpha_{1,2}$		10	150	93	3	99.407	1.24700			9.42	13.46	16.28	16.40	16.83	19.14	21.43	22.01	22.94	23.44	25.54	36.08	51.93	53.95	54.75
Pa	$L\gamma_2$		2	1	91	6	19.869	1.24780	4		9.42	13.47	16.29	16.41	16.84	19.15	21.44			23.45	25.56	36.11	51.97	53.99	54.79
Os	$L\beta_{17}$	B	1	.01	76	6	9.933	1.24800	4		9.43	13.47	16.29	16.42	16.85	19.16	21.44	22.03	22.96	23.46	25.56	36.11	51.98	54.00	54.80
Xe	$K\alpha_1$	H	3	100	54	6	29.774	1.24902	5		9.43	13.48	16.30	16.43	16.86	19.17	21.46	22.05	22.98	23.47	25.58	36.14	52.02	54.05	54.85
Yb	$L\gamma_8$		1	.1	70	6	9.923	1.24923	5		9.43	13.49	16.31	16.43	16.86	19.18	21.47	22.05	22.98	23.48	25.59	36.15	52.03	54.06	54.86
Pu	$K\alpha_2$		10	50	94	3	99.168	1.25000			9.44	13.49	16.32	16.44	16.87	19.19	21.48	22.06	23.00	23.49	25.61	36.17	52.07	54.09	54.89
Ir	L_2-M_2	B	1	.01	77	6	9.915	1.25020	4		9.44	13.50	16.32	16.44	16.88	19.19	21.48	22.07	23.00	23.50	25.61	36.18	52.08	54.10	54.90
Po	$K\beta_3$	H	9	13	84	6	89.231	1.25028	5		9.44	13.50	16.32	16.45	16.88	19.19	21.48	22.07	23.00	23.50	25.61	36.18	52.08	54.11	54.91
Po	$K\alpha_1$	H	8	100	84	6	79.279	1.25088	5		9.45	13.50	16.33	16.45	16.89	19.20	21.49	22.08	23.01	23.51	25.62	36.20	52.11	54.13	54.93
Re	$L\beta_6$		1	.1	75	6	9.909	1.25100	5		9.45	13.50	16.33	16.45	16.89	19.20	21.50	22.08	23.01	23.51	25.63	36.20	52.11	54.14	54.94
Sb	$K\beta_1$		3	20	51	6	29.721	1.25125	6		9.45	13.51	16.33	16.46	16.89	19.21	21.50	22.09	23.02	23.52	25.63	36.21	52.12	54.15	54.95
Re	$K\beta_1$		7	26	75	6	69.298	1.25216	6		9.46	13.52	16.35	16.47	16.90	19.22	21.52	22.10	23.04	23.53	25.65	36.24	52.16	54.19	55.00

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hg	$L\alpha_2$		1	10	80	6	9.896	1.25264	5	9.46	13.52	16.35	16.48	16.91	19.23	21.52	22.11	23.05	23.54	25.66	36.25	52.19	54.22	55.02
Th	$L\gamma_{11}$	B	2	.01	90	6	19.791	1.25272	5	9.46	13.52	16.35	16.48	16.91	19.23	21.53			23.54	25.66	36.25	52.19	54.22	55.02
Yb	$K\beta_1$		6	64	70	6	59.356	1.25304	5	9.46	13.53	16.36	16.48	16.91	19.24	21.53	22.12	23.05	23.55	25.67	36.26	52.20	54.24	55.04
Sb	$K\beta_3$		3	9	51	6	29.674	1.25321	6	9.46	13.53	16.36	16.48	16.92	19.24	21.53	22.12	23.06	23.55	25.67	36.27	52.21	54.24	55.05
Xe	$K\alpha_{1,2}$	H	3	150	54	6	29.666	1.25355	5	9.47	13.53	16.36	16.49	16.92	19.24	21.54	22.13	23.06	23.56	25.68	36.28	52.23	54.26	55.06
Ta	$L\beta_{10}$	B	1	.01	73	6	9.888	1.25370	4	9.47	13.53	16.37	16.49	16.92	19.25	21.54	22.13	23.06	23.56	25.68	36.28	52.23	54.27	55.07
Mo	$K8_5'$	B	2	.8	42	6	19.773	1.25384	5	9.47	13.54	16.37	16.49	16.93	19.25	21.55			23.57	25.69	36.29	52.24	54.27	55.08
Ge	$K\alpha_1$		1	100	32	6	9.885	1.25405	6	9.47	13.54	16.37	16.50	16.93	19.25	21.55	22.14	23.07	23.57	25.69	36.29	52.25	54.28	55.09
W	$K\alpha_1$		6	100	74	6	59.308	1.25406	7	9.47	13.54	16.37	16.50	16.93	19.25	21.55	22.14	23.07	23.57	25.69	36.29	52.25	54.28	55.09
Mo	$K\beta_5''$	B	2	.4	42	6	19.768	1.25416	5	9.47	13.54	16.37	16.50	16.93	19.25	21.55			23.57	25.69	36.30	52.25	54.29	55.09
Sm	$K\alpha_2$		4	50	62	6	39.516	1.25479	6	9.48	13.55	16.38	16.51	16.94	19.26	21.56	22.15	23.09	23.58	25.70	36.31	52.28	54.32	55.12
Th	L_1-N_4	B	2	.01	90	6	19.751	1.25520	4	9.48	13.55	16.39	16.51	16.94	19.27	21.57			23.59	25.71	36.33	52.30	54.34	55.14
Ta	AL_3		1		73	6	9.875	1.25530	4	9.48	13.55	16.39	16.51	16.95	19.27	21.57	22.16	23.09	23.59	25.72	36.33	52.31	54.34	55.14
Ge	$K\alpha_{1,2}$		1	150	32	6	9.874	1.25537	6	9.48	13.55	16.39	16.51	16.95	19.27	21.57	22.16	23.10	23.60	25.72	36.33	52.31	54.34	55.15
Ta	$L\beta_5$		1	.1	73	6	9.873	1.25550	4	9.48	13.55	16.39	16.51	16.95	19.27	21.57	22.16	23.10	23.60	25.72	36.34	52.31	54.35	55.15
W	$K\beta_2'$		7	10	74	6	69.089	1.25595	6	9.49	13.56	16.40	16.52	16.95	19.28	21.58	22.17	23.11	23.61	25.73	36.35	52.33	54.37	55.18
At	$K\alpha_2$	H	8	50	85	6	78.930	1.25640	5	9.49	13.56	16.40	16.53	16.96	19.29	21.59	22.18	23.12	23.62	25.74	36.36	52.35	54.39	55.20
W	$K\beta_2''$		7	10	74	6	69.020	1.25720	5	9.50	13.57	16.41	16.54	16.97	19.30	21.60	22.19	23.13	23.63	25.76	36.39	52.39	54.43	55.24
Yb	$K\beta_3$	H	6	12	70	6	59.141	1.25760	4	9.50	13.58	16.42	16.54	16.98	19.31	21.61	22.20	23.14	23.64	25.76	36.40	52.41	54.45	55.25
Ta	Lu	B	1	.01	73	6	9.855	1.25778	5	9.50	13.58	16.42	16.54	16.98	19.31	21.61	22.20	23.14	23.64	25.77	36.40	52.42	54.46	55.26
Re	$K\beta_3$		7	12	75	6	68.983	1.25788	6	9.50	13.58	16.42	16.55	16.98	19.31	21.62	22.21	23.14	23.64	25.77	36.41	52.42	54.46	55.27
Ge	$K\alpha_2$		1	50	32	6	9.854	1.25801	6	9.50	13.58	16.42	16.55	16.98	19.31	21.62	22.21	23.15	23.65	25.77	36.41	52.43	54.47	55.27
Tm	$K\beta_2$	H	6	9	69	6	59.085	1.25880	4	9.51	13.59	16.43	16.56	16.99	19.32	21.63	22.22	23.16	23.66	25.79	36.43	52.46	54.50	55.31
Re	$L\beta_4$		1	4	75	6	9.845	1.25917	5	9.51	13.59	16.44	16.56	17.00	19.33	21.64	22.23	23.17	23.67	25.80	36.45	52.48	54.52	55.33
U	$K\alpha_1$		10	100	92	6	98.422	1.25947	6	9.51	13.60	16.44	16.57	17.00	19.33	21.64	22.23	23.17	23.67	25.80	36.45	52.49	54.54	55.34
Lu	$L\gamma_5$		1	.1	71	6	9.841	1.25960	4	9.51	13.60	16.44	16.57	17.00	19.34	21.65	22.24	23.18	23.68	25.81	36.46	52.50	54.54	55.35
Hg	$K\alpha_2$		7	50	80	6	68.883	1.25971	6	9.51	13.60	16.45	16.57	17.01	19.34	21.65	22.24	23.18	23.68	25.81	36.46	52.50	54.55	55.35
Th	L_2-P_4		2	.01	90	6	19.679	1.25982	5	9.51	13.60	16.45	16.57	17.01	19.34	21.65			23.68	25.81	36.47	52.51	54.55	55.36
Ta	$L_3-O_{2,3}$	B	1	.01	73	6	9.837	1.26010	4	9.52	13.60	16.45	16.58	17.01	19.34	21.65	22.25	23.18	23.69	25.82	36.47	52.52	54.57	55.37
Ra	$K\alpha_1$	H	9	100	88	6	88.454	1.26126	5	9.53	13.62	16.47	16.59	17.03	19.36	21.67	22.27	23.21	23.71	25.84	36.51	52.57	54.62	55.43
Au	$K\alpha_1$		7	100	79	6	68.792	1.26136	6	9.53	13.62	16.47	16.59	17.03	19.36	21.68	22.27	23.21	23.71	25.84	36.51	52.58	54.63	55.43
Er	$K\alpha_1$		5	100	68	6	49.119	1.26182	6	9.53	13.62	16.47	16.60	17.03	19.37	21.68	22.28	23.22	23.72	25.85	36.53	52.60	54.65	55.46
Th	$L_2-P_{2,3}$	B	2	.01	90	6	19.639	1.26240	4	9.53	13.63	16.48	16.61	17.04	19.38	21.69			23.73	25.86	36.54	52.62	54.67	55.48
Xe	$K\alpha_2$	H	3	50	54	6	29.453	1.26261	5	9.54	13.63	16.48	16.61	17.04	19.38	21.70	22.29	23.23	23.73	25.87	36.55	52.63	54.68	55.49
W	$L8_3$		1	6	74	6	9.817	1.26269	5	9.54	13.63	16.48	16.61	17.05	19.38	21.70	22.29	23.23	23.74	25.87	36.55	52.64	54.69	55.50
Th	L_2-P_1		2	.01	90	6	19.626	1.26320	4	9.54	13.64	16.49	16.62	17.05	19.39	21.71			23.74	25.88	36.57	52.66	54.71	55.52
Ce	$K\beta_1$		4	22	58	6	39.251	1.26326	6	9.54	13.64	16.49	16.62	17.05	19.39	21.71	22.30	23.24	23.75	25.88	36.57	52.66	54.71	55.52
W	$K\alpha_{1,2}$		6	150	74	6	58.856	1.26370	6	9.54	13.64	16.50	16.62	17.06	19.40	21.72	22.31	23.25	23.75	25.89	36.58	52.68	54.73	55.55
Ta	$L\beta_7$		1	.1	73	6	9.808	1.26385	5	9.55	13.64	16.50	16.63	17.06	19.40	21.72	22.31	23.25	23.76	25.89	36.59	52.69	54.74	55.55
Po	$K\alpha_{1,2}$	H	8	150	84	6	78.452	1.26406	5	9.55	13.65	16.50	16.63	17.06	19.41	21.72	22.32	23.26	23.76	25.90	36.59	52.70	54.75	55.56
Mo	$K\beta_1$		2	17	42	6	19.605	1.26458	6	9.55	13.65	16.51	16.63	17.07	19.41	21.73			23.77	25.91	36.61	52.72	54.78	55.59
Th	$L\gamma_6$		2	.01	90	6	19.596	1.26516	5	9.56	13.66	16.52	16.64	17.08	19.42	21.74			23.78	25.92	36.63	52.75	54.80	55.62
Mo	$K8_3$		2	7	42	6	19.587	1.26574	6	9.56	13.66	16.52	16.65	17.09	19.43	21.75			23.79	25.93	36.64	52.77	54.83	55.64
Ce	$K8_3$		4	10	58	6	39.163	1.26608	6	9.56	13.67	16.53	16.65	17.09	19.44	21.76	22.35	23.30	23.80	25.94	36.65	52.79	54.85	55.66
Pa	$L\gamma_1$	H	2	10	91	6	19.565	1.26716	5	9.57	13.68	16.54	16.67	17.11	19.45	21.78			23.82	25.96	36.69	52.84	54.90	55.71
W	L_3-N_3	8	1	.01	74	6	9.782	1.26720	4	9.57	13.68	16.54	16.67	17.11	19.45	21.78	22.37	23.32	23.82	25.96	36.69	52.84	54.90	55.71
Yb	$L\gamma_1$		1	5	70	6	9.778	1.26769	5	9.57	13.69	16.55	16.68	17.11	19.46	21.79	22.38	23.33	23.83	25.97	36.70	52.86	54.92	55.74
Tm	$L\gamma_3$		1	1	69	6	9.778	1.26780	4	9.58	13.69	16.55	16.68	17.12	19.46	21.79	22.38	23.33	23.83	25.98	36.70	52.87	54.93	55.74
Er	$K\alpha_{1,2}$		5	150	68	6	48.813	1.26973	6	9.59	13.71	16.58	16.70	17.14	19.49	21.82	22.42	23.36	23.87	26.02	36.76	52.95	55.02	55.83
Rn	$K\beta_2'$	H	10	11	86	6	97.622	1.26980	5	9.59	13.71	16.58	16.70	17.14	19.50	21.82	22.42	23.37	23.87	26.02	36.76	52.96	55.02	55.84
Er	AL_1		1		68	6	9.756	1.27060	4	9.60	13.72	16.59	16.71	17.15	19.51	21.84	22.43	23.38	23.89	26.03	36.79	52.99	55.06	55.88
U	$L\gamma_5$		2	.1	92	6	19.504	1.27114	5	9.60	13.72	16.60	16.72	17.16	19.52	21.85			23.90	26.05	36.80	53.02	55.08	55.90
Th	$L\gamma_3$		2	2	90	6	19.503	1.27118	5	9.60	13.72	16.60	16.72	17.16	19.52	21.85			23.90	26.05	36.81	53.02	55.09	55.90
Th	L_2-O_3	B	2	.01	90	6	19.503	1.27120	4	9.60	13.72	16.60	16.72	17.16	19.52	21.85			23.90	26.05	36.81	53.02	55.09	55.90
Au	$K8_1$		8	27	79	6	77.971	1.27186	6	9.61	13.73	16.60	16.73	17.17	19.53	21.86	22.46	23.40	23.91	26.06	36.83	53.05	55.12	55.94
Fr	$K\beta_1$	H	10	29	87	6	97.460	1.27190	5	9.61	13.73	16.61	16.73	17.17	19.53	21.86	22.46	23.40	23.91	26.06	36.83	53.05	55.12	55.94
Rn	$K\beta_2''$	H	10	11	86	6	97.460	1.27190	5	9.61	13.73	16.61	16.73	17.17	19.53	21.86	22.46	23.40	23.91	26.06	36.83	53.05	55.12	55.94
Ac	$K\alpha_2$	H	9	50	89	6	87.660	1.27269	5	9.61	13.74	16.62	16.74	17.18	19.54	21.87	22.47	23.42	23.93	26.08	36.85	53.09	55.16	55.98
Au	$K\alpha_{1,2}$		7	150	79	6	68.177	1.27275	6	9.61	13.74	16.62	16.74	17.18	19.54	21.87	22.47	23.42	23.93	26.08	36.85	53.09	55.16	55.98
W	L_2-M_5	B	1	.01	74	6	9.739	1.27280	4	9.61	13.74	16.62	16.74	17.18	19.54	21.88	22.47	23.42	23.93	26.08	36.85	53.09	55.16	55.98
Gd	$K\beta_1$		5	23	64	6	48.688	1.27300	5	9.61	13.74	16.62	16.75	17.19	19.54	21.88	22.48	23.43	23.93	26.08	36.86	53.10	55.17	55.99
Pt	$K\beta_2'$		8	10	78	6	77.864	1.27360	5	9.62	13.75	16.63	16.75	17.19	19.55	21.89	22.49	23.44	23.94	26.10	36.88	53.13	55.20	56.02
Th	L_2-O_2	B	2	.01	90	6	19.463	1.27380	4	9.62	13.75	16.63	16.76	17.20	19.56	21.89			23.95	26.10	36.88	53.14	55.21	56.03
Sn	$K-O_{2,3}$		3	.01	50	6	29.190	1.27401	5	9.62	13.75	16.63	16.76	17.20	19.56	21.90	22.49	23.44	23.95	26.11	36.89	53.15	55.22	56.04
Tm	$L\gamma_2$		1	1	69	6	9.728	1.27420	4	9.62	13.76	16.64	16.76	17.20	19.56	21.90	22.50	23.45	23.95	26.11	36.90	53.15	55.23	56.05

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Bi	Lt	8	1	.01	83	6	9.724	1.27480	4	9.63	13.76	16.64	16.77	17.21	19.57	21.91	22.51	23.46	23.97	26.12	36.91	53.18	55.26	56.08
Sn	$K\beta_4$	B	3	.01	50	6	29.170	1.27485	5	9.63	13.76	16.64	16.77	17.21	19.57	21.91	22.51	23.46	23.97	26.12	36.92	53.18	55.26	56.08
Pt	$K\beta_2''$		8	10	78	6	77.772	1.27512	5	9.63	13.77	16.65	16.77	17.21	19.58	21.92	22.51	23.46	23.97	26.13	36.92	53.20	55.27	56.09
Er	$L\gamma_4$		1	.1	68	6	9.721	1.27520	4	9.63	13.77	16.65	16.78	17.22	19.58	21.92	22.52	23.47	23.97	26.13	36.93	53.20	55.28	56.10
Ra	$K\alpha_{1,2}$	H	9	150	88	6	87.419	1.27620	5	9.64	13.78	16.66	16.79	17.23	19.59	21.93	22.53	23.48	23.99	26.15	36.96	53.24	55.32	56.14
U	$K\alpha_{1,2}$		10	150	92	6	97.131	1.27621	6	9.64	13.78	16.66	16.79	17.23	19.59	21.93	22.53	23.48	23.99	26.15	36.96	53.24	55.32	56.14
Au	$L\alpha_1$		1	100	79	6	9.712	1.27640	5	9.64	13.78	16.66	16.79	17.23	19.60	21.94	22.54	23.49	24.00	26.16	36.96	53.25	55.33	56.15
W	L_3-N_2	B	1	.01	74	6	9.711	1.27650	4	9.64	13.78	16.67	16.79	17.23	19.60	21.94	22.54	23.49	24.00	26.16	36.97	53.26	55.34	56.16
Gd	$K\beta_3$		5	11	64	6	48.547	1.27670	5	9.64	13.78	16.67	16.80	17.24	19.60	21.94	22.54	23.49	24.00	26.16	36.97	53.27	55.35	56.17
Pb	$K\beta_2'$		9	11	82	6	87.351	1.27719	5	9.65	13.79	16.67	16.80	17.24	19.61	21.95	22.55	23.50	24.01	26.17	36.99	53.29	55.37	56.19
Bi	$K\beta_1$		9	89	83	6	87.328	1.27753	6	9.65	13.79	16.68	16.81	17.25	19.61	21.96	22.56	23.51	24.02	26.18	37.00	53.30	55.39	56.21
Sn	$K\beta_2$		3	5	50	6	29.104	1.27774	6	9.65	13.79	16.68	16.81	17.25	19.62	21.96	22.56	23.51	24.02	26.18	37.00	53.31	55.40	56.22
Th	$L\gamma_8$		2	.1	90	6	19.400	1.27796	5	9.65	13.80	16.69	16.81	17.25	19.62	21.97			24.03	26.19	37.01	53.32	55.41	56.23
Cm	$L\beta_1$		2	50	96	3	19.399	1.27800		9.65	13.80	16.69	16.81	17.25	19.62	21.97			24.03	26.19	37.01	53.33	55.41	56.23
Tl	Ls	8	1	.01	81	6	9.699	1.27807	5	9.65	13.80	16.69	16.81	17.25	19.62	21.97	22.57	23.52	24.03	26.19	37.01	53.33	55.41	56.23
Au	$K\beta_3$		8	13	79	6	77.567	1.27848	6	9.66	13.80	16.69	16.82	17.26	19.63	21.97	22.57	23.53	24.04	26.20	37.02	53.35	55.43	56.25
Pb	$K\beta_2''$		9	11	82	6	87.222	1.27908	5	9.66	13.81	16.70	16.83	17.27	19.64	21.98	22.58	23.54	24.05	26.21	37.04	53.37	55.46	56.28
Np	$K\alpha_2$		10	50	93	3	96.844	1.28000		9.67	13.82	16.71	16.84	17.28	19.65	22.00	22.60	23.56	24.07	26.23	37.07	53.42	55.50	56.33
La	$K\beta_2$		4	7	57	6	38.723	1.28047	6	9.67	13.82	16.72	16.85	17.29	19.66	22.01	22.61	23.56	24.07	26.24	37.08	53.44	55.52	56.35
Pm	$K\alpha_1$	H	4	100	61	6	38.718	1.28064	6	9.67	13.83	16.72	16.85	17.29	19.66	22.01	22.61	23.57	24.08	26.24	37.09	53.44	55.53	56.36
Fr	$K\beta_3$	H	10	14	87	6	96.791	1.28070	5	9.67	13.83	16.72	16.85	17.29	19.66	22.01	22.61	23.57	24.08	26.25	37.09	53.45	55.53	56.36
Th	Lv	8	2	.01	90	6	19.349	1.28128	5	9.68	13.83	16.73	16.86	17.30	19.67	22.02			24.09	26.26	37.11	53.47	55.56	56.39
W	$L\beta_1$		1	50	74	6	9.671	1.28181	6	9.68	13.84	16.74	16.86	17.31	19.68	22.03	22.63	23.59	24.10	26.27	37.12	53.50	55.59	56.41
Po	Ll		1	3	84	6	9.662	1.28290	4	9.69	13.85	16.75	16.88	17.32	19.70	22.05	22.65	23.61	24.12	26.29	37.16	53.55	55.64	56.46
W	$K\alpha_2$		6	50	74	6	57.972	1.28297	6	9.69	13.85	16.75	16.88	17.32	19.70	22.05	22.65	23.61	24.12	26.29	37.16	53.55	55.64	56.47
Pu	$L\beta_9$	B	2	.01	94	6	19.320	1.28320	4	9.69	13.85	16.75	16.88	17.32	19.70	22.06			24.13	26.30	37.17	53.56	55.65	56.48
Zn	AK		1		30	6	9.659	1.28340	4	9.69	13.86	16.76	16.88	17.33	19.71	22.06	22.66	23.62	24.13	26.30	37.17	53.57	55.66	56.49
Zn	$K\beta_2$		1	.3	30	6	9.656	1.28372	5	9.70	13.86	16.76	16.89	17.33	19.71	22.07	22.67	23.63	24.14	26.31	37.18	53.58	55.68	56.50
Th	$L\gamma_2$		2	1	90	6	19.302	1.28442	5	9.70	13.87	16.77	16.90	17.34	19.72	22.08			24.15	26.32	37.20	53.61	55.71	56.54
Ta	$L\beta_2$		1	20	73	6	9.650	1.28454	5	9.70	13.87	16.77	16.90	17.34	19.72	22.08	22.68	23.64	24.15	26.33	37.21	53.62	55.72	56.54
Eu	$K\beta_2$		5	8	63	6	48.248	1.28461	6	9.70	13.87	16.77	16.90	17.34	19.72	22.08	22.68	23.64	24.15	26.33	37.21	53.62	55.72	56.55
Ir	Ln	D	1	1	77	6	9.649	1.28470	4	9.70	13.87	16.77	16.90	17.35	19.73	22.08	22.69	23.64	24.15	26.33	37.21	53.63	55.72	56.55
Zn	$K\beta_5$	8	1	.04	30	6	9.648	1.28480	4	9.70	13.87	16.78	16.90	17.35	19.73	22.08	22.69	23.65	24.16	26.33	37.21	53.63	55.73	56.56
Si	$K\beta_3$		9	13	83	6	86.819	1.28501	6	9.71	13.87	16.78	16.91	17.35	19.73	22.09	22.69	23.65	24.16	26.33	37.22	53.64	55.74	56.57
Er	$K\alpha_2$		5	50	68	6	48.213	1.28555	6	9.71	13.88	16.78	16.91	17.36	19.74	22.10	22.70	23.66	24.17	26.35	37.24	53.67	55.76	56.59
Ru	$K\alpha_1$		2	100	44	6	19.276	1.28617	6	9.71	13.89	16.79	16.92	17.36	19.75	22.11			24.18	26.36	37.26	53.69	55.79	56.62
Ta	$L\beta_{15}$		1	1	73	6	9.638	1.28619	5	9.71	13.89	16.79	16.92	17.37	19.75	22.11	22.71	23.67	24.18	26.36	37.26	53.69	55.79	56.62
Si	$K\alpha_1$		8	100	83	6	77.095	1.28631	6	9.72	13.89	16.79	16.92	17.37	19.75	22.11	22.71	23.67	24.19	26.36	37.26	53.70	55.80	56.63
Pm	$K\alpha_{1,2}$	H	4	150	61	6	38.532	1.28683	6	9.72	13.89	16.80	16.93	17.37	19.76	22.12	22.72	23.68	24.20	26.37	37.28	53.72	55.82	56.65
Au	$L\alpha_2$		1	10	79	6	9.626	1.28772	5	9.73	13.90	16.81	16.94	17.39	19.77	22.14	22.74	23.70	24.21	26.39	37.30	53.76	55.87	56.70
Ru	$K\alpha_{1,2}$		2	150	44	6	19.233	1.28905	6	9.74	13.92	16.83	16.96	17.40	19.79	22.16			24.24	26.42	37.34	53.82	55.93	56.76
Tm	AL_2		1		69	6	9.615	1.28920	4	9.74	13.92	16.83	16.96	17.41	19.80	22.16	22.77	23.73	24.24	26.42	37.35	53.83	55.94	56.77
W	$L\beta_6$		1	.1	74	6	9.610	1.28989	5	9.74	13.93	16.84	16.97	17.42	19.81	22.17	22.78	23.74	24.25	26.44	37.37	53.86	55.97	56.80
Hf	$L\beta_9$	B	1	.01	72	6	9.607	1.29025	5	9.75	13.93	16.85	16.97	17.42	19.81	22.18	22.78	23.75	24.26	26.44	37.38	53.88	55.98	56.82
Ra	$L\gamma_{13}$		2	.01	88	6	19.215	1.29026	5	9.75	13.93	16.85	16.97	17.42	19.81	22.18			24.26	26.44	37.38	53.88	55.99	56.82
Po	$K\alpha_2$	H	8	50	84	6	76.851	1.29040	5	9.75	13.93	16.85	16.98	17.42	19.81	22.18	22.79	23.75	24.26	26.45	37.38	53.88	55.99	56.82
Tm	$L\gamma_6$		1	.01	69	6	9.606	1.29050	4	9.75	13.93	16.85	16.98	17.42	19.82	22.18	22.79	23.75	24.27	26.45	37.39	53.89	56.00	56.83
W	$K\beta_1$		7	26	74	6	67.233	1.29062	6	9.75	13.93	16.85	16.98	17.43	19.82	22.19	22.79	23.75	24.27	26.45	37.39	53.89	56.00	56.83
Re	$L\beta_{17}$	8	1	.01	75	6	9.589	1.29270	4	9.76	13.96	16.88	17.01	17.45	19.85	22.22	22.83	23.79	24.31	26.50	37.45	53.99	56.10	56.93
Ta	$K\alpha_1$		6	100	73	6	57.523	1.29298	6	9.77	13.96	16.88	17.01	17.46	19.85	22.23	22.83	23.80	24.31	26.50	37.46	54.00	56.11	56.95
Pa	$K\alpha_1$	H	10	100	91	6	95.852	1.29325	6	9.77	13.96	16.89	17.01	17.46	19.86	22.23	22.84	23.80	24.32	26.51	37.47	54.01	56.13	56.96
Tm	$K\beta_1$		6	23	69	6	57.506	1.29336	5	9.77	13.96	16.89	17.02	17.46	19.86	22.23	22.84	23.81	24.32	26.51	37.47	54.02	56.13	56.97
Os	L_2-M_2	8	1	.01	76	6	9.584	1.29340	4	9.77	13.96	16.89	17.02	17.46	19.86	22.23	22.84	23.81	24.32	26.51	37.47	54.02	56.13	56.97
Ra	$L_1-O_{4,5}$	B	2	.01	88	6	19.165	1.29360	4	9.77	13.97	16.89	17.02	17.47	19.86	22.24			24.32	26.51	37.48	54.03	56.14	56.98
Ru	$K\alpha_2$		2	50	44	6	19.147	1.29482	6	9.78	13.98	16.91	17.04	17.48	19.88	22.26			24.35	26.54	37.52	54.08	56.20	57.04
Ta	$K\beta_2'$		7	9	73	6	67.001	1.29508	6	9.78	13.98	16.91	17.04	17.49	19.89	22.26	22.87	23.84	24.35	26.55	37.52	54.10	56.21	57.05
Th	L_1-N_1	B	2	.01	90	6	19.143	1.29510	5	9.78	13.98	16.91	17.04	17.49	19.89	22.26			24.35	26.55	37.52	54.10	56.21	57.05
Sn	$K\beta_5'$	B	3	.1	50	6	28.711	1.29525	5	9.78	13.98	16.91	17.04	17.49	19.89	22.27	22.87	23.84	24.36	26.55	37.53	54.10	56.22	57.06
Zn	$K\beta_{1,3}$		1	20	30	6	9.570	1.29525	5	9.78	13.98	16.91	17.04	17.49	19.89	22.27	22.87	23.84	24.36	26.55	37.53	54.10	56.22	57.06
Sn	$K\beta_5''$	8	3	.1	50	6	28.705	1.29552	5	9.79	13.99	16.92	17.04	17.49	19.89	22.27	22.88	23.85	24.36	26.55	37.54	54.12	56.23	57.07
Au	$K\alpha_2$		7	50	79	6	66.978	1.29552	6	9.79	13.99	16.92	17.04	17.49	19.89	22.27	22.88	23.85	24.36	26.55	37.54	54.12	56.23	57.07
Fr	$K\alpha_1$	H	9	100	87	6	86.089	1.29591	5	9.79	13.99	16.92	17.05	17.50	19.90	22.28	22.89	23.85	24.37	26.56	37.55	54.13	56.25	57.09
W	$K8_3$		7	12	74	6	66.940	1.29627	6	9.79	14.00	16.93	17.05	17.50	19.91	22.28	22.89	23.86	24.38	26.57	37.56	54.15	56.27	57.11
Ta	$K8_2''$		7	9	73	6	66.937	1.29632	6	9.79	14.00	16.93	17.06	17.50	19.91	22.28	22.89	23.86	24.38	26.57	37.56	54.15	56.27	57.11
Pu	$L\beta_{10}$	B	2	.01	94	6	19.124	1.29640	4	9.79	14.00	16.93	17.06	17.50	19.91	22.29			24.38	26.57	37.56	54.16	56.28	57.11

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Hf	AL_3		1		72	6	9.556	1.29720	4		9.80	14.01	16.94	17.07	17.52	19.92	22.30	22.91	23.88	24.39	26.59	37.59	54.19	56.31	57.15
Hf	$L\beta_5$		1	.1	72	6	9.553	1.29761	5		9.80	14.01	16.94	17.07	17.52	19.93	22.31	22.92	23.88	24.40	26.60	37.60	54.21	56.33	57.17
Hf	$L\beta_{10}$	F	1	.01	72	6	9.553	1.29764	5		9.80	14.01	16.94	17.07	17.52	19.93	22.31	22.92	23.89	24.40	26.60	37.60	54.21	56.33	57.17
Am	$L\beta_3$		2	6	95	6	19.103	1.29782	5		9.80	14.01	16.95	17.08	17.52	19.93	22.31			24.41	26.60	37.61	54.22	56.34	57.18
Tm	$K\beta_3$		6	11	69	6	57.293	1.29816	5		9.81	14.02	16.95	17.08	17.53	19.93	22.32	22.93	23.89	24.41	26.61	37.62	54.23	56.36	57.20
Pt	$K\alpha_1$		7	100	78	6	66.821	1.29858	6		9.81	14.02	16.96	17.09	17.53	19.94	22.32	22.93	23.90	24.42	26.62	37.63	54.25	56.38	57.22
Hf	Lu	F	1	.01	72	6	9.542	1.29909	5		9.81	14.03	16.96	17.09	17.54	19.95	22.33	22.94	23.91	24.43	26.63	37.64	54.28	56.40	57.24
Pm	$K\alpha_2$	H	4	50	61	6	38.165	1.29921	6		9.81	14.03	16.96	17.09	17.54	19.95	22.34	22.95	23.91	24.43	26.63	37.65	54.28	56.41	57.25
Ra	$L\gamma_4$		2	.1	88	6	19.081	1.29930	5		9.81	14.03	16.97	17.09	17.54	19.95	22.34			24.43	26.63	37.65	54.29	56.41	57.25
Bi	$K\alpha_{1,2}$		8	150	83	6	76.315	1.29946	6		9.81	14.03	16.97	17.10	17.55	19.95	22.34	22.95	23.92	24.44	26.64	37.65	54.29	56.42	57.26
I	$K\alpha_1$		3	100	53	6	28.607	1.29995	6		9.82	14.04	16.97	17.10	17.55	19.96	22.35	22.96	23.93	24.45	26.65	37.67	54.32	56.44	57.28
Er	$K\beta_2$	H	6	8	68	6	57.204	1.30020	4		9.82	14.04	16.98	17.11	17.56	19.97	22.35	22.96	23.93	24.45	26.65	37.68	54.33	56.45	57.30
W	$L\beta_4$		1	4	74	6	9.524	1.30162	5		9.83	14.05	17.00	17.13	17.58	19.99	22.38	22.99	23.96	24.48	26.68	37.72	54.39	56.52	57.36
Ta	$K\alpha_{1,2}$		6	150	73	6	57.098	1.30260	6		9.84	14.06	17.01	17.14	17.59	20.00	22.39	23.01	23.98	24.50	26.70	37.75	54.44	56.57	57.41
Ra	$L\gamma_4 p$		2	.1	88	6	19.032	1.30262	5		9.84	14.06	17.01	17.14	17.59	20.00	22.39			24.50	26.70	37.75	54.44	56.57	57.41
Ho	$K\alpha_1$		5	100	67	6	47.539	1.30378	6		9.85	14.08	17.02	17.15	17.60	20.02	22.41	23.03	24.00	24.52	26.73	37.78	54.49	56.62	57.47
Th	L_2-N_5	B	2	.01	90	6	19.009	1.30420	4		9.85	14.08	17.03	17.16	17.61	20.03	22.42			24.53	26.74	37.80	54.51	56.64	57.49
I	$K\alpha_{1,2}$		3	150	53	6	28.508	1.30446	6		9.85	14.08	17.03	17.16	17.61	20.03	22.43	23.04	24.01	24.53	26.74	37.81	54.52	56.66	57.50
At	$K\beta_2'$	H	10	11	85	6	94.974	1.30520	5		9.86	14.09	17.04	17.17	17.62	20.04	22.44	23.05	24.03	24.55	26.76	37.83	54.55	56.69	57.54
Hf	$L\beta_7$		1	.1	72	6	9.494	1.30564	5		9.86	14.10	17.05	17.18	17.63	20.05	22.45	23.06	24.03	24.55	26.77	37.84	54.57	56.71	57.56
Sn	$K\beta_1$		3	19	50	6	28.481	1.30571	6		9.86	14.10	17.05	17.18	17.63	20.05	22.45	23.06	24.04	24.56	26.77	37.84	54.58	56.72	57.56
Cf	$L\beta_2$		2	20	98	3	18.983	1.30600			9.86	14.10	17.05	17.18	17.63	20.06	22.45			24.56	26.77	37.85	54.59	56.73	57.58
Ra	$K\alpha_2$	B	9	50	88	6	85.419	1.30608	5		9.87	14.10	17.05	17.18	17.64	20.06	22.45	23.07	24.04	24.56	26.77	37.85	54.59	56.73	57.58
Th	$L\gamma_1$		2	10	90	6	18.979	1.30626	5		9.87	14.10	17.06	17.19	17.64	20.06	22.46			24.57	26.78	37.86	54.60	56.74	57.59
Yb	$L\gamma_5$		1	.1	70	6	9.489	1.30630	4		9.87	14.10	17.06	17.19	17.64	20.06	22.46	23.07	24.05	24.57	26.78	37.86	54.60	56.74	57.59
Nb	$K\beta_4$	B	2	.01	41	6	18.978	1.30636	5		9.87	14.10	17.06	17.19	17.64	20.06	22.46			24.57	26.78	37.86	54.61	56.75	57.59
Ta	$L\beta_3$		1	6	73	6	9.486	1.30678	5		9.87	14.11	17.06	17.19	17.65	20.07	22.47	23.08	24.06	24.58	26.79	37.88	54.62	56.77	57.61
Rn	$K\beta_1$	H	10	29	86	6	94.850	1.30690	5		9.87	14.11	17.07	17.20	17.65	20.07	22.47	23.08	24.06	24.58	26.79	37.88	54.63	56.77	57.62
At	$K\beta_2''$	H	10	11	85	6	94.829	1.30720	5		9.87	14.11	17.07	17.20	17.65	20.08	22.47	23.09	24.06	24.58	26.80	37.89	54.64	56.79	57.63
Sn	$K\beta_3$		3	9	50	6	28.439	1.30763	6		9.88	14.12	17.08	17.21	17.66	20.08	22.48	23.10	24.07	24.59	26.81	37.90	54.66	56.81	57.65
Pb	Lt	B	1	.01	82	6	9.479	1.30767	5		9.88	14.12	17.08	17.21	17.66	20.08	22.48	23.10	24.07	24.59	26.81	37.90	54.67	56.81	57.66
Nb	$K\beta_2$		2	4	41	6	18.949	1.30832	5		9.88	14.13	17.08	17.21	17.67	20.09	22.49			24.61	26.82	37.92	54.69	56.84	57.69
Ta	L_3-N_3	8	1	.01	73	6	9.473	1.30860	4		9.88	14.13	17.09	17.22	17.67	20.10	22.50	23.11	24.09	24.61	26.83	37.93	54.71	56.85	57.70
Pt	$K\beta_1$		8	27	78	6	75.735	1.30940	6		9.89	14.14	17.10	17.23	17.68	20.11	22.51	23.13	24.10	24.63	26.84	37.95	54.74	56.89	57.74
U	$K\alpha_2$		10	50	92	6	94.649	1.30968	6		9.89	14.14	17.10	17.23	17.68	20.11	22.52	23.13	24.11	24.63	26.85	37.96	54.76	56.90	57.75
Pt	$K\alpha_{1,2}$		7	150	78	6	66.241	1.30994	6		9.89	14.14	17.11	17.24	17.69	20.12	22.52	23.14	24.11	24.64	26.86	37.97	54.77	56.92	57.77
Pa	$K\alpha_{1,2}$	H	10	150	91	6	94.627	1.30998	6		9.89	14.14	17.11	17.24	17.69	20.12	22.52	23.14	24.12	24.64	26.86	37.97	54.77	56.92	57.77
Pa	$L\gamma_5$		2	.1	91	6	18.925	1.31000	4		9.89	14.14	17.11	17.24	17.69	20.12	22.52			24.64	26.86	37.97	54.77	56.92	57.77
Fr	$K\alpha_{1,2}$	H	9	150	87	6	85.110	1.31082	5		9.90	14.15	17.12	17.25	17.70	20.13	22.54	23.15	24.13	24.65	26.87	38.00	54.81	56.96	57.81
Ir	$K\beta_2'$		8	10	77	6	75.606	1.31165	6		9.91	14.16	17.13	17.26	17.71	20.14	22.55	23.17	24.15	24.67	26.89	38.02	54.85	57.00	57.85
Ho	$K\alpha_{1,2}$		5	150	67	6	47.253	1.31166	6		9.91	14.16	17.13	17.26	17.71	20.14	22.55	23.17	24.15	24.67	26.89	38.02	54.85	57.00	57.85
La	$K\beta_1$		4	21	57	6	37.795	1.31193	6		9.91	14.17	17.13	17.26	17.72	20.15	22.56	23.17	24.15	24.67	26.90	38.03	54.86	57.01	57.86
Pt	$L\alpha_1$		1	100	78	6	9.441	1.31304	5		9.92	14.18	17.15	17.28	17.73	20.17	22.58	23.19	24.17	24.70	26.92	38.06	54.91	57.06	57.91
Ir	$K\beta_2''$		8	10	77	6	75.516	1.31320	5		9.92	14.18	17.15	17.28	17.73	20.17	22.58	23.20	24.18	24.70	26.92	38.07	54.92	57.07	57.92
I	$K\alpha_2$		3	50	53	6	28.312	1.31349	6		9.92	14.18	17.15	17.28	17.74	20.17	22.58	23.20	24.18	24.70	26.93	38.08	54.93	57.08	57.94
Tl	$K\beta_2'$		9	10	81	6	84.933	1.31355	5		9.92	14.18	17.15	17.28	17.74	20.17	22.59	23.20	24.18	24.71	26.93	38.08	54.93	57.09	57.94
Pb	$K\beta_1$		9	88	82	6	84.922	1.31373	6		9.92	14.18	17.16	17.29	17.74	20.18	22.59	23.21	24.19	24.71	26.93	38.08	54.94	57.10	57.95
8g	Ls	F	1	.01	80	6	9.435	1.31381	5		9.92	14.19	17.16	17.29	17.74	20.18	22.59	23.21	24.19	24.71	26.94	38.09	54.94	57.10	57.95
Er	$L\gamma_3$		1	1	68	6	9.429	1.31460	4		9.93	14.19	17.17	17.30	17.75	20.19	22.60	23.22	24.20	24.73	26.95	38.11	54.98	57.14	57.99
La	$K\beta_3$		4	9	57	6	37.714	1.31474	6		9.93	14.20	17.17	17.30	17.75	20.19	22.61	23.22	24.20	24.73	26.96	38.11	54.99	57.14	58.00
Tl	$K\beta_2''$		9	10	81	6	84.823	1.31526	5		9.93	14.20	17.18	17.31	17.76	20.20	22.61	23.23	24.21	24.74	26.97	38.13	55.01	57.17	58.02
Tm	$L\gamma_1$		1	5	69	6	9.424	1.31530	4		9.93	14.20	17.18	17.31	17.76	20.20	22.62	23.23	24.22	24.74	26.97	38.13	55.01	57.17	58.02
Am	$L\beta_1$		2	50	95	6	18.849	1.31531	6		9.93	14.20	17.18	17.31	17.76	20.20	22.62			24.74	26.97	38.13	55.01	57.17	58.02
Rn	$K\beta_3$	H	10	13	86	6	94.230	1.31550	5		9.94	14.20	17.18	17.31	17.76	20.20	22.62	23.24	24.22	24.74	26.97	38.14	55.02	57.18	58.03
Pt	$K\beta_3$		8	12	78	6	75.355	1.31601	6		9.94	14.21	17.19	17.32	17.77	20.21	22.63	23.25	24.23	24.75	26.98	38.15	55.04	57.20	58.06
Bi	Ll		1	3	83	6	9.419	1.31610	5		9.94	14.21	17.19	17.32	17.77	20.21	22.63	23.25	24.23	24.75	26.98	38.16	55.05	57.21	58.06
Ta	L_3-N_2	B	1	.01	73	6	9.414	1.31670	4		9.95	14.22	17.19	17.33	17.78	20.22	22.64	23.26	24.24	24.77	27.00	38.17	55.07	57.24	58.09
Eu	$K\beta_1$		5	23	63	6	47.030	1.31788	6		9.95	14.23	17.21	17.34	17.80	20.24	22.66	23.28	24.26	24.79	27.02	38.21	55.13	57.29	58.15
Ta	L_2-M_5	B	1	.01	73	6	9.398	1.31897	5		9.96	14.24	17.22	17.36	17.81	20.26	22.68	23.30	24.28	24.81	27.04	38.24	55.18	57.34	58.20
Ho	AL_1		1		67	6	9.398	1.31900	4		9.96	14.24	17.22	17.36	17.81	20.26	22.68	23.30	24.28	24.81	27.04	38.24	55.18	57.35	58.20
Ho	L_1-$O_{4,5}$	B	1	.01	67	6	9.385	1.32083	4		9.98	14.26	17.25	17.38	17.84	20.29	22.71	23.33	24.32	24.84	27.08	38.30	55.26	57.43	58.29
Er	$L\gamma_2$		1	1	68	6	9.384	1.32100	4		9.98	14.26	17.25	17.38	17.84	20.29	22.71	23.34	24.32	24.85	27.09	38.30	55.27	57.44	58.30
Pb	$K\beta_3$		9	13	82	6	84.436	1.32129	6		9.98	14.27	17.26	17.39	17.84	20.29	22.72	23.34	24.33	24.85	27.09	38.31	55.28	57.45	58.31
Eu	$K\beta_3$		5	11	63	6	46.896	1.32166	6		9.98	14.27	17.26	17.39	17.85	20.30	22.73	23.35	24.33	24.86	27.10	38.32	55.30	57.47	58.33
Ta	$K\alpha_2$		6	50	73	6	56.267	1.32183	6		9.98	14.27	17.26	17.39	17.85	20.30	22.73	23.35	24.34	24.86	27.10	38.33	55.31	57.48	58.34

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Ho	$L\gamma_4$		1	.1	67	6	9.373	1.32250	4	9.99	14.28	17.27	17.40	17.86	20.31	22.74	23.36	24.35	24.88	27.12	38.35	55.34	57.51	58.37
Pb	$K\alpha_1$		8	100	82	6	74.956	1.32301	6	9.99	14.29	17.28	17.41	17.87	20.32	22.75	23.37	24.36	24.89	27.13	38.36	55.36	57.54	58.40
Th	L_2-N_3	B	2	.01	90	6	18.725	1.32400	4	10.00	14.30	17.29	17.42	17.88	20.34	22.77			24.91	27.15	38.39	55.41	57.58	58.44
Pt	$L\alpha_2$		1	10	78	6	9.360	1.32432	5	10.00	14.30	17.29	17.43	17.88	20.34	22.77	23.39	24.38	24.91	27.16	38.40	55.42	57.60	58.46
Bi	$K\alpha_2$		8	50	83	6	74.802	1.32574	6	10.01	14.32	17.31	17.45	17.90	20.36	22.80	23.42	24.41	24.94	27.19	38.45	55.48	57.67	58.53
Hf	$L\beta_2$		1	20	72	6	9.346	1.32639	5	10.02	14.32	17.32	17.45	17.91	20.37	22.81	23.43	24.42	24.95	27.20	38.47	55.51	57.70	58.56
Ta	$L\beta_1$		1	50	73	6	9.342	1.32698	5	10.02	14.33	17.33	17.46	17.92	20.38	22.82	23.44	24.43	24.96	27.21	38.48	55.54	57.73	58.59
Nd	$K\alpha_1$		4	100	60	6	37.355	1.32738	6	10.03	14.33	17.34	17.47	17.93	20.39	22.83	23.45	24.44	24.97	27.22	38.50	55.56	57.74	58.61
Ho	$K\alpha_2$		5	50	67	6	46.692	1.32743	6	10.03	14.33	17.34	17.47	17.93	20.39	22.83	23.45	24.44	24.97	27.22	38.50	55.56	57.75	58.61
Hf	$L\beta_{15}$		1	1	72	6	9.336	1.32783	5	10.03	14.34	17.34	17.47	17.93	20.40	22.83	23.46	24.45	24.98	27.23	38.51	55.58	57.77	58.63
Os	Ln		1	1	76	6	9.335	1.32785	5	10.03	14.34	17.34	17.47	17.93	20.40	22.83	23.46	24.45	24.98	27.23	38.51	55.58	57.77	58.63
Th	$K\alpha_1$		10	100	90	6	93.334	1.32813	6	10.03	14.34	17.35	17.48	17.94	20.40	22.84	23.46	24.45	24.98	27.24	38.52	55.59	57.78	58.64
Ta	$K\beta_1$		7	26	73	6	65.212	1.33062	6	10.05	14.37	17.38	17.51	17.97	20.44	22.88	23.51	24.50	25.03	27.29	38.59	55.71	57.90	58.77
Ra	$L\gamma_{11}$	B	2	.01	88	6	18.629	1.33080	4	10.05	14.37	17.38	17.51	17.97	20.44	22.89			25.04	27.29	38.60	55.72	57.91	58.77
Ta	$L\beta_6$		1	.1	73	6	9.314	1.33094	5	10.05	14.37	17.38	17.51	17.97	20.44	22.89	23.51	24.51	25.04	27.29	38.60	55.72	57.91	58.78
Sm	$K8_2$	H	5	8	62	6	46.566	1.33100	4	10.05	14.37	17.38	17.52	17.98	20.44	22.89	23.51	24.51	25.04	27.30	38.60	55.72	57.92	58.78
Ba	$K\beta_2$		4	7	56	6	37.251	1.33108	5	10.05	14.37	17.38	17.52	17.98	20.45	22.89	23.52	24.51	25.04	27.30	38.61	55.73	57.92	58.79
In	$K\text{-}O_{2,3}$		3	.01	49	6	27.935	1.33122	5	10.06	14.37	17.39	17.52	17.98	20.45	22.89	23.52	24.51	25.04	27.30	38.61	55.73	57.93	58.79
Nb	$K\beta_1$		2	.6	41	6	18.619	1.33152	5	10.06	14.38	17.39	17.52	17.98	20.45	22.90			25.05	27.31	38.62	55.75	57.94	58.81
In	$K\beta_4$	B	3	.01	49	6	27.923	1.33179	5	10.06	14.38	17.39	17.53	17.99	20.46	22.90	23.53	24.52	25.05	27.31	38.63	55.76	57.95	58.82
Rn	$K\alpha_1$	H	9	100	86	6	83.768	1.33182	5	10.06	14.38	17.39	17.53	17.99	20.46	22.90	23.53	24.52	25.06	27.31	38.63	55.76	57.96	58.82
Pt	$K\alpha_2$		7	50	78	6	65.112	1.33267	6	10.07	14.39	17.40	17.54	18.00	20.47	22.92	23.54	24.54	25.07	27.33	38.65	55.80	58.00	58.86
Nb	$K\beta_3$		2	7	41	6	18.603	1.33268	5	10.07	14.39	17.40	17.54	18.00	20.47	22.92			25.07	27.33	38.66	55.80	58.00	58.87
Ra	L_1-N_4	B	2	.01	88	6	18.596	1.33320	4	10.07	14.40	17.41	17.54	18.01	20.48	22.93			25.08	27.34	38.67	55.82	58.02	58.89
Hf	$K\alpha_1$		6	100	72	6	55.781	1.33336	6	10.07	14.40	17.41	17.55	18.01	20.48	22.93	23.56	24.55	25.08	27.34	38.68	55.83	58.03	58.90
Nd	$K\alpha_{1,2}$		4	150	60	6	37.182	1.33355	6	10.07	14.40	17.42	17.55	18.01	20.48	22.93	23.56	24.56	25.09	27.35	38.68	55.84	58.04	58.91
In	$K8_2$		3	5	49	6	27.856	1.33500	5	10.08	14.42	17.44	17.57	18.03	20.51	22.96	23.59	24.58	25.12	27.38	38.73	55.91	58.11	58.98
Hf	$K\beta_2$	H	7	9	72	6	64.969	1.33560	4	10.09	14.42	17.44	17.58	18.04	20.52	22.97	23.60	24.59	25.13	27.39	38.74	55.93	58.14	59.01
Lu	$L\beta_9$	B	1	.01	71	6	9.280	1.33580	4	10.09	14.42	17.45	17.58	18.04	20.52	22.97	23.60	24.60	25.13	27.40	38.75	55.94	58.15	59.02
Er	$K8_1$		6	22	68	6	55.672	1.33596	5	10.09	14.43	17.45	17.58	18.04	20.52	22.98	23.60	24.60	25.13	27.40	38.75	55.95	58.15	59.02
Pb	$K\alpha_{1,2}$		8	150	82	6	74.221	1.33612	6	10.09	14.43	17.45	17.58	18.04	20.52	22.98	23.61	24.60	25.14	27.40	38.76	55.96	58.16	59.03
Ta	$K\beta_3$		7	12	73	6	64.938	1.33623	6	10.09	14.43	17.45	17.58	18.05	20.53	22.98	23.61	24.61	25.14	27.40	38.76	55.96	58.17	59.04
W	L_1-M_1	B	1	.01	74	6	9.275	1.33650	4	10.10	14.43	17.46	17.59	18.05	20.53	22.99	23.61	24.61	25.14	27.41	38.77	55.97	58.18	59.05
Re	L_2-M_2	B	1	.01	75	6	9.274	1.33660	4	10.10	14.43	17.46	17.59	18.05	20.53	22.99	23.61	24.61	25.15	27.41	38.77	55.98	58.18	59.06
Ir	$K\alpha_1$		7	100	77	6	64.885	1.33733	6	10.10	14.44	17.47	17.60	18.06	20.54	23.00	23.63	24.63	25.16	27.43	38.80	56.01	58.22	59.09
Pu	$L\beta_3$		2	6	94	6	18.537	1.33742	5	10.10	14.44	17.47	17.60	18.06	20.54	23.00			25.16	27.43	38.80	56.02	58.22	59.10
Bk	$L\beta_2$		2	20	97	3	18.529	1.33800		10.11	14.45	17.47	17.61	18.07	20.55	23.01			25.17	27.44	38.82	56.04	58.25	59.12
Er	AL_2		1		68	6	9.260	1.33860	4	10.11	14.45	17.48	17.62	18.08	20.56	23.02	23.65	24.65	25.18	27.45	38.83	56.07	58.28	59.15
W	$L\beta_{17}$	B	1	.01	74	6	9.260	1.33870	4	10.11	14.46	17.48	17.62	18.08	20.56	23.02	23.65	24.65	25.19	27.46	38.84	56.07	58.28	59.16
Er	$L\gamma_6$		1	.01	68	6	9.253	1.33970	4	10.12	14.47	17.50	17.63	18.09	20.58	23.04	23.67	24.67	25.21	27.48	38.87	56.12	58.33	59.21
Ga	$K\alpha_1$		1	100	31	6	9.250	1.34008	6	10.12	14.47	17.50	17.64	18.10	20.59	23.05	23.68	24.68	25.21	27.49	38.88	56.14	58.35	59.22
Er	$K\beta_3$		6	12	68	6	55.485	1.34046	5	10.13	14.48	17.51	17.64	18.10	20.59	23.05	23.68	24.69	25.22	27.49	38.89	56.16	58.37	59.24
Lu	AL_3	H	1		71	6	9.247	1.34050	4	10.13	14.48	17.51	17.64	18.10	20.59	23.05	23.68	24.69	25.22	27.49	38.89	56.16	58.37	59.25
Fr	$K\alpha_2$	H	9	50	87	6	83.217	1.34064	5	10.13	14.48	17.51	17.64	18.11	20.59	23.06	23.69	24.69	25.22	27.50	38.90	56.16	58.38	59.25
Ga	$K\alpha_{1,2}$		1	150	31	6	9.241	1.34138	5	10.13	14.49	17.52	17.65	18.12	20.61	23.07	23.70	24.70	25.24	27.51	38.92	56.20	58.41	59.29
Tl	Lt	B	1	.01	81	6	9.240	1.34154	5	10.13	14.49	17.52	17.65	18.12	20.61	23.07	23.70	24.71	25.24	27.52	38.92	56.20	58.42	59.30
Po	$K\beta_2'$	H	10	11	84	6	92.383	1.34180	5	10.14	14.49	17.52	17.66	18.12	20.61	23.08	23.71	24.71	25.25	27.52	38.93	56.22	58.43	59.31
Lu	$L\beta_5$		1	.1	71	6	9.238	1.34183	5	10.14	14.49	17.53	17.66	18.12	20.61	23.08	23.71	24.71	25.25	27.52	38.93	56.22	58.43	59.31
Ra	L_2-$P_{2,3}$	B	2	.01	88	6	18.463	1.34280	4	10.14	14.50	17.54	17.67	18.14	20.63	23.09			25.27	27.54	38.96	56.26	58.48	59.36
Hf	$K\alpha_{1,2}$		6	150	72	6	55.382	1.34296	6	10.14	14.50	17.54	17.67	18.14	20.63	23.10	23.73	24.73	25.27	27.55	38.97	56.27	58.49	59.36
Lu	$L\beta_{10}$	B	1	.01	71	6	9.230	1.34303	4	10.14	14.50	17.54	17.67	18.14	20.63	23.10	23.73	24.73	25.27	27.55	38.97	56.27	58.49	59.37
At	$K\beta_1$	H	10	29	85	6	92.287	1.34320	5	10.15	14.50	17.54	17.68	18.14	20.63	23.10	23.73	24.74	25.27	27.55	38.97	56.28	58.50	59.38
Pa	$K\alpha_2$	H	10	50	91	6	92.271	1.34343	6	10.15	14.51	17.55	17.68	18.14	20.64	23.11	23.74	24.74	25.28	27.56	38.98	56.29	58.51	59.39
Po	$K8_2''$	H	10	11	84	6	92.246	1.34380	5	10.15	14.51	17.55	17.68	18.15	20.64	23.11	23.74	24.75	25.28	27.56	38.99	56.31	58.53	59.41
Ga	$K\alpha_2$		1	50	31	6	9.223	1.34399	5	10.15	14.51	17.55	17.69	18.15	20.65	23.12	23.75	24.75	25.29	27.57	39.00	56.32	58.54	59.41
Ho	$K\beta_2$	H	6	8	67	6	55.315	1.34460	4	10.16	14.52	17.56	17.70	18.16	20.66	23.13	23.76	24.76	25.30	27.58	39.01	56.34	58.57	59.44
Ra	L_2-P_1		2	.01	88	6	18.435	1.34480	4	10.16	14.52	17.56	17.70	18.16	20.66	23.13			25.30	27.58	39.02	56.35	58.58	59.45
Th	$K\alpha_{1,2}$		10	150	90	6	92.174	1.34485	6	10.16	14.52	17.57	17.70	18.16	20.66	23.13	23.76	24.77	25.30	27.58	39.02	56.36	58.58	59.46
Lu	L_3-$O_{2,3}$	B	1	.01	71	6	9.215	1.34524	5	10.16	14.53	17.57	17.70	18.17	20.67	23.14	23.77	24.77	25.31	27.59	39.03	56.37	58.60	59.48
Ta	$L\beta_4$		1	4	73	6	9.211	1.34581	5	10.17	14.53	17.58	17.71	18.18	20.67	23.15	23.78	24.79	25.32	27.61	39.05	56.40	58.62	59.50
Nd	$K\alpha_2$		4	50	60	6	36.841	1.34589	6	10.17	14.53	17.58	17.71	18.18	20.68	23.15	23.78	24.79	25.32	27.61	39.05	56.40	58.63	59.51
Ra	$L\gamma_6$		2	.01	88	6	18.411	1.34656	5	10.17	14.54	17.59	17.72	18.19	20.69	23.16			25.34	27.62	39.07	56.43	58.66	59.54
Rn	$K\alpha_{1,2}$	H	9	150	86	6	82.843	1.34670	5	10.17	14.54	17.59	17.72	18.19	20.69	23.16	23.80	24.80	25.34	27.62	39.08	56.44	58.67	59.55
Ac	$L\gamma_1$	H	2	10	89	6	18.405	1.34702	5	10.18	14.55	17.59	17.73	18.19	20.69	23.17			25.35	27.63	39.09	56.45	58.68	59.56
Am	$L\beta_5$		2	1	95	6	18.396	1.34766	5	10.18	14.55	17.60	17.74	18.20	20.70	23.18			25.36	27.64	39.11	56.48	58.71	59.59

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Dy	$K\alpha_1$		5	100	66	6	45.991	1.34766	6		10.18	14.55	17.60	17.74	18.20	20.70	23.18	23.81	24.82	25.36	27.64	39.11	56.48	58.71	59.59
Ir	$K\beta_1$		8	27	77	6	73.548	1.34834	6		10.19	14.56	17.61	17.75	18.21	20.71	23.19	23.83	24.83	25.37	27.66	39.13	56.51	58.74	59.63
Ir	$K\alpha_{1,2}$		7	150	77	6	64.339	1.34866	6		10.19	14.56	17.62	17.75	18.22	20.72	23.20	23.83	24.84	25.38	27.66	39.14	56.53	58.76	59.64
Lu	$L\beta_7$		1	.1	71	6	9.186	1.34949	5		10.19	14.57	17.63	17.76	18.23	20.73	23.21	23.85	24.85	25.39	27.68	39.16	56.57	58.80	59.68
Pb	Ll		1	3	82	6	9.183	1.34990	5		10.20	14.58	17.63	17.77	18.23	20.74	23.22	23.85	24.86	25.40	27.69	39.17	56.59	58.82	59.70
Tc	$K\alpha_1$	H	2	100	43	6	18.364	1.35004	5		10.20	14.58	17.63	17.77	18.23	20.74	23.22			25.40	27.69	39.18	56.59	58.83	59.71
Th	$L\gamma_5$	D	2	.1	90	6	18.361	1.35028	5		10.20	14.58	17.64	17.77	18.24	20.74	23.23			25.41	27.70	39.19	56.60	58.84	59.72
Hf	L_3-N_3	B	1	.01	72	6	9.179	1.35053	5		10.20	14.58	17.64	17.77	18.24	20.75	23.23	23.86	24.87	25.41	27.70	39.19	56.61	58.85	59.73
Ra	$L\gamma_3$		2	2	88	6	18.354	1.35076	5		10.20	14.59	17.64	17.78	18.24	20.75	23.23			25.42	27.71	39.20	56.63	58.86	59.74
Os	$K\beta_2'$		8	10	76	6	73.390	1.35125	6		10.21	14.59	17.65	17.78	18.25	20.76	23.24	23.88	24.89	25.43	27.72	39.22	56.65	58.88	59.77
Tl	$K\beta_1$		9	78	81	6	82.562	1.35128	6		10.21	14.59	17.65	17.78	18.25	20.76	23.24	23.88	24.89	25.43	27.72	39.22	56.65	58.89	59.77
Ir	$L\alpha_1$		1	100	77	6	9.174	1.35128	5		10.21	14.59	17.65	17.78	18.25	20.76	23.24	23.88	24.89	25.43	27.72	39.22	56.65	58.89	59.77
Au	Ls		8	1	.01	79	6	9.173	1.35131	5		10.21	14.59	17.65	17.78	18.25	20.76	23.24	23.88	24.89	25.43	27.72	39.22	56.65	58.89	59.77
At	$K\beta_3$	H	10	13	85	6	91.707	1.35170	5		10.21	14.60	17.66	17.79	18.26	20.77	23.25	23.89	24.90	25.44	27.73	39.23	56.67	58.91	59.79
Hg	$K\beta_2'$		9	10	80	6	82.530	1.35180	5		10.21	14.60	17.66	17.79	18.26	20.77	23.25	23.89	24.90	25.44	27.73	39.23	56.67	58.91	59.80
In	$K\beta_5'$		8	3	.1	49	6	27.494	1.35258	5		10.22	14.61	17.67	17.80	18.27	20.78	23.27	23.90	24.91	25.45	27.75	39.26	56.71	58.95	59.83
Os	$K\beta_2''$		8	10	76	6	73.306	1.35280	5		10.22	14.61	17.67	17.80	18.27	20.78	23.27	23.91	24.92	25.46	27.75	39.26	56.72	58.96	59.84
Ra	L_2-O_3	B	2	.01	88	6	18.326	1.35280	4		10.22	14.61	17.67	17.80	18.27	20.78	23.27			25.46	27.75	39.26	56.72	58.96	59.84
Tc	$K\alpha_{1,2}$	H	2	150	43	6	18.325	1.35291	5		10.22	14.61	17.67	17.81	18.27	20.78	23.27			25.46	27.75	39.27	56.72	58.96	59.85
In	$K\beta_5''$	B	3	.1	49	6	27.487	1.35294	5		10.22	14.61	17.67	17.81	18.27	20.79	23.27	23.91	24.92	25.46	27.75	39.27	56.73	58.96	59.85
Hf	$L8_3$		1	6	72	6	9.162	1.35300	5		10.22	14.61	17.67	17.81	18.27	20.79	23.27	23.91	24.92	25.46	27.76	39.27	56.73	58.97	59.85
Hg	$K\beta_2''$		9	10	80	6	82.420	1.35360	5		10.22	14.62	17.68	17.81	18.28	20.80	23.28	23.92	24.93	25.47	27.77	39.29	56.76	59.00	59.88
Te	$K\alpha_1$		3	100	52	6	27.468	1.35388	6		10.23	14.62	17.68	17.82	18.29	20.80	23.29	23.92	24.94	25.48	27.77	39.30	56.77	59.01	59.90
Ir	$K\beta_3$		8	12	77	6	73.190	1.35494	6		10.24	14.63	17.70	17.83	18.30	20.82	23.31	23.94	24.96	25.50	27.80	39.33	56.82	59.06	59.95
Pu	$L\beta_1$		2	50	94	6	18.291	1.35544	5		10.24	14.64	17.70	17.84	18.31	20.82	23.32			25.51	27.81	39.34	56.84	59.08	59.97
Dy	$K\alpha_{1,2}$		5	150	66	6	45.724	1.35552	6		10.24	14.64	17.71	17.84	18.31	20.83	23.32	23.95	24.97	25.51	27.81	39.34	56.84	59.09	59.98
Tm	$L\gamma_5$		1	.1	69	6	9.143	1.35580	4		10.24	14.64	17.71	17.84	18.31	20.83	23.32	23.96	24.97	25.51	27.81	39.35	56.86	59.10	59.99
Ra	L_2-O_2	B	2	.01	88	6	18.283	1.35600	4		10.24	14.64	17.71	17.85	18.32	20.83	23.33			25.52	27.82	39.36	56.87	59.11	60.00
Te	$K\alpha_{1,2}$		3	150	52	6	27.377	1.35837	6		10.26	14.67	17.74	17.88	18.35	20.87	23.37	24.01	25.02	25.56	27.87	39.43	56.97	59.23	60.12
Tc	$K\alpha_2$	H	2	50	43	6	18.248	1.35864	5		10.26	14.67	17.75	17.88	18.35	20.87	23.37			25.57	27.87	39.44	56.99	59.24	60.13
Tl	$K\beta_3$		9	13	81	6	82.104	1.35882	6		10.26	14.67	17.75	17.88	18.35	20.88	23.37	24.01	25.03	25.57	27.88	39.44	56.99	59.25	60.14
Hf	L_3-N_2	B	1	.01	72	6	9.122	1.35887	5		10.26	14.67	17.75	17.88	18.35	20.88	23.38	24.01	25.03	25.57	27.88	39.45	57.00	59.25	60.14
Ra	$L\gamma_8$		2	.1	88	6	18.227	1.36020	4		10.27	14.69	17.77	17.90	18.37	20.90	23.40			25.60	27.91	39.49	57.06	59.31	60.21
Tl	$K\alpha_1$		8	100	81	6	72.859	1.36109	6		10.28	14.70	17.78	17.91	18.39	20.91	23.41	24.05	25.07	25.61	27.92	39.51	57.10	59.36	60.25
U	$L\beta_9$	B	2	.01	92	6	18.202	1.36203	6		10.29	14.71	17.79	17.93	18.40	20.93	23.43			25.63	27.94	39.54	57.14	59.40	60.29
Hf	$K\alpha_2$		6	50	72	6	54.502	1.36214	6		10.29	14.71	17.79	17.93	18.40	20.93	23.43	24.07	25.09	25.64	27.95	39.55	57.15	59.41	60.30
Pb	$K\alpha_2$		8	50	82	6	72.792	1.36235	6		10.29	14.71	17.80	17.93	18.40	20.93	23.44	24.08	25.10	25.64	27.95	39.55	57.16	59.42	60.31
Ir	$L\alpha_2$		1	10	77	6	9.098	1.36250	5		10.29	14.71	17.80	17.93	18.40	20.93	23.44	24.08	25.10	25.64	27.95	39.56	57.16	59.42	60.32
8a	$K\beta_1$		4	21	56	6	36.372	1.36324	6		10.30	14.72	17.81	17.94	18.41	20.95	23.45	24.09	25.11	25.66	27.97	39.58	57.20	59.46	60.35
In	$K\beta_1$		3	19	49	6	27.271	1.36363	6		10.30	14.73	17.81	17.95	18.42	20.95	23.46	24.10	25.12	25.66	27.98	39.59	57.21	59.48	60.37
Ra	$L\gamma_2$		2	1	88	6	18.176	1.36398	5		10.30	14.73	17.82	17.95	18.42	20.96	23.46			25.67	27.99	39.60	57.23	59.49	60.39
Er	$L\gamma_1$		1	5	68	6	9.087	1.36410	4		10.30	14.73	17.82	17.95	18.43	20.96	23.47	24.11	25.13	25.67	27.99	39.60	57.24	59.50	60.40
Ac	$K\alpha_1$	H	10	100	89	6	90.868	1.36417	6		10.31	14.73	17.82	17.96	18.43	20.96	23.47	24.11	25.13	25.67	27.99	39.61	57.24	59.50	60.40
Ho	$L\gamma_3$		1	1	67	6	9.086	1.36430	4		10.31	14.73	17.82	17.96	18.43	20.96	23.47	24.11	25.13	25.68	27.99	39.61	57.25	59.51	60.41
Sm	$K\beta_1$		5	22	62	6	45.405	1.36505	5		10.31	14.74	17.83	17.97	18.44	20.97	23.48	24.13	25.15	25.69	28.01	39.63	57.28	59.55	60.44
In	$K\beta_3$		3	8	49	6	27.233	1.36554	6		10.32	14.75	17.84	17.97	18.45	20.98	23.49	24.13	25.15	25.70	28.02	39.65	57.30	59.57	60.47
8a	$K\beta_3$		4	7	56	6	36.298	1.36603	6		10.32	14.75	17.84	17.98	18.45	20.99	23.50	24.14	25.16	25.71	28.03	39.66	57.32	59.59	60.49
Te	$K\alpha_2$		3	50	52	6	27.197	1.36735	6		10.33	14.77	17.86	18.00	18.47	21.01	23.52	24.17	25.19	25.73	28.06	39.70	57.39	59.66	60.55
Sm	$K\beta_3$		5	10	62	6	45.281	1.36880	5		10.34	14.78	17.88	18.02	18.49	21.03	23.55	24.19	25.22	25.76	28.09	39.75	57.45	59.73	60.63
At	$K\alpha_1$	H	9	100	85	6	81.499	1.36890	5		10.34	14.78	17.88	18.02	18.49	21.03	23.55	24.19	25.22	25.76	28.09	39.75	57.46	59.73	60.63
Dy	AL_1	H	1		66	6	9.053	1.36920	4		10.34	14.79	17.89	18.02	18.50	21.04	23.56	24.20	25.22	25.77	28.09	39.76	57.47	59.75	60.65
Ho	$L\gamma_2$		1	1	67	6	9.049	1.36980	4		10.35	14.79	17.89	18.03	18.50	21.05	23.57	24.21	25.23	25.78	28.11	39.78	57.50	59.77	60.67
Cm	$L\beta_2$		2	20	96	3	18.096	1.37000			10.35	14.80	17.90	18.03	18.51	21.05	23.57			25.79	28.11	39.78	57.51	59.78	60.68
Lu	$L8_2$		1	1	71	6	9.047	1.37012	5		10.35	14.80	17.90	18.03	18.51	21.05	23.57	24.22	25.24	25.79	28.11	39.79	57.51	59.79	60.69
Dy	$K\alpha_2$		5	50	66	6	45.200	1.37123	6		10.36	14.81	17.91	18.05	18.52	21.07	23.59	24.24	25.26	25.81	28.14	39.82	57.56	59.84	60.74
Ir	$K\alpha_2$		7	50	77	6	63.276	1.37133	6		10.36	14.81	17.91	18.05	18.52	21.07	23.59	24.24	25.26	25.81	28.14	39.82	57.57	59.85	60.75
Lu	$L8_{1,5}$		1	20	71	6	9.038	1.37150	4		10.36	14.81	17.92	18.05	18.53	21.07	23.60	24.24	25.27	25.81	28.14	39.83	57.58	59.86	60.76
Hf	$K8_1$	H	7	66	72	6	63.222	1.37249	5		10.37	14.82	17.93	18.07	18.54	21.09	23.61	24.26	25.28	25.83	28.16	39.86	57.62	59.90	60.81
Am	$L\beta_4$		2	4	95	6	18.060	1.37278	5		10.37	14.83	17.93	18.07	18.54	21.09	23.62			25.84	28.17	39.87	57.63	59.92	60.82
Re	Ln		1	1	75	6	9.026	1.37342	5		10.38	14.83	17.94	18.08	18.55	21.10	23.63	24.28	25.30	25.85	28.18	39.89	57.66	59.95	60.85
Hf	$L\beta_1$		1	50	72	6	9.021	1.37410	5		10.38	14.84	17.95	18.09	18.56	21.11	23.64	24.29	25.32	25.86	28.20	39.91	57.69	59.98	60.89
Hf	$L\beta_6$		1	.1	72	6	9.021	1.37410	5		10.38	14.84	17.95	18.09	18.56	21.11	23.64	24.29	25.32	25.86	28.20	39.91	57.69	59.98	60.89
Tl	$K\alpha_{1,2}$		8	150	81	6	72.167	1.37415	6		10.38	14.84	17.95	18.09	18.56	21.11	23.64	24.29	25.32	25.87	28.20	39.91	57.70	59.98	60.89
Dy	$L\gamma_4$		1	.1	66	6	9.018	1.37459	5		10.38	14.85	17.96	18.09	18.57	21.12	23.65	24.30	25.32	25.87	28.21	39.92	57.72	60.00	60.91
Ra	L_1-N_1	B	2	.01	88	6	18.033	1.37480	4		10.39	14.85	17.96	18.10	18.57	21.12	23.65			25.88	28.21	39.93	57.73	60.01	60.92

El	Line	C	N	I	Z	R	KeV	Lambda	P	Å	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-7}																	
U	$L\beta_{10}$	B	2	.01	92	6	18.028	1.37520	5		10.39	14.85	17.96	18.10	18.58	21.13	23.66			25.89	28.22	39.94	57.75	60.03	60.94
Lu	$K\alpha_1$		6	100	71	6	54.061	1.37579	6		10.39	14.86	17.97	18.11	18.59	21.14	23.67	24.32	25.35	25.90	28.23	39.96	57.77	60.06	60.97
Rn	$K\alpha_2$	H	9	50	86	6	81.051	1.37646	5		10.40	14.87	17.98	18.12	18.59	21.15	23.68	24.33	25.36	25.91	28.25	39.98	57.80	60.09	61.00
Pr	$K\alpha_1$		4	100	59	6	36.020	1.37656	6		10.40	14.87	17.98	18.12	18.60	21.15	23.68	24.33	25.36	25.91	28.25	39.98	57.81	60.10	61.01
Hg	Lt	F	1	.01	80	6	9.004	1.37670	4		10.40	14.87	17.98	18.12	18.60	21.15	23.69	24.33	25.36	25.91	28.25	39.99	57.81	60.11	61.01
Os	$K\alpha_1$		7	100	76	6	62.990	1.37756	6		10.41	14.88	18.00	18.13	18.61	21.17	23.70	24.35	25.38	25.93	28.27	40.01	57.85	60.15	61.05
Hf	$K\beta_3$	H	7	12	72	6	62.969	1.37802	5		10.41	14.88	18.00	18.14	18.62	21.17	23.71	24.36	25.39	25.94	28.28	40.03	57.88	60.17	61.08
Zr	$K\beta_4$	B	2	.01	40	6	17.991	1.37802	5		10.41	14.88	18.00	18.14	18.62	21.17	23.71			25.94	28.28	40.03	57.88	60.17	61.08
Th	$K\alpha_2$		10	50	90	6	89.938	1.37829	6		10.41	14.89	18.01	18.14	18.62	21.18	23.71	24.36	25.39	25.94	28.29	40.03	57.89	60.18	61.09
Lu	$K\beta_2$	H	7	9	71	6	62.956	1.37830	4		10.41	14.89	18.01	18.14	18.62	21.18	23.71	24.36	25.39	25.94	28.29	40.03	57.89	60.18	61.09
Np	$L\beta_3$	H	2	6	93	6	17.986	1.37840	5		10.41	14.89	18.01	18.14	18.62	21.18	23.72			25.95	28.29	40.04	57.89	60.19	61.10
Pm	$K\beta_2$	H	5	8	61	6	44.929	1.37950	4		10.42	14.90	18.02	18.16	18.64	21.20	23.74	24.38	25.42	25.97	28.31	40.07	57.94	60.24	61.15
Bi	$K\beta_2'$		10	11	83	6	89.846	1.37970	5		10.42	14.90	18.02	18.16	18.64	21.20	23.74	24.39	25.42	25.97	28.31	40.08	57.95	60.25	61.16
Zr	$K\beta_2$		2	4	40	6	17.967	1.37986	5		10.42	14.90	18.03	18.16	18.64	21.20	23.74			25.97	28.32	40.08	57.96	60.26	61.17
Cu	AK		1		29	6	8.979	1.38059	5		10.43	14.91	18.04	18.17	18.65	21.21	23.75	24.40	25.44	25.99	28.33	40.10	57.99	60.29	61.20
Po	$K\beta_1$	H	10	89	84	6	89.781	1.38070	5		10.43	14.91	18.04	18.17	18.65	21.22	23.76	24.41	25.44	25.99	28.34	40.11	58.00	60.30	61.21
Ho	$K\beta_1$		6	22	67	6	53.868	1.38072	5		10.43	14.91	18.04	18.17	18.65	21.22	23.76	24.41	25.44	25.99	28.34	40.11	58.00	60.30	61.21
Ac	$K\alpha_{1,2}$	H	10	150	89	6	89.773	1.38081	5		10.43	14.91	18.04	18.18	18.65	21.22	23.76	24.41	25.44	25.99	28.34	40.11	58.00	60.30	61.21
Cu	$K\beta_5$	B	1	.03	29	6	8.976	1.38109	5		10.43	14.92	18.04	18.18	18.66	21.22	23.76	24.41	25.45	26.00	28.34	40.12	58.02	60.32	61.23
Pu	$L\beta_5$		2	1	94	6	17.948	1.38136	5		10.44	14.92	18.05	18.18	18.66	21.23	23.77			26.00	28.35	40.13	58.03	60.33	61.24
Bi	$K\beta_2''$		10	11	83	6	89.716	1.38170	5		10.44	14.92	18.05	18.19	18.67	21.23	23.77	24.42	25.46	26.01	28.36	40.14	58.04	60.35	61.26
Pr	$K\alpha_{1,2}$		4	150	59	6	35.860	1.38270	6		10.45	14.93	18.06	18.20	18.68	21.25	23.79	24.44	25.48	26.03	28.38	40.17	58.09	60.40	61.31
At	$K\alpha_{1,2}$	H	9	150	85	6	80.624	1.38375	5		10.45	14.95	18.08	18.22	18.69	21.26	23.81	24.46	25.50	26.05	28.40	40.20	58.14	60.45	61.36
Yb	$L\beta_9$	B	1	.01	70	6	8.958	1.38380	4		10.45	14.95	18.08	18.22	18.69	21.26	23.81	24.46	25.50	26.05	28.40	40.20	58.14	60.45	61.36
Cs	$K\beta_2$		4	6	55	6	35.815	1.38444	5		10.46	14.95	18.09	18.22	18.70	21.27	23.82	24.47	25.51	26.06	28.41	40.22	58.17	60.48	61.39
Tl	Ll		1	3	81	6	8.952	1.38477	5		10.46	14.96	18.09	18.23	18.71	21.28	23.83	24.48	25.51	26.07	28.42	40.23	58.19	60.50	61.41
Ho	$K\beta_3$		6	11	67	6	53.702	1.38498	5		10.46	14.96	18.09	18.23	18.71	21.28	23.83	24.48	25.52	26.07	28.43	40.24	58.20	60.51	61.42
Lu	$K\alpha_{1,2}$		6	150	71	6	53.687	1.38535	6		10.47	14.96	18.10	18.24	18.72	21.29	23.84	24.49	25.53	26.08	28.43	40.25	58.21	60.52	61.44
Yb	AL_3		1		70	6	8.942	1.38620	4		10.47	14.97	18.11	18.25	18.73	21.30	23.85	24.50	25.54	26.10	28.45	40.27	58.25	60.56	61.48
Ra	L_2-N_5	B	2	.01	88	6	17.882	1.38640	4		10.47	14.97	18.11	18.25	18.73	21.31	23.86			26.10	28.45	40.28	58.26	60.57	61.49
Ta	$L8_{17}$	B	1	.01	73	6	8.941	1.38640	4		10.47	14.97	18.11	18.25	18.73	21.31	23.86	24.51	25.55	26.10	28.45	40.28	58.26	60.57	61.49
Yb	LB_5		1	.1	70	6	8.938	1.38696	5		10.48	14.98	18.12	18.26	18.74	21.31	23.87	24.52	25.56	26.11	28.47	40.30	58.29	60.60	61.52
Os	$K\alpha_{1,2}$		7	150	76	6	62.477	1.38886	6		10.49	15.00	18.14	18.28	18.76	21.34	23.90	24.55	25.59	26.15	28.51	40.35	58.37	60.69	61.61
Os	$K\beta_1$		8	27	76	6	71.401	1.38889	6		10.49	15.00	18.15	18.28	18.76	21.34	23.90	24.55	25.59	26.15	28.51	40.35	58.38	60.69	61.61
Po	$K8_3$	H	10	13	84	6	89.231	1.38920	5		10.49	15.00	18.15	18.29	18.77	21.35	23.90	24.56	25.60	26.15	28.51	40.36	58.39	60.71	61.63
Ra	$L\gamma_1$		2	10	88	6	17.845	1.38926	5		10.50	15.01	18.15	18.29	18.77	21.35	23.91			26.15	28.51	40.37	58.39	60.71	61.63
Pt	Ls	B	1	.01	78	6	8.921	1.38950	4		10.50	15.01	18.15	18.29	18.77	21.35	23.91	24.56	25.60	26.16	28.52	40.37	58.40	60.72	61.64
Yb	L_3-$O_{2,3}$	B	1	.01	70	6	8.919	1.38980	4		10.50	15.01	18.16	18.30	18.78	21.36	23.91	24.57	25.61	26.16	28.53	40.38	58.42	60.74	61.66
Dy	$K8_2$	H	6	9	66	6	53.500	1.39020	4		10.50	15.02	18.16	18.30	18.78	21.36	23.92	24.58	25.62	26.17	28.53	40.39	58.44	60.76	61.68
Hg	$K\beta_1$		9	28	80	6	80.240	1.39038	6		10.50	15.02	18.16	18.30	18.78	21.37	23.93	24.58	25.62	26.18	28.54	40.40	58.44	60.77	61.68
Ho	AL_2		1		67	6	8.915	1.39050	4		10.50	15.02	18.17	18.30	18.79	21.37	23.93	24.58	25.62	26.18	28.54	40.40	58.45	60.77	61.69
Os	$L\alpha_1$		1	100	76	6	8.910	1.39121	5		10.51	15.03	18.18	18.31	18.80	21.38	23.94	24.59	25.64	26.19	28.56	40.43	58.48	60.81	61.73
Yb	$L\beta_{10}$	B	1	.01	70	6	8.908	1.39150	4		10.51	15.03	18.18	18.32	18.80	21.38	23.94	24.60	25.64	26.20	28.56	40.43	58.50	60.82	61.74
Au	$K8_2'$		9	10	79	6	80.172	1.39156	6		10.51	15.03	18.18	18.32	18.80	21.39	23.95	24.60	25.64	26.20	28.56	40.44	58.50	60.82	61.74
Zr	$K\beta_5$		2	.08	40	6	17.813	1.39180	4		10.51	15.03	18.18	18.32	18.80	21.39	23.95			26.20	28.57	40.44	58.51	60.83	61.75
Hf	$L8_4$		1	4	72	6	8.904	1.39220	5		10.52	15.04	18.19	18.33	18.81	21.40	23.96	24.61	25.65	26.21	28.58	40.46	58.53	60.85	61.77
Cu	$K\beta_{1,3}$		1	20	29	6	8.904	1.39222	6		10.52	15.04	18.19	18.33	18.81	21.40	23.96	24.61	25.65	26.21	28.58	40.46	58.53	60.85	61.78
Ho	$L\gamma_6$		1	.01	67	6	8.903	1.39230	4		10.52	15.04	18.19	18.33	18.81	21.40	23.96	24.61	25.66	26.21	28.58	40.46	58.53	60.86	61.78
Re	$K\beta_2'$		8	10	75	6	71.219	1.39243	6		10.52	15.04	18.19	18.33	18.81	21.40	23.96	24.62	25.66	26.22	28.58	40.46	58.54	60.87	61.79
Cu	$K\beta_3$		1	6	29	6	8.901	1.39260	4		10.52	15.04	18.19	18.33	18.81	21.40	23.96	24.62	25.66	26.22	28.58	40.47	58.55	60.87	61.79
Au	$K\beta_2''$		9	10	79	6	80.062	1.39347	5		10.53	15.05	18.21	18.34	18.83	21.42	23.98	24.64	25.68	26.24	28.60	40.49	58.59	60.92	61.84
Tb	$K\alpha_1$		5	100	65	6	44.474	1.39362	6		10.53	15.05	18.21	18.35	18.83	21.42	23.98	24.64	25.68	26.24	28.61	40.50	58.59	60.92	61.84
Re	$K\beta_2''$		8	10	75	6	71.139	1.39400	5		10.53	15.06	18.21	18.35	18.83	21.42	23.99	24.64	25.69	26.25	28.61	40.51	58.61	60.94	61.86
Yb	LB_7		1	.1	70	6	8.887	1.39480	4		10.54	15.07	18.22	18.36	18.84	21.44	24.00	24.66	25.70	26.26	28.63	40.53	58.65	60.98	61.90
Pr	$K\alpha_2$		4	50	59	6	35.544	1.39500	6		10.54	15.07	18.23	18.36	18.85	21.44	24.01	24.66	25.71	26.26	28.64	40.54	58.66	60.99	61.91
Os	$K\beta_3$		8	12	76	6	71.065	1.39545	6		10.54	15.07	18.23	18.37	18.85	21.45	24.01	24.67	25.72	26.27	28.64	40.55	58.68	61.01	61.93
Cd	$K\beta_2$		3	5	48	6	26.639	1.39598	6		10.55	15.08	18.24	18.38	18.86	21.45	24.02	24.68	25.73	26.28	28.66	40.57	58.70	61.04	61.96
Np	$L\beta_1$		2	50	93	6	17.747	1.39696	6		10.55	15.09	18.25	18.39	18.87	21.47	24.04			26.30	28.68	40.60	58.75	61.08	62.01
Hg	$K\beta_3$		9	13	80	6	79.809	1.39789	6		10.56	15.10	18.26	18.40	18.89	21.48	24.06	24.71	25.76	26.32	28.70	40.63	58.79	61.13	62.05
Ho	$L\gamma_8$		1	.1	67	6	8.865	1.39830	4		10.56	15.10	18.27	18.41	18.89	21.49	24.06	24.72	25.77	26.33	28.70	40.64	58.81	61.15	62.07
Tl	$K\alpha_2$		8	50	81	6	70.820	1.40029	6		10.58	15.12	18.30	18.43	18.92	21.52	24.10	24.76	25.81	26.37	28.75	40.70	58.90	61.25	62.17
Hg	$K\alpha_1$		8	100	80	6	70.807	1.40054	6		10.58	15.13	18.30	18.44	18.92	21.53	24.10	24.76	25.81	26.37	28.75	40.71	58.91	61.26	62.19
Pu	$L\beta_7$		2	.1	94	6	17.701	1.40060	4		10.58	15.13	18.30	18.44	18.92	21.53	24.10			26.37	28.75	40.71	58.92	61.26	62.19
Ra	$K\alpha_1$	H	10	100	88	6	88.454	1.40140	5		10.59	15.14	18.31	18.45	18.93	21.54	24.12	24.78	25.83	26.39	28.77	40.73	58.95	61.30	62.23
Lu	$L\beta_3$		1	6	71	6	8.845	1.40140	5		10.59	15.14	18.31	18.45	18.93	21.54	24.12	24.78	25.83	26.39	28.77	40.73	58.95	61.30	62.23

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Tb	$K\alpha_{1,2}$		5	150	65	6	44.226	1.40145	6		10.59	15.14	18.31	18.45	18.94	21.54	24.12	24.78	25.83	26.39	28.77	40.74	58.96	61.30	62.23
Os	$L\alpha_2$		1	10	76	6	8.840	1.40234	5		10.59	15.15	18.32	18.46	18.95	21.55	24.13	24.79	25.84	26.41	28.79	40.76	59.00	61.34	62.27
Am	$L\beta_2$		2	20	95	6	17.673	1.40278	6		10.60	15.15	18.33	18.47	18.95	21.56	24.14			26.41	28.80	40.78	59.02	61.37	62.30
Zr	$K\beta_1$		2	18	40	6	17.665	1.40346	5		10.60	15.16	18.34	18.48	18.96	21.57	24.15			26.43	28.81	40.80	59.05	61.40	62.33
Pa	$L\beta_9$	B	2	.01	91	6	17.663	1.40360	4		10.60	15.16	18.34	18.48	18.96	21.57	24.16			26.43	28.82	40.80	59.05	61.41	62.34
Lu	$K\alpha_2$		6	50	71	6	52.956	1.40449	6		10.61	15.17	18.35	18.49	18.98	21.59	24.17	24.83	25.88	26.45	28.83	40.83	59.10	61.45	62.38
Zr	$K\beta_3$		2	9	40	6	17.651	1.40456	5		10.61	15.17	18.35	18.49	18.98	21.59	24.17			26.45	28.84	40.83	59.10	61.45	62.38
Pu	Lu	8	2	.01	94	6	17.630	1.40620	4		10.62	15.19	18.37	18.51	19.00	21.61	24.20			26.48	28.87	40.88	59.17	61.53	62.46
Er	$L\gamma_5$		1	.1	68	6	8.812	1.40670	4		10.63	15.19	18.38	18.52	19.01	21.62	24.21	24.87	25.93	26.49	28.88	40.90	59.20	61.56	62.49
Am	$L\beta_{15}$		2	1	95	6	17.623	1.40682	5		10.63	15.20	18.38	18.52	19.01	21.62	24.21			26.49	28.88	40.90	59.20	61.56	62.50
Po	$K\alpha_1$	H	9	100	84	6	79.279	1.40724	5		10.63	15.20	18.39	18.53	19.01	21.63	24.22	24.88	25.94	26.50	28.89	40.91	59.22	61.58	62.52
Ra	L_2-N_3	8	2	.01	88	6	17.600	1.40860	4		10.64	15.22	18.40	18.55	19.03	21.65	24.24			26.53	28.92	40.95	59.29	61.65	62.58
Sb	$K\alpha_1$		3	100	51	6	26.355	1.41106	6		10.66	15.24	18.44	18.58	19.07	21.69	24.29	24.95	26.01	26.57	28.97	41.03	59.40	61.77	62.71
Os	$K\alpha_2$		7	50	76	6	61.476	1.41147	6		10.66	15.25	18.44	18.58	19.07	21.70	24.29	24.96	26.02	26.58	28.98	41.04	59.42	61.79	62.73
Pu	$L\beta_4$		2	4	94	6	17.553	1.41240	5		10.67	15.26	18.45	18.60	19.08	21.71	24.31			26.60	29.00	41.07	59.46	61.83	62.77
At	$K\alpha_2$	H	9	50	85	6	78.930	1.41345	5		10.68	15.27	18.47	18.61	19.10	21.73	24.33	24.99	26.05	26.62	29.02	41.10	59.51	61.88	62.82
Hg	$K\alpha_{1,2}$		8	150	80	6	70.154	1.41358	6		10.68	15.27	18.47	18.61	19.10	21.73	24.33	25.00	26.06	26.62	29.02	41.10	59.52	61.89	62.83
Au	Lt	B	1	.01	79	6	8.769	1.41366	5		10.68	15.27	18.47	18.61	19.10	21.73	24.33	25.00	26.06	26.62	29.03	41.11	59.52	61.89	62.83
Ac	$K\alpha_2$	H	10	50	89	6	87.660	1.41410	5		10.68	15.27	18.48	18.62	19.11	21.74	24.34	25.01	26.06	26.63	29.04	41.12	59.54	61.92	62.86
Pm	$K\beta_1$	H	5	22	61	6	43.818	1.41450	5		10.69	15.28	18.48	18.62	19.11	21.74	24.35	25.01	26.07	26.64	29.04	41.13	59.56	61.93	62.88
Yb	$L\beta_{2,15}$		1	20	70	6	8.757	1.41550	5		10.69	15.29	18.50	18.64	19.13	21.76	24.36	25.03	26.09	26.66	29.07	41.16	59.61	61.98	62.92
Sb	$K\alpha_{1,2}$		3	150	51	6	26.271	1.41553	6		10.69	15.29	18.50	18.64	19.13	21.76	24.36	25.03	26.09	26.66	29.07	41.16	59.61	61.99	62.93
Lu	$K\beta_1$	H	7	65	71	6	61.272	1.41617	5		10.70	15.30	18.50	18.65	19.14	21.77	24.38	25.04	26.10	26.67	29.08	41.18	59.64	62.02	62.96
Np	$L\beta_5$		2	1	93	6	17.505	1.41628	5		10.70	15.30	18.51	18.65	19.14	21.77	24.38			26.67	29.08	41.19	59.64	62.02	62.96
Dy	$L\gamma_3$		1	1	66	6	8.752	1.41640	5		10.70	15.30	18.51	18.65	19.14	21.77	24.38	25.05	26.11	26.67	29.08	41.19	59.65	62.03	62.97
Tb	$K\alpha_2$		5	50	65	6	43.737	1.41711	6		10.71	15.31	18.52	18.66	19.15	21.78	24.39	25.06	26.12	26.69	29.10	41.21	59.68	62.06	63.00
Ho	$L\gamma_1$		1	5	67	6	8.746	1.41740	4		10.71	15.31	18.52	18.66	19.15	21.79	24.40	25.06	26.13	26.69	29.11	41.22	59.69	62.08	63.02
Cs	$K\beta_1$		4	21	55	6	34.981	1.41746	6		10.71	15.31	18.52	18.66	19.15	21.79	24.40	25.07	26.13	26.69	29.11	41.22	59.70	62.08	63.02
Pa	$L\beta_{10}$	B	2	.01	91	6	17.489	1.41760	4		10.71	15.31	18.52	18.66	19.16	21.79	24.40			26.70	29.11	41.23	59.70	62.09	63.03
Ra	$K\alpha_{1,2}$	H	10	150	88	6	87.419	1.41800	5		10.71	15.32	18.53	18.67	19.16	21.80	24.41	25.08	26.14	26.71	29.12	41.24	59.72	62.11	63.05
Pm	$K\beta_3$	H	5	10	61	6	43.705	1.41815	5		10.71	15.32	18.53	18.67	19.16	21.80	24.41	25.08	26.14	26.71	29.12	41.24	59.73	62.11	63.06
Mo	$K\alpha_1$		2	100	42	6	17.476	1.41860	6		10.72	15.32	18.54	18.68	19.17	21.81	24.42			26.72	29.13	41.26	59.75	62.13	63.08
Lu	$L\beta_6$		1	.1	71	6	8.736	1.41890	4		10.72	15.33	18.54	18.68	19.17	21.81	24.42	25.09	26.15	26.72	29.14	41.27	59.76	62.15	63.09
Pb	$K\beta_2$'		10	11	82	6	87.351	1.41910	5		10.72	15.33	18.54	18.68	19.18	21.81	24.43	25.10	26.16	26.73	29.14	41.27	59.77	62.16	63.10
Re	$K\alpha_1$		7	100	75	6	61.130	1.41947	6		10.72	15.33	18.55	18.69	19.18	21.82	24.43	25.10	26.17	26.73	29.15	41.28	59.79	62.18	63.12
Bi	$K\beta_1$		10	89	83	6	87.328	1.41948	6		10.72	15.33	18.55	18.69	19.18	21.82	24.43	25.10	26.17	26.73	29.15	41.28	59.79	62.18	63.12
Yb	$K\alpha_1$		6	100	70	6	52.380	1.41993	6		10.73	15.34	18.55	18.70	19.19	21.83	24.44	25.11	26.17	26.74	29.16	41.30	59.81	62.20	63.14
Cs	$K\beta_3$		4	9	55	6	34.913	1.42020	6		10.73	15.34	18.56	18.70	19.19	21.83	24.45	25.12	26.18	26.75	29.16	41.31	59.82	62.21	63.16
O	$L\beta_3$		2	6	92	6	17.452	1.42058	5		10.73	15.35	18.56	18.70	19.20	21.84	24.45			26.75	29.17	41.32	59.84	62.23	63.18
W	Ln		1	1	74	6	8.723	1.42110	5		10.74	15.35	18.57	18.71	19.20	21.84	24.46	25.13	26.20	26.76	29.18	41.33	59.87	62.26	63.20
Pb	$K\beta_2$''		10	11	82	6	87.222	1.42120	5		10.74	15.35	18.57	18.71	19.20	21.85	24.46	25.13	26.20	26.77	29.18	41.34	59.87	62.26	63.21
Mo	$K\alpha_{1,2}$		2	150	42	6	17.441	1.42146	6		10.74	15.35	18.57	18.72	19.21	21.85	24.47			26.77	29.19	41.34	59.88	62.27	63.22
Hg	Ll		1	3	80	6	8.720	1.42160	4		10.74	15.36	18.58	18.72	19.21	21.85	24.47	25.14	26.21	26.77	29.19	41.35	59.89	62.28	63.23
Lu	$K\beta_3$	H	7	12	71	6	61.037	1.42163	5		10.74	15.36	18.58	18.72	19.21	21.85	24.47	25.14	26.21	26.78	29.19	41.35	59.89	62.28	63.23
Po	$K\alpha_{1,2}$	H	9	150	84	6	78.452	1.42206	5		10.74	15.36	18.58	18.72	19.22	21.86	24.48	25.15	26.21	26.78	29.20	41.36	59.91	62.30	63.25
Tb	AL_1		1		65	6	8.715	1.42230	4		10.75	15.36	18.59	18.73	19.22	21.86	24.48	25.15	26.22	26.79	29.21	41.37	59.92	62.31	63.26
Dy	$L\gamma_2$		1	1	66	6	8.713	1.42278	5		10.75	15.37	18.59	18.73	19.23	21.87	24.49	25.16	26.23	26.80	29.22	41.38	59.94	62.34	63.29
Tb	L_1-$O_{4,5}$	B	1	.01	65	6	8.712	1.42280	4		10.75	15.37	18.59	18.73	19.23	21.87	24.49	25.16	26.23	26.80	29.22	41.38	59.94	62.34	63.29
Yb	$K\beta_2$	H	7	9	70	6	60.974	1.42310	4		10.75	15.37	18.60	18.74	19.23	21.88	24.50	25.17	26.23	26.80	29.22	41.39	59.96	62.35	63.30
Lu	$L\beta_1$		1	50	71	6	8.708	1.42359	5		10.76	15.38	18.60	18.74	19.24	21.88	24.51	25.18	26.24	26.81	29.24	41.41	59.98	62.38	63.33
Sb	$K\alpha_2$		3	50	51	6	26.106	1.42448	6		10.76	15.39	18.61	18.76	19.25	21.90	24.52	25.19	26.26	26.83	29.25	41.44	60.02	62.42	63.37
Cd	$K\beta_1$		3	19	48	6	26.091	1.42531	6		10.77	15.40	18.63	18.77	19.26	21.91	24.54	25.21	26.28	26.85	29.27	41.46	60.06	62.46	63.41
Mo	$K\alpha_2$		2	50	42	6	17.371	1.42718	6		10.78	15.42	18.65	18.79	19.29	21.94	24.57			26.88	29.31	41.52	60.15	62.55	63.50
Cd	$K\beta_3$		3	8	48	6	26.057	1.42719	6		10.78	15.42	18.65	18.79	19.29	21.94	24.57	25.24	26.31	26.88	29.31	41.52	60.15	62.55	63.50
Dy	$K\beta_1$		6	23	66	6	52.110	1.42728	5		10.78	15.42	18.65	18.79	19.29	21.94	24.57	25.24	26.31	26.88	29.31	41.52	60.15	62.56	63.51
Tb	$L\gamma_4$		1	.1	65	6	8.683	1.42760	4		10.79	15.42	18.66	18.80	19.29	21.95	24.58	25.25	26.32	26.89	29.32	41.53	60.17	62.57	63.53
Bi	$K\beta_3$		10	13	83	6	86.819	1.42779	6		10.79	15.42	18.66	18.80	19.29	21.95	24.58	25.25	26.32	26.89	29.32	41.54	60.18	62.58	63.53
Ce	$K\alpha_1$		4	100	58	6	34.714	1.42837	6		10.79	15.43	18.67	18.81	19.30	21.96	24.59	25.26	26.33	26.90	29.34	41.55	60.20	62.61	63.56
Yb	$K\alpha_{1,2}$		6	150	70	6	52.030	1.42947	6		10.80	15.44	18.68	18.82	19.32	21.98	24.61	25.28	26.35	26.93	29.36	41.59	60.25	62.66	63.62
Hf	L_1-M_1	B	1	.01	72	6	8.667	1.43025	5		10.81	15.45	18.69	18.83	19.33	21.99	24.62	25.30	26.37	26.94	29.37	41.61	60.29	62.70	63.66
Ta	L_2-M_2	B	1	.01	73	6	8.666	1.43048	5		10.81	15.45	18.69	18.84	19.33	21.99	24.63	25.30	26.37	26.94	29.38	41.62	60.30	62.71	63.67
Nd	$K\beta_2$	H	5	7	60	6	43.327	1.43050	4		10.81	15.45	18.69	18.84	19.33	21.99	24.63	25.30	26.37	26.95	29.38	41.62	60.30	62.71	63.67
Re	$K\alpha_{1,2}$		7	150	75	6	60.648	1.43074	6		10.81	15.46	18.70	18.84	19.33	21.99	24.63	25.30	26.38	26.95	29.39	41.63	60.31	62.73	63.68
Au	$K\beta_1$		9	27	79	6	77.971	1.43084	6		10.81	15.46	18.70	18.84	19.34	22.00	24.63	25.31	26.38	26.95	29.39	41.63	60.32	62.73	63.69
Re	$K\beta_1$		8	26	75	6	69.298	1.43104	6		10.81	15.46	18.70	18.84	19.34	22.00	24.64	25.31	26.38	26.96	29.39	41.64	60.33	62.74	63.70

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Dy	$K\beta_3$		6	11	66	6	51.949	1.43172	5	10.82	15.47	18.71	18.85	19.35	22.01	24.65	25.32	26.40	26.97	29.41	41.66	60.36	62.77	63.73
Ir	Ls	B	1	.01	77	6	8.658	1.43180	4	10.82	15.47	18.71	18.85	19.35	22.01	24.65	25.32	26.40	26.97	29.41	41.66	60.36	62.78	63.73
Pt	$K\beta_2'$		9	10	78	6	77.864	1.43280	5	10.82	15.48	18.72	18.87	19.36	22.03	24.67	25.34	26.42	26.99	29.43	41.69	60.41	62.83	63.78
Re	$L\alpha_1$		1	100	75	6	8.651	1.43290	5	10.83	15.48	18.73	18.87	19.36	22.03	24.67	25.34	26.42	26.99	29.43	41.69	60.41	62.83	63.79
Fr	$L\gamma_1$	H	2	10	87	6	17.300	1.43304	5	10.83	15.48	18.73	18.87	19.37	22.03	24.67			26.99	29.43	41.70	60.42	62.84	63.80
Tm	AL_3		1		69	6	8.648	1.43340	4	10.83	15.48	18.73	18.87	19.37	22.04	24.68	25.35	26.43	27.00	29.44	41.71	60.44	62.86	63.81
Tm	$L\beta_9$	B	1	.01	69	6	8.647	1.43360	4	10.83	15.49	18.73	18.88	19.37	22.04	24.68	25.36	26.43	27.00	29.45	41.71	60.45	62.87	63.82
Ce	$K\alpha_{1,2}$		4	150	58	6	34.566	1.43449	6	10.84	15.50	18.75	18.89	19.39	22.05	24.70	25.37	26.45	27.02	29.46	41.74	60.49	62.91	63.87
Pt	$K\beta_2''$		9	10	78	6	77.772	1.43451	5	10.84	15.50	18.75	18.89	19.39	22.05	24.70	25.37	26.45	27.02	29.46	41.74	60.49	62.91	63.87
Tm	$L8_5$		1	.1	69	6	8.639	1.43490	4	10.84	15.50	18.75	18.89	19.39	22.06	24.70	25.38	26.46	27.03	29.47	41.75	60.51	62.93	63.89
Zn	$K\alpha_1$		1	100	30	6	8.637	1.43515	6	10.84	15.50	18.75	18.90	19.39	22.06	24.71	25.38	26.46	27.03	29.48	41.76	60.52	62.94	63.90
W	$K\beta_2'$		8	10	74	6	69.089	1.43537	6	10.84	15.51	18.76	18.90	19.40	22.07	24.71	25.39	26.46	27.04	29.48	41.77	60.53	62.95	63.91
Ra	$L\gamma_5$		2	.1	88	6	17.271	1.43548	5	10.85	15.51	18.76	18.90	19.40	22.07	24.71			27.04	29.48	41.77	60.53	62.96	63.92
Hf	$L\beta_{17}$	B	1	.01	72	6	8.630	1.43643	5	10.85	15.52	18.77	18.91	19.41	22.08	24.73	25.41	26.48	27.06	29.50	41.80	60.58	63.00	63.96
Zn	$K\alpha_{1,2}$		1	150	30	6	8.630	1.43644	6	10.85	15.52	18.77	18.91	19.41	22.08	24.73	25.41	26.48	27.06	29.50	41.80	60.58	63.00	63.96
W	$K\beta_2''$		8	10	74	6	69.020	1.43680	5	10.86	15.52	18.78	18.92	19.42	22.09	24.74	25.41	26.49	27.07	29.51	41.81	60.60	63.02	63.98
Pu	$L\beta_2$		2	20	94	6	17.252	1.43702	5	10.86	15.52	18.78	18.92	19.42	22.09	24.74			27.07	29.52	41.82	60.61	63.03	63.99
Re	$K\beta_3$		8	12	75	6	68.983	1.43758	6	10.86	15.53	18.79	18.93	19.43	22.10	24.75	25.43	26.51	27.08	29.53	41.83	60.63	63.06	64.02
Tb	$K\beta_2$	H	6	8	65	6	51.715	1.43820	4	10.87	15.54	18.80	18.94	19.44	22.11	24.76	25.44	26.52	27.09	29.54	41.85	60.66	63.09	64.05
Au	$K\beta_3$		9	13	79	6	77.567	1.43829	6	10.87	15.54	18.80	18.94	19.44	22.11	24.76	25.44	26.52	27.09	29.54	41.86	60.67	63.09	64.06
Zn	$K\alpha_2$		1	50	30	6	8.614	1.43900	6	10.87	15.55	18.81	18.95	19.45	22.12	24.77	25.45	26.53	27.11	29.56	41.88	60.70	63.13	64.09
Hg	$K\alpha_2$		8	50	80	6	68.883	1.43966	6	10.88	15.55	18.81	18.96	19.46	22.13	24.79	25.47	26.54	27.12	29.57	41.90	60.73	63.16	64.13
Fr	$K\alpha_1$	H	10	100	87	6	86.089	1.43990	5	10.88	15.56	18.82	18.96	19.46	22.14	24.79	25.47	26.55	27.13	29.58	41.91	60.74	63.17	64.14
U	$L\beta_1$		2	50	92	6	17.217	1.43997	6	10.88	15.56	18.82	18.96	19.46	22.14	24.79			27.13	29.58	41.91	60.74	63.18	64.14
Lu	$L\beta_4$		1	5	71	6	8.605	1.44056	5	10.88	15.56	18.83	18.97	19.47	22.15	24.80	25.48	26.56	27.14	29.59	41.93	60.77	63.21	64.17
Tm	$L\beta_{10}$	B	1	.01	69	6	8.602	1.44100	4	10.89	15.57	18.83	18.98	19.47	22.15	24.81	25.49	26.57	27.15	29.60	41.94	60.79	63.23	64.19
Pu	$L\beta_{15}$		2	1	94	6	17.205	1.44100	4	10.89	15.57	18.83	18.98	19.47	22.15	24.81			27.15	29.60	41.94	60.79	63.23	64.19
Xe	$K8_2$	H	4	6	54	6	34.408	1.44104	5	10.89	15.57	18.83	18.98	19.48	22.16	24.81	25.49	26.57	27.15	29.60	41.94	60.79	63.23	64.19
Au	$K\alpha_1$		8	100	79	6	68.792	1.44156	6	10.89	15.57	18.84	18.98	19.48	22.16	24.82	25.50	26.58	27.16	29.61	41.96	60.82	63.26	64.22
Gd	$K\alpha_1$		5	100	64	6	42.989	1.44176	6	10.89	15.58	18.84	18.99	19.49	22.17	24.82	25.50	26.58	27.16	29.62	41.96	60.83	63.27	64.23
Re	$L\alpha_2$		1	10	75	6	8.585	1.44396	5	10.91	15.60	18.87	19.01	19.52	22.20	24.86	25.54	26.63	27.20	29.66	42.03	60.93	63.37	64.34
Dy	AL_2		1		66	6	8.582	1.44450	4	10.91	15.61	18.88	19.02	19.52	22.21	24.87	25.55	26.64	27.21	29.67	42.05	60.95	63.40	64.37
U	$L_3-P_{4,5}$		2	.01	92	6	17.159	1.44480	5	10.92	15.61	18.88	19.03	19.53	22.21	24.88			27.22	29.68	42.05	60.97	63.41	64.38
Dy	$L\gamma_6$		1	.01	66	6	8.574	1.44579	5	10.92	15.62	18.90	19.04	19.54	22.23	24.89	25.58	26.66	27.24	29.70	42.08	61.02	63.46	64.43
Ce	$K\alpha_2$		4	50	58	6	34.273	1.44673	6	10.93	15.63	18.91	19.05	19.55	22.24	24.91	25.59	26.68	27.26	29.72	42.11	61.06	63.51	64.48
Th	$L\beta_9$	B	2	.01	90	6	17.136	1.44680	4	10.93	15.63	18.91	19.05	19.55	22.24	24.91			27.26	29.72	42.12	61.06	63.51	64.48
Bi	$K\alpha_1$		9	100	83	6	77.095	1.44710	6	10.93	15.63	18.91	19.06	19.56	22.25	24.92	25.60	26.68	27.26	29.73	42.12	61.08	63.53	64.50
U	$L_3-P_{2,3}$	B	2	.01	92	6	17.115	1.44852	5	10.94	15.65	18.93	19.08	19.58	22.27	24.94			27.29	29.76	42.17	61.14	63.60	64.57
Yb	$K\alpha_2$		6	50	70	6	51.345	1.44854	6	10.94	15.65	18.93	19.08	19.58	22.27	24.94	25.63	26.71	27.29	29.76	42.17	61.14	63.60	64.57
Gd	$K\alpha_{1,2}$		5	150	64	6	42.757	1.44957	6	10.95	15.66	18.95	19.09	19.59	22.29	24.96	25.64	26.73	27.31	29.78	42.20	61.19	63.65	64.62
U	L_3-P_1		2	.01	92	6	17.093	1.45042	5	10.96	15.67	18.96	19.10	19.60	22.30	24.97			27.33	29.80	42.23	61.23	63.69	64.66
Ra	$K\alpha_2$	H	10	50	88	6	85.419	1.45120	5	10.96	15.68	18.97	19.11	19.61	22.31	24.99	25.67	26.76	27.34	29.82	42.25	61.27	63.73	64.70
Po	$K\alpha_2$	H	9	50	84	6	76.851	1.45170	5	10.97	15.68	18.97	19.12	19.62	22.32	25.00	25.68	26.77	27.35	29.83	42.27	61.29	63.75	64.73
Yb	$L\beta_3$		1	6	70	6	8.535	1.45233	5	10.97	15.69	18.98	19.13	19.63	22.33	25.01	25.69	26.78	27.36	29.84	42.28	61.32	63.78	64.76
U	$L8_5$		2	1	92	6	17.067	1.45261	6	10.98	15.69	18.99	19.13	19.63	22.34	25.01			27.37	29.84	42.29	61.33	63.80	64.77
Pt	Lt	B	1	.01	78	6	8.531	1.45300	4	10.98	15.70	18.99	19.13	19.64	22.34	25.02	25.71	26.79	27.38	29.85	42.30	61.35	63.82	64.79
Re	$K\alpha_2$		7	50	75	6	59.708	1.45328	6	10.98	15.70	18.99	19.14	19.64	22.35	25.02	25.71	26.80	27.38	29.86	42.31	61.36	63.83	64.81
Np	$L\beta_4$		2	4	93	6	17.058	1.45342	5	10.98	15.70	19.00	19.14	19.64	22.35	25.03			27.39	29.86	42.32	61.37	63.84	64.81
Au	$K\alpha_{1,2}$		8	150	79	6	68.177	1.45458	6	10.99	15.71	19.01	19.16	19.66	22.37	25.05	25.73	26.82	27.41	29.89	42.35	61.43	63.89	64.87
Y	$K\beta_4$		2	.01	39	6	17.033	1.45552	5	11.00	15.73	19.02	19.17	19.67	22.38	25.06			27.43	29.91	42.38	61.47	63.94	64.92
Fr	$K\alpha_{1,2}$	H	10	150	87	6	85.110	1.45647	5	11.00	15.74	19.04	19.18	19.69	22.40	25.08	25.77	26.86	27.44	29.93	42.41	61.51	63.99	64.97
Y	$K\beta_2$		2	4	39	6	17.013	1.45728	5	11.01	15.74	19.05	19.19	19.70	22.41	25.09			27.46	29.94	42.44	61.55	64.03	65.01
Ag	$K\beta_4$	8	3	.01	47	6	25.507	1.45794	5	11.02	15.75	19.06	19.20	19.71	22.42	25.11	25.79	26.89	27.47	29.96	42.46	61.58	64.06	65.04
Tl	$K8_2'$		10	10	81	6	84.933	1.45950	5	11.03	15.77	19.08	19.22	19.73	22.44	25.13	25.82	26.92	27.50	29.99	42.50	61.66	64.14	65.12
Au	Ll		1	3	79	6	8.493	1.45964	5	11.03	15.77	19.08	19.22	19.73	22.44	25.14	25.82	26.92	27.50	29.99	42.51	61.66	64.14	65.12
Pb	$K8_1$		10	88	82	6	84.922	1.45970	6	11.03	15.77	19.08	19.22	19.73	22.45	25.14	25.83	26.92	27.51	29.99	42.51	61.67	64.15	65.13
Th	$L\beta_{10}$	B	2	.01	90	6	16.978	1.46020	4	11.03	15.78	19.09	19.23	19.74	22.45	25.15			27.52	30.00	42.52	61.69	64.17	65.15
Ag	$K\beta_2$		3	5	47	6	25.452	1.46110	6	11.04	15.79	19.10	19.24	19.75	22.47	25.16	25.85	26.95	27.53	30.02	42.55	61.73	64.21	65.20
Tl	$K8_2''$		10	10	81	6	84.823	1.46140	5	11.04	15.79	19.10	19.25	19.75	22.47	25.17	25.86	26.95	27.54	30.03	42.56	61.75	64.23	65.21
U	L_3-O_3	B	2	.01	92	6	16.960	1.46180	4	11.04	15.79	19.11	19.25	19.76	22.48	25.17			27.55	30.04	42.57	61.76	64.25	65.23
Ho	$L\gamma_5$		1	.1	67	6	8.480	1.46180	4	11.04	15.79	19.11	19.25	19.76	22.48	25.17	25.86	26.96	27.55	30.04	42.57	61.76	64.25	65.23
Yb	$K\beta_1$		7	64	70	6	59.356	1.46188	5	11.05	15.79	19.11	19.25	19.76	22.48	25.18	25.86	26.96	27.55	30.04	42.58	61.77	64.25	65.24
Bi	$K\alpha_{1,2}$		9	150	83	6	76.315	1.46189	6	11.05	15.79	19.11	19.25	19.76	22.48	25.18	25.87	26.96	27.55	30.04	42.58	61.77	64.25	65.24
W	$K\alpha_1$		7	100	74	6	59.308	1.46307	7	11.05	15.81	19.12	19.27	19.78	22.50	25.20	25.89	26.98	27.57	30.06	42.61	61.82	64.31	65.30
Tm	$L\beta_{2,15}$		1	20	69	6	8.467	1.46400	4	11.06	15.82	19.14	19.28	19.79	22.51	25.21	25.90	27.00	27.59	30.08	42.64	61.87	64.36	65.34

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Pa	$L\beta_3$		2	6	91	6	16.927	1.46460	5		11.07	15.82	19.14	19.29	19.80	22.52	25.22			27.60	30.10	42.66	61.90	64.39	65.37
Gd	$K\alpha_2$		5	50	64	6	42.302	1.46519	6		11.07	15.83	19.15	19.30	19.80	22.53	25.23	25.92	27.02	27.61	30.11	42.68	61.92	64.42	65.40
Tm	$K\alpha_1$		6	100	69	6	50.733	1.46603	6		11.08	15.84	19.16	19.31	19.82	22.54	25.25	25.94	27.04	27.63	30.13	42.70	61.96	64.46	65.45
Yb	$L\beta_6$		1	.1	70	6	8.455	1.46610	4		11.08	15.84	19.16	19.31	19.82	22.55	25.25	25.94	27.04	27.63	30.13	42.70	61.97	64.46	65.45
Nd	$K\beta_1$		5	22	60	6	42.264	1.46649	6		11.08	15.84	19.17	19.31	19.82	22.55	25.26	25.95	27.05	27.64	30.14	42.72	61.98	64.48	65.47
O	L_3-O_2	B	2	.01	92	6	16.904	1.46660	4		11.08	15.85	19.17	19.32	19.82	22.55	25.26			27.64	30.14	42.72	61.99	64.48	65.47
Yb	$K\beta_3$	H	7	12	70	6	59.141	1.46720	4		11.09	15.85	19.18	19.32	19.83	22.56	25.27	25.96	27.06	27.65	30.15	42.74	62.02	64.51	65.50
Pb	$K\beta_3$		10	13	82	6	84.436	1.46810	6		11.09	15.86	19.19	19.34	19.84	22.58	25.28	25.98	27.08	27.67	30.17	42.77	62.06	64.56	65.55
Am	$L\beta_6$		2	.1	95	6	16.884	1.46836	5		11.09	15.86	19.19	19.34	19.85	22.58	25.29			27.67	30.18	42.77	62.07	64.57	65.56
Tm	$K\beta_2$	H	7	9	69	6	59.085	1.46860	4		11.10	15.87	19.20	19.34	19.85	22.58	25.29	25.99	27.09	27.68	30.18	42.78	62.08	64.58	65.57
Y	$K\beta_5$		2	.07	39	6	16.877	1.46900	4		11.10	15.87	19.20	19.35	19.86	22.59	25.30			27.68	30.19	42.79	62.10	64.60	65.59
Nd	$K\beta_3$		5	10	60	6	42.159	1.47013	6		11.11	15.88	19.22	19.36	19.87	22.61	25.32	26.01	27.12	27.71	30.21	42.83	62.16	64.66	65.65
Ta	Ln		1	1	73	6	8.427	1.47106	5		11.11	15.89	19.23	19.38	19.88	22.62	25.34	26.03	27.13	27.72	30.23	42.86	62.20	64.70	65.70
Sn	$K\alpha_1$		3	100	50	6	25.267	1.47180	6		11.12	15.90	19.24	19.38	19.90	22.63	25.35	26.04	27.15	27.74	30.25	42.88	62.23	64.74	65.74
Tb	$L\gamma_3$		1	1	65	6	8.422	1.47180	4		11.12	15.90	19.24	19.38	19.90	22.63	25.35	26.04	27.15	27.74	30.25	42.88	62.23	64.74	65.74
U	$L\beta_7$		2	.1	92	6	16.842	1.47204	5		11.12	15.90	19.24	19.39	19.90	22.64	25.35			27.74	30.25	42.89	62.24	64.75	65.75
Np	$L\beta_2$		2	20	93	6	16.837	1.47246	6		11.13	15.91	19.25	19.39	19.90	22.64	25.36			27.75	30.26	42.90	62.26	64.77	65.77
Dy	$L\gamma_1$		1	5	66	6	8.417	1.47266	5		11.13	15.91	19.25	19.40	19.91	22.65	25.36	26.06	27.16	27.76	30.27	42.91	62.27	64.78	65.78
Pt	$K\beta_1$		9	27	78	6	75.735	1.47307	6		11.13	15.92	19.26	19.40	19.91	22.65	25.37	26.07	27.17	27.76	30.28	42.92	62.29	64.80	65.80
Os	Ls	B	1	.01	76	6	8.413	1.47350	4		11.13	15.92	19.26	19.41	19.92	22.66	25.38	26.07	27.18	27.77	30.28	42.93	62.31	64.83	65.82
W	$K\alpha_{1,2}$		7	150	74	6	58.856	1.47431	6		11.14	15.93	19.27	19.42	19.93	22.67	25.39	26.09	27.20	27.79	30.30	42.96	62.35	64.87	65.86
Xe	$K\beta_1$	H	4	20	54	6	33.619	1.47488	5		11.14	15.94	19.28	19.43	19.94	22.68	25.40	26.10	27.21	27.80	30.31	42.97	62.38	64.89	65.89
W	$K\beta_1$		8	26	74	6	67.233	1.47499	6		11.14	15.94	19.28	19.43	19.94	22.68	25.40	26.10	27.21	27.80	30.32	42.98	62.38	64.90	65.90
Tm	$K\alpha_{1,2}$		6	150	69	6	50.406	1.47554	6		11.15	15.94	19.29	19.43	19.95	22.69	25.41	26.11	27.22	27.81	30.33	42.99	62.41	64.93	65.92
Ir	$K\beta_2'$		9	10	77	6	75.606	1.47560	6		11.15	15.94	19.29	19.44	19.95	22.69	25.42	26.11	27.22	27.81	30.33	43.00	62.41	64.93	65.93
Yb	$L\beta_1$		1	50	70	6	8.400	1.47565	5		11.15	15.94	19.29	19.44	19.95	22.69	25.42	26.11	27.22	27.81	30.33	43.00	62.41	64.93	65.93
Sn	$K\alpha_{1,2}$		3	150	50	6	25.191	1.47625	6		11.15	15.95	19.30	19.44	19.96	22.70	25.43	26.12	27.23	27.82	30.34	43.02	62.44	64.96	65.96
W	$L\alpha_1$		1	100	74	6	8.396	1.47639	5		11.16	15.95	19.30	19.45	19.96	22.71	25.43	26.13	27.23	27.83	30.34	43.02	62.45	64.97	65.97
Tb	$L\gamma_2$		1	1	65	6	8.396	1.47640	4		11.16	15.95	19.30	19.45	19.96	22.71	25.43	26.13	27.23	27.83	30.35	43.02	62.45	64.97	65.97
Tb	$K\beta_1$		6	23	65	6	50.374	1.47648	5		11.16	15.95	19.30	19.45	19.96	22.71	25.43	26.13	27.24	27.83	30.35	43.02	62.45	64.97	65.97
U	Lu	B	2	.01	92	6	16.783	1.47721	6		11.16	15.96	19.31	19.46	19.97	22.72	25.44			27.84	30.36	43.04	62.49	65.01	66.01
Ir	$K\beta_2''$		9	10	77	6	75.516	1.47735	5		11.16	15.96	19.31	19.46	19.97	22.72	25.45	26.14	27.25	27.85	30.37	43.05	62.49	65.02	66.01
Xe	$K\beta_3$	H	4	9	54	6	33.556	1.47764	5		11.16	15.97	19.32	19.46	19.97	22.73	25.45	26.15	27.26	27.85	30.37	43.06	62.51	65.03	66.03
Gd	AL_1		1		64	6	8.385	1.47840	4		11.17	15.97	19.33	19.47	19.99	22.74	25.46	26.16	27.27	27.87	30.39	43.08	62.54	65.07	66.07
Rn	$L\gamma_1$	H	2	10	86	6	16.768	1.47856	5		11.17	15.98	19.33	19.47	19.99	22.74	25.47			27.87	30.39	43.09	62.55	65.08	66.08
Ag	$K\beta_5$	B	3	.1	47	6	25.141	1.47918	5		11.18	15.98	19.34	19.48	20.00	22.75	25.48	26.18	27.29	27.88	30.40	43.10	62.58	65.11	66.11
Rn	$K\alpha_1$	H	10	100	86	6	83.768	1.47980	5		11.18	15.99	19.34	19.49	20.00	22.76	25.49	26.19	27.30	27.89	30.42	43.12	62.61	65.14	66.14
Ta	$K\beta_2'$		8	9	73	6	67.001	1.48009	6		11.18	15.99	19.35	19.50	20.01	22.76	25.49	26.19	27.30	27.90	30.42	43.13	62.62	65.15	66.15
Pt	$K\beta_3$		9	12	78	6	75.355	1.48051	6		11.19	16.00	19.35	19.50	20.01	22.77	25.50	26.20	27.31	27.91	30.43	43.15	62.64	65.17	66.17
Au	$K\alpha_2$		8	50	79	6	66.978	1.48060	6		11.19	16.00	19.35	19.50	20.02	22.77	25.50	26.20	27.31	27.91	30.43	43.15	62.65	65.18	66.18
Hf	L_2-M_2	B	1	.01	72	6	8.372	1.48064	5		11.19	16.00	19.35	19.50	20.02	22.77	25.50	26.20	27.31	27.91	30.43	43.15	62.65	65.18	66.18
Gd	L_1-$O_{4,5}$	B	1	.01	64	6	8.372	1.48070	4		11.19	16.00	19.36	19.50	20.02	22.77	25.50	26.20	27.32	27.91	30.44	43.15	62.65	65.18	66.18
Tb	$K\beta_3$		6	11	65	6	50.221	1.48098	5		11.19	16.00	19.36	19.51	20.02	22.78	25.51	26.21	27.32	27.91	30.44	43.16	62.67	65.20	66.20
Y	$K\beta_1$		2	16	39	6	16.735	1.48144	5		11.19	16.01	19.37	19.51	20.03	22.78	25.52			27.92	30.45	43.17	62.69	65.22	66.22
W	$K\beta_3$		8	12	74	6	66.940	1.48145	6		11.19	16.01	19.37	19.51	20.03	22.78	25.52	26.22	27.33	27.92	30.45	43.17	62.69	65.22	66.22
Ta	$K\beta_2''$		8	9	73	6	66.937	1.48150	6		11.19	16.01	19.37	19.51	20.03	22.79	25.52	26.22	27.33	27.93	30.45	43.18	62.69	65.22	66.22
Y	$K\beta_3$		2	8	39	6	16.723	1.48252	5		11.20	16.02	19.38	19.53	20.04	22.80	25.54			27.94	30.47	43.21	62.74	65.27	66.28
La	$K\alpha_1$		4	100	57	6	33.436	1.48295	6		11.21	16.02	19.39	19.53	20.05	22.81	25.54	26.24	27.36	27.95	30.48	43.22	62.76	65.29	66.30
Er	AL_3		1		68	6	8.356	1.48350	4		11.21	16.03	19.39	19.54	20.05	22.82	25.55	26.25	27.37	27.96	30.49	43.24	62.78	65.32	66.32
Gd	$L\gamma_4$		1	.1	64	6	8.354	1.48390	4		11.21	16.03	19.40	19.55	20.06	22.82	25.56	26.26	27.38	27.97	30.50	43.25	62.80	65.34	66.34
Pr	$K\beta_2$		5	65	59	6	41.767	1.48395	5		11.21	16.03	19.40	19.55	20.06	22.82	25.56	26.26	27.38	27.97	30.50	43.25	62.81	65.34	66.35
Pt	$K\alpha_1$		8	100	78	6	66.821	1.48409	6		11.21	16.04	19.40	19.55	20.06	22.83	25.56	26.26	27.38	27.97	30.51	43.26	62.81	65.35	66.35
Pa	$L\beta_1$		2	50	91	6	16.699	1.48464	5		11.22	16.04	19.41	19.56	20.07	22.83	25.57			27.99	30.52	43.27	62.84	65.38	66.38
Er	$L\beta_5$		1	.1	68	6	8.349	1.48480	4		11.22	16.04	19.41	19.56	20.07	22.84	25.58	26.28	27.39	27.99	30.52	43.28	62.85	65.38	66.39
Sn	$K\alpha_2$		3	50	50	6	25.040	1.48516	6		11.22	16.05	19.41	19.56	20.08	22.84	25.58	26.28	27.40	28.00	30.53	43.29	62.86	65.40	66.41
Er	$L\beta_9$	B	1	.01	68	6	8.345	1.48550	4		11.22	16.05	19.42	19.57	20.08	22.85	25.59	26.29	27.41	28.00	30.54	43.30	62.88	65.42	66.43
W	$L\alpha_2$		1	10	74	6	8.334	1.48743	5		11.24	16.07	19.44	19.59	20.11	22.88	25.62	26.33	27.44	28.04	30.58	43.36	62.97	65.51	66.52
Ni	AK		1		28	6	8.330	1.48807	5		11.24	16.08	19.45	19.60	20.12	22.89	25.63	26.34	27.45	28.05	30.59	43.38	63.00	65.55	66.56
Pb	$K\alpha_1$		9	100	82	6	74.956	1.48838	6		11.25	16.08	19.46	19.61	20.12	22.89	25.64	26.34	27.46	28.06	30.60	43.39	63.01	65.56	66.57
Ni	$K\beta_5$	B	1	.03	28	6	8.327	1.48862	5	4	11.25	16.09	19.46	19.61	20.12	22.90	25.64	26.35	27.46	28.06	30.60	43.39	63.03	65.57	66.58
Gd	$K\beta_2$		6	8	64	6	49.952	1.48896	5		11.25	16.09	19.46	19.61	20.13	22.90	25.65	26.35	27.47	28.07	30.61	43.40	63.04	65.59	66.60
La	$K\alpha_{1,2}$		4	150	57	6	33.299	1.48905	6		11.25	16.09	19.47	19.61	20.13	22.90	25.65	26.35	27.47	28.07	30.61	43.41	63.05	65.59	66.60
Pr	$K\alpha_2$	H	10	50	87	6	83.217	1.48960	5		11.26	16.10	19.47	19.62	20.14	22.91	25.66	26.36	27.48	28.08	30.62	43.42	63.07	65.62	66.63
U	$L\beta_{17}$	B	2	.01	92	6	16.638	1.49006	5		11.26	16.10	19.48	19.63	20.14	22.92	25.67			28.09	30.63	43.44	63.09	65.64	66.66
Pa	$L\beta_5$		2	1	91	6	16.634	1.49040	4		11.26	16.10	19.48	19.63	20.15	22.92	25.67			28.10	30.64	43.45	63.11	65.66	66.67

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Ag	$K\beta_1$		3	18	47	6	24.938	1.49121	6		11.27	16.11	19.49	19.64	20.16	22.94	25.69	26.39	27.51	28.11	30.66	43.47	63.15	65.70	66.71
Yb	$L\beta_4$		1	5	70	6	8.312	1.49138	5		11.27	16.12	19.50	19.65	20.16	22.94	25.69	26.40	27.52	28.12	30.66	43.48	63.16	65.71	66.72
Si	$K\alpha_2$		9	50	83	6	74.802	1.49145	6		11.27	16.12	19.50	19.65	20.16	22.94	25.69	26.40	27.52	28.12	30.66	43.48	63.16	65.71	66.73
Eu	$K\alpha_1$		5	100	63	6	41.535	1.49223	6		11.28	16.12	19.51	19.66	20.17	22.95	25.71	26.41	27.53	28.13	30.68	43.50	63.20	65.75	66.77
Nb	$K\alpha_1$		2	100	41	6	16.612	1.49240	5		11.28	16.13	19.51	19.66	20.18	22.96	25.71			28.13	30.68	43.51	63.20	65.76	66.77
Ir	Lt		8	1	.01	77	6	8.303	1.49300	4		11.28	16.13	19.52	19.67	20.18	22.96	25.72	26.43	27.55	28.15	30.69	43.53	63.23	65.79	66.80
Ag	$K\beta_3$		3	8	47	6	24.907	1.49305	6		11.28	16.13	19.52	19.67	20.19	22.97	25.72	26.43	27.55	28.15	30.70	43.53	63.24	65.79	66.81
Er	$L\beta_7$		1	.1	68	6	8.297	1.49410	4		11.29	16.14	19.53	19.68	20.20	22.98	25.74	26.45	27.57	28.17	30.72	43.56	63.28	65.85	66.86
Er	$L\beta_{10}$	B	1	.01	68	6	8.297	1.49410	4		11.29	16.14	19.53	19.68	20.20	22.98	25.74	26.45	27.57	28.17	30.72	43.56	63.28	65.85	66.86
Tm	$K\alpha_2$		6	50	69	6	49.764	1.49457	6		11.29	16.15	19.54	19.69	20.21	22.99	25.75	26.45	27.58	28.18	30.73	43.58	63.31	65.87	66.88
Nb	$K\alpha_{1,2}$		2	150	41	6	16.581	1.49523	5		11.30	16.16	19.55	19.70	20.22	23.00	25.76			28.19	30.74	43.60	63.34	65.90	66.92
U	$L\beta_4$		2	4	92	6	16.573	1.49597	6		11.30	16.16	19.56	19.71	20.23	23.01	25.77			28.20	30.76	43.62	63.37	55.94	66.96
Rn	$K\alpha_{1,2}$	H	10	150	86	6	82.843	1.49633	5		11.31	16.17	19.56	19.71	20.23	23.02	25.78	26.49	27.61	28.21	30.76	43.63	63.39	65.96	66.97
W	$K\alpha_2$		7	50	74	6	57.972	1.49680	6		11.31	16.17	19.57	19.72	20.24	23.02	25.79	26.49	27.62	28.22	30.77	43.64	63.41	65.98	67.00
Pt	$K\alpha_{1,2}$		8	150	78	6	66.241	1.49707	6		11.31	16.18	19.57	19.72	20.24	23.03	25.79	26.50	27.62	28.22	30.78	43.65	63.43	65.99	67.01
Pt	Ll		1	3	78	6	8.267	1.49950	4		11.33	16.20	19.60	19.75	20.27	23.07	25.83	26.54	27.67	28.27	30.83	43.73	63.54	66.11	67.13
Eu	$K\alpha_{1,2}$		5	150	63	6	41.320	1.50001	6		11.33	16.21	19.61	19.76	20.28	23.07	25.84	26.55	27.68	28.28	30.84	43.74	63.56	66.14	67.16
Ni	$K\beta_{1,3}$		1	20	28	6	8.263	1.50013	6		11.34	16.21	19.61	19.76	20.28	23.08	25.85	26.55	27.68	28.28	30.84	43.75	63.57	66.15	67.17
Nb	$K\alpha_2$		2	50	41	6	16.518	1.50088	5		11.34	16.22	19.62	19.77	20.29	23.09	25.86			28.30	30.86	43.77	63.61	66.18	67.20
I	$K\beta_2$	H	4	6	53	6	33.036	1.50092	5		11.34	16.22	19.62	19.77	20.29	23.09	25.86	26.57	27.70	28.30	30.86	43.77	63.61	66.18	67.21
La	$K\alpha_2$		4	50	57	6	33.028	1.50125	6		11.34	16.22	19.63	19.78	20.30	23.09	25.86	26.57	27.70	28.30	30.87	43.78	63.62	56.20	67.22
Tl	$K\beta_1$		10	78	81	6	82.562	1.50142	6		11.35	16.22	19.63	19.78	20.30	23.10	25.87	26.58	27.71	28.31	30.87	43.79	63.63	66.21	67.23
Hg	$K\beta_2'$		10	10	80	6	82.530	1.50200	5		11.35	16.23	19.64	19.79	20.31	23.11	25.88	26.59	27.72	28.32	30.88	43.80	63.66	66.24	67.26
Tb	AL_2		1		65	6	8.251	1.50230	4		11.35	16.23	19.64	19.79	20.31	23.11	25.88	26.59	27.72	28.33	30.89	43.81	63.67	66.25	67.28
Pu	$L\beta_6$		2	.1	94	6	16.495	1.50296	5		11.36	16.24	19.65	19.80	20.32	23.12	25.89			28.34	30.90	43.83	63.70	66.29	67.31
Pb	$K\alpha_{1,2}$		9	150	82	6	74.221	1.50313	6		11.36	16.24	19.65	19.80	20.32	23.12	25.90	26.61	27.74	28.34	30.91	43.84	63.71	66.29	67.32
Tb	$L\gamma_6$		1	.01	65	6	8.245	1.50350	4		11.36	16.25	19.66	19.81	20.33	23.13	25.90	26.61	27.74	28.35	30.92	43.85	63.73	66.31	67.34
Hg	$K\beta_2''$		10	10	80	6	82.420	1.50400	5		11.36	16.25	19.66	19.81	20.33	23.14	25.91	26.62	27.75	28.36	30.93	43.87	63.75	66.34	67.36
Tm	$L\beta_3$		1	6	69	6	8.229	1.50630	4		11.38	16.28	19.69	19.84	20.37	23.17	25.95	26.67	27.80	28.40	30.97	43.94	63.86	66.45	67.48
Ta	$K\alpha_1$		7	100	73	6	57.523	1.50848	6		11.40	16.30	19.72	19.87	20.40	23.21	25.99	26.70	27.84	28.44	31.02	44.00	63.97	66.56	67.59
Tm	$K\beta_1$		7	23	69	6	57.506	1.50892	5		11.40	16.31	19.73	19.88	20.40	23.21	26.00	26.71	27.85	28.45	31.03	44.02	63.99	66.58	67.61
Pa	$L\beta_7$		2	.1	91	6	16.427	1.50920	4		11.40	16.31	19.73	19.88	20.41	23.22	26.00			28.46	31.04	44.02	64.00	66.60	67.63
U	$L\beta_2$		2	20	92	6	16.425	1.50936	6		11.41	16.31	19.73	19.88	20.41	23.22	26.01			28.46	31.04	44.03	64.01	66.60	67.64
Th	$L\beta_3$		2	6	90	6	16.423	1.50958	5		11.41	16.31	19.74	19.89	20.41	23.22	26.01			28.47	31.04	44.04	64.02	66.62	67.65
Tb	$L\gamma_8$		1	.1	65	6	8.211	1.50970	4		11.41	16.31	19.74	19.89	20.41	23.23	26.01	26.73	27.86	28.47	31.05	44.04	64.02	66.62	67.65
Tl	$K\beta_3$		10	13	81	6	82.104	1.50980	6		11.41	16.32	19.74	19.89	20.41	23.23	26.01	26.73	27.86	28.47	31.05	44.04	64.03	66.63	67.66
U	$L\beta_{15}$		2	1	92	6	16.383	1.51328	6		11.44	16.35	19.79	19.94	20.46	23.28	26.08			28.54	31.12	44.15	64.19	66.80	67.83
Bi	$L\gamma_{13}$	D	2	.01	83	6	16.382	1.51336	5		11.44	16.35	19.79	19.94	20.46	23.28	26.08			28.54	31.12	44.15	64.20	66.80	67.84
Er	$L\beta_{2,15}$		1	20	68	6	8.188	1.51399	5		11.44	16.36	19.80	19.95	20.47	23.29	26.09	26.80	27.94	28.55	31.14	44.17	64.23	66.84	67.87
Er	$K\alpha_1$		6	100	68	6	49.119	1.51419	6		11.44	16.36	19.80	19.95	20.47	23.30	26.09	26.81	27.95	28.55	31.14	44.18	64.24	66.85	67.88
Tm	$K\beta_3$		7	11	69	6	57.293	1.51452	5		11.44	16.37	19.80	19.95	20.48	23.30	26.10	26.81	27.95	28.56	31.15	44.19	64.25	66.86	67.90
Eu	$K\alpha_2$		5	50	63	6	40.895	1.51559	6		11.45	16.38	19.82	19.97	20.49	23.32	26.12	26.83	27.97	28.58	31.17	44.22	64.30	66.92	67.95
Th	L_2-M_5	B	2	.01	90	6	16.356	1.51580	4		11.45	16.38	19.82	19.97	20.50	23.32	26.12			28.59	31.18	44.23	64.31	66.93	67.96
8i	L_1-$O_{4,5}$	B	2	.01	83	6	16.355	1.51582	5		11.45	16.38	19.82	19.97	20.50	23.32	26.12			28.59	31.18	44.23	64.31	66.93	67.96
Tm	$L\beta_6$		1	.1	69	6	8.176	1.51620	4		11.46	16.39	19.82	19.98	20.50	23.33	26.13	26.84	27.98	28.59	31.18	44.24	64.33	66.95	67.98
Ir	$K\beta_1$		9	27	77	6	73.548	1.51688	6		11.45	16.39	19.83	19.98	20.51	23.34	26.14	26.86	28.00	28.61	31.20	44.26	64.36	66.98	68.02
Er	$K\beta_2$	H	7	8	68	6	57.204	1.51690	4		11.46	16.39	19.83	19.98	20.51	23.34	26.14	26.86	28.00	28.61	31.20	44.26	64.37	66.98	68.02
Re	Ls	8	1	.01	75	6	8.167	1.51780	4		11.47	16.40	19.85	20.00	20.52	23.35	26.15	26.87	28.01	28.62	31.22	44.29	64.41	67.03	68.06
Pu	Ln		2	1	94	6	16.330	1.51820	4		11.47	16.41	19.85	20.00	20.53	23.36	26.16			28.63	31.23	44.30	64.43	67.05	68.09
Dy	$L\gamma_5$		1	.1	66	6	8.165	1.51824	5		11.47	16.41	19.85	20.00	20.53	23.36	26.16	26.88	28.02	28.63	31.23	44.30	64.43	67.05	68.09
Ta	$K\alpha_{1,2}$		7	150	73	6	57.098	1.51970	6		11.48	16.42	19.87	20.02	20.55	23.38	26.19	26.91	28.05	28.66	31.26	44.35	64.50	67.12	68.16
Os	$K\beta_2'$		9	10	76	6	73.390	1.52015	6		11.49	16.43	19.88	20.03	20.56	23.39	26.20	26.92	28.06	28.67	31.27	44.36	64.52	67.14	68.18
Ta	$K\beta_1$		8	26	73	6	65.212	1.52071	6		11.49	16.43	19.88	20.04	20.56	23.40	26.21	26.93	28.07	28.68	31.28	44.38	64.55	67.17	68.21
At	$K\alpha_1$	H	10	100	85	6	81.499	1.52100	5		11.49	16.44	19.89	20.04	20.57	23.40	26.21	26.93	28.07	28.69	31.28	44.39	64.56	67.19	68.23
Pr	$K\beta_1$		5	22	59	6	40.741	1.52130	6		11.50	16.44	19.89	20.04	20.57	23.41	26.22	26.94	28.08	28.69	31.29	44.40	64.57	67.20	68.24
Th	L_3-$P_{4,5}$		2	.01	90	6	16.292	1.52174	5		11.50	16.45	19.90	20.05	20.58	23.41	26.22			28.70	31.30	44.41	64.60	67.22	68.27
8i	$L\gamma_4$		2	.1	83	6	16.292	1.52174	5		11.50	16.45	19.90	20.05	20.58	23.41	26.22			28.70	31.30	44.41	64.60	67.22	68.27
Os	$K\beta_2''$		9	10	76	6	73.306	1.52190	5		11.50	16.45	19.90	20.05	20.58	23.42	26.23	26.95	28.09	28.70	31.30	44.41	64.60	67.23	68.27
Ta	$L\alpha_1$		1	100	73	6	8.145	1.52197	5		11.50	16.45	19.90	20.05	20.58	23.42	26.23	26.95	28.09	28.70	31.31	44.42	64.61	67.23	68.28
Pt	$K\alpha_2$		8	50	78	6	65.112	1.52305	6		11.51	16.46	19.91	20.07	20.60	23.43	26.25	26.97	28.11	28.72	31.33	44.45	64.66	67.29	68.33
Hf	Ln		1	1	72	6	8.138	1.52325	5		11.51	16.46	19.92	20.07	20.60	23.44	26.25	26.97	28.12	28.73	31.33	44.46	64.67	67.30	68.34
Er	$K\alpha_{1,2}$		6	150	68	6	48.813	1.52368	6		11.51	16.47	19.92	20.08	20.60	23.44	26.26	26.98	28.12	28.74	31.34	44.47	64.69	67.32	68.36
8i	$L\gamma_4p$		2	.1	83	6	16.268	1.52396	5		11.52	16.47	19.93	20.08	20.61	23.45	26.26			28.74	31.35	44.48	64.70	67.33	68.38
Ir	$K\beta_3$		9	12	77	6	73.190	1.52430	6		11.52	16.47	19.93	20.08	20.61	23.45	26.27	26.99	28.14	28.75	31.35	44.49	64.72	67.35	68.40
Pr	$K\beta_3$		5	10	59	6	40.646	1.52487	6		11.52	16.48	19.94	20.09	20.62	23.46	26.28	27.00	28.15	28.76	31.37	44.51	64.74	67.38	68.43

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Th	$L_3-P_{2,3}$	B	2	.01	90	6	16.257	1.52500	4		11.52	16.48	19.94	20.09	20.62	23.46	26.28			28.76	31.37	44.51	64.75	67.39	68.43
At	$L\gamma_1$	H	2	10	85	6	16.249	1.52578	5		11.53	16.49	19.95	20.10	20.63	23.48	26.29			28.78	31.39	44.53	64.79	67.43	68.47
Hf	$K\beta_2$	H	8	9	72	6	64.969	1.52640	4		11.53	16.50	19.96	20.11	20.64	23.49	26.31	27.03	28.18	28.79	31.40	44.55	64.82	67.46	68.50
Th	L_3-P_1		2	.01	90	6	16.238	1.52676	5		11.54	16.50	19.96	20.12	20.65	23.49	26.31			28.80	31.41	44.56	64.83	67.47	68.52
Ta	$K\beta_3$		8	12	73	6	64.938	1.52712	6		11.54	16.50	19.97	20.12	20.65	23.50	26.32	27.04	28.19	28.80	31.41	44.58	64.85	67.49	68.54
Gd	$K\beta_1$		6	23	64	6	48.688	1.52760	5		11.54	16.51	19.97	20.13	20.66	23.50	26.33	27.05	28.20	28.81	31.42	44.59	64.87	67.52	68.57
Pd	$K\beta_4$	B	3	.01	46	6	24.339	1.52790	4		11.55	16.51	19.98	20.13	20.66	23.51	26.33	27.05	28.20	28.82	31.43	44.60	64.89	67.53	68.58
Bi	$L_1-N_{6,7}$	B	2	.01	83	6	16.223	1.52820	4		11.55	16.52	19.98	20.14	20.67	23.51	26.34			28.82	31.44	44.61	64.90	67.55	68.60
Ir	$K\alpha_1$		8	100	77	6	64.885	1.52838	6		11.55	16.52	19.99	20.14	20.67	23.52	26.34	27.06	28.21	28.83	31.44	44.61	64.91	67.56	68.60
Po	$L\gamma_6$		2	.01	84	6	16.215	1.52900	4		11.55	16.52	19.99	20.15	20.68	23.53	26.35			28.84	31.45	44.63	64.94	67.59	68.64
Th	$L\beta_5$		2	1	90	6	16.211	1.52936	5		11.56	16.53	20.00	20.15	20.68	23.53	26.36			28.85	31.46	44.64	64.96	67.61	68.66
Rn	$K\alpha_2$		H10	50	86	6	81.051	1.52940	5		11.56	16.53	20.00	20.15	20.68	23.53	26.36	27.08	28.23	28.85	31.46	44.65	64.96	67.61	68.66
Gd	$L\gamma_3$		1	1	64	6	8.104	1.52970	4		11.56	16.53	20.00	20.16	20.69	23.54	26.36	27.09	28.24	28.85	31.47	44.65	64.97	67.62	68.67
Tb	$L\gamma_1$		1	5	65	6	8.100	1.53030	4		11.56	16.54	20.01	20.16	20.69	23.55	26.37	27.10	28.25	28.86	31.48	44.67	65.00	67.65	68.70
Tm	$L\beta_1$		1	50	69	6	8.100	1.53040	4		11.56	16.54	20.01	20.16	20.70	23.55	26.38	27.10	28.25	28.87	31.48	44.68	65.01	67.66	68.71
Th	$L\beta_1$		2	50	90	6	16.199	1.53042	6		11.56	16.54	20.01	20.16	20.70	23.55	26.38			28.87	31.48	44.68	65.01	67.66	68.71
Pd	$K\beta_2$		3	3	46	6	24.295	1.53068	6		11.57	16.54	20.02	20.17	20.70	23.55	26.38	27.10	28.26	28.87	31.49	44.69	65.02	67.67	68.72
Tl	$K\alpha_1$		9	100	81	6	72.859	1.53122	6		11.57	16.55	20.02	20.18	20.71	23.56	26.39	27.11	28.27	28.88	31.50	44.70	65.05	67.70	68.75
Gd	$K\beta_3$		6	11	64	6	48.547	1.53204	5		11.58	16.56	20.03	20.19	20.72	23.57	26.40	27.13	28.28	28.90	31.52	44.73	65.09	67.74	68.79
Pb	$K\alpha_2$		9	50	82	6	72.792	1.53265	6		11.58	16.56	20.04	20.19	20.73	23.58	26.42	27.14	28.29	28.91	31.53	44.75	65.12	67.77	68.82
Ta	$L\alpha_2$		1	10	73	6	8.086	1.53293	5		11.58	16.57	20.05	20.20	20.73	23.59	26.42	27.15	28.30	28.92	31.54	44.75	65.13	67.78	68.84
Gd	$L\gamma_2$		1	1	64	6	8.086	1.53310	4		11.59	16.57	20.05	20.20	20.73	23.59	26.42	27.15	28.30	28.92	31.54	44.76	65.14	67.79	68.85
Lu	L_2-M_2	B	1	.01	71	6	8.084	1.53333	5		11.59	16.57	20.05	20.20	20.74	23.59	26.43	27.15	28.31	28.92	31.55	44.77	65.15	67.80	68.86
Os	Lt	B	1	.01	76	6	8.077	1.53470	4		11.60	16.59	20.07	20.22	20.75	23.62	26.45	27.18	28.33	28.95	31.57	44.81	65.21	67.87	68.93
I	$K\beta_1$		4	20	53	6	32.289	1.53562	6		11.60	16.60	20.08	20.23	20.77	23.63	26.47	27.19	28.35	28.97	31.59	44.84	65.26	67.92	68.98
In	$K\alpha_1$		3	100	49	6	24.206	1.53634	6		11.61	16.60	20.09	20.24	20.78	23.64	26.48	27.21	28.36	28.98	31.61	44.86	65.29	67.96	69.01
Ho	AL_3		1		67	6	8.066	1.53680	4		11.61	16.61	20.10	20.25	20.78	23.65	26.49	27.22	28.37	28.99	31.62	44.87	65.31	67.98	69.04
Ba	$L\beta_9$	B	2	.01	88	6	16.129	1.53714	5		11.62	16.61	20.10	20.25	20.79	23.65	26.49			29.00	31.63	44.88	65.33	68.00	69.05
At	$K\alpha_{1,2}$	H	10	150	85	6	80.624	1.53750	5		11.62	16.62	20.11	20.26	20.79	23.66	26.50	27.23	28.38	29.00	31.63	44.89	65.35	68.01	69.07
Ho	$L\beta_5$		1	.1	67	6	8.061	1.53780	4		11.62	16.62	20.11	20.26	20.80	23.66	26.51	27.23	28.39	29.01	31.64	44.90	65.36	68.03	69.09
Th	L_3-O_3	B	2	.01	90	6	16.120	1.53800	4		11.62	16.62	20.11	20.27	20.80	23.67	26.51			29.01	31.64	44.91	65.37	68.04	69.10
Np	$L\beta_6$		2	.1	93	6	16.120	1.53800	3		11.62	16.62	20.11	20.27	20.80	23.67	26.51			29.01	31.64	44.91	65.37	68.04	69.10
Eu	AL_1		1		63	6	8.059	1.53810	4		11.62	16.62	20.11	20.27	20.80	23.67	26.51	27.24	28.40	29.01	31.65	44.91	65.38	68.04	69.10
U	L_3-N_3	B	2	.01	92	6	16.118	1.53820	4		11.62	16.62	20.12	20.27	20.80	23.67	26.51			29.02	31.65	44.92	65.38	68.05	69.11
I	$K\beta_3$		4	9	53	6	32.234	1.53826	6		11.62	16.63	20.12	20.27	20.80	23.67	26.51	27.24	28.40	29.02	31.65	44.92	65.38	68.05	69.11
Sr	$K\beta_4$	C	2	.00	38	6	16.101	1.53978	5		11.64	16.64	20.14	20.29	20.82	23.69	26.54			29.05	31.68	44.97	65.46	68.13	69.19
Pa	$L\beta_4$		2	4	91	6	16.101	1.53980	4		11.64	16.64	20.14	20.29	20.82	23.69	26.54			29.05	31.68	44.97	65.46	68.13	69.19
Ba	$K\alpha_1$		4	100	56	6	32.188	1.54044	6		11.64	16.65	20.14	20.30	20.83	23.70	26.55	27.28	28.44	29.06	31.70	44.99	65.49	68.16	69.22
Cu	$K\alpha_1$		1	100	29	6	8.046	1.54056	6		11.64	16.65	20.15	20.30	20.83	23.71	26.55	27.28	28.44	29.06	31.70	44.99	65.49	68.17	69.23
In	$K\alpha_{1,2}$		3	150	49	6	24.136	1.54077	6		11.64	16.65	20.15	20.30	20.84	23.71	26.56	27.29	28.45	29.07	31.70	45.00	65.50	68.18	69.24
Ce	$K\beta_2$		5	7	58	6	40.226	1.54080	5		11.64	16.65	20.15	20.30	20.84	23.71	26.56	27.29	28.45	29.07	31.70	45.00	65.51	68.18	69.24
Ir	$K\alpha_{1,2}$		8	150	77	6	64.339	1.54133	6		11.65	16.66	20.16	20.31	20.85	23.72	26.57	27.30	28.46	29.08	31.71	45.01	65.53	68.21	69.27
Eu	$K\beta_2$		6	8	63	6	48.248	1.54154	6		11.65	16.66	20.16	20.31	20.85	23.72	26.57	27.30	28.46	29.08	31.72	45.02	65.54	68.22	69.28
Sr	$K\beta_2$		2	3	38	6	16.082	1.54162	5		11.65	16.66	20.16	20.31	20.85	23.72	26.57			29.08	31.72	45.02	65.54	68.22	69.28
Ir	L1	D	1	3	77	6	8.040	1.54180	4		11.65	16.66	20.16	20.32	20.85	23.73	26.58	27.31	28.47	29.09	31.72	45.03	65.55	68.23	69.29
Cu	$K\alpha_{1,2}$		1	150	29	6	8.040	1.54184	6		11.65	16.66	20.16	20.32	20.85	23.73	26.58	27.31	28.47	29.09	31.72	45.03	65.55	68.23	69.29
Ta	$K\alpha_2$		7	50	73	6	56.267	1.54213	6		11.65	16.67	20.17	20.32	20.86	23.73	26.58	27.31	28.47	29.09	31.73	45.04	65.57	68.25	69.31
Th	L_3-O_2	B	2	.01	90	6	16.072	1.54260	4		11.66	16.67	20.17	20.33	20.86	23.74	26.59			29.10	31.74	45.05	65.59	68.27	69.33
Er	$K\alpha_2$		6	50	68	6	48.213	1.54266	6		11.66	16.67	20.17	20.33	20.86	23.74	26.59	27.32	28.48	29.10	31.74	45.05	65.59	68.27	69.34
Eu	$L\gamma_4$		1	.1	63	6	8.029	1.54390	4		11.67	16.69	20.19	20.34	20.88	23.76	26.61	27.34	28.51	29.13	31.77	45.09	65.65	68.34	69.40
Po	$L\gamma_7$		2	1	84	6	16.057	1.54400	3		11.67	16.69	20.19	20.35	20.88	23.76	26.61			29.13	31.77	45.10	65.66	68.34	69.41
Cu	$K\alpha_2$		1	50	29	6	8.026	1.54439	6		11.67	16.69	20.20	20.35	20.89	23.77	26.62	27.35	28.51	29.14	31.78	45.11	65.68	68.36	69.43
Tm	$L\beta_4$		1	5	69	6	8.024	1.54480	4		11.67	16.70	20.20	20.36	20.89	23.77	26.63	27.36	28.52	29.14	31.79	45.12	65.70	68.38	69.45
Hg	$K\beta_1$		10	28	80	6	80.240	1.54487	6		11.67	16.70	20.20	20.36	20.89	23.77	26.63	27.36	28.52	29.15	31.79	45.12	65.70	68.39	69.45
Cf	$L\gamma_1$		3	10	98	3	24.070	1.54500			11.68	16.70	20.20	20.36	20.90	23.78	26.63	27.36	28.53	29.15	31.79	45.13	65.71	68.39	69.46
Sm	$K\alpha_1$		5	100	62	6	40.111	1.54520	6		11.68	16.70	20.21	20.36	20.90	23.78	26.64	27.37	28.53	29.15	31.80	45.13	65.72	68.40	69.47
Tl	$K\alpha_{1,2}$		9	150	81	6	72.167	1.54592	6		11.68	16.71	20.22	20.37	20.91	23.79	26.65	27.38	28.54	29.17	31.81	45.15	65.75	68.44	69.50
Au	$K\beta_2'$		10	10	79	6	80.172	1.54618	6		11.68	16.71	20.22	20.37	20.91	23.79	26.65	27.38	28.55	29.17	31.82	45.16	65.76	68.45	69.52
Ba	$K\alpha_{1,2}$		4	150	56	6	32.062	1.54652	6		11.69	16.72	20.22	20.38	20.92	23.80	26.66	27.39	28.55	29.18	31.82	45.17	65.78	68.47	69.54
Pa	$L\beta_2$		2	20	91	6	16.022	1.54740	4		11.69	16.72	20.24	20.39	20.93	23.81	26.67			29.19	31.84	45.20	65.82	68.51	69.58
Au	$K\beta_2''$		10	10	79	6	80.062	1.54830	5		11.70	16.73	20.25	20.40	20.94	23.83	26.69	27.42	28.59	29.21	31.86	45.23	65.86	68.56	69.63
Ho	$L\beta_{10}$	B	1	.01	67	6	8.005	1.54860	4		11.70	16.74	20.25	20.41	20.94	23.83	26.70	27.43	28.59	29.22	31.87	45.24	65.88	68.57	69.64
Th	$L8_7$		2	.1	90	6	16.008	1.54874	5		11.70	16.74	20.25	20.41	20.95	23.83	26.70			29.22	31.87	45.24	65.89	68.58	69.65
In	$K\alpha_2$		3	50	49	6	23.998	1.54963	6		11.71	16.75	20.27	20.42	20.96	23.85	26.71	27.45	28.61	29.24	31.89	45.27	65.93	68.63	69.70
Pd	$K\beta_5$	B	3	.1	46	6	23.991	1.55010	5		11.71	16.75	20.27	20.43	20.97	23.86	26.72	27.46	28.62	29.25	31.90	45.28	65.95	68.65	69.72

El	Line	C	N	I	Z	R	KeV	Lambda P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Ra	$L\beta_{10}$	B	2	.01	88	6	15.985	1.55092 5	11.72	16.76	20.28	20.44	20.98	23.87	26.74			29.26	31.92	45.31	65.99	68.69	69.76
Sr	$K\beta_5$		2	.07	38	6	15.966	1.55280 4	11.73	16.78	20.31	20.46	21.00	23.90	26.77			29.30	31.96	45.37	66.08	68.79	69.86
Sm	$K\alpha_{1,2}$		5	150	62	6	39.911	1.55296 6	11.74	16.79	20.31	20.47	21.00	23.90	26.77	27.51	28.68	29.30	31.96	45.37	66.09	68.79	69.87
Hg	$K\beta_3$		10	13	80	6	79.809	1.55321 6	11.74	16.79	20.31	20.47	21.01	23.90	26.78	27.51	28.68	29.31	31.96	45.38	66.10	68.81	69.88
Th	Lu	B	2	.01	90	6	15.962	1.55322 5	11.74	16.79	20.31	20.47	21.01	23.90	26.78			29.31	31.97	45.38	66.10	68.81	69.88
Bi	$L\gamma_{11}$	B	2	.01	83	6	15.948	1.55456 5	11.75	16.80	20.33	20.49	21.03	23.93	26.80			29.33	31.99	45.42	66.16	68.87	69.95
Hf	$K\alpha_1$		7	100	72	6	55.781	1.55559 6	11.76	16.81	20.34	20.50	21.04	23.94	26.82	27.55	28.73	29.35	32.02	45.45	66.21	68.93	70.00
Ac	$L\beta_3$	H	2	10	89	6	15.929	1.55644 5	11.76	16.82	20.36	20.51	21.05	23.95	26.83			29.37	32.03	45.48	66.25	68.97	70.05
Bi	L_1-N_4	B	2	.01	83	6	15.922	1.55708 5	11.77	16.83	20.36	20.52	21.06	23.96	26.84			29.38	32.05	45.50	66.29	69.00	70.08
Er	$K\beta_1$		7	22	68	6	55.672	1.55862 5	11.78	16.85	20.38	20.54	21.08	23.99	26.87	27.61	28.78	29.41	32.08	45.55	66.36	69.08	70.16
Ba	$K\alpha_2$		4	50	56	6	31.812	1.55867 6	11.78	16.85	20.39	20.54	21.08	23.99	26.87	27.61	28.78	29.41	32.08	45.55	66.36	69.08	70.16
U	L_3-N_2	B	2	.01	92	6	15.889	1.56034 5	11.79	16.87	20.41	20.56	21.11	24.02	26.90			29.44	32.12	45.60	66.44	69.17	70.25
Pd	$K\beta_1$		3	18	46	6	23.815	1.56156 6	11.80	16.88	20.42	20.58	21.12	24.03	26.92	27.66	28.84	29.47	32.14	45.64	66.50	69.23	70.31
Er	$L\beta_3$		1	6	68	6	7.938	1.56160 4	11.80	16.88	20.42	20.58	21.12	24.04	26.92	27.66	28.84	29.47	32.14	45.64	66.50	69.23	70.31
Np	Ln		2	1	93	6	15.874	1.56180 4	11.80	16.88	20.43	20.58	21.13	24.04	26.93			29.47	32.15	45.64	66.51	69.24	70.32
Os	$K\beta_1$		9	27	76	6	71.401	1.56250 6	11.81	16.89	20.44	20.59	21.13	24.05	26.94	27.68	28.86	29.49	32.16	45.67	66.55	69.28	70.36
Gd	AL_2		1		64	6	7.930	1.56320 4	11.81	16.90	20.45	20.60	21.14	24.06	26.95	27.69	28.87	29.50	32.18	45.69	66.58	69.31	70.40
Pd	$K\beta_3$		3	8	46	6	23.787	1.56337 6	11.81	16.90	20.45	20.60	21.15	24.06	26.95	27.70	28.87	29.50	32.18	45.69	66.59	69.32	70.40
Po	$K\alpha_1$	H	10	100	84	6	79.279	1.56360 5	11.82	16.90	20.45	20.61	21.15	24.07	26.96	27.70	28.88	29.51	32.18	45.70	66.60	69.33	70.42
Er	$K\beta_3$		7	12	68	6	55.485	1.56387 5	11.82	16.90	20.45	20.61	21.15	24.07	26.96	27.70	28.88	29.51	32.19	45.71	66.61	69.35	70.43
W	Ls	B	1	.01	74	6	7.925	1.56420 4	11.82	16.91	20.46	20.61	21.16	24.08	26.97	27.71	28.89	29.52	32.20	45.72	66.63	69.36	70.45
Te	$K\beta_2$	D	4	6	52	6	31.698	1.56425 6	11.82	16.91	20.46	20.62	21.16	24.08	26.97	27.71	28.89	29.52	32.20	45.72	66.63	69.36	70.45
Gd	$L\gamma_6$		1	.01	64	6	7.924	1.56440 4	11.82	16.91	20.46	20.62	21.16	24.08	26.97	27.71	28.89	29.52	32.20	45.72	66.64	69.37	70.46
Ho	$K\alpha_1$		6	100	67	6	47.539	1.56454 6	11.82	16.91	20.46	20.62	21.16	24.08	26.98	27.72	28.89	29.52	32.20	45.73	66.64	69.38	70.46
Pb	L_1-$O_{4,5}$	8	2	.01	82	6	15.840	1.56514 5	11.83	16.92	20.47	20.63	21.17	24.09	26.99			29.54	32.22	45.75	66.67	69.41	70.50
Sr	$K\beta_1$		2	16	38	6	15.833	1.56584 5	11.83	16.93	20.48	20.64	21.18	24.10	27.00			29.55	32.23	45.77	66.71	69.45	70.53
Re	$K\beta_2'$		9	10	75	6	71.219	1.56649 6	11.84	16.93	20.49	20.65	21.19	24.11	27.01	27.75	28.93	29.56	32.25	45.79	66.74	69.48	70.57
Hf	$K\alpha_{1,2}$		7	150	72	6	55.382	1.56678 6	11.84	16.94	20.49	20.65	21.19	24.12	27.01	27.76	28.94	29.57	32.25	45.80	66.75	69.49	70.58
Sr	$K\beta_3$		2	8	38	6	15.822	1.56690 5	11.84	16.94	20.49	20.65	21.19	24.12	27.02			29.57	32.25	45.80	66.76	69.50	70.59
Ho	$L\beta_{2,15}$		1	20	67	6	7.910	1.56710 4	11.84	16.94	20.50	20.65	21.20	24.12	27.02	27.76	28.94	29.57	32.26	45.81	66.77	69.51	70.60
Ir	$K\alpha_2$		8	50	77	6	63.276	1.56723 6	11.84	16.94	20.50	20.66	21.20	24.12	27.02	27.76	28.95	29.58	32.26	45.81	66.77	69.52	70.60
Er	$L\beta_6$		1	.1	68	6	7.908	1.56750 4	11.85	16.94	20.50	20.66	21.20	24.13	27.03	27.77	28.95	29.58	32.27	45.82	66.79	69.53	70.62
Re	$K\beta_2''$		9	10	75	6	71.139	1.56825 5	11.85	16.95	20.51	20.67	21.21	24.14	27.04	27.78	28.96	29.60	32.28	45.84	66.82	69.57	70.66
Sm	$K\alpha_2$		5	50	62	6	39.516	1.56849 6	11.85	16.95	20.52	20.67	21.22	24.14	27.04	27.79	28.97	29.60	32.29	45.85	66.83	69.58	70.67
Hf	$K\beta_1$	H	8	66	72	6	63.222	1.56856 5	11.85	16.96	20.52	20.67	21.22	24.14	27.05	27.79	28.97	29.60	32.29	45.85	66.84	69.58	70.67
Ho	$K\beta_2$	H	7	8	67	6	55.315	1.56870 4	11.86	16.96	20.52	20.67	21.22	24.15	27.05	27.79	28.97	29.61	32.29	45.86	66.84	69.59	70.68
Hf	$L\alpha_1$		1	100	72	6	7.898	1.56958 5	11.86	16.97	20.53	20.69	21.23	24.16	27.06	27.81	28.99	29.62	32.31	45.88	66.89	69.64	70.73
Os	$K\beta_3$		9	12	76	6	71.065	1.56988 6	11.86	16.97	20.53	20.69	21.24	24.16	27.07	27.81	29.00	29.63	32.32	45.89	66.90	69.65	70.74
At	$K\alpha_2$	H	10	50	85	6	78.930	1.57050 5	11.87	16.98	20.54	20.70	21.24	24.17	27.08	27.82	29.01	29.64	32.33	45.91	66.93	69.68	70.77
Gd	$L\gamma_8$		1	.1	64	6	7.892	1.57070 4	11.87	16.98	20.54	20.70	21.25	24.18	27.08	27.83	29.01	29.64	32.33	45.92	66.94	69.69	70.78
Pb	$L\gamma_4$		2	.1	82	6	15.775	1.57160 4	11.88	16.99	20.56	20.71	21.26	24.19	27.10			29.66	32.35	45.95	66.98	69.74	70.83
Zr	$K\alpha_1$		2	100	40	6	15.772	1.57186 5	11.88	16.99	20.56	20.72	21.26	24.20	27.10			29.67	32.36	45.95	67.00	69.75	70.84
Ho	$K\alpha_{1,2}$		6	150	67	6	47.253	1.57400 6	11.90	17.01	20.59	20.75	21.29	24.23	27.14	27.89	29.07	29.71	32.40	46.02	67.10	69.86	70.95
Pb	$L\gamma_4$p		2	.1	82	6	15.750	1.57412 5	11.90	17.02	20.59	20.75	21.29	24.23	27.14			29.71	32.41	• .02	67.11	69.87	70.96
Os	$K\alpha_1$		8	100	76	6	62.990	1.57435 6	11.90	17.02	20.59	20.75	21.30	24.23	27.15	27.89	29.08	29.71	32.41	46.03	67.12	69.88	70.97
Zr	$K\alpha_{1,2}$		2	150	40	6	15.744	1.57467 5	11.90	17.02	20.60	20.75	21.30	24.24	27.15			29.72	32.42	46.04	67.13	69.89	70.99
Hf	$K\beta_3$	H	8	12	72	6	62.969	1.57488 5	11.90	17.02	20.60	20.76	21.30	24.24	27.16	27.90	29.09	29.72	32.42	46.05	67.14	69.90	71.00
Po	$L\gamma_1$		2	10	84	6	15.741	1.57496 5	11.90	17.02	20.60	20.76	21.31	24.24	27.16			29.73	32.42	46.05	67.15	69.91	71.00
Lu	$K\beta_2$	H	8	9	71	6	62.956	1.57520 4	11.90	17.03	20.60	20.76	21.31	24.25	27.16	27.91	29.10	29.73	32.43	46.06	67.16	69.92	71.02
Tl	$K\alpha_2$		9	50	81	6	70.820	1.57532 6	11.91	17.03	20.61	20.76	21.31	24.25	27.16	27.91	29.10	29.73	32.43	46.06	67.16	69.93	71.02
Hg	$K\alpha_1$		9	100	80	6	70.807	1.57561 6	11.91	17.03	20.61	20.77	21.31	24.25	27.17	27.92	29.10	29.74	32.44	46.07	67.18	69.94	71.04
U	$L\beta_6$		2	.1	92	6	15.723	1.57676 5	11.92	17.04	20.62	20.78	21.33	24.27	27.19			29.76	32.46	46.11	67.23	70.00	71.10
Pb	L_1-$N_{6,7}$	8	2	.01	82	6	15.723	1.57680 4	11.92	17.04	20.63	20.78	21.33	24.27	27.19			29.76	32.46	46.11	67.24	70.00	71.10
Lu	Ln		1	1	71	6	7.856	1.57790 4	11.93	17.06	20.64	20.80	21.35	24.29	27.21	27.96	29.15	29.78	32.49	46.14	67.29	70.06	71.16
Pb	L_1-O_1	F	2	.01	82	6	15.711	1.57802 5	11.93	17.06	20.64	20.80	21.35	24.29	27.21			29.79	32.49	46.15	67.29	70.06	71.16
Ac	$L\beta_1$	H	2	50	89	6	15.710	1.57806 5	11.93	17.06	20.64	20.80	21.35	24.29	27.21			29.79	32.49	46.15	67.30	70.07	71.17
Bi	$L\gamma_3$		2	2	83	6	15.708	1.57834 5	11.93	17.06	20.65	20.80	21.35	24.30	27.22			29.79	32.50	46.16	67.31	70.08	71.18
Tb	$L\gamma_5$		1	.1	65	6	7.852	1.57870 4	11.93	17.07	20.65	20.81	21.36	24.30	27.22	27.97	29.16	29.80	32.50	46.17	67.33	70.10	71.20
Re	Lt	B	1	.01	75	6	7.851	1.57890 4	11.93	17.07	20.65	20.81	21.36	24.31	27.23	27.98	29.17	29.80	32.51	46.17	67.34	70.11	71.21
Ce	$K\beta_1$		5	22	58	6	39.251	1.57908 6	11.93	17.07	20.66	20.81	21.36	24.31	27.23	27.98	29.17	29.81	32.51	46.18	67.35	70.12	71.22
Po	$K\alpha_{1,2}$	H	10	150	84	6	78.452	1.58007 5	11.94	17.08	20.67	20.83	21.38	24.32	27.25	28.00	29.19	29.82	32.53	46.21	67.39	70.17	71.27
Zr	$K\alpha_2$		2	50	40	6	15.688	1.58030 5	11.94	17.08	20.67	20.83	21.38	24.33	27.25			29.83	32.54	46.22	67.41	70.18	71.28
Hf	$L\alpha_2$		1	10	72	6	7.843	1.58046 5	11.94	17.08	20.67	20.83	21.38	24.33	27.25	28.00	29.20	29.83	32.54	46.22	67.41	70.19	71.29
Bi	$L\gamma_6$		2	.01	83	6	15.683	1.58086 5	11.95	17.09	20.68	20.84	21.39	24.34	27.26			29.84	32.55	46.23	67.43	70.21	71.31
Eu	$K\beta_1$		6	23	63	6	47.030	1.58146 6	11.95	17.10	20.69	20.84	21.39	24.35	27.27	28.02	29.21	29.85	32.56	46.25	67.46	70.24	71.34

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypsum (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Ce	$K\beta_3$		5	10	58	6	39.163	1.58260	6	11.96	17.11	20.70	20.86	21.41	24.36	27.29	28.04	29.24	29.87	32.59	46.29	67.52	70.30	71.40
Cf	$L\alpha_1$		2	100	98	3	15.652	1.58400		11.97	17.12	20.72	20.88	21.43	24.39	27.32			29.90	32.62	46.33	67.58	70.37	71.47
Th	$L\beta_{17}$	F	2	.01	90	6	15.644	1.58472	5	11.98	17.13	20.73	20.89	21.44	24.40	27.33			29.91	32.63	46.35	67.62	70.41	71.51
Os	Ll		1	3	76	6	7.821	1.58498	5	11.98	17.13	20.73	20.89	21.44	24.40	27.33	28.09	29.28	29.92	32.64	46.36	67.63	70.42	71.53
Th	$L\beta_4$		2	4	90	6	15.640	1.58514	5	11.98	17.14	20.74	20.89	21.44	24.40	27.34			29.92	32.64	46.37	67.64	70.43	71.53
Eu	$K\beta_3$		6	11	63	6	46.896	1.58599	6	11.99	17.14	20.75	20.91	21.46	24.42	27.35	28.10	29.30	29.94	32.66	46.39	67.68	70.47	71.58
Th	$L\beta_2$		2	20	90	6	15.621	1.58708	5	11.99	17.16	20.76	20.92	21.47	24.43	27.37			29.96	32.68	46.43	67.73	70.53	71.64
Os	$K\alpha_{1,2}$		8	150	76	6	62.477	1.58727	6	12.00	17.16	20.76	20.92	21.47	24.44	27.37	28.13	29.32	29.96	32.69	46.43	67.74	70.54	71.65
Er	$L\beta_1$		1	50	68	6	7.809	1.58730	4	12.00	17.16	20.76	20.92	21.47	24.44	27.38	28.13	29.32	29.96	32.69	46.43	67.74	70.54	71.65
8i	L_2-O_3	8	2	.01	83	6	15.615	1.58768	5	12.00	17.16	20.77	20.93	21.48	24.44	27.38			29.97	32.69	46.44	67.76	70.56	71.67
Dy	$L\beta_5$		1	.1	66	6	7.804	1.58837	5	12.00	17.17	20.78	20.94	21.49	24.45	27.39	28.15	29.34	29.98	32.71	46.47	67.80	70.59	71.70
Yb	L_2-M_2	8	1	.01	70	6	7.804	1.58844	5	12.00	17.17	20.78	20.94	21.49	24.45	27.40	28.15	29.35	29.99	32.71	46.47	67.80	70.60	71.71
Hf	$K\alpha_2$		7	50	72	6	54.602	1.58917	6	12.01	17.18	20.79	20.95	21.50	24.47	27.41	28.16	29.36	30.00	32.73	46.49	67.83	70.63	71.74
Au	$K\beta_1$		10	27	79	6	77.971	1.58982	6	12.02	17.19	20.80	20.96	21.51	24.48	27.42	28.17	29.37	30.01	32.74	46.51	67.87	70.67	71.78
8k	$L\gamma_1$		3	10	97	3	23.389	1.59000		12.02	17.19	20.80	20.96	21.51	24.48	27.42	28.18	29.38	30.02	32.74	46.52	67.87	70.68	71.79
Hg	$K\alpha_{1,2}$		9	150	80	6	70.154	1.59028	6	12.02	17.19	20.80	20.96	21.52	24.48	27.43	28.18	29.38	30.02	32.75	46.52	67.89	70.69	71.80
Eu	$L\gamma_3$		1	1	63	6	7.795	1.59030	4	12.02	17.19	20.80	20.96	21.52	24.48	27.43	28.18	29.38	30.02	32.75	46.53	67.89	70.69	71.80
Th	$L\beta_{15}$		2	1	90	6	15.585	1.59078	5	12.02	17.20	20.81	20.97	21.52	24.49	27.44			30.03	32.76	46.54	67.91	70.71	71.83
Bi	$L\gamma_2$		2	1	83	6	15.580	1.59130	5	12.03	17.20	20.82	20.98	21.53	24.50	27.45			30.04	32.77	46.56	67.94	70.74	71.86
Dy	AL_3		1		66	6	7.788	1.59160	4	12.03	17.21	20.82	20.98	21.53	24.50	27.45	28.21	29.41	30.05	32.78	46.57	67.95	70.76	71.87
Pt	$K\beta_2'$		10	10	78	6	77.864	1.59200	5	12.03	17.21	20.83	20.99	21.54	24.51	27.46	28.21	29.41	30.06	32.79	46.58	67.97	70.78	71.89
Gd	$L\gamma_1$		1	5	64	6	7.784	1.59240	4	12.03	17.21	20.83	20.99	21.54	24.52	27.46	28.22	29.42	30.06	32.79	46.59	67.99	70.80	71.91
Ho	$K\alpha_2$		6	50	67	6	46.692	1.59292	6	12.04	17.22	20.84	21.00	21.55	24.52	27.47	28.23	29.43	30.07	32.80	46.61	68.02	70.82	71.94
Pt	$K\beta_2''$		10	10	78	6	77.772	1.59390	5	12.05	17.23	20.85	21.01	21.56	24.54	27.49	28.25	29.45	30.09	32.83	46.64	68.06	70.87	71.99
Bi	Lv		B	2	.01	83	6	15.549	1.59442	5	12.05	17.24	20.86	21.02	21.57	24.55	27.50			30.10	32.84	46.65	68.09	70.90	72.02
8i	$L\gamma_8$			2	.1	83	6	15.547	1.59460	4	12.05	17.24	20.86	21.02	21.57	24.55	27.50			30.11	32.84	46.66	68.10	70.91	72.03
Eu	$L\gamma_2$			1	1	63	6	7.766	1.59610	4	12.06	17.25	20.88	21.04	21.59	24.57	27.53	28.29	29.49	30.13	32.87	46.71	68.17	70.99	72.11
Sm	$K\beta_2$		H	6	8	62	6	46.566	1.59720	4	12.07	17.27	20.90	21.05	21.61	24.59	27.55	28.31	29.51	30.16	32.90	46.74	68.22	71.04	72.16
Au	$K\beta_3$			10	13	79	6	77.567	1.59810	6	12.08	17.28	20.91	21.07	21.62	24.61	27.57	28.32	29.53	30.17	32.91	46.77	68.27	71.09	72.21
Dy	$L\beta_9$		8	1	.01	66	6	7.749	1.59973	5	12.09	17.29	20.93	21.09	21.64	24.63	27.59	28.35	29.56	30.20	32.95	46.82	68.35	71.17	72.30
Te	$K\beta_1$			4	20	52	6	30.990	1.59998	6	12.09	17.30	20.93	21.09	21.65	24.64	27.60	28.36	29.56	30.21	32.95	46.83	68.36	71.19	72.31
Sm	AL_1			1		62	6	7.747	1.60020	4	12.09	17.30	20.93	21.09	21.65	24.64	27.60	28.36	29.57	30.21	32.96	46.83	68.37	71.20	72.32
La	$K\beta_2$			5	7	57	6	38.723	1.60058	6	12.10	17.30	20.94	21.10	21.66	24.64	27.61	28.37	29.58	30.22	32.97	46.84	68.39	71.22	72.34
Er	$L\beta_4$			1	5	68	6	7.744	1.60070	4	12.10	17.31	20.94	21.10	21.66	24.65	27.61	28.37	29.58	30.22	32.97	46.85	68.39	71.22	72.35
Pm	$K\alpha_1$		H	5	100	61	6	38.718	1.60080	6	12.10	17.31	20.94	21.10	21.66	24.65	27.61	28.37	29.58	30.23	32.97	46.85	68.40	71.23	72.35
Cs	$K\alpha_1$			4	100	55	6	30.968	1.60116	6	12.10	17.31	20.95	21.11	21.66	24.65	27.62	28.38	29.59	30.23	32.98	46.86	68.42	71.25	72.37
Rh	$K\beta_4$		B	3	.01	45	6	23.213	1.60203	5	12.11	17.32	20.96	21.12	21.68	24.67	27.63	28.39	29.60	30.25	33.00	46.89	68.46	71.29	72.42
Te	$K\beta_3$			4	9	52	6	30.939	1.60264	6	12.11	17.33	20.97	21.13	21.68	24.68	27.64	28.41	29.61	30.26	33.01	46.91	68.49	71.32	72.45
8i	L_1-N_1	8	2	.01	83	6	15.453	1.60440	4	12.13	17.35	20.99	21.15	21.71	24.70	27.68			30.29	33.05	46.96	68.57	71.41	72.54
Dy	$L\beta_7$			1	.1	66	6	7.726	1.60447	5	12.13	17.35	20.99	21.15	21.71	24.71	27.68	28.44	29.65	30.30	33.05	46.96	68.58	71.42	72.54
Pb	$L\gamma_{11}$		8	2	.01	82	6	15.450	1.60466	5	12.13	17.35	20.99	21.15	21.71	24.71	27.68			30.30	33.05	46.97	68.59	71.43	72.55
Cd	$K\alpha_1$			3	100	48	6	23.170	1.60503	6	12.13	17.35	21.00	21.16	21.72	24.71	27.69	28.45	29.66	30.31	33.06	46.98	68.61	71.44	72.57
Lu	$K\alpha_1$			7	100	71	6	54.061	1.60509	6	12.13	17.35	21.00	21.16	21.72	24.72	27.69	28.45	29.66	30.31	33.06	46.98	68.61	71.45	72.58
Rh	$K\beta_2$			3	4	45	6	23.169	1.60509	5	12.13	17.35	21.00	21.16	21.72	24.72	27.69	28.45	29.66	30.31	33.06	46.98	68.61	71.45	72.58
Rh	$K\beta_2''$			3	.1	45	6	23.164	1.60539	5	12.13	17.36	21.00	21.16	21.72	24.72	27.69	28.46	29.67	30.31	33.07	46.99	68.62	71.46	72.59
Ra	$L\beta_3$			2	6	88	6	15.442	1.60546	5	12.13	17.36	21.00	21.16	21.72	24.72	27.69			30.32	33.07	47.00	68.63	71.47	72.60
Cs	$K\alpha_{1,2}$			4	150	55	6	30.851	1.60722	6	12.15	17.38	21.03	21.19	21.75	24.75	27.73	28.49	29.70	30.35	33.11	47.05	68.71	71.56	72.69
Pb	L_1-N_4	8	2	.01	82	6	15.425	1.60728	5	12.15	17.38	21.03	21.19	21.75	24.75	27.73			30.35	33.11	47.05	68.71	71.56	72.69
Sm	$L\gamma_4$			1	.1	62	6	7.712	1.60728	5	12.15	17.38	21.03	21.19	21.75	24.75	27.73	28.49	29.70	30.35	33.11	47.05	68.71	71.56	72.69
Dy	$L\beta_{10}$	8	1	.01	66	6	7.712	1.60743	5	12.15	17.38	21.03	21.19	21.75	24.75	27.73	28.49	29.71	30.35	33.11	47.06	68.72	71.57	72.70
Ra	L_3-$P_{2,3}$	8	2	.01	88	6	15.422	1.60760	4	12.15	17.38	21.03	21.19	21.75	24.75	27.73			30.36	33.12	47.06	68.73	71.58	72.71
8i	$K\alpha_1$		10	100	83	6	77.095	1.60789	6	12.15	17.38	21.04	21.20	21.76	24.76	27.74	28.50	29.71	30.36	33.12	47.07	68.74	71.59	72.72
Cf	$L\alpha_2$			2	10	98	3	15.418	1.60800		12.15	17.38	21.04	21.20	21.76	24.76	27.74			30.36	33.12	47.07	68.75	71.60	72.73
Co	AK			1		27	6	7.708	1.60815	5	12.15	17.39	21.04	21.20	21.76	24.76	27.74	28.51	29.72	30.37	33.13	47.08	68.76	71.61	72.74
Pm	$K\alpha_{1,2}$		H	5	150	61	6	38.532	1.60854	6	12.16	17.39	21.05	21.21	21.77	24.77	27.75	28.51	29.73	30.37	33.14	47.09	68.78	71.63	72.76
Co	$K\beta_5$		8	1	.03	27	6	7.705	1.60891	5 4	12.16	17.39	21.05	21.21	21.77	24.77	27.76	28.52	29.73	30.38	33.14	47.10	68.79	71.64	72.78
Cd	$K\alpha_{1,2}$			3	150	48	6	23.106	1.60944	6	12.16	17.40	21.06	21.22	21.78	24.78	27.76	28.53	29.74	30.39	33.15	47.12	68.82	71.67	72.80
Re	$K\beta_1$			9	26	75	6	69.298	1.60992	6	12.17	17.41	21.06	21.22	21.78	24.79	27.77	28.54	29.75	30.40	33.17	47.13	68.84	71.70	72.83
Ra	L_3-P_1			2	.01	88	6	15.399	1.61000	4	12.17	17.41	21.06	21.23	21.79	24.79	27.77			30.40	33.17	47.14	68.85	71.70	72.83
U	Ln			2	1	92	6	15.397	1.61018	5	12.17	17.41	21.07	21.23	21.79	24.79	27.78			30.41	33.17	47.14	68.86	71.71	72.84
Ho	$K\beta_1$			7	22	67	6	53.868	1.61084	5	12.17	17.42	21.08	21.24	21.80	24.81	27.79	28.55	29.77	30.42	33.18	47.16	68.89	71.74	72.88
Ra	$L\beta_5$			2	1	88	6	15.375	1.61254	5	12.19	17.43	21.10	21.26	21.82	24.83	27.82			30.45	33.22	47.22	68.97	71.83	72.97
Ta	Ls		8	1	.01	73	6	7.587	1.61264	5	12.19	17.44	21.10	21.26	21.82	24.83	27.82	28.59	29.80	30.45	33.22	47.22	68.98	71.84	72.97
Po	$K\alpha_2$		H	10	50	84	6	76.851	1.61300	5	12.19	17.44	21.10	21.27	21.83	24.84	27.83	28.59	29.81	30.46	33.23	47.23	68.99	71.85	72.99
Os	$K\alpha_2$			8	50	76	6	61.476	1.61311	6	12.19	17.44	21.11	21.27	21.83	24.84	27.83	28.59	29.81	30.46	33.23	47.23	69.00	71.86	73.00

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
W	$K\beta_2'$		9	10	74	6	69.089	1.61479	6		12.20	17.46	21.13	21.29	21.85	24.87	27.86	28.63	29.84	30.50	33.27	47.29	69.08	71.95	73.09
Pa	$L\beta_6$		2	.1	91	6	15.343	1.61580	4		12.21	17.47	21.14	21.30	21.86	24.88	27.88			30.52	33.29	47.32	69.13	72.00	73.14
Ho	$K\beta_3$		7	11	67	6	53.702	1.61581	5		12.21	17.47	21.14	21.30	21.86	24.88	27.88	28.64	29.86	30.52	33.29	47.32	69.13	72.00	73.14
Lu	$K\alpha_{1,2}$		7	150	71	6	53.687	1.61624	6		12.22	17.47	21.15	21.31	21.87	24.89	27.88	28.65	29.87	30.52	33.30	47.33	69.15	72.02	73.16
W	$K\beta_2''$		9	10	74	6	69.020	1.61640	5		12.22	17.48	21.15	21.31	21.87	24.89	27.89	28.65	29.87	30.53	33.30	47.34	69.16	72.03	73.17
Th	L_3-N_3	B	2	.01	90	6	15.338	1.61640	4		12.22	17.48	21.15	21.31	21.87	24.89	27.89			30.53	33.30	47.34	69.16	72.03	73.17
Dy	$K\alpha_1$		6	100	66	6	45.991	1.61720	6		12.22	17.48	21.16	21.32	21.88	24.90	27.90	28.67	29.89	30.54	33.32	47.36	69.20	72.07	73.21
Tl	$L_1-O_{4,5}$	B	2	.01	81	6	15.330	1.61722	5		12.22	17.49	21.16	21.32	21.88	24.90	27.90			30.54	33.32	47.36	69.20	72.07	73.21
Re	$K\beta_3$		9	12	75	6	68.983	1.61727	6		12.22	17.49	21.16	21.32	21.88	24.91	27.90	28.67	29.89	30.54	33.32	47.36	69.20	72.07	73.22
Cd	$K\alpha_2$		3	50	48	6	22.980	1.61827	6		12.23	17.50	21.17	21.34	21.90	24.92	27.92	28.69	29.91	30.56	33.34	47.39	69.25	72.13	73.27
Lu	$K\beta_1$	H	8	65	71	6	61.272	1.61848	5		12.23	17.50	21.18	21.34	21.90	24.92	27.92	28.69	29.91	30.57	33.35	47.40	69.26	72.14	73.28
Cs	$K\alpha_2$		4	50	55	6	30.620	1.61934	6		12.24	17.51	21.19	21.35	21.91	24.94	27.94	28.71	29.93	30.58	33.36	47.43	69.30	72.18	73.33
Lu	$L\alpha_1$		1	100	71	6	7.654	1.61951	5		12.24	17.51	21.19	21.35	21.92	24.94	27.94	28.71	29.93	30.59	33.37	47.43	69.31	72.19	73.33
Hg	$K\alpha_2$		9	50	80	6	68.883	1.61962	6		12.24	17.51	21.19	21.35	21.92	24.94	27.94	28.71	29.94	30.59	33.37	47.44	69.32	72.20	73.34
Bk	$L\alpha_1$		2	100	97	3	15.304	1.62000			12.24	17.52	21.20	21.36	21.92	24.95	27.95			30.60	33.38	47.45	69.34	72.22	73.36
Ho	$L\beta_3$		1	6	67	6	7.650	1.62030	4		12.25	17.52	21.20	21.36	21.93	24.95	27.96	28.72	29.95	30.60	33.39	47.46	69.35	72.23	73.38
Co	$K\beta_{1,3}$		1	20	27	6	7.648	1.62079	5	4	12.25	17.52	21.21	21.37	21.93	24.96	27.96	28.73	29.96	30.61	33.40	47.47	69.37	72.26	73.40
Th	L_1-M_1	F	2	.01	90	6	15.287	1.62174	5		12.26	17.53	21.22	21.38	21.95	24.98	27.98			30.63	33.42	47.50	69.42	72.31	73.45
Au	$K\alpha_1$		9	100	79	6	68.792	1.62175	6		12.26	17.53	21.22	21.38	21.95	24.98	27.98	28.75	29.98	30.63	33.42	47.50	69.42	72.31	73.45
Dy	$K\beta_2$	H	7	9	66	6	53.500	1.62190	4		12.26	17.54	21.22	21.38	21.95	24.98	27.98	28.75	29.98	30.63	33.42	47.51	69.43	72.31	73.46
Re	$K\alpha_1$		8	100	75	6	61.130	1.62225	6		12.26	17.54	21.23	21.39	21.95	24.98	27.99	28.76	29.99	30.64	33.43	47.52	69.45	72.33	73.48
Rh	$K\beta_5'$	B	3	.05	45	6	22.913	1.62303	5		12.27	17.55	21.24	21.40	21.96	25.00	28.00	28.77	30.00	30.66	33.44	47.54	69.48	72.37	73.52
Rh	$K\beta_5''$	B	3	.05	45	6	22.906	1.62354	5		12.27	17.55	21.24	21.41	21.97	25.00	28.01	28.78	30.01	30.66	33.45	47.56	69.51	72.40	73.55
Tl	$L\gamma_4$		2	.1	81	6	15.269	1.62368	5		12.27	17.56	21.25	21.41	21.97	25.01	28.02			30.67	33.46	47.56	69.52	72.41	73.55
Oy	$L\beta_{2,15}$		1	20	66	6	7.634	1.62369	5		12.27	17.56	21.25	21.41	21.97	25.01	28.02	28.79	30.01	30.67	33.46	47.56	69.52	72.41	73.55
Ho	$L\beta_6$		1	.1	67	6	7.634	1.62370	4		12.27	17.56	21.25	21.41	21.97	25.01	28.02	28.79	30.01	30.67	33.46	47.56	69.52	72.41	73.56
Pm	$K\alpha_2$	H	5	50	61	6	38.165	1.62401	6		12.27	17.56	21.25	21.41	21.98	25.01	28.02	28.79	30.02	30.67	33.46	47.57	69.53	72.42	73.57
Bi	$K\alpha_{1,2}$		10	150	83	6	76.315	1.62432	6		12.28	17.56	21.25	21.42	21.98	25.02	28.03	28.80	30.02	30.68	33.47	47.58	69.55	72.44	73.59
W	Lt		8	1	.01	74	6	7.631	1.62440	4		12.28	17.56	21.26	21.42	21.98	25.02	28.03	28.80	30.03	30.68	33.47	47.58	69.55	72.44	73.59
Lu	$K\beta_3$	H	8	12	71	6	61.037	1.62472	5		12.28	17.57	21.26	21.42	21.99	25.02	28.03	28.81	30.03	30.69	33.48	47.59	69.57	72.46	73.61
Pu	$L\gamma_4$		3	.1	94	6	22.888	1.62480	4		12.28	17.57	21.26	21.42	21.99	25.02	28.04	28.81	30.03	30.69	33.48	47.60	69.57	72.46	73.61
Tl	$L\gamma_4p$		2	.1	81	6	15.246	1.62616	5		12.29	17.58	21.28	21.44	22.01	25.04	28.06			30.72	33.51	47.64	69.64	72.53	73.68
Bi	$L\gamma_1$		2	10	83	6	15.245	1.62622	5		12.29	17.58	21.28	21.44	22.01	25.05	28.06			30.72	33.51	47.64	69.64	72.54	73.69
Yb	$K\beta_2$	H	8	9	70	6	60.974	1.62640	4		12.29	17.59	21.28	21.44	22.01	25.05	28.06	28.84	30.06	30.72	33.51	47.65	69.65	72.55	73.70
Dy	$K\alpha_{1,2}$		6	150	66	6	45.724	1.62662	6		12.29	17.59	21.28	21.45	22.01	25.05	28.07	28.84	30.07	30.72	33.52	47.65	69.66	72.56	73.71
Eu	AL_2		1		63	6	7.618	1.62710	4		12.30	17.59	21.29	21.45	22.02	25.06	28.08	28.85	30.08	30.73	33.53	47.67	69.68	72.58	73.73
Ra	$L\beta_1$		2	50	88	6	15.233	1.62750	5		12.30	17.60	21.30	21.46	22.02	25.07	28.08			30.74	33.54	47.68	69.70	72.60	73.76
Eu	$L\gamma_6$	A	1	.01	63	6	7.613	1.62820	4		12.31	17.60	21.31	21.47	22.03	25.08	28.09	28.87	30.10	30.76	33.55	47.70	69.74	72.64	73.79
Am	$L\gamma_6$		3	.01	95	6	22.824	1.62933	5		12.32	17.62	21.32	21.48	22.05	25.09	28.11	28.89	30.12	30.78	33.58	47.74	69.79	72.70	73.85
Pb	$L\gamma_3$		2	2	82	6	15.215	1.62940	4		12.32	17.62	21.32	21.48	22.05	25.10	28.12			30.78	33.58	47.74	69.80	72.70	73.86
Pu	$L\gamma_4p$		3	.1	94	6	22.820	1.62960	4		12.32	17.62	21.32	21.49	22.05	25.10	28.12	28.89	30.12	30.78	33.58	47.75	69.81	72.71	73.87
Tl	L_1-O_1	F	2	.01	81	6	15.208	1.63022	5		12.32	17.63	21.33	21.50	22.06	25.11	28.13			30.79	33.60	47.77	69.84	72.74	73.90
Lu	$L\alpha_2$		1	10	71	6	7.604	1.63029	5		12.32	17.63	21.33	21.50	22.06	25.11	28.13	28.91	30.14	30.80	33.60	47.77	69.84	72.75	73.90
Re	Ll		1	3	75	6	7.602	1.63056	5		12.32	17.63	21.34	21.50	22.07	25.11	28.14	28.91	30.14	30.80	33.60	47.78	69.85	72.76	73.92
Rb	$K\beta_4$	C	2	.00	37	6	15.202	1.63080	4		12.33	17.63	21.34	21.50	22.07	25.12	28.14			30.81	33.61	47.78	69.87	72.77	73.93
Pb	L_2-P_1		2	.1	82	6	15.194	1.63166	5		12.33	17.64	21.35	21.51	22.08	25.13	28.16			30.82	33.63	47.81	69.91	72.82	73.98
Sb	$K\beta_2$	D	4	5	51	6	30.388	1.63172	6		12.33	17.64	21.35	21.51	22.08	25.13	28.16	28.93	30.16	30.82	33.63	47.81	69.91	72.82	73.98
Ra	$L\beta_7$		2	.1	88	6	15.187	1.63240	4		12.34	17.65	21.36	21.52	22.09	25.14	28.17			30.84	33.64	47.83	69.94	72.86	74.01
Rb	$K\beta_2$		2	3	37	6	15.183	1.63290	5		12.34	17.66	21.37	21.53	22.10	25.15	28.18			30.85	33.65	47.85	69.97	72.88	74.04
Pb	$L\gamma_6$		2	.01	82	6	15.176	1.63366	5		12.35	17.66	21.38	21.54	22.11	25.16	28.19			30.86	33.67	47.87	70.01	72.92	74.08
Eu	$L\gamma_8$		1	.1	63	6	7.584	1.63460	4		12.36	17.67	21.39	21.55	22.12	25.18	28.21	28.98	30.22	30.88	33.69	47.90	70.05	72.97	74.13
Re	$K\alpha_{1,2}$		8	150	75	6	60.648	1.63513	6		12.36	17.68	21.40	21.56	22.13	25.19	28.22	28.99	30.23	30.89	33.70	47.92	70.08	73.00	74.16
Yb	Ln		1	1	70	6	7.579	1.63560	5		12.36	17.69	21.40	21.57	22.14	25.19	28.23	29.00	30.24	30.90	33.71	47.93	70.10	73.02	74.18
Au	$K\alpha_{1,2}$		9	150	79	6	68.177	1.63640	6		12.37	17.69	21.41	21.58	22.15	25.21	28.24	29.02	30.25	30.91	33.73	47.96	70.14	73.06	74.23
Pt	$K\beta_1$		10	27	78	6	75.735	1.63675	6		12.37	17.70	21.42	21.58	22.15	25.21	28.25	29.02	30.26	30.92	33.73	47.97	70.16	73.08	74.25
Rh	$K\beta_1$		3	16	45	6	22.720	1.63681	6		12.37	17.70	21.42	21.58	22.15	25.21	28.25	29.02	30.26	30.92	33.74	47.97	70.16	73.09	74.25
Ra	Lu	B	2	.01	88	6	15.143	1.63720	4		12.37	17.70	21.42	21.59	22.16	25.22	28.25			30.93	33.74	47.98	70.18	73.11	74.27
Th	L_3-N_2	B	2	.01	90	6	15.136	1.63800	4		12.38	17.71	21.44	21.60	22.17	25.23	28.27			30.94	33.76	48.01	70.22	73.15	74.31
Cm	$L\gamma_1$		3	10	96	3	22.703	1.63800			12.38	17.71	21.44	21.60	22.17	25.23	28.27	29.05	30.28	30.94	33.76	48.01	70.22	73.15	74.31
Sm	$K\beta_1$		6	22	62	6	45.405	1.63806	5		12.38	17.71	21.44	21.60	22.17	25.23	28.27	29.05	30.28	30.95	33.76	48.01	70.22	73.15	74.31
Lu	$K\alpha_2$		7	50	71	6	52.956	1.63857	6		12.39	17.72	21.44	21.61	22.18	25.24	28.28	29.06	30.29	30.96	33.77	48.02	70.25	73.18	74.34
Rh	$K\beta_3$		3	8	45	6	22.695	1.63860	6		12.39	17.72	21.44	21.61	22.18	25.24	28.28	29.06	30.29	30.96	33.77	48.03	70.25	73.18	74.34
Ir	$K\beta_2'$		10	10	77	6	75.606	1.63956	6		12.39	17.73	21.46	21.62	22.19	25.25	28.29	29.07	30.31	30.98	33.79	48.06	70.30	73.23	74.39
La	$K\beta_1$		5	21	57	6	37.795	1.63991	6		12.40	17.73	21.46	21.62	22.19	25.26	28.30	29.08	30.32	30.98	33.80	48.07	70.31	73.25	74.41
Pb	L_2-O_3	B	2	.01	82	6	15.117	1.64000	4		12.40	17.73	21.46	21.63	22.20	25.26	28.30			30.98	33.80	48.07	70.32	73.25	74.42

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Gd	$L\gamma_5$		1	.1	64	6	7.553	1.64120	4	12.41	17.75	21.48	21.64	22.21	25.28	28.32	29.10	30.34	31.01	33.83	48.11	70.38	73.31	74.48
Ir	$K\beta_2''$		10	10	77	6	75.516	1.64150	5	12.41	17.75	21.48	21.65	22.22	25.28	28.33	29.11	30.35	31.01	33.84	48.12	70.39	73.33	74.50
Pb	$L\gamma_2$		2	1	82	6	15.099	1.64200	4	12.41	17.76	21.49	21.65	22.22	25.29	28.34			31.02	33.85	48.13	70.42	73.35	74.52
Sm	$K\beta_3$		6	10	62	6	45.281	1.64256	5	12.42	17.76	21.50	21.66	22.23	25.30	28.35	29.13	30.37	31.03	33.86	48.15	70.44	73.38	74.55
La	$K\beta_3$		5	9	57	6	37.714	1.64343	6	12.42	17.77	21.51	21.67	22.24	25.32	28.36	29.14	30.39	31.05	33.88	48.18	70.49	73.43	74.60
Rb	$K\beta_5$		2	.06	37	6	15.082	1.64380	4	12.42	17.77	21.51	21.68	22.25	25.32	28.37			31.06	33.88	48.19	70.50	73.45	74.62
Bk	$L\alpha_2$		2	10	97	3	15.080	1.64400		12.43	17.78	21.51	21.68	22.25	25.32	28.37			31.06	33.89	48.19	70.51	73.46	74.63
Pt	$K\beta_3$		10	12	78	6	75.355	1.64501	6	12.43	17.79	21.53	21.69	22.26	25.34	28.39	29.17	30.42	31.08	33.91	48.23	70.56	73.51	74.68
Dy	$K\alpha_2$		6	50	66	6	45.200	1.64548	6	12.44	17.79	21.53	21.70	22.27	25.35	28.40	29.18	30.42	31.09	33.92	48.24	70.59	73.54	74.71
Pb	Lv	B	2	.01	82	6	15.057	1.64654	5	12.45	17.80	21.55	21.71	22.29	25.36	28.42			31.11	33.94	48.27	70.64	73.59	74.76
Pb	$L\gamma_8$		2	.1	82	6	15.050	1.64730	5	12.45	17.81	21.56	21.72	22.30	25.38	28.43			31.13	33.96	48.30	70.68	73.63	74.81
Ho	$L\beta_1$		1	50	67	6	7.524	1.64750	4	12.45	17.82	21.56	21.73	22.30	25.38	28.43	29.22	30.46	31.13	33.96	48.30	70.69	73.64	74.82
Si	L_2-N_3	B	2	.01	83	6	15.029	1.64960	4	12.47	17.84	21.59	21.75	22.33	25.41	28.47			31.17	34.01	48.37	70.79	73.75	74.93
Tb	AL_3		1		65	6	7.514	1.64970	4	12.47	17.84	21.59	21.75	22.33	25.41	28.47	29.26	30.50	31.17	34.01	48.37	70.80	73.76	74.93
Tb	$L\beta_5$		1	.1	65	6	7.508	1.65100	4	12.48	17.85	21.61	21.77	22.35	25.43	28.50	29.28	30.53	31.20	34.04	48.41	70.86	73.82	75.00
Pb	$K\alpha_1$		10	100	82	6	74.956	1.65376	6	12.50	17.88	21.64	21.81	22.38	25.48	28.55	29.33	30.58	31.25	34.10	48.50	71.00	73.97	75.15
Pm	$K\beta_2$	H	6	8	61	6	44.929	1.65540	4	12.51	17.90	21.67	21.83	22.41	25.50	28.57	29.36	30.61	31.28	34.13	48.55	71.08	74.05	75.24
Fr	$L\beta_3$	H	2	10	87	6	14.973	1.65578	5	12.52	17.91	21.67	21.84	22.41	25.51	28.58			31.29	34.14	48.56	71.10	74.07	75.26
Th	$L\beta_6$		2	.1	90	6	14.973	1.65580	5	12.52	17.91	21.67	21.84	22.41	25.51	28.58			31.29	34.14	48.56	71.10	74.07	75.26
Sm	$L\gamma_3$		1	1	62	6	7.485	1.65601	5	12.52	17.91	21.67	21.84	22.42	25.51	28.58	29.37	30.62	31.29	34.14	48.57	71.11	74.08	75.27
Yb	$K\alpha_1$		7	100	70	6	52.380	1.65658	6	12.52	17.91	21.68	21.85	22.42	25.52	28.59	29.38	30.64	31.30	34.16	48.59	71.14	74.11	75.30
Bi	$K\alpha_2$		10	50	83	6	74.802	1.65717	6	12.53	17.92	21.69	21.85	22.43	25.53	28.61	29.39	30.65	31.32	34.17	48.61	71.16	74.15	75.33
Pb	L_1-N_1	B	2	.01	82	6	14.960	1.65718	5	12.53	17.92	21.69	21.85	22.43	25.53	28.61			31.32	34.17	48.61	71.17	74.15	75.33
Rb	$K\beta_1$		2	16	37	6	14.959	1.65736	5	12.53	17.92	21.69	21.86	22.43	25.53	28.61			31.32	34.17	48.61	71.17	74.16	75.34
Eu	$L\gamma_1$		1	5	63	6	7.479	1.65740	4	12.53	17.92	21.69	21.86	22.43	25.53	28.61	29.40	30.65	31.32	34.17	48.61	71.18	74.16	75.34
Tl	$L\gamma_{11}$		8	2	.01	81	6	14.957	1.65758	5	12.53	17.92	21.69	21.86	22.44	25.54	28.61			31.32	34.18	48.62	71.18	74.17	75.35
Y	$K\alpha_1$			2	100	39	6	14.956	1.65768	5	12.53	17.93	21.70	21.86	22.44	25.54	28.61			31.33	34.18	48.62	71.19	74.17	75.36
Ni	$K\alpha_1$			1	100	28	6	7.477	1.65791	6	12.53	17.93	21.70	21.86	22.44	25.54	28.62	29.41	30.66	31.33	34.18	48.63	71.20	74.18	75.37
Cm	$L\alpha_1$			2	100	96	3	14.953	1.65800		12.53	17.93	21.70	21.87	22.44	25.54	28.62			31.33	34.19	48.63	71.21	74.19	75.38
Rb	$K\beta_3$			2	8	37	6	14.949	1.65842	5	12.54	17.93	21.71	21.87	22.45	25.55	28.63			31.34	34.19	48.64	71.23	74.21	75.40
Tb	$L\beta_7$			1	.1	65	6	7.474	1.65850	4	12.54	17.93	21.71	21.87	22.45	25.55	28.63	29.42	30.67	31.34	34.20	48.65	71.23	74.21	75.40
Pa	Ln			2	1	91	6	14.944	1.65900	4	12.54	17.94	21.71	21.88	22.46	25.56	28.64			31.35	34.21	48.66	71.26	74.24	75.43
Ni	$K\alpha_{1,2}$			1	150	28	6	7.471	1.65919	6	12.54	17.94	21.72	21.88	22.46	25.56	28.64	29.43	30.68	31.36	34.21	48.67	71.26	74.25	75.44
Nd	$K\alpha_1$			5	100	60	6	37.355	1.65923	6	12.54	17.94	21.72	21.88	22.46	25.56	28.64	29.43	30.69	31.36	34.21	48.67	71.27	74.25	75.44
W	$K\beta_1$			9	26	74	6	67.233	1.65937	6	12.54	17.94	21.72	21.88	22.46	25.56	28.64	29.43	30.69	31.36	34.21	48.67	71.27	74.26	75.45
Ho	$L\beta_4$			1	5	67	6	7.470	1.65950	4	12.54	17.95	21.72	21.89	22.46	25.57	28.65	29.44	30.69	31.36	34.22	48.68	71.28	74.27	75.46
Tl	L_1-N_4	B	2	.01	81	6	14.935	1.66002	5	12.55	17.95	21.73	21.89	22.47	25.58	28.66			31.37	34.23	48.69	71.31	74.29	75.48
Sm	$L\gamma_2$			1	1	62	6	7.465	1.66044	5	12.55	17.96	21.73	21.90	22.48	25.58	28.66	29.45	30.71	31.38	34.24	48.71	71.33	74.32	75.51
Y	$K\alpha_{1,2}$			2	150	39	6	14.931	1.66049	5	12.55	17.96	21.73	21.90	22.48	25.58	28.66			31.38	34.24	48.71	71.33	74.32	75.51
Re	$K\alpha_2$			8	50	75	6	59.708	1.66089	6	12.55	17.96	21.74	21.90	22.48	25.59	28.67	29.46	30.72	31.39	34.25	48.72	71.35	74.34	75.53
Ni	$K\alpha_2$			1	50	28	6	7.460	1.66175	6	12.56	17.97	21.75	21.92	22.49	25.60	28.69	29.48	30.73	31.41	34.27	48.75	71.39	74.38	75.58
Am	$L\gamma_2$			3	1	95	6	22.359	1.66320	4	12.57	17.99	21.77	21.94	22.51	25.62	28.71	29.50	30.76	31.43	34.30	48.79	71.46	74.46	75.65
Hf	Ls		8	1	.01	72	6	7.452	1.66346	5	12.57	17.99	21.77	21.94	22.52	25.63	28.72	29.51	30.77	31.44	34.30	48.80	71.48	74.47	75.67
Ba	$K\beta_2$			5	7	56	6	37.251	1.66385	5	12.58	17.99	21.78	21.94	22.52	25.64	28.72	29.51	30.77	31.45	34.31	48.81	71.50	74.49	75.69
Ta	$K8_2'$			9	9	73	6	67.001	1.66510	6	12.59	18.01	21.79	21.96	22.54	25.65	28.75	29.54	30.80	31.47	34.34	48.85	71.56	74.56	75.75
Dy	$K\beta_1$			7	23	66	6	52.110	1.66516	5	12.59	18.01	21.79	21.96	22.54	25.66	28.75	29.54	30.80	31.47	34.34	48.85	71.56	74.56	75.76
Xe	$K\alpha_1$	H	4	100	54	6	29.774	1.66536	5	12.59	18.01	21.80	21.96	22.54	25.66	28.75	29.54	30.80	31.48	34.34	48.86	71.57	74.57	75.77
Au	$K\alpha_2$			9	50	79	6	66.978	1.66567	6	12.59	18.01	21.80	21.97	22.55	25.66	28.76	29.55	30.81	31.48	34.35	48.87	71.59	74.59	75.79
Y	$K\alpha_2$			2	50	39	6	14.880	1.66610	5	12.59	18.02	21.81	21.97	22.55	25.67	28.76			31.49	34.36	48.88	71.61	74.61	75.81
W	$K\beta_3$			9	12	74	6	66.940	1.66663	6	12.60	18.02	21.81	21.98	22.56	25.68	28.77	29.56	30.83	31.50	34.37	48.90	71.63	74.64	75.84
Ta	$K\beta_2''$			9	9	73	6	66.937	1.66669	6	12.60	18.02	21.82	21.98	22.56	25.68	28.77	29.57	30.83	31.50	34.37	48.90	71.64	74.64	75.84
Nd	$K\alpha_{1,2}$			5	150	60	6	37.182	1.66694	6	12.60	18.03	21.82	21.99	22.57	25.68	28.78	29.57	30.83	31.51	34.38	48.91	71.65	74.66	75.85
Tb	$L8_{10}$	B	1	.01	65	6	7.435	1.66730	4	12.60	18.03	21.82	21.99	22.57	25.69	28.78	29.58	30.84	31.51	34.38	48.92	71.67	74.68	75.87
Pm	AL_1	H	1		61	6	7.434	1.66740	4	12.60	18.03	21.82	21.99	22.57	25.69	28.79	29.58	30.84	31.51	34.39	48.92	71.67	74.68	75.88
Th	L_2-M_2		8	2	.01	90	6	14.867	1.66760	4	12.61	18.03	21.83	21.99	22.57	25.69	28.79			31.52	34.39	48.93	71.68	74.69	75.89
Yb	$K\alpha_{1,2}$			7	150	70	6	52.030	1.66771	6	12.61	18.04	21.83	22.00	22.58	25.70	28.79	29.58	30.85	31.52	34.39	48.93	71.69	74.70	75.90
Sb	$K\beta_1$			4	20	51	6	29.721	1.66834	6	12.61	18.04	21.84	22.00	22.58	25.71	28.80	29.60	30.86	31.53	34.41	48.95	71.72	74.73	75.93
Si	L_2-N_2		8	2	.01	83	6	14.856	1.66880	4	12.61	18.05	21.84	22.01	22.59	25.71	28.81			31.54	34.42	48.97	71.74	74.75	75.95
Pt	$K\alpha_1$			9	100	78	6	66.821	1.66960	6	12.62	18.06	21.85	22.02	22.60	25.73	28.82	29.62	30.88	31.56	34.43	48.99	71.78	74.80	76.00
Hg	$L_1-O_{4,5}$		8	2	.01	80	6	14.846	1.67000	4	12.62	18.06	21.86	22.03	22.61	25.73	28.83			31.57	34.44	49.01	71.80	74.82	76.02
Pb	$K\alpha_{1,2}$		10	150	82	6	74.221	1.67015	6	12.62	18.06	21.86	22.03	22.61	25.73	28.83	29.63	30.89	31.57	34.44	49.01	71.81	74.82	76.03
Dy	$K\beta_3$			7	11	66	6	51.949	1.67034	5	12.63	18.06	21.86	22.03	22.61	25.74	28.84	29.63	30.90	31.57	34.45	49.02	71.82	74.83	76.04
Yb	$K\beta_1$			8	64	70	6	59.356	1.67072	5	12.63	18.07	21.87	22.04	22.62	25.74	28.84	29.64	30.90	31.58	34.46	49.03	71.84	74.85	76.06
Ra	$L\beta_2$			2	20	88	6	14.839	1.67074	5	12.63	18.07	21.87	22.04	22.62	25.74	28.84			31.58	34.46	49.03	71.84	74.86	76.06
Sb	$K\beta_3$			4	9	51	6	29.674	1.67095	6	12.63	18.07	21.87	22.04	22.62	25.75	28.85	29.64	30.91	31.58	34.46	49.04	71.85	74.87	76.07

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Xe	$K\alpha_{1,2}$	H	4	150	54	6	29.666	1.67140	5	12.63	18.08	21.88	22.04	22.63	25.75	28.86	29.65	30.92	31.59	34.47	49.05	71.87	74.89	76.09
Yb	$L\alpha_1$		1	100	70	6	7.414	1.67189	5	12.64	18.08	21.88	22.05	22.63	25.76	28.86	29.66	30.93	31.60	34.48	49.07	71.89	74.92	76.12
W	$K\alpha_1$		8	100	74	6	59.308	1.67208	7	12.64	18.08	21.89	22.05	22.64	25.76	28.87	29.66	30.93	31.61	34.48	49.07	71.90	74.93	76.13
Tb	$K\alpha_1$		6	100	65	6	44.474	1.67234	6	12.64	18.09	21.89	22.06	22.64	25.77	28.87	29.67	30.93	31.61	34.49	49.08	71.92	74.94	76.14
Ta	Lt	B	1	.01	73	6	7.411	1.67265	5	12.64	18.09	21.89	22.06	22.64	25.77	28.88	29.67	30.94	31.62	34.50	49.09	71.93	74.96	76.16
Ra	$L\beta_{15}$		2	1	88	6	14.806	1.67444	5	12.66	18.11	21.92	22.09	22.67	25.80	28.91			31.65	34.54	49.15	72.02	75.05	76.26
Np	$L\gamma_4$		3	.1	93	6	22.195	1.67550	4	12.67	18.12	21.93	22.10	22.68	25.82	28.93	29.73	30.99	31.67	34.56	49.18	72.07	75.11	76.31
Pb	L_2-N_5	B	2	.01	82	6	14.789	1.67640	4	12.67	18.13	21.94	22.11	22.70	25.83	28.94			31.69	34.58	49.21	72.12	75.15	76.36
Yb	$K\beta_3$	H	8	12	70	6	59.141	1.67680	4	12.68	18.13	21.95	22.12	22.70	25.84	28.95	29.75	31.02	31.70	34.59	49.22	72.14	75.17	76.38
Hg	$L\gamma_4$		2	.1	80	6	14.776	1.67788	5	12.68	18.15	21.96	22.13	22.72	25.85	28.97			31.72	34.61	49.25	72.19	75.23	76.44
Tb	$K\beta_2$	H	7	8	65	6	51.715	1.67790	4	12.68	18.15	21.96	22.13	22.72	25.86	28.97	29.77	31.04	31.72	34.61	49.25	72.19	75.23	76.44
W	Ll		1	3	74	6	7.386	1.67820	4	12.69	18.15	21.97	22.14	22.72	25.86	28.98	29.77	31.05	31.72	34.62	49.26	72.21	75.25	76.46
Ag	$K\alpha_1$		3	100	47	6	22.159	1.67822	7	12.69	18.15	21.97	22.14	22.72	25.86	28.98	29.78	31.05	31.72	34.62	49.26	72.21	75.25	76.46
Tm	$K8_2$	H	8	9	69	6	59.085	1.67840	4	12.69	18.15	21.97	22.14	22.72	25.86	28.98	29.78	31.05	31.73	34.62	49.27	72.22	75.26	76.47
8i	$L\gamma_5$		2	.1	83	6	14.771	1.67846	5	12.69	18.15	21.97	22.14	22.72	25.86	28.98			31.73	34.62	49.27	72.22	75.26	76.47
Fr	$L\beta_1$	H	2	50	87	6	14.768	1.67880	5	12.69	18.16	21.98	22.14	22.73	25.87	28.99			31.74	34.63	49.28	72.24	75.28	76.49
Pu	$L\gamma_6$		3	.01	94	6	22.146	1.67919	5	12.69	18.16	21.98	22.15	22.73	25.88	28.99	29.79	31.06	31.74	34.64	49.29	72.26	75.30	76.51
Pb	$L\gamma_1$		2	10	82	6	14.762	1.67946	5	12.70	18.16	21.98	22.15	22.74	25.88	29.00			31.75	34.64	49.30	72.27	75.31	76.53
Hg	$L\gamma_4 p$		2	.1	80	6	14.755	1.68026	5	12.70	18.17	21.99	22.16	22.75	25.89	29.01			31.76	34.66	49.33	72.31	75.36	76.57
Ra	$L8_4$		2	4	88	6	14.745	1.68142	5	12.71	18.18	22.01	22.18	22.76	25.91	29.03			31.79	34.68	49.36	72.37	75.42	76.63
Tb	$K\alpha_{1,2}$		6	150	65	6	44.226	1.68174	6	12.71	18.19	22.01	22.18	22.77	25.92	29.04	29.84	31.11	31.79	34.69	49.37	72.38	75.43	76.65
Cm	$L\alpha_2$		2	10	96	3	14.740	1.68200		12.71	18.19	22.02	22.19	22.77	25.92	29.04			31.80	34.70	49.38	72.40	75.45	76.66
Oy	$L\beta_6$		1	.1	66	6	7.369	1.68213	5	12.72	18.19	22.02	22.19	22.77	25.92	29.05	29.85	31.12	31.80	34.70	49.39	72.40	75.46	76.67
Oy	$L\beta_3$		1	6	66	6	7.369	1.68220	4	12.72	18.19	22.02	22.19	22.77	25.92	29.05	29.85	31.12	31.80	34.70	49.39	72.41	75.46	76.67
Nd	$K\alpha_2$		5	50	60	6	36.841	1.68236	6	12.72	18.20	22.02	22.19	22.78	25.93	29.05	29.85	31.12	31.80	34.70	49.39	72.42	75.47	76.68
Tl	$L\gamma_3$		2	2	81	6	14.734	1.68260	5	12.72	18.20	22.03	22.19	22.78	25.93	29.05			31.81	34.71	49.40	72.43	75.48	76.69
Ag	$K\alpha_{1,2}$		3	150	47	6	22.101	1.68261	6	12.72	18.20	22.03	22.19	22.78	25.93	29.05	29.85	31.13	31.81	34.71	49.40	72.43	75.48	76.70
Ru	$K\beta_4$	B	3	.01	44	6	22.101	1.68267	5	12.72	18.20	22.03	22.20	22.78	25.93	29.06	29.86	31.13	31.81	34.71	49.40	72.43	75.48	76.70
Yb	$L\alpha_2$		1	10	70	6	7.366	1.68285	5	12.72	18.20	22.03	22.20	22.78	25.93	29.06	29.86	31.13	31.81	34.71	49.41	72.44	75.49	76.71
Tb	$L\beta_{2,15}$		1	20	65	6	7.365	1.68300	4	12.72	18.20	22.03	22.20	22.79	25.94	29.06	29.86	31.14	31.82	34.72	49.41	72.45	75.50	76.72
Xe	$K\alpha_2$	H	4	50	54	6	29.453	1.68348	5	12.73	18.21	22.04	22.21	22.79	25.94	29.07	29.87	31.15	31.83	34.73	49.43	72.47	75.53	76.74
Pt	$K\alpha_{1,2}$		9	150	78	6	66.241	1.68421	6	12.73	18.22	22.05	22.22	22.80	25.95	29.08	29.88	31.16	31.84	34.74	49.45	72.51	75.56	76.78
Hg	L_1-O_1	F	2	.01	80	6	14.716	1.68464	5	12.73	18.22	22.05	22.22	22.81	25.96	29.09			31.85	34.75	49.46	72.53	75.59	76.80
W	$K\alpha_{1,2}$		8	150	74	6	58.856	1.68493	6	12.74	18.22	22.06	22.23	22.81	25.97	29.09	29.90	31.17	31.85	34.76	49.47	72.54	75.60	76.82
Ru	$K8_2$		3	3	44	6	22.070	1.68498	5	12.74	18.22	22.06	22.23	22.81	25.97	29.10	29.90	31.17	31.86	34.76	49.48	72.55	75.61	76.82
Ir	$K\beta_1$		10	27	77	6	73.548	1.68542	6	12.74	18.23	22.06	22.23	22.82	25.97	29.10	29.91	31.18	31.86	34.77	49.49	72.57	75.63	76.85
Am	$L\gamma_1$		3	10	95	6	22.061	1.68566	6	12.74	18.23	22.07	22.24	22.82	25.98	29.11	29.91	31.19	31.87	34.77	49.50	72.58	75.64	76.86
Ra	$L\beta_{1,7}$	B	2	.01	88	6	14.691	1.68760	4	12.76	18.25	22.09	22.26	22.85	26.01	29.14			31.91	34.82	49.56	72.68	75.74	76.96
Tl	$L\gamma_6$		2	.01	81	6	14.684	1.68840	4	12.76	18.26	22.10	22.27	22.86	26.02	29.16			31.92	34.83	49.58	72.72	75.79	77.01
Os	$K\beta_2'$		10	10	76	6	73.390	1.68906	6	12.77	18.27	22.11	22.28	22.87	26.03	29.17	29.97	31.25	31.93	34.85	49.60	72.75	75.82	77.04
Yb	$K\alpha_2$		7	50	70	6	51.345	1.68997	6	12.78	18.28	22.12	22.29	22.88	26.04	29.18	29.99	31.27	31.95	34.87	49.63	72.80	75.87	77.09
Os	$K\beta_2''$		10	10	76	6	73.306	1.69100	5	12.78	18.29	22.14	22.31	22.90	26.06	29.20	30.01	31.29	31.97	34.89	49.66	72.85	75.92	77.15
Ag	$K\alpha_2$		3	50	47	6	21.987	1.69139	6	12.79	18.29	22.14	22.31	22.90	26.07	29.21	30.01	31.30	31.98	34.90	49.68	72.87	75.94	77.17
Pu	$L\gamma_3$		3	2	94	6	21.979	1.69200	6	12.79	18.30	22.15	22.32	22.91	26.08	29.22	30.03	31.31	31.99	34.91	49.70	72.90	75.98	77.20
Ir	$K\beta_3$		10	12	77	6	73.190	1.69367	6	12.80	18.32	22.17	22.34	22.93	26.10	29.25	30.06	31.34	32.02	34.94	49.75	72.98	76.06	77.29
Sm	AL_2		1		62	6	7.312	1.69530	4	12.82	18.34	22.19	22.36	22.95	26.13	29.28	30.09	31.37	32.06	34.98	49.80	73.06	76.15	77.38
Tl	$L\gamma_2$		2	1	81	6	14.623	1.69546	5	12.82	18.34	22.20	22.37	22.96	26.13	29.28			32.06	34.98	49.80	73.07	76.16	77.39
Tm	Ln		1	1	69	6	7.308	1.69630	4	12.82	18.35	22.21	22.38	22.97	26.14	29.30	30.10	31.39	32.08	35.00	49.83	73.11	76.20	77.43
Am	$L\alpha_1$		2	100	95	6	14.615	1.69637	6	12.82	18.35	22.21	22.38	22.97	26.14	29.30			32.08	35.00	49.83	73.12	76.21	77.44
Sm	$L\gamma_6$	A	1	.01	62	6	7.306	1.69666	5	12.83	18.35	22.21	22.38	22.97	26.15	29.30	30.11	31.40	32.08	35.01	49.84	73.13	76.22	77.45
Pu	$L\gamma_8$		3	.1	94	6	21.909	1.69740	4	12.83	18.36	22.22	22.39	22.98	26.16	29.32	30.12	31.41	32.10	35.02	49.86	73.17	76.26	77.49
Pm	$K\beta_1$	H	6	22	61	6	43.818	1.69740	5	12.83	18.36	22.22	22.39	22.98	26.16	29.32	30.12	31.41	32.10	35.02	49.86	73.17	76.26	77.49
Tl	L_2-O_2	8	2	.01	81	6	14.601	1.69800	4	12.84	18.37	22.23	22.40	22.99	26.17	29.33			32.11	35.04	49.88	73.20	76.29	77.53
Tb	$K\alpha_2$		6	50	65	6	43.737	1.70054	6	12.86	18.39	22.26	22.43	23.03	26.21	29.37	30.18	31.47	32.16	35.09	49.96	73.32	76.43	77.66
Tl	Lv	B	2	.01	81	6	14.575	1.70096	5	12.86	18.40	22.27	22.44	23.03	26.22	29.38			32.17	35.10	49.98	73.35	76.45	77.69
Tl	$K\alpha_1$		10	100	81	6	72.859	1.70136	6	12.86	18.40	22.27	22.44	23.04	26.22	29.39	30.20	31.48	32.17	35.11	49.99	73.37	76.47	77.71
Pm	$K8_3$	H	6	10	61	6	43.705	1.70178	5	12.87	18.41	22.28	22.45	23.04	26.23	29.39	30.20	31.49	32.18	35.12	50.00	73.39	76.49	77.73
Ra	L_3-N_3	B	2	.01	88	6	14.563	1.70240	4	12.87	18.41	22.29	22.46	23.05	26.24	29.40			32.19	35.13	50.02	73.42	76.53	77.77
Tl	$L\gamma_8$		2	.1	81	6	14.561	1.70260	4	12.87	18.42	22.29	22.46	23.05	26.24	29.41			32.20	35.13	50.03	73.43	76.54	77.78
Pb	$K\alpha_2$		10	50	82	6	72.792	1.70294	6	12.87	18.42	22.30	22.47	23.06	26.25	29.41	30.22	31.51	32.20	35.14	50.04	73.45	76.56	77.79
Ru	$K\beta_5'$	B	3	.08	44	6	21.830	1.70355	5	12.88	18.43	22.30	22.47	23.07	26.26	29.42	30.24	31.53	32.22	35.15	50.06	73.48	76.59	77.83
Sn	$K\beta_2$		4	5	50	6	29.104	1.70366	6	12.88	18.43	22.31	22.48	23.07	26.26	29.43	30.24	31.53	32.22	35.16	50.06	73.48	76.59	77.83
Pb	L_2-N_3	B	2	.01	82	6	14.551	1.70384	5	12.88	18.43	22.31	22.48	23.07	26.26	29.43			32.22	35.16	50.07	73.49	76.60	77.84
Ru	$K\beta_5''$	B	3	.5	44	6	21.824	1.70400	4	12.88	18.43	22.31	22.48	23.07	26.26	29.43	30.24	31.53	32.23	35.16	50.07	73.50	76.61	77.85
Ba	$K\beta_1$		5	21	56	6	36.372	1.70405	6	12.88	18.43	22.31	22.48	23.07	26.27	29.43	30.24	31.54	32.23	35.17	50.07	73.50	76.62	77.86

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Sm	$L\gamma_8$		1	.1	62	6	7.265	1.70634	5		12.90	18.46	22.34	22.51	23.11	26.30	29.47	30.29	31.58	32.27	35.21	50.15	73.62	76.74	77.98
Ba	$K\beta_3$		5	7	56	6	36.298	1.70753	6		12.91	18.47	22.36	22.53	23.12	26.32	29.49	30.31	31.60	32.29	35.24	50.18	73.68	76.80	78.04
Eu	$L\gamma_5$		1	.1	63	6	7.255	1.70850	4		12.92	18.48	22.37	22.54	23.14	26.34	29.51	30.33	31.62	32.31	35.26	50.21	73.72	76.85	78.10
Rn	$L\beta_3$	H	2	10	86	6	14.509	1.70872	5		12.92	18.48	22.37	22.54	23.14	26.34	29.52			32.32	35.27	50.22	73.74	76.86	78.11
Th	Ln		2	1	90	6	14.507	1.70892	5		12.92	18.48	22.37	22.55	23.14	26.34	29.52			32.32	35.27	50.23	73.75	76.87	78.12
Tl	L_1-N_1	B	2	.01	81	6	14.500	1.70980	4		12.93	18.49	22.39	22.56	23.15	26.36	29.53			32.34	35.29	50.25	73.79	76.92	78.17
Tm	$K\alpha_1$		7	100	69	6	50.733	1.71037	6		12.93	18.50	22.39	22.57	23.16	26.36	29.54	30.36	31.66	32.35	35.30	50.27	73.82	76.95	78.20
Dy	$L\beta_1$		1	50	66	6	7.246	1.71062	5		12.93	18.50	22.40	22.57	23.16	26.37	29.55	30.36	31.66	32.35	35.31	50.28	73.83	76.96	78.21
W	$K\alpha_2$		8	50	74	6	57.972	1.71062	6		12.93	18.50	22.40	22.57	23.16	26.37	29.55	30.36	31.66	32.35	35.31	50.28	73.83	76.96	78.21
Ta	$K\beta_1$		9	26	73	6	65.212	1.71080	6		12.93	18.51	22.40	22.57	23.17	26.37	29.55	30.37	31.66	32.36	35.31	50.29	73.84	76.97	78.22
Gd	AL_3		1		64	6	7.242	1.71170	4		12.94	18.52	22.41	22.58	23.18	26.39	29.57	30.38	31.68	32.37	35.33	50.31	73.89	77.02	78.27
U	$L\gamma_{13}$		3	.01	92	6	21.724	1.71180	4		12.94	18.52	22.41	22.58	23.18	26.39	29.57	30.39	31.68	32.38	35.33	50.32	73.89	77.03	78.28
Pu	$L\gamma_2$		3	1	94	6	21.721	1.71204	5		12.94	18.52	22.42	22.59	23.18	26.39	29.57	30.39	31.69	32.38	35.34	50.32	73.90	77.04	78.29
Gd	$L\beta_5$		1	.1	64	6	7.236	1.71300	4		12.95	18.53	22.43	22.60	23.20	26.41	29.59	30.41	31.71	32.40	35.36	50.35	73.95	77.09	78.34
Hg	$L\gamma_{11}$	B	2	.01	80	6	14.472	1.71314	5		12.95	18.53	22.43	22.60	23.20	26.41	29.59			32.40	35.36	50.36	73.96	77.10	78.35
Pt	$K\alpha_2$		9	50	78	6	65.112	1.71343	6		12.95	18.53	22.43	22.61	23.20	26.41	29.60	30.41	31.71	32.41	35.37	50.37	73.97	77.11	78.37
Fr	$L\beta_2$		2	20	87	6	14.448	1.71600	3		12.97	18.56	22.47	22.64	23.24	26.45	29.64			32.46	35.42	50.45	74.10	77.25	78.51
Nd	$K\beta_2$	H	6	7	60	6	43.327	1.71660	4		12.98	18.57	22.48	22.65	23.25	26.46	29.65	30.47	31.77	32.47	35.43	50.47	74.13	77.28	78.54
Pb	L_2-N_2	B	2	.01	82	6	14.439	1.71700	4		12.98	18.57	22.48	22.65	23.25	26.47	29.66			32.48	35.44	50.48	74.15	77.30	78.56
Hf	$K\beta_2$	H	9	9	72	6	64.969	1.71720	4		12.98	18.58	22.48	22.66	23.26	26.47	29.66	30.48	31.79	32.48	35.45	50.49	74.16	77.32	78.57
Ru	$K\beta_1$		3	16	44	6	21.653	1.71745	6		12.98	18.58	22.49	22.66	23.26	26.48	29.67	30.49	31.79	32.49	35.45	50.49	74.18	77.33	78.58
U	$L_1-O_{4,5}$	B	3	.01	92	6	21.652	1.71750	4		12.98	18.58	22.49	22.66	23.26	26.48	29.67	30.49	31.79	32.49	35.45	50.50	74.18	77.33	78.59
Tl	$K\alpha_{1,2}$		10	150	81	6	72.167	1.71769	6		12.99	18.58	22.49	22.66	23.26	26.48	29.67	30.49	31.79	32.49	35.46	50.50	74.19	77.34	78.60
Ta	$K\beta_3$		9	12	73	6	64.938	1.71801	6		12.99	18.58	22.50	22.67	23.27	26.48	29.68	30.50	31.80	32.50	35.46	50.51	74.20	77.36	78.62
Ru	$K\beta_3$		3	8	44	6	21.631	1.71920	6		13.00	18.60	22.51	22.68	23.28	26.50	29.70	30.52	31.82	32.52	35.49	50.55	74.26	77.42	78.68
Ir	$K\alpha_1$		9	100	77	6	64.885	1.71942	6		13.00	18.60	22.51	22.69	23.29	26.51	29.70	30.52	31.83	32.52	35.49	50.56	74.28	77.43	78.69
Gd	$L\beta_7$		1	.1	64	6	7.206	1.72030	4		13.01	18.61	22.53	22.70	23.30	26.52	29.72	30.54	31.84	32.54	35.51	50.58	74.32	77.48	78.74
Am	$L\alpha_2$		2	10	95	6	14.409	1.72053	6		13.01	18.61	22.53	22.70	23.30	26.52	29.72			32.55	35.52	50.59	74.33	77.49	78.75
Pr	$K\alpha_1$		5	100	59	6	36.020	1.72070	6		13.01	18.61	22.53	22.70	23.30	26.53	29.73	30.55	31.85	32.55	35.52	50.60	74.34	77.50	78.76
Dy	$L\beta_4$		1	5	66	6	7.203	1.72103	5		13.01	18.62	22.54	22.71	23.31	26.53	29.73	30.55	31.86	32.56	35.53	50.61	74.36	77.52	78.78
Tm	$K\alpha_{1,2}$		7	150	69	6	50.406	1.72147	6		13.01	18.62	22.54	22.71	23.31	26.54	29.74	30.56	31.87	32.56	35.54	50.62	74.38	77.54	78.80
Tb	$K\beta_1$		7	23	65	6	50.374	1.72256	5		13.02	18.63	22.56	22.73	23.33	26.56	29.76	30.58	31.89	32.59	35.56	50.66	74.43	77.60	78.86
Hf	Lt	B	1	.01	72	6	7.194	1.72305	5		13.03	18.64	22.56	22.73	23.34	26.56	29.77	30.59	31.90	32.60	35.57	50.67	74.46	77.63	78.89
Ra	L_3-N_2	B	2	.01	88	6	14.384	1.72360	4		13.03	18.65	22.57	22.74	23.34	26.57	29.78			32.61	35.58	50.69	74.49	77.66	78.92
Ta	$K\alpha_1$		8	100	73	6	57.523	1.72398	6		13.03	18.65	22.57	22.75	23.35	26.58	29.78	30.61	31.91	32.61	35.59	50.70	74.51	77.68	78.94
Gd	$L\beta_9$	B	1	.01	64	6	7.190	1.72400	4		13.03	18.65	22.57	22.75	23.35	26.58	29.79	30.61	31.91	32.61	35.59	50.70	74.51	77.68	78.94
Tm	$K\beta_1$		8	23	69	6	57.506	1.72448	5		13.04	18.65	22.58	22.75	23.36	26.59	29.79	30.62	31.92	32.62	35.60	50.72	74.53	77.70	78.97
U	$L\gamma_4$		3	.1	92	6	21.559	1.72497	5		13.04	18.66	22.59	22.76	23.36	26.59	29.80	30.62	31.93	32.63	35.61	50.73	74.56	77.73	79.00
Tm	$L\alpha_1$	H	1	100	69	6	7.179	1.72680	4		13.05	18.68	22.61	22.79	23.39	26.62	29.83	30.66	31.97	32.67	35.65	50.79	74.65	77.83	79.10
Sm	$L\gamma_1$		1	5	62	6	7.177	1.72724	5		13.06	18.68	22.62	22.79	23.39	26.63	29.84	30.67	31.98	32.68	35.66	50.80	74.67	77.85	79.12
Tb	$K\beta_3$		7	11	65	6	50.221	1.72781	5		13.06	18.69	22.63	22.80	23.40	26.64	29.85	30.68	31.99	32.69	35.67	50.82	74.70	77.88	79.15
Au	$L_1-O_{4,5}$	B	2	.01	79	6	14.347	1.72800	5		13.06	18.69	22.63	22.80	23.40	26.64	29.86			32.69	35.68	50.83	74.71	77.89	79.16
Pr	$K\alpha_{1,2}$		5	150	59	6	35.860	1.72838	6		13.07	18.70	22.63	22.81	23.41	26.65	29.86	30.69	32.00	32.70	35.68	50.84	74.73	77.91	79.18
Ta	Ll		1	3	73	6	7.172	1.72841	5		13.07	18.70	22.63	22.81	23.41	26.65	29.86	30.69	32.00	32.70	35.69	50.84	74.73	77.91	79.18
U	$L\gamma_4p$		3	.1	92	6	21.495	1.73010	6		13.08	18.72	22.66	22.83	23.43	26.67	29.89	30.72	32.03	32.73	35.72	50.89	74.81	78.01	79.28
Gd	$K\alpha_1$		6	100	64	6	42.989	1.73012	6		13.08	18.72	22.66	22.83	23.43	26.67	29.89	30.72	32.03	32.73	35.72	50.89	74.82	78.01	79.28
Cs	$K\beta_2$		5	6	55	6	35.815	1.73055	5		13.08	18.72	22.66	22.84	23.44	26.68	29.90	30.73	32.04	32.74	35.73	50.91	74.84	78.03	79.30
Tm	$K\beta_3$		8	11	69	6	57.293	1.73088	5		13.09	18.72	22.67	22.84	23.44	26.69	29.91	30.73	32.05	32.75	35.74	50.92	74.85	78.05	79.32
Np	$L\gamma_6$		3	.01	93	6	21.484	1.73097	5		13.09	18.73	22.67	22.84	23.44	26.69	29.91	30.73	32.05	32.75	35.74	50.92	74.86	78.05	79.32
Gd	$L\beta_{10}$	B	1	.01	64	6	7.159	1.73150	4		13.09	18.73	22.67	22.85	23.45	26.70	29.92	30.74	32.06	32.76	35.75	50.94	74.89	78.08	79.35
Rn	$L\beta_1$	H	2	50	86	6	14.313	1.73210	5		13.10	18.74	22.68	22.86	23.46	26.71	29.93			32.77	35.76	50.96	74.92	78.11	79.39
Kr	$K\beta_2$		2	3	36	6	14.312	1.73220	4		13.10	18.74	22.68	22.86	23.46	26.71	29.93			32.77	35.77	50.96	74.92	78.12	79.39
Pb	$L\gamma_5$		2	.1	82	6	14.305	1.73310	5		13.10	18.75	22.70	22.87	23.47	26.72	29.95			32.79	35.79	50.99	74.97	78.17	79.44
I	$K\alpha_1$		4	100	53	6	28.607	1.73327	6		13.10	18.75	22.70	22.87	23.48	26.72	29.95	30.78	32.09	32.79	35.79	50.99	74.98	78.18	79.45
Er	$K\beta_2$	H	8	8	68	6	57.204	1.73360	4		13.11	18.75	22.70	22.88	23.48	26.73	29.95	30.78	32.10	32.80	35.80	51.00	74.99	78.19	79.47
Ir	$K\alpha_{1,2}$		9	150	77	6	64.339	1.73399	6		13.11	18.76	22.71	22.88	23.49	26.74	29.96	30.79	32.10	32.81	35.80	51.02	75.01	78.21	79.49
Au	$L\gamma_4$		2	.1	79	6	14.297	1.73406	5		13.11	18.76	22.71	22.88	23.49	26.74	29.96			32.81	35.81	51.02	75.02	78.22	79.49
Tl	$L\gamma_1$		2	10	81	6	14.289	1.73504	5		13.12	18.77	22.72	22.90	23.50	26.75	29.98			32.83	35.83	51.05	75.07	78.27	79.55
Os	$K\beta_1$		10	27	76	6	71.401	1.73611	6		13.13	18.78	22.74	22.91	23.51	26.77	30.00	30.83	32.14	32.85	35.85	51.08	75.12	78.33	79.61
Au	$L\gamma_4p$		2	.1	79	6	14.278	1.73632	5		13.13	18.78	22.74	22.91	23.52	26.77	30.00			32.85	35.85	51.09	75.13	78.34	79.62
Pu	$L\alpha_1$		2	100	94	6	14.276	1.73660	5		13.13	18.79	22.74	22.92	23.52	26.78	30.01			32.86	35.86	51.10	75.14	78.35	79.63
Pu	$L\gamma_1$		3	10	94	6	21.414	1.73665	6		13.13	18.79	22.74	22.92	23.52	26.78	30.01	30.84	32.15	32.86	35.86	51.10	75.15	78.36	79.64
Ta	$K\alpha_{1,2}$		8	150	73	6	57.098	1.73680	6		13.13	18.79	22.74	22.92	23.52	26.78	30.01	30.84	32.16	32.86	35.86	51.10	75.15	78.37	79.65
Gd	$K\beta_2$		7	8	64	6	49.952	1.73712	5		13.13	18.79	22.75	22.92	23.53	26.78	30.02	30.85	32.16	32.87	35.87	51.11	75.17	78.38	79.66
Tm	$L\alpha_2$		1	10	69	6	7.132	1.73810	4		13.14	18.80	22.76	22.94	23.54	26.80	30.03	30.86	32.18	32.89	35.89	51.15	75.22	78.44	79.72

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Hg	$L\gamma_3$		2	2	80	6	14.262	1.73830	5		13.14	18.81	22.76	22.94	23.54	26.80	30.04			32.89	35.90	51.15	75.23	78.45	79.73
Nd	AL_1		1		60	6	7.128	1.73900	4		13.15	18.81	22.77	22.95	23.55	26.81	30.05	30.88	32.20	32.91	35.91	51.17	75.27	78.48	79.77
I	$K\alpha_{1,2}$		4	150	53	6	28.508	1.73928	6		13.15	18.82	22.78	22.95	23.56	26.82	30.06	30.89	32.21	32.91	35.92	51.18	75.28	78.50	79.78
Gd	$K\alpha_{1,2}$		6	150	64	6	42.757	1.73949	6		13.15	18.82	22.78	22.95	23.56	26.82	30.06	30.89	32.21	32.92	35.92	51.19	75.29	78.51	79.79
Re	$K\beta_2'$		10	10	75	6	71.219	1.74054	6		13.16	18.83	22.79	22.97	23.58	26.84	30.08	30.91	32.23	32.94	35.94	51.22	75.34	78.57	79.85
Au	L_1-O_1	F	2	.01	79	6	14.243	1.74068	5		13.16	18.83	22.80	22.97	23.58	26.84	30.08			32.94	35.95	51.23	75.35	78.57	79.86
Sn	$K\beta_1$		4	19	50	6	28.481	1.74094	6		13.16	18.83	22.80	22.97	23.58	26.84	30.08	30.92	32.24	32.94	35.95	51.23	75.37	78.59	79.87
Kr	$K\beta_5$	B	2	.06	36	6	14.235	1.74160	4		13.17	18.84	22.81	22.98	23.59	26.85	30.10			32.96	35.97	51.26	75.40	78.62	79.91
Ra	$L\beta_6$		2	.1	88	6	14.234	1.74176	5		13.17	18.84	22.81	22.99	23.59	26.86	30.10			32.96	35.97	51.26	75.41	78.63	79.92
Tb	$L\beta_6$		1	.1	65	6	7.115	1.74220	4		13.17	18.85	22.82	22.99	23.60	26.86	30.11	30.94	32.26	32.97	35.98	51.27	75.43	78.66	79.94
Re	$K\beta_2''$		10	10	75	6	71.139	1.74250	5		13.17	18.85	22.82	22.99	23.60	26.87	30.11	30.94	32.27	32.97	35.99	51.28	75.44	78.67	79.96
Np	$L\gamma_3$		3	2	93	6	21.336	1.74300	4		13.18	18.86	22.83	23.00	23.61	26.88	30.12	30.95	32.28	32.98	36.00	51.30	75.47	78.70	79.99
Fe	AK		1		26	6	7.110	1.74346	5		13.18	18.86	22.83	23.01	23.62	26.88	30.13	30.96	32.28	32.99	36.01	51.31	75.49	78.72	80.01
Sn	$K\beta_3$		4	9	50	6	28.439	1.74351	6		13.18	18.86	22.83	23.01	23.62	26.88	30.13	30.96	32.29	32.99	36.01	51.32	75.50	78.73	80.01
Tm	$K\alpha_2$		7	50	69	6	49.764	1.74366	6		13.18	18.86	22.84	23.01	23.62	26.89	30.13	30.96	32.29	33.00	36.01	51.32	75.50	78.73	80.02
Pr	$K\alpha_2$		5	50	59	6	35.544	1.74374	6		13.18	18.87	22.84	23.01	23.62	26.89	30.13	30.97	32.29	33.00	36.01	51.32	75.51	78.74	80.03
Fe	$K\beta_5$	B	1	.03	26	6	7.107	1.74420	4	4	13.19	18.87	22.84	23.02	23.63	26.90	30.14	30.97	32.30	33.01	36.02	51.34	75.53	78.76	80.05
Os	$K\beta_3$		10	12	76	6	71.065	1.74431	6		13.19	18.87	22.84	23.02	23.63	26.90	30.14	30.98	32.30	33.01	36.02	51.34	75.54	78.77	80.06
Nd	$L\gamma_4$		1	.1	60	6	7.106	1.74450	4		13.19	18.87	22.85	23.02	23.63	26.90	30.15	30.98	32.30	33.01	36.03	51.35	75.55	78.78	80.07
Gd	$L\beta_{2,15}$		1	20	64	6	7.102	1.74550	4		13.20	18.88	22.86	23.04	23.64	26.92	30.17	31.00	32.32	33.03	36.05	51.38	75.60	78.83	80.12
Hg	$L\gamma_6$		2	.01	80	6	14.196	1.74638	5		13.20	18.89	22.87	23.05	23.66	26.93	30.18			33.05	36.07	51.41	75.64	78.88	80.17
Tb	$L\beta_3$		1	6	65	6	7.095	1.74720	4		13.21	18.90	22.88	23.06	23.67	26.94	30.20	31.03	32.36	33.07	36.09	51.43	75.68	78.93	80.22
Tl	$K\alpha_2$		10	50	81	6	70.820	1.75036	6		13.23	18.94	22.92	23.10	23.71	26.99	30.25	31.09	32.42	33.13	36.15	51.53	75.84	79.10	80.39
Sr	$K\alpha_1$		2	100	38	6	14.163	1.75052	5		13.24	18.94	22.93	23.10	23.71	26.99	30.25			33.13	36.16	51.54	75.85	79.11	80.40
Hg	$K\alpha_1$		10	100	80	6	70.807	1.75068	6		13.24	18.94	22.93	23.10	23.72	27.00	30.26	31.09	32.42	33.13	36.16	51.54	75.86	79.11	80.41
Hg	$L\gamma_2$		2	1	80	6	14.160	1.75088	5		13.24	18.94	22.93	23.11	23.72	27.00	30.26			33.14	36.16	51.55	75.87	79.12	80.42
I	$K\alpha_2$		4	50	53	6	28.312	1.75132	6		13.24	18.95	22.94	23.11	23.72	27.01	30.27	31.10	32.43	33.15	36.17	51.56	75.89	79.15	80.45
Hg	L_2-O_3	B	2	.01	80	6	14.154	1.75160	4		13.24	18.95	22.94	23.12	23.73	27.01	30.27			33.15	36.18	51.57	75.91	79.16	80.46
Sr	$K\alpha_{1,2}$		2	150	38	6	14.140	1.75330	5		13.26	18.97	22.96	23.14	23.75	27.04	30.30			33.18	36.22	51.63	75.99	79.26	80.56
Pd	$K\alpha_1$		3	100	46	6	21.174	1.75634	6		13.28	19.00	23.00	23.18	23.79	27.09	30.36	31.20	32.53	33.24	36.28	51.72	76.15	79.42	80.72
Er	Ln		1	1	68	6	7.057	1.75660	4		13.28	19.01	23.01	23.18	23.80	27.09	30.36	31.20	32.53	33.25	36.29	51.73	76.16	79.43	80.74
Fe	$K\beta_{1,3}$		1	20	26	6	7.057	1.75661	5	4	13.28	19.01	23.01	23.18	23.80	27.09	30.36	31.20	32.53	33.25	36.29	51.73	76.16	79.43	80.74
Hg	L_2-O_2	8	2	.01	80	6	14.112	1.75680	4		13.28	19.01	23.01	23.19	23.80	27.09	30.37			33.25	36.29	51.74	76.17	79.44	80.75
Kr	$K\beta_1$		2	16	36	6	14.110	1.75700	4		13.28	19.01	23.01	23.19	23.80	27.10	30.37			33.26	36.30	51.74	76.18	79.46	80.76
Hg	Lv	B	2	.01	80	6	14.105	1.75770	5		13.29	19.02	23.02	23.20	23.81	27.11	30.38			33.27	36.31	51.76	76.22	79.49	80.80
Kr	$K\beta_3$		2	8	36	6	14.102	1.75800	4		13.29	19.02	23.03	23.20	23.82	27.11	30.39			33.28	36.32	51.77	76.23	79.51	80.82
Gd	$K\alpha_2$		6	50	64	6	42.302	1.75823	6		13.29	19.02	23.03	23.21	23.82	27.12	30.39	31.23	32.57	33.28	36.32	51.78	76.25	79.52	80.83
Sr	$K\alpha_2$		2	50	38	6	14.095	1.75886	5		13.30	19.03	23.04	23.21	23.83	27.13	30.40			33.29	36.34	51.80	76.28	79.56	80.86
Nd	$K\beta_1$		6	22	60	6	42.264	1.75979	6		13.31	19.04	23.05	23.23	23.84	27.14	30.42	31.26	32.60	33.31	36.36	51.83	76.33	79.61	80.92
Hg	$L\gamma_8$		2	.1	80	6	14.087	1.75990	5		13.31	19.04	23.05	23.23	23.84	27.14	30.42			33.31	36.36	51.83	76.33	79.61	80.92
Tl	L_2-N_3	B	2	.01	81	6	14.087	1.75992	5		13.31	19.04	23.05	23.23	23.84	27.14	30.42			33.31	36.36	51.83	76.33	79.61	80.92
Pu	$L\alpha_2$		2	10	94	6	14.082	1.76056	5		13.31	19.05	23.06	23.24	23.85	27.15	30.43			33.33	36.37	51.85	76.37	79.65	80.96
Pd	$K\alpha_{1,2}$		3	150	46	6	21.121	1.76071	6		13.31	19.05	23.06	23.24	23.85	27.16	30.43	31.28	32.61	33.33	36.38	51.86	76.37	79.66	80.97
Np	$L\gamma_2$		3	1	93	6	21.107	1.76190	4		13.32	19.06	23.08	23.25	23.87	27.17	30.46	31.30	32.64	33.35	36.40	51.90	76.43	79.72	81.03
Ta	$K\alpha_2$		8	50	73	6	56.267	1.76244	6		13.33	19.07	23.09	23.26	23.88	27.18	30.47	31.31	32.65	33.36	36.41	51.91	76.46	79.75	81.06
At	$L\beta_3$	H	2	10	85	6	14.065	1.76270	5		13.33	19.07	23.09	23.27	23.88	27.19	30.47			33.37	36.42	51.92	76.48	79.77	81.08
Ir	$K\alpha_2$		9	50	77	6	63.276	1.76313	6		13.33	19.08	23.09	23.27	23.89	27.19	30.48	31.32	32.66	33.38	36.43	51.94	76.50	79.79	81.10
Nd	$K\beta_3$		6	10	60	6	42.159	1.76416	6		13.34	19.09	23.11	23.28	23.90	27.21	30.50	31.34	32.68	33.40	36.45	51.97	76.55	79.84	81.16
Hf	$K\beta_1$	H	9	66	72	6	63.222	1.76463	5		13.34	19.09	23.11	23.29	23.91	27.22	30.50	31.35	32.69	33.40	36.46	51.98	76.57	79.87	81.19
Hg	L_1-N_1	B	2	.01	80	6	14.043	1.76540	4		13.35	19.10	23.12	23.30	23.92	27.23	30.52			33.42	36.48	52.01	76.61	79.91	81.23
Er	$K\alpha_1$		7	100	68	6	49.119	1.76655	6		13.36	19.11	23.14	23.32	23.93	27.25	30.54	31.38	32.72	33.44	36.50	52.04	76.67	79.97	81.29
Hg	$K\alpha_{1,2}$		10	150	80	6	70.154	1.76698	6		13.36	19.12	23.15	23.32	23.94	27.25	30.55	31.39	32.73	33.45	36.51	52.06	76.69	80.00	81.32
Pm	AL_2	H	1		61	6	7.013	1.76760	4		13.36	19.13	23.15	23.33	23.95	27.26	30.56	31.40	32.74	33.46	36.52	52.08	76.73	80.03	81.35
Au	$L\gamma_{11}$	B	2	.01	79	6	14.017	1.76866	5		13.37	19.14	23.17	23.35	23.96	27.28	30.58			33.48	36.55	52.11	76.78	80.09	81.41
Pd	$K\alpha_2$		3	50	46	6	21.017	1.76946	6		13.38	19.15	23.18	23.36	23.97	27.29	30.59	31.43	32.78	33.50	36.56	52.14	76.82	80.13	81.45
U	$L\gamma_{11}$	B	3	.01	92	6	21.015	1.76958	5		13.38	19.15	23.18	23.36	23.97	27.29	30.59	31.44	32.78	33.50	36.56	52.14	76.83	80.14	81.46
Tc	$K\beta_2$	H	3	3	43	6	21.002	1.77072	5		13.39	19.16	23.20	23.37	23.99	27.31	30.61	31.46	32.80	33.52	36.59	52.18	76.89	80.20	81.52
Os	$K\alpha_1$		9	100	76	6	62.990	1.77114	6		13.39	19.16	23.20	23.38	24.00	27.32	30.62	31.47	32.81	33.53	36.60	52.19	76.91	80.22	81.55
Au	L_1-N_4	B	2	.01	79	6	13.997	1.77126	5		13.39	19.17	23.20	23.38	24.00	27.32	30.62			33.53	36.60	52.19	76.91	80.23	81.55
Hf	$K\beta_3$	H	9	12	72	6	62.969	1.77174	5		13.40	19.17	23.21	23.39	24.00	27.33	30.63	31.48	32.82	33.54	36.61	52.21	76.94	80.26	81.58
Cs	$K\beta_1$		5	21	55	6	34.981	1.77182	6		13.40	19.17	23.21	23.39	24.01	27.33	30.63	31.48	32.82	33.54	36.61	52.21	76.94	80.26	81.59
Lu	$K\beta_2$	H	9	9	71	6	62.956	1.77210	4		13.40	19.17	23.21	23.39	24.01	27.33	30.64	31.48	32.83	33.55	36.62	52.22	76.96	80.28	81.60
U	L_1-N_4	B	3	.01	92	6	20.976	1.77288	5		13.40	19.18	23.22	23.40	24.02	27.35	30.65	31.50	32.84	33.57	36.64	52.25	77.00	80.32	81.64
Tl	L_2-N_2	F	2	.01	81	6	13.974	1.77412	5		13.41	19.20	23.24	23.42	24.04	27.37	30.67			33.59	36.66	52.28	77.06	80.39	81.71
Cs	$K\beta_3$		5	9	55	6	34.913	1.77525	6		13.42	19.21	23.26	23.43	24.05	27.38	30.69	31.54	32.89	33.61	36.69	52.32	77.12	80.45	81.78

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10^{-}																	
Lu	Lt	8	1	.01	71	6	6.980	1.77600	4		13.43	19.22	23.27	23.44	24.06	27.40	30.71	31.55	32.90	33.63	36.70	52.34	77.16	80.49	81.82
U	L_2-P_4		3	.01	92	6	20.938	1.77609	5		13.43	19.22	23.27	23.44	24.06	27.40	30.71	31.56	32.91	33.63	36.70	52.35	77.16	80.49	81.82
Eu	AL_3		1		63	6	6.979	1.77610	4		13.43	19.22	23.27	23.44	24.06	27.40	30.71	31.56	32.91	33.63	36.70	52.35	77.16	80.49	81.82
Tb	$L\beta_1$		1	50	65	6	6.977	1.77680	4		13.43	19.23	23.28	23.45	24.07	27.41	30.72	31.57	32.92	33.64	36.72	52.37	77.20	80.53	81.86
Eu	$L\beta_5$	A	1	.1	63	6	6.975	1.77720	4		13.44	19.23	23.28	23.46	24.08	27.41	30.73	31.58	32.93	33.65	36.73	52.38	77.22	80.56	81.89
Er	$K\alpha_{1,2}$		7	150	68	6	48.813	1.77763	6		13.44	19.24	23.29	23.47	24.09	27.42	30.73	31.58	32.94	33.66	36.74	52.40	77.24	80.58	81.91
Hf	$K\alpha_1$		8	100	72	6	55.781	1.77782	6		13.44	19.24	23.29	23.47	24.09	27.42	30.74	31.59	32.94	33.66	36.74	52.40	77.25	80.59	81.92
Np	$L\alpha_1$		2	100	93	6	13.942	1.77826	6		13.45	19.24	23.30	23.47	24.09	27.43	30.75			33.67	36.75	52.42	77.27	80.61	81.95
U	L_2-$P_{2,3}$	8	3	.01	92	6	20.904	1.77900	4		13.45	19.25	23.31	23.48	24.10	27.44	30.76	31.61	32.96	33.68	36.77	52.44	77.31	80.65	81.99
Sm	$L\gamma_5$		1	.1	62	6	6.967	1.77934	5		13.45	19.25	23.31	23.49	24.11	27.45	30.76	31.61	32.97	33.69	36.77	52.45	77.33	80.67	82.01
In	$K\beta_2$		4	5	49	6	27.856	1.78000	5		13.46	19.26	23.32	23.50	24.12	27.46	30.78	31.63	32.98	33.70	36.79	52.47	77.36	80.71	82.04
Pr	$K\beta_2$		6	65	59	6	41.767	1.78074	5		13.46	19.27	23.33	23.51	24.13	27.47	30.79	31.64	32.99	33.72	36.80	52.49	77.40	80.75	82.08
Pa	$L\gamma_4$		3	.1	91	6	20.879	1.78110	4		13.47	19.27	23.33	23.51	24.13	27.48	30.80	31.65	33.00	33.73	36.81	52.51	77.42	80.77	82.10
Er	$K\beta_1$		8	22	68	6	55.672	1.78128	5		13.47	19.27	23.34	23.51	24.14	27.48	30.80	31.65	33.00	33.73	36.82	52.51	77.43	80.78	82.11
Hf	Ll		1	3	72	6	6.958	1.78145	5		13.47	19.28	23.34	23.52	24.14	27.48	30.80	31.65	33.01	33.73	36.82	52.52	77.44	80.79	82.12
Gd	$K\beta_1$		7	23	64	6	48.688	1.78220	5		13.48	19.29	23.35	23.53	24.15	27.49	30.82	31.67	33.02	33.75	36.83	52.54	77.48	80.83	82.17
Er	$L\alpha_1$		1	100	68	6	6.947	1.78425	5		13.49	19.31	23.37	23.55	24.18	27.53	30.85	31.70	33.06	33.79	36.88	52.61	77.58	80.94	82.28
U	$L\gamma_6$		3	.01	92	6	20.839	1.78453	6		13.49	19.31	23.38	23.56	24.18	27.53	30.86	31.71	33.07	33.79	36.88	52.61	77.60	80.96	82.30
Eu	$L\beta_7$		1	.1	63	6	6.944	1.78510	4		13.50	19.32	23.39	23.57	24.19	27.54	30.87	31.72	33.08	33.80	36.90	52.63	77.63	80.99	82.33
Ce	$K\alpha_1$		5	100	58	6	34.714	1.78546	6		13.50	19.32	23.39	23.57	24.19	27.54	30.87	31.73	33.08	33.81	36.90	52.64	77.65	81.01	82.35
Os	$K\alpha_{1,2}$		9	150	76	6	62.477	1.78568	6		13.50	19.32	23.39	23.57	24.20	27.55	30.88	31.73	33.09	33.82	36.91	52.65	77.66	81.02	82.36
Tb	$L\beta_4$		1	5	65	6	6.939	1.78640	4		13.51	19.33	23.40	23.58	24.21	27.56	30.89	31.74	33.10	33.83	36.92	52.67	77.69	81.06	82.40
Pt	L_1-$O_{4,5}$	8	2	.01	78	6	13.875	1.78680	4		13.51	19.34	23.41	23.59	24.21	27.57	30.90			33.84	36.93	52.69	77.72	81.08	82.42
At	$L\beta_1$	H	2	50	85	6	13.874	1.78698	5		13.51	19.34	23.41	23.59	24.21	27.57	30.90			33.84	36.94	52.69	77.72	81.09	82.43
Er	$K\beta_3$		8	12	68	6	55.485	1.78728	5		13.51	19.34	23.42	23.59	24.22	27.57	30.91	31.76	33.12	33.85	36.94	52.70	77.74	81.11	82.45
Gd	$K\beta_3$		7	11	64	6	48.547	1.78738	5		13.52	19.34	23.42	23.60	24.22	27.57	30.91	31.76	33.12	33.85	36.95	52.71	77.75	81.11	82.46
Re	$K\beta_1$		10	26	75	6	69.298	1.78880	6		13.53	19.36	23.44	23.61	24.24	27.60	30.93	31.79	33.15	33.88	36.98	52.75	77.82	81.19	82.54
Co	$K\alpha_1$		1	100	27	6	6.929	1.78896	6		13.53	19.36	23.44	23.62	24.24	27.60	30.93	31.79	33.15	33.88	36.98	52.76	77.83	81.20	82.55
Np	$L\gamma_1$		3	10	93	6	20.781	1.78949	6		13.53	19.36	23.44	23.62	24.25	27.61	30.94	31.80	33.16	33.89	36.99	52.77	77.85	81.23	82.58
Tl	$L\gamma_5$		2	.1	81	6	13.850	1.79000	5		13.54	19.37	23.45	23.63	24.26	27.62	30.95			33.90	37.00	52.79	77.88	81.26	82.60
Co	$K\alpha_{1,2}$		1	150	27	6	6.924	1.79026	6		13.54	19.37	23.45	23.63	24.26	27.62	30.96	31.81	33.18	33.90	37.01	52.80	77.89	81.27	82.62
Hf	$K\alpha_{1,2}$		8	150	72	6	55.382	1.79061	6		13.54	19.38	23.46	23.64	24.26	27.63	30.96	31.82	33.18	33.91	37.01	52.81	77.91	81.29	82.64
Eu	$K\alpha_1$		6	100	63	6	41.535	1.79068	6		13.54	19.38	23.46	23.64	24.27	27.63	30.97	31.82	33.18	33.91	37.02	52.81	77.92	81.29	82.64
Eu	$L\beta_9$	8	1	.01	63	6	6.919	1.79160	4		13.55	19.39	23.47	23.65	24.28	27.64	30.98	31.84	33.20	33.93	37.04	52.84	77.96	81.34	82.69
U	L_2-O_3	8	3	.01	92	6	20.754	1.79184	5		13.55	19.39	23.48	23.66	24.28	27.64	30.99	31.84	33.21	33.94	37.04	52.85	77.98	81.36	82.71
Ho	$K\beta_2$	H	8	8	67	6	55.315	1.79280	4		13.56	19.40	23.49	23.67	24.29	27.66	31.00	31.86	33.22	33.95	37.06	52.88	78.03	81.41	82.76
Co	$K\alpha_2$		1	50	27	6	6.914	1.79285	6		13.56	19.40	23.49	23.67	24.29	27.66	31.00	31.86	33.23	33.95	37.06	52.88	78.03	81.41	82.76
Hg	$L\gamma_1$		2	10	80	6	13.828	1.79292	5		13.56	19.40	23.49	23.67	24.30	27.66	31.01			33.96	37.06	52.88	78.03	81.42	82.77
Ce	$K\alpha_{1,2}$		5	150	58	6	34.566	1.79311	6		13.56	19.40	23.49	23.67	24.30	27.66	31.01	31.87	33.23	33.96	37.07	52.89	78.04	81.43	82.78
Pt	$L\gamma_4$		2	.1	78	6	13.826	1.79318	5		13.56	19.40	23.49	23.67	24.30	27.67	31.01			33.96	37.07	52.89	78.05	81.43	82.78
W	$K\beta_2'$		10	10	74	6	69.089	1.79421	6		13.57	19.42	23.51	23.69	24.31	27.68	31.03	31.89	33.25	33.98	37.09	52.92	78.10	81.49	82.84
Pt	$L\gamma_4p$		2	.1	78	6	13.812	1.79494	5		13.57	19.42	23.52	23.70	24.32	27.69	31.04			34.00	37.11	52.95	78.14	81.53	82.88
Er	$L\alpha_2$		1	10	68	6	6.904	1.79550	4		13.58	19.43	23.52	23.70	24.33	27.70	31.05	31.91	33.28	34.01	37.12	52.96	78.17	81.56	82.91
Au	$L\gamma_3$		2	2	79	6	13.807	1.79566	5		13.58	19.43	23.53	23.71	24.33	27.70	31.05			34.01	37.12	52.97	78.17	81.57	82.92
U	$L\gamma_3$		3	2	92	6	20.709	1.79572	6		13.58	19.43	23.53	23.71	24.33	27.71	31.05	31.91	33.28	34.01	37.12	52.97	78.18	81.57	82.93
Bi	$L\beta_9$	B	2	.01	83	6	13.805	1.79582	5		13.58	19.43	23.53	23.71	24.34	27.71	31.06			34.01	37.13	52.97	78.18	81.58	82.93
W	$K\beta_2''$		10	10	74	6	69.020	1.79600	5		13.58	19.44	23.53	23.71	24.34	27.71	31.06	31.92	33.29	34.02	37.13	52.98	78.19	81.59	82.94
Pu	$L\gamma_5$		3	.1	94	6	20.701	1.79640	4		13.58	19.44	23.54	23.72	24.34	27.72	31.07	31.93	33.29	34.02	37.14	52.99	78.21	81.61	82.96
Nd	$L\gamma_3$		1	1	60	6	6.900	1.79640	4		13.58	19.44	23.54	23.72	24.34	27.72	31.07	31.93	33.29	34.02	37.14	52.99	78.21	81.61	82.96
Re	$K\beta_3$		10	12	75	6	68.983	1.79697	6		13.59	19.45	23.54	23.72	24.35	27.73	31.08	31.94	33.30	34.04	37.15	53.01	78.24	81.64	83.00
Eu	$K\beta_2$		7	8	63	6	48.248	1.79845	6		13.60	19.46	23.56	23.74	24.37	27.75	31.10	31.96	33.33	34.06	37.18	53.06	78.32	81.72	83.08
Pm	$L\gamma_1$		1	5	61	6	6.891	1.79890	4		13.60	19.47	23.57	23.75	24.38	27.76	31.11	31.97	33.34	34.07	37.19	53.07	78.34	81.75	83.11
Pt	L_1-O_1	8	2	.01	78	6	13.781	1.79900	4		13.60	19.47	23.57	23.75	24.38	27.76	31.11			34.07	37.19	53.07	78.35	81.75	83.11
Po	$L\beta_5$		2	1	84	6	13.779	1.79920	4		13.60	19.47	23.57	23.75	24.38	27.76	31.12			34.08	37.20	53.08	78.36	81.76	83.12
Eu	$L\beta_{10}$	8	1	.01	63	6	6.889	1.79930	4		13.61	19.47	23.57	23.76	24.38	27.76	31.12	31.98	33.35	34.08	37.20	53.08	78.36	81.77	83.13
Hg	$K\alpha_2$		10	50	80	6	68.883	1.79958	6		13.61	19.47	23.58	23.76	24.39	27.77	31.12	31.98	33.35	34.09	37.21	53.09	78.38	81.78	83.14
Er	$K\alpha_2$		7	50	68	6	48.213	1.79977	6		13.61	19.48	23.58	23.76	24.39	27.77	31.13	31.99	33.36	34.09	37.21	53.10	78.39	81.79	83.15
Eu	$K\alpha_{1,2}$		6	150	63	6	41.320	1.80002	6		13.61	19.48	23.58	23.76	24.39	27.77	31.13	31.99	33.36	34.09	37.22	53.11	78.40	81.81	83.17
Xe	$K\beta_2$	H	5	6	54	6	34.408	1.80130	5		13.62	19.49	23.60	23.78	24.41	27.79	31.15	32.02	33.39	34.12	37.24	53.15	78.47	81.88	83.24
Nd	$L\gamma_2$		1	1	60	6	6.882	1.80130	4		13.62	19.49	23.60	23.78	24.41	27.79	31.15	32.02	33.39	34.12	37.24	53.15	78.47	81.88	83.24
Au	$K\alpha_1$		10	100	79	6	68.792	1.80195	6		13.63	19.50	23.61	23.79	24.42	27.80	31.17	32.03	33.40	34.13	37.26	53.17	78.50	81.91	83.28
Np	$L\alpha_2$		2	10	93	6	13.757	1.80209	6		13.63	19.50	23.61	23.79	24.42	27.81	31.17			34.14	37.26	53.17	78.51	81.92	83.29
U	$L\gamma_8$		3	.1	92	6	20.617	1.80375	5		13.64	19.52	23.63	23.81	24.44	27.83	31.20	32.06	33.43	34.17	37.30	53.23	78.59	82.01	83.38
Tc	$K\beta_1$	H	3	16	43	6	20.615	1.80390	5		13.64	19.52	23.64	23.82	24.45	27.83	31.20	32.06	33.44	34.17	37.30	53.23	78.60	82.02	83.39
Te	$K\alpha_1$		4	100	52	6	27.468	1.80518	6		13.65	19.54	23.65	23.83	24.46	27.85	31.22	32.09	33.46	34.20	37.33	53.27	78.67	82.09	83.46

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Gd	$L\beta_6$		1	.1	64	6	6.866	1.80540	4	13.65	19.54	23.66	23.84	24.47	27.86	31.23	32.09	33.46	34.20	37.33	53.28	78.68	82.10	83.47
Tc	$K\beta_3$	H	3	8	43	6	20.595	1.80564	5	13.65	19.54	23.66	23.84	24.47	27.86	31.23	32.09	33.47	34.20	37.34	53.29	78.69	82.12	83.49
Au	$L\gamma_6$		2	.01	79	6	13.728	1.80594	5	13.66	19.54	23.66	23.84	24.48	27.87	31.24			34.21	37.34	53.30	78.71	82.13	83.50
Ce	$K\alpha_2$		5	50	58	6	34.273	1.80841	6	13.67	19.57	23.70	23.88	24.51	27.91	31.28	32.15	33.52	34.26	37.40	53.37	78.84	82.27	83.64
Au	$L\gamma_2$		2	1	79	6	13.707	1.80868	5	13.68	19.57	23.70	23.88	24.51	27.91	31.28			34.26	37.40	53.38	78.85	82.29	83.66
Cf	$L\beta_1$		3	50	98	3	20.557	1.80900		13.68	19.58	23.70	23.89	24.52	27.91	31.29	32.16	33.53	34.27	37.41	53.39	78.87	82.30	83.68
U	Lv	B	3	.01	92	6	20.554	1.80930	4	13.68	19.58	23.71	23.89	24.52	27.92	31.30	32.16	33.54	34.28	37.42	53.40	78.88	82.32	83.69
Bi	$L\beta_{10}$	B	2	.01	83	6	13.698	1.80990	5	13.69	19.59	23.72	23.90	24.53	27.93	31.31			34.29	37.43	53.42	78.91	82.35	83.73
Te	$K\alpha_{1,2}$		4	150	52	6	27.377	1.81116	6	13.70	19.60	23.73	23.91	24.55	27.95	31.33	32.20	33.57	34.31	37.46	53.46	78.98	82.42	83.H0
Eu	$L\beta_{2,15}$		1	20	63	6	6.842	1.81180	4	13.70	19.61	23.74	23.92	24.56	27.96	31.34	32.21	33.59	34.32	37.47	53.48	79.01	82.46	83.84
Au	L_2-O_3	B	2	.01	79	6	13.676	1.81276	5	13.71	19.62	23.75	23.94	24.57	27.97	31.36			34.34	37.49	53.51	79.06	82.51	83.89
Pr	AL_1	H	1		59	6	6.833	1.81410	4	13.72	19.63	23.77	23.95	24.59	28.00	31.38	32.25	33.63	34.37	37.52	53.56	79.13	82.59	83.97
Os	$K\alpha_2$		9	50	76	6	61.476	1.81475	6	13.72	19.64	23.78	23.96	24.60	28.01	31.39	32.26	33.64	34.38	37.53	53.58	79.17	82.62	84.00
Ra	Ln		2	1	88	6	13.661	1.81484	5	13.72	19.64	23.78	23.96	24.60	28.01	31.39			34.38	37.53	53.58	79.17	82.63	84.01
Au	L_2-O_2	B	2	.01	79	6	13.660	1.81492	5	13.72	19.64	23.78	23.96	24.60	28.01	31.40			34.39	37.54	53.58	79.1H	82.63	84.01
Gd	$L\beta_3$		1	6	64	6	6.830	1.81500	4	13.72	19.64	23.78	23.97	24.60	28.01	31.40	32.27	33.65	34.39	37.54	53.58	79.18	82.64	84.02
O	$L\gamma_2$		3	1	92	6	20.481	1.81571	6	13.73	19.65	23.79	23.98	24.61	28.02	31.41	32.28	33.66	34.40	37.55	53.61	79.22	82.68	84.06
Hf	$K\alpha_2$		8	50	72	6	54.602	1.81619	6	13.73	19.66	23.80	23.98	24.62	28.03	31.42	32.29	33.67	34.41	37.56	53.62	79.24	82.70	84.09
Au	Lv	B	2	.01	79	6	13.646	1.81674	5	13.74	19.66	23.81	23.99	24.62	28.04	31.43			34.42	37.58	53.64	79.27	82.73	84.12
Hg	L_2-N_3	B	2	.01	80	6	13.638	1.81788	5	13.75	19.67	23.82	24.00	24.64	28.05	31.45			34.44	37.60	53.68	79.33	82.80	84.18
In	$K\beta_1$		4	19	49	6	27.271	1.81818	6	13.75	19.68	23.83	24.01	24.64	28.06	31.45	32.32	33.71	34.45	37.61	53.69	79.35	82.81	84.20
Po	$L\beta_3$		2	6	84	6	13.635	1.81820	4	13.75	19.68	23.83	24.01	24.64	28.06	31.45			34.45	37.61	53.69	79.35	82.81	84.20
Au	$K\alpha_{1,2}$		10	150	79	6	68.177	1.81822	6	13.75	19.68	23.83	24.01	24.64	28.06	31.45	32.32	33.71	34.45	37.61	53.69	79.35	82.82	84.20
Eu	$K\alpha_2$		6	50	63	6	40.895	1.81871	6	13.75	19.68	23.83	24.02	24.65	28.07	31.46	32.33	33.72	34.46	37.62	53.70	79.37	82.84	84.23
Pr	$L\gamma_4$		1	.1	59	6	6.814	1.81930	4	13.76	19.69	23.84	24.02	24.66	28.08	31.47	32.34	33.73	34.47	37.63	53.72	79.40	82.88	84.26
Au	$L\gamma_8$		2	.1	79	6	13.624	1.81978	5	13.76	19.70	23.85	24.03	24.67	28.08	31.48			34.48	37.64	53.74	79.43	82.90	84.29
In	$K\beta_3$		4	8	49	6	27.233	1.82072	6	13.77	19.71	23.86	24.04	24.68	28.10	31.50	32.37	33.76	34.50	37.66	53.77	79.48	82.95	84.34
Lu	$K8_1$	H	9	65	71	6	61.272	1.82079	5	13.77	19.71	23.86	24.04	24.68	28.10	31.50	32.37	33.76	34.50	37.66	53.77	79.48	82.96	84.35
Th	$L\gamma_{13}$		3	.01	90	6	20.420	1.82115	5	13.77	19.71	23.87	24.05	24.68	28.11	31.51	32.38	33.77	34.51	37.67	53.78	79.50	82.98	84.37
O	$L\alpha_1$		2	100	92	6	13.612	1.82128	6	13.77	19.71	23.87	24.05	24.69	28.11	31.51			34.51	37.67	53.78	79.51	82.99	84.38
Te	$K\alpha_2$		4	50	52	6	27.197	1.82314	6	13.79	19.73	23.89	24.07	24.71	28.14	31.54	32.41	33.80	34.55	37.71	53.84	79.61	83.09	84.48
Au	L_1-N_1	F	2	.01	79	6	13.592	1.82404	5	13.79	19.74	23.90	24.09	24.72	28.15	31.56			34.56	37.73	53.87	79.65	83.14	84.53
Th	L_1-$O_{4,5}$	B	3	.01	90	6	20.378	1.82490	4	13.80	19.75	23.92	24.10	24.74	28.17	31.57	32.45	33.84	34.58	37.75	53.90	79.70	83.19	84.58
Re	$K\alpha_1$		9	100	75	6	61.130	1.82503	6	13.80	19.75	23.92	24.10	24.74	28.17	31.57	32.45	33.84	34.58	37.75	53.90	79.70	83.19	84.59
Ho	$K\alpha_1$		7	100	67	6	47.539	1.82529	6	13.80	19.76	23.92	24.10	24.74	28.17	31.58	32.45	33.84	34.59	37.76	53.91	79.72	83.21	84.60
Pr	$K\beta_1$		6	22	59	6	40.741	1.82557	6	13.81	19.76	23.92	24.11	24.75	28.18	31.58	32.46	33.85	34.59	37.76	53.92	79.73	83.22	84.62
Ho	Ln		1	1	67	6	6.787	1.82640	4	13.81	19.77	23.94	24.12	24.76	28.19	31.60	32.47	33.87	34.61	37.78	53.95	79.78	83.27	84.67
Lu	$K\beta_3$	H	9	12	71	6	61.037	1.82781	5	13.82	19.78	23.95	24.14	24.78	28.21	31.62	32.50	33.89	34.64	37.81	53.99	79.85	83.35	84.75
Pt	$L\gamma_{11}$	B	2	.01	78	6	13.558	1.82860	4	13.83	19.79	23.96	24.15	24.79	28.22	31.64			34.65	37.83	54.02	79.89	83.39	84.79
Yb	$K\beta_2$	H	9	9	70	6	60.974	1.82970	4	13.84	19.80	23.98	24.16	24.80	28.24	31.66	32.53	33.93	34.67	37.85	54.05	79.95	83.45	84.86
Pr	$K\beta_3$		6	10	59	6	40.646	1.82985	6	13.84	19.81	23.98	24.16	24.80	28.24	31.66	32.54	33.93	34.68	37.86	54.06	79.96	83.46	84.87
Yb	Lt	B	1	.01	70	6	6.770	1.83091	5	13.85	19.82	24.00	24.18	24.82	28.26	31.68	32.56	33.95	34.70	37.88	54.09	80.01	83.52	84.93
Th	$L\gamma_4$		3	.1	90	6	20.289	1.83294	5	13.86	19.84	24.02	24.21	24.85	28.29	31.72	32.59	33.99	34.74	37.92	54.16	80.12	83.64	85.04
Lu	$K\alpha_1$		8	100	71	6	54.061	1.83438	6	13.87	19.86	24.04	24.23	24.87	28.31	31.74	32.62	34.02	34.77	37.95	54.20	80.20	83.72	85.13
Lu	Ll		1	2	71	6	6.752	1.83600	4	13.88	19.87	24.06	24.25	24.89	28.34	31.77	32.65	34.05	34.80	37.99	54.25	80.28	83.81	85.22
Ho	$K\alpha_{1,2}$		7	150	67	6	47.253	1.83633	6	13.89	19.88	24.07	24.25	24.89	28.35	31.78	32.66	34.06	34.80	38.00	54.27	80.30	83.83	85.24
Th	$L\gamma_4$p		3	.1	90	6	20.238	1.83753	5	13.90	19.89	24.08	24.27	24.91	28.36	31.80	32.6H	34.08	34.83	38.02	54.30	80.36	83.89	85.31
Re	$K\alpha_{1,2}$		9	150	75	6	60.648	1.83952	6	13.91	19.91	24.11	24.29	24.94	28.40	31.83	32.71	34.12	34.87	38.06	54.37	80.47	84.00	85.42
Rh	$K\alpha_1$		3	100	45	6	20.213	1.83984	6	13.91	19.91	24.11	24.30	24.94	28.40	31.84	32.72	34.12	34.87	38.07	54.38	80.48	84.02	85.44
Pa	$L\gamma_6$		3	.01	91	6	20.212	1.83990	4	13.91	19.92	24.11	24.30	24.94	28.40	31.84	32.72	34.12	34.87	38.07	54.38	80.49	84.03	85.44
Br	$K\beta_2$		2	2	35	6	13.467	1.84092	5	13.92	19.93	24.13	24.31	24.96	28.42	31.86			34.89	38.09	54.41	80.54	84.08	85.50
Ho	$K\beta_1$		8	22	67	6	53.868	1.84096	5	13.92	19.93	24.13	24.31	24.96	28.42	31.86	32.74	34.14	34.89	38.10	54.41	80.54	84.09	85.50
Xe	$K8_1$	H	5	20	54	6	33.619	1.84360	5	13.94	19.96	24.16	24.35	24.99	28.46	31.90	32.79	34.19	34.95	38.15	54.50	80.68	84.23	85.66
W	$K\beta_1$		10	26	74	6	67.233	1.84374	6	13.94	19.96	24.17	24.35	25.00	28.46	31.91	32.79	34.20	34.95	38.15	54.50	80.69	84.24	85.66
Th	L_1-O_1	B	3	.01	90	6	20.169	1.84380	4	13.94	19.96	24.17	24.35	25.00	28.46	31.91	32.79	34.20	34.95	38.16	54.50	80.69	84.24	85.67
Po	$L\beta_1$		2	50	84	6	13.445	1.84400	4	13.95	19.96	24.17	24.35	25.00	28.47	31.91			34.95	38.16	54.51	80.70	84.26	85.68
Nd	AL_2		1		60	6	6.722	1.84400	4	13.95	19.96	24.17	24.35	25.00	28.47	31.91	32.80	34.20	34.95	38.16	54.51	80.70	84.26	85.68
Rh	$K\alpha_{1,2}$		3	150	45	6	20.165	1.84419	6	13.95	19.96	24.17	24.36	25.00	28.47	31.91	32.80	34.21	34.96	38.16	54.52	80.71	84.27	85.69
U	$L\gamma_1$		3	10	92	6	20.164	1.84431	6	13.95	19.96	24.17	24.36	25.00	28.47	31.92	32.80	34.21	34.96	38.17	54.52	80.72	84.27	85.70
Ho	$L\alpha_1$		1	100	67	6	6.719	1.84500	4	13.95	19.97	24.18	24.37	25.01	28.48	31.93	32.81	34.22	34.97	38.18	54.54	80.76	84.31	85.74
Eu	$K\beta_1$		7	23	63	6	47.030	1.84504	6	13.95	19.97	24.18	24.37	25.01	28.48	31.93	32.81	34.22	34.97	38.18	54.54	80.76	84.31	85.74
U	$L\alpha_2$		2	10	92	6	13.437	1.H4512	6	13.95	19.97	24.18	24.37	25.01	28.48	31.93			34.98	38.18	54.55	80.76	84.32	85.74
Sm	AL_3		1		62	6	6.716	1.84570	4	13.96	19.98	24.19	24.38	25.02	28.49	31.94	32.83	34.23	34.99	38.20	54.56	80.79	84.35	85.78
Ho	$K\beta_3$		8	11	67	6	53.702	1.84664	5	13.97	19.99	24.20	24.39	25.04	28.51	31.96	32.84	34.25	35.01	38.22	54.59	80.84	84.40	85.83
Gd	$L\beta_1$		1	50	64	6	6.712	1.84680	4	13.97	19.99	24.21	24.39	25.04	28.51	31.96	32.85	34.26	35.01	38.22	54.60	80.85	84.41	85.84

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
								10⁻																	
Sm	$L\beta_5$		1	.1	62	6	6.711	1.84700	5		13.97	19.99	24.21	24.39	25.04	28.51	31.96	32.85	34.26	35.01	38.23	54.61	80.86	84.42	85.85
Xe	$K\beta_3$	H	5	9	54	6	33.556	1.84705	5		13.97	19.99	24.21	24.40	25.04	28.51	31.97	32.85	34.26	35.01	38.23	54.61	80.86	84.43	85.85
Lu	$K\alpha_{1,2}$		8	150	71	6	53.687	1.84714	6		13.97	19.99	24.21	24.40	25.04	28.52	31.97	32.85	34.26	35.02	38.23	54.61	80.87	84.43	85.86
Np	$L\gamma_5$		3	.1	93	6	20.123	1.84800	3		13.98	20.00	24.22	24.41	25.05	28.53	31.98	32.87	34.28	35.03	38.25	54.64	80.91	84.48	85.91
Th	$L_1-N_{6,7}$	B	3	.01	90	6	20.123	1.84800	4		13.98	20.00	24.22	24.41	25.05	28.53	31.98	32.87	34.28	35.03	38.25	54.64	80.91	84.48	85.91
Bi	$L_3-P_{2,3}$	B	2	.01	83	6	13.414	1.84826	5		13.98	20.01	24.23	24.41	25.06	28.53	31.99			35.04	38.25	54.65	80.93	84.50	85.92
Ir	$L_1-O_{4,5}$	B	2	.01	77	6	13.411	1.84860	4		13.98	20.01	24.23	24.42	25.06	28.54	31.99			35.04	38.26	54.66	80.95	84.51	85.94
Ce	$K\beta_2$		6	7	58	6	40.226	1.84896	5		13.98	20.01	24.24	24.42	25.07	28.54	32.00	32.89	34.30	35.05	38.27	54.67	80.96	84.54	85.96
Hg	$L\gamma_5$		2	.1	80	6	13.408	1.84906	5		13.98	20.02	24.24	24.42	25.07	28.55	32.00			35.05	38.27	54.67	80.97	84.54	85.97
Br	$K\beta_5$	B	2	.06	35	6	13.402	1.84986	5		13.99	20.02	24.25	24.43	25.08	28.56	32.02			35.07	38.29	54.70	81.01	84.59	86.02
Ta	$K\beta_2'$		10	9	73	6	67.001	1.85011	6		13.99	20.03	24.25	24.44	25.08	28.56	32.02	32.91	34.32	35.07	38.29	54.71	81.03	84.60	86.03
Eu	$K\beta_3$		7	11	63	6	46.896	1.85032	6		13.99	20.03	24.25	24.44	25.09	28.57	32.02	32.91	34.32	35.08	38.30	54.71	81.04	84.61	86.04
Pa	$L\gamma_3$		3	2	91	6	20.094	1.85070	4		14.00	20.03	24.26	24.44	25.09	28.57	32.03	32.92	34.33	35.09	38.30	54.73	81.06	84.63	86.06
Au	$K\alpha_2$		10	50	79	6	66.978	1.85075	6		14.00	20.03	24.26	24.44	25.09	28.57	32.03	32.92	34.33	35.09	38.31	54.73	81.06	84.64	86.07
Rb	$K\alpha_1$		2	100	37	6	13.393	1.85111	6		14.00	20.04	24.26	24.45	25.10	28.58	32.04			35.09	38.31	54.74	81.08	84.66	86.09
Bi	$L\beta_5$		2	1	83	6	13.393	1.85112	5		14.00	20.04	24.26	24.45	25.10	28.58	32.04			35.09	38.31	54.74	81.08	84.66	86.09
W	$K\beta_3$		10	12	74	6	66.940	1.85181	6		14.00	20.05	24.27	24.46	25.11	28.59	32.05	32.94	34.35	35.11	38.33	54.76	81.12	84.70	86.13
Ta	$K\beta_2''$		10	9	73	6	66.937	1.85188	6		14.01	20.05	24.27	24.46	25.11	28.59	32.05	32.94	34.35	35.11	38.33	54.76	81.12	84.70	86.13
Rh	$K\alpha_2$		3	50	45	6	20.070	1.85289	6		14.01	20.06	24.29	24.47	25.12	28.61	32.07	32.96	34.37	35.13	38.35	54.80	81.17	84.76	86.19
Au	$L\gamma_1$		2	10	79	6	13.379	1.85300	5		14.01	20.06	24.29	24.48	25.12	28.61	32.07			35.13	38.35	54.80	81.18	84.76	86.20
Pb	$L\beta_9$	B	2	.01	82	6	13.375	1.85360	4		14.02	20.07	24.30	24.48	25.13	28.62	32.08			35.14	38.37	54.82	81.21	84.80	86.23
Dy	$K\beta_2$	8	8	9	66	6	53.500	1.85360	4		14.02	20.07	24.30	24.48	25.13	28.62	32.08	32.97	34.39	35.14	38.37	54.82	81.21	84.80	86.23
La	$K\alpha_1$		5	100	57	6	33.436	1.85368	6		14.02	20.07	24.30	24.48	25.13	28.62	32.08	32.97	34.39	35.14	38.37	54.82	81.21	84.80	86.24
Rb	$K\alpha_{1,2}$		2	150	37	6	13.373	1.85386	5		14.02	20.07	24.30	24.49	25.14	28.62	32.09			35.15	38.37	54.83	81.22	84.81	86.25
Gd	$L\beta_4$		1	5	64	6	6.686	1.85400	4		14.02	20.07	24.30	24.49	25.14	28.62	32.09	32.98	34.39	35.15	38.38	54.83	81.23	84.82	86.26
Sm	$K\alpha_1$		6	100	62	6	40.111	1.85424	6		14.02	20.07	24.31	24.49	25.14	28.63	32.09	32.98	34.40	35.15	38.38	54.84	81.24	84.83	86.27
Ir	$L\gamma_4$		2	.1	77	6	13.366	1.85488	5		14.03	20.08	24.31	24.50	25.15	28.64	32.10			35.17	38.39	54.86	81.28	84.87	86.31
Pt	$K\alpha_1$		10	100	78	6	66.821	1.85511	6		14.03	20.08	24.32	24.50	25.15	28.64	32.11	33.00	34.41	35.17	38.40	54.87	81.29	84.88	86.32
Nd	$L\gamma_8$		1	.1	60	6	6.682	1.85520	4		14.03	20.08	24.32	24.50	25.15	28.64	32.11	33.00	34.42	35.17	38.40	54.87	81.30	84.89	86.33
Pt	$L\gamma_3$		2	2	78	6	13.359	1.85582	5		14.04	20.09	24.33	24.51	25.16	28.65	32.12			35.19	38.41	54.89	81.33	84.92	86.36
Ho	$L\alpha_2$		1	10	67	6	6.679	1.85610	4		14.04	20.09	24.33	24.52	25.17	28.66	32.13	33.02	34.43	35.19	38.42	54.90	81.34	84.94	86.38
Sm	$L\beta_7$		1	.1	62	6	6.678	1.85626	5		14.04	20.09	24.33	24.52	25.17	28.66	32.13	33.02	34.44	35.19	38.42	54.90	81.35	84.95	86.39
Ir	$L\gamma_4p$		2	.1	77	6	13.353	1.85662	5		14.04	20.10	24.34	24.52	25.17	28.67	32.14			35.20	38.43	54.91	81.37	84.97	86.41
Ho	$K\alpha_2$		7	50	67	6	46.692	1.85840	6		14.05	20.12	24.36	24.55	25.20	28.69	32.17	33.06	34.48	35.24	38.47	54.97	81.47	85.07	86.51
Po	$L\beta_2$		2	20	84	6	13.338	1.85874	5		14.06	20.12	24.37	24.55	25.20	28.70	32.17			35.24	38.48	54.98	81.48	85.09	86.53
Rb	$K\alpha_2$		2	50	37	6	13.333	1.85938	5		14.06	20.13	24.37	24.56	25.21	28.71	32.18			35.26	38.49	55.00	81.52	85.12	86.57
Mo	$K\beta_4$	B	3	.01	42	6	19.993	1.86003	5		14.07	20.14	24.38	24.57	25.22	28.72	32.20	33.09	34.51	35.27	38.51	55.02	81.55	85.16	86.61
Bi	L_3-O_3	B	2	.01	83	6	13.326	1.86040	4		14.07	20.14	24.39	24.57	25.23	28.72	32.20			35.28	38.51	55.04	81.57	85.18	86.63
La	$K\alpha_{1,2}$		5	150	57	6	33.299	1.86131	6		14.08	20.15	24.40	24.59	25.24	28.74	32.22	33.11	34.53	35.29	38.53	55.07	81.62	85.23	86.68
Cd	$K\beta_2$		4	5	48	6	26.639	1.86131	6		14.08	20.15	24.40	24.59	25.24	28.74	32.22	33.11	34.53	35.29	38.53	55.07	81.62	85.23	86.68
Sm	$L\beta_9$	B	1	.01	62	6	6.659	1.86166	5		14.08	20.15	24.40	24.59	25.24	28.74	32.23	33.12	34.54	35.30	38.54	55.08	81.64	85.25	86.70
Po	$L\beta_{15}$		2	1	84	6	13.312	1.86240	4		14.09	20.16	24.41	24.60	25.25	28.76	32.24			35.31	38.56	55.10	81.68	85.29	86.74
Mo	$K\beta_2$		3	4	42	6	19.962	1.86297	5		14.09	20.17	24.42	24.61	25.26	28.77	32.25	33.14	34.56	35.33	38.57	55.12	81.71	85.33	86.78
Bk	$L\beta_1$		3	50	97	3	19.961	1.86300			14.09	20.17	24.42	24.61	25.26	28.77	32.25	33.14	34.57	35.33	38.57	55.12	81.71	85.33	86.78
Mo	$K\beta_2''$		3	.1	42	6	19.959	1.86321	5		14.09	20.17	24.42	24.61	25.26	28.77	32.25	33.15	34.57	35.33	38.57	55.13	81.72	85.34	86.79
Sm	$K\beta_2$	H	7	8	62	6	46.566	1.86340	4		14.09	20.17	24.43	24.61	25.27	28.77	32.26	33.15	34.57	35.33	38.58	55.13	81.73	85.35	86.80
Sm	$K\alpha_{1,2}$		6	150	62	6	39.911	1.86356	6		14.09	20.17	24.43	24.62	25.27	28.77	32.26	33.15	34.58	35.34	38.58	55.14	81.74	85.36	86.81
Bi	L_3-O_2	B	2	.01	83	6	13.296	1.86460	4		14.10	20.19	24.44	24.63	25.28	28.79	32.28			35.36	38.60	55.17	81.79	85.42	86.87
Br	$K\beta_1$		2	16	35	6	13.289	1.86558	5		14.11	20.20	24.46	24.64	25.30	28.81	32.30			35.38	38.62	55.20	81.85	85.47	86.93
Pa	$L\alpha_1$		2	100	91	6	13.288	1.86568	5		14.11	20.20	24.46	24.65	25.30	28.81	32.30			35.38	38.63	55.21	81.85	85.48	86.93
Br	$K\beta_3$		2	8	35	6	13.282	1.86654	5		14.12	20.21	24.47	24.66	25.31	28.82	32.31			35.40	38.65	55.23	81.90	85.53	86.98
Pb	$L\beta_{10}$	B	2	.01	82	6	13.273	1.86780	4		14.13	20.22	24.49	24.67	25.33	28.84	32.33			35.42	38.67	55.27	81.97	85.60	87.06
U	L_2-N_3	B	3	.01	92	6	19.904	1.86840	4		14.13	20.23	24.49	24.68	25.34	28.85	32.35	33.24	34.67	35.43	38.69	55.29	82.00	85.64	87.09
Pt	$L\gamma_6$		2	.01	78	6	13.269	1.86840	4		14.13	20.23	24.49	24.68	25.34	28.85	32.35			35.43	38.69	55.29	82.00	85.64	87.09
Re	$K\alpha_2$		9	50	75	6	59.708	1.86850	6		14.13	20.23	24.50	24.68	25.34	28.85	32.35	33.24	34.67	35.43	38.69	55.30	82.00	85.64	87.10
Pt	$L\gamma_2$		2	1	78	6	13.268	1.86854	5		14.13	20.23	24.50	24.68	25.34	28.85	32.35			35.43	38.69	55.30	82.00	85.64	87.10
Sm	$L\beta_{10}$	8	1	.01	62	6	6.629	1.86990	5		14.14	20.24	24.51	24.70	25.36	28.87	32.37	33.27	34.70	35.46	38.72	55.34	82.08	85.72	87.18
Bi	Lu	B	2	.01	83	6	13.257	1.87010	5		14.14	20.25	24.52	24.70	25.36	28.88	32.38			35.47	38.72	55.35	82.09	85.73	87.19
Bi	$L\beta_7$		2	.1	83	6	13.257	1.87010	5		14.14	20.25	24.52	24.70	25.36	28.88	32.38			35.47	38.72	55.35	82.09	85.73	87.19
Pt	$K\alpha_{1,2}$		10	150	78	6	66.241	1.87134	6		14.15	20.26	24.53	24.72	25.38	28.90	32.40	33.30	34.73	35.49	38.75	55.39	82.15	85.80	87.26
Pa	$L\gamma_2$		3	1	91	6	19.869	1.87170	4		14.16	20.26	24.54	24.73	25.38	28.90	32.40	33.30	34.73	35.50	38.76	55.40	82.17	85.82	87.28
Lu	$K\alpha_2$		8	50	71	6	52.956	1.87265	6		14.16	20.27	24.55	24.74	25.39	28.92	32.42	33.32	34.75	35.52	38.78	55.43	82.22	85.88	87.34
Eu	$L\beta_6$		1	.1	63	6	6.616	1.87370	4		14.17	20.29	24.56	24.75	25.41	28.93	32.44	33.34	34.77	35.54	38.80	55.46	82.28	85.94	87.40
Pr	$L\gamma_3$		1	1	59	6	6.615	1.87400	4		14.17	20.29	24.57	24.76	25.41	28.94	32.44	33.34	34.78	35.54	38.81	55.47	82.30	85.95	87.42
I	$K\beta_2$	H	5	6	53	6	33.036	1.87615	5		14.19	20.31	24.60	24.79	25.44	28.97	32.48	33.38	34.82	35.58	38.85	55.54	82.41	86.08	87.54

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
La	$K\alpha_2$		5	50	57	6	33.028	1.87656	6		14.19	20.32	24.60	24.79	25.45	28.98	32.49	33.39	34.83	35.59	38.86	55.56	82.43	86.10	87.57
Bi	$L\beta_3$		2	6	83	6	13.208	1.87710	5		14.20	20.32	24.61	24.80	25.46	28.99	32.50			35.60	38.87	55.57	82.46	86.13	87.60
Nd	$L\gamma_1$		1	5	60	6	6.601	1.87790	4		14.20	20.33	24.62	24.81	25.47	29.00	32.51	33.42	34.85	35.62	38.89	55.60	82.50	86.18	87.65
Pt	Lv	B	2	.01	78	6	13.197	1.87862	5		14.21	20.34	24.63	24.82	25.48	29.01	32.53			35.63	38.91	55.62	82.54	86.22	87.69
Th	$L\gamma_{11}$	B	3	.01	90	6	19.791	1.87908	5		14.21	20.34	24.64	24.83	25.48	29.02	32.54	33.44	34.87	35.64	38.92	55.64	82.57	86.24	87.72
Pr	$L\gamma_2$		1	1	59	6	6.597	1.87910	4		14.21	20.34	24.64	24.83	25.48	29.02	32.54	33.44	34.87	35.64	38.92	55.64	82.57	86.24	87.72
Yb	$K\beta_1$		9	64	70	6	59.356	1.87956	5		14.22	20.35	24.64	24.83	25.49	29.03	32.54	33.45	34.88	35.65	38.93	55.65	82.59	86.27	87.74
Au	L_2-N_3	B	2	.01	79	6	13.184	1.88040	4		14.22	20.36	24.65	24.84	25.50	29.04	32.56			35.67	38.94	55.68	82.64	86.32	87.79
Mo	$K\beta_5'$	B	3	.8	42	6	19.773	1.88076	5		14.22	20.36	24.66	24.85	25.51	29.05	32.57	33.47	34.91	35.67	38.95	55.69	82.66	86.34	87.81
W	$K\alpha_1$		9	100	74	6	59.308	1.88109	7		14.23	20.37	24.66	24.85	25.51	29.05	32.57	33.47	34.91	35.68	38.96	55.70	82.68	86.36	87.83
Mo	$K\beta_5''$	B	3	.4	42	6	19.768	1.88124	5		14.23	20.37	24.66	24.85	25.51	29.05	32.57	33.48	34.91	35.68	38.96	55.71	82.68	86.37	87.84
Sb	$K\alpha_1$		4	100	51	6	26.355	1.88142	6		14.23	20.37	24.67	24.86	25.51	29.06	32.58	33.48	34.92	35.69	38.97	55.71	82.69	86.38	87.85
Sm	$K\alpha_2$		6	50	62	6	39.516	1.88219	6		14.24	20.38	24.68	24.87	25.53	29.07	32.59	33.49	34.93	35.70	38.98	55.74	82.73	86.42	87.90
Pt	$L\gamma_8$		2	.1	78	6	13.172	1.88220	4		14.24	20.38	24.68	24.87	25.53	29.07	32.59			35.70	38.98	55.74	82.73	86.42	87.90
Sm	$L\beta_{2,15}$		1	20	62	6	6.586	1.88221	5		14.24	20.38	24.68	24.87	25.53	29.07	32.59	33.49	34.93	35.70	38.98	55.74	82.74	86.42	87.90
Th	L_1-N_4	B	3	.01	90	6	19.751	1.88280	4		14.24	20.38	24.69	24.87	25.53	29.08	32.60	33.51	34.94	35.71	39.00	55.76	82.77	86.46	87.93
Pt	L_1-N_1	F	2	.01	78	6	13.156	1.88452	5		14.25	20.40	24.71	24.90	25.56	29.11	32.63			35.75	39.03	55.81	82.86	86.55	88.04
Yb	$K\beta_3$	H	9	12	70	6	59.141	1.88640	4		14.27	20.42	24.73	24.92	25.58	29.13	32.67	33.57	35.01	35.78	39.07	55.87	82.96	86.66	88.15
Eu	$L\beta_3$		1	6	63	6	6.570	1.88670	4		14.27	20.43	24.74	24.93	25.59	29.14	32.67	33.58	35.02	35.79	39.08	55.88	82.98	86.68	88.16
Dy	$K\alpha_1$		7	100	66	6	45.991	1.88673	6		14.27	20.43	24.74	24.93	25.59	29.14	32.67	33.58	35.02	35.79	39.08	55.88	82.98	86.68	88.17
Sb	$K\alpha_{1,2}$		4	150	51	6	26.271	1.88738	6		14.28	20.43	24.75	24.94	25.60	29.15	32.68	33.59	35.03	35.80	39.09	55.90	83.01	86.72	88.20
Tm	$K\beta_2$	H	9	9	69	6	59.085	1.88820	4		14.28	20.44	24.76	24.95	25.61	29.16	32.70	33.60	35.05	35.82	39.11	55.93	83.06	86.77	88.25
Bi	L_2-M_5	B	2	.01	83	6	13.129	1.88838	5		14.28	20.45	24.76	24.95	25.61	29.17	32.70			35.82	39.12	55.94	83.07	86.78	88.26
Ir	$L\gamma_{11}$	B	2	.01	77	6	13.123	1.88920	4		14.29	20.45	24.77	24.96	25.62	29.18	32.72			35.84	39.13	55.96	83.11	86.82	88.31
Pa	$L\alpha_2$	H	2	10	91	6	13.120	1.88964	5		14.29	20.46	24.78	24.97	25.63	29.19	32.72			35.85	39.14	55.98	83.13	86.85	88.34
Th	L_2-P_4		3	.01	90	6	19.679	1.88973	5		14.29	20.46	24.78	24.97	25.63	29.19	32.72	33.63	35.08	35.85	39.14	55.98	83.14	86.85	88.34
Ir	L_1-N_4	B	2	.01	77	6	13.105	1.89180	4		14.31	20.48	24.81	25.00	25.66	29.22	32.76			35.89	39.19	56.05	83.25	86.97	88.46
Yb	$K\alpha_1$		8	100	70	6	52.380	1.89324	6		14.32	20.50	24.82	25.02	25.68	29.24	32.79	33.70	35.14	35.92	39.22	56.09	83.33	87.05	88.55
Ce	AL_1	H	1		58	6	6.547	1.89340	4		14.32	20.50	24.83	25.02	25.68	29.25	32.79	33.70	35.15	35.92	39.22	56.10	83.34	87.06	88.56
Th	L_2-$P_{2,3}$	B	3	.01	90	6	19.639	1.89360	4		14.32	20.50	24.83	25.02	25.68	29.25	32.79	33.70	35.15	35.93	39.23	56.10	83.35	87.08	88.57
Yb	Ll		1	2	70	6	6.544	1.89415	5		14.33	20.51	24.84	25.03	25.69	29.26	32.80	33.71	35.16	35.94	39.24	56.12	83.38	87.11	88.60
Th	L_2-P_1		3	.01	90	6	19.626	1.89480	4		14.33	20.52	24.85	25.04	25.70	29.27	32.82	33.73	35.17	35.95	39.25	56.14	83.41	87.14	88.64
Ce	$K\beta_1$		6	22	58	6	39.251	1.89490	6		14.33	20.52	24.85	25.04	25.70	29.27	32.82	33.73	35.18	35.95	39.26	56.15	83.42	87.15	88.65
Po	$L\beta_4$		2	4	84	6	13.083	1.89500	4		14.33	20.52	24.85	25.04	25.70	29.27	32.82			35.95	39.26	56.15	83.42	87.16	88.65
W	$K\alpha_{1,2}$		9	150	74	6	58.856	1.89554	6		14.34	20.52	24.86	25.05	25.71	29.28	32.83	33.74	35.19	35.96	39.27	56.17	83.45	87.19	88.69
Mn	AK		1		25	6	6.536	1.89643	5		14.34	20.53	24.87	25.06	25.72	29.29	32.84	33.76	35.21	35.98	39.29	56.20	83.50	87.24	88.74
Mo	$K\beta_1$		3	17	42	6	19.605	1.89686	6		14.35	20.54	24.87	25.06	25.73	29.30	32.85	33.76	35.21	35.99	39.30	56.21	83.52	87.26	88.76
Mn	$K\beta_5$	B	1	.03	25	6	6.534	1.89710	4	4	14.35	20.54	24.88	25.07	25.73	29.30	32.86	33.77	35.22	35.99	39.30	56.22	83.54	87.28	88.78
Dy	Ln		1	1	66	6	6.533	1.89743	5		14.35	20.54	24.88	25.07	25.74	29.31	32.86	33.77	35.22	36.00	39.31	56.23	83.55	87.30	88.80
Dy	$K\alpha_{1,2}$		7	150	66	6	45.724	1.89773	6		14.35	20.55	24.88	25.08	25.74	29.31	32.87	33.78	35.23	36.01	39.32	56.24	83.57	87.31	88.81
Th	$L\gamma_6$		3	.01	90	6	19.596	1.89774	5		14.35	20.55	24.88	25.08	25.74	29.31	32.87	33.78	35.23	36.01	39.32	56.24	83.57	87.31	88.82
Mo	$K\beta_3$		3	7	42	6	19.587	1.89862	6		14.36	20.56	24.90	25.09	25.75	29.33	32.88	33.80	35.25	36.02	39.34	56.27	83.62	87.36	88.87
Ce	$L\gamma_4$		1	.1	58	6	6.527	1.89910	4		14.36	20.56	24.90	25.09	25.76	29.34	32.89	33.80	35.26	36.03	39.35	56.28	83.64	87.39	88.90
Ce	$K\beta_3$		6	10	58	6	39.163	1.89912	6		14.36	20.56	24.90	25.09	25.76	29.34	32.89	33.80	35.26	36.03	39.35	56.28	83.65	87.39	88.90
Sb	$K\alpha_2$		4	50	51	6	26.106	1.89931	6		14.37	20.57	24.91	25.10	25.76	29.34	32.90	33.81	35.26	36.04	39.35	56.29	83.66	87.40	88.91
Cd	$K\beta_1$		4	19	48	6	26.091	1.90042	6		14.37	20.58	24.92	25.11	25.78	29.36	32.92	33.83	35.28	36.06	39.38	56.32	83.72	87.47	88.97
Pa	$L\gamma_1$	8	3	10	91	6	19.565	1.90074	5		14.38	20.58	24.92	25.12	25.78	29.36	32.92	33.83	35.29	36.07	39.38	56.33	83.73	87.49	88.99
Ta	$K\beta_1$		10	26	73	6	65.212	1.90089	6		14.38	20.58	24.93	25.12	25.78	29.36	32.92	33.84	35.29	36.07	39.39	56.34	83.74	87.50	89.00
Pb	L_3-$P_{2,3}$	8	2	.01	82	6	13.032	1.90236	5		14.39	20.60	24.95	25.14	25.80	29.39	32.95			36.10	39.42	56.39	83.82	87.58	89.09
Cd	$K\beta_3$		4	8	48	6	26.057	1.90292	6		14.39	20.61	24.95	25.15	25.81	29.40	32.96	33.87	35.33	36.11	39.43	56.40	83.85	87.61	89.12
Dy	$K\beta_1$		8	23	66	6	52.110	1.90304	5		14.39	20.61	24.96	25.15	25.81	29.40	32.96	33.88	35.33	36.11	39.43	56.41	83.86	87.62	89.13
Pt	$K\alpha_2$		10	50	78	6	65.112	1.90381	6		14.40	20.61	24.97	25.16	25.82	29.41	32.98	33.89	35.35	36.13	39.45	56.43	83.90	87.66	89.17
Bi	$L\beta_1$		2	50	83	6	13.021	1.90396	6		14.40	20.62	24.97	25.16	25.83	29.41	32.98			36.13	39.45	56.44	83.91	87.67	89.18
Pb	$L\beta_5$		2	1	82	6	13.013	1.90520	4		14.41	20.63	24.98	25.18	25.84	29.43	33.00			36.15	39.48	56.48	83.97	87.74	89.26
Yb	$K\alpha_{1,2}$		8	150	70	6	52.030	1.90596	6		14.42	20.64	24.99	25.19	25.85	29.44	33.01	33.93	35.39	36.17	39.50	56.50	84.01	87.79	89.30
U	$L\gamma_5$		3	.1	92	6	19.504	1.90671	5		14.42	20.65	25.00	25.20	25.86	29.46	33.03	33.94	35.40	36.18	39.51	56.53	84.06	87.83	89.35
Th	$L\gamma_3$		3	2	90	6	19.503	1.90677	5		14.42	20.65	25.00	25.20	25.86	29.46	33.03	33.94	35.40	36.18	39.51	56.53	84.06	87.84	89.35
Th	L_2-O_3	8	3	.01	90	6	19.503	1.90680	4		14.42	20.65	25.01	25.20	25.86	29.46	33.03	33.95	35.40	36.19	39.51	56.53	84.06	87.84	89.35
Hf	$K\beta_2$		H10	9	72	6	64.969	1.90800	4		14.43	20.66	25.02	25.21	25.88	29.48	33.05	33.97	35.43	36.21	39.54	56.57	84.13	87.91	89.42
Dy	$L\alpha_1$		1	100	66	6	6.494	1.90881	5		14.44	20.67	25.03	25.22	25.89	29.49	33.06	33.98	35.44	36.22	39.56	56.60	84.17	87.95	89.47
Ta	$K\beta_3$		10	12	73	6	64.938	1.90890	6		14.44	20.67	25.03	25.23	25.89	29.49	33.07	33.98	35.44	36.23	39.56	56.60	84.17	87.96	89.48
Dy	$K\beta_3$		8	11	66	6	51.949	1.90896	5		14.44	20.67	25.03	25.23	25.89	29.49	33.07	33.99	35.45	36.23	39.56	56.60	84.18	87.96	89.48
Mn	$K\beta_{1,3}$		1	20	25	6	6.489	1.91021	5	4	14.45	20.68	25.05	25.24	25.91	29.51	33.09	34.01	35.47	36.25	39.59	56.64	84.25	88.03	89.55
Bi	$L\beta_2$		2	20	83	6	12.978	1.91036	5		14.45	20.69	25.05	25.25	25.91	29.51	33.09			36.26	39.59	56.65	84.25	88.04	89.56
Ir	$K\alpha_1$		10	100	77	6	64.885	1.91047	6		14.45	20.69	25.05	25.25	25.92	29.52	33.09	34.01	35.47	36.26	39.59	56.65	84.26	88.05	89.57

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)	LiF (220)	Qtz (203)	Topaz (303)
Th	L_2-O_2	B	3	.01	90	6	19.463	1.91070	4		14.45	20.69	25.06	25.25	25.92	29.52	33.10	34.02	35.48	36.26	39.60	56.66	84.27	88.06	89.58
Sm	$K8_1$		7	22	62	6	45.405	1.91107	5		14.46	20.69	25.06	25.25	25.92	29.52	33.11	34.02	35.49	36.27	39.61	56.67	84.29	88.08	89.61
Au	$L\gamma_5$		2	.1	79	6	12.972	1.91118	5		14.46	20.70	25.06	25.26	25.93	29.53	33.11			36.27	39.61	56.67	84.30	88.09	89.61
Th	$L\alpha_1$		2	100	90	6	12.967	1.91200	5		14.46	20.70	25.07	25.27	25.94	29.54	33.12			36.29	39.63	56.70	84.34	88.14	89.66
Os	L_1-$O_{4,5}$	B	2	.01	76	6	12.966	1.91206	5		14.46	20.71	25.08	25.27	25.94	29.54	33.12			36.29	39.63	56.70	84.35	88.14	89.67
Tl	$L\beta_9$	B	2	.01	81	6	12.956	1.91350	5		14.47	20.72	25.09	25.29	25.96	29.56	33.15			36.32	39.66	56.75	84.42	88.23	89.75
Bi	$L\beta_{15}$		2	1	83	6	12.953	1.91404	5		14.48	20.73	25.10	25.29	25.96	29.57	33.16			36.33	39.67	56.76	84.45	88.26	89.78
Pb	L_3-O_3	B	2	.01	82	6	12.942	1.91560	4		14.49	20.74	25.12	25.32	25.99	29.60	33.19			36.36	39.70	56.81	84.54	88.35	89.88
Pt	$L\gamma_1$		2	10	78	6	12.940	1.91594	5		14.49	20.75	25.13	25.32	25.99	29.60	33.19			36.36	39.71	56.83	84.56	88.37	89.90
Sm	$K\beta_3$		7	10	62	6	45.281	1.91632	5		14.50	20.75	25.13	25.33	26.00	29.61	33.20	34.12	35.59	36.37	39.72	56.84	84.58	88.39	89.92
Th	$L\gamma_8$		3	.1	90	6	19.400	1.91694	5		14.50	20.76	25.14	25.33	26.00	29.62	33.21	34.13	35.60	36.38	39.73	56.86	84.61	88.43	89.96
Cm	$L\beta_1$		3	50	96	3	19.399	1.91700			14.50	20.76	25.14	25.33	26.01	29.62	33.21	34.13	35.60	36.39	39.73	56.86	84.61	88.43	89.96
Pb	L_3-O_2	B	2	.01	82	6	12.931	1.91720	4		14.50	20.76	25.14	25.34	26.01	29.62	33.21			36.39	39.74	56.87	84.63	88.44	89.97
Tb	$K8_2$	H	8	8	65	6	51.715	1.91760	4		14.50	20.77	25.15	25.34	26.01	29.63	33.22	34.14	35.61	36.40	39.75	56.88	84.65	88.46	90.00
Ir	$L\gamma_3$		2	2	77	6	12.922	1.91862	5		14.51	20.78	25.16	25.36	26.03	29.64	33.24			36.42	39.77	56.91	84.70	88.52	90.06
Os	$L\gamma_4$		2	.1	76	6	12.921	1.91876	5		14.51	20.78	25.16	25.36	26.03	29.65	33.24			36.42	39.77	56.92	84.71	88.53	90.06
Pm	AL_3	H	1		61	6	6.459	1.91910	4		14.52	20.78	25.17	25.36	26.03	29.65	33.25	34.17	35.64	36.43	39.78	56.93	84.73	88.55	90.09
I	$K\beta_1$		5	20	53	6	32.289	1.91952	6		14.52	20.79	25.17	25.37	26.04	29.66	33.26	34.18	35.65	36.44	39.79	56.94	84.75	88.58	90.11
Dy	$K\alpha_2$		7	50	66	6	45.200	1.91973	6		14.52	20.79	25.18	25.37	26.04	29.66	33.26	34.18	35.65	36.44	39.79	56.95	84.76	88.59	90.12
Dy	$L\alpha_2$		1	10	66	6	6.457	1.91991	5		14.52	20.79	25.18	25.37	26.05	29.66	33.26	34.19	35.66	36.44	39.80	56.95	84.77	88.60	90.13
Eu	$L\beta_1$		1	50	63	6	6.455	1.92030	4		14.53	20.80	25.19	25.38	26.05	29.67	33.27	34.19	35.66	36.45	39.80	56.97	84.79	88.62	90.16
Os	$L\gamma_4p$		2	.1	76	6	12.908	1.92066	5		14.53	20.80	25.19	25.38	26.06	29.68	33.28			36.46	39.81	56.98	84.81	88.64	90.18
La	$K\beta_2$		6	7	57	6	38.723	1.92070	6		14.53	20.80	25.19	25.38	26.06	29.68	33.28	34.20	35.67	36.46	39.81	56.98	84.82	88.64	90.18
Pm	$K\alpha_1$	H	6	100	61	6	38.718	1.92096	6		14.53	20.80	25.19	25.39	26.06	29.68	33.28	34.21	35.68	36.46	39.82	56.99	B4.83	88.66	90.20
Th	Lv	B	3	.01	90	6	19.349	1.92192	5		14.54	20.81	25.21	25.40	26.07	29.70	33.30	34.22	35.69	36.48	39.84	57.02	84.88	88.72	90.25
Pb	Lu	B	2	.01	82	6	12.895	1.92266	5		14.54	20.82	25.22	25.41	26.08	29.71	33.31			36.50	39.86	57.04	84.92	88.76	90.30
I	$K\beta_3$		5	9	53	6	32.234	1.92282	6		14.54	20.82	25.22	25.41	26.09	29.71	33.31	34.24	35.71	36.50	39.86	57.05	84.93	88.77	90.31
Pb	$L\beta_7$		2	.1	82	6	12.886	1.92400	4		14.55	20.84	25.23	25.43	26.10	29.73	33.34			36.52	39.88	57.09	85.00	88.84	90.38
W	$K\alpha_2$		9	50	74	6	57.972	1.92445	6		14.56	20.84	25.24	25.43	26.11	29.74	33.34	34.27	35.74	36.53	39.89	57.10	85.02	88.86	90.41
Os	L_1-O_1	F	2	.01	76	6	12.882	1.92454	5		14.56	20.84	25.24	25.44	26.11	29.74	33.35			36.53	39.90	57.10	85.03	88.87	90.41
Pu	$L\beta_9$	B	3	.01	94	6	19.320	1.92480	4		14.56	20.84	25.25	25.44	26.11	29.74	33.35	34.28	35.75	36.54	39.90	57.11	85.04	88.88	90.43
Pr	AL_2	H	1		59	6	6.438	1.92550	4		14.56	20.85	25.25	25.45	26.12	29.75	33.36	34.29	35.76	36.55	39.92	57.14	85.08	88.92	90.47
Eu	$L\beta_4$		1	5	63	6	6.438	1.92550	4		14.56	20.85	25.25	25.45	26.12	29.75	33.36	34.29	35.76	36.55	39.92	57.14	85.08	88.92	90.47
Ba	$K\alpha_1$		5	100	56	6	32.188	1.92555	6		14.57	20.85	25.26	25.45	26.12	29.75	33.36	34.29	35.76	36.55	39.92	57.14	85.08	88.93	90.47
Th	$L\gamma_2$		3	1	90	6	19.302	1.92663	5		14.57	20.86	25.27	25.46	26.14	29.77	33.38	34.31	35.79	36.57	39.94	57.17	85.14	88.99	90.54
Ir	$K\alpha_{1,2}$		10	150	77	6	64.339	1.92666	6		14.57	20.87	25.27	25.46	26.14	29.77	33.38	34.31	35.79	36.58	39.94	57.17	85.14	88.99	90.54
U	Ls	B	2	.01	92	6	12.864	1.92720	4		14.58	20.87	25.28	25.47	26.15	29.78	33.39			36.59	39.95	57.19	85.17	89.02	90.57
Tl	$L\beta_{10}$	B	2	.01	81	6	12.860	1.92778	5		14.58	20.88	25.28	25.48	26.15	29.79	33.40			36.60	39.97	57.21	85.20	89.06	90.61
Ru	$K\alpha_1$		3	100	44	6	19.276	1.92925	6		14.59	20.89	25.30	25.50	26.17	29.81	33.43	34.36	35.84	36.63	40.00	57.26	85.28	89.14	90.69
Pm	$K\alpha_{1,2}$	H	6	150	61	6	38.532	1.93025	6		14.60	20.90	25.32	25.51	26.19	29.83	33.45	34.38	35.85	36.65	40.02	57.29	85.34	89.20	90.75
Ir	$L\gamma_2$		2	1	77	6	12.840	1.93090	5		14.61	20.91	25.33	25.52	26.20	29.84	33.46			36.66	40.03	57.31	85.37	89.24	90.79
Pm	$K\beta_2$	H	7	8	61	6	44.929	1.93130	4		14.61	20.92	25.33	25.53	26.20	29.84	33.47	34.40	35.87	36.67	40.04	57.32	85.39	89.26	90.82
Yb	$K\alpha_2$		8	50	70	6	51.345	1.93139	6		14.61	20.92	25.33	25.53	26.20	29.85	33.47	34.40	35.88	36.67	40.04	57.33	85.40	89.27	90.82
Ba	$K\alpha_{1,2}$		5	150	56	6	32.062	1.93315	6		14.62	20.94	25.36	25.55	26.23	29.87	33.50	34.43	35.91	36.70	40.08	57.38	85.50	89.37	90.93
Ru	$K\alpha_{1,2}$		3	150	44	6	19.233	1.93357	6		14.63	20.94	25.36	25.56	26.23	29.BB	33.51	34.44	35.92	36.71	40.09	57.40	85.52	89.40	90.95
Ir	$L\gamma_6$		2	.01	77	6	12.818	1.93416	5		14.63	20.95	25.37	25.56	26.24	29.89	33.52			36.72	40.10	57.42	85.55	89.43	90.99
Po	$L8_6$		2	.1	84	6	12.816	1.93440	4		14.63	20.95	25.37	25.57	26.25	29.89	33.52			36.73	40.11	57.42	85.56	89.45	91.00
Ra	$L\gamma_{13}$		3	.01	88	6	19.215	1.93539	5		14.64	20.96	25.39	25.58	26.26	29.91	33.54	34.47	35.95	36.75	40.13	57.46	85.62	89.50	91.06
Nd	$L\gamma_5$		1	.1	60	6	6.405	1.93550	4		14.64	20.96	25.39	25.58	26.26	29.91	33.54	34.47	35.96	36.75	40.13	57.46	85.62	89.51	91.07
Th	$L\alpha_2$		2	10	90	6	12.807	1.93576	5		14.64	20.96	25.39	25.59	26.26	29.91	33.55			36.75	40.14	57.47	85.64	89.52	91.09
Fe	$K\alpha_1$		1	100	26	6	6.403	1.93604	6		14.65	20.97	25.40	25.59	26.27	29.92	33.55	34.4B	35.97	36.76	40.15	57.48	85.65	89.54	91.10
Pr	$L\gamma_8$		1	.1	59	6	6.402	1.93620	4		14.65	20.97	25.40	25.59	26.27	29.92	33.55	34.49	35.97	36.76	40.15	57.48	85.66	89.55	91.11
Fe	$K\alpha_{1,2}$		1	150	26	6	6.398	1.93735	6		14.66	20.98	25.41	25.61	26.29	29.94	33.57	34.51	35.99	36.79	40.17	57.52	85.73	89.62	91.18
Pb	$L\beta_3$		2	6	82	6	12.791	1.93B22	5		14.66	20.99	25.42	25.62	26.30	29.95	33.59			36.80	40.19	57.55	85.77	89.67	91.23
Ta	$K\alpha_1$		9	100	73	6	57.523	1.93947	6		14.67	21.01	25.44	25.64	26.32	29.97	33.61	34.55	36.03	36.83	40.22	57.59	85.84	89.74	91.31
Fe	$K\alpha_2$		1	50	25	6	6.390	1.93998	6		14.68	21.01	25.45	25.64	26.32	29.98	33.62	34.55	36.04	36.84	40.23	57.60	85.87	89.77	91.34
Tm	$K\beta_1$		9	23	69	6	57.506	1.94004	5		14.68	21.01	25.45	25.64	26.32	29.98	33.62	34.56	36.04	36.84	40.23	57.61	85.87	89.78	91.34
Ra	L_1-$O_{4,5}$	B	3	.01	88	6	19.165	1.94040	4		14.68	21.02	25.45	25.65	26.33	29.99	33.63	34.56	36.05	36.85	40.24	57.62	85.89	89.B0	91.37
Ir	L_2-O_3	F	2	.01	77	6	12.771	1.94122	5		14.68	21.02	25.46	25.66	26.34	30.00	33.64			36.86	40.26	57.65	85.94	89.85	91.42
Ru	$K\alpha_2$		3	50	44	6	19.147	1.94222	6		14.69	21.04	25.48	25.67	26.35	30.02	33.66	34.60	36.08	36.88	40.28	57.68	85.99	89.91	91.48
Th	L_1-N_1	B	3	.01	90	6	19.143	1.94265	5		14.70	21.04	25.48	25.68	26.36	30.02	33.67	34.60	36.09	36.89	40.29	57.69	86.02	89.93	91.50
Ir	Lv	B	2	.01	77	6	12.758	1.94322	5		14.70	21.05	25.49	25.69	26.37	30.03	33.68			36.90	40.30	57.71	86.05	89.96	91.54
Pt	L_2-N_3	F	2	.01	78	6	12.751	1.94426	5		14.71	21.06	25.50	25.70	26.38	30.05	33.70			36.92	40.32	57.74	86.11	90.03	91.60
Pu	$L\beta_{10}$	B	3	.01	94	6	19.124	1.94460	4		14.71	21.06	25.51	25.71	26.39	30.05	33.70	34.64	36.13	36.93	40.33	57.76	86.12	90.05	91.62
Bi	L_3-N_3	B	2	.01	83	6	12.737	1.94642	5		14.72	21.08	25.53	25.73	26.41	30.08	33.74			36.96	40.37	57.81	86.23	90.15	91.73

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Sm	$L\beta_6$		1	.1	62	6	6.369	1.94643	5		8.38	8.55	11.26	14.72	21.08	25.53	25.73	26.41	30.08	33.74	34.67	36.17	36.96	40.37	57.81
Am	$L\beta_3$		3	6	95	6	19.103	1.94673	5		8.38	8.55	11.26	14.73	21.08	25.54	25.73	26.42	30.09	33.74	34.68	36.17	36.97	40.38	57.82
Tm	$K\beta_3$		9	11	69	6	57.293	1.94724	5		8.39	8.55	11.26	14.73	21.09	25.54	25.74	26.42	30.10	33.75	34.69	36.18	36.98	40.39	57.84
Ir	L_1-N_1	F	2	.01	77	6	12.726	1.94810	5		8.39	8.55	11.27	14.74	21.10	25.56	25.75	26.44	30.11	33.77			37.00	40.41	57.87
Ag	$K\beta_2$		4	5	47	6	25.452	1.94813	6		8.39	8.55	11.27	14.74	21.10	25.56	25.75	26.44	30.11	33.77	34.70	36.20	37.00	40.41	57.87
Ir	$L\gamma_8$		2	.1	77	6	12.726	1.94818	5		8.39	8.55	11.27	14.74	21.10	25.56	25.75	26.44	30.11	33.77			37.00	40.41	57.87
Ba	$K\alpha_2$		5	50	56	6	31.812	1.94834	6		8.39	8.56	11.27	14.74	21.10	25.56	25.76	26.44	30.11	33.77	34.71	36.20	37.00	40.41	57.88
Pm	$K\alpha_2$	H	6	50	61	6	38.165	1.94882	6		8.39	8.56	11.27	14.74	21.11	25.57	25.76	26.45	30.12	33.78	34.72	36.21	37.01	40.42	57.89
Ra	$L\gamma_4$		3	.1	88	6	19.081	1.94895	5		8.39	8.56	11.27	14.74	21.11	25.57	25.76	26.45	30.12	33.78	34.72	36.21	37.01	40.42	57.90
Pb	L_2-M_5	B	2	.01	82	6	12.718	1.94940	4		8.40	8.56	11.28	14.75	21.11	25.57	25.77	26.45	30.13	33.79			37.02	40.43	57.91
Er	$K\beta_2$	H	9	8	68	6	57.204	1.95030	4		8.40	8.56	11.28	14.75	21.12	25.59	25.78	26.47	30.14	33.80	34.74	36.24	37.04	40.45	57.94
Tb	$K\alpha_1$		7	100	65	6	44.474	1.95107	6		8.40	8.57	11.29	14.76	21.13	25.60	25.79	26.48	30.16	33.82	34.76	36.25	37.06	40.47	57.97
Os	$L\gamma_{11}$	B	2	.01	76	6	12.694	1.95300	4		8.41	8.58	11.30	14.77	21.15	25.62	25.82	26.50	30.19	33.85			37.09	40.51	58.03
Bi	$L\beta_4$		2	4	83	6	12.689	1.95380	5		8.41	8.58	11.30	14.78	21.16	25.63	25.83	26.51	30.20	33.87			37.11	40.53	58.05
Ta	$K\alpha_{1,2}$		9	150	73	6	57.098	1.95390	6		8.41	8.58	11.30	14.78	21.16	25.63	25.83	26.52	30.20	33.87	34.81	36.31	37.11	40.53	58.06
Ra	$L\gamma_4p$		3	.1	88	6	19.032	1.95393	5		8.41	8.58	11.30	14.78	21.16	25.63	25.83	26.52	30.20	33.87	34.81	36.31	37.11	40.53	58.06
Os	L_1-N_4	B	2	.01	76	6	12.685	1.95440	4		8.42	8.58	11.31	14.78	21.17	25.64	25.84	26.52	30.21	33.88			37.12	40.54	58.07
Tm	$K\alpha_1$		8	100	69	6	50.733	1.95470	6		8.42	8.58	11.31	14.79	21.17	25.64	25.84	26.53	30.21	33.88	34.83	36.32	37.13	40.55	58.08
Tm	Ll		1	2	69	6	6.341	1.95500	4		8.42	8.58	11.31	14.79	21.18	25.65	25.85	26.53	30.22	33.89	34.83	36.33	37.13	40.56	58.09
Ce	$L\gamma_3$		1	1	58	6	6.340	1.95530	4		8.42	8.59	11.31	14.79	21.18	25.65	25.85	26.53	30.22	33.89	34.84	36.34	37.14	40.56	58.10
Te	$K\beta_2$	D	5	6	52	6	31.698	1.95531	6		8.42	8.59	11.31	14.79	21.18	25.65	25.85	26.53	30.22	33.89	34.84	36.34	37.14	40.56	58.10
Pm	$L\beta_{2,15}$		1	20	61	6	6.338	1.95590	4		8.42	8.59	11.32	14.80	21.19	25.66	25.86	26.54	30.23	33.90	34.85	36.35	37.15	40.57	58.12
Th	L_2-N_5	B	3	.01	90	6	19.009	1.95630	4		8.43	8.59	11.32	14.80	21.19	25.67	25.86	26.55	30.24	33.91	34.85	36.36	37.16	40.58	58.14
Pt	L_2-N_2	B	2	.01	78	6	12.659	1.95840	4		8.43	8.60	11.33	14.82	21.21	25.69	25.89	26.58	30.27	33.95			37.20	40.63	58.20
Tl	L_3-$P_{2,3}$	B	2	.01	81	6	12.659	1.95852	5		8.43	8.60	11.33	14.82	21.21	25.70	25.89	26.58	30.27	33.95			37.20	40.63	58.21
Cf	$L\beta_2$		3	20	98	3	18.983	1.95900			8.44	8.60	11.33	14.82	21.22	25.70	25.90	26.59	30.28	33.96	34.90	36.41	37.21	40.64	58.22
Ir	$K\alpha_2$		10	50	77	6	63.276	1.95904	6		8.44	8.60	11.33	14.82	21.22	25.70	25.90	26.59	30.28	33.96	34.90	36.41	37.21	40.64	58.22
Th	$L\gamma_1$		3	10	90	6	18.979	1.95939	5		8.44	8.60	11.34	14.82	21.22	25.71	25.90	26.59	30.29	33.97	34.91	36.41	37.22	40.65	58.24
Nb	$K\beta_4$	B	3	.01	41	6	18.978	1.95954	5		8.44	8.60	11.34	14.82	21.23	25.71	25.91	26.59	30.29	33.97	34.91	36.42	37.22	40.65	58.24
Se	$K\beta_2$		2	1	34	6	12.650	1.95984	5		8.44	8.61	11.34	14.83	21.23	25.71	25.91	26.60	30.30	33.98			37.23	40.66	58.25
Ac	$L\alpha_1$	H	2	100	89	6	12.650	1.95986	5		8.44	8.61	11.34	14.83	21.23	25.71	25.91	26.60	30.30	33.98			37.23	40.66	58.25
Kr	$K\alpha_1$		2	100	36	6	12.648	1.96020	4		8.44	8.61	11.34	14.83	21.23	25.72	25.91	26.60	30.30	33.98			37.24	40.67	58.26
Ce	$L\gamma_2$		1	1	58	6	6.324	1.96020	4		8.44	8.61	11.34	14.83	21.23	25.72	25.91	26.60	30.30	33.98	34.93	36.43	37.24	40.67	58.26
Hf	$K\beta_1$	H	10	66	72	6	63.222	1.96070	5		8.44	8.61	11.34	14.83	21.24	25.72	25.92	26.61	30.31	33.99	34.94	36.44	37.25	40.68	58.28
Pr	$L\gamma_1$		1	5	59	6	6.321	1.96110	4		8.45	8.61	11.35	14.84	21.24	25.73	25.93	26.61	30.32	34.00	34.94	36.45	37.25	40.69	58.29
Tl	$L\beta_5$		2	1	81	6	12.641	1.96116	5		8.45	8.61	11.35	14.84	21.24	25.73	25.93	26.62	30.32	34.00			37.25	40.69	58.29
Tb	$K\alpha_{1,2}$		7	150	65	6	44.226	1.96203	6		8.45	8.62	11.35	14.84	21.25	25.74	25.94	26.63	30.33	34.01	34.96	36.47	37.27	40.71	58.32
Sn	$K\alpha_1$		4	100	50	6	25.267	1.96240	6		8.45	8.62	11.35	14.85	21.26	25.75	25.94	26.63	30.34	34.02	34.97	36.47	37.28	40.72	58.33
Sm	$L\beta_3$		1	6	62	6	6.317	1.96241	5		8.45	8.62	11.35	14.85	21.26	25.75	25.94	26.63	30.34	34.02	34.97	36.47	37.28	40.72	58.33
Nb	$K\beta_2$		3	4	41	6	18.949	1.96249	5		8.45	8.62	11.35	14.85	21.26	25.75	25.95	26.63	30.34	34.02	34.97	36.47	37.28	40.72	58.34
Kr	$K\alpha_{1,2}$		2	150	36	6	12.631	1.96287	4		8.45	8.62	11.36	14.85	21.26	25.75	25.95	26.64	30.34	34.03			37.29	40.73	58.35
Pb	$L8_2$		2	20	82	6	12.621	1.96442	5		8.46	8.63	11.36	14.86	21.28	25.77	25.97	26.66	30.37	34.06			37.32	40.76	58.40
Pa	$L\gamma_5$		3	.1	91	6	18.925	1.96500	4		8.46	8.63	11.37	14.87	21.29	25.78	25.98	26.67	30.38	34.07	35.01	36.52	37.33	40.77	58.42
Bi	L_3-N_2	B	2	.01	83	6	12.613	1.96560	5		8.47	8.63	11.37	14.87	21.29	25.79	25.99	26.68	30.39	34.08			37.34	40.78	58.44
Pb	$L\beta_1$		2	50	82	6	12.612	1.96582	5		8.47	8.63	11.37	14.87	21.29	25.79	25.99	26.68	30.39	34.08			37.35	40.79	58.45
Tm	$K\alpha_{1,2}$		8	150	69	6	50.406	1.96739	6		8.47	8.64	11.38	14.88	21.31	25.81	26.01	26.70	30.42	34.11	35.06	36.57	37.38	40.82	58.50
Pb	$L\beta_{15}$		2	1	82	6	12.599	1.96778	5		8.47	8.64	11.38	14.89	21.32	25.82	26.02	26.71	30.42	34.12			37.38	40.83	58.51
La	$K\beta_1$		6	21	57	6	37.795	1.96790	6		8.48	8.64	11.38	14.89	21.32	25.82	26.02	26.71	30.42	34.12	35.07	36.58	37.39	40.83	58.51
Os	$K\alpha_1$		10	100	76	6	62.990	1.96794	6		8.48	8.64	11.39	14.89	21.32	25.82	26.02	26.71	30.42	34.12	35.07	36.58	37.39	40.84	58.51
Kr	$K\alpha_2$		2	50	36	6	12.596	1.96820	4		8.48	8.64	11.39	14.89	21.32	25.82	26.02	26.71	30.43	34.12			37.39	40.84	58.52
Sn	$K\alpha_{1,2}$		4	150	50	6	25.191	1.96834	6		8.48	8.64	11.39	14.89	21.32	25.83	26.02	26.71	30.43	34.13	35.08	36.59	37.40	40.84	58.53
Se	$K\beta_5$		2	.05	34	6	12.594	1.96860	4		8.48	8.64	11.39	14.89	21.32	25.83	26.03	26.72	30.43	34.13			37.40	40.85	58.54
Hf	$K\beta_3$	H	10	12	72	6	62.969	1.96860	5		8.48	8.64	11.39	14.89	21.32	25.83	26.03	26.72	30.43	34.13	35.08	36.59	37.40	40.85	58.54
Tb	$K\beta_1$		8	23	65	6	50.374	1.96864	5		8.48	8.64	11.39	14.89	21.32	25.83	26.03	26.72	30.44	34.13	35.08	36.59	37.40	40.85	58.54
Lu	$K\beta_2$	H	10	9	71	6	62.956	1.96900	4		8.48	8.65	11.39	14.90	21.33	25.83	26.03	26.72	30.44	34.14	35.09	36.60	37.41	40.86	58.55
Tl	L_3-O_3	B	2	.01	81	6	12.580	1.97076	5		8.49	8.65	11.40	14.91	21.35	25.86	26.06	26.75	30.47	34.17			37.44	40.90	58.61
La	$K\beta_3$		6	9	57	6	37.714	1.97212	6		8.49	8.66	11.41	14.92	21.36	25.88	26.08	26.77	30.49	34.19	35.15	36.66	37.47	40.93	58.65
Am	$L\beta_1$		3	50	95	6	18.849	1.97296	6		8.50	8.66	11.41	14.93	21.37	25.89	26.09	26.78	30.50	34.21	35.16	36.68	37.49	40.94	58.68
Tb	Ln		1	1	65	6	6.283	1.97300	4		8.50	8.66	11.41	14.93	21.37	25.89	26.09	26.78	30.50	34.21	35.16	36.68	37.49	40.95	58.68
Hg	$L\beta_9$	B	2	.01	80	6	12.558	1.97420	4		8.50	8.67	11.42	14.94	21.39	25.90	26.10	26.80	30.52	34.23			37.51	40.97	58.72
Tb	$K\beta_3$		8	11	65	6	50.221	1.97464	5		8.50	8.67	11.42	14.94	21.39	25.91	26.11	26.80	30.53	34.24	35.19	36.71	37.52	40.98	58.73
Tl	L_3-O_2	B	2	.01	81	6	12.554	1.97476	5		8.50	8.67	11.42	14.94	21.39	25.91	26.11	26.80	30.53	34.24			37.52	40.98	58.74
Pt	$L\gamma_5$		2	.1	78	6	12.550	1.97540	4		8.51	8.67	11.43	14.94	21.40	25.92	26.12	26.81	30.54	34.25			37.53	41.00	58.76
Tb	$L\alpha_1$		1	100	65	6	6.272	1.97650	4		8.51	8.68	11.43	14.95	21.41	25.93	26.13	26.83	30.56	34.27	35.23	36.74	37.56	41.02	58.79
Tl	Lu	B	2	.01	81	6	12.536	1.97760	4		8.52	8.68	11.44	14.96	21.42	25.95	26.15	26.84	30.58	34.29			37.58	41.05	58.83

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
La	AL_1	H	1		57	6	6.267	1.97800	4		8.52	8.69	11.44	14.96	21.43	25.96	26.15	26.85	30.58	34.30	35.25	36.77	37.59	41.05	58.84
Bi	$L\beta_{17}$	B	2	.01	83	6	12.532	1.97826	5		8.52	8.69	11.45	14.97	21.43	25.96	26.16	26.85	30.59	34.30			37.59	41.06	58.85
Re	L_1-$O_{4,5}$	B	2	.01	75	6	12.521	1.98000	4		8.53	8.69	11.46	14.98	21.45	25.98	26.18	26.88	30.62	34.34			37.63	41.10	58.91
Sn	$K\alpha_2$		4	50	50	6	25.040	1.98021	6		8.53	8.70	11.46	14.98	21.45	25.98	26.18	26.88	30.62	34.34	35.29	36.82	37.63	41.10	58.92
Pm	$K\beta_1$	H	7	22	61	6	43.818	1.98030	5		8.53	8.70	11.46	14.98	21.45	25.99	26.19	26.88	30.62	34.34	35.30	36.82	37.63	41.10	58.92
Tl	$L\beta_7$		2	.1	81	6	12.519	1.98034	5		8.53	8.70	11.46	14.98	21.45	25.99	26.19	26.88	30.62	34.34			37.63	41.10	58.92
Ir	$L\gamma_1$		2	10	77	6	12.510	1.98170	5		8.53	8.70	11.46	14.99	21.47	26.00	26.20	26.90	30.64	34.37			37.66	41.13	58.96
Ta	$K\alpha_2$		9	50	73	6	56.267	1.98274	6		8.54	8.71	11.47	15.00	21.48	26.02	26.22	26.91	30.66	34.38	35.34	36.86	37.68	41.16	59.00
La	$L\gamma_4$		1	.1	57	6	6.251	1.98300	4		8.54	8.71	11.47	15.00	21.48	26.02	26.22	26.92	30.66	34.39	35.35	36.87	37.68	41.16	59.01
Ac	$L\alpha_2$	H	2	10	89	6	12.499	1.98356	5		8.54	8.71	11.48	15.01	21.49	26.03	26.23	26.93	30.67	34.40			37.70	41.17	59.03
Os	$L\gamma_3$		2	2	76	6	12.498	1.98372	5		8.54	8.71	11.48	15.01	21.49	26.03	26.23	26.93	30.67	34.40			37.70	41.18	59.03
Tb	$K\alpha_2$		7	50	65	6	43.737	1.98396	6		8.54	8.71	11.48	15.01	21.49	26.03	26.23	26.93	30.68	34.41	35.36	36.89	37.70	41.18	59.04
Os	$K\alpha_{1,2}$		10	150	76	6	62.477	1.98409	6		8.55	8.71	11.48	15.01	21.49	26.04	26.24	26.93	30.68	34.41	35.37	36.89	37.71	41.19	59.04
Se	$K\beta_1$		2	16	34	6	12.494	1.98436	5		8.55	8.71	11.48	15.01	21.50	26.04	26.24	26.94	30.68	34.41			37.71	41.19	59.05
Re	$L\gamma_4$		2	.1	75	6	12.490	1.98498	5		8.55	8.72	11.48	15.02	21.50	26.05	26.25	26.95	30.69	34.42			37.72	41.21	59.07
Gd	$K\beta_2$		8	8	64	6	49.952	1.98528	5		8.55	8.72	11.49	15.02	21.51	26.05	26.25	26.95	30.70	34.43	35.39	36.91	37.73	41.21	59.08
Se	$K\beta_3$		2	8	34	6	12.487	1.98536	5		8.55	8.72	11.49	15.02	21.51	26.05	26.25	26.95	30.70	34.43			37.73	41.21	59.08
Pm	$K\beta_3$	H	7	10	61	6	43.705	1.98541	5		8.55	8.72	11.49	15.02	21.51	26.05	26.25	26.95	30.70	34.43	35.39	36.92	37.73	41.21	59.09
Th	L_2-N_3	B	3	.01	90	6	18.725	1.98600	4		8.55	8.72	11.49	15.03	21.52	26.06	26.26	26.96	30.71	34.44	35.40	36.93	37.74	41.23	59.10
Bi	$L\beta_6$		2	.1	83	6	12.479	1.98662	5		8.56	8.72	11.49	15.03	21.52	26.07	26.27	26.97	30.72	34.45			37.76	41.24	59.13
Re	$L\gamma_4$P		2	.1	75	6	12.479	1.98668	5		8.56	8.72	11.49	15.03	21.52	26.07	26.27	26.97	30.72	34.45			37.76	41.24	59.13
Tb	$L\alpha_2$		1	10	65	6	6.237	1.98750	4		8.56	8.73	11.50	15.04	21.53	26.08	26.28	26.98	30.73	34.47	35.43	36.96	37.77	41.26	59.15
Ag	$K\beta_1$		4	18	47	6	24.938	1.98828	6		8.56	8.73	11.50	15.04	21.54	26.09	26.29	26.99	30.75	34.48	35.44	36.97	37.79	41.28	59.18
Ag	$K\beta_3$		4	8	47	6	24.907	1.99074	6		8.57	8.74	11.52	15.06	21.57	26.13	26.33	27.02	30.79	34.53	35.49	37.02	37.84	41.33	59.26
Nd	$K\alpha_1$		6	100	60	6	37.355	1.99108	6		8.58	8.74	11.52	15.06	21.57	26.13	26.33	27.03	30.79	34.53	35.49	37.02	37.84	41.34	59.27
Hg	$L\beta_{10}$	B	2	.01	80	6	12.443	1.99240	4		8.58	8.75	11.53	15.07	21.59	26.15	26.35	27.05	30.81	34.56			37.87	41.37	59.31
Tm	$K\alpha_2$		8	50	69	6	49.764	1.99276	6		8.58	8.75	11.53	15.08	21.59	26.15	26.35	27.05	30.82	34.56	35.53	37.06	37.88	41.37	59.33
Re	L_1-O_1	B	2	.01	75	6	12.440	1.99300	4		8.58	8.75	11.53	15.08	21.59	26.16	26.36	27.06	30.82	34.57			37.88	41.38	59.33
Os	$L\gamma_2$		2	1	76	6	12.420	1.99610	5		8.60	8.77	11.55	15.10	21.63	26.20	26.40	27.10	30.87	34.62			37.94	41.45	59.44
Ra	$L\gamma_{11}$	B	3	.01	88	6	18.629	1.99620	4		8.60	8.77	11.55	15.10	21.63	26.20	26.40	27.10	30.87	34.63	35.59	37.12	37.94	41.45	59.44
Ba	$K\beta_2$		6	7	56	6	37.251	1.99662	5		8.60	8.77	11.55	15.11	21.63	26.20	26.41	27.11	30.88	34.63	35.60	37.13	37.95	41.46	59.45
Nd	AL_3		1		60	6	6.208	1.99670	4		8.60	8.77	11.55	15.11	21.63	26.20	26.41	27.11	30.88	34.63	35.60	37.13	37.95	41.46	59.46
Nb	$K\beta_1$		3	.6	41	6	18.619	1.99728	5		8.60	8.77	11.56	15.11	21.64	26.21	26.41	27.12	30.89	34.64	35.61	37.14	37.97	41.47	59.47
Sm	$L\beta_1$		1	50	62	6	6.204	1.99806	5		8.61	8.77	11.56	15.12	21.65	26.22	26.42	27.13	30.90	34.66	35.62	37.16	37.98	41.49	59.50
Nb	$K\beta_3$		3	7	41	6	18.603	1.99902	5		8.61	8.78	11.57	15.12	21.66	26.24	26.44	27.14	30.92	34.68	35.64	37.18	38.00	41.51	59.53
Ra	L_1-N_4	B	3	.01	88	6	18.596	1.99980	4		8.61	8.78	11.57	15.13	21.67	26.25	26.45	27.15	30.93	34.69	35.66	37.19	38.02	41.53	59.56
Te	$K\beta_1$		5	20	52	6	30.990	1.99997	6		8.61	8.78	11.57	15.13	21.67	26.25	26.45	27.15	30.93	34.69	35.66	37.20	38.02	41.53	59.56
Hf	$K\alpha_1$		9	100	72	6	55.781	2.00004	6		8.61	8.78	11.57	15.13	21.67	26.25	26.45	27.15	30.93	34.69	35.66	37.20	38.02	41.53	59.56
Nd	$K\alpha_{1,2}$		6	150	60	6	37.182	2.00033	6		8.62	8.78	11.57	15.13	21.67	26.25	26.46	27.16	30.94	34.70	35.66	37.20	38.03	41.54	59.57
Sm	$L\beta_4$		1	5	62	6	6.195	2.00095	5		8.62	8.79	11.58	15.14	21.68	26.26	26.46	27.17	30.95	34.71	35.68	37.22	38.04	41.55	59.59
Pb	L_3-N_3	B	2	.01	82	6	12.390	2.00100	4		8.62	8.79	11.58	15.14	21.68	26.26	26.46	27.17	30.95	34.71			38.04	41.55	59.60
Bi	L_1-M_1	B	2	.01	83	6	12.390	2.00100	4		8.62	8.79	11.58	15.14	21.68	26.26	26.46	27.17	30.95	34.71			38.04	41.55	59.60
Tl	$L\beta_3$		2	6	81	6	12.388	2.00124	5		8.62	8.79	11.58	15.14	21.68	26.27	26.47	27.17	30.95	34.72			38.04	41.56	59.60
Cs	$K\alpha_1$		5	100	55	6	30.968	2.00145	6		8.62	8.79	11.58	15.14	21.68	26.27	26.47	27.17	30.96	34.72	35.69	37.22	38.05	41.56	59.61
Os	$L\gamma_6$		2	.01	76	6	12.383	2.00214	5		8.62	8.79	11.58	15.15	21.69	26.28	26.48	27.18	30.97	34.73			38.06	41.58	59.63
Am	Ll		2	3	95	6	12.381	2.00240	4		8.62	8.79	11.59	15.15	21.69	26.28	26.48	27.19	30.97	34.74			38.07	41.58	59.64
Nd	$K\beta_2$	H	7	7	60	6	43.327	2.00270	4		8.63	8.79	11.59	15.15	21.70	26.28	26.49	27.19	30.97	34.74	35.71	37.25	38.07	41.59	59.65
Te	$K\beta_3$		5	9	52	6	30.939	2.00329	6		8.63	8.80	11.59	15.16	21.70	26.29	26.49	27.20	30.98	34.75	35.72	37.26	38.09	41.60	59.67
Er	$K\beta_1$		9	22	68	6	55.672	2.00394	5		8.63	8.80	11.59	15.16	21.71	26.30	26.50	27.21	30.99	34.76	35.73	37.27	38.10	41.62	59.69
Pu	$L\beta_3$		3	6	94	6	18.537	2.00613	5		8.64	8.81	11.61	15.18	21.74	26.33	26.53	27.24	31.03	34.80	35.77	37.32	38.14	41.66	59.76
Bk	$L\beta_2$		3	20	97	3	18.529	2.00700			8.64	8.81	11.61	15.18	21.75	26.34	26.54	27.25	31.04	34.82	35.79	37.33	38.16	41.68	59.79
Cs	$K\alpha_{1,2}$		5	150	55	6	30.851	2.00902	6		8.65	8.82	11.62	15.20	21.77	26.37	26.57	27.28	31.08	34.85	35.83	37.37	38.20	41.73	59.86
Nd	$L\beta_7$		1	.1	60	6	6.170	2.00920	4		8.65	8.82	11.62	15.20	21.77	26.37	26.57	27.28	31.08	34.86	35.83	37.37	38.20	41.73	59.87
Os	L_2-O_3	B	2	.01	76	6	12.338	2.00940	4		8.65	8.82	11.63	15.20	21.77	26.37	26.58	27.28	31.08	34.86			38.21	41.74	59.87
Ra	$L\alpha_1$		2	100	88	6	12.338	2.00946	5		8.65	8.82	11.63	15.20	21.77	26.38	26.58	27.28	31.08	34.86			38.21	41.74	59.87
Os	Lv	B	2	.01	76	6	12.334	2.01000	4		8.66	8.83	11.63	15.21	21.78	26.38	26.59	27.29	31.09	34.87			38.22	41.75	59.89
Er	$K\beta_3$		9	12	68	6	55.485	2.01069	5		8.66	8.83	11.63	15.21	21.79	26.39	26.59	27.30	31.10	34.88	35.86	37.40	38.23	41.76	59.91
Ir	L_2-N_3	B	2	.01	77	6	12.329	2.01080	4		8.66	8.83	11.63	15.21	21.79	26.39	26.60	27.30	31.10	34.89			38.23	41.77	59.92
Ce	AL_2	H	1		58	6	6.160	2.01240	4		8.67	8.84	11.64	15.23	21.80	26.41	26.62	27.32	31.13	34.92	35.89	37.44	38.26	41.80	59.97
Ra	L_2-$P_{2,3}$	B	3	.01	88	6	18.463	2.01420	4		8.67	8.84	11.65	15.24	21.82	26.44	26.64	27.35	31.16	34.95	35.92	37.47	38.30	41.84	60.03
Hf	$K\alpha_{1,2}$		9	150	72	6	55.382	2.01443	6		8.68	8.85	11.66	15.24	21.83	26.44	26.64	27.35	31.16	34.95	35.93	37.48	38.31	41.85	60.04
Tl	L_2-M_5	B	2	.01	81	6	12.307	2.01444	5		8.68	8.85	11.66	15.24	21.83	26.44	26.65	27.35	31.16	34.95			38.31	41.85	60.04
Pb	$L\beta_4$		2	4	82	6	12.304	2.01500	4		8.68	8.85	11.66	15.25	21.83	26.45	26.65	27.36	31.17	34.96			38.32	41.86	60.06
Er	Ll		1	2	68	6	6.152	2.01500	3		8.68	8.85	11.66	15.25	21.83	26.45	26.65	27.36	31.17	34.96	35.94	37.49	38.32	41.86	60.06
Os	$L\gamma_8$		2	.1	76	6	12.299	2.01576	5		8.68	8.85	11.66	15.25	21.84	26.46	26.66	27.37	31.18	34.98			38.33	41.87	60.08

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Os	$K\alpha_2$		10	50	76	6	61.476	2.01639	6		8.68	8.85	11.67	15.26	21.85	26.47	26.67	27.38	31.19	34.99	35.96	37.51	38.34	41.89	60.10
Nd	$L\beta_9$	B	1	.01	60	6	6.147	2.01650	4		8.68	8.86	11.67	15.26	21.85	26.47	26.67	27.38	31.19	34.99	35.96	37.52	38.35	41.89	60.11
Ho	$K\beta_2$	H	9	8	67	6	55.315	2.01690	4		8.69	8.86	11.67	15.26	21.85	26.47	26.68	27.39	31.20	35.00	35.97	37.52	38.35	41.90	60.12
Ra	L_2-P_1		3	.01	88	6	18.435	2.01720	4		8.69	8.86	11.67	15.26	21.86	26.48	26.68	27.39	31.20	35.00	35.98	37.53	38.36	41.91	60.13
Gd	$K\alpha_1$		7	100	64	6	42.989	2.01847	6		8.69	8.86	11.68	15.27	21.87	26.50	26.70	27.41	31.22	35.02	36.00	37.55	38.38	41.93	60.17
Nd	$K\alpha_2$		6	50	60	6	36.841	2.01883	6		8.69	8.87	11.68	15.28	21.88	26.50	26.70	27.41	31.23	35.03	36.01	37.56	38.39	41.94	60.18
Er	$K\alpha_1$		8	100	68	6	49.119	2.01892	6		8.70	8.87	11.68	15.28	21.88	26.50	26.71	27.41	31.23	35.03	36.01	37.56	38.39	41.94	60.18
Hg	$L\beta_5$		2	1	80	6	12.275	2.01974	5		8.70	8.87	11.69	15.28	21.89	26.51	26.72	27.43	31.25	35.05			38.41	41.96	60.21
Ra	$L\gamma_6$		3	.01	88	6	18.411	2.01984	5		8.70	8.87	11.69	15.28	21.89	26.51	26.72	27.43	31.25	35.05	36.02	37.58	38.41	41.96	60.22
Pr	$L\gamma_5$		1	.1	59	6	6.135	2.02050	4		8.70	8.87	11.69	15.29	21.89	26.52	26.73	27.44	31.26	35.06	36.04	37.59	38.42	41.98	60.24
Ac	$L\gamma_1$	H	3	10	89	6	18.405	2.02053	5		8.70	8.87	11.69	15.29	21.89	26.52	26.73	27.44	31.26	35.06	36.04	37.59	38.43	41.98	60.24
Tl	$L\beta_2$		2	20	81	6	12.270	2.02062	5		8.70	8.87	11.69	15.29	21.89	26.52	26.73	27.44	31.26	35.06			38.43	41.98	60.24
Pb	L_3-N_2	B	2	.01	82	6	12.268	2.02080	5		8.70	8.87	11.69	15.29	21.90	26.53	26.73	27.44	31.26	35.07			38.43	41.98	60.25
Am	$L\beta_5$		3	1	95	6	18.396	2.02149	5		8.71	8.88	11.70	15.30	21.90	26.54	26.74	27.45	31.27	35.08	36.06	37.61	38.44	42.00	60.27
Re	$L\gamma_{11}$	B	2	.01	75	6	12.264	2.02160	4		8.71	8.88	11.70	15.30	21.91	26.54	26.74	27.45	31.27	35.08			38.45	42.00	60.27
Lu	$K\beta_1$	H	10	65	71	6	61.272	2.02310	5		8.71	8.88	11.71	15.31	21.92	26.56	26.76	27.47	31.30	35.11	36.08	37.64	38.48	42.03	60.32
Th	Ls	F	2	.01	90	6	12.252	2.02350	5		8.72	8.89	11.71	15.31	21.93	26.56	26.77	27.48	31.30	35.11			38.48	42.04	60.34
Ce	$L\gamma_8$		1	.1	58	6	6.125	2.02370	4		8.72	8.89	11.71	15.31	21.93	26.57	26.77	27.48	31.31	35.12	36.10	37.65	38.49	42.05	60.34
Nd	$L8_{10}$	B	1	.01	60	6	6.125	2.02370	4		8.72	8.89	11.71	15.31	21.93	26.57	26.77	27.48	31.31	35.12	36.10	37.65	38.49	42.05	60.34
Re	L_1-N_4		8	2	.01	75	6	12.250	2.02380	4		8.72	8.89	11.71	15.31	21.93	26.57	26.77	27.48	31.31	35.12			38.49	42.05	60.35
Ir	L_2-N_2	B	2	.01	77	6	12.249	2.02400	4		8.72	8.89	11.71	15.31	21.93	26.57	26.77	27.48	31.31	35.12			38.49	42.05	60.35
Tl	$L\beta_{15}$		2	1	81	6	12.249	2.02402	5		8.72	8.89	11.71	15.31	21.93	26.57	26.77	27.49	31.31	35.12			38.49	42.05	60.35
Cs	$K\alpha_2$		5	50	55	6	30.620	2.02417	6		8.72	8.89	11.71	15.32	21.93	26.57	26.78	27.49	31.32	35.13	36.10	37.66	38.50	42.06	60.36
Tc	$K\alpha_1$	H	3	100	43	6	18.364	2.02506	5		8.72	8.89	11.72	15.32	21.94	26.58	26.79	27.50	31.33	35.14	36.12	37.68	38.51	42.08	60.39
Th	$L\gamma_5$	D	3	.1	90	6	18.361	2.02542	5		8.72	8.89	11.72	15.33	21.95	26.59	26.79	27.50	31.34	35.15	36.13	37.69	38.52	42.08	60.40
Ra	$L\gamma_3$		3	2	88	6	18.354	2.02614	5		8.73	8.90	11.72	15.33	21.96	26.60	26.80	27.51	31.35	35.16	36.14	37.70	38.54	42.10	60.42
Re	$K\alpha_1$		10	100	75	6	61.130	2.02781	6		8.73	8.90	11.73	15.34	21.97	26.62	26.83	27.54	31.37	35.19	36.17	37.73	38.57	42.14	60.48
Hg	L_3-O_3	B	2	.01	80	6	12.224	2.02808	5		8.73	8.91	11.73	15.35	21.98	26.62	26.83	27.54	31.38	35.20			38.57	42.14	60.49
Ra	L_2-O_3	B	3	.01	88	6	18.326	2.02920	4		8.74	8.91	11.74	15.35	21.99	26.64	26.84	27.56	31.40	35.22	36.20	37.76	38.60	42.17	60.52
Tc	$K\alpha_{1,2}$	H	3	150	43	6	18.325	2.02936	5		8.74	8.91	11.74	15.36	21.99	26.64	26.85	27.56	31.40	35.22	36.20	37.76	38.60	42.17	60.53
Gd	$K\alpha_{1,2}$		7	150	64	6	42.757	2.02940	6		8.74	8.91	11.74	15.36	21.99	26.64	26.85	27.56	31.40	35.22	36.20	37.76	38.60	42.17	60.53
Tl	$L\beta_1$		2	50	81	6	12.211	2.03026	5		8.74	8.92	11.75	15.36	22.00	26.65	26.86	27.57	31.41	35.24			38.62	42.19	60.56
Lu	$K\beta_3$	H	10	12	71	6	61.037	2.03090	5		8.75	8.92	11.75	15.37	22.01	26.66	26.87	27.58	31.42	35.25	36.23	37.79	38.63	42.20	60.58
Hg	L_3-O_2	B	2	.01	80	6	12.206	2.03116	5		8.75	8.92	11.75	15.37	22.01	26.67	26.87	27.58	31.43	35.25			38.64	42.21	60.59
Er	$K\alpha_{1,2}$		8	150	68	6	48.813	2.03158	6		8.75	8.92	11.75	15.37	22.01	26.67	26.88	27.59	31.43	35.26	36.24	37.81	38.64	42.22	60.60
Yb	$K\beta_2$	H	10	9	70	6	60.974	2.03300	4		8.76	8.93	11.76	15.38	22.03	26.69	26.90	27.61	31.46	35.28	36.27	37.83	38.67	42.25	60.65
Ra	$L\alpha_2$		2	10	88	6	12.194	2.03312	5		8.76	8.93	11.76	15.38	22.03	26.69	26.90	27.61	31.46	35.29			38.67	42.25	60.65
Pu	$L\beta_1$		3	50	94	6	18.291	2.03316	5		8.76	8.93	11.76	15.38	22.03	26.69	26.90	27.61	31.46	35.29	36.27	37.84	38.68	42.25	60.65
Ra	L_2-O_2	B	3	.01	88	6	18.283	2.03400	4		8.76	8.93	11.77	15.39	22.04	26.70	26.91	27.62	31.47	35.30	36.29	37.85	38.69	42.27	60.68
Hg	Lu	F	2	.01	80	6	12.183	2.03492	5		8.76	8.94	11.77	15.40	22.05	26.72	26.92	27.64	31.49	35.32			38.71	42.29	60.71
Hg	Lup	B	2	.01	80	6	12.181	2.03538	5		8.77	8.94	11.78	15.40	22.06	26.72	26.93	27.64	31.49	35.33			38.72	42.30	60.73
Nd	$L\beta_{2,15}$		1	20	60	6	6.088	2.03600	4		8.77	8.94	11.78	15.41	22.06	26.73	26.94	27.65	31.50	35.34	36.32	37.89	38.73	42.31	60.75
Gd	$K\beta_1$		8	23	64	6	48.688	2.03680	5		8.77	8.94	11.78	15.41	22.07	26.74	26.95	27.66	31.52	35.35	36.34	37.91	38.75	42.33	60.77
Tc	$K\alpha_2$	8	3	50	43	6	18.248	2.03796	5		8.78	8.95	11.79	15.42	22.09	26.76	26.96	27.68	31.53	35.37	36.36	37.93	38.77	42.36	60.81
Hg	$L\beta_7$		2	.1	80	6	12.160	2.03874	5		8.78	8.95	11.80	15.43	22.09	26.77	26.97	27.69	31.55	35.39			38.79	42.37	60.84
Sb	$K\beta_2$	D	5	5	51	6	30.388	2.03964	6		8.78	8.96	11.80	15.43	22.10	26.78	26.98	27.70	31.56	35.40	36.39	37.96	38.80	42.39	60.87
Ra	$L\gamma_8$		3	.1	88	6	18.227	2.04030	4		8.79	8.96	11.81	15.44	22.11	26.79	26.99	27.71	31.57	35.42	36.40	37.97	38.82	42.41	60.89
Pd	$K\beta_2$		4	3	46	6	24.295	2.04091	6		8.79	8.96	11.81	15.44	22.12	26.80	27.00	27.72	31.58	35.43	36.41	37.99	38.83	42.42	60.91
La	$L\gamma_3$		1	1	57	6	6.073	2.04100	4		8.79	8.96	11.81	15.44	22.12	26.80	27.00	27.72	31.58	35.43	36.42	37.99	38.83	42.42	60.91
Au	$L8_9$	B	2	.01	79	6	12.145	2.04126	5		8.79	8.96	11.81	15.45	22.12	26.80	27.01	27.72	31.59	35.43			38.84	42.43	60.92
Pb	$L\beta_6$		2	.1	82	6	12.141	2.04200	4		8.79	8.97	11.82	15.45	22.13	26.81	27.02	27.73	31.60	35.45			38.85	42.45	60.95
Pm	$L\beta_3$		1	6	61	6	6.070	2.04210	4		8.80	8.97	11.82	15.45	22.13	26.81	27.02	27.74	31.60	35.45	36.44	38.01	38.85	42.45	60.95
Gd	$K\beta_3$		8	11	64	6	48.547	2.04272	5		8.80	8.97	11.82	15.46	22.14	26.82	27.03	27.74	31.61	35.46	36.45	38.02	38.86	42.46	60.97
U	$L8_9$	B	3	.01	92	6	18.202	2.04304	6		8.80	8.97	11.82	15.46	22.14	26.82	27.03	27.75	31.61	35.46	36.45	38.03	38.87	42.47	60.98
Hf	$K\alpha_2$		9	50	72	6	54.602	2.04321	6		8.80	8.97	11.82	15.46	22.14	26.83	27.03	27.75	31.62	35.47	36.46	38.03	38.87	42.47	60.99
Ir	$L\gamma_5$		2	.1	77	6	12.132	2.04350	5		8.80	8.97	11.82	15.46	22.15	26.83	27.04	27.76	31.62	35.47			38.88	42.48	60.99
Pb	$L8_{17}$	F	2	.01	82	6	12.132	2.04369	5		8.80	8.97	11.82	15.46	22.15	26.83	27.04	27.76	31.62	35.47			38.88	42.48	61.00
Re	$K\alpha_{1,2}$		10	150	75	6	60.648	2.04391	6		8.80	8.98	11.83	15.47	22.15	26.84	27.04	27.76	31.63	35.48	36.47	38.04	38.89	42.49	61.01
Ba	$K\beta_1$		6	21	56	6	36.372	2.04487	6		8.81	8.98	11.83	15.47	22.16	26.85	27.06	27.77	31.64	35.50	36.49	38.06	38.91	42.51	61.04
Pu	Ll		2	3	94	6	12.122	2.04520	4		8.81	8.98	11.83	15.48	22.16	26.85	27.06	27.78	31.65	35.50			38.91	42.51	61.05
Ra	$L\gamma_2$		3	1	88	6	18.176	2.04597	5		8.81	8.98	11.84	15.48	22.17	26.86	27.07	27.79	31.66	35.52	36.51	38.08	38.93	42.53	61.08
La	$L\gamma_2$		1	1	57	6	6.059	2.04600	4		8.81	8.98	11.84	15.48	22.17	26.86	27.07	27.79	31.66	35.52	36.51	38.08	38.93	42.53	61.08
Gd	$L\alpha_1$		1	100	64	6	6.056	2.04680	4		8.82	8.99	11.84	15.49	22.18	26.87	27.08	27.80	31.67	35.53	36.52	38.10	38.95	42.55	61.10
In	$K\alpha_1$		4	100	49	6	24.206	2.04845	6		8.82	9.00	11.85	15.50	22.20	26.90	27.10	27.82	31.70	35.56	36.55	38.13	38.98	42.59	61.16
Ce	$L\gamma_1$		1	5	58	6	6.051	2.04870	4		8.82	9.00	11.85	15.50	22.20	26.90	27.11	27.83	31.70	35.57	36.56	38.14	38.98	42.59	61.17

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Å	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Ba	$K\beta_3$		6	7	56	6	36.298	2.04904	6		8.83	9.00	11.86	15.51	22.21	26.90	27.11	27.83	31.71	35.57	36.56	38.14	38.99	42.60	61.18
Gd	Ln		1	1	64	6	6.049	2.04940	4		8.83	9.00	11.86	15.51	22.21	26.91	27.12	27.84	31.72	35.58	36.57	38.15	39.00	42.61	61.19
W	$L_1-O_{4,5}$	B	2	.01	74	6	12.094	2.05000	4		8.83	9.00	11.86	15.51	22.22	26.92	27.12	27.85	31.73	35.59			39.01	42.62	61.21
Os	$L\gamma_1$		2	10	76	6	12.093	2.05006	5		8.83	9.00	11.86	15.51	22.22	26.92	27.13	27.85	31.73	35.59			39.01	42.62	61.21
Gd	$K\alpha_2$		7	50	64	6	42.302	2.05126	6		8.83	9.01	11.87	15.52	22.23	26.93	27.14	27.86	31.75	35.61	36.60	38.19	39.03	42.65	61.25
Re	$L\gamma_3$		2	2	75	6	12.080	2.05226	5		8.84	9.01	11.87	15.53	22.24	26.95	27.15	27.88	31.76	35.63			39.05	42.67	61.28
Nd	$K\beta_1$		7	22	60	6	42.264	2.05309	6		8.84	9.02	11.88	15.54	22.25	26.96	27.17	27.89	31.77	35.64	36.64	38.22	39.07	42.69	61.31
In	$K\alpha_{1,2}$		4	150	49	6	24.136	2.05436	6		8.85	9.02	11.89	15.55	22.27	26.98	27.18	27.91	31.79	35.67	36.66	38.25	39.09	42.71	61.35
Cm	$L\beta_2$		3	20	96	3	18.096	2.05500			8.85	9.02	11.89	15.55	22.27	26.98	27.19	27.91	31.80	35.68	36.67	38.26	39.11	42.73	61.38
Eu	$K\beta_2$		8	8	63	6	48.248	2.05538	6		8.85	9.03	11.89	15.55	22.28	26.99	27.20	27.92	31.81	35.69	36.68	38.27	39.12	42.74	61.39
W	$L\gamma_4$		2	.1	74	6	12.061	2.05550	5		8.85	9.03	11.89	15.55	22.28	26.99	27.20	27.92	31.81	35.69			39.12	42.74	61.39
Au	$L\beta_{10}$	B	2	.01	79	6	12.060	2.05578	5		8.85	9.03	11.90	15.56	22.28	26.99	27.20	27.93	31.82	35.69			39.12	42.75	61.40
Er	$K\alpha_2$		8	50	68	6	48.213	2.05688	6		8.86	9.03	11.90	15.56	22.29	27.01	27.22	27.94	31.83	35.71	36.71	38.30	39.14	42.77	61.44
Tl	L_3-N_3	B	2	.01	81	6	12.051	2.05720	4		8.86	9.03	11.90	15.57	22.30	27.01	27.22	27.94	31.84	35.72			39.15	42.78	61.45
W	$L\gamma_4 p$		2	.1	74	6	12.051	2.05726	5		8.86	9.03	11.90	15.57	22.30	27.01	27.22	27.95	31.84	35.72			39.15	42.78	61.45
Gd	$L\alpha_2$		1	10	64	6	6.024	2.05780	4		8.85	9.04	11.91	15.57	22.30	27.02	27.23	27.95	31.85	35.73	36.73	38.31	39.16	42.79	61.47
Nd	$K\beta_3$		7	10	60	6	42.159	2.05819	6		8.86	9.04	11.91	15.57	22.31	27.03	27.23	27.96	31.86	35.74	36.73	38.32	39.17	42.80	61.48
Am	$L\beta_4$		3	4	95	6	18.060	2.05917	5		8.87	9.04	11.91	15.58	22.32	27.04	27.25	27.97	31.87	35.75	36.75	38.34	39.19	42.82	61.51
Cf	$L\gamma_1$		4	10	98	3	24.070	2.06000			8.87	9.05	11.92	15.59	22.33	27.05	27.26	27.98	31.88	35.77	36.77	38.36	39.21	42.84	61.54
Fr	$L\alpha_1$	H	2	100	87	6	12.029	2.06098	5		8.88	9.05	11.93	15.60	22.34	27.06	27.27	28.00	31.90	35.79			39.23	42.86	61.57
Ra	L_1-N_1	B	3	.01	88	6	18.033	2.06220	4		8.88	9.06	11.93	15.61	22.35	27.08	27.29	28.01	31.92	35.81	36.81	38.40	39.25	42.89	61.61
U	$L\beta_{10}$	B	3	.01	92	6	18.028	2.06280	5		8.88	9.06	11.94	15.61	22.36	27.09	27.30	28.02	31.93	35.82	36.82	38.41	39.26	42.90	61.63
W	L_1-O_1	B	2	.01	74	6	12.015	2.06340	4		8.89	9.06	11.94	15.61	22.36	27.10	27.31	28.03	31.94	35.83			39.27	42.91	61.65
Lu	$K\alpha_1$		9	100	71	6	54.061	2.06368	6		8.89	9.06	11.94	15.62	22.37	27.10	27.31	28.03	31.94	35.83	36.83	38.43	39.28	42.92	61.66
Pb	L_1-M_1	B	2	.01	82	6	12.008	2.06460	4		8.89	9.07	11.95	15.62	22.38	27.11	27.32	28.05	31.96	35.85			39.30	42.94	61.69
Re	$L\gamma_2$		2	1	75	6	12.008	2.06466	5		8.89	9.07	11.95	15.62	22.38	27.11	27.32	28.05	31.96	35.85			39.30	42.94	61.70
Pr	$K\alpha_1$		6	100	59	6	36.020	2.06484	6		8.89	9.07	11.95	15.63	22.38	27.12	27.32	28.05	31.96	35.86	36.86	38.45	39.30	42.94	61.70
In	$K\alpha_2$		4	50	49	6	23.998	2.06618	6		8.90	9.07	11.96	15.64	22.39	27.13	27.34	28.07	31.98	35.88	36.88	38.48	39.33	42.97	61.75
Zr	$K\beta_4$	B	3	.01	40	6	17.991	2.06703	5		8.90	9.08	11.96	15.64	22.40	27.15	27.35	28.08	32.00	35.89	36.90	38.49	39.35	42.99	61.77
Hg	$L\beta_3$		2	6	80	6	11.993	2.06716	5		8.90	9.08	11.96	15.64	22.41	27.15	27.36	28.08	32.00	35.90			39.35	42.99	61.78
Np	$L\beta_3$	H	3	6	93	6	17.986	2.06760	5		8.91	9.08	11.96	15.65	22.41	27.15	27.36	28.09	32.01	35.91	36.91	38.50	39.36	43.00	61.79
Ba	AL_1		1		56	6	5.995	2.06780	4		8.91	9.08	11.96	15.65	22.41	27.16	27.36	28.09	32.01	35.91	36.91	38.51	39.36	43.01	61.80
Bi	L_2-M_2	B	2	.01	83	6	11.981	2.06920	4		8.91	9.09	11.97	15.66	22.43	27.17	27.38	28.11	32.03	35.93			39.39	43.04	61.85
U	Lt	B	2	.01	92	6	11.980	2.06940	4		8.91	9.09	11.97	15.66	22.43	27.18	27.39	28.11	32.03	35.94			39.39	43.04	61.85
Zr	$K\beta_2$		3	4	40	6	17.967	2.06979	5		8.91	9.09	11.98	15.66	22.43	27.18	27.39	28.12	32.04	35.94	36.95	38.55	39.40	43.05	61.87
Cr	AK		1		24	6	5.988	2.07020	5		8.92	9.09	11.98	15.67	22.44	27.19	27.40	28.13	32.05	35.95	36.95	38.55	39.41	43.06	61.88
Cr	$K\beta_5$	B	1	.03	24	6	5.986	2.07087	5	4	8.92	9.09	11.98	15.67	22.45	27.20	27.41	28.13	32.06	35.96	36.97	38.57	39.42	43.08	61.90
Ho	$K\beta_1$		9	22	67	6	53.868	2.07108	5		8.92	9.10	11.98	15.67	22.45	27.20	27.41	28.14	32.06	35.97	36.97	38.57	39.43	43.08	61.91
Pu	$L\beta_5$		3	1	94	6	17.948	2.07204	5		8.92	9.10	11.99	15.68	22.46	27.21	27.42	28.15	32.08	35.98	36.99	38.59	39.45	43.10	61.94
Re	$L\gamma_6$		2	.01	75	6	11.954	2.07398	5		8.93	9.11	12.00	15.69	22.48	27.24	27.45	28.18	32.11	36.02			39.48	43.14	62.00
Pr	$K\alpha_{1,2}$		6	150	59	6	35.860	2.07406	6		8.93	9.11	12.00	15.70	22.48	27.24	27.45	28.18	32.11	36.02	37.03	38.63	39.49	43.14	62.01
Ba	$L\gamma_4$		1	.1	56	6	5.972	2.07560	4		8.94	9.12	12.01	15.71	22.50	27.26	27.47	28.20	32.13	36.05	37.05	38.66	39.52	43.18	62.06
Re	$K\alpha_2$		10	50	75	6	59.708	2.07611	6		8.94	9.12	12.01	15.71	22.50	27.27	27.48	28.21	32.14	36.06	37.06	38.67	39.53	43.19	62.08
Cs	$K\beta_2$		6	6	55	6	35.815	2.07666	5		8.94	9.12	12.02	15.72	22.51	27.27	27.48	28.21	32.15	36.07	37.07	38.68	39.54	43.20	62.09
Ho	$K\beta_3$		9	11	67	6	53.702	2.07747	5		8.95	9.12	12.02	15.72	22.52	27.28	27.49	28.23	32.16	36.08	37.09	38.69	39.55	43.22	62.12
Au	$L_3-P_{2,3}$	C	2	.01	79	6	11.933	2.07752	5		8.95	9.12	12.02	15.72	22.52	27.29	27.50	28.23	32.16	36.08			39.55	43.22	62.12
Pr	$K\beta_2$		7	65	59	6	41.767	2.07753	5		8.95	9.12	12.02	15.72	22.52	27.29	27.50	28.23	32.16	36.08	37.09	38.70	39.55	43.22	62.12
Lu	$K\alpha_{1,2}$		9	150	71	6	53.687	2.07803	6		8.95	9.13	12.02	15.73	22.52	27.29	27.50	28.23	32.17	36.09	37.10	38.70	39.56	43.23	62.14
Tl	$L\beta_4$		2	4	81	6	11.929	2.07836	5		8.95	9.13	12.03	15.73	22.53	27.30	27.51	28.24	32.18	36.10			39.57	43.24	62.15
Pr	AL_3	H	1		59	6	5.962	2.07910	4		8.96	9.13	12.03	15.73	22.54	27.31	27.52	28.25	32.19	36.11	37.12	38.73	39.59	43.25	62.17
Re	L_2-O_3	B	2	.01	75	6	11.923	2.07940	4		8.96	9.13	12.03	15.74	22.54	27.31	27.52	28.25	32.19	36.12			39.59	43.26	62.18
Br	$K\alpha_1$		2	100	35	6	11.922	2.07948	5		8.96	9.13	12.03	15.74	22.54	27.31	27.52	28.25	32.19	36.12			39.59	43.26	62.19
Hg	$L\beta_2$		2	20	80	6	11.922	2.07950	5		8.96	9.13	12.03	15.74	22.54	27.31	27.52	28.25	32.19	36.12			39.59	43.26	62.19
Ra	L_2-N_5	B	3	.01	88	6	17.882	2.07960	4		8.96	9.13	12.03	15.74	22.54	27.31	27.52	28.26	32.20	36.12	37.13	38.74	39.60	43.27	62.19
Pm	$L\beta_1$		1	50	61	6	5.960	2.07970	4		8.96	9.13	12.03	15.74	22.54	27.31	27.52	28.26	32.20	36.12	37.13	38.74	39.60	43.27	62.19
Os	L_2-N_3	F	2	.01	76	6	11.915	2.08078	5		8.96	9.14	12.04	15.75	22.56	27.33	27.54	28.27	32.21	36.14			39.62	43.29	62.23
Re	Lv	B	2	.01	75	6	11.915	2.08080	4		8.96	9.14	12.04	15.75	22.56	27.33	27.54	28.27	32.21	36.14			39.62	43.29	62.23
Au	$L\beta_5$		2	1	79	6	11.914	2.08088	5		8.96	9.14	12.04	15.75	22.56	27.33	27.54	28.27	32.22	36.14			39.62	43.29	62.23
Xe	$K\alpha_1$	H	5	100	54	6	29.774	2.08170	5		8.97	9.14	12.05	15.75	22.57	27.34	27.55	28.28	32.23	36.16	37.17	38.78	39.64	43.31	62.26
Pd	$K\beta_1$		4	18	46	6	23.815	2.08208	6		8.97	9.14	12.05	15.76	22.57	27.35	27.56	28.29	32.24	36.17	37.17	38.78	39.64	43.32	62.27
Br	$K\alpha_{1,2}$		2	150	35	6	11.907	2.08220	5		8.97	9.14	12.05	15.76	22.57	27.35	27.56	28.29	32.24	36.17			39.65	43.32	62.28
Hg	$L\beta_{15}$		2	1	80	6	11.902	2.08302	5		8.97	9.15	12.05	15.76	22.58	27.36	27.57	28.30	32.25	36.18			39.66	43.34	62.30
Ra	$L\gamma_1$		3	10	88	6	17.845	2.08389	5		8.98	9.15	12.06	15.77	22.59	27.37	27.58	28.31	32.26	36.20	37.21	38.82	39.68	43.36	62.33
Re	L_1-N_1	B	2	.01	75	6	11.896	2.08400	4		8.98	9.15	12.06	15.77	22.59	27.37	27.58	28.32	32.27	36.20			39.68	43.36	62.34
Pd	$K\beta_3$		4	8	46	6	23.787	2.08449	6		8.98	9.15	12.06	15.77	22.60	27.38	27.59	28.32	32.27	36.21	37.22	38.83	39.69	43.37	62.35

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Fr	$L\alpha_2$	H	2	10	87	6	11.893	2.08460	5		8.98	9.15	12.06	15.78	22.60	27.38	27.59	28.32	32.28	36.21			39.69	43.38	62.36
Cr	$K8_{1,3}$		1	18	24	6	5.946	2.08487	5	4	8.98	9.16	12.06	15.78	22.60	27.38	27.59	28.33	32.28	36.22	37.23	38.84	39.70	43.38	62.37
Dy	$K\beta_2$	H	9	9	66	6	53.500	2.08530	4		8.98	9.16	12.07	15.78	22.60	27.39	27.60	28.33	32.29	36.22	37.23	38.85	39.71	43.39	62.38
Sb	$K8_1$		5	20	51	6	29.721	2.08542	6		8.98	9.16	12.07	15.78	22.61	27.39	27.60	28.34	32.29	36.23	37.24	38.85	39.71	43.39	62.38
Np	$L1$		2	3	93	6	11.887	2.08560	4		8.98	9.16	12.07	15.78	22.61	27.39	27.60	28.34	32.29	36.23			39.71	43.40	62.39
Ho	$L1$		1	2	67	6	5.942	2.08600	4		8.98	9.16	12.07	15.79	22.61	27.40	27.61	28.34	32.30	36.24	37.25	38.86	39.72	43.41	62.40
Ho	$K\alpha_1$		8	100	67	6	47.539	2.08605	6		8.98	9.16	12.07	15.79	22.61	27.40	27.61	28.34	32.30	36.24	37.25	38.86	39.72	43.41	62.41
Br	$K\alpha_2$		2	50	35	6	11.876	2.08764	5		8.99	9.17	12.08	15.80	22.63	27.42	27.63	28.37	32.32	36.27			39.75	43.44	62.46
Zr	$K8_5$		3	.08	40	6	17.813	2.08770	4		8.99	9.17	12.08	15.80	22.63	27.42	27.63	28.37	32.32	36.27	37.28	38.89	39.76	43.44	62.46
Re	$L\gamma_8$		2	.1	75	6	11.874	2.08796	5		8.99	9.17	12.08	15.80	22.63	27.43	27.64	28.37	32.33	36.27			39.76	43.45	62.47
Yb	$K\beta_1$		10	64	70	6	59.356	2.08840	5		9.00	9.17	12.08	15.80	22.64	27.43	27.64	28.38	32.34	36.28	37.29	38.91	39.77	43.46	62.48
Sb	$K8_3$		5	9	51	6	29.674	2.08868	6		9.00	9.17	12.09	15.81	22.64	27.44	27.65	28.38	32.34	36.28	37.30	38.91	39.78	43.46	62.49
Eu	$K\alpha_1$		7	100	63	6	41.535	2.08912	6		9.00	9.17	12.09	15.81	22.65	27.44	27.65	28.39	32.35	36.29	37.31	38.92	39.78	43.47	62.51
Xe	$K\alpha_{1,2}$	H	5	150	54	6	29.666	2.08925	5		9.00	9.18	12.09	15.81	22.65	27.44	27.65	28.39	32.35	36.29	37.31	38.92	39.79	43.48	62.51
As	$K\beta_2$		2	1	33	6	11.862	2.09000	5		9.00	9.18	12.09	15.82	22.66	27.45	27.66	28.40	32.36	36.31			39.80	43.49	62.54
Au	$L_3\text{-}O_{2,3}$	B	2	.01	79	6	11.862	2.09000	4		9.00	9.18	12.09	15.82	22.66	27.45	27.66	28.40	32.36	36.31			39.80	43.49	62.54
W	$K\alpha_1$		10	100	74	6	59.308	2.09010	7		9.00	9.18	12.09	15.82	22.66	27.45	27.67	28.40	32.36	36.31	37.32	38.94	39.80	43.50	62.54
W	$L\gamma_{11}$	B	2	.01	74	6	11.853	2.09160	4		9.01	9.19	12.10	15.83	22.67	27.47	27.69	28.42	32.39	36.34			39.83	43.53	62.59
Pr	$L8_7$		1	.1	59	6	5.926	2.09190	4		9.01	9.19	12.10	15.83	22.68	27.48	27.69	28.43	32.39	36.34	37.36	38.97	39.84	43.53	62.60
Pr	$K\alpha_2$		6	50	59	6	35.544	2.09249	6		9.01	9.19	12.11	15.84	22.68	27.49	27.70	28.43	32.40	36.35	37.37	38.98	39.85	43.55	62.62
W	$L_1\text{-}N_4$	B	2	.01	74	6	11.842	2.09360	4		9.02	9.19	12.11	15.84	22.70	27.50	27.71	28.45	32.42	36.37			39.87	43.57	62.66
Au	Lu	B	2	.01	79	6	11.834	2.09504	5		9.02	9.20	12.12	15.86	22.71	27.52	27.73	28.47	32.44	36.40			39.90	43.60	62.70
Np	$L\beta_1$		3	50	93	6	17.747	2.09543	6		9.03	9.20	12.13	15.86	22.72	27.53	27.74	28.48	32.45	36.41	37.42	39.04	39.91	43.61	62.72
Yb	$K\beta_3$	H	10	12	70	6	59.141	2.09600	4		9.03	9.20	12.13	15.86	22.72	27.53	27.74	28.48	32.46	36.42	37.43	39.05	39.92	43.62	62.74
Hg	$L\beta_1$		2	50	80	6	11.821	2.09736	5		9.03	9.21	12.14	15.87	22.74	27.55	27.76	28.50	32.48	36.44			39.95	43.65	62.78
As	$K8_5$	B	2	.05	33	6	11.819	2.09760	4		9.03	9.21	12.14	15.87	22.74	27.55	27.77	28.51	32.48	36.44			39.95	43.66	62.79
Tm	$K8_2$	H	10	9	69	6	59.085	2.09800	4		9.04	9.21	12.14	15.88	22.74	27.56	27.77	28.51	32.49	36.45	37.47	39.09	39.96	43.67	62.80
Ho	$K\alpha_{1,2}$		8	150	67	6	47.253	2.09866	6		9.04	9.22	12.14	15.88	22.75	27.57	27.78	28.52	32.50	36.46	37.48	39.10	39.97	43.68	62.83
Tl	$L8_6$		2	.1	81	6	11.810	2.09926	5		9.04	9.22	12.15	15.89	22.76	27.58	27.79	28.53	32.51	36.47			39.99	43.70	62.85
Au	$L8_7$		2	.1	79	6	11.809	2.09948	5		9.04	9.22	12.15	15.89	22.76	27.58	27.79	28.53	32.51	36.48			39.99	43.70	62.85
Eu	$K\alpha_{1,2}$		7	150	63	6	41.320	2.10002	6		9.05	9.22	12.15	15.89	22.77	27.59	27.80	28.54	32.52	36.49	37.51	39.13	40.00	43.71	62.87
Pr	$L8_9$	B	1	.01	59	6	5.902	2.10040	4		9.05	9.22	12.15	15.90	22.77	27.59	27.80	28.54	32.53	36.49	37.51	39.14	40.01	43.72	62.88
Pu	$L8_7$		3	.1	94	6	17.701	2.10090	4		9.05	9.23	12.16	15.90	22.78	27.60	27.81	28.55	32.53	36.50	37.52	39.15	40.02	43.73	62.90
Mn	$K\alpha_1$		1	100	25	6	5.898	2.10182	6	4	9.05	9.23	12.16	15.91	22.79	27.61	27.82	28.56	32.55	36.52	37.54	39.17	40.04	43.75	62.93
Mn	$K\alpha_{1,2}$		1	150	25	6	5.894	2.10314	5	4	9.06	9.24	12.17	15.92	22.80	27.63	27.84	28.58	32.57	36.54	37.56	39.19	40.06	43.78	62.97
Nd	$L8_6$		1	.1	60	6	5.892	2.10390	4		9.06	9.24	12.17	15.92	22.81	27.64	27.85	28.59	32.58	36.56	37.58	39.21	40.08	43.80	63.00
Am	$L8_2$		3	20	95	6	17.673	2.10417	6		9.06	9.24	12.18	15.92	22.81	27.64	27.86	28.60	32.59	36.56	37.58	39.21	40.08	43.80	63.01
Xe	$K\alpha_2$	H	5	50	54	6	29.453	2.10435	5		9.06	9.24	12.18	15.93	22.81	27.64	27.86	28.60	32.59	36.57	37.59	39.21	40.09	43.81	63.02
Zr	$K\beta_1$		3	18	40	6	17.665	2.10519	5		9.07	9.25	12.18	15.93	22.82	27.66	27.87	28.61	32.60	36.58	37.60	39.23	40.10	43.83	63.04
La	AL_2	H	1		57	6	5.888	2.10530	4		9.07	9.25	12.18	15.93	22.82	27.66	27.87	28.61	32.60	36.58	37.60	39.23	40.11	43.83	63.05
Pa	$L8_9$	B	3	.01	91	6	17.663	2.10540	4		9.07	9.25	12.18	15.93	22.83	27.66	27.87	28.61	32.61	36.58	37.61	39.24	40.11	43.83	63.05
Mn	$K\alpha_2$		1	50	25	6	5.887	2.10578	5	4	9.07	9.25	12.19	15.94	22.83	27.66	27.88	28.62	32.61	36.59	37.61	39.24	40.11	43.84	63.06
W	$K\alpha_{1,2}$		10	150	74	6	58.856	2.10616	6		9.07	9.25	12.19	15.94	22.83	27.67	27.88	28.62	32.62	36.60	37.62	39.25	40.12	43.85	63.08
Lu	$K\alpha_2$		9	50	71	6	52.956	2.10673	6		9.07	9.25	12.19	15.94	22.84	27.68	27.89	28.63	32.63	36.61	37.63	39.26	40.13	43.86	63.09
Zr	$K\beta_3$		3	9	40	6	17.651	2.10684	5		9.07	9.25	12.19	15.95	22.84	27.68	27.89	28.63	32.63	36.61	37.63	39.26	40.14	43.86	63.10
Pr	$L\beta_{10}$	B	1	.01	59	6	5.883	2.10710	4		9.08	9.25	12.19	15.95	22.84	27.68	27.89	28.64	32.63	36.62	37.64	39.27	40.14	43.87	63.11
Eu	$K8_1$		8	23	63	6	47.030	2.10862	6		9.08	9.26	12.20	15.96	22.86	27.70	27.92	28.66	32.66	36.64	37.67	39.30	40.17	43.90	63.16
Pt	$L8_9$	B	2	.01	78	6	11.756	2.10892	5		9.08	9.26	12.20	15.96	22.86	27.71	27.92	28.66	32.66	36.65			40.18	43.91	63.17
Pu	Lu	B	3	.01	94	6	17.630	2.10930	4		9.09	9.26	12.21	15.96	22.87	27.71	27.92	28.67	32.67	36.65	37.68	39.31	40.18	43.92	63.18
Am	$L8_{15}$		3	1	95	6	17.623	2.11023	5		9.09	9.27	12.21	15.97	22.88	27.72	27.94	28.68	32.68	36.67	37.70	39.33	40.20	43.94	63.21
Ce	$L\gamma_5$		1	.1	58	6	5.874	2.11030	4		9.09	9.27	12.21	15.97	22.88	27.72	27.94	28.68	32.68	36.67	37.70	39.33	40.20	43.94	63.21
Tl	$L8_{17}$	B	2	.01	81	6	11.738	2.11218	5		9.10	9.28	12.22	15.99	22.90	27.75	27.96	28.71	32.71	36.71			40.24	43.98	63.28
Ra	$L_2\text{-}N_3$	B	3	.01	88	6	17.600	2.11290	4		9.10	9.28	12.23	15.99	22.91	27.76	27.97	28.72	32.73	36.72	37.75	39.38	40.26	43.99	63.30
Os	$L\gamma_5$		2	.1	76	6	11.728	2.11386	5		9.11	9.28	12.23	16.00	22.92	27.77	27.99	28.73	32.74	36.74			40.28	44.02	63.33
Rn	$L\alpha_1$	H	2	100	86	6	11.725	2.11446	5		9.11	9.29	12.24	16.00	22.93	27.78	27.99	28.74	32.75	36.75			40.29	44.03	63.35
As	$K\beta_1$		2	15	33	6	11.724	2.11460	5		9.11	9.29	12.24	16.00	22.93	27.78	28.00	28.74	32.75	36.75			40.29	44.03	63.36
Eu	$K\beta_3$		8	11	63	6	46.896	2.11466	6		9.11	9.29	12.24	16.00	22.93	27.78	28.00	28.74	32.75	36.75	37.78	39.41	40.29	44.03	63.36
As	$K\beta_3$		2	7	33	6	11.718	2.11566	5		9.11	9.29	12.24	16.01	22.94	27.80	28.01	28.76	32.77	36.77			40.31	44.05	63.39
Hg	$L_3\text{-}N_3$	B	2	.01	80	6	11.711	2.11700	4		9.12	9.30	12.25	16.02	22.95	27.81	28.03	28.77	32.79	36.79			40.34	44.08	63.44
Bi	Ln		2	1	83	6	11.710	2.11712	5		9.12	9.30	12.25	16.02	22.95	27.82	28.03	28.78	32.79	36.80			40.34	44.09	63.44
Pu	$L8_4$		3	4	94	6	17.553	2.11860	5		9.13	9.30	12.26	16.03	22.97	27.84	28.05	28.80	32.82	36.82	37.85	39.49	40.37	44.12	63.49
Pr	$L8_{2,15}$		1	20	59	6	5.849	2.11940	4		9.13	9.31	12.26	16.04	22.98	27.85	28.06	28.81	32.83	36.84	37.87	39.51	40.39	44.14	63.52
Bk	$L\gamma_1$		4	10	97	3	23.389	2.12000			9.13	9.31	12.27	16.05	22.99	27.85	28.07	28.82	32.84	36.85	37.88	39.52	40.40	44.15	63.54
Eu	$L\alpha_1$		1	100	63	6	5.845	2.12090	4		9.14	9.31	12.27	16.05	23.00	27.87	28.08	28.83	32.85	36.86	37.89	39.54	40.42	44.17	63.57
Eu	$K\alpha_2$		7	50	63	6	40.895	2.12183	6		9.14	9.32	12.28	16.06	23.01	27.88	28.09	28.84	32.87	36.88	37.91	39.55	40.43	44.19	63.60

El	Line	C	N	I	Z	R	KeV	Lambda P A 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Re	$L\gamma_1$		2	10	75	6	11.683	2.12198 5	9.14	9.32	12.28	16.06	23.01	27.88	28.10	28.84	32.87	36.88			40.44	44.19	63.60
Pt	$L\beta_{10}$	B	2	.01	78	6	11.674	2.12366 5	9.15	9.33	12.29	16.07	23.03	27.90	28.12	28.87	32.90	36.91			40.47	44.23	63.66
Ta	L_1-$O_{4,5}$	B	2	.01	73	6	11.673	2.12384 5	9.15	9.33	12.29	16.07	23.03	27.91	28.12	28.87	32.90	36.92			40.47	44.23	63.67
Ho	$K\alpha_2$		8	50	67	6	46.692	2.12389 6	9.15	9.33	12.29	16.08	23.03	27.91	28.12	28.87	32.90	36.92	37.95	39.59	40.47	44.24	63.67
W	$L\gamma_3$		2	2	74	6	11.672	2.12400 5	9.15	9.33	12.29	16.08	23.03	27.91	28.12	28.87	32.90	36.92			40.48	44.24	63.67
Np	$L\beta_5$		3	1	93	6	17.505	2.12442 5	9.15	9.33	12.29	16.08	23.03	27.91	28.13	28.88	32.91	36.93	37.96	39.60	40.49	44.25	63.69
Cs	$K\beta_1$		6	21	55	6	34.981	2.12618 6	9.16	9.34	12.30	16.09	23.05	27.94	28.15	28.90	32.94	36.96	37.99	39.64	40.52	44.29	63.75
Pa	$L\beta_{10}$	B	3	.01	91	6	17.489	2.12640 4	9.16	9.34	12.31	16.09	23.06	27.94	28.16	28.91	32.94	36.96	38.00	39.64	40.52	44.29	63.75
Nd	$L\beta_3$		1	6	60	6	5.828	2.12680 4	9.16	9.34	12.31	16.10	23.06	27.95	28.16	28.91	32.95	36.97	38.00	39.65	40.53	44.30	63.77
Ta	L_1-$N_{6,7}$	B	2	.01	73	6	11.655	2.12714 5	9.16	9.34	12.31	16.10	23.06	27.95	28.17	28.92	32.95	36.98			40.54	44.31	63.78
Mo	$K\alpha_1$		3	100	42	6	17.476	2.12790 6	9.17	9.35	12.31	16.11	23.07	27.96	28.18	28.93	32.96	36.99	38.02	39.67	40.55	44.32	63.80
Pb	L_2-M_2	B	2	.01	82	6	11.646	2.12880 4	9.17	9.35	12.32	16.11	23.08	27.97	28.19	28.94	32.98	37.01			40.57	44.34	63.83
Tl	L_1-M_1	B	2	.01	81	6	11.646	2.12880 4	9.17	9.35	12.32	16.11	23.08	27.97	28.19	28.94	32.98	37.01			40.57	44.34	63.83
Ta	$L\gamma_4$		2	.1	73	6	11.643	2.12934 5	9.17	9.35	12.32	16.12	23.09	27.98	28.20	28.95	32.99	37.02			40.58	44.35	63.85
Sn	$K\beta_2$		5	5	50	6	29.104	2.12957 6	9.17	9.35	12.32	16.12	23.09	27.98	28.20	28.95	32.99	37.02	38.05	39.70	40.59	44.36	63.86
Sm	$K\beta_2$	H	8	8	62	6	46.566	2.12960 4	9.17	9.35	12.32	16.12	23.09	27.98	28.20	28.95	32.99	37.02	38.06	39.71	40.59	44.36	63.86
Pr	$K\beta_1$		7	22	59	6	40.741	2.12983 6	9.17	9.35	12.33	16.12	23.09	27.99	28.20	28.95	33.00	37.02	38.06	39.71	40.59	44.37	63.87
Yb	$K\alpha_1$		9	100	70	6	52.380	2.12989 6	9.17	9.35	12.33	16.12	23.09	27.99	28.20	28.95	33.00	37.03	38.06	39.71	40.59	44.37	63.87
Cs	$K\beta_3$		6	9	55	6	34.913	2.13030 6	9.18	9.36	12.33	16.12	23.10	27.99	28.21	28.96	33.00	37.03	38.07	39.72	40.60	44.38	63.88
U	$L\beta_3$		3	6	92	6	17.452	2.13087 5	9.18	9.36	12.33	16.13	23.11	28.00	28.22	28.97	33.01	37.04	38.08	39.73	40.61	44.39	63.90
Ta	$L\gamma_4$p		2	.1	73	6	11.635	2.13088 5	9.18	9.36	12.33	16.13	23.11	28.00	28.22	28.97	33.01	37.04			40.61	44.39	63.90
Eu	Ln		1	1	63	6	5.816	2.13150 4	9.18	9.36	12.33	16.13	23.11	28.01	28.22	28.98	33.02	37.05	38.09	39.74	40.63	44.40	63.92
Eu	$L\alpha_2$		1	10	63	6	5.816	2.13150 4	9.18	9.36	12.33	16.13	23.11	28.01	28.22	28.98	33.02	37.05	38.09	39.74	40.63	44.40	63.92
Mo	$K\alpha_{1,2}$		3	150	42	6	17.441	2.13219 6	9.18	9.36	12.34	16.14	23.12	28.02	28.23	28.99	33.03	37.07	38.10	39.76	40.64	44.42	63.95
Ba	$L\gamma_3$		1	1	56	6	5.808	2.13420 4	9.19	9.37	12.35	16.15	23.14	28.04	28.26	29.01	33.07	37.10	38.14	39.79	40.68	44.46	64.01
U	Ll		2	3	92	6	11.616	2.13424 5	9.19	9.37	12.35	16.15	23.14	28.05	28.26	29.01	33.07	37.10			40.68	44.46	64.02
Pr	$K\beta_3$		7	10	59	6	40.646	2.13482 6	9.20	9.38	12.35	16.16	23.15	28.05	28.27	29.02	33.08	37.11	38.15	39.81	40.69	44.48	64.04
Ta	L_1-O_1	B	2	.01	73	6	11.610	2.13542 5	9.20	9.38	12.36	16.16	23.16	28.06	28.28	29.03	33.08	37.13			40.70	44.49	64.06
Au	$L\beta_3$		2	6	79	6	11.608	2.13570 5	9.20	9.38	12.36	16.17	23.16	28.07	28.28	29.03	33.09	37.13			40.71	44.49	64.06
W	$L\gamma_2$		2	1	74	6	11.606	2.13612 5	9.20	9.38	12.36	16.17	23.16	28.07	28.29	29.04	33.10	37.14			40.72	44.50	64.08
Hg	L_3-N_2	F	2	.01	80	6	11.605	2.13640 4	9.20	9.38	12.36	16.17	23.17	28.07	28.29	29.04	33.10	37.14			40.72	44.51	64.09
Rn	$L\alpha_2$	H	2	10	86	6	11.596	2.13798 5	9.21	9.39	12.37	16.18	23.18	28.10	28.31	29.07	33.13	37.17			40.76	44.54	64.14
W	$K\alpha_2$		10	50	74	6	57.972	2.13828 6	9.21	9.39	12.37	16.18	23.19	28.10	28.32	29.07	33.13	37.18	38.22	39.87	40.76	44.55	64.15
Ba	$L\gamma_2$		1	1	56	6	5.796	2.13870 4	9.21	9.39	12.38	16.19	23.19	28.11	28.32	29.08	33.14	37.18	38.22	39.88	40.77	44.56	64.17
Cd	$K\alpha_1$		4	100	48	6	23.170	2.14004 6	9.22	9.40	12.38	16.20	23.21	28.12	28.34	29.09	33.16	37.21	38.25	39.91	40.80	44.59	64.21
Rh	$K\beta_2$		4	4	45	6	23.169	2.14012 5	9.22	9.40	12.38	16.20	23.21	28.12	28.34	29.10	33.16	37.21	38.25	39.91	40.80	44.59	64.21
Au	$L\beta_2$		2	20	79	6	11.583	2.14044 5	9.22	9.40	12.39	16.20	23.21	28.13	28.35	29.10	33.16	37.22			40.80	44.60	64.22
Mo	$K\alpha_2$		3	50	42	6	17.371	2.14077 6	9.22	9.40	12.39	16.20	23.21	28.13	28.35	29.10	33.17	37.22	38.26	39.92	40.81	44.61	64.23
Dy	$K\beta_1$		9	23	66	6	52.110	2.14092 5	9.22	9.40	12.39	16.20	23.22	28.14	28.35	29.11	33.17	37.22	38.27	39.93	40.81	44.61	64.24
La	$L\gamma_1$		1	5	57	6	5.788	2.14180 4	9.23	9.41	12.39	16.21	23.23	28.15	28.36	29.12	33.19	37.24	38.28	39.94	40.83	44.63	64.27
Ce	$K\alpha_1$		6	100	58	6	34.714	2.14255 6	9.23	9.41	12.40	16.22	23.23	28.16	28.37	29.13	33.20	37.25	38.30	39.96	40.85	44.64	64.29
Au	$L\beta_{15}$		2	1	79	6	11.565	2.14376 5	9.23	9.42	12.41	16.23	23.25	28.17	28.39	29.15	33.22	37.28			40.87	44.67	64.34
Yb	$K\alpha_{1,2}$		9	150	70	6	52.030	2.14420 6	9.24	9.42	12.41	16.23	23.25	28.18	28.40	29.15	33.22	37.28	38.33	39.99	40.88	44.68	64.35
Hg	$L\beta_4$		2	4	80	6	11.561	2.14444 5	9.24	9.42	12.41	16.23	23.25	28.18	28.40	29.16	33.23	37.29			40.88	44.69	64.36
Pt	$L\beta_5$		2	1	78	6	11.559	2.14480 4	9.24	9.42	12.41	16.23	23.26	28.19	28.40	29.16	33.23	37.29			40.89	44.69	64.37
Cd	$K\alpha_{1,2}$		4	150	48	6	23.106	2.14592 6	9.24	9.42	12.42	16.24	23.27	28.20	28.42	29.18	33.25	37.31	38.36	40.02	40.91	44.72	64.41
Dy	$K\beta_3$		9	11	66	6	51.949	2.14758 5	9.25	9.43	12.43	16.26	23.29	28.22	28.44	29.20	33.28	37.34	38.39	40.05	40.95	44.76	64.46
W	$L\gamma_6$		2	.01	74	6	11.537	2.14896 5	9.26	9.44	12.44	16.27	23.30	28.24	28.46	29.22	33.30	37.37			40.97	44.79	64.51
Fr	$L\gamma_1$	H	3	10	87	6	17.300	2.14956 5	9.26	9.44	12.44	16.27	23.31	28.25	28.47	29.23	33.31	37.38	38.43	40.09	40.99	44.80	64.53
Au	L_2-M_5	B	2	.01	79	6	11.525	2.15120 4	9.27	9.45	12.45	16.28	23.33	28.27	28.49	29.25	33.34	37.41			41.02	44.83	64.59
Ce	$K\alpha_{1,2}$		6	150	58	6	34.566	2.15173 6	9.27	9.45	12.45	16.29	23.33	28.28	28.50	29.26	33.34	37.42	38.47	40.14	41.03	44.85	64.60
Pt	L_3-$O_{2,3}$	B	2	.01	78	6	11.519	2.15220 4	9.27	9.45	12.46	16.29	23.34	28.29	28.50	29.26	33.35	37.43			41.04	44.86	64.62
Ra	$L\gamma_5$		3	.1	88	6	17.271	2.15322 5	9.27	9.46	12.46	16.30	23.35	28.30	28.52	29.28	33.37	37.45	38.49	40.16	41.06	44.88	64.65
Re	L_2-N_3	B	2	.01	75	6	11.513	2.15340 4	9.28	9.46	12.46	16.30	23.35	28.30	28.52	29.28	33.37	37.45			41.06	44.88	64.66
W	Lv	B	2	.01	74	6	11.509	2.15420 4	9.28	9.46	12.47	16.31	23.36	28.31	28.53	29.29	33.38	37.46			41.08	44.90	64.69
W	L_2-O_3	F	2	.01	74	6	11.505	2.15480 5	9.28	9.46	12.47	16.31	23.37	28.32	28.54	29.30	33.39	37.47			41.09	44.91	64.71
Ta	$K\alpha_1$		10	100	73	6	57.523	2.15497 6	9.28	9.46	12.47	16.31	23.37	28.32	28.54	29.30	33.40	37.48	38.53	40.20	41.09	44.92	64.71
Pu	$L\beta_2$		3	20	94	6	17.252	2.15553 5	9.28	9.47	12.47	16.32	23.38	28.33	28.55	29.31	33.41	37.49	38.54	40.21	41.10	44.93	64.73
Tm	$K\beta_1$		10	23	69	6	57.506	2.15560 5	9.29	9.47	12.47	16.32	23.38	28.33	28.55	29.31	33.41	37.49	38.54	40.21	41.11	44.93	64.73
Dy	$K\alpha_1$		8	100	66	6	45.991	2.15626 6	9.29	9.47	12.48	16.32	23.38	28.34	28.56	29.32	33.42	37.50	38.55	40.22	41.12	44.95	64.76
Ce	$K\beta_2$		7	7	58	6	40.226	2.15712 5	9.29	9.47	12.48	16.33	23.39	28.35	28.57	29.33	33.43	37.52	38.57	40.24	41.14	44.96	64.79
Tb	$K\beta_2$	H	9	8	65	6	51.715	2.15730 4	9.29	9.47	12.48	16.33	23.40	28.35	28.57	29.33	33.43	37.52	38.57	40.24	41.14	44.97	64.79
Cd	$K\alpha_2$		4	50	48	6	22.980	2.15769 6	9.29	9.48	12.49	16.33	23.40	28.36	28.58	29.34	33.44	37.53	38.58	40.25	41.15	44.98	64.80
Pt	Lu	B	2	.01	78	6	11.489	2.15792 5	9.30	9.48	12.49	16.33	23.40	28.36	28.58	29.34	33.44	37.53			41.15	44.98	64.81
Dy	Ll		1	2	66	6	5.742	2.15877 5	9.30	9.48	12.49	16.34	23.41	28.37	28.59	29.35	33.46	37.55	38.60	40.27	41.17	45.00	64.84

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Hg	$L\beta_6$		2	.1	80	6	11.480	2.15950	5	9.30	9.48	12.50	16.35	23.42	28.38	28.60	29.36	33.47	37.56			41.18	45.02	64.87
U	$L\beta_1$		3	50	92	6	17.217	2.15995	6	9.30	9.49	12.50	16.35	23.43	28.39	28.61	29.37	33.48	37.57	38.62	40.30	41.19	45.03	64.88
Pu	$L\beta_{15}$		3	1	94	6	17.205	2.16150	4	9.31	9.49	12.51	16.36	23.44	28.41	28.63	29.39	33.50	37.60	38.65	40.33	41.22	45.06	64.93
Xe	$K\beta_2$	H	6	6	54	6	34.408	2.16156	5	9.31	9.49	12.51	16.36	23.44	28.41	28.63	29.39	33.50	37.60	38.65	40.33	41.22	45.06	64.93
Th	Lt	F	2	.01	90	6	11.468	2.16186	5	9.31	9.49	12.51	16.36	23.45	28.42	28.64	29.40	33.51	37.60			41.23	45.07	64.95
W	$L\gamma_8$		2	.1	74	6	11.466	2.16226	5	9.31	9.50	12.51	16.37	23.45	28.42	28.64	29.40	33.51	37.61			41.24	45.08	64.96
Sm	$K\alpha_1$		7	100	62	6	40.111	2.16328	6	9.32	9.50	12.52	16.38	23.46	28.44	28.65	29.42	33.53	37.63	38.68	40.36	41.26	45.10	64.99
Pt	$L\beta_7$		2	.1	78	6	11.460	2.16336	5	9.32	9.50	12.52	16.38	23.46	28.44	28.66	29.42	33.53	37.63			41.26	45.10	65.00
Tm	$K\beta_3$		10	11	69	6	57.293	2.16360	5	9.32	9.50	12.52	16.38	23.47	28.44	28.66	29.42	33.53	37.63	38.69	40.37	41.27	45.11	65.00
Ta	$L\gamma_{11}$	F	2	.01	73	6	11.450	2.16520	5	9.33	9.51	12.53	16.39	23.48	28.46	28.68	29.44	33.56	37.66			41.30	45.14	65.06
Ce	AL_3	H	1		58	6	5.723	2.16600	3	9.33	9.51	12.54	16.40	23.49	28.47	28.69	29.46	33.57	37.68	38.73	40.41	41.31	45.16	65.08
I	$K\alpha_1$		5	100	53	6	28.607	2.16659	6	9.33	9.52	12.54	16.40	23.50	28.48	28.70	29.46	33.58	37.69	38.74	40.42	41.33	45.17	65.10
Nd	$L8_1$		1	50	60	6	5.721	2.16690	4	9.33	9.52	12.54	16.40	23.50	28.48	28.70	29.47	33.59	37.69	38.75	40.43	41.33	45.18	65.12
Nd	$L\beta_4$		1	5	60	6	5.721	2.16690	4	9.33	9.52	12.54	16.40	23.50	28.48	28.70	29.47	33.59	37.69	38.75	40.43	41.33	45.18	65.12
Er	$K\beta_2$	H	10	8	68	6	57.204	2.16700	4	9.33	9.52	12.54	16.40	23.50	28.48	28.70	29.47	33.59	37.69	38.75	40.43	41.33	45.18	65.12
Au	$L8_1$		2	50	79	6	11.440	2.16706	5	9.33	9.52	12.54	16.40	23.50	28.49	28.71	29.47	33.59	37.70			41.33	45.18	65.12
O	$L_3-P_{4,5}$		3	.01	92	6	17.159	2.16720	5	9.34	9.52	12.54	16.41	23.50	28.49	28.71	29.47	33.59	37.70	38.75	40.44	41.34	45.19	65.13
Cs	AL_1		1		55	6	5.720	2.16730	4	9.34	9.52	12.54	16.41	23.51	28.49	28.71	29.47	33.59	37.70	38.76	40.44	41.34	45.19	65.13
Ta	L_1-N_4	B	2	.01	73	6	11.438	2.16754	5	9.34	9.52	12.54	16.41	23.51	28.49	28.71	29.48	33.60	37.70			41.34	45.19	65.14
Re	L_2-N_2	B	2	.01	75	6	11.436	2.16780	4	9.34	9.52	12.55	16.41	23.51	28.50	28.72	29.48	33.60	37.71			41.35	45.20	65.15
Dy	$K\alpha_{1,2}$		8	150	66	6	45.724	2.16883	6	9.34	9.53	12.55	16.42	23.52	28.51	28.73	29.49	33.62	37.73	38.78	40.47	41.37	45.22	65.18
At	$L\alpha_1$	H	2	100	85	6	11.425	2.17000	5	9.35	9.53	12.56	16.43	23.54	28.53	28.75	29.51	33.64	37.75			41.39	45.25	65.22
Ce	$K\alpha_2$		6	50	58	6	34.273	2.17010	6	9.35	9.53	12.56	16.43	23.54	28.53	28.75	29.51	33.64	37.75	38.81	40.49	41.40	45.25	65.22
Th	$L8_9$	B	3	.01	90	6	17.136	2.17020	4	9.35	9.53	12.56	16.43	23.54	28.53	28.75	29.51	33.64	37.75	38.81	40.49	41.40	45.25	65.23
Ta	$K\alpha_{1,2}$		10	150	73	6	57.098	2.17100	6	9.35	9.54	12.56	16.43	23.55	28.54	28.76	29.52	33.65	37.77	38.82	40.51	41.41	45.27	65.25
U	$L_3-P_{2,3}$	B	3	.01	92	6	17.115	2.17278	5	9.36	9.54	12.57	16.45	23.57	28.56	28.78	29.55	33.68	37.80	38.86	40.55	41.45	45.31	65.31
Yb	$K\alpha_2$		9	50	70	6	51.345	2.17282	6	9.36	9.54	12.57	16.45	23.57	28.56	28.78	29.55	33.68	37.80	38.86	40.55	41.45	45.31	65.32
Cs	$L\gamma_4$		1	.1	55	6	5.702	2.17410	4	9.37	9.55	12.58	16.46	23.58	28.58	28.80	29.57	33.70	37.82	38.88	40.57	41.48	45.34	65.36
I	$K\alpha_{1,2}$		5	150	53	6	28.508	2.17410	6	9.37	9.55	12.58	16.46	23.58	28.58	28.80	29.57	33.70	37.82	38.88	40.57	41.48	45.34	65.36
Sm	$K\alpha_{1,2}$		7	150	62	6	39.911	2.17415	6	9.37	9.55	12.58	16.46	23.58	28.58	28.80	29.57	33.70	37.82	38.88	40.57	41.48	45.34	65.36
U	L_3-P_1		3	.01	92	6	17.093	2.17563	5	9.37	9.56	12.59	16.47	23.60	28.60	28.82	29.59	33.73	37.85	38.91	40.60	41.51	45.37	65.41
Sn	$K\beta_1$		5	19	50	6	28.481	2.17618	6	9.37	9.56	12.59	16.47	23.60	28.61	28.83	29.60	33.73	37.86	38.92	40.61	41.52	45.38	65.43
U	$L\beta_5$		3	1	92	6	17.067	2.17891	6	9.39	9.57	12.61	16.49	23.63	28.64	28.87	29.64	33.78	37.91	38.97	40.66	41.57	45.44	65.52
Sn	$K\beta_3$		5	9	50	6	28.439	2.17938	6	9.39	9.57	12.61	16.50	23.64	28.65	28.87	29.64	33.79	37.92	38.98	40.67	41.58	45.45	65.54
Ir	$L8_9$	B	2	.01	77	6	11.375	2.17950	5	9.39	9.57	12.61	16.50	23.64	28.65	28.87	29.64	33.79	37.92			41.58	45.46	65.54
Np	$L\beta_4$		3	4	93	6	17.058	2.18013	5	9.39	9.58	12.62	16.50	23.65	28.66	28.88	29.65	33.80	37.93	38.99	40.69	41.60	45.47	65.56
Au	L_3-N_3	B	2	.01	79	6	11.370	2.18052	5	9.39	9.58	12.62	16.51	23.65	28.67	28.89	29.66	33.80	37.94			41.60	45.48	65.58
Ce	$L\beta_7$	D	1	.1	58	6	5.685	2.18060	4	9.39	9.58	12.62	16.51	23.65	28.67	28.89	29.66	33.81	37.94	39.00	40.70	41.60	45.48	65.58
Pa	Ll		2	3	91	6	11.364	2.18160	4	9.40	9.58	12.63	16.51	23.66	28.68	28.90	29.67	33.82	37.96			41.62	45.50	65.61
Rh	$K\beta_1$		4	16	45	6	22.720	2.18242	6	9.40	9.59	12.63	16.52	23.67	28.69	28.91	29.68	33.83	37.97	39.04	40.73	41.64	45.52	65.64
Hg	$L\beta_{17}$	B	2	.01	80	6	11.356	2.18320	4	9.40	9.59	12.64	16.53	23.68	28.70	28.92	29.69	33.85	37.99			41.66	45.54	65.67
Y	$K\beta_4$		3	.01	39	6	17.033	2.18328	5	9.40	9.59	12.64	16.53	23.68	28.70	28.92	29.70	33.85	37.99	39.05	40.75	41.66	45.54	65.67
Cm	$L\gamma_1$		4	10	96	3	22.703	2.18400		9.41	9.59	12.64	16.53	23.69	28.71	28.93	29.71	33.86	38.00	39.07	40.76	41.67	45.56	65.69
Sm	$K\beta_1$		8	22	62	6	45.405	2.18408	5	9.41	9.59	12.64	16.53	23.69	28.71	28.94	29.71	33.86	38.00	39.07	40.77	41.67	45.56	65.70
Rh	$K\beta_3$		4	8	45	6	22.695	2.18480	6	9.41	9.60	12.64	16.54	23.70	28.72	28.95	29.72	33.87	38.02	39.08	40.78	41.69	45.57	65.72
Pb	Ln		2	1	82	6	11.347	2.18482	5	9.41	9.60	12.64	16.54	23.70	28.72	28.95	29.72	33.87	38.02			41.69	45.57	65.72
Y	$K\beta_2$		3	4	39	6	17.013	2.18592	5	9.42	9.60	12.65	16.55	23.71	28.74	28.96	29.73	33.89	38.04	39.10	40.80	41.71	45.60	65.76
Re	$L\gamma_5$		2	.1	75	6	11.332	2.18776	5	9.42	9.61	12.66	16.56	23.73	28.76	28.99	29.76	33.92	38.07			41.75	45.64	65.82
Ce	$L\beta_9$	B	1	.01	58	6	5.664	2.18850	4	9.43	9.61	12.67	16.57	23.74	28.77	29.00	29.77	33.93	38.08	39.15	40.85	41.76	45.66	65.85
I	$K\alpha_2$		5	50	53	6	28.312	2.18914	6	9.43	9.61	12.67	16.57	23.75	28.78	29.00	29.78	33.94	38.09	39.16	40.86	41.78	45.67	65.87
Sm	$K\beta_3$		8	10	62	6	45.281	2.19008	5	9.43	9.62	12.68	16.58	23.76	28.79	29.02	29.79	33.96	38.11	39.18	40.88	41.79	45.69	65.90
Th	$L8_{10}$	B	3	.01	90	6	16.978	2.19030	4	9.44	9.62	12.68	16.58	23.76	28.80	29.02	29.79	33.96	38.12	39.18	40.89	41.80	45.70	65.91
Pr	$L8_6$		1	.1	59	6	5.659	2.19060	4	9.44	9.62	12.68	16.58	23.76	28.80	29.02	29.80	33.97	38.12	39.19	40.89	41.80	45.70	65.92
U	L_3-O_3	B	3	.01	92	6	16.960	2.19270	4	9.45	9.63	12.69	16.60	23.79	28.83	29.05	29.83	34.00	38.16	39.23	40.93	41.85	45.75	65.99
At	$L\alpha_2$	H	2	10	85	6	11.303	2.19342	5	9.45	9.63	12.69	16.60	23.79	28.84	29.06	29.84	34.01	38.17			41.86	45.76	66.01
Dy	$K\alpha_2$		8	50	66	6	45.200	2.19398	6	9.45	9.64	12.70	16.61	23.80	28.85	29.07	29.84	34.02	38.18	39.25	40.96	41.87	45.78	66.03
Ir	$L\beta_{10}$	B	2	.01	77	6	11.300	2.19404	5	9.45	9.64	12.70	16.61	23.80	28.85	29.07	29.85	34.02	38.18			41.87	45.78	66.03
Ce	$L\beta_{10}$	B	1	.01	58	6	5.645	2.19580	4	9.46	9.64	12.71	16.62	23.82	28.87	29.09	29.87	34.05	38.21	39.29	40.99	41.91	45.82	66.09
Sm	$K\alpha_2$		7	50	62	6	39.516	2.19589	6	9.46	9.64	12.71	16.62	23.82	28.87	29.10	29.87	34.05	38.22	39.29	41.00	41.91	45.82	66.10
Pa	$L\beta_3$		3	6	91	6	16.927	2.19690	5	9.46	9.65	12.71	16.63	23.83	28.89	29.11	29.89	34.07	38.23	39.31	41.02	41.93	45.84	66.13
W	$L\gamma_1$		2	10	74	6	11.284	2.19710	5	9.46	9.65	12.72	16.63	23.83	28.89	29.11	29.89	34.07	38.24			41.93	45.85	66.14
Tl	L_2-M_2	F	2	.01	81	6	11.280	2.19782	5	9.47	9.65	12.72	16.64	23.84	28.90	29.12	29.90	34.08	38.25			41.95	45.86	66.16
Ta	$L\gamma_3$		2	2	73	6	11.276	2.19872	5	9.47	9.66	12.73	16.65	23.85	28.91	29.13	29.91	34.09	38.27			41.97	45.88	66.19
Tm	$K\alpha_1$		9	100	69	6	50.733	2.19904	6	9.47	9.66	12.73	16.65	23.86	28.92	29.14	29.92	34.10	38.27	39.35	41.06	41.97	45.89	66.20
Au	L_3-N_2	B	2	.01	79	6	11.272	2.19936	5	9.47	9.66	12.73	16.65	23.86	28.92	29.14	29.92	34.11	38.28			41.98	45.90	66.21

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Hg	L_1-M_1		8	2 .01	80	6	11.270	2.19980	4	9.48	9.66	12.73	16.65	23.86	28.93	29.15	29.93	34.11	38.29			41.99	45.90	66.23
Sm	$L\alpha_1$		1	100	62	6	5.635	2.19980	5	9.48	9.66	12.73	16.65	23.86	28.93	29.15	29.93	34.11	38.29	39.36	41.07	41.99	45.90	66.23
U	L_3-O_2		8	3 .01	92	6	16.904	2.19990	4	9.48	9.66	12.73	16.65	23.86	28.93	29.15	29.93	34.11	38.29	39.36	41.07	41.99	45.91	66.23
Hf	L_1-O_4		B	2 .01	72	6	11.260	2.20172	5	9.48	9.67	12.74	16.67	23.88	28.95	29.17	29.95	34.14	38.32			42.03	45.95	66.29
Am	$L\beta_6$			3 .1	95	6	16.884	2.20254	5	9.49	9.67	12.75	16.67	23.89	28.96	29.19	29.96	34.16	38.34	39.41	41.13	42.04	45.97	66.32
Ta	$K\alpha_2$			10 50	73	6	56.267	2.20305	6	9.49	9.68	12.75	16.68	23.90	28.97	29.19	29.97	34.16	38.35	39.42	41.14	42.05	45.98	66.34
Y	$K\beta_5$			3 .07	39	6	16.877	2.20350	4	9.49	9.68	12.75	16.68	23.90	28.98	29.20	29.98	34.17	38.35	39.43	41.14	42.06	45.99	66.36
Pt	$L\beta_2$			2 20	78	6	11.249	2.20400	5	9.49	9.68	12.76	16.69	23.91	28.98	29.21	29.98	34.18	38.36			42.07	46.00	66.37
8a	AL_2			1	56	6	5.622	2.20480	4	9.50	9.68	12.76	16.69	23.92	28.99	29.22	30.00	34.19	38.38	39.45	41.17	42.09	46.02	66.40
La	$L\gamma_5$			1 .1	57	6	5.620	2.20560	4	9.50	9.69	12.77	16.70	23.93	29.00	29.23	30.01	34.20	38.39	39.47	41.19	42.10	46.03	66.43
Hf	$L\gamma_4$			2 .1	72	6	11.238	2.20606	5	9.50	9.69	12.77	16.70	23.93	29.01	29.23	30.01	34.21	38.40			42.11	46.04	66.44
Pt	$L\beta_3$		D	2 6	78	6	11.233	2.20716	5	9.51	9.69	12.77	16.71	23.94	29.02	29.25	30.03	34.23	38.42			42.14	46.07	66.48
Pm	$K\beta_2$		H	8 8	61	6	44.929	2.20720	4	9.51	9.69	12.77	16.71	23.95	29.02	29.25	30.03	34.23	38.42	39.50	41.22	42.14	46.07	66.48
Hf	$L\gamma_4$P			2 .1	72	6	11.231	2.20752	5	9.51	9.70	12.78	16.71	23.95	29.03	29.25	30.03	34.24	38.43			42.14	46.08	66.49
U	$L\beta_7$			3 .1	92	6	16.842	2.20806	5	9.51	9.70	12.78	16.72	23.95	29.04	29.26	30.04	34.24	38.44	39.51	41.23	42.15	46.09	66.51
Np	$L\beta_2$			3 20	93	6	16.837	2.20869	6	9.51	9.70	12.78	16.72	23.96	29.04	29.27	30.05	34.25	38.45	39.53	41.25	42.17	46.10	66.53
Ce	$L\beta_{2,15}$			1 20	58	6	5.612	2.20870	4	9.51	9.70	12.78	16.72	23.96	29.05	29.27	30.05	34.25	38.45	39.53	41.25	42.17	46.10	66.53
Se	$K\alpha_1$			2 100	34	6	11.220	2.20954	5	9.52	9.70	12.79	16.73	23.97	29.06	29.28	30.06	34.27	38.46			42.18	46.12	66.56
Ta	$L\gamma_2$			2 1	73	6	11.215	2.21060	4	9.52	9.71	12.79	16.74	23.98	29.07	29.29	30.08	34.28	38.48			42.20	46.14	66.60
Sm	$L\alpha_2$			1 10	62	6	5.607	2.21062	5	9.52	9.71	12.79	16.74	23.98	29.07	29.30	30.08	34.29	38.48	39.56	41.28	42.20	46.14	66.60
Ce	$K\beta_1$			7 22	58	6	39.251	2.21071	6	9.52	9.71	12.80	16.74	23.98	29.07	29.30	30.08	34.29	38.48	39.56	41.28	42.21	46.15	66.60
Ir	$L\beta_5$			2 .1	77	6	11.209	2.21170	5	9.53	9.71	12.80	16.74	23.99	29.09	29.31	30.09	34.30	38.50			42.23	46.17	66.63
Se	$K\alpha_{1,2}$			2 150	34	6	11.207	2.21224	5	9.53	9.72	12.80	16.75	24.00	29.09	29.32	30.10	34.31	38.51			42.24	46.18	66.65
Xe	$K\beta_1$		H	6 20	54	6	33.619	2.21232	5	9.53	9.72	12.80	16.75	24.00	29.09	29.32	30.10	34.31	38.51	39.59	41.32	42.24	46.18	66.66
Au	$L\beta_4$			2 4	79	6	11.203	2.21302	5	9.53	9.72	12.81	16.75	24.01	29.10	29.33	30.11	34.32	38.53			42.25	46.20	66.68
Hf	L_1-O_1		B	2 .01	72	6	11.201	2.21328	5	9.53	9.72	12.81	16.76	24.01	29.11	29.33	30.11	34.33	38.53			42.26	46.20	66.69
Tm	$K\alpha_{1,2}$			9 150	69	6	50.406	2.21332	6	9.53	9.72	12.81	16.76	24.01	29.11	29.33	30.11	34.33	38.53	39.61	41.34	42.26	46.20	66.69
Tb	$K\beta_1$			9 23	65	6	50.374	2.21472	5	9.54	9.73	12.82	16.77	24.03	29.13	29.35	30.13	34.35	38.56	39.64	41.36	42.29	46.23	66.74
Ce	$K\beta_3$			7 10	58	6	39.163	2.21564	6	9.54	9.73	12.82	16.77	24.04	29.14	29.36	30.15	34.37	38.57	39.66	41.38	42.31	46.25	66.77
U	Lu		B	3 .01	92	6	16.783	2.21581	6	9.55	9.73	12.82	16.78	24.04	29.14	29.37	30.15	34.37	38.58	39.66	41.38	42.31	46.26	66.77
Xe	$K\beta_3$		H	6 9	54	6	33.556	2.21646	5	9.55	9.74	12.83	16.78	24.05	29.15	29.37	30.16	34.38	38.59	39.67	41.40	42.32	46.27	66.80
Pr	$L\beta_3$			1 6	59	6	5.591	2.21720	4	9.55	9.74	12.83	16.79	24.06	29.16	29.38	30.17	34.39	38.60	39.69	41.41	42.34	46.29	66.82
Se	$K\alpha_2$			2 50	34	6	11.179	2.21764	5	9.55	9.74	12.84	16.79	24.06	29.17	29.39	30.17	34.40	38.61			42.35	46.30	66.84
Rn	$L\gamma_1$		H	3 10	86	6	16.768	2.21784	5	9.55	9.74	12.84	16.79	24.06	29.17	29.39	30.18	34.40	38.61	39.70	41.42	42.35	46.30	66.84
Sm	Ln			1 1	62	6	5.588	2.21824	5	9.56	9.74	12.84	16.79	24.07	29.17	29.40	30.18	34.41	38.62	39.70	41.43	42.36	46.31	66.86
Ir	L_3-$O_{2,3}$		B	2 .01	77	6	11.175	2.21846	5	9.56	9.74	12.84	16.80	24.07	29.18	29.40	30.19	34.41	38.62			42.36	46.32	66.86
Tb	$K\beta_3$			9 11	65	6	50.221	2.22147	5	9.57	9.76	12.86	16.82	24.10	29.22	29.44	30.23	34.46	38.68	39.76	41.50	42.42	46.38	66.97
Au	$L\beta_6$			2 .1	79	6	11.158	2.22184	5	9.57	9.76	12.86	16.82	24.11	29.22	29.45	30.23	34.46	38.69			42.43	46.39	66.98
Y	$K\beta_1$			3 16	39	6	16.735	2.22216	5	9.57	9.76	12.86	16.82	24.11	29.23	29.45	30.24	34.47	38.69	39.78	41.51	42.44	46.40	66.99
Hf	$K\alpha_1$			10 100	72	6	55.781	2.22227	6	9.57	9.76	12.86	16.82	24.11	29.23	29.45	30.24	34.47	38.69	39.78	41.51	42.44	46.40	66.99
Ir	Lu		8	2 .01	77	6	11.153	2.22290	5	9.58	9.76	12.87	16.83	24.12	29.24	29.46	30.25	34.48	38.71			42.45	46.41	67.02
Pt	L_2-M_5		F	2 .01	78	6	11.149	2.22366	5	9.58	9.77	12.87	16.84	24.13	29.25	29.47	30.26	34.49	38.72			42.47	46.43	67.04
Y	$K\beta_3$			3 8	39	6	16.723	2.22378	5	9.58	9.77	12.87	16.84	24.13	29.25	29.47	30.26	34.50	38.72	39.81	41.54	42.47	46.43	67.05
La	$K\alpha_1$			6 100	57	6	33.436	2.22442	6	9.58	9.77	12.87	16.84	24.13	29.26	29.48	30.27	34.51	38.73	39.82	41.55	42.48	46.45	67.07
In	$K\beta_2$			5 5	49	6	27.956	2.22500	5	9.58	9.77	12.88	16.85	24.14	29.26	29.49	30.28	34.51	38.74	39.83	41.56	42.49	46.46	67.09
Er	$K\beta_1$			10 22	68	6	55.672	2.22660	5	9.59	9.78	12.89	16.86	24.16	29.29	29.51	30.30	34.54	38.77	39.86	41.60	42.52	46.50	67.14
Pa	$L\beta_1$			3 50	91	6	16.699	2.22696	5	9.59	9.78	12.89	16.86	24.16	29.29	29.52	30.30	34.55	38.78	39.87	41.60	42.53	46.50	67.15
Po	$L\alpha_1$			2 100	84	6	11.129	2.22772	5	9.60	9.78	12.89	16.87	24.17	29.30	29.53	30.31	34.56	38.79			42.55	46.52	67.18
Ta	$L\gamma_6$			2 .01	73	6	11.129	2.22776	5	9.60	9.78	12.89	16.87	24.17	29.30	29.53	30.32	34.56	38.79			42.55	46.52	67.18
Ir	$L\beta_7$			2 .1	77	6	11.119	2.22978	5	9.61	9.79	12.91	16.88	24.19	29.33	29.55	30.34	34.59	38.83			42.59	46.57	67.25
Tb	$K\alpha_1$			8 100	65	6	44.474	2.22979	6	9.61	9.79	12.91	16.88	24.19	29.33	29.56	30.34	34.59	38.83	39.92	41.66	42.59	46.57	67.25
W	L_2-N_3		B	2 .01	74	6	11.118	2.22980	4	9.61	9.79	12.91	16.88	24.19	29.33	29.56	30.34	34.59	38.83			42.59	46.57	67.25
Th	Ll			2 1	90	6	11.117	2.23016	5	9.61	9.80	12.91	16.89	24.20	29.33	29.56	30.35	34.60	38.84			42.60	46.58	67.26
Ta	L_1-N_1		B	2 .01	73	6	11.115	2.23042	5	9.61	9.80	12.91	16.89	24.20	29.34	29.56	30.35	34.60	38.84			42.60	46.58	67.27
Ta	Lv		B	2 .01	73	6	11.110	2.23160	4	9.61	9.80	12.92	16.90	24.21	29.35	29.58	30.37	34.62	38.86			42.62	46.61	67.31
Cs	$L\gamma_3$			1 1	55	6	5.552	2.23280	4	9.62	9.81	12.92	16.91	24.23	29.37	29.60	30.39	34.64	38.88	39.98	41.72	42.65	46.63	67.35
Gd	$K\beta_2$			9 8	64	6	49.952	2.23344	5	9.62	9.81	12.93	16.91	24.23	29.38	29.60	30.39	34.65	38.90	39.99	41.73	42.66	46.65	67.38
La	$K\alpha_{1,2}$			6 150	57	6	33.299	2.23357	6	9.62	9.81	12.93	16.91	24.24	29.38	29.61	30.40	34.65	38.90	39.99	41.73	42.66	46.65	67.38
Ge	$K\beta_2$			2 .5	32	6	11.099	2.23372	5	9.62	9.81	12.93	16.91	24.24	29.38	29.61	30.40	34.65	38.90			42.67	46.65	67.39
Ta	L_2-O_3		8	2 .01	73	6	11.098	2.23386	5	9.62	9.81	12.93	16.91	24.24	29.38	29.61	30.40	34.66	38.90			42.67	46.66	67.39
Er	$K\beta_3$			10 12	68	6	55.485	2.23419	5	9.62	9.81	12.93	16.92	24.24	29.39	29.61	30.40	34.66	38.91	40.00	41.74	42.67	46.66	67.40
U	$L\beta_{17}$		8	3 .01	92	6	16.638	2.23509	5	9.63	9.82	12.94	16.92	24.25	29.40	29.63	30.42	34.68	38.93	40.02	41.76	42.69	46.68	67.43
Tb	Ll			1 2	65	6	5.546	2.23520	4	9.63	9.82	12.94	16.92	24.25	29.40	29.63	30.42	34.68	38.93	40.02	41.76	42.70	46.69	67.44
Pa	$L\beta_5$			3 1	91	6	16.634	2.23560	4	9.63	9.82	12.94	16.93	24.26	29.41	29.63	30.42	34.68	38.94	40.03	41.77	42.70	46.70	67.45
Ta	L_2-O_2		B	2 .01	73	6	11.089	2.23578	5	9.63	9.82	12.94	16.93	24.26	29.41	29.64	30.43	34.69	38.94			42.71	46.70	67.46

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Cs	$L\gamma_2$		1	1	55	6	5.541	2.23710	4		9.64	9.83	12.95	16.94	24.27	29.43	29.65	30.45	34.71	38.96	40.06	41.80	42.73	46.73	67.50
Ag	$K\alpha_1$		4	100	47	6	22.159	2.23763	7		9.64	9.83	12.95	16.94	24.28	29.43	29.66	30.45	34.72	38.97	40.07	41.81	42.75	46.74	67.52
Hf	$K\alpha_{1,2}$		10	150	72	6	55.382	2.23825	6		9.64	9.83	12.96	16.95	24.29	29.44	29.67	30.46	34.73	38.98	40.08	41.82	42.76	46.75	67.54
Nb	$K\alpha_1$		3	100	41	6	16.612	2.23860	5		9.64	9.83	12.96	16.95	24.29	29.45	29.67	30.47	34.73	38.99	40.08	41.83	42.77	46.76	67.55
Ge	$K\beta_5$	B	2	.05	32	6	11.073	2.23900	4		9.65	9.83	12.96	16.95	24.30	29.45	29.68	30.47	34.74	39.00			42.77	46.77	67.57
Pt	$L\beta_1$		2	50	78	6	11.069	2.23980	5		9.65	9.84	12.96	16.96	24.30	29.46	29.69	30.48	34.75	39.01			42.79	46.79	67.59
La	$K\beta_2$		7	7	57	6	38.723	2.24082	6		9.65	9.84	12.97	16.97	24.32	29.48	29.70	30.50	34.77	39.03	40.13	41.87	42.81	46.81	67.63
Ho	$K\beta_2$	H	10	8	67	6	55.315	2.24100	4		9.65	9.84	12.97	16.97	24.32	29.48	29.71	30.50	34.77	39.03	40.13	41.88	42.81	46.82	67.63
Ta	$L\gamma_8$		2	.1	73	6	11.063	2.24100	4		9.65	9.84	12.97	16.97	24.32	29.48	29.71	30.50	34.77	39.03			42.81	46.82	67.63
Pm	$K\alpha_1$	H	7	100	61	6	38.718	2.24112	6		9.65	9.84	12.97	16.97	24.32	29.48	29.71	30.50	34.77	39.04	40.13	41.88	42.82	46.82	67.64
Ba	$L\gamma_1$		1	5	56	6	5.530	2.24150	4		9.66	9.85	12.97	16.97	24.32	29.49	29.71	30.51	34.78	39.04	40.14	41.89	42.82	46.83	67.65
Tm	$K\alpha_2$		9	50	69	6	49.764	2.24185	6		9.66	9.85	12.98	16.97	24.33	29.49	29.72	30.51	34.78	39.05	40.15	41.89	42.83	46.83	67.66
Tb	$K\alpha_{1,2}$		8	150	65	6	44.226	2.24232	6		9.66	9.85	12.98	16.98	24.33	29.50	29.72	30.52	34.79	39.06	40.15	41.90	42.84	46.84	67.68
Nb	$K\alpha_{1,2}$		3	150	41	6	16.581	2.24284	5		9.66	9.85	12.98	16.98	24.34	29.50	29.73	30.53	34.80	39.07	40.16	41.91	42.85	46.86	67.70
Hf	$L\gamma_{11}$	B	2	.01	72	6	11.053	2.24292	5		9.66	9.85	12.98	16.98	24.34	29.51	29.73	30.53	34.80	39.07			42.85	46.86	67.70
Ag	$K\alpha_{1,2}$		4	150	47	6	22.101	2.24348	6		9.65	9.85	12.99	16.99	24.34	29.51	29.74	30.53	34.81	39.08	40.18	41.93	42.86	46.87	67.72
W	L_2-N_2	B	2	.01	74	6	11.050	2.24360	4		9.67	9.85	12.99	16.99	24.35	29.51	29.74	30.54	34.81	39.08			42.87	46.87	67.72
U	$L\beta_4$		3	4	92	6	16.573	2.24395	6		9.67	9.86	12.99	16.99	24.35	29.52	29.75	30.54	34.82	39.09	40.18	41.93	42.87	46.88	67.74
Hf	L_1-N_4	B	2	.01	72	6	11.043	2.24500	5		9.67	9.86	12.99	17.00	24.36	29.53	29.76	30.56	34.84	39.11			42.89	46.90	67.77
Pt	L_3-N_3	B	2	.01	78	6	11.042	2.24520	4		9.67	9.86	13.00	17.00	24.36	29.54	29.76	30.56	34.84	39.11			42.90	46.91	67.78
Ru	$K\beta_2$		4	3	44	6	22.070	2.24664	5		9.68	9.87	13.00	17.01	24.38	29.56	29.78	30.58	34.86	39.14	40.23	41.99	42.93	46.94	67.83
Am	$L\gamma_1$		4	10	95	6	22.061	2.24754	6		9.68	9.87	13.01	17.02	24.39	29.57	29.80	30.59	34.88	39.15	40.25	42.00	42.94	46.96	67.86
Po	$L\alpha_2$	H	2	10	84	6	11.014	2.25096	5		9.70	9.89	13.03	17.04	24.43	29.61	29.84	30.64	34.93	39.21			43.01	47.04	67.98
Nb	$K\alpha_2$		3	50	41	6	16.518	2.25132	5		9.70	9.89	13.03	17.05	24.43	29.62	29.85	30.64	34.94	39.22	40.32	42.08	43.02	47.04	67.99
I	$K\beta_2$	H	6	6	53	6	33.036	2.25138	5		9.70	9.89	13.03	17.05	24.43	29.62	29.85	30.64	34.94	39.22	40.32	42.08	43.02	47.05	67.99
La	$K\alpha_2$		6	50	57	6	33.028	2.25188	6		9.70	9.89	13.03	17.05	24.44	29.63	29.85	30.65	34.95	39.23	40.33	42.09	43.03	47.06	68.01
Pm	$K\alpha_{1,2}$	H	7	150	61	6	38.532	2.25196	6		9.70	9.89	13.03	17.05	24.44	29.63	29.86	30.65	34.95	39.23	40.33	42.09	43.03	47.06	68.01
Os	$L\beta_9$	B	2	.01	76	6	11.005	2.25274	5		9.70	9.89	13.04	17.06	24.45	29.64	29.87	30.66	34.96	39.25			43.05	47.08	68.04
U	M_1-P_3		1	.01	92	6	5.502	2.25300	3		9.71	9.90	13.04	17.06	24.45	29.64	29.87	30.67	34.96	39.25	40.35	42.11	43.05	47.08	68.05
Pu	$L\beta_6$		3	.1	94	6	16.495	2.25444	5		9.71	9.90	13.05	17.07	24.47	29.66	29.89	30.69	34.99	39.28	40.38	42.14	43.08	47.11	68.10
Pr	$L\beta_4$		1	5	59	6	5.497	2.25500	4		9.71	9.90	13.05	17.07	24.47	29.67	29.90	30.69	35.00	39.29	40.39	42.15	43.09	47.13	68.12
Ag	$K\alpha_2$		4	50	47	6	21.987	2.25519	6		9.72	9.91	13.05	17.08	24.47	29.67	29.90	30.70	35.00	39.29	40.39	42.15	43.10	47.13	68.12
Tl	Ln		2	1	81	6	10.992	2.25538	5		9.72	9.91	13.05	17.08	24.48	29.67	29.90	30.70	35.00	39.29			43.10	47.13	68.13
Au	$L\beta_{17}$	B	2	.01	79	6	10.990	2.25596	5		9.72	9.91	13.06	17.08	24.48	29.68	29.91	30.71	35.01	39.30			43.11	47.15	68.15
Pu	$L\gamma_3$		4	2	94	6	21.979	2.25600	6		9.72	9.91	13.06	17.08	24.48	29.68	29.91	30.71	35.01	39.31	40.41	42.17	43.11	47.15	68.15
Te	$K\alpha_1$		5	100	52	6	27.468	2.25647	6		9.72	9.91	13.06	17.09	24.49	29.69	29.92	30.72	35.02	39.31	40.42	42.18	43.12	47.16	68.17
Ge	$K\beta_1$		2	14	32	6	10.980	2.25788	5		9.73	9.92	13.07	17.10	24.50	29.71	29.94	30.74	35.04	39.34			43.15	47.19	68.21
Ge	$K\beta_3$		2	7	32	6	10.976	2.25872	5		9.73	9.92	13.07	17.10	24.51	29.72	29.95	30.75	35.05	39.35			43.17	47.21	68.24
Pr	$L\beta_1$		1	50	59	6	5.488	2.25880	4		9.73	9.92	13.07	17.10	24.51	29.72	29.95	30.75	35.06	39.36	40.46	42.23	43.17	47.21	68.25
La	AL_3	H	1		57	6	5.483	2.26100	3		9.74	9.93	13.09	17.12	24.54	29.75	29.98	30.78	35.09	39.40	40.50	42.27	43.21	47.26	68.32
Pt	L_3-N_2	B	2	.01	78	6	10.960	2.26200	4		9.74	9.94	13.09	17.13	24.55	29.76	29.99	30.79	35.11	39.41			43.23	47.28	68.36
Pm	$K\beta_1$	H	8	22	61	6	43.818	2.26320	5		9.75	9.94	13.10	17.14	24.56	29.78	30.01	30.81	35.13	39.44	40.54	42.31	43.26	47.31	68.40
Pa	$L\beta_7$		3	.1	91	6	16.427	2.26380	4		9.75	9.94	13.10	17.14	24.57	29.79	30.02	30.82	35.14	39.45	40.56	42.32	43.27	47.32	68.42
Te	$K\alpha_{1,2}$		5	150	52	6	27.377	2.26395	6		9.75	9.94	13.10	17.14	24.57	29.79	30.02	30.82	35.14	39.45	40.56	42.33	43.27	47.32	68.42
U	$L\beta_2$		3	20	92	6	16.425	2.26404	6		9.75	9.94	13.11	17.14	24.57	29.79	30.02	30.82	35.14	39.45	40.56	42.33	43.28	47.33	68.43
Th	$L\beta_3$		3	6	90	6	16.423	2.26437	5		9.75	9.95	13.11	17.15	24.57	29.79	30.02	30.83	35.15	39.46	40.57	42.33	43.28	47.33	68.44
W	$L\gamma_5$		2	.1	74	6	10.947	2.26470	5		9.76	9.95	13.11	17.15	24.58	29.80	30.03	30.83	35.15	39.46			43.29	47.34	68.45
Os	$L\beta_{10}$	B	2	.01	76	6	10.936	2.26706	5		9.77	9.96	13.12	17.17	24.60	29.83	30.06	30.86	35.19	39.51			43.34	47.39	68.53
Tb	$K\alpha_2$		8	50	65	6	43.737	2.26738	6		9.77	9.96	13.12	17.17	24.61	29.83	30.06	30.87	35.19	39.51	40.62	42.39	43.34	47.40	68.54
Pm	$K\beta_3$	H	8	10	61	6	43.705	2.26904	5		9.78	9.97	13.13	17.18	24.63	29.86	30.09	30.89	35.22	39.54	40.65	42.43	43.38	47.44	68.60
Au	L_1-M_1	F	2	.01	79	6	10.926	2.26906	5		9.78	9.97	13.13	17.18	24.63	29.86	30.09	30.89	35.22	39.54			43.38	47.44	68.60
V	AK		1		23	6	5.463	2.26910	4		9.78	9.97	13.13	17.18	24.63	29.86	30.09	30.89	35.22	39.54	40.65	42.43	43.38	47.44	68.60
V	$K\beta_5$	B	1	.02	23	6	5.462	2.26951	5	4	9.78	9.97	13.14	17.19	24.63	29.86	30.09	30.90	35.23	39.55	40.66	42.44	43.39	47.45	68.61
U	$L\beta_{15}$		3	1	92	6	16.383	2.26993	6		9.78	9.97	13.14	17.19	24.64	29.87	30.10	30.90	35.23	39.56	40.67	42.44	43.39	47.46	68.63
Bi	$L\gamma_{13}$	D	3	.01	83	6	16.382	2.27004	5		9.78	9.97	13.14	17.19	24.64	29.87	30.10	30.90	35.24	39.56	40.67	42.45	43.40	47.46	68.63
Hf	$K\alpha_2$		10	50	72	6	54.602	2.27024	6		9.78	9.97	13.14	17.19	24.64	29.87	30.10	30.91	35.24	39.56	40.68	42.45	43.40	47.46	68.64
Ir	$L\beta_2$		2	20	77	6	10.919	2.27064	5		9.78	9.97	13.14	17.19	24.64	29.88	30.11	30.91	35.25	39.57			43.41	47.47	68.65
Er	$K\alpha_1$		9	100	68	6	49.119	2.27128	6		9.78	9.98	13.15	17.20	24.65	29.89	30.12	30.92	35.26	39.58	40.70	42.47	43.42	47.49	68.68
In	$K\beta_1$		5	19	49	6	27.271	2.27272	6		9.79	9.98	13.16	17.21	24.67	29.91	30.14	30.94	35.28	39.61	40.72	42.50	43.45	47.52	68.73
Pm	$K\alpha_2$	H	7	50	61	6	38.165	2.27362	6		9.79	9.99	13.16	17.22	24.68	29.92	30.15	30.95	35.29	39.62	40.74	42.52	43.47	47.54	68.76
Th	L_2-M_5	B	3	.01	90	6	16.356	2.27370	4		9.80	9.99	13.16	17.22	24.68	29.92	30.15	30.96	35.29	39.63	40.74	42.52	43.47	47.54	68.76
Xe	AL_1		1		54	6	5.452	2.27370	4		9.80	9.99	13.16	17.22	24.68	29.92	30.15	30.96	35.29	39.63	40.74	42.52	43.47	47.54	68.76
Bi	L_1-$O_{4,5}$	B	3	.01	83	6	16.355	2.27373	5		9.80	9.99	13.16	17.22	24.68	29.92	30.15	30.96	35.30	39.63	40.74	42.52	43.47	47.54	68.76
Ta	L_2-N_5	B	2	.01	73	6	10.904	2.27374	5		9.80	9.99	13.16	17.22	24.68	29.92	30.15	30.96	35.30	39.63			43.47	47.54	68.76
Ir	$L\beta_{15}$		2	1	77	6	10.902	2.27414	5		9.80	9.99	13.16	17.22	24.68	29.93	30.16	30.96	35.30	39.63			43.48	47.55	68.77

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
La	$L8_7$		1	.1	57	6	5.449	2.27500	3		9.80	9.99	13.17	17.23	24.69	29.94	30.17	30.97	35.32	39.65	40.76	42.54	43.50	47.57	68.80
Ta	$L\gamma_1$		2	10	73	6	10.893	2.27588	5		9.80	10.00	13.17	17.23	24.70	29.95	30.18	30.99	35.33	39.67			43.51	47.59	68.83
In	$K\beta_3$		5	8	49	6	27.233	2.27590	6		9.80	10.00	13.17	17.23	24.70	29.95	30.18	30.99	35.33	39.67	40.78	42.56	43.51	47.59	68.83
Hf	$L\gamma_3$		2	2	72	6	10.889	2.27682	5		9.81	10.00	13.18	17.24	24.71	29.96	30.19	31.00	35.35	39.68			43.53	47.61	68.87
Pu	Ln		3	1	94	6	16.330	2.27730	4		9.81	10.00	13.18	17.24	24.72	29.97	30.20	31.01	35.35	39.69	40.81	42.59	43.54	47.62	68.88
Hg	L_2-M_2		8 2	.01	80	6	10.886	2.27740	4		9.81	10.00	13.18	17.25	24.72	29.97	30.20	31.01	35.35	39.69			43.54	47.62	68.89
Te	$K\alpha_2$		5	50	52	6	27.197	2.27892	6		9.82	10.01	13.19	17.26	24.74	29.99	30.22	31.03	35.38	39.72	40.84	42.62	43.57	47.66	68.94
Os	$L8_5$		2	.1	76	6	10.869	2.28100	4		9.83	10.02	13.20	17.27	24.76	30.02	30.25	31.06	35.41	39.76			43.62	47.70	69.01
Ir	$L8_3$		2	6	77	6	10.866	2.28170	5		9.83	10.02	13.21	17.28	24.77	30.03	30.26	31.07	35.42	39.77			43.63	47.72	69.03
Ce	$L8_6$		1	.1	58	6	5.433	2.28180	4		9.83	10.02	13.21	17.28	24.77	30.03	30.26	31.07	35.42	39.77	40.89	42.68	43.63	47.72	69.04
La	$L8_9$	B	1	.01	57	6	5.432	2.28200	3		9.83	10.02	13.21	17.28	24.77	30.03	30.26	31.07	35.43	39.78	40.90	42.68	43.64	47.72	69.05
Pm	$L\alpha_1$		1	100	61	6	5.432	2.28220	4		9.83	10.02	13.21	17.28	24.77	30.03	30.27	31.07	35.43	39.78	40.90	42.68	43.64	47.73	69.05
8i	$L\gamma_4$		3	.1	83	6	16.292	2.28261	5		9.83	10.03	13.21	17.29	24.78	30.04	30.27	31.08	35.44	39.79	40.91	42.69	43.65	47.74	69.07
Th	L_3-$P_{4,5}$		3	.01	90	6	16.292	2.28261	5		9.83	10.03	13.21	17.29	24.78	30.04	30.27	31.08	35.44	39.79	40.91	42.69	43.65	47.74	69.07
V	$K\beta_{1,3}$		1	20	23	6	5.426	2.28440	5	4	9.84	10.03	13.22	17.30	24.80	30.06	30.30	31.11	35.47	39.82	40.94	42.73	43.68	47.78	69.13
Pt	$L8_4$		2	4	78	6	10.852	2.28446	5		9.84	10.03	13.22	17.30	24.80	30.06	30.30	31.11	35.47	39.82			43.69	47.78	69.13
Er	$K\alpha_{1,2}$		9	150	68	6	48.813	2.28552	6		9.85	10.04	13.23	17.31	24.81	30.08	30.31	31.12	35.48	39.84	40.96	42.75	43.71	47.80	69.17
8i	$L\gamma_4$P		3	.1	83	6	16.268	2.28594	5		9.85	10.04	13.23	17.31	24.81	30.08	30.32	31.13	35.49	39.85	40.97	42.76	43.72	47.81	69.18
Lu	$L\gamma_4$		2	.1	71	6	10.840	2.28700	4		9.85	10.05	13.24	17.32	24.82	30.10	30.33	31.14	35.51	39.87			43.74	47.84	69.22
Pt	$L8_6$		2	.1	78	6	10.840	2.28710	5		9.85	10.05	13.24	17.32	24.83	30.10	30.33	31.14	35.51	39.87			43.74	47.84	69.22
Th	L_3-$P_{2,3}$		8 3	.01	90	6	16.257	2.28750	4		9.85	10.05	13.24	17.32	24.83	30.11	30.34	31.15	35.52	39.88	41.00	42.79	43.75	47.85	69.24
8i	$L\alpha_1$		2	100	83	6	10.837	2.28772	5		9.86	10.05	13.24	17.32	24.83	30.11	30.34	31.15	35.52	39.88			43.75	47.85	69.24
At	$L\gamma_1$	H	3	10	85	6	16.249	2.28867	5		9.86	10.05	13.25	17.33	24.84	30.12	30.35	31.16	35.54	39.90	41.02	42.81	43.77	47.87	69.28
Nd	$K\beta_2$	H	8	7	60	6	43.327	2.28880	4		9.86	10.05	13.25	17.33	24.84	30.12	30.36	31.17	35.54	39.90	41.02	42.81	43.77	47.88	69.28
Hf	$L\gamma_2$		2	1	72	6	10.832	2.28884	5		9.86	10.05	13.25	17.33	24.84	30.12	30.36	31.17	35.54	39.90			43.77	47.88	69.28
Cr	$K\alpha_1$		1	100	24	6	5.414	2.28970	5	4	9.86	10.06	13.25	17.34	24.85	30.14	30.37	31.18	35.55	39.92	41.04	42.83	43.79	47.90	69.31
Ru	$K\beta_1$		4	16	44	6	21.653	2.28993	6		9.87	10.06	13.26	17.34	24.86	30.14	30.37	31.18	35.56	39.92	41.04	42.84	43.80	47.90	69.32
La	LB_{10}		8 1	.01	57	6	5.413	2.29000	3		9.87	10.06	13.26	17.34	24.86	30.14	30.37	31.18	35.56	39.92	41.05	42.84	43.80	47.90	69.32
Th	L_3-P_1		3	.01	90	6	16.238	2.29014	5		9.87	10.06	13.26	17.34	24.86	30.14	30.37	31.19	35.56	39.92	41.05	42.84	43.80	47.91	69.33
Os	Lu		8 2	.01	76	6	10.823	2.29074	5		9.87	10.06	13.26	17.35	24.87	30.15	30.38	31.19	35.57	39.94			43.81	47.92	69.35
Cr	$K\alpha_{1,2}$		1	150	24	6	5.411	2.29100	5	4	9.87	10.06	13.26	17.35	24.87	30.15	30.39	31.20	35.57	39.94	41.06	42.86	43.82	47.92	69.36
Gd	$K\beta_1$		9	23	64	6	48.688	2.29140	5		9.87	10.07	13.26	17.35	24.87	30.16	30.39	31.20	35.58	39.95	41.07	42.86	43.83	47.93	69.37
Ru	$K\beta_3$		4	8	44	6	21.631	2.29227	6		9.88	10.07	13.27	17.36	24.88	30.17	30.40	31.21	35.59	39.96	41.09	42.88	43.84	47.95	69.40
Bi	L_1-$N_{6,7}$		8 3	.01	83	6	16.223	2.29230	4		9.88	10.07	13.27	17.36	24.88	30.17	30.40	31.22	35.59	39.96	41.09	42.88	43.84	47.95	69.40
Pm	$L\alpha_2$		1	10	61	6	5.407	2.29260	4		9.88	10.07	13.27	17.36	24.89	30.17	30.41	31.22	35.60	39.97	41.09	42.89	43.85	47.96	69.41
Lu	$K\alpha_1$		10	100	71	6	54.061	2.29298	6		9.88	10.07	13.27	17.36	24.89	30.18	30.41	31.22	35.60	39.98	41.10	42.90	43.86	47.97	69.42
Po	$L\gamma_6$		3	.01	84	6	16.215	2.29350	4		9.88	10.07	13.28	17.37	24.90	30.19	30.42	31.23	35.61	39.99	41.11	42.91	43.87	47.98	69.44
Cr	$K\alpha_2$		1	50	24	6	5.405	2.29361	6	4	9.88	10.07	13.28	17.37	24.90	30.19	30.42	31.23	35.61	39.99	41.11	42.91	43.87	47.98	69.45
Th	$L\beta_5$		3	1	90	6	16.211	2.29404	5		9.88	10.08	13.28	17.37	24.90	30.19	30.43	31.24	35.62	40.00	41.12	42.92	43.88	47.99	69.46
Th	$L8_1$		3	50	90	6	16.199	2.29563	6		9.89	10.08	13.29	17.38	24.92	30.21	30.45	31.26	35.65	40.02	41.15	42.95	43.91	48.03	69.52
La	$K\beta_1$		7	21	57	6	37.795	2.29588	6		9.89	10.08	13.29	17.39	24.92	30.22	30.45	31.27	35.65	40.03	41.16	42.95	43.92	48.03	69.53
Ir	L_2-M_5	B	2	.01	77	6	10.789	2.29780	4		9.90	10.09	13.30	17.40	24.94	30.24	30.48	31.29	35.68	40.06			43.95	48.08	69.59
Gd	$K\beta_3$		9	11	64	6	48.547	2.29806	5		9.90	10.09	13.30	17.40	24.95	30.25	30.48	31.30	35.69	40.07	41.20	43.00	43.96	48.08	69.60
Os	$L\beta_7$		2	7	76	6	10.785	2.29866	5		9.90	10.10	13.31	17.41	24.95	30.26	30.49	31.30	35.70	40.08			43.97	48.09	69.62
La	$K\beta_3$		7	9	57	6	37.714	2.30080	6		9.91	10.11	13.32	17.42	24.98	30.28	30.52	31.33	35.73	40.12	41.25	43.05	44.01	48.14	69.70
Ho	$K\beta_1$		10	22	67	6	53.868	2.30120	5		9.91	10.11	13.32	17.43	24.98	30.29	30.52	31.34	35.74	40.13	41.26	43.06	44.02	48.15	69.71
La	$LB_{2,15}$		1	20	57	6	5.383	2.30300	4		9.92	10.12	13.33	17.44	25.00	30.31	30.55	31.36	35.77	40.16	41.29	43.09	44.06	48.19	69.77
I	$K\beta_1$		6	20	53	6	32.289	2.30343	6		9.92	10.12	13.33	17.44	25.01	30.32	30.55	31.37	35.77	40.17	41.30	43.10	44.07	48.20	69.79
U	M_1-O_3		1	.01	92	6	5.380	2.30400	3		9.93	10.12	13.34	17.45	25.01	30.33	30.56	31.38	35.78	40.18	41.31	43.11	44.08	48.21	69.81
Ra	LB_9	B	3	.01	88	6	16.129	2.30571	5		9.93	10.13	13.35	17.46	25.03	30.35	30.59	31.40	35.81	40.21	41.34	43.15	44.11	48.25	69.87
Gd	$K\alpha_1$		8	100	64	6	42.989	2.30682	6		9.94	10.13	13.35	17.47	25.04	30.37	30.60	31.42	35.83	40.23	41.36	43.17	44.14	48.28	69.90
Th	L_3-O_3	B	3	.01	90	6	16.120	2.30700	4		9.94	10.13	13.35	17.47	25.05	30.37	30.60	31.42	35.83	40.23	41.36	43.17	44.14	48.28	69.91
Np	LB_6		3	.1	93	6	16.120	2.30700	3		9.94	10.13	13.35	17.47	25.05	30.37	30.60	31.42	35.83	40.23	41.36	43.17	44.14	48.28	69.91
U	L_3-N_3		8 3	.01	92	6	16.118	2.30730	4		9.94	10.14	13.36	17.47	25.05	30.37	30.61	31.42	35.83	40.24	41.37	43.18	44.15	48.29	69.92
I	$K\beta_3$		6	9	53	6	32.234	2.30738	6		9.94	10.14	13.36	17.47	25.05	30.37	30.61	31.43	35.84	40.24	41.37	43.18	44.15	48.29	69.92
Ho	$K\beta_3$		10	11	67	6	53.702	2.30830	5		9.94	10.14	13.36	17.48	25.06	30.39	30.62	31.44	35.85	40.26	41.39	43.20	44.17	48.31	69.96
Ba	$L\gamma_5$		1	.1	56	6	5.370	2.30850	4		9.95	10.14	13.36	17.48	25.06	30.39	30.62	31.44	35.85	40.26	41.39	43.20	44.17	48.31	69.96
Lu	$K\alpha_{1,2}$		10	150	71	6	53.687	2.30892	6		9.95	10.14	13.37	17.49	25.07	30.39	30.63	31.45	35.86	40.27	41.40	43.21	44.18	48.32	69.98
Sr	$K\beta_4$	C	3	.00	38	6	16.101	2.30967	5		9.95	10.15	13.37	17.49	25.07	30.40	30.64	31.46	35.87	40.28	41.41	43.22	44.19	48.34	70.00
Pa	$L8_4$		3	4	91	6	16.101	2.30970	4		9.95	10.15	13.37	17.49	25.07	30.40	30.64	31.46	35.87	40.28	41.42	43.22	44.19	48.34	70.00
Hf	$L\gamma_6$		2	.01	72	6	10.731	2.31038	5		9.95	10.15	13.37	17.50	25.08	30.41	30.65	31.47	35.88	40.29			44.21	48.36	70.03
Ta	L_2-N_3		8 2	.01	73	6	10.730	2.31060	4		9.95	10.15	13.38	17.50	25.08	30.42	30.65	31.47	35.89	40.30			44.21	48.36	70.04
8a	$K\alpha_1$		6	100	56	6	32.188	2.31067	6		9.95	10.15	13.38	17.50	25.09	30.42	30.65	31.47	35.89	40.30	41.43	43.24	44.21	48.36	70.04
8i	$L\alpha_2$		2	10	83	6	10.729	2.31072	5		9.96	10.15	13.38	17.50	25.09	30.42	30.65	31.47	35.89	40.30			44.21	48.36	70.04
Ce	$L8_3$		1	6	58	6	5.364	2.31090	4		9.96	10.15	13.38	17.50	25.09	30.42	30.66	31.48	35.89	40.30	41.44	43.25	44.22	48.37	70.05

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	AOP (112)	NaCl (200)	LiF (200)
Ir	L_3-N_3	B	2	.01	77	6	10.723	2.31200	4	9.96	10.16	13.38	17.51	25.10	30.44	30.67	31.49	35.91	40.32			44.24	48.39	70.08
Gd	Ll		1	2	64	6	5.361	2.31220	4	9.96	10.16	13.39	17.51	25.10	30.44	30.67	31.49	35.91	40.33	41.46	43.27	44.24	48.40	70.09
Eu	$K\beta_2$		9	8	63	6	48.248	2.31231	6	9.96	10.16	13.39	17.51	25.10	30.44	30.68	31.49	35.91	40.33	41.46	43.28	44.25	48.40	70.10
Sr	$K\beta_2$		3	3	38	6	16.082	2.31243	5	9.96	10.16	13.39	17.51	25.10	30.44	30.68	31.50	35.92	40.33	41.47	43.28	44.25	48.40	70.10
Th	L_3-O_2	B	3	.01	90	6	16.072	2.31390	4	9.97	10.16	13.40	17.52	25.12	30.46	30.70	31.52	35.94	40.36	41.49	43.31	44.28	48.43	70.15
Cs	AL_2		1		55	6	5.357	2.31390	4	9.97	10.16	13.40	17.52	25.12	30.46	30.70	31.52	35.94	40.36	41.49	43.31	44.28	48.43	70.15
Er	$K\alpha_2$		9	50	68	6	48.213	2.31399	6	9.97	10.16	13.40	17.52	25.12	30.46	30.70	31.52	35.94	40.36	41.50	43.31	44.28	48.44	70.15
Pu	$L\gamma_1$		4	10	94	6	21.414	2.31553	6	9.98	10.17	13.40	17.54	25.14	30.48	30.72	31.54	35.97	40.39	41.52	43.34	44.31	48.47	70.21
Ir	$L\beta_1$		2	50	77	6	10.706	2.31562	5	9.98	10.17	13.41	17.54	25.14	30.48	30.72	31.54	35.97	40.39			44.31	48.47	70.21
Po	$L\gamma_2$		3	1	84	6	16.057	2.31600	3	9.98	10.17	13.41	17.54	25.14	30.49	30.73	31.55	35.97	40.40	41.53	43.35	44.32	48.48	70.22
Hf	Lv	B	2	.01	72	6	10.702	2.31660	5	9.98	10.18	13.41	17.54	25.15	30.50	30.73	31.55	35.98	40.41			44.33	48.49	70.24
Dy	$K\beta_2$	H	10	9	66	6	53.500	2.31700	4	9.98	10.18	13.41	17.55	25.16	30.50	30.74	31.56	35.99	40.41	41.55	43.37	44.34	48.50	70.26
Gd	$K\alpha_{1,2}$		8	150	64	6	42.757	2.31932	6	9.99	10.19	13.43	17.57	25.18	30.53	30.77	31.59	36.03	40.46	41.60	43.41	44.39	48.55	70.34
Ba	$K\alpha_{1,2}$		6	150	56	6	32.062	2.31978	6	9.99	10.19	13.43	17.57	25.19	30.54	30.78	31.60	36.03	40.46	41.60	43.42	44.40	48.56	70.36
Pa	$L\beta_2$		3	20	91	6	16.022	2.32110	4	10.00	10.20	13.44	17.58	25.20	30.56	30.79	31.62	36.06	40.49	41.63	43.45	44.42	48.59	70.40
Lu	$L\gamma_{11}$	B	2	.01	71	6	10.576	2.32214	5	10.00	10.20	13.44	17.59	25.21	30.57	30.81	31.63	36.07	40.51			44.44	48.62	70.44
Hf	$L\gamma_8$		2	.8	72	6	10.674	2.32276	5	10.01	10.20	13.45	17.59	25.22	30.58	30.82	31.64	36.08	40.52			44.46	48.63	70.46
Nd	$K\alpha_1$		7	100	60	6	37.355	2.32292	6	10.01	10.20	13.45	17.59	25.22	30.58	30.82	31.64	36.09	40.52	41.66	43.48	44.46	48.64	70.46
Th	$L\beta_7$		3	.1	90	6	16.008	2.32311	5	10.01	10.20	13.45	17.59	25.22	30.59	30.82	31.65	36.09	40.52	41.67	43.49	44.46	48.64	70.47
Ta	L_2-N_2	F	2	.01	73	6	10.670	2.32362	5	10.01	10.21	13.45	17.60	25.23	30.59	30.83	31.65	36.10	40.53			44.47	48.65	70.49
Np	$L\gamma_3$		4	2	93	6	21.336	2.32400	4	10.01	10.21	13.45	17.60	25.23	30.60	30.83	31.66	36.10	40.54	41.68	43.51	44.48	48.66	70.50
Lu	L_1-N_4	B	2	.01	71	6	10.665	2.32454	5	10.01	10.21	13.46	17.61	25.24	30.60	30.84	31.67	36.11	40.55			44.49	48.67	70.52
Ra	$L\beta_{10}$	B	3	.01	88	6	15.985	2.32638	5	10.02	10.22	13.47	17.62	25.26	30.63	30.87	31.69	36.14	40.58	41.73	43.55	44.53	48.71	70.59
Cd	$K\beta_2$		5	5	48	6	26.639	2.32664	6	10.02	10.22	13.47	17.62	25.26	30.63	30.87	31.70	36.14	40.59	41.73	43.56	44.54	48.72	70.59
Hg	Ln		2	1	80	6	10.649	2.32800	4	10.03	10.23	13.48	17.63	25.28	30.65	30.89	31.71	36.17	40.61			44.56	48.75	70.64
Sr	$K\beta_5$		3	.07	38	6	15.966	2.32920	4	10.03	10.23	13.48	17.64	25.29	30.67	30.90	31.73	36.19	40.64	41.78	43.61	44.59	48.77	70.68
Ba	$K\beta_2$		7	7	56	6	37.251	2.32939	5	10.04	10.23	13.49	17.64	25.29	30.67	30.91	31.73	36.19	40.64	41.78	43.61	44.59	48.78	70.69
Re	$L\beta_9$	B	2	.01	75	6	10.642	2.32974	5	10.04	10.23	13.49	17.64	25.30	30.67	30.91	31.74	36.19	40.65			44.60	48.79	70.70
Th	Lu	B	3	.01	90	6	15.962	2.32983	5	10.04	10.23	13.49	17.65	25.30	30.68	30.91	31.74	36.20	40.65	41.79	43.62	44.60	48.79	70.71
Ir	L_3-N_2	B	2	.01	77	6	10.636	2.33090	5	10.04	10.24	13.49	17.65	25.31	30.69	30.93	31.75	36.21	40.67			44.62	48.81	70.74
Bi	$L\gamma_{11}$	B	3	.01	83	6	15.948	2.33184	5	10.05	10.24	13.50	17.66	25.32	30.70	30.94	31.77	36.23	40.68	41.83	43.66	44.64	48.83	70.78
Pt	$L\beta_{17}$	B	2	.01	78	6	10.625	2.33340	4	10.05	10.25	13.51	17.67	25.34	30.72	30.96	31.79	36.25	40.71			44.67	48.87	70.83
Nd	$K\alpha_{1,2}$		7	150	60	6	37.182	2.33372	6	10.05	10.25	13.51	17.68	25.34	30.73	30.97	31.79	36.26	40.72	41.87	43.70	44.68	48.88	70.84
Ra	Ll		2	3	88	6	10.620	2.33438	5	10.06	10.25	13.51	17.68	25.35	30.74	30.98	31.80	36.27	40.73			44.69	48.89	70.86
Ac	$L\beta_3$	H	3	10	89	6	15.929	2.33466	5	10.06	10.26	13.52	17.68	25.35	30.74	30.98	31.81	36.27	40.74	41.88	43.72	44.70	48.90	70.87
Bi	L_1-N_4	B	3	.01	83	6	15.922	2.33562	5	10.06	10.26	13.52	17.69	25.36	30.75	30.99	31.82	36.29	40.75	41.90	43.73	44.72	48.92	70.91
Ba	$K\alpha_2$		6	50	56	6	31.812	2.33801	6	10.07	10.27	13.54	17.71	25.39	30.79	31.02	31.85	36.33	40.80	41.95	43.78	44.76	48.97	70.99
Pt	L_1-M_1	B	2	.01	78	6	10.598	2.33924	5	10.08	10.28	13.54	17.72	25.40	30.80	31.04	31.87	36.35	40.82			44.79	49.00	71.03
Os	$L\beta_2$		2	20	76	6	10.597	2.33958	5	10.08	10.28	13.54	17.72	25.40	30.81	31.05	31.88	36.35	40.82			44.80	49.01	71.05
U	L_3-N_2	B	3	.01	92	6	15.889	2.34051	5	10.08	10.28	13.55	17.73	25.41	30.82	31.06	31.89	36.37	40.84	41.99	43.83	44.81	49.03	71.08
Lu	$K\alpha_2$		10	50	71	6	52.956	2.34081	6	10.08	10.28	13.55	17.73	25.42	30.82	31.06	31.89	36.37	40.85	42.00	43.84	44.82	49.03	71.09
Au	L_2-M_2	B	2	.01	79	6	10.588	2.34160	4	10.09	10.29	13.56	17.74	25.43	30.83	31.07	31.90	36.39	40.86			44.84	49.05	71.12
Pd	$K\alpha_1$		4	100	46	6	21.174	2.34179	6	10.09	10.29	13.56	17.74	25.43	30.84	31.08	31.91	36.39	40.87	42.02	43.86	44.84	49.06	71.12
Np	Ln		3	1	93	6	15.874	2.34270	4	10.09	10.29	13.56	17.74	25.44	30.85	31.09	31.92	36.40	40.88	42.03	43.87	44.86	49.08	71.16
Os	$L\beta_{15}$		2	1	76	6	10.580	2.34334	5	10.10	10.29	13.57	17.75	25.45	30.86	31.10	31.93	36.41	40.89			44.87	49.09	71.18
Gd	$K\alpha_2$		8	50	64	6	42.302	2.34430	6	10.10	10.30	13.57	17.76	25.46	30.87	31.11	31.94	36.43	40.91	42.06	43.91	44.89	49.11	71.21
Re	$L\beta_{10}$	B	2	.01	75	6	10.575	2.34436	5	10.10	10.30	13.57	17.76	25.46	30.87	31.11	31.94	36.43	40.91			44.89	49.11	71.21
Ta	$L\gamma_5$		2	.1	73	6	10.569	2.34580	4	10.11	10.30	13.58	17.77	25.47	30.89	31.13	31.96	36.45	40.94			44.92	49.15	71.26
Te	$K\beta_2$	D	6	6	52	6	31.698	2.34638	6	10.11	10.31	13.58	17.77	25.48	30.90	31.14	31.97	36.46	40.95	42.10	43.95	44.93	49.16	71.28
Nd	$K\beta_1$		8	22	60	6	42.264	2.34639	6	10.11	10.31	13.58	17.77	25.48	30.90	31.14	31.97	36.46	40.95	42.10	43.95	44.93	49.16	71.28
Ho	$K\alpha_1$		9	100	67	6	47.539	2.34680	6	10.11	10.31	13.59	17.78	25.48	30.91	31.14	31.98	36.47	40.96	42.11	43.95	44.94	49.17	71.30
Pd	$K\alpha_{1,2}$		4	150	46	6	21.121	2.34762	6	10.11	10.31	13.59	17.78	25.49	30.92	31.16	31.99	36.48	40.97	42.13	43.97	44.96	49.19	71.33
Pb	L_1-$O_{4,5}$	B	3	.01	82	6	15.840	2.34771	5	10.11	10.31	13.59	17.78	25.49	30.92	31.16	31.99	36.48	40.97	42.13	43.97	44.96	49.19	71.33
Cs	$L\gamma_1$		1	5	55	6	5.279	2.34800	4	10.12	10.31	13.59	17.78	25.50	30.92	31.16	31.99	36.49	40.98	42.13	43.98	44.97	49.19	71.34
Sr	$K\beta_1$		3	16	38	6	15.833	2.34876	5	10.12	10.32	13.60	17.79	25.51	30.93	31.17	32.00	36.50	40.99	42.15	43.99	44.98	49.21	71.37
Ce	$L\beta_4$		1	5	58	6	5.276	2.34970	4	10.12	10.32	13.60	17.80	25.52	30.94	31.18	32.02	36.52	41.01	42.17	44.01	45.00	49.23	71.40
Pb	$L\alpha_1$		2	100	82	6	10.550	2.35002	5	10.12	10.32	13.61	17.80	25.52	30.95	31.19	32.02	36.52	41.02			45.01	49.24	71.41
Sr	$K\beta_3$		3	8	38	6	15.822	2.35035	5	10.13	10.32	13.61	17.80	25.52	30.95	31.19	32.03	36.53	41.02	42.18	44.02	45.01	49.25	71.42
As	$K\alpha_1$		2	100	33	6	10.542	2.35176	5	10.13	10.33	13.62	17.81	25.54	30.97	31.21	32.05	36.55	41.05			45.04	49.28	71.47
Sb	$K\alpha_1$		5	100	51	6	26.355	2.35177	6	10.13	10.33	13.62	17.81	25.54	30.97	31.21	32.05	36.55	41.05	42.21	44.05	45.04	49.28	71.47
Nd	$K\beta_3$		8	10	60	6	42.159	2.35222	6	10.13	10.33	13.62	17.82	25.54	30.98	31.22	32.05	36.56	41.06	42.21	44.06	45.05	49.29	71.49
As	$K\alpha_{1,2}$		2	150	33	6	10.530	2.35442	5	10.14	10.34	13.63	17.83	25.57	31.01	31.25	32.08	36.59	41.10			45.10	49.34	71.57
Re	$L\beta_5$		2	.1	75	6	10.530	2.35442	5	10.14	10.34	13.63	17.83	25.57	31.01	31.25	32.08	36.59	41.10			45.10	49.34	71.57
Nd	$K\alpha_2$		7	50	60	6	36.841	2.35530	6	10.15	10.35	13.64	17.84	25.58	31.02	31.26	32.10	36.61	41.11	42.27	44.12	45.11	49.36	71.60
Hf	L_2-N_5	B	2	.01	72	6	10.524	2.35576	5	10.15	10.35	13.64	17.84	25.58	31.03	31.27	32.10	36.61	41.12			45.12	49.37	71.61

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)	Ge (111)	Si (111)	AOP (112)	NaCl (200)	LiF (200)
Ir	$L\beta_6$		2	.1	77	6	10.523	2.35592	5	10.15	10.35	13.64	17.84	25.59	31.03	31.27	32.10	36.62	41.12			45.13	49.37	71.62
Ce	$L\beta_1$		1	50	58	6	5.261	2.35610	4	10.15	10.35	13.64	17.85	25.59	31.03	31.27	32.11	36.62	41.13	42.29	44.14	45.13	49.38	71.62
Pb	$L\gamma_4$		3	.1	82	6	15.775	2.35740	4	10.16	10.36	13.65	17.86	25.60	31.05	31.29	32.13	36.64	41.15	42.31	44.16	45.16	49.40	71.67
Zr	$K\alpha_1$		3	100	40	6	15.772	2.35779	5	10.16	10.36	13.65	17.86	25.61	31.05	31.29	32.13	36.65	41.16	42.32	44.17	45.16	49.41	71.68
Hf	$L\gamma_1$		2	10	72	6	10.514	2.35800	5	10.16	10.36	13.65	17.86	25.61	31.06	31.30	32.13	36.65	41.16			45.17	49.42	71.69
Lu	$L\gamma_3$		2	1	71	6	10.509	2.35906	5	10.16	10.36	13.66	17.87	25.62	31.07	31.31	32.15	36.67	41.18			45.19	49.44	71.73
Os	$L\beta_3$		2	6	76	6	10.509	2.35910	5	10.16	10.36	13.66	17.87	25.62	31.07	31.31	32.15	36.67	41.18			45.19	49.44	71.73
Ir	$L\beta_4$		2	4	77	6	10.509	2.35916	5	10.16	10.36	13.66	17.87	25.62	31.07	31.31	32.15	36.67	41.18			45.19	49.44	71.73
Sb	$K\alpha_{1,2}$		5	150	51	6	26.271	2.35922	6	10.16	10.36	13.66	17.87	25.62	31.07	31.31	32.15	36.67	41.18	42.35	44.20	45.19	49.45	71.73
Pd	$K\alpha_2$		4	50	46	6	21.017	2.35928	6	10.16	10.36	13.66	17.87	25.62	31.07	31.31	32.15	36.67	41.18	42.35	44.20	45.19	49.45	71.74
As	$K\alpha_2$		2	50	33	6	10.506	2.35974	5	10.17	10.37	13.66	17.87	25.63	31.08	31.32	32.16	36.68	41.19			45.20	49.46	71.75
Tc	$K\beta_2$	H	4	3	43	6	21.002	2.36096	5	10.17	10.37	13.67	17.88	25.64	31.10	31.34	32.18	36.70	41.21	42.38	44.23	45.23	49.48	71.80
Ho	$K\alpha_{1,2}$		9	150	67	6	47.253	2.36100	6	10.17	10.37	13.67	17.88	25.64	31.10	31.34	32.18	36.70	41.22	42.38	44.23	45.23	49.49	71.80
Pb	$L\gamma_4 p$		3	.1	82	6	15.750	2.36118	5	10.17	10.37	13.67	17.88	25.64	31.10	31.34	32.18	36.70	41.22	42.38	44.24	45.23	49.49	71.80
Zr	$K\alpha_{1,2}$		3	150	40	6	15.744	2.36201	5	10.18	10.38	13.67	17.89	25.65	31.11	31.35	32.19	36.71	41.23	42.40	44.25	45.25	49.51	71.83
Po	$L\gamma_1$		3	10	84	6	15.741	2.36244	5	10.18	10.38	13.68	17.89	25.66	31.12	31.36	32.20	36.72	41.24	42.41	44.26	45.26	49.52	71.85
Ba	AL_3		1		56	6	5.246	2.36290	4	10.18	10.38	13.68	17.90	25.66	31.12	31.36	32.20	36.73	41.25	42.41	44.27	45.27	49.53	71.86
Re	Lu	B	2	.01	75	6	10.492	2.36300	4	10.18	10.38	13.68	17.90	25.66	31.12	31.36	32.20	36.73	41.25			45.27	49.53	71.87
U	$L\beta_6$		3	.1	92	6	15.723	2.36514	5	10.19	10.39	13.69	17.92	25.69	31.15	31.39	32.23	36.76	41.29	42.46	44.32	45.31	49.58	71.94
Pb	L_1-$N_{6,7}$	B	3	.01	82	6	15.723	2.36520	4	10.19	10.39	13.69	17.92	25.69	31.15	31.39	32.23	36.77	41.29	42.46	44.32	45.31	49.58	71.94
Yb	L_1-$O_{4,5}$	B	2	.01	70	6	10.481	2.36540	4	10.19	10.39	13.69	17.92	25.69	31.16	31.40	32.24	36.77	41.30			45.32	49.58	71.95
Yb	$K\alpha_1$		10	100	70	6	52.380	2.36655	6	10.20	10.40	13.70	17.93	25.70	31.17	31.41	32.25	36.79	41.32	42.48	44.34	45.34	49.61	71.99
Pb	L_1-O_1	F	3	.01	82	6	15.711	2.36703	5	10.20	10.40	13.70	17.93	25.71	31.18	31.42	32.26	36.79	41.33	42.49	44.35	45.35	49.62	72.01
Ac	$L\beta_1$	H	3	50	89	6	15.710	2.36709	5	10.20	10.40	13.70	17.93	25.71	31.18	31.42	32.26	36.80	41.33	42.49	44.35	45.35	49.62	72.01
Bi	$L\gamma_3$		3	2	83	6	15.708	2.36751	5	10.20	10.40	13.71	17.93	25.71	31.18	31.43	32.27	36.80	41.33	42.50	44.36	45.36	49.63	72.03
Nd	$L\alpha_1$		1	100	60	6	5.229	2.37040	4	10.21	10.41	13.72	17.96	25.74	31.22	31.47	32.31	36.85	41.39	42.56	44.42	45.42	49.70	72.13
Zr	$K\alpha_2$		3	50	40	6	15.688	2.37045	5	10.21	10.41	13.72	17.96	25.75	31.22	31.47	32.31	36.85	41.39	42.56	44.42	45.42	49.70	72.13
Lu	$L\gamma_2$		2	1	71	6	10.458	2.37060	4	10.21	10.41	13.72	17.96	25.75	31.23	31.47	32.31	36.85	41.39			45.42	49.70	72.13
Yb	$L\gamma_4$		2	.1	70	6	10.458	2.37060	4	10.21	10.41	13.72	17.96	25.75	31.23	31.47	32.31	36.85	41.39			45.42	49.70	72.13
Bi	$L\gamma_6$		3	.01	83	6	15.683	2.37129	5	10.22	10.42	13.73	17.96	25.75	31.24	31.48	32.32	36.86	41.40	42.57	44.44	45.44	49.72	72.16
Eu	$K\beta_1$		9	23	63	6	47.030	2.37219	6	10.22	10.42	13.73	17.97	25.76	31.25	31.49	32.33	36.88	41.42	42.59	44.46	45.46	49.74	72.19
Re	$L\beta_7$		2	.1	75	6	10.451	2.37220	5	10.22	10.42	13.73	17.97	25.76	31.25	31.49	32.33	36.88	41.42			45.46	49.74	72.19
Pb	$L\alpha_2$		2	10	82	6	10.448	2.37296	5	10.22	10.42	13.74	17.97	25.77	31.26	31.50	32.34	36.89	41.43			45.47	49.75	72.22
Sb	$K\alpha_2$		5	50	51	6	26.106	2.37413	6	10.23	10.43	13.75	17.98	25.79	31.27	31.52	32.36	36.91	41.46	42.63	44.49	45.49	49.78	72.26
Pr	$K\beta_2$		8	65	59	6	41.767	2.37432	5	10.23	10.43	13.75	17.99	25.79	31.28	31.52	32.36	36.91	41.46	42.63	44.50	45.50	49.78	72.27
Cd	$K\beta_1$		5	19	48	6	26.091	2.37552	6	10.23	10.44	13.75	17.99	25.80	31.29	31.54	32.38	36.93	41.48	42.65	44.52	45.52	49.81	72.31
Cf	$L\alpha_1$		3	100	98	3	15.652	2.37600		10.24	10.44	13.76	18.00	25.81	31.30	31.54	32.39	36.94	41.49	42.66	44.53	45.53	49.82	72.32
Th	$L\beta_{17}$	F	3	.01	90	6	15.644	2.37708	5	10.24	10.44	13.76	18.01	25.82	31.31	31.56	32.40	36.96	41.51	42.68	44.55	45.55	49.85	72.36
Yb	L_1-O_1	B	2	.01	70	6	10.429	2.37720	4	10.24	10.44	13.76	18.01	25.82	31.32	31.56	32.40	36.96	41.51			45.56	49.85	72.37
Th	$L\beta_4$		3	4	90	6	15.640	2.37771	5	10.24	10.45	13.77	18.01	25.83	31.32	31.57	32.41	36.97	41.52	42.69	44.56	45.57	49.86	72.39
Os	L_2-M_5	F	2	.01	76	6	10.423	2.37856	5	10.25	10.45	13.77	18.02	25.84	31.33	31.58	32.42	36.98	41.54			45.58	49.88	72.42
Cd	$K\beta_3$		5	8	48	6	26.057	2.37865	6	10.25	10.45	13.77	18.02	25.84	31.34	31.58	32.42	36.98	41.54	42.71	44.58	45.59	49.88	72.42
Dy	$K\beta_1$		10	23	66	6	52.110	2.37880	5	10.25	10.45	13.77	18.02	25.84	31.34	31.58	32.43	36.98	41.54	42.71	44.59	45.59	49.88	72.42
Eu	$K\beta_3$		9	11	63	6	46.896	2.37899	6	10.25	10.45	13.77	18.02	25.84	31.34	31.58	32.43	36.99	41.54	42.72	44.59	45.59	49.89	72.43
La	$L\beta_6$		1	.1	57	6	5.211	2.37900	4	10.25	10.45	13.77	18.02	25.84	31.34	31.58	32.43	36.99	41.54	42.72	44.59	45.59	49.89	72.43
Ba	$L\beta_7$		1	.1	56	6	5.207	2.38060	4	10.26	10.46	13.78	18.03	25.86	31.36	31.60	32.45	37.01	41.57	42.75	44.62	45.63	49.92	72.49
Th	$L\beta_2$		3	20	90	6	15.621	2.38062	5	10.26	10.46	13.78	18.03	25.86	31.36	31.60	32.45	37.01	41.57	42.75	44.62	45.63	49.92	72.49
Nd	$L\alpha_2$		1	10	60	6	5.207	2.38070	4	10.26	10.46	13.78	18.03	25.86	31.36	31.61	32.45	37.01	41.58	42.75	44.62	45.63	49.93	72.49
Bi	L_2-O_3	B	3	.01	83	6	15.615	2.38152	5	10.26	10.46	13.79	18.04	25.87	31.37	31.62	32.46	37.03	41.59	42.77	44.64	45.64	49.94	72.52
Yb	$K\alpha_{1,2}$		10	150	70	6	52.030	2.38245	6	10.26	10.47	13.79	18.05	25.88	31.39	31.63	32.48	37.04	41.61	42.78	44.66	45.66	49.97	72.55
Ba	$K\beta_1$		7	21	56	6	36.372	2.38568	6	10.28	10.48	13.81	18.07	25.91	31.43	31.67	32.52	37.09	41.67	42.84	44.72	45.73	50.04	72.67
Np	$L\gamma_1$		4	10	93	6	20.781	2.38599	6	10.28	10.48	13.81	18.07	25.92	31.43	31.68	32.53	37.10	41.67	42.85	44.73	45.73	50.04	72.68
Th	$L\beta_{15}$		3	1	90	6	15.585	2.38617	5	10.28	10.48	13.82	18.08	25.92	31.44	31.68	32.53	37.10	41.68	42.85	44.73	45.74	50.05	72.68
Dy	$K\beta_3$		10	11	66	6	51.949	2.38620	5	10.28	10.48	13.82	18.08	25.92	31.44	31.68	32.53	37.10	41.68	42.85	44.73	45.74	50.05	72.68
Ba	$L\beta_{10}$	B	1	.01	56	6	5.193	2.38690	4	10.28	10.49	13.82	18.08	25.93	31.45	31.69	32.54	37.11	41.69	42.87	44.75	45.75	50.07	72.71
Bi	$L\gamma_2$		3	1	83	6	15.580	2.38695	5	10.28	10.49	13.82	18.08	25.93	31.45	31.69	32.54	37.12	41.69	42.87	44.75	45.75	50.07	72.71
Eu	$K\alpha_1$		8	100	63	6	41.535	2.38757	6	10.29	10.49	13.82	18.09	25.93	31.46	31.70	32.55	37.13	41.70	42.88	44.76	45.77	50.08	72.73
I	AL_1	H	1		53	6	5.191	2.38800	4	10.29	10.49	13.83	18.09	25.94	31.46	31.71	32.55	37.13	41.71	42.89	44.77	45.78	50.09	72.75
Ho	$K\alpha_2$		9	50	67	6	46.692	2.38937	6	10.29	10.50	13.83	18.10	25.95	31.48	31.72	32.57	37.15	41.73	42.91	44.79	45.80	50.12	72.80
Ba	$K\beta_3$		7	7	56	6	36.298	2.39055	6	10.30	10.50	13.84	18.11	25.97	31.50	31.74	32.59	37.17	41.76	42.94	44.82	45.83	50.15	72.84
I	$L\gamma_4$		1	.1	53	6	5.184	2.39130	4	10.30	10.51	13.85	18.12	25.98	31.51	31.75	32.60	37.19	41.77	42.95	44.83	45.84	50.16	72.87
Bi	Lv	8	3	.01	83	6	15.549	2.39163	5	10.30	10.51	13.85	18.12	25.98	31.51	31.75	32.60	37.19	41.77	42.96	44.84	45.85	50.17	72.88
Bi	$L\gamma_8$		3	.1	83	6	15.547	2.39190	4	10.31	10.51	13.85	18.12	25.98	31.51	31.76	32.61	37.20	41.78	42.96	44.84	45.85	50.18	72.89
Ga	$K\beta_2$		2	.3	31	6	10.365	2.39200	5	10.31	10.51	13.85	18.12	25.98	31.52	31.76	32.61	37.20	41.78			45.86	50.18	72.89
U	$L\gamma_3$		4	2	92	6	20.709	2.39430	6	10.32	10.52	13.86	18.14	26.01	31.55	31.79	32.64	37.23	41.82	43.01	44.89	45.90	50.23	72.97

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Os	$L\beta_1$		2	50	76	6	10.354	2.39454	5		10.32	10.52	13.86	18.14	26.01	31.55	31.79	32.65	37.24	41.83			45.91	50.24	72.98
Eu	Ll		1	2	63	6	5.176	2.39480	4		10.32	10.52	13.87	18.14	26.01	31.55	31.80	32.65	37.24	41.83	43.02	44.90	45.91	50.24	72.99
Sm	$K\beta_2$	H	9	8	62	6	46.566	2.39580	4		10.32	10.53	13.87	18.15	26.03	31.57	31.81	32.66	37.26	41.85	43.03	44.92	45.93	50.26	73.02
Ga	$K\beta_5$	B	2	.04	31	6	10.346	2.39620	4		10.32	10.53	13.87	18.15	26.03	31.57	31.82	32.67	37.26	41.86			45.94	50.27	73.04
Tb	$K\beta_2$	H	10	8	65	6	51.715	2.39700	4		10.33	10.53	13.88	18.16	26.04	31.58	31.83	32.68	37.28	41.87	43.06	44.95	45.96	50.29	73.07
Lu	$L\gamma_6$		2	.01	71	6	10.341	2.39740	4		10.33	10.53	13.88	18.16	26.04	31.59	31.83	32.69	37.28	41.88			45.97	50.30	73.08
Te	$K\beta_1$		6	20	52	6	30.990	2.39997	6		10.34	10.54	13.90	18.18	26.07	31.62	31.87	32.72	37.33	41.93	43.11	45.00	46.02	50.36	73.17
Eu	$K\alpha_{1,2}$		8	150	63	6	41.320	2.40002	6		10.34	10.54	13.90	18.18	26.07	31.62	31.87	32.72	37.33	41.93	43.11	45.01	46.02	50.36	73.17
Os	L_3-N_2	B	2	.01	76	6	10.323	2.40172	5		10.35	10.55	13.91	18.19	26.09	31.65	31.89	32.75	37.35	41.96			46.05	50.40	73.23
Cs	$K\alpha_1$		6	100	55	6	30.968	2.40174	6		10.35	10.55	13.91	18.19	26.09	31.65	31.89	32.75	37.35	41.96	43.15	45.04	46.05	50.40	73.23
Lu	L_2-$O_{2,3}$	8	2	.01	71	6	10.318	2.40280	4		10.35	10.56	13.91	18.20	26.10	31.66	31.91	32.76	37.37	41.98			46.08	50.42	73.27
Te	$K\beta_3$		6	9	52	6	30.939	2.40395	6		10.36	10.56	13.92	18.21	26.12	31.68	31.92	32.78	37.39	42.00	43.19	45.08	46.10	50.45	73.31
Ba	$L8_{2,1,5}$		1	20	56	6	5.156	2.40435	5		10.36	10.56	13.92	18.21	26.12	31.68	31.93	32.78	37.40	42.01	43.20	45.09	46.11	50.46	73.33
Tc	$K\beta_1$	H	4	16	43	6	20.615	2.40520	5		10.36	10.57	13.93	18.22	26.13	31.69	31.94	32.80	37.41	42.02	43.21	45.11	46.12	50.48	73.36
Au	Ln		2	1	79	6	10.307	2.40546	5		10.36	10.57	13.93	18.22	26.13	31.70	31.94	32.80	37.41	42.03			46.13	50.48	73.37
Bi	L_1-N_1	B	3	.01	83	6	15.453	2.40660	4		10.37	10.57	13.93	18.23	26.15	31.71	31.96	32.81	37.43	42.05	43.24	45.14	46.15	50.51	73.41
Pb	$L\gamma_{11}$	B	3	.01	82	6	15.450	2.40699	5		10.37	10.57	13.94	18.23	26.15	31.72	31.96	32.82	37.44	42.06	43.25	45.14	46.16	50.52	73.42
Tc	$K\beta_3$	H	4	8	43	6	20.595	2.40752	5		10.37	10.58	13.94	18.24	26.16	31.73	31.97	32.83	37.45	42.07	43.26	45.15	46.17	50.53	73.44
Ra	$L\beta_3$		3	6	88	6	15.442	2.40819	5		10.38	10.58	13.94	18.24	26.16	31.73	31.98	32.84	37.46	42.08	43.27	45.17	46.18	50.54	73.46
Pr	$K\alpha_1$		7	100	59	6	36.020	2.40898	6		10.38	10.58	13.95	18.25	26.17	31.75	31.99	32.85	37.47	42.09	43.28	45.18	46.20	50.56	73.49
Lu	$L\gamma_8$		2	.1	71	6	10.290	2.40940	4		10.38	10.58	13.95	18.25	26.18	31.75	32.00	32.85	37.48	42.10			46.21	50.57	73.51
Nd	Ln		1	1	60	6	5.145	2.40940	4		10.38	10.58	13.95	18.25	26.18	31.75	32.00	32.85	37.48	42.10	43.29	45.19	46.21	50.57	73.51
W	$L\beta_9$	8	2	.01	74	6	10.289	2.40958	5		10.38	10.59	13.95	18.25	26.18	31.75	32.00	32.86	37.48	42.10			46.21	50.57	73.51
La	$L\beta_3$		1	6	57	6	5.143	2.41050	4		10.39	10.59	13.96	18.26	26.19	31.77	32.01	32.87	37.50	42.12	43.31	45.21	46.23	50.59	73.55
Cs	$K\alpha_{1,2}$		6	150	55	6	30.851	2.41083	6		10.39	10.59	13.96	18.26	26.19	31.77	32.02	32.87	37.50	42.13	43.32	45.22	46.24	50.60	73.56
Pb	L_1-N_4	B	3	.01	82	6	15.425	2.41092	5		10.39	10.59	13.96	18.26	26.19	31.77	32.02	32.88	37.50	42.13	43.32	45.22	46.24	50.60	73.56
Ra	L_3-$P_{2,3}$	B	3	.01	88	6	15.422	2.41140	4		10.39	10.59	13.96	18.27	26.20	31.78	32.02	32.88	37.51	42.14	43.33	45.23	46.25	50.62	73.58
Cf	$L8_1$		4	50	98	3	20.557	2.41200			10.39	10.60	13.97	18.27	26.20	31.79	32.03	32.89	37.52	42.15	43.34	45.24	46.26	50.63	73.60
Cf	$L\alpha_2$		3	10	98	3	15.418	2.41200			10.39	10.60	13.97	18.27	26.20	31.79	32.03	32.89	37.52	42.15	43.34	45.24	46.26	50.63	73.60
Re	$L\beta_2$		2	20	75	6	10.274	2.41320	5		10.40	10.60	13.97	18.28	26.22	31.80	32.05	32.91	37.54	42.17			46.29	50.66	73.64
Ir	$L8_{1,7}$	B	2	.01	77	6	10.271	2.41380	4		10.40	10.60	13.98	18.29	26.22	31.81	32.06	32.92	37.55	42.18			46.30	50.67	73.66
Yb	$K\alpha_2$		10	50	70	6	51.345	2.41424	6		10.40	10.61	13.98	18.29	26.23	31.82	32.06	32.92	37.56	42.19	43.38	45.29	46.31	50.68	73.68
Tl	$L\alpha_1$		2	100	81	6	10.267	2.41478	5		10.40	10.61	13.98	18.29	26.24	31.82	32.07	32.93	37.56	42.20			46.32	50.69	73.70
Ra	L_3-P_1		3	.01	88	6	15.399	2.41500	4		10.41	10.61	13.98	18.30	26.24	31.83	32.07	32.93	37.57	42.20	43.40	45.30	46.32	50.70	73.71
U	Ln		3	1	92	6	15.397	2.41527	5		10.41	10.61	13.98	18.30	26.24	31.83	32.08	32.94	37.57	42.21	43.40	45.31	46.33	50.70	73.72
Ga	$K8_1$		2	14	31	6	10.263	2.41578	5		10.41	10.61	13.99	18.30	26.25	31.84	32.08	32.94	37.58	42.22			46.34	50.71	73.73
Re	$L\beta_{15}$		2	1	75	6	10.260	2.41638	5		10.41	10.62	13.99	18.31	26.25	31.85	32.09	32.95	37.59	42.23			46.35	50.73	73.75
Ga	$K\beta_3$		2	7	31	6	10.259	2.41670	5		10.41	10.62	13.99	18.31	26.26	31.85	32.10	32.96	37.60	42.23			46.36	50.73	73.77
Cs	$L\gamma_5$		1	.1	55	6	5.128	2.41740	4		10.42	10.62	14.00	18.31	26.26	31.86	32.11	32.97	37.61	42.25	43.44	45.35	46.37	50.75	73.79
Ra	$L\beta_5$		3	1	88	6	15.375	2.41881	5		10.42	10.63	14.01	18.33	26.28	31.88	32.13	32.99	37.63	42.27	43.47	45.38	46.40	50.78	73.84
Pr	$K\alpha_{1,2}$		7	150	59	6	35.860	2.41973	6		10.43	10.63	14.01	18.33	26.29	31.89	32.14	33.00	37.64	42.29	43.49	45.40	46.42	50.80	73.87
Ir	L_1-M_1	8	2	.01	77	6	10.243	2.42040	4		10.43	10.63	14.01	18.34	26.30	31.90	32.15	33.01	37.65	42.30			46.43	50.82	73.90
Bi	Ls	B	2	.01	83	6	10.240	2.42100	4		10.43	10.64	14.02	18.34	26.30	31.91	32.16	33.02	37.66	42.31			46.44	50.83	73.92
Cs	$K8_2$		7	6	55	6	35.815	2.42277	5		10.44	10.64	14.03	18.36	26.32	31.93	32.18	33.04	37.69	42.34	43.54	45.46	46.48	50.87	73.98
Pa	$L8_6$		3	.1	91	6	15.343	2.42370	4		10.44	10.65	14.03	18.36	26.33	31.94	32.19	33.05	37.71	42.36	43.56	45.47	46.50	50.89	74.02
W	$L\beta_{10}$	8	2	.01	74	6	10.226	2.42436	5		10.45	10.65	14.04	18.37	26.34	31.95	32.20	33.06	37.72	42.37			46.51	50.91	74.04
Th	L_3-N_3	B	3	.01	90	6	15.338	2.42460	4		10.45	10.65	14.04	18.37	26.34	31.96	32.20	33.07	37.72	42.38	43.58	45.49	46.52	50.91	74.05
Eu	$K\alpha_2$		8	50	63	6	40.895	2.42494	6		10.45	10.65	14.04	18.37	26.35	31.96	32.21	33.07	37.73	42.38	43.58	45.50	46.52	50.92	74.06
Dy	$K\alpha_1$		9	100	66	6	45.991	2.42580	6		10.45	10.66	14.05	18.38	26.36	31.97	32.22	33.08	37.74	42.40	43.60	45.52	46.54	50.94	74.09
Tl	L_1-$O_{4,5}$	8	3	.01	81	6	15.330	2.42583	5		10.45	10.66	14.05	18.38	26.36	31.97	32.22	33.08	37.74	42.40	43.60	45.52	46.54	50.94	74.09
Pt	L_2-M_2	B	2	.01	78	6	10.219	2.42600	3		10.45	10.66	14.05	18.38	26.36	31.98	32.22	33.09	37.75	42.40			46.55	50.94	74.10
Os	$L\beta_6$		2	.1	76	6	10.215	2.42698	5		10.46	10.66	14.05	18.39	26.37	31.99	32.24	33.10	37.76	42.42			46.57	50.97	74.13
Cs	$K\alpha_2$		6	50	55	6	30.620	2.42901	6		10.47	10.67	14.06	18.40	26.39	32.02	32.26	33.13	37.79	42.46	43.66	45.58	46.61	51.01	74.20
Xe	AL_2		1		54	6	5.103	2.42920	4		10.47	10.67	14.07	18.40	26.39	32.02	32.27	33.13	37.80	42.46	43.66	45.58	46.61	51.02	74.21
Bk	$L\alpha_1$		3	100	97	3	15.304	2.43000			10.47	10.68	14.07	18.41	26.40	32.03	32.28	33.14	37.81	42.48	43.68	45.60	46.63	51.03	74.24
Hf	$L\gamma_5$		2	.1	72	6	10.199	2.43074	5		10.47	10.68	14.07	18.42	26.41	32.04	32.29	33.15	37.82	42.49			46.64	51.05	74.27
W	$L8_5$		2	.1	74	6	10.199	2.43090	5		10.47	10.68	14.08	18.42	26.41	32.04	32.29	33.16	37.82	42.49			46.65	51.05	74.27
Th	L_1-M_1	F	3	.01	90	6	15.287	2.43261	5		10.48	10.69	14.09	18.43	26.43	32.06	32.31	33.18	37.85	42.53	43.73	45.65	46.68	51.09	74.33
Pr	$K\beta_1$		8	22	59	6	40.741	2.43409	6		10.49	10.69	14.09	18.44	26.45	32.08	32.33	33.20	37.88	42.55	43.76	45.68	46.71	51.13	74.39
Ag	$K\beta_2$		5	5	47	6	25.452	2.43516	6		10.49	10.70	14.10	18.45	26.46	32.10	32.35	33.22	37.89	42.57	43.78	45.70	46.73	51.15	74.42
Tl	$L\gamma_4$		3	.1	81	6	15.269	2.43552	5		10.49	10.70	14.10	18.45	26.46	32.10	32.35	33.22	37.90	42.58	43.78	45.71	46.74	51.16	74.44
Os	$L8_4$		2	4	76	6	10.174	2.43688	5		10.50	10.71	14.11	18.46	26.48	32.12	32.37	33.24	37.92	42.60			46.77	51.19	74.49
W	Lu	B	2	.01	74	6	10.172	2.43736	5		10.50	10.71	14.11	18.47	26.49	32.13	32.38	33.25	37.93	42.61			46.78	51.20	74.50
Tl	$L\alpha_2$		2	10	81	6	10.171	2.43750	5		10.50	10.71	14.11	18.47	26.49	32.13	32.38	33.25	37.93	42.61			46.78	51.20	74.51
Tl	$L\gamma_4p$		3	.1	81	6	15.246	2.43924	5		10.51	10.72	14.12	18.48	26.51	32.15	32.40	33.27	37.96	42.65	43.85	45.78	46.82	51.24	74.57

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Bi	$L\gamma_1$		3	10	83	6	15.245	2.43933	5		10.51	10.72	14.12	18.48	26.51	32.16	32.41	33.27	37.96	42.65	43.86	45.78	46.82	51.24	74.57
Pr	$K\beta_3$		8	10	59	6	40.646	2.43980	6		10.51	10.72	14.13	18.49	26.51	32.16	32.41	33.28	37.97	42.66	43.87	45.79	46.83	51.25	74.59
Dy	$K\alpha_{1,2}$		9	150	66	6	45.724	2.43994	6		10.51	10.72	14.13	18.49	26.51	32.16	32.41	33.28	37.97	42.66	43.87	45.80	46.83	51.26	74.60
Re	$L\beta_3$		2	6	75	6	10.158	2.44062	5		10.52	10.72	14.13	18.49	26.52	32.17	32.42	33.29	37.98	42.67			46.84	51.27	74.62
Pr	$K\alpha_2$		7	50	59	6	35.544	2.44124	6		10.52	10.73	14.14	18.50	26.53	32.18	32.43	33.30	37.99	42.68	43.89	45.82	46.86	51.29	74.64
Ra	$L\beta_1$		3	50	88	6	15.233	2.44125	5		10.52	10.73	14.14	18.50	26.53	32.18	32.43	33.30	37.99	42.68	43.89	45.82	46.86	51.29	74.64
Th	M_1-O_3		1	.01	90	6	5.076	2.44200	3		10.52	10.73	14.14	18.50	26.54	32.19	32.44	33.31	38.00	42.70	43.91	45.84	46.87	51.30	74.67
W	$L_3-O_{2,3}$	B	2	.01	74	6	10.152	2.44220	4		10.52	10.73	14.14	18.50	26.54	32.19	32.44	33.31	38.01	42.70			46.88	51.31	74.68
U	M_2-O_4		1	.01	92	6	5.074	2.44300	3		10.53	10.73	14.15	18.51	26.55	32.21	32.46	33.33	38.02	42.72	43.93	45.86	46.89	51.33	74.70
Tm	$K\alpha_1$		10	100	69	6	50.733	2.44338	6		10.53	10.73	14.15	18.51	26.55	32.21	32.46	33.33	38.03	42.72	43.93	45.86	46.90	51.33	74.72
Pb	$L\gamma_3$		3	2	82	6	15.215	2.44410	4		10.53	10.74	14.15	18.52	26.56	32.22	32.47	33.34	38.04	42.74	43.95	45.88	46.91	51.35	74.74
Lu	$L\gamma_1$		2	5	71	6	10.142	2.44456	5		10.53	10.74	14.16	18.52	26.56	32.23	32.48	33.35	38.05	42.74			46.92	51.36	74.76
Yb	$L\gamma_3$		2	1	70	6	10.141	2.44464	5		10.53	10.74	14.16	18.52	26.57	32.23	32.48	33.35	38.05	42.75			46.93	51.36	74.76
Tl	L_1-O_1	F	3	.01	81	6	15.208	2.44533	5		10.54	10.74	14.16	18.53	26.57	32.24	32.49	33.36	38.06	42.76	43.97	45.90	46.94	51.38	74.79
Rb	$K\beta_4$	C	3	.00	37	6	15.202	2.44620	4		10.54	10.75	14.16	18.53	26.58	32.25	32.50	33.37	38.07	42.77	43.99	45.92	46.96	51.40	74.82
Pb	L_2-P_1		3	.1	82	6	15.194	2.44749	5		10.55	10.75	14.17	18.54	26.60	32.27	32.52	33.39	38.09	42.80	44.01	45.95	46.98	51.43	74.87
I	$L\gamma_{2,3}$		1	2	53	6	5.065	2.44750	4		10.55	10.75	14.17	18.54	26.60	32.27	32.52	33.39	38.09	42.80	44.01	45.95	46.98	51.43	74.87
Sb	$K\beta_2$	D	6	5	51	6	30.388	2.44757	6		10.55	10.75	14.17	18.55	26.60	32.27	32.52	33.39	38.09	42.80	44.01	45.95	46.98	51.43	74.87
W	$L\beta_7$		2	.1	74	6	10.127	2.44800	5		10.55	10.76	14.18	18.55	26.60	32.27	32.52	33.40	38.10	42.81			46.99	51.44	74.88
Ra	$L\beta_7$		3	.1	88	6	15.187	2.44860	4		10.55	10.76	14.18	18.55	26.61	32.28	32.53	33.40	38.11	42.82	44.03	45.97	47.01	51.45	74.91
La	$L\beta_4$		1	5	57	6	5.061	2.44930	4		10.55	10.76	14.18	18.56	26.62	32.29	32.54	33.41	38.12	42.83	44.04	45.98	47.02	51.47	74.93
Rb	$K\beta_2$		3	3	37	6	15.183	2.44935	5		10.55	10.76	14.18	18.56	26.62	32.29	32.54	33.41	38.12	42.83	44.05	45.98	47.02	51.47	74.93
Pb	$L\gamma_6$		3	.01	82	6	15.176	2.45049	5		10.56	10.77	14.19	18.57	26.63	32.31	32.56	33.43	38.14	42.85	44.07	46.01	47.04	51.50	74.97
Tm	$L_1-O_{4,5}$	B	2	.01	69	6	10.108	2.45260	4		10.57	10.78	14.20	18.58	26.65	32.34	32.59	33.46	38.18	42.89			47.09	51.54	75.05
Sn	$K\alpha_1$		5	100	50	6	25.267	2.45299	6		10.57	10.78	14.20	18.59	26.66	32.34	32.59	33.47	38.18	42.90	44.11	46.05	47.10	51.55	75.06
Rh	$K\alpha_1$		4	100	45	6	20.213	2.45312	6		10.57	10.78	14.21	18.59	26.66	32.34	32.59	33.47	38.18	42.90	44.12	46.06	47.10	51.55	75.07
Ra	Lu	B	3	.01	88	6	15.143	2.45580	4		10.58	10.79	14.22	18.61	26.69	32.38	32.63	33.51	38.23	42.95	44.17	46.11	47.15	51.61	75.16
Re	L_3-N_3	B	2	.01	75	6	10.092	2.45660	4		10.59	10.79	14.23	18.61	26.70	32.39	32.64	33.52	38.24	42.97			47.17	51.63	75.19
Th	L_3-N_2	B	3	.01	90	6	15.136	2.45700	4		10.59	10.79	14.23	18.62	26.70	32.40	32.65	33.52	38.25	42.97	44.19	46.13	47.18	51.64	75.21
Sm	$K\beta_1$		9	22	62	6	45.405	2.45709	5		10.59	10.80	14.23	18.62	26.70	32.40	32.65	33.52	38.25	42.97	44.19	46.14	47.18	51.64	75.21
Yb	$L\gamma_2$		2	1	70	6	10.088	2.45758	5		10.59	10.80	14.23	18.62	26.71	32.40	32.65	33.53	38.26	42.98			47.19	51.66	75.23
Tm	$L\gamma_4$		2	.1	69	6	10.083	2.45880	4		10.59	10.80	14.24	18.63	26.72	32.42	32.67	33.55	38.28	43.01			47.21	51.68	75.27
La	$L\beta_1$		1	50	57	6	5.041	2.45891	5		10.60	10.80	14.24	18.63	26.72	32.42	32.67	33.55	38.28	43.01	44.23	46.17	47.22	51.69	75.28
Rh	$K\alpha_{1,2}$		4	150	45	6	20.165	2.45892	6		10.60	10.80	14.24	18.63	26.72	32.42	32.67	33.55	38.28	43.01	44.23	46.17	47.22	51.69	75.28
U	$L\gamma_1$		4	10	92	6	20.164	2.45908	6		10.60	10.80	14.24	18.63	26.73	32.42	32.68	33.55	38.28	43.01	44.23	46.18	47.22	51.69	75.28
Tm	$K\alpha_{1,2}$		10	150	69	6	50.406	2.45924	6		10.60	10.80	14.24	18.63	26.73	32.43	32.68	33.55	38.28	43.01	44.23	46.18	47.22	51.69	75.29
Pb	L_2-O_3	B	3	.01	82	6	15.117	2.46000	4		10.60	10.81	14.25	18.64	26.74	32.44	32.69	33.56	38.29	43.03	44.25	46.19	47.24	51.71	75.31
Sn	$K\alpha_{1,2}$		5	150	50	6	25.191	2.46042	6		10.60	10.81	14.25	18.64	26.74	32.44	32.69	33.57	38.30	43.04	44.26	46.20	47.25	51.72	75.33
Tb	$K\beta_1$		10	23	65	6	50.374	2.46080	5		10.60	10.81	14.25	18.65	26.74	32.45	32.70	33.58	38.31	43.04	44.26	46.21	47.25	51.73	75.34
Re	L_2-M_5	B	2	.01	75	6	10.074	2.46100	4		10.60	10.81	14.25	18.65	26.75	32.45	32.70	33.58	38.31	43.05			47.26	51.73	75.35
Pb	$L\gamma_2$		3	1	82	6	15.099	2.46300	4		10.61	10.82	14.26	18.66	26.77	32.48	32.73	33.61	38.34	43.08	44.30	46.25	47.30	51.78	75.42
Pr	$L\alpha_1$		1	100	59	6	5.033	2.46300	4		10.61	10.82	14.26	18.66	26.77	32.48	32.73	33.61	38.34	43.08	44.30	46.25	47.30	51.78	75.42
Sm	$K\beta_3$		9	10	62	6	45.281	2.46384	5		10.62	10.82	14.27	18.67	26.78	32.49	32.74	33.62	38.36	43.10	44.32	46.27	47.32	51.80	75.45
Ce	$K\beta_2$		8	7	58	6	40.226	2.46528	5		10.62	10.83	14.28	18.68	26.79	32.51	32.76	33.64	38.38	43.12	44.35	46.30	47.35	51.83	75.50
Rb	$K\beta_5$		3	.06	37	6	15.082	2.46570	4		10.62	10.83	14.28	18.68	26.80	32.51	32.77	33.64	38.39	43.13	44.36	46.31	47.35	51.84	75.52
Sk	$L\alpha_2$		3	10	97	3	15.080	2.46600			10.63	10.83	14.28	18.69	26.80	32.52	32.77	33.65	38.39	43.14	44.36	46.31	47.36	51.85	75.53
Pa	$L\gamma_3$		4	2	91	6	20.094	2.46760	4		10.63	10.84	14.29	18.70	26.82	32.54	32.79	33.67	38.42	43.17	44.39	46.34	47.39	51.88	75.59
Dy	$K\alpha_2$		9	50	66	6	45.200	2.46822	6		10.64	10.84	14.29	18.70	26.83	32.55	32.80	33.68	38.43	43.18	44.40	46.36	47.41	51.90	75.61
Tb	$K\beta_3$		10	11	65	6	50.221	2.46830	5		10.64	10.84	14.29	18.70	26.83	32.55	32.80	33.68	38.43	43.18	44.40	46.36	47.41	51.90	75.61
Pb	Lv		8	3	.01	82	6	15.057	2.46981	5		10.64	10.85	14.30	18.72	26.84	32.57	32.82	33.70	38.45	43.21	44.43	46.39	47.44	51.93	75.67
Rh	$K\alpha_2$		4	50	45	6	20.070	2.47052	6		10.65	10.85	14.31	18.72	26.85	32.58	32.83	33.71	38.47	43.22	44.45	46.40	47.45	51.95	75.69
Pb	$L\gamma_8$		3	.1	82	6	15.050	2.47095	5		10.65	10.86	14.31	18.72	26.86	32.58	32.84	33.72	38.47	43.23	44.45	46.41	47.46	51.96	75.71
Sm	$K\alpha_1$		8	100	62	6	40.111	2.47232	6		10.65	10.86	14.32	18.73	26.87	32.60	32.86	33.74	38.49	43.25	44.48	46.44	47.49	51.99	75.76
Pr	$L\alpha_2$		1	10	59	6	5.013	2.47290	4		10.66	10.86	14.32	18.74	26.88	32.61	32.86	33.75	38.50	43.26	44.49	46.45	47.50	52.00	75.78
Cs	AL_3		1		55	6	5.011	2.47400	4		10.66	10.87	14.33	18.75	26.89	32.63	32.88	33.76	38.52	43.28	44.51	46.47	47.52	52.03	75.82
Bi	L_2-N_3		8	3	.01	83	6	15.029	2.47440	4		10.56	10.87	14.33	18.75	26.90	32.63	32.88	33.77	38.53	43.29	44.52	46.48	47.53	52.04	75.83
Sn	$K\alpha_2$		5	50	50	6	25.040	2.47526	6		10.67	10.88	14.33	18.76	26.90	32.64	32.90	33.78	38.54	43.31	44.54	46.50	47.55	52.05	75.86
Re	$L\beta_1$		2	50	75	6	10.008	2.47716	5		10.67	10.88	14.34	18.77	26.93	32.67	32.92	33.81	38.57	43.34			47.59	52.10	75.93
Cs	$K\beta_1$		7	21	55	6	34.981	2.48055	6		10.69	10.90	14.36	18.80	26.96	32.71	32.97	33.85	38.63	43.41	44.64	46.60	47.66	52.17	76.06
Gd	$K8_2$		10	8	64	6	49.952	2.48160	5		10.69	10.90	14.37	18.81	26.97	32.73	32.98	33.87	38.64	43.42	44.66	46.62	47.68	52.20	76.09
Sm	Ll		1	2	62	6	4.994	2.48230	4		10.70	10.91	14.37	18.81	26.98	32.74	32.99	33.88	38.66	43.44	44.67	46.64	47.69	52.21	76.12
Hg	$L\alpha_1$		2	100	80	6	9.987	2.48240	5		10.70	10.91	14.38	18.81	26.98	32.74	32.99	33.88	38.66	43.44			47.69	52.22	76.12
Ba	$L\beta_6$		1	.1	56	6	4.993	2.48260	4		10.70	10.91	14.38	18.81	26.99	32.74	33.00	33.88	38.66	43.44	44.58	46.64	47.70	52.22	76.13
Pm	$K\beta_2$	H	9	8	61	6	44.929	2.48310	4		10.70	10.91	14.38	18.82	26.99	32.75	33.00	33.89	38.67	43.45	44.69	46.65	47.71	52.23	76.15
Fr	$L8_3$	H	3	10	87	6	14.973	2.48367	5		10.70	10.91	14.38	18.82	27.00	32.76	33.01	33.90	38.68	43.46	44.70	46.66	47.72	52.24	76.17

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Th	$L\beta_6$		3	.1	90	6	14.973	2.48370	5		10.70	10.91	14.38	18.82	27.00	32.76	33.01	33.90	38.68	43.46	44.70	46.67	47.72	52.25	76.17
Mo	$K\beta_2$		4	4	42	6	19.962	2.48396	5		10.70	10.91	14.38	18.82	27.00	32.76	33.02	33.90	38.68	43.47	44.70	46.67	47.73	52.25	76.18
Bk	$L\beta_1$		4	50	97	3	19.961	2.48400			10.70	10.91	14.38	18.82	27.00	32.76	33.02	33.90	38.68	43.47	44.70	46.67	47.73	52.25	76.18
Sm	$K\alpha_{1,2}$		8	150	62	6	39.911	2.48474	6		10.71	10.92	14.39	18.83	27.01	32.77	33.03	33.91	38.70	43.48	44.72	46.69	47.74	52.27	76.21
Cs	$L\beta_7$		1	.1	55	6	4.989	2.48490	4		10.71	10.92	14.39	18.83	27.01	32.77	33.03	33.91	38.70	43.49	44.72	46.69	47.75	52.27	76.21
Cs	$L\beta_9$	F	1	.01	55	6	4.988	2.48520	4		10.71	10.92	14.39	18.83	27.01	32.78	33.03	33.92	38.70	43.49	44.73	46.70	47.75	52.28	76.22
Ag	$K\beta_1$		5	18	47	6	24.938	2.48534	6		10.71	10.92	14.39	18.83	27.02	32.78	33.03	33.92	38.71	43.49	44.73	46.70	47.75	52.28	76.23
Cs	$K\beta_3$		7	9	55	6	34.913	2.48535	6		10.71	10.92	14.39	18.83	27.02	32.78	33.03	33.92	38.71	43.49	44.73	46.70	47.75	52.28	76.23
Yb	$L\gamma_6$		2	.01	70	6	9.975	2.48542	5		10.71	10.92	14.39	18.83	27.02	32.78	33.03	33.92	38.71	43.49			47.76	52.28	76.23
Pb	L_1-N_1	B	3	.01	82	6	14.960	2.48577	5		10.71	10.92	14.40	18.84	27.02	32.79	33.04	33.93	38.71	43.50	44.74	46.71	47.76	52.29	76.24
Pt	Ln		2	1	78	6	9.973	2.48580	4		10.71	10.92	14.40	18.84	27.02	32.79	33.04	33.93	38.71	43.50			47.76	52.29	76.25
Rb	$K\beta_1$		3	16	37	6	14.959	2.48604	5		10.71	10.92	14.40	18.84	27.02	32.79	33.04	33.93	38.72	43.51	44.74	46.71	47.77	52.30	76.25
Tl	$L\gamma_{11}$	B	3	.01	81	6	14.957	2.48637	5		10.71	10.92	14.40	18.84	27.03	32.79	33.05	33.93	38.72	43.51	44.75	46.72	47.78	52.31	76.27
Y	$K\alpha_1$		3	100	39	6	14.956	2.48652	5		10.71	10.92	14.40	18.84	27.03	32.80	33.05	33.94	38.72	43.52	44.75	46.72	47.78	52.31	76.27
Cm	$L\alpha_1$		3	100	96	3	14.953	2.48700			10.72	10.93	14.40	18.85	27.03	32.80	33.06	33.94	38.73	43.52	44.76	46.73	47.79	52.32	76.29
Rb	$K\beta_3$		3	8	37	6	14.949	2.48763	5		10.72	10.93	14.41	18.85	27.04	32.81	33.07	33.95	38.74	43.54	44.77	46.74	47.80	52.33	76.31
Pb	Ls	B	2	.01	82	6	9.966	2.48770	5		10.72	10.93	14.41	18.85	27.04	32.81	33.07	33.95	38.74	43.54			47.80	52.34	76.31
Ag	$K\beta_3$		5	8	47	6	24.907	2.48842	6		10.72	10.93	14.41	18.86	27.05	32.82	33.08	33.96	38.75	43.55	44.79	46.76	47.82	52.35	76.34
Pa	Ln		3	1	91	6	14.944	2.48850	4		10.72	10.93	14.41	18.86	27.05	32.82	33.08	33.96	38.76	43.55	44.79	46.76	47.82	52.35	76.34
W	$L\beta_2$		2	20	74	6	9.960	2.48920	5		10.73	10.94	14.42	18.86	27.06	32.83	33.09	33.97	38.77	43.56			47.83	52.37	76.37
Tl	L_1-N_4	B	3	.01	81	6	14.935	2.49003	5		10.73	10.94	14.42	18.87	27.07	32.84	33.10	33.99	38.78	43.58	44.82	46.79	47.85	52.39	76.40
Yb	L_2-$O_{2,3}$	B	2	.01	70	6	9.954	2.49060	4		10.73	10.94	14.42	18.87	27.07	32.85	33.11	33.99	38.79	43.59			47.86	52.40	76.42
Y	$K\alpha_{1,2}$		3	150	39	6	14.931	2.49073	5		10.73	10.94	14.42	18.88	27.08	32.85	33.11	34.00	38.79	43.59	44.83	46.81	47.86	52.40	76.42
Tm	$K\alpha_2$		10	50	69	6	49.764	2.49095	6		10.73	10.94	14.43	18.88	27.08	32.86	33.11	34.00	38.80	43.60	44.83	46.81	47.87	52.41	76.43
Cs	$L\beta_{10}$	B	1	.01	55	6	4.974	2.49200	4		10.74	10.95	14.43	18.88	27.09	32.87	33.12	34.01	38.81	43.62	44.85	46.83	47.89	52.43	76.47
W	$L\beta_{15}$		2	1	74	6	9.946	2.49262	5		10.74	10.95	14.43	18.89	27.10	32.88	33.13	34.02	38.82	43.63			47.90	52.45	76.49
Ta	$L\beta_9$	B	2	.01	73	6	9.944	2.49320	4		10.74	10.95	14.44	18.89	27.10	32.89	33.14	34.03	38.83	43.64			47.91	52.46	76.51
Os	$L\beta_{17}$	B	2	.01	76	6	9.933	2.49600	4		10.76	10.97	14.45	18.92	27.13	32.92	33.18	34.07	38.88	43.69			47.97	52.52	76.61
Ti	AK		1		22	6	4.964	2.49734	5		10.76	10.97	14.46	18.93	27.15	32.94	33.20	34.09	38.90	43.71	44.96	46.94	48.00	52.55	76.66
Xe	$K\alpha_1$	H	6	100	54	6	29.774	2.49804	5		10.76	10.98	14.47	18.93	27.16	32.95	33.21	34.10	38.91	43.73	44.97	46.95	48.01	52.57	76.69
Yb	$L\gamma_8$		2	.1	70	6	9.923	2.49846	5		10.77	10.98	14.47	18.93	27.16	32.96	33.21	34.10	38.92	43.73			48.02	52.58	76.70
Ti	$K\beta_5$		8	1	.02	22	6	4.961	2.49850	4	4	10.77	10.98	14.47	18.93	27.16	32.96	33.21	34.11	38.92	43.74	44.98	46.96	48.02	52.58	76.71
Y	$K\alpha_2$		3	50	39	6	14.880	2.49915	5		10.77	10.98	14.47	18.94	27.17	32.97	33.22	34.11	38.93	43.75	44.99	46.97	48.04	52.60	76.73
Ce	$K\alpha_1$		7	100	58	6	34.714	2.49964	6		10.77	10.98	14.48	18.94	27.17	32.97	33.23	34.12	38.94	43.76	45.00	46.98	48.05	52.61	76.75
Ir	L_2-M_2	B	2	.01	77	6	9.915	2.50040	4		10.77	10.99	14.48	18.95	27.18	32.98	33.24	34.13	38.95	43.77			48.06	52.62	76.77
Th	L_2-M_2	B	3	.01	90	6	14.867	2.50140	4		10.78	10.99	14.49	18.96	27.19	33.00	33.25	34.15	38.97	43.79	45.03	47.02	48.08	52.65	76.81
Re	$L\beta_6$		2	.1	75	6	9.909	2.50200	5		10.78	10.99	14.49	18.96	27.20	33.01	33.26	34.15	38.97	43.80			48.09	52.66	76.83
Sb	$K\beta_1$		6	20	51	6	29.721	2.50251	6		10.78	11.00	14.49	18.97	27.21	33.01	33.27	34.16	38.98	43.81	45.05	47.04	48.11	52.67	76.85
8i	L_2-N_2	B	3	.01	83	6	14.856	2.50320	4		10.79	11.00	14.50	18.97	27.21	33.02	33.28	34.17	38.99	43.82	45.07	47.05	48.12	52.69	76.88
V	$K\alpha_1$		1	100	23	6	4.951	2.50356	5	4	10.79	11.00	14.50	18.97	27.22	33.03	33.28	34.18	39.00	43.83	45.07	47.06	48.13	52.70	76.89
V	$K\alpha_{1,2}$		1	150	23	6	4.949	2.50483	5	4	10.79	11.01	14.51	18.98	27.23	33.04	33.30	34.19	39.02	43.85	45.10	47.09	48.15	52.72	76.94
Hg	L_1-$O_{4,5}$	B	3	.01	80	6	14.846	2.50500	4		10.79	11.01	14.51	18.98	27.23	33.05	33.30	34.20	39.02	43.86	45.10	47.09	48.16	52.73	76.94
Hg	$L\alpha_2$		2	10	80	6	9.896	2.50528	5		10.80	11.01	14.51	18.99	27.24	33.05	33.31	34.20	39.03	43.86			48.16	52.73	76.95
Ra	$L\beta_2$		3	20	88	6	14.839	2.50611	5		10.80	11.01	14.51	18.99	27.25	33.06	33.32	34.21	39.04	43.88	45.12	47.11	48.18	52.75	76.98
Sb	$K\beta_3$		6	9	51	6	29.674	2.50642	6		10.80	11.01	14.52	19.00	27.25	33.07	33.32	34.22	39.05	43.88	45.13	47.12	48.19	52.76	76.99
Xe	$K\alpha_{1,2}$	H	6	150	54	6	29.666	2.50710	5		10.80	11.02	14.52	19.00	27.26	33.07	33.33	34.23	39.06	43.89	45.14	47.13	48.20	52.78	77.02
V	$K\alpha_2$		1	50	23	6	4.944	2.50738	5	4	10.80	11.02	14.52	19.00	27.26	33.08	33.34	34.23	39.06	43.90	45.15	47.14	48.20	52.78	77.03
Ta	$L\beta_{10}$	B	2	.01	73	6	9.888	2.50740	4		10.80	11.02	14.52	19.00	27.26	33.08	33.34	34.23	39.06	43.90			48.21	52.78	77.03
Ge	$K\alpha_1$		2	100	32	6	9.885	2.50811	6		10.81	11.02	14.53	19.01	27.27	33.09	33.35	34.24	39.07	43.91			48.22	52.80	77.05
Tb	$K\alpha_1$		9	100	65	6	44.474	2.50852	6		10.81	11.02	14.53	19.01	27.27	33.09	33.35	34.25	39.08	43.92	45.17	47.16	48.23	52.81	77.07
Sm	$K\alpha_2$		8	50	62	6	39.516	2.50958	6		10.81	11.03	14.53	19.02	27.29	33.11	33.37	34.26	39.10	43.94	45.19	47.18	48.25	52.83	77.11
Te	AL_1		1		52	6	4.939	2.50990	4		10.82	11.03	14.54	19.02	27.29	33.11	33.37	34.27	39.10	43.95	45.19	47.19	48.26	52.84	77.12
Ce	$K\alpha_{1,2}$		7	150	58	6	34.566	2.51035	6		10.82	11.03	14.54	19.03	27.29	33.12	33.38	34.27	39.11	43.95	45.20	47.20	48.27	52.85	77.14
Ge	$K\alpha_{1,2}$		2	150	32	6	9.874	2.51074	6		10.82	11.03	14.54	19.03	27.30	33.12	33.38	34.28	39.12	43.96			48.27	52.86	77.15
Ta	$L8_5$		2	.1	73	6	9.873	2.51100	4		10.82	11.03	14.54	19.03	27.30	33.13	33.38	34.28	39.12	43.97			48.28	52.86	77.16
Te	$L\gamma_4$		1	.1	52	6	4.936	2.51130	4		10.82	11.03	14.54	19.03	27.30	33.13	33.39	34.29	39.13	43.97	45.22	47.21	48.28	52.87	77.17
Ra	$L\beta_{15}$		3	1	88	6	14.806	2.51166	5		10.82	11.04	14.55	19.04	27.31	33.14	33.39	34.29	39.13	43.98	45.23	47.22	48.29	52.88	77.18
Cs	$L\beta_{2,15}$		1	20	55	6	4.935	2.51180	4		10.82	11.04	14.55	19.04	27.31	33.14	33.40	34.29	39.13	43.98	45.23	47.22	48.30	52.88	77.19
Pr	Ln		1	1	59	6	4.935	2.51200	3		10.82	11.04	14.55	19.04	27.31	33.14	33.40	34.30	39.14	43.98	45.23	47.23	48.30	52.89	77.20
Ti	$K\beta_{1,3}$		1	20	22	6	4.931	2.51391	5	4	10.83	11.05	14.56	19.05	27.33	33.17	33.42	34.32	39.17	44.02	45.27	47.27	48.34	52.93	77.27
Pb	L_2-N_5	B	3	.01	82	6	14.789	2.51460	4		10.84	11.05	14.56	19.06	27.34	33.18	33.43	34.33	39.18	44.03	45.28	47.28	48.35	52.95	77.29
Ta	Lu	B	2	.01	73	6	9.855	2.51556	5		10.84	11.05	14.57	19.06	27.35	33.19	33.45	34.35	39.19	44.05			48.37	52.97	77.33
Ge	$K\alpha_2$		2	50	32	6	9.854	2.51602	6		10.84	11.05	14.57	19.07	27.36	33.20	33.45	34.35	39.20	44.06			48.38	52.98	77.34
Ba	$L\beta_3$		1	6	56	6	4.926	2.51640	4		10.84	11.06	14.57	19.07	27.36	33.20	33.46	34.36	39.21	44.07	45.32	47.32	48.39	52.99	77.36
Hg	$L\gamma_4$		3	.1	80	6	14.776	2.51682	5		10.85	11.06	14.58	19.07	27.37	33.21	33.46	34.36	39.22	44.07	45.33	47.33	48.40	53.00	77.37

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Bi	$L\gamma_5$		3	.1	83	6	14.771	2.51769	5		10.85	11.06	14.58	19.08	27.37	33.22	33.48	34.38	39.23	44.09	45.34	47.34	48.42	53.02	77.40
Fr	$L\beta_1$	H	3	50	87	6	14.768	2.51820	5		10.85	11.06	14.58	19.09	27.38	33.23	33.48	34.38	39.24	44.10	45.35	47.35	48.43	53.03	77.42
Re	$L\beta_4$		2	4	75	6	9.845	2.51934	5		10.85	11.07	14.58	19.09	27.38	33.23	33.49	34.38	39.24	44.10			48.43	53.03	77.43
Pb	$L\gamma_1$		3	10	82	6	14.762	2.51919	5		10.86	11.07	14.59	19.09	27.39	33.24	33.50	34.40	39.25	44.12	45.37	47.37	48.45	53.05	77.46
Lu	$L\gamma_5$		2	.1	71	6	9.841	2.51920	4		10.86	11.07	14.59	19.09	27.39	33.24	33.50	34.40	39.25	44.12			48.45	53.05	77.46
Ta	L_3-$O_{2,3}$		8	2	.01	73	6	9.837	2.52020	4		10.86	11.07	14.60	19.10	27.40	33.25	33.51	34.41	39.27	44.14			48.47	53.07	77.49
Hg	$L\gamma_4p$		3	.1	80	6	14.755	2.52039	5		10.86	11.07	14.60	19.10	27.40	33.25	33.51	34.41	39.27	44.14	45.39	47.40	48.47	53.08	77.50
Xe	$K\beta_2$	H	7	6	54	6	34.408	2.52182	5		10.87	11.08	14.60	19.11	27.42	33.27	33.53	34.43	39.30	44.17	45.42	47.42	48.50	53.11	77.55
Ra	$L\beta_4$		3	4	88	6	14.745	2.52213	5		10.87	11.08	14.61	19.12	27.42	33.28	33.54	34.44	39.30	44.17	45.43	47.43	48.51	53.12	77.57
Tb	$K\alpha_{1,2}$		9	150	65	6	44.226	2.52261	6		10.87	11.08	14.61	19.12	27.43	33.29	33.54	34.44	39.31	44.18	45.44	47.44	48.52	53.13	77.58
Cm	$L\alpha_2$		3	10	96	3	14.740	2.52300			10.87	11.09	14.61	19.12	27.43	33.29	33.55	34.45	39.32	44.19	45.44	47.45	48.52	53.14	77.60
Er	$K\alpha_1$		10	100	68	6	49.119	2.52365	6		10.88	11.09	14.62	19.13	27.44	33.30	33.56	34.46	39.33	44.20	45.46	47.46	48.54	53.15	77.62
Tl	$L\gamma_3$		3	2	81	6	14.734	2.52390	5		10.88	11.09	14.62	19.13	27.44	33.30	33.56	34.46	39.33	44.20	45.46	47.47	48.54	53.16	77.63
Xe	$K\alpha_2$	H	6	50	54	6	29.453	2.52522	5		10.88	11.10	14.62	19.14	27.46	33.32	33.58	34.48	39.35	44.23	45.49	47.49	48.57	53.19	77.68
W	$L\beta_3$		2	6	74	6	9.817	2.52538	5		10.88	11.10	14.63	19.14	27.46	33.32	33.58	34.48	39.35	44.23			48.57	53.19	77.68
Ce	$K\beta_1$		8	22	58	6	39.251	2.52653	6		10.89	11.10	14.63	19.15	27.47	33.34	33.60	34.50	39.37	44.25	45.51	47.52	48.60	53.22	77.73
Hg	L_1-O_1	F	3	.01	80	6	14.716	2.52696	5		10.89	11.10	14.63	19.15	27.48	33.34	33.60	34.51	39.38	44.26	45.52	47.53	48.61	53.23	77.74
Pa	M_2-O_4		1	.01	91	6	4.905	2.52700	3		10.89	11.10	14.64	19.15	27.48	33.34	33.60	34.51	39.38	44.26	45.52	47.53	48.61	53.23	77.74
Ta	$L\beta_7$		2	.1	73	6	9.808	2.52770	5		10.89	11.11	14.64	19.16	27.49	33.35	33.61	34.52	39.39	44.27			48.62	53.24	77.77
Mo	$K\beta_1$		4	17	42	6	19.605	2.52915	6		10.90	11.11	14.65	19.17	27.50	33.37	33.63	34.54	39.42	44.30	45.56	47.57	48.65	53.28	77.82
Ra	$L\beta_{1,7}$		8	3	.01	88	6	14.691	2.53140	4		10.91	11.12	14.66	19.19	27.53	33.40	33.66	34.57	39.45	44.34	45.60	47.62	48.70	53.33	77.90
Mo	$K\beta_3$		4	7	42	6	19.587	2.53149	6		10.91	11.12	14.66	19.19	27.53	33.41	33.67	34.57	39.45	44.34	45.60	47.62	48.70	53.33	77.91
Ce	$K\alpha_2$		7	50	58	6	34.273	2.53178	6		10.91	11.12	14.66	19.19	27.53	33.41	33.67	34.57	39.46	44.35	45.61	47.62	48.70	53.34	77.92
Ce	$K\beta_3$		8	10	58	6	39.163	2.53216	6		10.91	11.13	14.67	19.19	27.54	33.41	33.67	34.58	39.46	44.36	45.62	47.63	48.71	53.34	77.93
Tl	$L\gamma_6$		3	.01	81	6	14.684	2.53260	4		10.91	11.13	14.67	19.20	27.54	33.42	33.68	34.59	39.47	44.36	45.63	47.64	48.72	53.35	77.95
Pa	$L\gamma_1$	H	4	10	91	6	19.565	2.53432	5		10.92	11.14	14.68	19.21	27.56	33.44	33.70	34.61	39.50	44.40	45.66	47.67	48.76	53.39	78.01
W	L_3-N_3		8	2	.01	74	6	9.782	2.53440	4		10.92	11.14	14.68	19.21	27.56	33.45	33.71	34.61	39.50	44.40			48.76	53.40	78.01
Yb	$L\gamma_1$		2	5	70	6	9.778	2.53538	5		10.93	11.14	14.68	19.22	27.57	33.46	33.72	34.62	39.52	44.42			48.78	53.42	78.05
Tm	$L\gamma_3$		2	1	69	6	9.778	2.53560	4		10.93	11.14	14.69	19.22	27.57	33.46	33.72	34.63	39.52	44.42			48.78	53.42	78.06
Er	$K\alpha_{1,2}$		10	150	68	6	48.813	2.53947	6		10.94	11.16	14.71	19.25	27.62	33.51	33.77	34.68	39.58	44.49	45.76	47.78	48.86	53.51	78.20
Th	$L\gamma_3$		4	2	90	6	19.503	2.54236	5		10.96	11.17	14.72	19.27	27.65	33.55	33.81	34.72	39.63	44.54	45.81	47.84	48.92	53.58	78.31
Tl	$L\gamma_2$		3	1	81	6	14.623	2.54319	5		10.96	11.17	14.73	19.28	27.66	33.56	33.83	34.73	39.64	44.56	45.83	47.85	48.94	53.60	78.34
Am	$L\alpha_1$		3	100	95	6	14.615	2.54456	6		10.97	11.18	14.74	19.29	27.67	33.58	33.84	34.75	39.67	44.58	45.85	47.88	48.97	53.63	78.39
W	L_2-M_5	B	2	.01	74	6	9.739	2.54560	4		10.97	11.19	14.74	19.29	27.68	33.60	33.86	34.77	39.68	44.60			48.99	53.65	78.42
Gd	$K\beta_1$		10	23	64	6	48.688	2.54600	5		10.97	11.19	14.75	19.30	27.69	33.60	33.86	34.77	39.69	44.61	45.88	47.91	49.00	53.66	78.44
Pm	$K\beta_1$	H	9	22	61	6	43.818	2.54610	5		10.97	11.19	14.75	19.30	27.69	33.60	33.87	34.78	39.69	44.61	45.88	47.91	49.00	53.66	78.44
Tl	L_2-O_2	B	3	.01	81	6	14.601	2.54700	4		10.98	11.19	14.75	19.31	27.70	33.62	33.88	34.79	39.71	44.63	45.90	47.93	49.02	53.68	78.48
Tm	$L\gamma_2$		2	1	69	6	9.728	2.54840	4		10.98	11.20	14.76	19.32	27.72	33.64	33.90	34.81	39.73	44.66			49.04	53.71	78.53
8i	Lt	B	2	.01	83	6	9.724	2.54960	4		10.99	11.20	14.77	19.33	27.73	33.65	33.91	34.82	39.75	44.68			49.07	53.74	78.57
Er	$L\gamma_4$		2	.1	68	6	9.721	2.55040	4		10.99	11.21	14.77	19.33	27.74	33.66	33.92	34.84	39.76	44.69			49.09	53.76	78.60
Tb	$K\alpha_2$		9	50	65	6	43.737	2.55081	6		10.99	11.21	14.77	19.33	27.74	33.67	33.93	34.84	39.77	44.70	45.97	48.00	49.09	53.77	78.62
Pd	$K\beta_2$		5	3	46	6	24.295	2.55114	6		10.99	11.21	14.78	19.34	27.75	33.67	33.93	34.85	39.77	44.71	45.99	48.01	49.10	53.78	78.63
Tl	Lv	B	3	.01	81	6	14.575	2.55144	5		11.00	11.21	14.78	19.34	27.75	33.68	33.94	34.85	39.78	44.71	45.98	48.02	49.11	53.78	78.64
Pm	$K\beta_3$	H	9	10	61	6	43.705	2.55267	5		11.00	11.22	14.78	19.35	27.76	33.69	33.96	34.87	39.80	44.73	46.01	48.04	49.13	53.81	78.68
Au	$L\alpha_1$		2	100	79	6	9.712	2.55280	5		11.00	11.22	14.79	19.35	27.76	33.70	33.96	34.87	39.80	44.74			49.14	53.81	78.69
W	L_3-N_2		8	2	.01	74	6	9.711	2.55300	4		11.00	11.22	14.79	19.35	27.77	33.70	33.96	34.87	39.80	44.74			49.14	53.82	78.70
Gd	$K\beta_3$		10	11	64	6	48.547	2.55340	5		11.00	11.22	14.79	19.35	27.77	33.70	33.97	34.88	39.81	44.75	46.02	48.06	49.15	53.83	78.71
Ra	L_3-N_3	B	3	.01	88	6	14.563	2.55360	4		11.00	11.22	14.79	19.36	27.77	33.71	33.97	34.88	39.81	44.75	46.03	48.06	49.15	53.83	78.72
Tl	$L\gamma_8$		3	.1	81	6	14.561	2.55390	4		11.01	11.22	14.79	19.36	27.78	33.71	33.97	34.89	39.82	44.76	46.03	48.07	49.16	53.84	78.73
I	AL_2	H	1		53	6	4.853	2.55420	4		11.01	11.22	14.79	19.36	27.78	33.71	33.98	34.89	39.82	44.76	46.04	48.07	49.16	53.85	78.74
Ba	$L\beta_4$		1	5	56	6	4.851	2.55530	4		11.01	11.23	14.80	19.37	27.79	33.73	33.99	34.91	39.84	44.78	46.06	48.09	49.19	53.87	78.78
Sn	$K\beta_2$		6	5	50	6	29.104	2.55549	6		11.01	11.23	14.80	19.37	27.79	33.73	33.99	34.91	39.84	44.79	46.06	48.10	49.19	53.88	78.79
Pb	L_2-N_3	B	3	.01	82	6	14.551	2.55576	5		11.01	11.23	14.80	19.37	27.80	33.74	34.00	34.91	39.85	44.79	46.07	49.10	49.20	53.88	78.80
Cm	$L\beta_1$		4	50	96	3	19.399	2.55600			11.01	11.23	14.80	19.37	27.80	33.74	34.00	34.92	39.85	44.80	46.07	48.11	49.20	53.89	78.81
Tl	Ls	B	2	.01	81	6	9.699	2.55614	5		11.02	11.23	14.80	19.38	27.80	33.74	34.00	34.92	39.85	44.80			49.20	53.89	78.81
In	$K\alpha_1$		5	100	49	6	24.206	2.56056	6		11.03	11.25	14.83	19.41	27.85	33.80	34.06	34.98	39.93	44.88	46.16	48.20	49.29	53.99	78.98
La	$K\beta_2$		8	7	57	6	38.723	2.56094	6		11.04	11.25	14.83	19.41	27.85	33.81	34.07	34.98	39.93	44.89	46.17	48.21	49.30	54.00	78.99
Pm	$K\alpha_1$	H	8	100	61	6	38.718	2.56128	6		11.04	11.25	14.83	19.41	27.86	33.81	34.07	34.99	39.94	44.89	46.17	48.21	49.31	54.01	79.00
Ce	$L\alpha_1$		1	100	58	6	4.839	2.56150	4		11.04	11.26	14.84	19.42	27.86	33.81	34.08	34.99	39.94	44.90	46.18	48.22	49.31	54.01	79.01
Rn	$L\beta_3$	H	3	10	86	6	14.509	2.56308	5		11.05	11.26	14.85	19.43	27.88	33.84	34.10	35.02	39.97	44.93	46.21	48.25	49.35	54.05	79.07
Th	Ln		3	1	90	6	14.507	2.56338	5		11.05	11.26	14.85	19.43	27.88	33.84	34.10	35.02	39.97	44.93	46.21	48.26	49.35	54.06	79.08
W	$L\beta_1$		2	50	74	6	9.671	2.56362	6		11.05	11.26	14.85	19.43	27.88	33.84	34.11	35.02	39.98	44.94			49.36	54.06	79.09
Tl	L_1-N_1	B	3	.01	81	6	14.500	2.56470	4		11.05	11.27	14.85	19.44	27.90	33.86	34.12	35.04	39.99	44.96	46.24	48.28	49.39	54.09	79.13
Po	Ll		2	3	84	6	9.662	2.56580	4		11.06	11.27	14.86	19.45	27.91	33.87	34.14	35.05	40.01	44.98			49.40	54.11	79.17
Te	$L\gamma_{2,3}$		1	2	52	6	4.828	2.56740	4		11.06	11.28	14.87	19.46	27.93	33.89	34.16	35.08	40.04	45.01	46.29	48.34	49.43	54.15	79.23

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Zn	$K\beta_2$		2	.3	30	6	9.656	2.56744	5	11.06	11.28	14.87	19.46	27.93	33.89	34.16	35.08	40.04	45.01			49.44	54.15	79.23
In	$K\alpha_{1,2}$		5	150	49	6	24.136	2.56795	6	11.07	11.28	14.87	19.47	27.93	33.90	34.17	35.08	40.05	45.02	46.30	48.35	49.45	54.16	79.25
Ba	$L\beta_1$		1	50	56	6	4.827	2.56821	5	11.07	11.28	14.88	19.47	27.94	33.90	34.17	35.09	40.05	45.02	46.30	48.35	49.45	54.17	79.26
Ta	$L\beta_2$		2	20	73	6	9.650	2.56908	5	11.07	11.29	14.88	19.47	27.94	33.92	34.18	35.10	40.06	45.04			49.47	54.19	79.29
Eu	$K\beta_2$		10	8	63	6	48.248	2.56923	6	11.07	11.29	14.88	19.48	27.95	33.92	34.18	35.10	40.07	45.04	46.32	48.37	49.47	54.19	79.30
Ir	Ln	D	2	1	77	6	9.649	2.56940	4	11.07	11.29	14.88	19.48	27.95	33.92	34.18	35.10	40.07	45.04			49.48	54.19	79.30
Zn	$K\beta_5$	B	2	.04	30	6	9.648	2.56960	4	11.07	11.29	14.88	19.48	27.95	33.92	34.19	35.11	40.07	45.05			49.48	54.20	79.31
Hg	$L\gamma_{11}$	B	3	.01	80	6	14.472	2.56971	5	11.07	11.29	14.88	19.48	27.95	33.93	34.19	35.11	40.07	45.05	46.33	48.38	49.48	54.20	79.31
Ce	$L\alpha_2$		1	10	58	6	4.822	2.57060	4	11.08	11.30	14.89	19.49	27.96	33.94	34.20	35.12	40.09	45.07	46.35	48.40	49.50	54.22	79.35
Er	$K\alpha_2$		10	50	68	6	48.213	2.57110	6	11.08	11.30	14.89	19.49	27.97	33.94	34.21	35.13	40.10	45.08	46.36	48.41	49.51	54.23	79.36
Ru	$K\alpha_1$		4	100	44	6	19.276	2.57233	6	11.09	11.30	14.90	19.50	27.98	33.96	34.23	35.15	40.12	45.10	46.38	48.43	49.54	54.26	79.41
Ta	$L\beta_{15}$		2	1	73	6	9.638	2.57238	5	11.09	11.30	14.90	19.50	27.98	33.96	34.23	35.15	40.12	45.10			49.54	54.26	79.41
Pm	$K\alpha_{1,2}$	H	8	150	61	6	38.532	2.57366	6	11.09	11.31	14.91	19.51	28.00	33.98	34.24	35.16	40.14	45.12	46.41	48.46	49.56	54.29	79.46
Fr	$L\beta_2$		3	20	87	6	14.448	2.57400	3	11.09	11.31	14.91	19.51	28.00	33.98	34.25	35.17	40.14	45.13	46.41	48.47	49.57	54.30	79.47
Nd	$K\beta_2$	H	9	7	60	6	43.327	2.57490	4	11.10	11.31	14.91	19.52	28.01	34.00	34.26	35.18	40.16	45.15	46.43	48.49	49.59	54.32	79.51
Cf	$L\gamma_1$		5	10	98	3	24.070	2.57500		11.10	11.31	14.91	19.52	28.01	34.00	34.26	35.18	40.16	45.15	46.43	48.49	49.59	54.32	79.51
Au	$L\alpha_2$		2	10	79	6	9.626	2.57544	5	11.10	11.32	14.92	19.52	28.02	34.00	34.27	35.19	40.17	45.16			49.60	54.33	79.53
Pb	L_2-N_2	B	3	.01	82	6	14.439	2.57550	4	11.10	11.32	14.92	19.52	28.02	34.00	34.27	35.19	40.17	45.16	46.44	48.50	49.60	54.33	79.53
Ru	$K\alpha_{1,2}$		4	150	44	6	19.233	2.57810	6	11.11	11.33	14.93	19.54	28.04	34.04	34.30	35.23	40.21	45.20	46.49	48.55	49.65	54.39	79.62
W	$L\beta_6$		2	.1	74	6	9.610	2.57978	5	11.12	11.34	14.94	19.56	28.06	34.06	34.33	35.25	40.24	45.24			49.69	54.43	79.69
Hf	$L\beta_9$		8	2	.01	72	6	9.607	2.58050	5	11.12	11.34	14.95	19.56	28.07	34.07	34.34	35.26	40.25	45.25			49.70	54.45	79.71
Am	$L\alpha_2$			3	10	95	6	14.409	2.58080	6	11.12	11.34	14.95	19.56	28.07	34.08	34.34	35.27	40.25	45.25	46.54	48.60	49.71	54.45	79.72
Tm	$L\gamma_6$			2	.01	69	6	9.606	2.58100	4	11.12	11.34	14.95	19.57	28.08	34.08	34.34	35.27	40.26	45.26			49.71	54.46	79.73
Xe	$K\beta_1$	H	7	20	54	6	33.619	2.58104	5	11.12	11.34	14.95	19.57	28.08	34.08	34.34	35.27	40.26	45.26	46.55	48.61	49.72	54.46	79.73
I	$L\gamma_1$			1	8	53	6	4.800	2.58244	5	11.13	11.35	14.96	19.58	28.09	34.10	34.36	35.29	40.28	45.28	46.58	48.64	49.74	54.49	79.78
In	$K\alpha_2$			5	50	49	6	23.998	2.58272	6	11.13	11.35	14.96	19.58	28.10	34.10	34.37	35.29	40.29	45.29	46.58	48.64	49.75	54.50	79.79
Re	$L\beta_{17}$	B	2	.01	75	6	9.589	2.58540	4	11.14	11.36	14.98	19.60	28.13	34.14	34.40	35.33	40.33	45.34			49.80	54.56	79.89
Ra	L_3-N_2	B	3	.01	88	6	14.384	2.58540	4	11.14	11.36	14.98	19.60	28.13	34.14	34.40	35.33	40.33	45.34	46.63	48.70	49.80	54.56	79.89
Xe	$K\beta_3$	H	7	9	54	6	33.556	2.58587	5	11.14	11.36	14.98	19.60	28.13	34.15	34.41	35.34	40.34	45.35	46.64	48.71	49.81	54.57	79.91
Os	L_2-M_2	B	2	.01	76	6	9.584	2.58680	4	11.15	11.37	14.98	19.61	28.14	34.16	34.42	35.35	40.35	45.37			49.83	54.59	79.95
Ru	$K\alpha_2$			4	50	44	6	19.147	2.58963	6	11.16	11.38	15.00	19.63	28.17	34.20	34.46	35.39	40.40	45.42	46.71	48.78	49.89	54.65	80.05
Zn	$K\beta_{1,3}$			2	20	30	6	9.570	2.59050	5	11.16	11.38	15.01	19.64	28.18	34.21	34.47	35.40	40.41	45.43			49.91	54.67	80.08
Au	L_1-$O_{4,5}$	B	3	.01	79	6	14.347	2.59200	5	11.17	11.39	15.01	19.65	28.20	34.23	34.49	35.42	40.44	45.46	46.76	48.83	49.94	54.71	80.14
Xe	AL_3			1		54	6	4.781	2.59260	4	11.17	11.39	15.02	19.65	28.21	34.24	34.50	35.43	40.45	45.47	46.77	48.84	49.95	54.72	80.16
Cs	$L\beta_6$			1	.1	55	6	4.780	2.59320	4	11.18	11.40	15.02	19.66	28.21	34.24	34.51	35.44	40.46	45.48	46.78	48.85	49.97	54.74	80.18
La	$K\alpha_1$			7	100	57	6	33.436	2.59516	6	11.18	11.40	15.03	19.67	28.23	34.27	34.54	35.47	40.49	45.52	46.82	48.89	50.01	54.78	80.26
Gd	$K\alpha_1$			9	100	64	6	42.989	2.59518	6	11.18	11.40	15.03	19.67	28.23	34.27	34.54	35.47	40.49	45.52	46.82	48.89	50.01	54.78	80.26
Hf	$L\beta_5$			2	.1	72	6	9.553	2.59522	5	11.18	11.40	15.03	19.67	28.24	34.27	34.54	35.47	40.49	45.52			50.01	54.78	80.26
Hf	$L\beta_{10}$	F	2	.01	72	6	9.553	2.59528	5	11.18	11.40	15.03	19.68	28.24	34.27	34.54	35.47	40.49	45.52			50.01	54.78	80.26
Am	$L\beta_3$			4	6	95	6	19.103	2.59564	5	11.19	11.41	15.03	19.68	28.24	34.28	34.54	35.47	40.50	45.53	46.83	48.90	50.02	54.79	80.27
Rn	$L\beta_1$	H	3	50	86	6	14.313	2.59815	5	11.20	11.42	15.05	19.70	28.27	34.31	34.58	35.51	40.54	45.58	46.88	48.95	50.07	54.85	80.37
Hf	Lu	F	2	.01	72	6	9.542	2.59818	5	11.20	11.42	15.05	19.70	28.27	34.31	34.58	35.51	40.54	45.58			50.07	54.85	80.37
Kr	$K\beta_2$			3	3	36	6	14.312	2.59830	4	11.20	11.42	15.05	19.70	28.27	34.31	34.58	35.51	40.54	45.58	46.88	48.96	50.07	54.85	80.37
Pm	$K\alpha_2$	H	8	50	61	6	38.165	2.59842	6	11.20	11.42	15.05	19.70	28.27	34.32	34.58	35.51	40.54	45.58	46.88	48.96	50.07	54.86	80.38
Pb	$L\gamma_5$			3	.1	82	6	14.305	2.59965	5	11.20	11.42	15.06	19.71	28.28	34.33	34.60	35.53	40.56	45.60	46.90	48.98	50.10	54.88	80.42
I	$K\alpha_1$			6	100	53	6	28.607	2.59991	6	11.20	11.42	15.06	19.71	28.29	34.34	34.60	35.53	40.57	45.61	46.91	48.99	50.10	54.89	80.43
Au	$L\gamma_4$			3	.1	79	6	14.297	2.60109	5	11.21	11.43	15.07	19.72	28.30	34.35	34.62	35.55	40.58	45.63	46.93	49.01	50.13	54.92	80.48
Tl	$L\gamma_1$			3	10	81	6	14.289	2.60256	5	11.22	11.44	15.08	19.73	28.32	34.37	34.64	35.57	40.61	45.66	46.96	49.04	50.16	54.95	80.53
Pd	$K\beta_1$			5	18	46	6	23.815	2.60260	6	11.22	11.44	15.08	19.73	28.32	34.37	34.64	35.57	40.61	45.66	46.96	49.04	50.16	54.95	80.53
W	$L\beta_4$			2	4	74	6	9.524	2.60324	5	11.22	11.44	15.08	19.74	28.32	34.38	34.65	35.58	40.62	45.67			50.17	54.97	80.56
Au	$L\gamma_4p$			3	.1	79	6	14.278	2.60448	5	11.22	11.44	15.09	19.75	28.34	34.40	34.67	35.60	40.64	45.69	47.00	49.08	50.20	54.99	80.60
Pu	$L\alpha_1$			3	100	94	6	14.276	2.60490	5	11.23	11.45	15.09	19.75	28.34	34.40	34.67	35.61	40.65	45.70	47.01	49.09	50.21	55.00	80.62
Pd	$K\beta_3$			5	8	46	6	23.787	2.60561	6	11.23	11.45	15.09	19.75	28.35	34.41	34.68	35.62	40.66	45.71	47.02	49.10	50.22	55.02	80.65
La	$K\alpha_{1,2}$			7	150	57	6	33.299	2.60583	6	11.23	11.45	15.09	19.76	28.35	34.42	34.68	35.62	40.66	45.72	47.02	49.11	50.23	55.03	80.65
Hg	$L\gamma_3$			3	2	80	6	14.262	2.60745	5	11.24	11.46	15.10	19.77	28.37	34.44	34.71	35.64	40.69	45.75	47.05	49.14	50.26	55.06	80.72
Ho	$K\alpha_1$		10	100	67	6	47.539	2.60756	6	11.24	11.46	15.10	19.77	28.37	34.44	34.71	35.64	40.69	45.75	47.06	49.14	50.26	55.06	80.72
I	$K\alpha_{1,2}$		6	150	53	6	28.508	2.60892	6	11.24	11.46	15.11	19.78	28.39	34.46	34.73	35.66	40.71	45.78	47.08	49.17	50.29	55.10	80.77
Gd	$K\alpha_{1,2}$		9	150	64	6	42.757	2.60923	6	11.24	11.47	15.11	19.78	28.39	34.46	34.73	35.67	40.72	45.78	47.09	49.18	50.30	55.10	80.78
Au	L_1-O_1	F	3	.01	79	6	14.243	2.61102	5	11.25	11.47	15.12	19.80	28.41	34.49	34.76	35.69	40.75	45.81	47.12	49.21	50.33	55.14	80.85
Hf	$L\beta_7$			2	.1	72	6	9.494	2.61128	5	11.25	11.47	15.13	19.80	28.41	34.49	34.76	35.70	40.75	45.82			50.34	55.15	80.86
Sn	$K\beta_1$			6	19	50	6	28.481	2.61142	6	11.25	11.48	15.13	19.80	28.41	34.49	34.76	35.70	40.75	45.82	47.13	49.22	50.34	55.15	80.86
Cf	$L\beta_2$			4	20	98	3	18.983	2.61200		11.26	11.48	15.13	19.80	28.42	34.50	34.77	35.71	40.76	45.83	47.14	49.23	50.35	55.17	80.89
Kr	$K\beta_5$		8	3	.06	36	6	14.235	2.61240	4	11.26	11.48	15.13	19.81	28.43	34.51	34.78	35.71	40.77	45.84	47.15	49.24	50.36	55.18	80.90
Th	$L\gamma_1$			4	10	90	6	18.979	2.61252	5	11.26	11.48	15.13	19.81	28.43	34.51	34.78	35.71	40.77	45.84	47.15	49.24	50.36	55.18	80.90
Yb	$L\gamma_5$			2	.1	70	6	9.489	2.61260	4	11.26	11.48	15.13	19.81	28.43	34.51	34.78	35.71	40.77	45.84			50.37	55.18	80.91

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Ra	$L\beta_6$		3	.1	88	6	14.234	2.61264	5	11.26	11.48	15.13	19.81	28.43	34.51	34.78	35.71	40.77	45.84	47.15	49.24	50.37	55.18	80.91
Ta	$L\beta_3$		2	6	73	6	9.486	2.61356	5	11.26	11.48	15.14	19.81	28.44	34.52	34.79	35.73	40.79	45.86			50.39	55.20	80.94
Sn	$K\beta_3$		6	9	50	6	28.439	2.61526	6	11.27	11.49	15.15	19.83	28.46	34.55	34.81	35.75	40.82	45.89	47.20	49.30	50.42	55.24	81.01
Pb	Lt	B	2	.01	82	6	9.479	2.61534	5	11.27	11.49	15.15	19.83	28.46	34.55	34.82	35.75	40.82	45.89			50.42	55.24	81.01
Nb	$K\beta_2$		4	4	41	6	18.949	2.61664	5	11.28	11.50	15.16	19.84	28.47	34.56	34.83	35.77	40.84	45.92	47.23	49.32	50.45	55.27	81.06
Ta	L_3-N_3	B	2	.01	73	6	9.473	2.61720	4	11.28	11.50	15.16	19.84	28.48	34.57	34.84	35.78	40.85	45.93			50.46	55.29	81.08
Th	M_2-O_4		1	1	90	6	4.735	2.61800	3	11.28	11.50	15.17	19.85	28.49	34.58	34.85	35.79	40.86	45.94	47.26	49.35	50.48	55.30	81.11
Hg	$L\gamma_6$		3	.01	80	6	14.196	2.61957	5	11.29	11.51	15.17	19.86	28.51	34.60	34.87	35.81	40.89	45.97	47.29	49.38	50.51	55.34	81.17
Ce	Ln		1	1	58	6	4.731	2.62030	4	11.29	11.51	15.18	19.87	28.51	34.61	34.88	35.82	40.90	45.99	47.30	49.40	50.52	55.36	81.20
Ho	$K\alpha_{1,2}$		10	150	67	6	47.253	2.62333	6	11.31	11.53	15.20	19.89	28.55	34.66	34.93	35.87	40.95	46.04	47.36	49.46	50.59	55.43	81.31
La	$K\beta_1$		8	21	57	6	37.795	2.62386	6	11.31	11.53	15.20	19.89	28.55	34.66	34.93	35.87	40.96	46.05	47.37	49.47	50.60	55.44	81.33
Sr	$K\alpha_1$		3	100	38	6	14.163	2.62578	5	11.32	11.54	15.21	19.91	28.57	34.69	34.96	35.90	40.99	46.09	47.40	49.51	50.64	55.48	81.40
Pt	$L\alpha_1$		2	100	78	6	9.441	2.62608	5	11.32	11.54	15.21	19.91	28.58	34.69	34.96	35.90	40.99	46.09			50.64	55.49	81.41
Hg	$L\gamma_2$		3	1	80	6	14.160	2.62632	5	11.32	11.54	15.21	19.91	28.58	34.70	34.97	35.91	41.00	46.10	47.42	49.52	50.65	55.50	81.42
I	$K\beta_2$	H	7	6	53	6	33.036	2.62661	5	11.32	11.54	15.22	19.91	28.58	34.70	34.97	35.91	41.00	46.10	47.42	49.52	50.65	55.50	81.43
I	$K\alpha_2$		6	50	53	6	28.312	2.62697	6	11.32	11.54	15.22	19.92	28.59	34.70	34.98	35.92	41.01	46.11	47.43	49.53	50.66	55.51	81.45
La	$K\alpha_2$		7	50	57	6	33.028	2.62719	6	11.32	11.54	15.22	19.92	28.59	34.71	34.98	35.92	41.01	46.11	47.43	49.54	50.67	55.52	81.45
Hg	L_2-O_3	B	3	.01	80	6	14.154	2.62740	4	11.32	11.55	15.22	19.92	28.59	34.71	34.98	35.92	41.01	46.12	47.44	49.54	50.67	55.52	81.46
Hg	Ls	F	2	.01	80	6	9.435	2.62762	5	11.32	11.55	15.22	19.92	28.60	34.71	34.98	35.93	41.02	46.12			50.68	55.53	81.47
Cs	$L\beta_3$		1	6	55	6	4.716	2.62850	4	11.33	11.55	15.23	19.93	28.60	34.73	35.00	35.94	41.03	46.14	47.46	49.56	50.69	55.55	81.50
Er	$L\gamma_3$		2	1	68	6	9.429	2.62920	4	11.33	11.55	15.23	19.93	28.61	34.74	35.01	35.95	41.04	46.15			50.71	55.56	81.53
La	$K\beta_3$		8	9	57	6	37.714	2.62949	6	11.33	11.56	15.23	19.94	28.62	34.74	35.01	35.95	41.05	46.16	47.48	49.58	50.71	55.57	81.54
Sr	$K\alpha_{1,2}$		3	150	38	6	14.140	2.62995	5	11.33	11.56	15.23	19.94	28.62	34.75	35.02	35.96	41.06	46.17	47.48	49.59	50.72	55.58	81.56
Tm	$L\gamma_1$		2	5	69	6	9.424	2.63060	4	11.34	11.56	15.24	19.95	28.63	34.75	35.03	35.97	41.07	46.18			50.74	55.59	81.58
Am	$L\beta_1$		4	50	95	6	18.849	2.63062	6	11.34	11.56	15.24	19.95	28.63	34.75	35.03	35.97	41.07	46.18	47.50	49.61	50.74	55.59	81.58
Bi	Ll		2	3	83	6	9.419	2.63220	5	11.34	11.57	15.25	19.96	28.65	34.78	35.05	35.99	41.09	46.21			50.77	55.63	81.64
Ta	L_3-N_2	B	2	.01	73	6	9.414	2.63340	4	11.35	11.57	15.25	19.97	28.66	34.79	35.06	36.01	41.11	46.23			50.79	55.66	81.69
Hg	L_2-O_2	B	3	.01	80	6	14.112	2.63520	4	11.36	11.58	15.27	19.98	28.68	34.82	35.09	36.03	41.14	46.26	47.59	49.70	50.83	55.70	81.76
Kr	$K\beta_1$		3	16	36	6	14.110	2.63550	4	11.36	11.58	15.27	19.98	28.68	34.82	35.09	36.04	41.15	46.27	47.59	49.70	50.84	55.71	81.77
Eu	$K\beta_1$		10	23	63	6	47.030	2.63577	6	11.36	11.58	15.27	19.99	28.69	34.82	35.10	36.04	41.15	46.27	47.60	49.71	50.84	55.71	81.78
Hg	Lv	B	3	.01	80	6	14.105	2.63655	5	11.36	11.59	15.27	19.99	28.69	34.84	35.11	36.05	41.16	46.29	47.61	49.73	50.86	55.73	81.81
Kr	$K\beta_3$		3	8	36	6	14.102	2.63700	4	11.37	11.59	15.28	19.99	28.70	34.84	35.11	36.06	41.17	46.30	47.62	49.73	50.87	55.74	81.82
Gd	$K\alpha_2$		9	50	64	6	42.302	2.63734	6	11.37	11.59	15.28	20.00	28.70	34.85	35.12	36.06	41.18	46.30	47.63	49.74	50.88	55.75	81.84
Ta	L_2-M_5	B	2	.01	73	6	9.398	2.63794	5	11.37	11.59	15.28	20.00	28.71	34.85	35.13	36.07	41.19	46.31			50.89	55.76	81.86
Sr	$K\alpha_2$		3	50	38	6	14.095	2.63829	5	11.37	11.59	15.28	20.00	28.71	34.86	35.13	36.08	41.19	46.32	47.64	49.76	50.90	55.77	81.87
Sb	AL_1		1		51	6	4.698	2.63880	4	11.37	11.60	15.29	20.01	28.72	34.87	35.14	36.08	41.20	46.33	47.65	49.77	50.91	55.78	81.89
Nd	$K\beta_1$		9	22	60	6	42.264	2.63969	6	11.38	11.60	15.29	20.02	28.73	34.88	35.15	36.10	41.21	46.35	47.67	49.79	50.92	55.80	81.92
Sb	$L\gamma_4$		1	.1	51	6	4.696	2.63980	4	11.38	11.60	15.29	20.02	28.73	34.88	35.15	36.10	41.22	46.35	47.67	49.79	50.93	55.80	81.93
Hg	$L\gamma_8$		3	.1	80	6	14.087	2.63985	5	11.38	11.60	15.29	20.02	28.73	34.88	35.15	36.10	41.22	46.35	47.67	49.79	50.93	55.81	81.93
Tl	L_2-N_3	B	3	.01	81	6	14.087	2.63988	5	11.38	11.60	15.29	20.02	28.73	34.88	35.15	36.10	41.22	46.35	47.68	49.79	50.93	55.81	81.93
Pu	$L\alpha_2$		3	10	94	6	14.082	2.64084	5	11.38	11.61	15.30	20.02	28.74	34.89	35.17	36.11	41.23	46.37	47.69	49.81	50.95	55.83	81.97
Ho	$L_1-O_{4,5}$	B	2	.01	67	6	9.385	2.64160	4	11.38	11.61	15.30	20.03	28.75	34.90	35.18	36.12	41.25	46.38			50.96	55.85	82.00
Er	$L\gamma_2$		2	1	68	6	9.384	2.64200	4	11.39	11.61	15.31	20.03	28.75	34.91	35.18	36.13	41.25	46.39			50.97	55.86	82.01
Eu	$K\beta_3$		10	11	63	6	46.896	2.64332	6	11.39	11.62	15.31	20.04	28.77	34.93	35.20	36.15	41.27	46.41	47.74	49.86	51.00	55.89	82.06
At	$L\beta_3$	H	3	10	85	6	14.065	2.64405	5	11.40	11.62	15.32	20.05	28.78	34.94	35.21	36.16	41.29	46.43	47.76	49.88	51.01	55.90	82.09
Ho	$L\gamma_4$		2	.1	67	6	9.373	2.64500	4	11.40	11.62	15.32	20.06	28.79	34.95	35.22	36.17	41.30	46.45			51.03	55.92	82.13
Nd	$K\beta_3$		9	10	60	6	42.159	2.64624	6	11.41	11.63	15.33	20.07	28.80	34.97	35.24	36.19	41.32	46.47	47.80	49.92	51.06	55.95	82.17
Hg	L_1-N_1	B	3	.01	80	6	14.043	2.64810	4	11.41	11.64	15.34	20.08	28.82	34.99	35.27	36.22	41.35	46.50	47.83	49.96	51.10	56.00	82.24
Pt	$L\alpha_2$		2	10	78	6	9.360	2.64864	5	11.42	11.64	15.34	20.08	28.83	35.00	35.27	36.22	41.36	46.51			51.11	56.01	82.26
Bk	$L\gamma_1$		5	10	97	3	23.389	2.65000		11.42	11.65	15.35	20.09	28.84	35.02	35.29	36.24	41.38	46.54	47.87	50.00	51.14	56.04	82.31
Hf	$L\beta_2$		2	20	72	6	9.346	2.65278	5	11.43	11.66	15.37	20.12	28.87	35.06	35.33	36.28	41.43	46.59			51.20	56.10	82.42
Au	$L\gamma_{11}$	B	3	.01	79	6	14.017	2.65299	5	11.43	11.66	15.37	20.12	28.88	35.06	35.33	36.29	41.43	46.59	47.93	50.06	51.20	56.11	82.43
Ta	$L\beta_1$		2	50	73	6	9.342	2.65396	5	11.44	11.66	15.37	20.12	28.89	35.07	35.35	36.30	41.45	46.61			51.22	56.13	82.46
Nd	$K\alpha_1$		8	100	60	6	37.355	2.65477	6	11.44	11.67	15.38	20.13	28.90	35.08	35.36	36.31	41.46	46.63	47.96	50.09	51.24	56.15	82.49
Ho	$K\alpha_2$		10	50	67	6	46.692	2.65486	6	11.44	11.67	15.38	20.13	28.90	35.09	35.36	36.31	41.46	46.63	47.96	50.09	51.24	56.15	82.50
Hf	$L\beta_{1,5}$		2	1	72	6	9.336	2.65566	5	11.45	11.67	15.38	20.14	28.91	35.10	35.37	36.32	41.48	46.64			51.25	56.17	82.53
Os	Ln		2	1	76	6	9.335	2.65570	5	11.45	11.67	15.38	20.14	28.91	35.10	35.37	36.32	41.48	46.64			51.26	56.17	82.53
Au	L_1-N_4	B	3	.01	79	6	13.997	2.65689	5	11.45	11.68	15.39	20.15	28.92	35.11	35.39	36.34	41.50	46.67	48.00	50.13	51.28	56.20	82.57
I	$L\gamma_5$		1	.1	53	6	4.665	2.65710	5	11.45	11.68	15.39	20.15	28.92	35.12	35.39	36.34	41.50	46.67	48.01	50.14	51.28	56.20	82.58
Tl	L_2-N_2	F	3	.01	81	6	13.974	2.66118	5	11.47	11.69	15.42	20.18	28.97	35.17	35.45	36.40	41.57	46.75	48.08	50.22	51.37	56.30	82.74
Ta	$L\beta_6$		2	.1	73	6	9.314	2.66188	5	11.47	11.70	15.42	20.19	28.98	35.18	35.46	36.41	41.58	46.76			51.38	56.31	82.76
Sm	$K\beta_2$	H	10	8	62	6	46.566	2.66200	4	11.47	11.70	15.42	20.19	28.98	35.18	35.46	36.41	41.58	46.76	48.10	50.24	51.39	56.32	82.77
Ba	$K\beta_2$		8	7	56	6	37.251	2.66216	5	11.47	11.70	15.42	20.19	28.98	35.18	35.46	36.42	41.58	46.76	48.10	50.24	51.39	56.32	82.77
Nb	$K\beta_3$		4	7	41	6	18.603	2.66536	5	11.49	11.71	15.44	20.21	29.01	35.23	35.50	36.46	41.63	46.82	48.16	50.31	51.46	56.39	82.90
La	$L\alpha_1$		1	100	57	6	4.650	2.66570	5	11.49	11.71	15.44	20.21	29.02	35.23	35.51	36.47	41.64	46.83	48.17	50.31	51.46	56.40	82.91

El	Line	C	N	I	Z	R	KeV	Lambda P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Cs	$L\beta_4$		1	5	55	6	4.649	2.66660 4	11.49	11.72	15.45	20.22	29.03	35.25	35.52	36.48	41.65	46.85	48.19	50.33	51.48	56.42	82.94
Nd	$K\alpha_{1,2}$		8	150	60	6	37.182	2.66710 6	11.50	11.72	15.45	20.23	29.03	35.25	35.53	36.49	41.66	46.86	48.20	50.34	51.49	56.43	82.96
Np	$L\alpha_1$		3	100	93	6	13.942	2.66738 6	11.50	11.72	15.45	20.23	29.04	35.26	35.53	36.49	41.67	46.86	48.20	50.35	51.50	56.44	82.97
In	$K\beta_2$		6	5	49	6	27.856	2.67000 5	11.51	11.73	15.47	20.25	29.07	35.29	35.57	36.53	41.71	46.91	48.25	50.40	51.55	56.50	83.07
Pr	$K\beta_2$		9	65	59	6	41.767	2.67111 5	11.51	11.74	15.47	20.26	29.08	35.31	35.58	36.54	41.73	46.93	48.27	50.42	51.57	56.53	83.11
Lu	$L\beta_9$	B	2	.01	71	6	9.280	2.67160 4	11.51	11.74	15.48	20.26	29.08	35.31	35.59	36.55	41.74	46.94			51.59	56.54	83.13
W	L_1-M_1	B	2	.01	74	6	9.275	2.67300 4	11.52	11.75	15.49	20.27	29.10	35.33	35.61	36.57	41.76	46.97			51.61	56.57	83.19
Re	L_2-M_2	8	2	.01	75	6	9.274	2.67320 4	11.52	11.75	15.49	20.27	29.10	35.34	35.61	36.57	41.76	46.97			51.62	56.57	83.19
Pu	$L\beta_3$		4	6	94	6	18.537	2.67484 5	11.53	11.75	15.50	20.28	29.12	35.36	35.63	36.59	41.79	47.00	48.35	50.50	51.65	56.61	83.26
Cd	$K\alpha_1$		5	100	48	6	23.170	2.67505 6	11.53	11.76	15.50	20.29	29.12	35.36	35.64	36.60	41.79	47.00	48.35	50.50	51.66	56.62	83.26
Rh	$K\beta_2$		5	4	45	6	23.169	2.67515 5	11.53	11.76	15.50	20.29	29.12	35.36	35.64	36.60	41.79	47.01	48.35	50.50	51.66	56.62	83.27
La	$L\alpha_2$		1	10	57	6	4.633	2.67533 5	11.53	11.76	15.50	20.29	29.13	35.36	35.64	36.60	41.80	47.01	48.36	50.51	51.66	56.62	83.27
Nd	Ll		1	2	60	6	4.632	2.67600 4	11.53	11.76	15.50	20.29	29.13	35.37	35.65	36.61	41.81	47.02	48.37	50.52	51.68	56.64	83.30
Bk	$L\beta_2$		4	20	97	3	18.529	2.67600	11.53	11.76	15.50	20.29	29.13	35.37	35.65	36.61	41.81	47.02	48.37	50.52	51.68	56.64	83.30
W	$L\beta_{17}$	8	2	.01	74	6	9.260	2.67740 4	11.54	11.77	15.51	20.30	29.15	35.39	35.67	36.63	41.83	47.05			51.71	56.67	83.35
Er	$L\gamma_6$		2	.01	68	6	9.253	2.67940 4	11.55	11.78	15.52	20.32	29.17	35.42	35.70	36.66	41.86	47.09			51.75	56.72	83.43
Ga	$K\alpha_1$		2	100	31	6	9.250	2.68016 6	11.55	11.78	15.53	20.33	29.18	35.43	35.71	36.67	41.88	47.10			51.76	56.73	83.46
Pt	L_1-$O_{4,5}$	B	3	.01	78	6	13.875	2.68020 4	11.55	11.78	15.53	20.33	29.18	35.43	35.71	36.67	41.88	47.10	48.45	50.61	51.76	56.74	83.46
At	$L\beta_1$	H	3	50	85	6	13.874	2.68047 5	11.55	11.78	15.53	20.33	29.18	35.43	35.71	36.67	41.88	47.11	48.45	50.61	51.77	56.74	83.47
Cd	$K\alpha_{1,2}$		5	150	48	6	23.106	2.68240 6	11.56	11.79	15.54	20.34	29.20	35.46	35.74	36.70	41.91	47.14	48.49	50.65	51.81	56.79	83.54
Ga	$K\alpha_{1,2}$		2	150	31	6	9.241	2.68277 5	11.56	11.79	15.54	20.35	29.21	35.47	35.74	36.71	41.92	47.15			51.82	56.79	83.56
Tl	Lt	B	2	.01	81	6	9.240	2.68308 5	11.56	11.79	15.54	20.35	29.21	35.47	35.75	36.71	41.92	47.15			51.82	56.80	83.57
Lu	$L\beta_5$		2	.1	71	6	9.238	2.68366 5	11.57	11.79	15.55	20.35	29.22	35.48	35.76	36.72	41.93	47.16			51.84	56.82	83.59
Cs	$L\beta_1$		1	50	55	6	4.619	2.68370 4	11.57	11.79	15.55	20.35	29.22	35.48	35.76	36.72	41.93	47.17	48.52	50.68	51.84	56.82	83.59
Tl	$L\gamma_5$		3	.1	81	6	13.850	2.68500 5	11.57	11.80	15.56	20.36	29.23	35.50	35.77	36.74	41.95	47.19	48.54	50.70	51.86	56.85	83.64
Lu	$L\beta_{10}$	8	2	.01	71	6	9.230	2.68600 4	11.58	11.80	15.56	20.37	29.24	35.51	35.79	36.75	41.97	47.21			51.88	56.87	83.68
Eu	$K\alpha_1$		9	100	63	6	41.535	2.68601 6	11.58	11.80	15.56	20.37	29.24	35.51	35.79	36.75	41.97	47.21	48.56	50.72	51.88	56.87	83.68
I	$K\beta_1$		7	20	53	6	32.289	2.68733 6	11.58	11.81	15.57	20.38	29.26	35.53	35.81	36.77	41.99	47.23	48.59	50.75	51.91	56.90	83.73
Te	AL_2		1		52	6	4.612	2.68790 4	11.59	11.81	15.57	20.38	29.27	35.54	35.81	36.78	42.00	47.24	48.60	50.76	51.92	56.91	83.75
Ga	$K\alpha_2$		2	50	31	6	9.223	2.68798 5	11.59	11.81	15.57	20.39	29.27	35.54	35.81	36.78	42.00	47.25			51.92	56.92	83.76
Hg	$L\gamma_1$		3	10	80	6	13.828	2.68938 5	11.59	11.82	15.58	20.40	29.28	35.56	35.83	36.80	42.03	47.27	48.63	50.79	51.95	56.95	83.81
Pt	$L\gamma_4$		3	.1	78	6	13.826	2.68977 5	11.59	11.82	15.58	20.40	29.29	35.56	35.84	36.81	42.03	47.28	48.63	50.80	51.96	56.96	83.83
Lu	L_3-$O_{2,3}$	B	2	.01	71	6	9.215	2.69048 5	11.60	11.82	15.59	20.40	29.29	35.57	35.85	36.82	42.04	47.29			51.98	56.97	83.85
Ta	$L\beta_4$		2	4	73	6	9.211	2.69162 5	11.60	11.83	15.59	20.41	29.31	35.59	35.86	36.83	42.06	47.31			52.00	57.00	83.90
Nd	$K\alpha_2$		8	50	60	6	36.841	2.69178 6	11.60	11.83	15.60	20.41	29.31	35.59	35.87	36.83	42.07	47.32	48.67	50.84	52.00	57.00	83.90
I	$K\beta_3$		7	9	53	6	32.234	2.69195 6	11.60	11.83	15.60	20.42	29.31	35.59	35.87	36.84	42.07	47.32	48.69	50.84	52.01	57.01	83.91
Pt	$L\gamma_4p$		3	.1	78	6	13.812	2.69241 5	11.60	11.83	15.60	20.42	29.32	35.60	35.88	36.84	42.08	47.33	48.68	50.85	52.02	57.02	83.93
Au	$L\gamma_3$		3	2	79	6	13.807	2.69349 5	11.61	11.84	15.61	20.43	29.33	35.61	35.89	36.86	42.09	47.35	48.71	50.87	52.04	57.04	83.97
Bi	$L\beta_9$	B	3	.01	83	6	13.805	2.69373 5	11.61	11.84	15.61	20.43	29.33	35.62	35.89	36.86	42.10	47.35	48.71	50.88	52.04	57.05	83.98
Ac	$L\gamma_1$	H	4	10	89	6	18.405	2.69404 5	11.61	11.84	15.61	20.43	29.33	35.62	35.90	36.87	42.10	47.36	48.72	50.89	52.05	57.06	83.99
Sb	$L\gamma_{2,3}$		1	2	51	6	4.599	2.69530 4	11.62	11.85	15.62	20.44	29.35	35.64	35.92	36.88	42.12	47.38	48.74	50.91	52.08	57.08	84.04
Dy	$K\alpha_1$		10	100	66	6	45.991	2.69533 6	11.62	11.85	15.62	20.44	29.35	35.64	35.92	36.89	42.12	47.38	48.74	50.91	52.08	57.09	84.04
Ba	$K\alpha_1$		7	100	56	6	32.188	2.69578 6	11.62	11.85	15.62	20.44	29.35	35.64	35.92	36.89	42.13	47.39	48.75	50.92	52.09	57.10	84.06
Cd	$K\alpha_2$		5	50	48	6	22.980	2.69711 6	11.62	11.85	15.63	20.46	29.37	35.66	35.94	36.91	42.15	47.42	48.78	50.95	52.11	57.13	84.11
Pt	L_1-O_1	B	3	.01	78	6	13.781	2.69850 4	11.63	11.86	15.63	20.47	29.38	35.68	35.96	36.93	42.18	47.44	48.80	50.98	52.14	57.16	84.16
Po	$L\beta_5$		3	1	84	6	13.779	2.69880 4	11.63	11.86	15.64	20.47	29.39	35.69	35.96	36.93	42.18	47.45	48.81	50.98	52.15	57.17	84.17
Lu	$L\beta_7$		2	.1	71	6	9.186	2.69898 5	11.63	11.86	15.64	20.47	29.39	35.69	35.97	36.94	42.18	47.45			52.15	57.17	84.18
Pb	Ll		2	3	82	6	9.183	2.69980 5	11.64	11.87	15.64	20.48	29.40	35.70	35.98	36.95	42.20	47.47			52.17	57.19	84.21
Eu	$K\alpha_{1,2}$		9	150	63	6	41.320	2.70003 6	11.64	11.87	15.64	20.48	29.40	35.70	35.98	36.95	42.20	47.47	48.83	51.01	52.18	57.19	84.22
Tc	$K\alpha_1$	H	4	100	43	6	18.364	2.70008 5	11.64	11.87	15.64	20.48	29.40	35.70	35.98	36.95	42.20	47.47	48.83	51.01	52.18	57.19	84.22
Hf	L_3-N_3	B	2	.01	72	6	9.179	2.70106 5	11.64	11.87	15.65	20.49	29.41	35.72	35.99	36.97	42.22	47.49			52.20	57.22	84.26
Ra	$L\gamma_3$		4	2	88	6	18.354	2.70152 5	11.64	11.87	15.65	20.49	29.42	35.72	36.00	36.97	42.23	47.50	48.86	51.04	52.21	57.23	84.28
Ir	$L\alpha_1$		2	100	77	6	9.174	2.70256 5	11.65	11.88	15.66	20.50	29.43	35.74	36.02	36.99	42.24	47.52			52.23	57.25	84.32
Au	Ls	B	2	.01	79	6	9.173	2.70262 5	11.65	11.88	15.66	20.50	29.43	35.74	36.02	36.99	42.24	47.52			52.23	57.25	84.32
Np	$L\alpha_2$		3	10	93	6	13.757	2.70313 6	11.65	11.88	15.66	20.50	29.44	35.74	36.02	37.00	42.25	47.53	48.89	51.07	52.24	57.27	84.34
Tc	$K\alpha_{1,2}$	H	4	150	43	6	18.325	2.70581 5	11.66	11.89	15.68	20.52	29.46	35.78	36.06	37.03	42.30	47.58	48.94	51.12	52.30	57.33	84.44
Hf	$L\beta_3$		2	6	72	6	9.162	2.70600 5	11.66	11.89	15.68	20.52	29.47	35.78	36.06	37.04	42.30	47.58			52.30	57.33	84.45
Ba	$K\alpha_{1,2}$		7	150	56	6	32.062	2.70641 6	11.67	11.89	15.68	20.53	29.47	35.79	36.07	37.04	42.31	47.59	48.95	51.14	52.31	57.34	84.46
Te	$K\alpha_1$		6	100	52	6	27.468	2.70777 6	11.67	11.90	15.69	20.54	29.49	35.81	36.09	37.06	42.33	47.61	48.98	51.16	52.34	57.37	84.52
Au	$L\gamma_6$		3	.01	79	6	13.728	2.70891 5	11.68	11.91	15.70	20.55	29.50	35.82	36.10	37.08	42.35	47.64	49.00	51.19	52.36	57.40	84.56
Pu	$L\beta_1$		4	50	94	6	18.291	2.71088 5	11.68	11.91	15.71	20.55	29.52	35.85	36.13	37.11	42.38	47.67	49.04	51.23	52.40	57.44	84.64
Dy	$K\alpha_{1,2}$		10	150	66	6	45.724	2.71104 6	11.69	11.91	15.71	20.56	29.52	35.85	36.13	37.11	42.38	47.68	49.04	51.23	52.40	57.45	84.64
Tm	$L\gamma_5$		2	.1	69	6	9.143	2.71160 4	11.69	11.92	15.71	20.57	29.53	35.86	36.14	37.12	42.39	47.69			52.42	57.46	84.66
Te	$L\gamma_1$		1	8	52	6	4.570	2.71241 5	11.69	11.92	15.72	20.57	29.54	35.87	36.15	37.13	42.40	47.70	49.07	51.26	52.43	57.48	84.69
Au	$L\gamma_2$		3	1	79	6	13.707	2.71302 5	11.69	11.92	15.72	20.58	29.55	35.88	36.16	37.14	42.41	47.71	49.08	51.27	52.45	57.49	84.72

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
I	$L\beta_9$	8	1	.01	53	6	4.568	2.71352	5		11.70	11.93	15.72	20.58	29.55	35.89	36.17	37.14	42.42	47.72	49.09	51.28	52.46	57.51	84.74
Bi	$L\beta_{10}$	8	3	.01	83	6	13.698	2.71485	5		11.70	11.93	15.73	20.59	29.57	35.90	36.19	37.16	42.44	47.75	49.12	51.31	52.48	57.54	84.79
Te	$K\alpha_{1,2}$		6	150	52	6	27.377	2.71675	6		11.71	11.94	15.74	20.61	29.59	35.93	36.21	37.19	42.47	47.78	49.15	51.35	52.52	57.58	84.86
Tc	$K\alpha_2$	H	4	50	43	6	18.248	2.71728	5		11.71	11.94	15.74	20.61	29.59	35.94	36.22	37.20	42.48	47.79	49.16	51.36	52.53	57.59	84.88
Hf	L_3-N_2	8	2	.01	72	6	9.122	2.71774	5		11.71	11.94	15.75	20.61	29.60	35.94	36.22	37.20	42.49	47.80			52.54	57.60	84.90
Au	L_2-O_3	B	3	.01	79	6	13.676	2.71914	5		11.72	11.95	15.75	20.62	29.61	35.96	36.24	37.22	42.51	47.83	49.20	51.39	52.57	57.64	84.95
I	AL_3	H	1		53	6	4.558	2.71960	4		11.72	11.95	15.76	20.63	29.62	35.97	36.25	37.23	42.52	47.84	49.21	51.40	52.58	57.65	84.97
I	$L\beta_{10}$	8	1	.01	53	6	4.556	2.72104	5		11.73	11.96	15.77	20.64	29.63	35.99	36.27	37.25	42.55	47.86	49.24	51.43	52.61	57.68	85.03
Ra	Ln		3		1	88	6	13.661	2.72226	5		11.73	11.96	15.77	20.65	29.65	36.01	36.29	37.27	42.57	47.89	49.26	51.46	52.64	57.71	85.07
Au	L_2-O_2	8	3	.01	79	6	13.660	2.72238	5		11.73	11.96	15.77	20.65	29.65	36.01	36.29	37.27	42.57	47.89	49.26	51.46	52.64	57.71	85.08
Ir	$L\alpha_2$		2	10	77	6	9.098	2.72500	5		11.75	11.98	15.79	20.67	29.68	36.04	36.33	37.31	42.61	47.94			52.69	57.77	85.18
Au	Lv	B	3	.01	79	6	13.646	2.72511	5		11.75	11.98	15.79	20.67	29.68	36.04	36.33	37.31	42.61	47.94	49.32	51.52	52.70	57.77	85.18
8a	$K\beta_1$		8	21	56	6	36.372	2.72649	6		11.75	11.98	15.80	20.68	29.70	36.06	36.35	37.33	42.63	47.96	49.34	51.54	52.73	57.81	85.24
Hg	L_2-N_3	B	3	.01	80	6	13.638	2.72682	5		11.75	11.98	15.80	20.68	29.70	36.07	36.35	37.33	42.64	47.97	49.35	51.55	52.73	57.81	85.25
In	$K\beta_1$		6	19	49	6	27.271	2.72727	6		11.76	11.99	15.80	20.69	29.70	36.07	36.36	37.34	42.65	47.98	49.36	51.56	52.74	57.82	85.27
Po	$L\beta_3$		3	6	84	6	13.635	2.72730	4		11.76	11.99	15.80	20.69	29.70	36.07	36.36	37.34	42.65	47.98	49.36	51.56	52.74	57.83	85.27
8a	$K\alpha_2$		7	50	56	6	31.812	2.72768	6		11.76	11.99	15.80	20.69	29.71	36.08	36.36	37.34	42.65	47.99	49.36	51.57	52.75	57.83	85.28
Rh	$K\beta_1$		5	16	45	6	22.720	2.72802	6		11.76	11.99	15.81	20.69	29.71	36.08	36.37	37.35	42.66	47.99	49.37	51.57	52.76	57.84	85.30
Eu	$K\alpha_2$		9	50	63	6	40.895	2.72806	6		11.76	11.99	15.81	20.69	29.71	36.09	36.37	37.35	42.66	47.99	49.37	51.58	52.76	57.84	85.30
Er	$L\gamma_1$		2	5	68	6	9.087	2.72820	4		11.76	11.99	15.81	20.69	29.71	36.09	36.37	37.35	42.66	48.00			52.76	57.85	85.30
Ho	$L\gamma_3$		2	1	67	6	9.086	2.72860	4		11.76	11.99	15.81	20.70	29.72	36.09	36.37	37.36	42.67	48.00			52.77	57.86	85.32
I	LB_7		1	.1	53	6	4.543	2.72880	4		11.76	11.99	15.81	20.70	29.72	36.10	36.38	37.36	42.67	48.01	49.39	51.59	52.77	57.86	85.33
Au	$L\gamma_8$		3	.1	79	6	13.624	2.72967	5		11.77	12.00	15.82	20.70	29.73	36.11	36.39	37.37	42.69	48.02	49.40	51.61	52.79	57.88	85.36
Cm	$L\gamma_1$		5	10	96	3	22.703	2.73000			11.77	12.00	15.82	20.71	29.73	36.11	36.39	37.38	42.69	48.03	49.41	51.61	52.80	57.89	85.37
Sm	$K\beta_1$		10	22	62	6	45.405	2.73010	5		11.77	12.00	15.82	20.71	29.74	36.11	36.40	37.38	42.69	48.03	49.41	51.62	52.80	57.89	85.38
Rh	$K\beta_3$		5	8	45	6	22.695	2.73100	6		11.77	12.00	15.82	20.71	29.75	36.13	36.41	37.39	42.71	48.05	49.43	51.63	52.82	57.91	85.41
In	$K\beta_3$		6	8	49	6	27.233	2.73108	6		11.77	12.00	15.82	20.72	29.75	36.13	36.41	37.39	42.71	48.05	49.43	51.64	52.82	57.91	85.42
U	$L\alpha_1$		3	100	92	6	13.612	2.73192	6		11.78	12.01	15.83	20.72	29.76	36.14	36.42	37.40	42.72	48.07	49.45	51.65	52.84	57.93	85.45
8a	$K\beta_3$		8	7	56	6	36.298	2.73206	6		11.78	12.01	15.83	20.72	29.76	36.14	36.42	37.41	42.73	48.07	49.45	51.66	52.84	57.94	85.45
Te	$K\alpha_2$		6	50	52	6	27.197	2.73470	6		11.79	12.02	15.85	20.74	29.79	36.18	36.46	37.44	42.77	48.12	49.50	51.71	52.90	58.00	85.56
Au	L_1-N_1	F	3	.01	79	6	13.592	2.73606	5		11.79	12.03	15.85	20.75	29.80	36.19	36.48	37.46	42.79	48.14	49.53	51.74	52.93	58.03	85.61
Te	$K\beta_2$	D	7	6	52	6	31.698	2.73744	6		11.80	12.03	15.86	20.76	29.82	36.21	36.50	37.48	42.81	48.17	49.55	51.77	52.95	58.06	85.66
Sm	$K\beta_3$		10	10	62	6	45.281	2.73760	5		11.80	12.03	15.86	20.77	29.82	36.22	36.50	37.48	42.82	48.17	49.56	51.77	52.96	58.06	85.67
Pr	$K\beta_1$		9	22	59	6	40.741	2.73835	6		11.80	12.04	15.87	20.77	29.83	36.23	36.51	37.50	42.83	48.19	49.57	51.78	52.97	58.08	85.70
Ho	$L\gamma_2$		2	1	67	6	9.049	2.73960	4		11.81	12.04	15.87	20.78	29.84	36.24	36.53	37.51	42.85	48.21			53.00	58.11	85.75
La	Ln		1	1	57	6	4.524	2.74000	3		11.81	12.04	15.88	20.78	29.85	36.25	36.53	37.52	42.86	48.22	49.60	51.82	53.01	58.12	85.76
Cm	$L\beta_2$		4	20	96	3	18.096	2.74000			11.81	12.04	15.88	20.78	29.85	36.25	36.53	37.52	42.86	48.22	49.60	51.82	53.01	58.12	85.76
Lu	$L\beta_2$		2	1	71	6	9.047	2.74024	5		11.81	12.04	15.88	20.79	29.85	36.25	36.54	37.52	42.86	48.22			53.01	58.13	85.77
Dy	$K\alpha_2$		10	50	66	6	45.200	2.74247	6		11.82	12.05	15.89	20.80	29.87	36.28	36.57	37.55	42.90	48.26	49.65	51.87	53.06	58.18	85.86
Pt	$L\gamma_{11}$	8	3	.01	78	6	13.558	2.74290	4		11.82	12.06	15.89	20.81	29.88	36.29	36.57	37.56	42.90	48.27	49.66	51.88	53.07	58.19	85.87
Lu	$L\beta_{15}$		2	20	71	6	9.038	2.74300	4		11.82	12.06	15.89	20.81	29.88	36.29	36.57	37.56	42.91	48.27			53.07	58.19	85.88
Pr	$K\beta_3$		9	10	59	6	40.646	2.74477	6		11.83	12.06	15.90	20.82	29.90	36.31	36.60	37.59	42.93	48.31	49.69	51.91	53.11	58.23	85.95
Am	$L\beta_4$		4	4	95	6	18.060	2.74556	5		11.83	12.07	15.91	20.83	29.91	36.32	36.61	37.60	42.95	48.32	49.71	51.93	53.12	58.25	85.98
Re	Ln		2	1	75	6	9.026	2.74684	5		11.84	12.07	15.92	20.84	29.92	36.34	36.63	37.62	42.97	48.35			53.15	58.28	86.03
Hf	$L\beta_1$		2	50	72	6	9.021	2.74820	5		11.85	12.08	15.92	20.85	29.94	36.36	36.65	37.64	42.99	48.37			53.18	58.31	86.08
Hf	$L\beta_6$		2	.1	72	6	9.021	2.74820	5		11.85	12.08	15.92	20.85	29.94	36.36	36.65	37.64	42.99	48.37			53.18	58.31	86.08
Ti	$K\alpha_1$		1	100	22	6	4.510	2.74851	5	4	11.85	12.08	15.93	20.85	29.94	36.37	36.65	37.64	43.00	48.38	49.77	51.99	53.18	58.32	86.09
Dy	$L\gamma_4$		2	.1	66	6	9.018	2.74918	5		11.85	12.08	15.93	20.85	29.95	36.37	36.66	37.65	43.01	48.39			53.20	58.33	86.12
Ti	$K\alpha_{1,2}$		1	150	22	6	4.508	2.74973	5	4	11.85	12.09	15.93	20.86	29.95	36.38	36.67	37.66	43.02	48.40	49.79	52.02	53.21	58.35	86.14
I	$L\beta_{2,15}$		1	17	53	6	4.507	2.75053	5		11.86	12.09	15.94	20.86	29.96	36.39	36.68	37.67	43.03	48.41	49.81	52.03	53.23	58.37	86.17
Ti	$K\alpha_2$		1	50	22	6	4.504	2.75216	5	4	11.86	12.10	15.95	20.88	29.98	36.42	36.70	37.69	43.06	48.44	49.84	52.06	53.26	58.40	86.23
U	M_1-N_3		1	.1	92	6	4.503	2.75300	3		11.87	12.10	15.95	20.88	29.99	36.43	36.71	37.70	43.07	48.46	49.85	52.08	53.28	58.42	86.27
Pr	$K\alpha_1$		8	100	59	6	36.020	2.75312	6		11.87	12.10	15.95	20.88	29.99	36.43	36.71	37.71	43.07	48.46	49.86	52.08	53.28	58.43	86.27
Hg	Lt	F	2	.01	80	6	9.004	2.75340	4		11.87	12.10	15.95	20.89	30.00	36.43	36.72	37.71	43.08	48.47			53.29	58.43	86.28
Np	$L\beta_3$	H	4	6	93	6	17.986	2.75680	5		11.88	12.12	15.97	20.91	30.03	36.48	36.76	37.76	43.13	48.53	49.93	52.16	53.36	58.51	86.42
Pm	$K\beta_2$	H	10	8	61	6	44.929	2.75900	4		11.89	12.13	15.99	20.93	30.06	36.51	36.79	37.79	43.17	48.57	49.97	52.20	53.40	58.56	86.50
Zr	$K\beta_2$		4	4	40	6	17.967	2.75972	5		11.90	12.13	15.99	20.94	30.07	36.52	36.80	37.80	43.18	48.59	49.98	52.22	53.42	58.58	86.53
Br	$K\beta_2$		3	2	35	6	13.467	2.76138	5		11.90	12.14	16.00	20.95	30.08	36.54	36.83	37.82	43.21	48.62	50.02	52.25	53.45	58.62	86.59
Sc	AK	H	1		21	6	4.488	2.76200	3		11.91	12.14	16.00	20.95	30.09	36.55	36.84	37.83	43.22	48.63	50.03	52.26	53.47	58.63	86.62
Cu	$K\beta_5$	B	2	.03	29	6	8.976	2.76218	5		11.91	12.14	16.01	20.95	30.09	36.55	36.84	37.83	43.22	48.63			53.47	58.64	86.63
Sc	$K\beta_5$		1	.02	21	6	4.486	2.76340	4	4	11.91	12.15	16.01	20.96	30.11	36.57	36.86	37.85	43.24	48.66	50.06	52.29	53.50	58.67	86.67
Pr	$K\alpha_{1,2}$		8	150	59	6	35.860	2.76541	6		11.92	12.15	16.02	20.98	30.13	36.60	36.88	37.88	43.27	48.69	50.09	52.33	53.54	58.71	86.75
Po	$L\beta_1$		3	50	84	6	13.445	2.76600	4		11.92	12.16	16.03	20.98	30.14	36.60	36.89	37.89	43.28	48.70	50.11	52.35	53.55	58.73	86.78
Yb	$L\beta_9$	B	2	.01	70	6	8.958	2.76760	4		11.93	12.16	16.04	21.00	30.15	36.63	36.91	37.91	43.31	48.73			53.58	58.76	86.84
U	$L\alpha_2$		3	10	92	6	13.437	2.76767	6		11.93	12.16	16.04	21.00	30.15	36.63	36.91	37.91	43.31	48.74	50.14	52.38	53.59	58.76	86.84

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Cs	$K\beta_2$		8	6	55	6	35.815	2.76888	5		11.94	12.17	16.04	21.01	30.17	36.64	36.93	37.93	43.33	48.76	50.16	52.40	53.61	58.79	86.89
Tl	Ll		2	3	81	6	8.952	2.76954	5		11.94	12.17	16.05	21.01	30.18	36.65	36.94	37.94	43.34	48.77			53.62	58.81	86.91
8i	$L_3-P_{2,3}$	B	3	.01	83	6	13.414	2.77239	5		11.95	12.19	16.07	21.03	30.21	36.69	36.98	37.98	43.39	48.82	50.23	52.48	53.68	58.87	87.03
Ta	$L\beta_{1,7}$		8	2	.01	73	6	8.941	2.77280	4		11.95	12.19	16.07	21.04	30.21	36.70	36.99	37.99	43.40	48.83			53.69	58.88	87.04
Ir	$L_1-O_{4,5}$		8	3	.01	77	6	13.411	2.77290	4		11.95	12.19	16.07	21.04	30.21	36.70	36.99	37.99	43.40	48.83	50.24	52.49	53.69	58.89	87.05
Ce	$K\beta_2$		9	7	58	6	40.226	2.77344	5		11.96	12.19	16.07	21.04	30.22	36.71	36.99	37.99	43.41	48.84	50.25	52.50	53.71	58.90	87.07
Hg	$L\gamma_5$		3	.1	80	6	13.408	2.77359	5		11.96	12.19	16.07	21.04	30.22	36.71	37.00	38.00	43.41	48.85	50.25	52.50	53.71	58.90	87.07
Yb	$L\beta_5$		2	.1	70	6	8.938	2.77392	5		11.96	12.19	16.07	21.04	30.22	36.71	37.00	38.00	43.41	48.85			53.72	58.91	87.09
Br	$K\beta_5$	B	3	.06	35	6	13.402	2.77479	5		11.96	12.20	16.08	21.05	30.23	36.73	37.01	38.01	43.43	48.87	50.28	52.53	53.73	58.93	87.12
8a	$L\alpha_1$		1	100	56	6	4.465	2.77595	5		11.97	12.20	16.09	21.06	30.25	36.74	37.03	38.03	43.45	48.89	50.30	52.55	53.76	58.96	87.17
Rb	$K\alpha_1$		3	100	37	6	13.393	2.77666	6		11.97	12.20	16.09	21.07	30.25	36.75	37.04	38.04	43.46	48.90	50.31	52.56	53.77	58.97	87.19
Bi	$L\beta_5$		3	1	83	6	13.393	2.77668	5		11.97	12.20	16.09	21.07	30.25	36.75	37.04	38.04	43.46	48.90	50.31	52.56	53.77	58.97	87.19
Sn	AL_1		1		50	6	4.464	2.77690	4		11.97	12.21	16.09	21.07	30.26	36.75	37.04	38.04	43.46	48.91	50.32	52.57	53.78	58.98	87.20
Sn	$L\gamma_4$		1	.1	50	6	4.463	2.77750	4		11.97	12.21	16.10	21.07	30.26	36.76	37.05	38.05	43.47	48.92	50.33	52.58	53.79	58.99	87.23
Ra	$L\gamma_1$		4	10	88	6	17.845	2.77852	5		11.98	12.21	16.10	21.08	30.28	36.78	37.06	38.07	43.49	48.94	50.35	52.60	53.81	59.02	87.27
Pt	Ls		8	2	.01	78	6	8.921	2.77900	4		11.98	12.21	16.10	21.08	30.28	36.78	37.07	38.07	43.50	48.95			53.82	59.03	87.29
Au	$L\gamma_1$		3	10	79	6	13.379	2.77950	5		11.98	12.22	16.11	21.09	30.29	36.79	37.08	38.08	43.51	48.96	50.37	52.62	53.83	59.04	87.31
Yb	$L_3-O_{2,3}$	B	2	.01	70	6	8.919	2.77960	4		11.98	12.22	16.11	21.09	30.29	36.79	37.08	38.08	43.51	48.96			53.83	59.04	87.31
Sc	$K\beta_{1,3}$		1	20	21	6	4.460	2.77960	4	4	11.98	12.22	16.11	21.09	30.29	36.79	37.08	38.08	43.51	48.96	50.37	52.62	53.83	59.04	87.31
Pb	$L\beta_9$		8	3	.01	82	6	13.375	2.78040	4		11.99	12.22	16.11	21.09	30.30	36.80	37.09	38.09	43.52	48.97	50.38	52.64	53.85	59.06	87.34
Rb	$K\alpha_{1,2}$		3	150	37	6	13.373	2.78080	5		11.99	12.22	16.11	21.10	30.30	36.81	37.10	38.10	43.53	48.98	50.39	52.65	53.86	59.07	87.36
Sm	$K\alpha_1$		9	100	62	6	40.111	2.78136	6		11.99	12.22	16.12	21.10	30.31	36.82	37.10	38.11	43.54	48.99	50.40	52.66	53.87	59.08	87.38
Ir	$L\gamma_4$		3	.1	77	6	13.366	2.78232	5		11.99	12.23	16.12	21.11	30.32	36.83	37.12	38.12	43.55	49.01	50.42	52.68	53.89	59.11	87.42
Os	$L\alpha_1$		2	100	76	6	8.910	2.78242	5		11.99	12.23	16.12	21.11	30.32	36.83	37.12	38.12	43.55	49.01			53.89	59.11	87.42
Yb	$L\beta_{10}$	B	2	.01	70	6	8.908	2.78300	4		12.00	12.23	16.13	21.11	30.33	36.84	37.13	38.13	43.56	49.02			53.91	59.12	87.44
Pt	$L\gamma_3$		3	2	78	6	13.359	2.78373	5		12.00	12.24	16.13	21.12	30.33	36.85	37.14	38.14	43.57	49.04	50.45	52.71	53.92	59.14	87.47
Pr	Ll		1	2	59	6	4.452	2.78410	4		12.00	12.24	16.13	21.12	30.34	36.85	37.14	38.15	43.58	49.04	50.46	52.72	53.93	59.15	87.49
Hf	$L\beta_4$		2	4	72	6	8.904	2.78440	5		12.00	12.24	16.14	21.12	30.34	36.86	37.15	38.15	43.59	49.05			53.94	59.16	87.50
Cu	$K\beta_{1,3}$		2	20	29	6	8.904	2.78444	6		12.00	12.24	16.14	21.12	30.34	36.86	37.15	38.15	43.59	49.05			53.94	59.16	87.50
Ho	$L\gamma_6$		2	.01	67	6	8.903	2.78460	4		12.00	12.24	16.14	21.13	30.34	36.86	37.15	38.15	43.59	49.05			53.94	59.16	87.51
Ir	$L\gamma_4p$		3	.1	77	6	13.353	2.78493	5		12.00	12.24	16.14	21.13	30.35	36.86	37.15	38.16	43.59	49.06	50.47	52.73	53.95	59.17	87.52
Cu	$K\beta_3$		2	6	29	6	8.901	2.78520	4		12.01	12.24	16.14	21.13	30.35	36.87	37.16	38.16	43.60	49.06			53.95	59.17	87.53
Ba	$L\alpha_2$		1	10	56	6	4.450	2.78553	5		12.01	12.24	16.14	21.13	30.35	36.87	37.16	38.17	43.60	49.07	50.48	52.74	53.96	59.18	87.54
Tb	$K\alpha_1$		10	100	65	6	44.474	2.78724	6		12.01	12.25	16.15	21.15	30.37	36.90	37.18	38.19	43.63	49.10	50.52	52.78	53.99	59.22	87.61
Po	$L\beta_2$		3	20	84	6	13.338	2.78811	5		12.02	12.25	16.16	21.15	30.38	36.91	37.20	38.20	43.65	49.12	50.53	52.80	54.01	59.24	87.64
Rb	$K\alpha_2$		3	50	37	6	13.333	2.78907	5		12.02	12.26	16.16	21.16	30.39	36.92	37.21	38.22	43.66	49.14	50.55	52.82	54.03	59.26	87.68
Yb	$L\beta_7$		2	.1	70	6	8.887	2.78960	4		12.03	12.26	16.17	21.16	30.40	36.93	37.22	38.22	43.67	49.15			54.04	59.28	87.70
Pr	$K\alpha_2$		8	50	59	6	35.544	2.78999	6		12.03	12.26	16.17	21.17	30.40	36.93	37.22	38.23	43.68	49.15	50.57	52.84	54.05	59.29	87.72
Te	$L\gamma_5$		1	.1	52	6	4.443	2.79007	5		12.03	12.26	16.17	21.17	30.40	36.93	37.22	38.23	43.68	49.16	50.57	52.84	54.05	59.29	87.72
8i	L_3-O_3	B	3	.01	83	6	13.326	2.79060	4		12.03	12.27	16.17	21.17	30.41	36.94	37.23	38.24	43.69	49.17	50.58	52.85	54.06	59.30	87.74
Cd	$K\beta_2$		6	5	48	6	26.639	2.79197	6		12.04	12.27	16.18	21.18	30.43	36.96	37.25	38.26	43.71	49.19	50.61	52.88	54.09	59.33	87.80
Po	$L\beta_{15}$		3	1	84	6	13.312	2.79360	4		12.04	12.28	16.19	21.20	30.44	36.98	37.27	38.28	43.74	49.22	50.64	52.91	54.13	59.37	87.86
Np	$L\beta_1$		4	50	93	6	17.747	2.79391	6		12.04	12.28	16.19	21.20	30.45	36.99	37.28	38.29	43.74	49.23	50.65	52.92	54.13	59.38	87.87
Sm	$K\alpha_{1,2}$		9	150	62	6	39.911	2.79534	6		12.05	12.29	16.20	21.21	30.46	37.01	37.30	38.31	43.77	49.25	50.67	52.94	54.16	59.41	87.93
Ho	$L\gamma_8$		2	.1	67	6	8.865	2.79660	4		12.06	12.29	16.21	21.22	30.48	37.02	37.31	38.32	43.79	49.28			54.19	59.44	87.98
Bi	L_3-O_2	B	3	.01	83	6	13.296	2.79690	4		12.06	12.29	16.21	21.22	30.48	37.03	37.32	38.33	43.79	49.28	50.70	52.98	54.20	59.45	87.99
Ag	$K\alpha_1$		5	100	47	6	22.159	2.79703	7		12.06	12.29	16.21	21.22	30.48	37.03	37.32	38.33	43.79	49.29	50.71	52.98	54.20	59.45	88.00
Br	$K\beta_1$		3	16	35	6	13.289	2.79837	5		12.06	12.30	16.22	21.23	30.50	37.05	37.34	38.35	43.82	49.31	50.73	53.01	54.23	59.48	88.05
Pa	$L\alpha_1$		3	100	91	6	13.288	2.79852	5		12.06	12.30	16.22	21.23	30.50	37.05	37.34	38.35	43.82	49.31	50.74	53.01	54.23	59.49	88.06
Br	$K\beta_3$		3	8	35	6	13.282	2.79981	5		12.07	12.31	16.23	21.24	30.51	37.07	37.36	38.37	43.84	49.34	50.76	53.04	54.26	59.52	88.11
Te	$K\beta_1$		7	20	52	6	30.990	2.79995	6		12.07	12.31	16.23	21.24	30.51	37.07	37.36	38.37	43.84	49.34	50.76	53.04	54.26	59.52	88.11
Pb	$L\beta_{10}$	B	3	.01	82	6	13.273	2.80170	4		12.08	12.31	16.24	21.26	30.53	37.09	37.38	38.40	43.87	49.37	50.80	53.07	54.30	59.56	88.18
Cs	$K\alpha_1$		7	100	55	6	30.968	2.80203	6		12.08	12.32	16.24	21.26	30.54	37.10	37.39	38.40	43.88	49.38	50.80	53.08	54.30	59.57	88.19
Pt	$L\gamma_6$		3	.01	78	6	13.269	2.80260	4		12.08	12.32	16.24	21.26	30.54	37.11	37.40	38.41	43.89	49.39	50.82	53.09	54.32	59.58	88.22
Lu	$L\beta_3$		2	6	71	6	8.845	2.80280	5		12.08	12.32	16.24	21.27	30.55	37.11	37.40	38.41	43.89	49.40			54.32	59.59	88.23
Pt	$L\gamma_2$		3	1	78	6	13.268	2.80281	5		12.08	12.32	16.24	21.27	30.55	37.11	37.40	38.41	43.89	49.40	50.82	53.10	54.32	59.59	88.23
Tb	$K\alpha_{1,2}$		10	150	65	6	44.226	2.80290	6		12.08	12.32	16.24	21.27	30.55	37.11	37.40	38.41	43.89	49.40	50.82	53.10	54.32	59.59	88.23
Ag	$K\alpha_{1,2}$		5	150	47	6	22.101	2.80435	6		12.09	12.33	16.25	21.28	30.56	37.13	37.42	38.43	43.91	49.42	50.85	53.13	54.35	59.62	88.29
Te	$K\beta_3$		7	9	52	6	30.939	2.80461	6		12.09	12.33	16.25	21.28	30.57	37.13	37.43	38.44	43.92	49.43	50.86	53.13	54.36	59.63	88.30
Os	$L\alpha_2$		2	10	76	6	8.840	2.80468	5		12.09	12.33	16.25	21.28	30.57	37.14	37.43	38.44	43.92	49.43			54.36	59.63	88.30
Bi	$L\beta_7$		3	.1	83	6	13.257	2.80515	5		12.09	12.33	16.26	21.28	30.57	37.14	37.43	38.45	43.93	49.44	50.86	53.14	54.37	59.64	88.32
8i	Lu	B	3	.01	83	6	13.257	2.80515	5		12.09	12.33	16.26	21.28	30.57	37.14	37.43	38.45	43.93	49.44	50.86	53.14	54.37	59.64	88.32
Am	$L\beta_2$		4	20	95	6	17.673	2.80556	6		12.09	12.33	16.26	21.29	30.58	37.15	37.44	38.45	43.93	49.45	50.87	53.15	54.38	59.65	88.33
Zr	$K\beta_1$		4	18	40	6	17.665	2.80692	5		12.10	12.34	16.27	21.30	30.59	37.17	37.46	38.47	43.96	49.47	50.90	53.18	54.41	59.68	88.39
Ru	$K\beta_2$		5	3	44	6	22.070	2.80830	5		12.11	12.34	16.27	21.31	30.61	37.18	37.48	38.49	43.98	49.50	50.93	53.21	54.44	59.71	88.44

El	Line	C	N	I	Z	R	KeV	Lambda P Å 10^{-}		KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Zr	$K\beta_3$		4	9	40	6	17.651	2.80912	5	12.11	12.35	16.28	21.31	30.62	37.20	37.49	38.50	43.99	49.51	50.94	53.23	54.45	59.73	88.48
Am	$L\gamma_1$		5	10	95	6	22.061	2.80943	6	12.11	12.35	16.28	21.32	30.62	37.20	37.49	38.51	44.00	49.52	50.95	53.23	54.46	59.74	88.49
Cs	$K\alpha_{1,2}$		7	150	55	6	30.851	2.81263	6	12.12	12.36	16.30	21.34	30.66	37.24	37.54	38.55	44.05	49.58	51.01	53.30	54.53	59.82	88.62
Er	$L\gamma_5$		2	.1	68	6	8.812	2.81340	4	12.13	12.37	16.30	21.35	30.66	37.26	37.55	38.56	44.06	49.59			54.54	59.83	88.65
Bi	$L\beta_3$		3	6	83	6	13.208	2.81565	5	12.14	12.38	16.32	21.36	30.69	37.29	37.58	38.60	44.10	49.64	51.07	53.36	54.59	59.89	88.74
U	M_2-N_4		1	5	92	6	4.400	2.81700	3	12.14	12.38	16.33	21.37	30.70	37.30	37.60	38.61	44.12	49.66	51.10	53.39	54.62	59.92	88.79
Pt	Lv		8	3	.01	78	6	13.197	2.81793	5	12.15	12.39	16.33	21.38	30.72	37.32	37.61	38.63	44.14	49.68	51.11	53.41	54.64	59.94	88.83
Ag	$K\alpha_2$			5	50	47	6	21.987	2.81899	6	12.15	12.39	16.34	21.39	30.73	37.33	37.62	38.64	44.16	49.70	51.13	53.43	54.66	59.96	88.87
Pu	$L\gamma_3$			5	2	94	6	21.979	2.82000	6	12.16	12.40	16.34	21.40	30.74	37.35	37.64	38.66	44.17	49.72	51.15	53.45	54.68	59.99	88.91
Au	L_2-N_3		8	3	.01	79	6	13.184	2.82060	4	12.16	12.40	16.35	21.40	30.75	37.35	37.65	38.67	44.18	49.73	51.17	53.46	54.69	60.00	88.93
Sb	$K\alpha_1$			6	100	51	6	26.355	2.82212	6	12.17	12.40	16.36	21.41	30.76	37.37	37.67	38.69	44.21	49.76	51.19	53.49	54.73	60.04	88.99
Sm	$K\alpha_2$			9	50	62	6	39.516	2.82328	6	12.17	12.41	16.36	21.42	30.78	37.39	37.68	38.70	44.23	49.78	51.22	53.52	54.75	60.07	89.04
Pt	$L\gamma_8$			3	.1	78	6	13.172	2.82330	4	12.17	12.41	16.36	21.42	30.78	37.39	37.68	38.70	44.23	49.78	51.22	53.52	54.75	60.07	89.04
Pu	$L\beta_4$			4	4	94	6	17.553	2.82480	5	12.18	12.42	16.37	21.43	30.79	37.41	37.70	38.73	44.25	49.81	51.25	53.55	54.78	60.10	89.10
Pt	L_1-N_1		F	3	.01	78	6	13.156	2.82678	5	12.19	12.43	16.38	21.45	30.81	37.44	37.73	38.75	44.28	49.85	51.29	53.59	54.82	60.15	89.18
Au	Lt		B	2	.01	79	6	8.769	2.82732	5	12.19	12.43	16.39	21.45	30.82	37.45	37.74	38.76	44.29	49.86			54.84	60.16	89.20
Pm	$K\beta_1$		810		22	61	6	43.818	2.82900	5	12.20	12.44	16.40	21.47	30.84	37.47	37.76	38.79	44.32	49.89	51.33	53.63	54.87	60.20	89.27
Sb	AL_2			1		51	6	4.381	2.82940	4	12.20	12.44	16.40	21.47	30.84	37.47	37.77	38.79	44.33	49.90	51.34	53.64	54.88	60.21	89.28
Yb	$L\beta_{2,15}$			2	20	70	6	8.757	2.83100	5	12.20	12.44	16.41	21.48	30.86	37.50	37.79	38.81	44.35	49.93			54.91	60.25	89.35
Sb	$K\alpha_{1,2}$			6	150	51	6	26.271	2.83107	6	12.20	12.44	16.41	21.48	30.86	37.50	37.79	38.82	44.35	49.93	51.37	53.67	54.91	60.25	89.35
Bi	L_2-M_5		8	3	.01	83	6	13.129	2.83257	5	12.21	12.45	16.42	21.49	30.88	37.52	37.81	38.84	44.38	49.96	51.40	53.71	54.95	60.28	89.41
Sn	$L\gamma_{2,3}$			1	2	50	6	4.376	2.83270	4	12.21	12.45	16.42	21.50	30.88	37.52	37.81	38.84	44.38	49.96	51.40	53.71	54.95	60.29	89.42
Dy	$L\gamma_3$			2	1	66	6	8.752	2.83280	5	12.21	12.45	16.42	21.50	30.88	37.52	37.82	38.84	44.38	49.96			54.95	60.29	89.42
Ir	$L\gamma_{11}$		8	3	.01	77	6	13.123	2.83380	4	12.22	12.46	16.42	21.50	30.89	37.54	37.83	38.85	44.40	49.98	51.42	53.73	54.97	60.31	89.46
Cs	$K\alpha_2$			7	50	55	6	30.620	2.83384	6	12.22	12.46	16.42	21.50	30.89	37.54	37.83	38.85	44.40	49.98	51.42	53.73	54.97	60.31	89.46
Tb	$K\alpha_2$			10	50	65	6	43.737	2.83423	6	12.22	12.46	16.43	21.51	30.90	37.54	37.84	38.86	44.41	49.99	51.43	53.74	54.98	60.32	89.48
Pa	$L\alpha_2$		H	3	10	91	6	13.120	2.83446	5	12.22	12.46	16.43	21.51	30.90	37.54	37.84	38.86	44.41	49.99	51.44	53.74	54.99	60.33	89.49
Ho	$L\gamma_1$			2	5	67	6	8.746	2.83480	4	12.22	12.46	16.43	21.51	30.90	37.55	37.84	38.87	44.42	50.00			54.99	60.34	89.50
Cs	$K\beta_1$			8	21	55	6	34.981	2.83491	6	12.22	12.46	16.43	21.51	30.90	37.55	37.84	38.87	44.42	50.00	51.44	53.75	55.00	60.34	89.51
Pm	$K\beta_3$		H	10	10	61	6	43.705	2.83630	5	12.23	12.47	16.44	21.52	30.92	37.57	37.86	38.89	44.44	50.03	51.47	53.78	55.02	60.37	89.56
I	$L\beta_6$			1	1	53	6	4.370	2.83672	5	12.23	12.47	16.44	21.53	30.93	37.58	37.87	38.90	44.45	50.03	51.48	53.79	55.03	60.38	89.58
Mo	$K\alpha_1$			4	100	42	6	17.476	2.83720	6	12.23	12.47	16.44	21.53	30.93	37.58	37.88	38.90	44.46	50.04	51.49	53.80	55.04	60.39	89.60
Ir	L_1-N_4		8	3	.01	77	6	13.105	2.83770	4	12.23	12.47	16.45	21.53	30.94	37.59	37.88	38.91	44.46	50.05	51.50	53.81	55.05	60.40	89.62
Lu	$L\beta_6$			2	.1	71	6	8.736	2.83780	4	12.23	12.47	16.45	21.53	30.94	37.59	37.88	38.91	44.47	50.05			55.06	60.41	89.62
Te	$L\beta_9$		B	1	.01	52	6	4.366	2.83897	5	12.24	12.48	16.45	21.54	30.95	37.61	37.90	38.93	44.49	50.08	51.52	53.84	55.08	60.43	89.67
Cs	$K\beta_3$			8	9	55	6	34.913	2.84040	6	12.24	12.49	16.46	21.55	30.97	37.63	37.92	38.95	44.51	50.10	51.55	53.87	55.11	60.47	89.73
U	$L\beta_3$			4	6	92	6	17.452	2.84116	5	12.25	12.49	16.47	21.56	30.97	37.64	37.93	38.96	44.52	50.12	51.57	53.88	55.13	60.49	89.76
W	Ln			2	1	74	6	8.723	2.84220	5	12.25	12.49	16.47	21.57	30.99	37.65	37.95	38.97	44.54	50.14			55.15	60.51	89.80
Ce	$K\beta_1$			9	22	58	6	39.251	2.84234	6	12.25	12.49	16.47	21.57	30.99	37.65	37.95	38.98	44.54	50.14	51.59	53.91	55.15	60.51	89.80
Po	$L\beta_4$			3	4	84	6	13.083	2.84259	4	12.25	12.49	16.47	21.57	30.99	37.65	37.95	38.98	44.54	50.14	51.59	53.91	55.15	60.52	89.81
Mo	$K\alpha_{1,2}$			4	150	42	6	17.441	2.84292	6	12.26	12.50	16.48	21.57	30.99	37.66	37.96	38.98	44.55	50.15	51.60	53.92	55.16	60.53	89.83
Hg	Ll			2	3	80	6	8.720	2.84320	4	12.26	12.50	16.48	21.58	31.00	37.66	37.96	38.99	44.56	50.16			55.17	60.53	89.84
Oy	$L\gamma_2$			2	1	66	6	8.713	2.84556	5	12.27	12.51	16.49	21.59	31.02	37.70	37.99	39.02	44.59	50.20			55.22	60.59	89.93
Tb	L_1-$O_{4,5}$		B	2	.01	65	6	8.712	2.84560	4	12.27	12.51	16.49	21.59	31.02	37.70	37.99	39.02	44.59	50.20			55.22	60.59	89.93
Te	$L\beta_{10}$		F	1	.01	52	6	4.356	2.84576	5	12.27	12.51	16.49	21.60	31.03	37.70	38.00	39.02	44.60	50.20	51.66	53.98	55.22	60.59	89.94
Lu	$L\beta_1$			2	50	71	6	8.708	2.84718	5	12.27	12.52	16.50	21.61	31.04	37.72	38.01	39.04	44.62	50.23			55.25	60.63	90.00
Ce	$K\beta_3$			9	10	58	6	39.163	2.84868	6	12.28	12.52	16.51	21.62	31.06	37.74	38.04	39.07	44.65	50.26	51.71	54.04	55.29	60.66	90.06
Sb	$K\alpha_2$			6	50	51	6	26.106	2.84896	6	12.28	12.52	16.51	21.62	31.06	37.74	38.04	39.07	44.65	50.26	51.72	54.04	55.29	60.67	90.07
Cd	$K\beta_1$			6	19	48	6	26.091	2.85063	6	12.29	12.53	16.52	21.63	31.08	37.77	38.06	39.09	44.68	50.30	51.75	54.08	55.33	60.71	90.14
Sb	$L\gamma_1$			1	8	51	6	4.347	2.85159	5	12.29	12.53	16.53	21.64	31.09	37.78	38.08	39.11	44.69	50.31	51.77	54.10	55.35	60.73	90.18
Pb	L_3-$P_{2,3}$		B	3	.01	82	6	13.032	2.85354	5	12.30	12.54	16.54	21.66	31.11	37.81	38.10	39.14	44.73	50.35	51.81	54.14	55.39	60.78	90.25
Mo	$K\alpha_2$			4	50	42	6	17.371	2.85436	6	12.31	12.55	16.54	21.66	31.12	37.82	38.11	39.15	44.74	50.37	51.82	54.15	55.40	60.80	90.29
Cd	$K\beta_3$			6	8	48	6	26.057	2.85438	6	12.31	12.55	16.54	21.66	31.12	37.82	38.11	39.15	44.74	50.37	51.82	54.15	55.41	60.80	90.29
Tb	$L\gamma_4$			2	.1	65	6	8.683	2.85520	4	12.31	12.55	16.55	21.67	31.13	37.83	38.13	39.16	44.75	50.38			55.42	60.82	90.32
Te	AL_3			1		52	6	4.341	2.85550	4	12.31	12.55	16.55	21.67	31.14	37.83	38.13	39.16	44.76	50.39	51.85	54.18	55.43	60.82	90.33
Sb	$K\beta_2$		D	7	5	51	6	30.388	2.85550	6	12.31	12.55	16.55	21.67	31.14	37.83	38.13	39.16	44.76	50.39					
Bi	$L\beta_1$			3	50	83	6	13.021	2.85593	6	12.31	12.55	16.55	21.67	31.14	37.84	38.14	39.17	44.77	50.40	51.85	54.18	55.44	60.83	90.35
Ce	$K\alpha_1$			8	100	58	6	34.714	2.85674	6	12.32	12.56	16.56	21.68	31.15	37.85	38.15	39.18	44.78	50.41	51.87	54.20	55.45	60.85	90.38
Pb	$L\beta_5$			3	1	82	6	13.013	2.85780	4	12.32	12.56	16.56	21.69	31.16	37.87	38.16	39.20	44.80	50.43	51.89	54.22	55.48	60.88	90.43
Hf	L_1-M_1		8	2	.01	72	6	8.667	2.86050	5	12.33	12.57	16.58	21.71	31.19	37.90	38.20	39.24	44.84	50.48			55.53	60.94	90.54
Ta	L_2-M_2		8	2	.01	73	6	8.666	2.86096	5	12.33	12.58	16.58	21.71	31.20	37.91	38.21	39.24	44.85	50.49			55.54	60.95	90.55
Nd	$K\beta_2$		H	10	7	60	6	43.327	2.86100	4	12.33	12.58	16.58	21.71	31.20	37.91	38.21	39.24	44.85	50.49	51.95	54.29	55.54	60.95	90.56
Ru	$K\beta_1$			5	16	44	6	21.653	2.86241	6	12.34	12.58	16.59	21.72	31.21	37.93	38.23	39.26	44.87	50.52	51.98	54.32	55.57	60.99	90.61
Ba	Ln			1	1	56	6	4.330	2.86270	4	12.34	12.58	16.59	21.73	31.22	37.93	38.23	39.27	44.88	50.52	51.99	54.32	55.58	60.99	90.62
Te	$L\beta_7$			1	.1	52	6	4.329	2.86340	4	12.34	12.59	16.60	21.73	31.22	37.94	38.24	39.28	44.89	50.54	52.00	54.34	55.60	61.01	90.65

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	AOP (112)	NaCl (200)	LiF (200)
Ir	Ls	8	2	.01	77	6	8.658	2.86360	4	12.35	12.59	16.60	21.73	31.23	37.94	38.24	39.28	44.89	50.54			55.60	61.01	90.66
Ru	$K8_3$		5	8	44	6	21.631	2.86533	6	12.35	12.60	16.61	21.75	31.25	37.97	38.27	39.30	44.92	50.57	52.04	54.38	55.64	61.05	90.73
8i	$L\beta_2$		3	20	83	6	12.978	2.86554	5	12.35	12.60	16.61	21.75	31.25	37.97	38.27	39.31	44.92	50.58	52.04	54.38	55.64	61.06	90.74
Re	$L\alpha_1$		2	100	75	6	8.651	2.86580	5	12.35	12.60	16.61	21.75	31.25	37.98	38.27	39.31	44.93	50.58			55.65	61.07	90.75
Fr	$L\gamma_1$	H	4	10	87	6	17.300	2.86608	5	12.36	12.60	16.61	21.75	31.25	37.98	38.28	39.31	44.93	50.59	52.05	54.39	55.65	61.07	90.76
Au	$L\gamma_5$		3	.1	79	6	12.972	2.86677	5	12.36	12.60	16.62	21.76	31.26	37.99	38.29	39.32	44.94	50.60	52.07	54.41	55.67	61.09	90.79
Tm	$L\beta_9$	B	2	.01	69	6	8.647	2.86720	4	12.36	12.60	16.62	21.76	31.27	37.99	38.29	39.33	44.95	50.61			55.68	61.10	90.81
Th	$L\alpha_1$		3	100	90	6	12.967	2.86800	5	12.36	12.61	16.62	21.77	31.27	38.01	38.30	39.34	44.96	50.62	52.09	54.43	55.69	61.12	90.84
Os	L_1-$O_{4,5}$	8	3	.01	76	6	12.966	2.86809	5	12.36	12.61	16.62	21.77	31.28	38.01	38.30	39.34	44.97	50.63	52.09	54.43	55.69	61.12	90.84
Ce	$K\alpha_{1,2}$		8	150	58	6	34.566	2.86898	6	12.37	12.61	16.63	21.77	31.29	38.02	38.32	39.36	44.98	50.64	52.11	54.45	55.71	61.14	90.88
Tm	$L8_5$		2	.1	69	6	8.639	2.86980	4	12.37	12.62	16.63	21.78	31.29	38.03	38.33	39.37	44.99	50.66			55.73	61.16	90.91
Tl	$L\beta_9$	B	3	.01	81	6	12.956	2.87025	5	12.37	12.62	16.64	21.78	31.30	38.04	38.33	39.37	45.00	50.67	52.13	54.48	55.74	61.17	90.93
Zn	$K\alpha_1$		2	100	30	6	8.637	2.87031	6	12.37	12.62	16.64	21.78	31.30	38.04	38.34	39.38	45.00	50.67			55.74	61.17	90.93
Bi	$L\beta_{15}$		3	1	83	6	12.953	2.87106	5	12.38	12.62	16.64	21.79	31.31	38.05	38.35	39.39	45.02	50.68	52.15	54.50	55.76	61.19	90.96
Hf	$L\beta_{17}$	8	2	.01	72	6	8.630	2.87286	5	12.39	12.63	16.65	21.80	31.33	38.07	38.37	39.41	45.05	50.72			55.80	61.23	91.04
Zn	$K\alpha_{1,2}$		2	150	30	6	8.630	2.87287	6	12.39	12.63	16.65	21.80	31.33	38.07	38.37	39.41	45.05	50.72			55.80	61.23	91.04
Pb	L_3-O_3	B	3	.01	82	6	12.942	2.87340	4	12.39	12.63	16.65	21.81	31.34	38.08	38.38	39.42	45.05	50.73	52.19	54.54	55.81	61.24	91.06
Pt	$L\gamma_1$		3	10	78	6	12.940	2.87391	5	12.39	12.63	16.66	21.81	31.34	38.09	38.39	39.43	45.06	50.74	52.20	54.55	55.82	61.26	91.08
Pu	$L\beta_2$		4	20	94	6	17.252	2.87404	5	12.39	12.63	16.66	21.81	31.34	38.09	38.39	39.43	45.06	50.74	52.21	54.56	55.82	61.26	91.08
I	$L\beta_3$		1	6	53	6	4.313	2.87429	5	12.39	12.63	16.66	21.81	31.35	38.09	38.39	39.43	45.07	50.74	52.21	54.56	55.83	61.27	91.09
Pb	L_3-O_2	B	3	.01	82	6	12.931	2.87580	4	12.40	12.64	16.67	21.83	31.36	38.11	38.41	39.45	45.09	50.77	52.24	54.59	55.86	61.30	91.16
Ir	$L\gamma_3$		3	2	77	6	12.922	2.87793	5	12.41	12.65	16.68	21.84	31.39	38.14	38.44	39.48	45.13	50.81	52.28	54.64	55.90	61.35	91.24
Zn	$K\alpha_2$		2	50	30	6	8.614	2.87800	6	12.41	12.65	16.68	21.84	31.39	38.14	38.44	39.49	45.13	50.81			55.90	61.35	91.24
Os	$L\gamma_4$		3	.1	76	6	12.921	2.87814	5	12.41	12.65	16.68	21.84	31.39	38.15	38.44	39.49	45.13	50.82	52.29	54.64	55.91	61.36	91.25
U	$L\beta_1$		4	50	92	6	17.217	2.87994	6	12.42	12.66	16.69	21.86	31.41	38.17	38.47	39.51	45.16	50.85	52.32	54.68	55.94	61.40	91.32
Os	$L\gamma_4$p		3	.1	76	6	12.908	2.88099	5	12.42	12.66	16.70	21.87	31.42	38.18	38.48	39.53	45.18	50.87	52.34	54.70	55.97	61.42	91.37
La	$K\beta_2$		9	7	57	6	38.723	2.88105	6	12.42	12.66	16.70	21.87	31.42	38.19	38.48	39.53	45.18	50.87	52.34	54.70	55.97	61.43	91.37
Lu	$L8_4$		2	5	71	6	8.605	2.88112	5	12.42	12.67	16.70	21.87	31.42	38.19	38.49	39.53	45.18	50.87			55.97	61.43	91.37
Pm	$K\alpha_1$	H	9	100	61	6	38.718	2.88144	6	12.42	12.67	16.70	21.87	31.43	38.19	38.49	39.53	45.19	50.88	52.35	54.71	55.98	61.43	91.39
Tm	$L\beta_{10}$	8	2	.01	69	6	8.602	2.88200	4	12.42	12.67	16.70	21.87	31.43	38.20	38.50	39.54	45.20	50.89			55.99	61.45	91.41
Xe	$K\beta_2$	H	8	6	54	6	34.408	2.88208	5	12.43	12.67	16.71	21.87	31.43	38.20	38.50	39.54	45.20	50.89	52.36	54.72	55.99	61.45	91.41
Te	$L\beta_{2,15}$		1	17	52	6	4.301	2.88217	5	12.43	12.67	16.71	21.88	31.43	38.20	38.50	39.54	45.20	50.89	52.37	54.72	55.99	61.45	91.41
Gd	$K\alpha_1$		10	100	64	6	42.989	2.88353	6	12.43	12.68	16.71	21.89	31.45	38.22	38.52	39.56	45.22	50.92	52.39	54.75	56.02	61.48	91.47
Pb	Lu	8	3	.01	82	6	12.895	2.88399	5	12.43	12.68	16.72	21.89	31.45	38.23	38.53	39.57	45.23	50.93	52.40	54.76	56.03	61.50	91.49
U	AM_3		1		92	6	4.298	2.88400	3	12.43	12.68	16.72	21.89	31.45	38.23	38.53	39.57	45.23	50.93	52.40	54.76	56.03	61.50	91.49
Pb	$L8_7$		3	.1	82	6	12.886	2.88600	4	12.44	12.69	16.73	21.90	31.48	38.25	38.55	39.60	45.26	50.96	52.44	54.80	56.07	61.54	91.57
Os	L_1-O_1	F	3	.01	76	6	12.882	2.88681	5	12.45	12.69	16.73	21.91	31.49	38.26	38.56	39.61	45.28	50.98	52.46	54.82	56.09	61.56	91.60
Re	$L\alpha_2$		2	10	75	6	8.585	2.88792	5	12.45	12.70	16.74	21.92	31.50	38.28	38.58	39.63	45.29	51.00			56.11	61.59	91.65
U	Ls	8	3	.01	92	6	12.864	2.89080	4	12.46	12.71	16.76	21.94	31.53	38.32	38.62	39.67	45.34	51.06	52.53	54.90	56.17	61.66	91.77
Dy	$L\gamma_6$		2	.01	66	6	8.574	2.89158	5	12.47	12.71	16.76	21.95	31.54	38.33	38.63	39.68	45.36	51.07			56.19	61.67	91.80
Tl	$L\beta_{10}$	8	3	.01	81	6	12.860	2.89167	5	12.47	12.71	16.76	21.95	31.54	38.33	38.63	39.68	45.36	51.07	52.55	54.92	56.19	61.68	91.80
Ce	Ll		1	2	58	6	4.287	2.89170	4	12.47	12.71	16.76	21.95	31.54	38.33	38.63	39.68	45.36	51.07	52.55	54.92	56.19	61.68	91.80
Cs	$L\alpha_1$		1	100	55	6	4.286	2.89240	4	12.47	12.71	16.77	21.95	31.55	38.34	38.64	39.69	45.37	51.09	52.57	54.93	56.21	61.69	91.83
Ce	$K\alpha_2$		8	50	58	6	34.273	2.89346	6	12.47	12.72	16.77	21.96	31.56	38.36	38.66	39.71	45.39	51.11	52.59	54.96	56.23	61.72	91.88
Pu	$L\gamma_1$		5	10	94	6	21.414	2.89441	6	12.48	12.72	16.78	21.97	31.57	38.37	38.67	39.72	45.40	51.12	52.61	54.98	56.25	61.74	91.91
Pm	$K\alpha_{1,2}$	H	9	150	61	6	38.532	2.89537	6	12.48	12.73	16.78	21.98	31.58	38.38	38.68	39.73	45.42	51.14	52.62	55.00	56.27	61.76	91.95
Ir	$L\gamma_2$		3	1	77	6	12.840	2.89635	5	12.49	12.73	16.79	21.98	31.59	38.40	38.70	39.75	45.43	51.16	52.64	55.02	56.29	61.79	91.99
Gd	$K\alpha_{1,2}$		10	150	64	6	42.757	2.89915	6	12.50	12.74	16.81	22.01	31.62	38.43	38.74	39.79	45.48	51.21	52.70	55.07	56.35	61.85	92.11
Ir	$L\gamma_6$		3	.01	77	6	12.818	2.90124	5	12.51	12.75	16.82	22.02	31.65	38.46	38.77	39.82	45.52	51.25	52.74	55.12	56.40	61.90	92.19
Po	$L8_6$		3	.1	84	6	12.816	2.90160	4	12.51	12.76	16.82	22.02	31.65	38.47	38.77	39.82	45.52	51.26	52.75	55.12	56.40	61.91	92.21
Cs	$L\alpha_2$		1	10	55	6	4.272	2.90200	4	12.51	12.76	16.82	22.03	31.66	38.47	38.78	39.83	45.53	51.27	52.75	55.13	56.41	61.92	92.23
Th	$L\alpha_2$		3	10	90	6	12.807	2.90364	5	12.52	12.76	16.83	22.04	31.67	38.50	38.80	39.85	45.55	51.30	52.79	55.17	56.45	61.96	92.29
Yb	$L8_3$		2	6	70	6	8.535	2.90466	5	12.52	12.77	16.84	22.05	31.69	38.51	38.81	39.87	45.57	51.32			56.47	61.98	92.34
Np	$L\gamma_3$		5	2	93	6	21.336	2.90500	4	12.52	12.77	16.84	22.05	31.69	38.51	38.82	39.87	45.58	51.32	52.81	55.19	56.47	61.99	92.35
Pt	Lt	8	2	.01	78	6	8.531	2.90600	4	12.53	12.77	16.85	22.06	31.70	38.53	38.83	39.89	45.59	51.34			56.50	62.02	92.39
Np	$L\beta_4$		4	4	93	6	17.058	2.90684	5	12.53	12.78	16.85	22.06	31.71	38.54	38.84	39.90	45.61	51.36	52.85	55.23	56.51	62.04	92.42
Pb	$L\beta_3$		3	6	82	6	12.791	2.90733	5	12.53	12.78	16.85	22.07	31.71	38.55	38.85	39.90	45.62	51.37	52.86	55.24	56.52	62.05	92.44
Pa	M_2-N_4		1	5	91	6	4.260	2.91000	3	12.55	12.79	16.87	22.09	31.74	38.58	38.89	39.94	45.66	51.42	52.91	55.30	56.58	62.11	92.55
Ir	L_2-O_3	F	3	.01	77	6	12.771	2.91183	5	12.55	12.80	16.88	22.10	31.77	38.61	38.91	39.97	45.69	51.45	52.95	55.34	56.62	62.15	92.63
I	$L8_4$		1	4	53	6	4.257	2.91207	5	12.56	12.80	16.88	22.11	31.77	38.61	38.92	39.97	45.69	51.46	52.95	55.34	56.62	62.16	92.64
Xe	$K\alpha_1$	H	7	100	54	6	29.774	2.91438	5	12.57	12.81	16.89	22.12	31.79	38.64	38.95	40.01	45.73	51.50	53.00	55.39	56.67	62.21	92.74
Y	$K\beta_2$		4	4	39	6	17.013	2.91456	5	12.57	12.81	16.90	22.12	31.80	38.65	38.95	40.01	45.74	51.51	53.00	55.39	56.68	62.22	92.74
Ir	Lv	8	3	.01	77	6	12.758	2.91483	5	12.57	12.81	16.90	22.13	31.80	38.65	38.95	40.01	45.74	51.51	53.01	55.40	56.68	62.23	92.75
Pt	L_2-N_3	F	3	.01	78	6	12.751	2.91639	5	12.57	12.82	16.91	22.14	31.82	38.67	38.98	40.03	45.77	51.54	53.04	55.43	56.72	62.26	92.82
Au	Ll		2	3	79	6	8.493	2.91928	5	12.59	12.83	16.92	22.16	31.85	38.71	39.02	40.08	45.81	51.60			56.78	62.33	92.94

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Sb	$K\beta_1$		7	20	51	6	29.721	2.91959	6		12.59	12.83	16.92	22.16	31.85	38.72	39.02	40.08	45.82	51.60	53.10	55.50	56.78	62.34	92.95
Bi	L_3-N_3	8	3	.01	83	6	12.737	2.91963	5		12.59	12.84	16.92	22.16	31.85	38.72	39.02	40.08	45.82	51.60	53.10	55.50	56.79	62.34	92.95
U	M_1-N_2		1	1	92	6	4.245	2.92000	2		12.59	12.84	16.93	22.17	31.86	38.72	39.03	40.09	45.83	51.61	53.11	55.50	56.79	62.35	92.97
Ir	L_1-N_1	F	3	.01	77	6	12.726	2.92215	5		12.60	12.85	16.94	22.18	31.88	38.75	39.06	40.12	45.86	51.65	53.15	55.55	56.84	62.40	93.06
Ag	$K\beta_2$		6	5	47	6	25.452	2.92219	6		12.60	12.85	16.94	22.18	31.88	38.75	39.06	40.12	45.86	51.65	53.15	55.55	56.84	62.40	93.06
Ir	$L\gamma_8$		3	.1	77	6	12.726	2.92227	5		12.60	12.85	16.94	22.18	31.88	38.75	39.06	40.12	45.86	51.65	53.15	55.55	56.84	62.40	93.06
Pm	$K\alpha_2$	H	9	50	61	6	38.165	2.92323	6		12.60	12.85	16.95	22.19	31.89	38.77	39.07	40.13	45.88	51.67	53.17	55.57	56.86	62.42	93.10
Ho	$L\gamma_5$		2	.1	67	6	8.480	2.92360	4		12.61	12.85	16.95	22.19	31.90	38.77	39.08	40.14	45.89	51.68			56.87	62.43	93.12
Pb	L_2-M_5	8	3	.01	82	6	12.718	2.92410	4		12.61	12.85	16.95	22.20	31.90	38.78	39.08	40.14	45.89	51.69	53.19	55.59	56.88	62.45	93.14
Sb	$K\beta_3$		7	9	51	6	29.674	2.92416	6		12.61	12.86	16.95	22.20	31.90	38.78	39.08	40.15	45.90	51.69	53.19	55.59	56.88	62.45	93.14
Xe	$K\alpha_{1,2}$	H	7	150	54	6	29.666	2.92495	5		12.61	12.86	16.96	22.20	31.91	38.79	39.09	40.16	45.91	51.70	53.20	55.61	56.90	62.47	93.17
In	AL_1		1		49	6	4.237	2.92600	4		12.62	12.86	16.96	22.21	31.92	38.80	39.11	40.17	45.93	51.72	53.22	55.63	56.92	62.49	93.22
In	$L\gamma_4$		1	.1	49	6	4.236	2.92640	4		12.62	12.86	16.96	22.22	31.93	38.81	39.11	40.18	45.93	51.73	53.23	55.64	56.93	62.50	93.23
Pd	$K\alpha_1$		5	100	46	6	21.174	2.92724	6		12.62	12.87	16.97	22.22	31.94	38.82	39.13	40.19	45.95	51.75	53.25	55.65	56.95	62.52	93.27
Tm	$L\beta_{2,15}$		2	20	69	6	8.467	2.92800	4		12.62	12.87	16.97	22.23	31.95	38.83	39.14	40.20	45.96	51.76			56.96	62.54	93.30
Pa	$L\beta_3$		4	6	91	6	16.927	2.92920	5		12.63	12.88	16.98	22.24	31.96	38.85	39.15	40.22	45.98	51.78	53.29	55.69	56.99	62.57	93.35
Os	$L\gamma_{11}$	8	3	.01	76	6	12.694	2.92950	4		12.63	12.88	16.98	22.24	31.96	38.85	39.16	40.22	45.98	51.79	53.29	55.70	56.99	62.57	93.36
Gd	$K\alpha_2$		10	50	64	6	42.302	2.93038	6		12.63	12.88	16.99	22.25	31.97	38.86	39.17	40.23	46.00	51.81	53.31	55.72	57.01	62.59	93.40
Si	$L\beta_4$		3	4	83	6	12.689	2.93070	5		12.64	12.88	16.99	22.25	31.98	38.87	39.17	40.24	46.00	51.81	53.32	55.72	57.02	62.60	93.41
Os	L_1-N_4	8	3	.01	76	6	12.685	2.93160	4		12.64	12.89	16.99	22.26	31.99	38.88	39.19	40.25	46.02	51.83	53.33	55.74	57.04	62.62	93.45
Sb	$L\gamma_5$		1	.1	51	6	4.228	2.93187	5		12.64	12.89	17.00	22.26	31.99	38.89	39.19	40.26	46.02	51.83	53.34	55.75	57.04	62.63	93.46
Yb	$L\beta_6$		2	.1	70	6	8.455	2.93220	4		12.64	12.89	17.00	22.26	31.99	38.89	39.20	40.26	46.03	51.84			57.05	62.64	93.47
Nd	$K\beta_1$		10	22	60	6	42.264	2.93299	6		12.65	12.89	17.00	22.27	32.00	38.90	39.21	40.27	46.04	51.86	53.36	55.77	57.07	62.66	93.51
Th	M_1-N_3		1	.1	90	6	4.225	2.93400	3		12.65	12.90	17.01	22.27	32.01	38.91	39.22	40.29	46.06	51.87	53.38	55.79	57.09	62.68	93.55
Pd	$K\alpha_{1,2}$		5	150	46	6	21.121	2.93452	6		12.65	12.90	17.01	22.28	32.02	38.92	39.23	40.29	46.07	51.88	53.39	55.80	57.10	62.69	93.57
I	$L\beta_1$		1	75	53	6	4.220	2.93744	5		12.66	12.91	17.03	22.30	32.05	38.96	39.27	40.34	46.12	51.94	53.45	55.86	57.16	62.76	93.69
Pt	L_2-N_2	8	3	.01	78	6	12.659	2.93760	4		12.67	12.91	17.03	22.30	32.05	38.96	39.27	40.34	46.12	51.94	53.45	55.87	57.17	62.77	93.70
Tl	$L_3-P_{2,3}$	8	3	.01	81	6	12.659	2.93778	5		12.67	12.92	17.03	22.30	32.06	38.97	39.27	40.34	46.12	51.95	53.46	55.87	57.17	62.77	93.70
Se	$K\beta_2$		3	1	34	6	12.650	2.93976	5		12.67	12.92	17.04	22.32	32.08	38.99	39.30	40.37	46.15	51.98	53.49	55.91	57.21	62.82	93.79
Ac	$L\alpha_1$	H	3	100	89	6	12.650	2.93979	5		12.68	12.92	17.04	22.32	32.08	38.99	39.30	40.37	46.15	51.98	53.50	55.91	57.21	62.82	93.79
Nd	$K\beta_3$		10	10	60	6	42.159	2.94027	6		12.68	12.93	17.05	22.32	32.08	39.00	39.31	40.38	46.16	51.99	53.50	55.92	57.22	62.83	93.81
Kr	$K\alpha_1$		3	100	36	6	12.648	2.94030	4		12.68	12.93	17.05	22.32	32.08	39.00	39.31	40.38	46.16	51.99	53.51	55.92	57.22	62.83	93.81
Tl	$L\beta_5$		3	1	81	6	12.641	2.94174	5		12.68	12.93	17.05	22.33	32.10	39.02	39.33	40.40	46.19	52.02	53.53	55.95	57.25	62.86	93.87
Ta	$L\eta$		2	1	73	6	8.427	2.94212	5		12.69	12.93	17.06	22.34	32.10	39.03	39.33	40.40	46.19	52.03			57.26	62.87	93.89
Sn	$K\alpha_1$		6	100	50	6	25.267	2.94359	6		12.69	12.94	17.06	22.35	32.12	39.05	39.35	40.42	46.22	52.06	53.57	55.99	57.29	62.91	93.95
Tb	$L\gamma_3$		2	1	65	6	8.422	2.94360	4		12.69	12.94	17.06	22.35	32.12	39.05	39.35	40.42	46.22	52.06			57.29	62.91	93.95
Kr	$K\alpha_{1,2}$		3	150	36	6	12.631	2.94430	4		12.69	12.94	17.07	22.35	32.13	39.06	39.36	40.43	46.23	52.07	53.58	56.01	57.31	62.93	93.98
Np	$L\beta_2$		4	20	93	6	16.837	2.94492	6		12.70	12.95	17.07	22.36	32.14	39.07	39.37	40.44	46.24	52.08	53.60	56.02	57.32	62.94	94.00
Dy	$L\gamma_1$		2	5	66	6	8.417	2.94532	5		12.70	12.95	17.07	22.36	32.14	39.07	39.38	40.45	46.25	52.09			57.33	62.95	94.02
Xe	$K\alpha_2$	H	7	50	54	6	29.453	2.94609	5		12.70	12.95	17.08	22.37	32.15	39.08	39.39	40.46	46.26	52.10	53.62	56.04	57.35	62.97	94.05
Pb	$L\beta_2$		3	20	82	6	12.621	2.94663	5		12.70	12.95	17.08	22.37	32.16	39.09	39.40	40.47	46.27	52.11	53.63	56.05	57.36	62.98	94.07
Os	$L\eta$	B	2	.01	76	6	8.413	2.94700	4		12.71	12.96	17.08	22.37	32.16	39.09	39.40	40.47	46.27	52.12			57.37	62.99	94.09
U	$M_3-O_{4,5}$		1	1	92	6	4.205	2.94800	3		12.71	12.96	17.09	22.38	32.17	39.11	39.42	40.49	46.29	52.14	53.66	56.08	57.39	63.01	94.13
Bi	L_3-N_2	B	3	.01	83	6	12.613	2.94840	5		12.71	12.96	17.09	22.38	32.18	39.11	39.42	40.49	46.30	52.15	53.66	56.09	57.40	63.02	94.15
Pb	$L\beta_1$		3	50	82	6	12.612	2.94873	5		12.71	12.96	17.09	22.39	32.18	39.12	39.43	40.50	46.30	52.15	53.67	56.10	57.40	63.03	94.16
Pd	$K\alpha_2$		5	50	46	6	21.017	2.94910	6		12.72	12.97	17.10	22.39	32.18	39.12	39.43	40.50	46.31	52.16	53.68	56.11	57.41	63.04	94.18
Xe	$K\beta_1$	H	8	20	54	6	33.619	2.94976	5		12.72	12.97	17.10	22.39	32.19	39.13	39.44	40.51	46.32	52.17	53.69	56.12	57.43	63.06	94.20
Tc	$K\beta_2$	H	5	3	43	6	21.002	2.95120	5		12.72	12.97	17.11	22.41	32.21	39.15	39.46	40.53	46.34	52.20	53.72	56.15	57.46	63.09	94.26
Yb	$L\beta_1$		2	50	70	6	8.400	2.95130	5		12.72	12.97	17.11	22.41	32.21	39.15	39.46	40.53	46.35	52.20			57.46	63.09	94.27
Pb	$L\beta_{15}$		3	1	82	6	12.599	2.95167	5		12.73	12.98	17.11	22.41	32.21	39.16	39.47	40.54	46.35	52.21	53.73	56.16	57.47	63.10	94.28
La	$K\beta_1$		9	21	57	6	37.795	2.95185	6		12.73	12.98	17.11	22.41	32.21	39.16	39.47	40.54	46.35	52.21	53.73	56.16	57.47	63.11	94.29
Kr	$K\alpha_2$		3	50	36	6	12.596	2.95230	4		12.73	12.98	17.12	22.41	32.22	39.17	39.48	40.55	46.36	52.22	53.74	56.17	57.48	63.12	94.31
Sn	$K\alpha_{1,2}$		6	150	50	6	25.191	2.95250	6		12.73	12.98	17.12	22.42	32.22	39.17	39.48	40.55	46.37	52.23	53.74	56.18	57.48	63.12	94.32
W	$L\alpha_1$		2	100	74	6	8.396	2.95278	5		12.73	12.98	17.12	22.42	32.22	39.17	39.48	40.56	46.37	52.23			57.49	63.13	94.33
Tb	$L\gamma_2$		2	1	65	6	8.396	2.95280	4		12.73	12.98	17.12	22.42	32.22	39.17	39.48	40.56	46.37	52.23			57.49	63.13	94.33
Se	$K\beta_5$		3	.05	34	6	12.594	2.95290	4		12.73	12.98	17.12	22.42	32.23	39.18	39.48	40.56	46.37	52.23	53.75	56.18	57.49	63.13	94.34
Xe	$K\beta_3$	H	8	9	54	6	33.556	2.95528	5		12.74	12.99	17.13	22.44	32.25	39.21	39.52	40.59	46.41	52.28	53.80	56.23	57.54	63.19	94.44
Tl	L_3-O_3	B	3	.01	81	6	12.580	2.95614	5		12.75	13.00	17.14	22.44	32.26	39.22	39.53	40.60	46.43	52.30	53.82	56.25	57.56	63.21	94.47
Rn	$L\gamma_1$	H	4	10	86	6	16.768	2.95712	5		12.75	13.00	17.14	22.45	32.27	39.23	39.54	40.62	46.44	52.31	53.84	56.27	57.58	63.23	94.51
La	$K\beta_3$		9	9	57	6	37.714	2.95817	6		12.75	13.01	17.15	22.46	32.28	39.25	39.56	40.63	46.46	52.33	53.86	56.29	57.60	63.26	94.56
Hf	L_2-M_2	B	2	.01	72	6	8.372	2.96128	5		12.77	13.02	17.17	22.48	32.32	39.29	39.60	40.68	46.51	52.39			57.67	63.33	94.69
Hg	$L\beta_9$	8	3	.01	80	6	12.558	2.96130	4		12.77	13.02	17.17	22.48	32.32	39.29	39.60	40.68	46.51	52.39	53.92	56.36	57.67	63.33	94.69
Gd	$L_1-O_{4,5}$	B	2	.01	64	6	8.372	2.96140	4		12.77	13.02	17.17	22.48	32.32	39.29	39.60	40.68	46.51	52.40			57.67	63.33	94.69
Tl	L_3-O_2	B	3	.01	81	6	12.554	2.96214	5		12.77	13.02	17.17	22.49	32.33	39.30	39.61	40.69	46.53	52.41	53.93	56.38	57.69	63.35	94.72
Y	$K\beta_1$		4	16	39	6	16.735	2.96288	5		12.78	13.03	17.18	22.50	32.34	39.31	39.62	40.70	46.54	52.42	53.95	56.39	57.70	63.37	94.75

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Pt	$L\gamma_5$		3	.1	78	6	12.550	2.96310	4		12.78	13.03	17.18	22.50	32.34	39.32	39.63	40.70	46.54	52.43	53.95	56.40	57.71	63.37	94.76
Y	$K\beta_3$		4	8	39	6	16.723	2.96504	5		12.78	13.04	17.19	22.51	32.36	39.34	39.65	40.73	46.57	52.47	53.99	56.44	57.75	63.42	94.85
La	$K\alpha_1$		8	100	57	6	33.436	2.96590	6		12.79	13.04	17.19	22.52	32.37	39.36	39.66	40.74	46.59	52.48	54.01	56.45	57.77	63.44	94.88
Tl	Lu	B	3	.01	81	6	12.536	2.96640	4		12.79	13.04	17.20	22.52	32.38	39.36	39.67	40.75	46.60	52.49	54.02	56.46	57.78	63.45	94.90
Bi	$L\beta_{17}$	8	3	.01	83	6	12.532	2.96739	5		12.79	13.05	17.20	22.53	32.39	39.38	39.69	40.76	46.61	52.51	54.04	56.48	57.80	63.48	94.94
Gd	$L\gamma_4$		2	.1	64	6	8.354	2.96780	4		12.80	13.05	17.21	22.53	32.39	39.38	39.69	40.77	46.62	52.52			57.81	63.49	94.96
Pr	$K\beta_2$		10	65	59	6	41.767	2.96790	5		12.80	13.05	17.21	22.53	32.39	39.38	39.69	40.77	46.62	52.52	54.05	56.50	57.81	63.49	94.97
Pa	$L\beta_1$		4	50	91	6	16.699	2.96928	5		12.80	13.05	17.21	22.55	32.41	39.40	39.71	40.79	46.64	52.55	54.08	56.52	57.84	63.52	95.02
Er	$L\beta_5$		2	.1	68	6	8.349	2.96960	4		12.80	13.06	17.22	22.55	32.41	39.41	39.72	40.80	46.65	52.55			57.85	63.53	95.04
Re	L_1-$O_{4,5}$	B	3	.01	75	6	12.521	2.97000	4		12.81	13.06	17.22	22.55	32.42	39.41	39.72	40.80	46.66	52.56	54.09	56.54	57.86	63.54	95.05
Sn	$K\alpha_2$		6	50	50	6	25.040	2.97032	6		12.81	13.06	17.22	22.55	32.42	39.42	39.73	40.81	46.66	52.57	54.10	56.55	57.86	63.55	95.07
Tl	$L\beta_7$		3	.1	81	6	12.519	2.97051	5		12.81	13.06	17.22	22.55	32.42	39.42	39.73	40.81	46.67	52.57	54.10	56.55	57.87	63.55	95.08
Te	$L\beta_6$		1	1	52	6	4.173	2.97088	5		12.81	13.06	17.22	22.56	32.43	39.42	39.73	40.82	46.67	52.58	54.11	56.56	57.88	63.56	95.09
Er	$L\beta_9$	B	2	.01	68	6	8.345	2.97100	4		12.81	13.06	17.22	22.56	32.43	39.43	39.74	40.82	46.67	52.58			57.88	63.56	95.10
Ir	$L\gamma_1$		3	10	77	6	12.510	2.97255	5		12.82	13.07	17.23	22.57	32.45	39.45	39.76	40.84	46.70	52.61	54.14	56.59	57.91	63.60	95.16
Sb	$L\beta_9$	B	1	.01	51	6	4.170	2.97261	5		12.82	13.07	17.23	22.57	32.45	39.45	39.76	40.84	46.70	52.61	54.14	56.59	57.91	63.60	95.16
W	$L\alpha_2$		2	10	74	6	8.334	2.97486	5		12.83	13.08	17.25	22.59	32.47	39.48	39.79	40.87	46.74	52.65			57.96	63.66	95.26
Ac	$L\alpha_2$	H	3	10	89	6	12.499	2.97534	5		12.83	13.08	17.25	22.59	32.48	39.49	39.80	40.88	46.75	52.66	54.19	56.65	57.97	63.67	95.28
Os	$L\gamma_3$		3	2	76	6	12.498	2.97558	5		12.83	13.08	17.25	22.59	32.48	39.49	39.80	40.88	46.75	52.67	54.20	56.65	57.98	63.67	95.29
Se	$K\beta_1$		3	16	34	6	12.494	2.97654	5		12.83	13.09	17.26	22.60	32.49	39.50	39.81	40.90	46.77	52.68	54.22	56.67	58.00	63.70	95.33
Ni	$K\beta_5$	B	2	.03	28	6	8.327	2.97724	5	4	12.84	13.09	17.26	22.61	32.50	39.51	39.82	40.91	46.78	52.70			58.01	63.71	95.36
Re	$L\gamma_4$		3	.1	75	6	12.490	2.97747	5		12.84	13.09	17.26	22.61	32.50	39.52	39.83	40.91	46.78	52.70	54.24	56.69	58.02	63.72	95.37
Se	$K\beta_3$		3	8	34	6	12.487	2.97804	5		12.84	13.09	17.27	22.61	32.51	39.52	39.83	40.92	46.79	52.71	54.25	56.71	58.03	63.73	95.39
La	$K\alpha_{1,2}$		8	150	57	6	33.299	2.97810	6		12.84	13.09	17.27	22.61	32.51	39.52	39.83	40.92	46.79	52.71	54.25	56.71	58.03	63.73	95.40
Sb	$L\beta_{10}$	8	1	.01	51	6	4.161	2.97917	5		12.85	13.10	17.27	22.62	32.52	39.54	39.85	40.93	46.81	52.73	54.27	56.73	58.05	63.76	95.44
8i	$L\beta_6$		3	.1	83	6	12.479	2.97993	5		12.85	13.10	17.28	22.63	32.53	39.55	39.86	40.94	46.82	52.75	54.28	56.74	58.07	63.78	95.47
In	$L\gamma_{2,3}$		1	2	49	6	4.160	2.98000	4		12.85	13.10	17.28	22.63	32.53	39.55	39.86	40.95	46.82	52.75	54.29	56.75	58.07	63.78	95.48
Re	$L\gamma_4$p		3	.1	75	6	12.479	2.98002	5		12.85	13.10	17.28	22.63	32.53	39.55	39.86	40.95	46.82	52.75	54.29	56.75	58.07	63.78	95.48
Sn	$K\beta_2$		7	5	50	6	29.104	2.98140	6		12.86	13.11	17.29	22.64	32.55	39.57	39.88	40.97	46.85	52.78	54.31	56.78	58.10	63.81	95.54
Sn	AL_2		1		50	6	4.157	2.98230	4		12.86	13.11	17.29	22.65	32.56	39.58	39.89	40.98	46.86	52.79	54.33	56.79	58.12	63.83	95.57
Ag	$K\beta_1$		6	18	47	6	24.938	2.98241	6		12.86	13.11	17.29	22.65	32.56	39.58	39.90	40.98	46.86	52.80	54.33	56.80	58.12	63.84	95.58
Np	$L\gamma_1$		5	10	93	6	20.781	2.98249	6		12.86	13.11	17.29	22.65	32.56	39.58	39.90	40.98	46.86	52.80	54.34	56.80	58.12	63.84	95.58
Yb	$L\beta_4$		2	5	70	6	8.312	2.98276	5		12.86	13.11	17.29	22.65	32.56	39.59	39.90	40.99	46.87	52.80			58.13	63.84	95.59
Eu	$K\alpha_1$		10	100	63	6	41.535	2.98446	6		12.87	13.12	17.30	22.66	32.58	39.61	39.92	41.01	46.90	52.84	54.37	56.84	58.17	63.88	95.67
Nb	$K\alpha_1$		4	100	41	6	16.612	2.98480	5		12.87	13.12	17.31	22.66	32.58	39.62	39.93	41.01	46.90	52.84	54.38	56.85	58.17	63.89	95.68
Ir	Lt	B	2	.01	77	6	8.303	2.98600	4		12.88	13.13	17.31	22.67	32.60	39.63	39.95	41.03	46.92	52.86			58.20	63.92	95.73
Ag	$K8_3$		6	8	47	6	24.907	2.98611	6		12.88	13.13	17.31	22.67	32.60	39.63	39.95	41.03	46.92	52.87	54.41	56.87	58.20	63.92	95.74
Nd	$K\alpha_1$		9	100	60	6	37.355	2.98661	6		12.88	13.13	17.32	22.68	32.60	39.64	39.95	41.04	46.93	52.88	54.42	56.88	58.21	63.94	95.76
Er	$L\beta_7$		2	.1	68	6	8.297	2.98820	4		12.88	13.14	17.33	22.69	32.62	39.66	39.98	41.06	46.96	52.91			58.24	63.97	95.82
Er	$L\beta_{10}$	B	2	.01	68	6	8.297	2.98820	4		12.88	13.14	17.33	22.69	32.62	39.66	39.98	41.06	46.96	52.91			58.24	63.97	95.82
Hg	$L\beta_{10}$	B	3	.01	80	6	12.443	2.98860	4		12.89	13.14	17.33	22.69	32.63	39.67	39.98	41.07	46.97	52.91	54.46	56.92	58.25	63.98	95.84
Re	L_1-O_1	8	3	.01	75	6	12.440	2.98950	4		12.89	13.14	17.33	22.70	32.64	39.68	39.99	41.08	46.98	52.93	54.47	56.94	58.27	64.01	95.88
Nb	$K\alpha_{1,2}$		4	150	41	6	16.581	2.99045	5		12.89	13.15	17.34	22.71	32.65	39.69	40.01	41.10	47.00	52.95	54.49	56.96	58.29	64.03	95.92
U	$L\beta_4$		4	4	92	6	16.573	2.99194	6		12.90	13.15	17.35	22.72	32.66	39.72	40.03	41.12	47.02	52.98	54.52	56.99	58.32	64.06	95.98
U	$L\gamma_3$		5	2	92	6	20.709	2.99287	6		12.90	13.16	17.35	22.73	32.67	39.73	40.04	41.13	47.04	53.00	54.54	57.01	58.34	64.09	96.02
Cs	Ln		1	1	55	6	4.141	2.99320	4		12.91	13.16	17.35	22.73	32.68	39.73	40.05	41.14	47.04	53.00	54.55	57.02	58.35	64.09	96.04
Os	$L\gamma_2$		3	1	76	6	12.420	2.99415	5		12.91	13.16	17.36	22.74	32.69	39.75	40.06	41.15	47.06	53.02	54.57	57.04	58.37	64.12	96.08
8a	$K\beta_2$		9	7	56	6	37.251	2.99493	5		12.91	13.17	17.36	22.74	32.70	39.76	40.07	41.16	47.07	53.04	54.58	57.06	58.39	64.14	96.11
Pt	Ll		2	3	78	6	8.267	2.99900	4		12.93	13.19	17.39	22.77	32.74	39.81	40.13	41.22	47.14	53.11			58.48	64.23	96.28
Eu	$K\alpha_{1,2}$		10	150	63	6	41.320	3.00003	6		12.94	13.19	17.39	22.78	32.75	39.83	40.14	41.23	47.16	53.13	54.68	57.16	58.50	64.26	96.33
Ni	$K\beta_{1,3}$		2	20	28	6	8.263	3.00027	6		12.94	13.19	17.40	22.78	32.76	39.83	40.14	41.24	47.16	53.14			58.50	64.26	96.34
Sb	AL_3		1		51	6	4.132	3.00030	4		12.94	13.19	17.40	22.78	32.76	39.83	40.14	41.24	47.16	53.14	54.69	57.17	58.50	64.26	96.34
Nd	$K\alpha_{1,2}$		9	150	60	6	37.182	3.00049	6		12.94	13.19	17.40	22.79	32.76	39.83	40.15	41.24	47.16	53.14	54.69	57.17	58.51	64.27	96.35
Sn	$L\gamma_1$		1	8	50	6	4.130	3.00115	5		12.94	13.20	17.40	22.79	32.77	39.84	40.16	41.25	47.18	53.15	54.70	57.19	58.52	64.28	96.38
8i	L_1-M_1	B	3	.01	83	6	12.390	3.00150	4		12.94	13.20	17.40	22.79	32.77	39.85	40.16	41.25	47.18	53.16	54.71	57.19	58.53	64.29	96.39
Pb	L_3-N_3	B	3	.01	82	6	12.390	3.00150	4		12.94	13.20	17.40	22.79	32.77	39.85	40.16	41.25	47.18	53.16	54.71	57.19	58.53	64.29	96.39
Nb	$K\alpha_2$		4	50	41	6	16.518	3.00176	5		12.94	13.20	17.40	22.79	32.77	39.85	40.16	41.26	47.19	53.17	54.72	57.20	58.53	64.30	96.40
I	$K\beta_2$	H	8	6	53	6	33.036	3.00184	5		12.94	13.20	17.40	22.80	32.77	39.85	40.17	41.26	47.19	53.17	54.72	57.20	58.54	64.30	96.40
Tl	$L\beta_3$		3	6	81	6	12.388	3.00186	5		12.94	13.20	17.40	22.80	32.77	39.85	40.17	41.26	47.19	53.17	54.72	57.20	58.54	64.30	96.41
La	$K\alpha_2$		8	50	57	6	33.028	3.00250	6		12.95	13.20	17.41	22.80	32.78	39.86	40.18	41.27	47.20	53.18	54.73	57.21	58.55	64.32	96.43
Os	$L\gamma_6$		3	.01	76	6	12.383	3.00321	5		12.95	13.20	17.41	22.81	32.79	39.87	40.19	41.28	47.21	53.19	54.74	57.23	58.57	64.33	96.46
Am	Ll		3	3	95	6	12.381	3.00360	4		12.95	13.21	17.42	22.81	32.79	39.88	40.19	41.28	47.22	53.20	54.75	57.24	58.57	64.34	96.48
Sb	$L\beta_7$		1	.1	51	6	4.125	3.00520	4		12.96	13.21	17.42	22.82	32.81	39.90	40.21	41.31	47.24	53.23	54.78	57.27	58.61	64.38	96.55
La	Ll		1	2	57	6	4.124	3.00600	3		12.96	13.22	17.43	22.83	32.82	39.91	40.22	41.32	47.26	53.25	54.80	57.29	58.63	64.40	96.58
Tc	$K\beta_1$	H	5	16	43	6	20.615	3.00650	5		12.96	13.22	17.43	22.83	32.83	39.92	40.23	41.33	47.26	53.26	54.81	57.30	58.64	64.41	96.60

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Tb	$L\gamma_6$		2	.01	65	6	8.245	3.00700	4		12.97	13.22	17.43	22.84	32.83	39.92	40.24	41.33	47.27	53.27			58.65	64.43	96.63
Te	$L\beta_3$		1	6	52	6	4.120	3.00893	5		12.97	13.23	17.45	22.85	32.85	39.95	40.27	41.36	47.31	53.30	54.86	57.35	58.69	64.47	96.71
Tc	$K\beta_3$	H	5	8	43	6	20.595	3.00940	5		12.98	13.23	17.45	22.85	32.86	39.96	40.27	41.37	47.31	53.31	54.87	57.36	58.70	64.48	96.73
Th	M_2-N_4		1	5	90	6	4.117	3.01100	3		12.98	13.24	17.46	22.87	32.88	39.98	40.29	41.39	47.34	53.34	54.90	57.39	58.73	64.52	96.80
Tm	$L\beta_3$		2	6	69	6	8.229	3.01260	4		12.99	13.25	17.47	22.88	32.90	40.00	40.32	41.41	47.37	53.37			58.77	64.56	96.87
Os	L_2-O_3	8	3	.01	76	6	12.338	3.01410	4		13.00	13.25	17.48	22.89	32.91	40.02	40.34	41.44	47.39	53.40	54.96	57.46	58.80	64.60	96.93
Ra	$L\alpha_1$		3	100	88	6	12.338	3.01419	5		13.00	13.25	17.48	22.89	32.91	40.02	40.34	41.44	47.39	53.40	54.96	57.46	58.80	64.60	96.93
Os	$L\nu$	8	3	.01	76	6	12.334	3.01500	4		13.00	13.26	17.48	22.90	32.92	40.03	40.35	41.45	47.41	53.42	54.98	57.47	58.82	64.62	96.97
Cf	$L\beta_1$		5	50	98	3	20.557	3.01500			13.00	13.26	17.48	22.90	32.92	40.03	40.35	41.45	47.41	53.42	54.98	57.47	58.82	64.62	96.97
Ir	L_2-N_3	8	3	.01	77	6	12.329	3.01620	4		13.01	13.26	17.49	22.91	32.94	40.05	40.37	41.47	47.43	53.44	55.00	57.50	58.84	64.65	97.02
Xe	$L\alpha_1$	H	1	100	54	6	4.109	3.01660	4		13.01	13.26	17.49	22.91	32.94	40.06	40.37	41.47	47.43	53.45	55.01	57.51	58.85	64.66	97.04
U	$L\beta_2$		4	20	92	6	16.425	3.01872	6		13.02	13.27	17.50	22.93	32.96	40.09	40.40	41.50	47.47	53.49	55.05	57.55	58.90	64.71	97.13
Th	$L\beta_3$		4	6	90	6	16.423	3.01916	5		13.02	13.27	17.51	22.93	32.97	40.09	40.41	41.51	47.48	53.50	55.06	57.56	58.91	64.72	97.15
Tb	$L\gamma_8$		2	.1	65	6	8.211	3.01940	4		13.02	13.28	17.51	22.93	32.97	40.10	40.41	41.51	47.48	53.50			58.91	64.72	97.16
Tl	L_2-M_5	8	3	.01	81	6	12.307	3.02166	5		13.03	13.29	17.52	22.95	33.00	40.13	40.44	41.54	47.52	53.55	55.11	57.61	58.96	64.78	97.25
Pb	$L\beta_4$		3	4	82	6	12.304	3.02250	4		13.03	13.29	17.53	22.95	33.01	40.14	40.45	41.56	47.53	53.56	55.13	57.63	58.98	64.80	97.29
Sb	$L\beta_{2,15}$		1	17	51	6	4.100	3.02335	5		13.04	13.29	17.53	22.95	33.02	40.15	40.47	41.57	47.55	53.58	55.14	57.65	59.00	64.82	97.33
Os	$L\gamma_8$		3	.1	76	6	12.299	3.02364	5		13.04	13.29	17.53	22.96	33.02	40.15	40.47	41.57	47.55	53.58	55.15	57.65	59.00	64.83	97.34
Er	$L\beta_{2,15}$		2	20	68	6	8.188	3.02798	5		13.06	13.31	17.56	23.00	33.07	40.21	40.53	41.64	47.62	53.67			59.10	64.93	97.53
Nd	$K\alpha_2$		9	50	60	6	36.841	3.02825	6		13.06	13.31	17.56	23.00	33.07	40.22	40.53	41.64	47.63	53.67	55.24	57.75	59.10	64.94	97.54
Hg	$L\beta_5$		3	1	80	6	12.275	3.02961	5		13.06	13.32	17.57	23.01	33.09	40.24	40.55	41.66	47.65	53.70	55.27	57.78	59.13	64.97	97.60
Sc	$K\alpha_1$		1	100	21	6	4.090	3.03090	4	4	13.07	13.33	17.57	23.02	33.10	40.25	40.57	41.68	47.67	53.72	55.29	57.81	59.16	65.00	97.65
Tl	$L\beta_2$		3	20	81	6	12.270	3.03093	5		13.07	13.33	17.57	23.02	33.10	40.26	40.57	41.68	47.67	53.72	55.29	57.81	59.16	65.00	97.65
Eu	$K\alpha_2$		10	50	63	6	40.895	3.03118	6		13.07	13.33	17.58	23.02	33.10	40.26	40.58	41.68	47.68	53.73	55.30	57.81	59.17	65.01	97.67
Pb	L_3-N_2	8	3	.01	82	6	12.268	3.03120	5		13.07	13.33	17.58	23.02	33.10	40.26	40.58	41.68	47.68	53.73	55.30	57.81	59.17	65.01	97.67
Sc	$K\alpha_{1,2}$		1	150	21	6	4.088	3.03200	4	4	13.07	13.33	17.58	23.03	33.11	40.27	40.59	41.69	47.69	53.74	55.31	57.83	59.18	65.03	97.70
Tm	$L\beta_6$		2	.1	69	6	8.176	3.03240	4		13.08	13.33	17.58	23.03	33.12	40.28	40.59	41.70	47.70	53.75			59.19	65.04	97.72
Re	$L\gamma_{11}$	8	3	.01	75	6	12.264	3.03240	4		13.08	13.33	17.58	23.03	33.12	40.28	40.59	41.70	47.70	53.75	55.32	57.84	59.19	65.04	97.72
I	$K\alpha_1$		7	100	53	6	28.607	3.03323	6		13.08	13.34	17.59	23.04	33.13	40.29	40.60	41.71	47.71	53.77	55.34	57.85	59.21	65.06	97.75
Sc	$K\alpha_2$		1	50	21	6	4.085	3.03420	4	4	13.08	13.34	17.59	23.04	33.14	40.30	40.62	41.73	47.73	53.79	55.36	57.87	59.23	65.08	97.80
Th	Ls	F	3	.01	90	6	12.252	3.03525	5		13.09	13.35	17.60	23.05	33.15	40.31	40.63	41.74	47.74	53.81	55.38	57.90	59.25	65.10	97.84
Re	Ls	B	2	.01	75	6	8.167	3.03560	4		13.09	13.35	17.60	23.06	33.15	40.32	40.64	41.75	47.75	53.81			59.26	65.11	97.86
Re	L_1-N_4	8	3	.01	75	6	12.250	3.03570	4		13.09	13.35	17.60	23.06	33.15	40.32	40.64	41.75	47.75	53.81	55.39	57.91	59.26	65.12	97.86
Ir	L_2-N_2	8	3	.01	77	6	12.249	3.03600	4		13.09	13.35	17.60	23.06	33.16	40.33	40.64	41.75	47.76	53.82	55.39	57.91	59.27	65.12	97.87
Tl	$L\beta_{15}$		3	1	81	6	12.249	3.03603	5		13.09	13.35	17.60	23.06	33.16	40.33	40.64	41.75	47.76	53.82	55.39	57.91	59.27	65.12	97.88
Dy	$L\gamma_5$		2	.1	66	6	8.165	3.03648	5		13.09	13.35	17.61	23.06	33.16	40.33	40.65	41.76	47.77	53.83			59.28	65.13	97.89
Pa	M_3-$O_{4,5}$		1	1	91	6	4.080	3.03800	3		13.10	13.36	17.62	23.07	33.18	40.35	40.67	41.78	47.79	53.86	55.43	57.95	59.31	65.17	97.96
Hg	L_3-O_3	8	3	.01	80	6	12.224	3.04212	5		13.12	13.38	17.64	23.11	33.23	40.41	40.73	41.84	47.86	53.94	55.51	58.04	59.40	65.27	98.14
Pr	$K\beta_1$		10	22	59	6	40.741	3.04261	6		13.12	13.38	17.64	23.11	33.23	40.42	40.74	41.85	47.87	53.95	55.52	58.05	59.41	65.28	98.16
I	$K\alpha_{1,2}$		7	150	53	6	28.508	3.04375	6		13.13	13.38	17.65	23.12	33.25	40.43	40.75	41.86	47.89	53.97	55.55	58.07	59.44	65.31	98.21
Ta	$L\alpha_1$		2	100	73	6	8.145	3.04394	5		13.13	13.38	17.65	23.12	33.25	40.44	40.75	41.87	47.89	53.97			59.44	65.31	98.22
Tl	$L\beta_1$		3	50	81	6	12.211	3.04539	5		13.13	13.39	17.66	23.13	33.26	40.46	40.77	41.89	47.91	54.00	55.58	58.11	59.47	65.35	98.28
Hf	Ln		2	1	72	6	8.138	3.04650	5		13.14	13.40	17.67	23.14	33.28	40.47	40.79	41.90	47.93	54.02			59.49	65.38	98.33
Te	$L\beta_4$		1	4	52	6	4.069	3.04661	5		13.14	13.40	17.67	23.14	33.28	40.47	40.79	41.90	47.93	54.02	55.60	58.13	59.50	65.38	98.33
Sn	$K\beta_1$		7	19	50	6	28.481	3.04665	6		13.14	13.40	17.67	23.14	33.28	40.47	40.79	41.90	47.94	54.02	55.60	58.14	59.50	65.38	98.34
Hg	L_3-O_2	8	3	.01	80	6	12.206	3.04674	5		13.14	13.40	17.67	23.14	33.28	40.47	40.79	41.91	47.94	54.03	55.61	58.14	59.50	65.38	98.34
Ra	$L\alpha_2$		3	10	88	6	12.194	3.04968	5		13.15	13.41	17.68	23.16	33.31	40.52	40.83	41.95	47.99	54.08	55.66	58.20	59.56	65.45	98.47
Pr	$K\beta_3$		10	10	59	6	40.646	3.04975	6		13.15	13.41	17.68	23.16	33.31	40.52	40.84	41.95	47.99	54.08	55.67	58.20	59.55	65.45	98.47
Sn	$K\beta_3$		7	9	50	6	28.439	3.05114	6		13.16	13.42	17.69	23.18	33.33	40.54	40.85	41.97	48.01	54.11	55.69	58.23	59.59	65.49	98.53
At	$L\gamma_1$	H	4	10	85	6	16.249	3.05156	5		13.16	13.42	17.70	23.18	33.33	40.54	40.86	41.98	48.02	54.12	55.70	58.24	59.60	65.50	98.55
Hg	Lu	F	3	.01	80	6	12.183	3.05238	5		13.16	13.42	17.70	23.18	33.34	40.55	40.87	41.99	48.03	54.13	55.72	58.25	59.62	65.52	98.59
Hg	Lup	8	3	.01	80	6	12.181	3.05307	5		13.17	13.42	17.70	23.19	33.35	40.56	40.88	42.00	48.04	54.15	55.73	58.27	59.64	65.53	98.62
Hg	$L\beta_7$		3	.1	80	6	12.160	3.05811	5		13.19	13.45	17.73	23.23	33.41	40.63	40.95	42.07	48.13	54.24	55.83	58.37	59.74	65.66	98.84
Gd	$L\gamma_3$		2	1	64	6	8.104	3.05940	4		13.19	13.45	17.74	23.24	33.42	40.65	40.97	42.09	48.15	54.27			59.77	65.69	98.89
Tb	$L\gamma_1$		2	5	65	6	8.100	3.06060	4		13.20	13.46	17.75	23.25	33.43	40.67	40.99	42.11	48.17	54.29			59.80	55.72	98.95
Tm	$L\beta_1$		2	50	69	6	8.100	3.06080	4		13.20	13.46	17.75	23.25	33.44	40.67	40.99	42.11	48.17	54.30			59.80	65.72	98.95
Th	$L\beta_1$		4	50	90	6	16.199	3.06084	6		13.20	13.46	17.75	23.25	33.44	40.67	40.99	42.11	48.17	54.30	55.89	58.43	59.80	65.72	98.96
Pd	$K\beta_2$		6	3	46	6	24.295	3.06137	6		13.20	13.46	17.75	23.25	33.44	40.68	41.00	42.12	48.18	54.31	55.90	58.44	59.81	65.74	98.98
Au	$L\beta_9$	8	3	.01	79	6	12.145	3.06189	5		13.20	13.46	17.76	23.26	33.45	40.68	41.01	42.12	48.19	54.32	55.91	58.45	59.83	65.75	99.00
Pb	$L\beta_6$		3	.1	82	6	12.141	3.06300	4		13.21	13.47	17.76	23.27	33.46	40.70	41.02	42.14	48.21	54.34	55.93	58.48	59.85	65.77	99.05
I	$K\alpha_2$		7	50	53	6	28.312	3.06480	6		13.22	13.48	17.77	23.28	33.48	40.72	41.05	42.17	48.24	54.37	55.96	58.51	59.89	65.82	99.13
Ir	$L\gamma_5$		3	.1	77	6	12.132	3.06525	5		13.22	13.48	17.78	23.28	33.49	40.73	41.05	42.17	48.25	54.38	55.97	58.52	59.90	65.83	99.15
Pb	$L\beta_{17}$	F	3	.01	82	6	12.132	3.06540	5		13.22	13.48	17.78	23.28	33.49	40.73	41.05	42.17	48.25	54.38	55.98	58.53	59.90	65.83	99.16
Ta	$L\alpha_2$		2	10	73	6	8.086	3.06586	5		13.22	13.48	17.78	23.29	33.49	40.74	41.06	42.18	48.26	54.39			59.91	65.84	99.18
Gd	$L\gamma_2$		2	1	64	6	8.086	3.06620	4		13.22	13.48	17.78	23.29	33.50	40.74	41.07	42.19	48.26	54.40			59.92	65.85	99.19

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Rh	$K\alpha_1$		5	100	45	6	20.213	3.06639	6		13.22	13.48	17.78	23.29	33.50	40.75	41.07	42.19	48.27	54.40	56.00	58.55	59.92	65.86	99.20
Lu	L_2-M_2	B	2	.01	71	6	8.084	3.06666	5		13.22	13.48	17.78	23.29	33.50	40.75	41.07	42.19	48.27	54.41			59.93	65.86	99.21
Ba	$K\beta_1$		9	21	56	6	36.372	3.06730	6		13.23	13.49	17.79	23.30	33.51	40.76	41.08	42.20	48.28	54.42	56.01	58.57	59.94	65.88	99.24
Pu	Ll		3	3	94	6	12.122	3.06780	4		13.23	13.49	17.79	23.30	33.52	40.77	41.09	42.21	48.29	54.43	56.02	58.58	59.95	65.89	99.26
Th	AM_3		1		90	6	4.040	3.06800	3		13.23	13.49	17.79	23.30	33.52	40.77	41.09	42.21	48.29	54.43	56.03	58.58	59.96	65.90	99.27
Os	Lt	B	2	.01	76	6	8.077	3.06940	4		13.24	13.50	17.80	23.32	33.53	40.79	41.11	42.23	48.32	54.46			59.99	65.93	99.33
Ca	AK		1		20	6	4.037	3.07030	4		13.24	13.50	17.80	23.32	33.54	40.80	41.12	42.25	48.33	54.48	56.07	58.63	60.01	65.95	99.37
I	$K\beta_1$		8	20	53	6	32.289	3.07124	6		13.24	13.50	17.81	23.33	33.55	40.81	41.14	42.26	48.35	54.50	56.09	58.65	60.03	65.97	99.41
In	$K\alpha_1$		6	100	49	6	24.206	3.07268	6		13.25	13.51	17.82	23.34	33.57	40.83	41.16	42.28	48.37	54.52	56.12	58.68	60.06	66.01	99.48
Ba	$K\beta_3$		9	7	56	6	36.298	3.07356	6		13.25	13.51	17.82	23.35	33.58	40.85	41.17	42.29	48.39	54.54	56.14	58.70	60.08	66.03	99.51
Rh	$K\alpha_{1,2}$		5	150	45	6	20.165	3.07364	6		13.25	13.52	17.82	23.35	33.58	40.85	41.17	42.29	48.39	54.54	56.14	58.70	60.08	66.03	99.52
U	$L\gamma_1$		5	10	92	6	20.164	3.07385	6		13.26	13.52	17.83	23.35	33.58	40.85	41.17	42.30	48.39	54.55	56.14	58.70	60.08	66.04	99.53
Ca	$K\beta_5$	C	1	.01	20	6	4.032	3.07460	4	4	13.26	13.52	17.83	23.36	33.59	40.86	41.18	42.31	48.40	54.56	56.16	58.72	60.10	66.06	99.56
W	L_1-$O_{4,5}$	B	3	.01	74	6	12.094	3.07500	4		13.26	13.52	17.83	23.36	33.60	40.87	41.19	42.31	48.41	54.57	56.17	58.73	60.11	66.07	99.58
Os	$L\gamma_1$		3	10	76	6	12.093	3.07509	5		13.26	13.52	17.83	23.36	33.60	40.87	41.19	42.31	48.41	54.57	56.17	58.73	60.11	66.07	99.58
8o	$L\beta_5$		2	.1	67	6	8.061	3.07560	4		13.26	13.52	17.84	23.36	33.60	40.87	41.20	42.32	48.42	54.58			60.12	66.08	99.60
I	$K\beta_3$		8	9	53	6	32.234	3.07651	6		13.27	13.53	17.84	23.37	33.61	40.89	41.21	42.33	48.44	54.60	56.20	58.76	60.14	66.10	99.64
Te	$L\beta_1$		1	75	52	6	4.029	3.07677	5		13.27	13.53	17.84	23.37	33.62	40.89	41.21	42.34	48.44	54.60	56.20	58.77	60.15	66.11	99.66
Re	$L\gamma_3$		3	2	75	6	12.080	3.07839	5		13.28	13.54	17.85	23.38	33.63	40.91	41.24	42.36	48.47	54.63	56.23	58.80	60.18	66.15	99.73
Pa	$L\beta_4$		4	4	91	6	16.101	3.07960	4		13.28	13.54	17.86	23.39	33.65	40.93	41.25	42.38	48.49	54.66	56.26	58.83	60.21	66.18	99.78
Ba	$K\alpha_1$		8	100	56	6	32.188	3.08089	6		13.29	13.55	17.87	23.40	33.66	40.95	41.27	42.40	48.51	54.68	56.28	58.85	60.23	66.21	99.84
Cu	$K\alpha_1$		2	100	29	6	8.046	3.08112	6		13.29	13.55	17.87	23.41	33.67	40.95	41.27	42.40	48.51	54.69			60.24	66.21	99.85
In	$K\alpha_{1,2}$		6	150	49	6	24.136	3.08154	6		13.29	13.55	17.87	23.41	33.67	40.96	41.28	42.41	48.52	54.69	56.30	58.87	60.25	66.22	99.87
Ce	$K\beta_2$		10	7	58	6	40.226	3.08160	5		13.29	13.55	17.87	23.41	33.67	40.96	41.28	42.41	48.52	54.70	56.30	58.87	60.25	66.23	99.87
Sr	$K\beta_2$		4	3	38	6	16.082	3.08324	5		13.30	13.56	17.88	23.42	33.69	40.98	41.30	42.43	48.55	54.73	56.33	58.90	60.29	66.27	99.94
W	$L\gamma_4$		3	.1	74	6	12.061	3.08325	5		13.30	13.56	17.88	23.42	33.69	40.98	41.30	42.43	48.55	54.73	56.33	58.90	60.29	66.27	99.94
Ir	Ll	D	2	3	77	6	8.040	3.08360	4		13.30	13.56	17.88	23.43	33.69	40.99	41.31	42.44	48.55	54.73			60.29	66.27	99.96
Au	$L8_{10}$	B	3	.01	79	6	12.060	3.08367	5		13.30	13.56	17.88	23.43	33.69	40.99	41.31	42.44	48.55	54.74	56.34	58.91	60.29	66.28	99.96
Cu	$K\alpha_{1,2}$		2	150	29	6	8.040	3.08368	6		13.30	13.56	17.88	23.43	33.69	40.99	41.31	42.44	48.56	54.74			60.29	66.28	99.96
Pa	$L\gamma_3$		5	2	91	6	20.094	3.08450	4		13.30	13.56	17.89	23.43	33.70	41.00	41.32	42.45	48.57	54.75	56.36	58.93	60.31	66.30	100.00
Sn	$L\gamma_5$		1	.1	50	6	4.018	3.08475	5		13.30	13.56	17.89	23.43	33.71	41.00	41.33	42.45	48.57	54.76	56.36	58.93	60.32	66.30	100.01
Cd	AL_1		1		48	6	4.018	3.08490	4		13.30	13.56	17.89	23.44	33.71	41.00	41.33	42.46	48.58	54.76	56.36	58.94	60.32	66.31	100.02
Tl	L_3-N_3	B	3	.01	81	6	12.051	3.08580	4		13.31	13.57	17.90	23.44	33.72	41.02	41.34	42.47	48.59	54.78	56.38	58.96	60.34	66.33	100.06
W	$L\gamma_4p$		3	.1	74	6	12.051	3.08589	5		13.31	13.57	17.90	23.44	33.72	41.02	41.34	42.47	48.59	54.78	56.38	58.96	60.34	66.33	100.06
Eu	$L\gamma_4$		2	.1	63	6	8.029	3.08780	4		13.32	13.58	17.91	23.46	33.74	41.04	41.37	42.50	48.62	54.82			60.38	66.38	100.14
Rh	$K\alpha_2$		5	50	45	6	20.070	3.08815	6		13.32	13.58	17.91	23.46	33.74	41.05	41.37	42.50	48.63	54.82	56.43	59.00	60.39	66.38	100.16
Cu	$K\alpha_2$		2	50	29	6	8.026	3.08878	6		13.32	13.58	17.91	23.47	33.75	41.06	41.38	42.51	48.64	54.83			60.41	66.40	100.19
Tm	$L\beta_4$		2	5	69	6	8.024	3.08960	4		13.32	13.59	17.92	23.47	33.76	41.07	41.39	42.52	48.65	54.85			60.42	66.42	100.22
Ca	$K\beta_{1,3}$		1	15	20	6	4.012	3.08970	4	4	13.32	13.59	17.92	23.47	33.76	41.07	41.39	42.52	48.66	54.85	56.46	59.04	60.43	66.42	100.23
Cf	$L\gamma_1$		6	10	98	3	24.070	3.09000			13.33	13.59	17.92	23.47	33.77	41.07	41.40	42.53	48.66	54.86	56.47	59.04	60.43	66.43	100.24
Sm	$K\alpha_1$		10	100	62	6	40.111	3.09040	6		13.33	13.59	17.92	23.48	33.77	41.08	41.40	42.54	48.67	54.87	56.47	59.05	60.44	66.44	100.26
Pr	$L\alpha_1$	H	3	100	87	6	12.029	3.09147	5		13.33	13.59	17.93	23.49	33.78	41.10	41.42	42.55	48.69	54.89	56.49	59.07	60.46	66.46	100.31
Ba	$K\alpha_{1,2}$		8	150	56	6	32.062	3.09304	6		13.34	13.60	17.94	23.50	33.80	41.12	41.44	42.57	48.71	54.92	56.53	59.11	60.50	66.50	100.38
Bi	AM_1	8	1		83	6	4.006	3.09400	3		13.34	13.61	17.94	23.51	33.81	41.13	41.46	42.59	48.73	54.93	56.55	59.13	60.52	66.53	100.42
Pa	$L8_2$		4	20	91	6	16.022	3.09480	4		13.35	13.61	17.95	23.51	33.82	41.14	41.47	42.60	48.74	54.95	56.56	59.14	60.54	66.55	100.45
W	L_1-O_1	B	3	.01	74	6	12.015	3.09510	4		13.35	13.61	17.95	23.51	33.82	41.15	41.47	42.60	48.75	54.96	56.57	59.15	60.54	66.55	100.47
Pb	L_1-M_1	B	3	.01	82	6	12.008	3.09690	4		13.36	13.62	17.96	23.53	33.84	41.17	41.50	42.63	48.78	54.99	56.60	59.19	60.58	66.60	100.55
Re	$L\gamma_2$		3	1	75	6	12.008	3.09699	5		13.36	13.62	17.96	23.53	33.84	41.17	41.50	42.63	48.78	54.99	56.60	59.19	60.58	66.60	100.55
Ho	$L8_{10}$	B	2	.01	67	6	8.005	3.09720	4		13.36	13.62	17.96	23.53	33.85	41.17	41.50	42.63	48.78	55.00			60.59	66.60	100.56
Pr	$K\alpha_1$		9	100	59	6	36.020	3.09726	6		13.36	13.62	17.96	23.53	33.85	41.18	41.50	42.63	48.78	55.00	56.61	59.20	60.59	66.61	100.56
In	$K\alpha_2$		6	50	49	6	23.998	3.09926	6		13.37	13.63	17.97	23.55	33.87	41.20	41.53	42.66	48.82	55.04	56.65	59.24	60.63	66.65	100.65
Hg	$L\beta_3$		3	6	80	6	11.993	3.10074	5		13.37	13.63	17.98	23.56	33.89	41.22	41.55	42.68	48.84	55.06	56.68	59.27	60.66	66.69	100.72
Bi	L_2-M_2	B	3	.01	83	6	11.981	3.10380	4		13.39	13.65	18.00	23.58	33.92	41.27	41.59	42.73	48.89	55.12	56.74	59.33	60.73	66.76	100.86
U	Lt	B	3	.01	92	6	11.980	3.10410	4		13.39	13.65	18.00	23.58	33.92	41.27	41.60	42.73	48.90	55.13	56.75	59.34	60.74	66.77	100.87
Mo	$K\beta_2$		5	4	42	6	19.962	3.10495	5		13.39	13.65	18.01	23.59	33.93	41.28	41.61	42.75	48.91	55.15	56.76	59.36	60.75	66.79	100.91
Bk	$L\beta_1$		5	50	97	3	19.961	3.10500			13.39	13.65	18.01	23.59	33.93	41.28	41.61	42.75	48.91	55.15	56.76	59.36	60.76	66.79	100.91
Sm	$K\alpha_{1,2}$		10	150	62	6	39.911	3.10593	6		13.39	13.66	18.01	23.60	33.94	41.30	41.62	42.76	48.93	55.16	56.78	59.38	60.78	66.82	100.95
Re	$L\gamma_6$		3	.01	75	6	11.954	3.11097	5		13.42	13.68	18.04	23.64	34.00	41.37	41.69	42.83	49.01	55.26	56.88	59.48	60.88	66.94	101.18
Pr	$K\alpha_{1,2}$		9	150	59	6	35.860	3.11108	6		13.42	13.68	18.04	23.64	34.00	41.37	41.69	42.83	49.01	55.26	56.89	59.49	60.89	66.94	101.18
Ac	$L\beta_3$	H	4	10	89	6	15.929	3.11288	5		13.42	13.69	18.05	23.65	34.02	41.39	41.72	42.86	49.05	55.30	56.92	59.52	60.93	66.99	101.26
Cs	$K\beta_2$		9	6	55	6	35.815	3.11499	5		13.43	13.70	18.07	23.67	34.05	41.42	41.75	42.89	49.08	55.34	56.96	59.57	60.97	67.04	101.36
In	$K\beta_2$		7	5	49	6	27.856	3.11500	5		13.43	13.70	18.07	23.67	34.05	41.42	41.75	42.89	49.08	55.34	56.96	59.57	60.97	67.04	101.36
U	M_3-O_1		1	.5	92	6	3.979	3.11500	3		13.43	13.70	18.07	23.67	34.05	41.42	41.75	42.89	49.08	55.34	56.96	59.57	60.97	67.04	101.36
Sn	$L\beta_9$	B	1	.01	50	6	3.979	3.11513	5		13.43	13.70	18.07	23.67	34.05	41.42	41.75	42.89	49.08	55.34	56.97	59.57	60.98	67.04	101.36
Sb	$L\beta_6$		1	1	51	6	3.979	3.11513	5		13.43	13.70	18.07	23.67	34.05	41.42	41.75	42.89	49.08	55.34	56.97	59.57	60.98	67.04	101.36

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Au	$L_3-P_{2,3}$	C	3	.01	79	6	11.933	3.11628	5		13.44	13.70	18.07	23.68	34.06	41.44	41.77	42.91	49.10	55.36	56.99	59.60	61.00	67.07	101.42
Ba	$K\alpha_2$		8	50	56	6	31.812	3.11734	6		13.44	13.71	18.08	23.69	34.07	41.45	41.78	42.92	49.12	55.38	57.01	59.62	61.02	67.09	101.46
Tl	$L\beta_4$		3	4	81	6	11.929	3.11754	5		13.44	13.71	18.08	23.69	34.08	41.46	41.79	42.93	49.12	55.39	57.01	59.62	61.03	67.10	101.47
Re	L_2-O_3	B	3	.01	75	6	11.923	3.11910	4		13.45	13.72	18.09	23.70	34.09	41.48	41.81	42.95	49.15	55.42	57.05	59.66	61.06	67.14	101.54
Br	$K\alpha_1$		3	100	35	6	11.922	3.11922	5		13.45	13.72	18.09	23.70	34.09	41.48	41.81	42.95	49.15	55.42	57.05	59.66	61.06	67.14	101.55
Hg	$L\beta_2$		3	20	80	6	11.922	3.11925	5		13.45	13.72	18.09	23.70	34.09	41.48	41.81	42.95	49.15	55.42	57.05	59.66	61.06	67.14	101.55
Os	L_2-N_3	F	3	.01	76	6	11.915	3.12117	5		13.46	13.73	18.10	23.71	34.12	41.51	41.84	42.98	49.18	55.46	57.09	59.70	61.11	67.19	101.64
Re	Lv	B	3	.01	75	6	11.915	3.12120	4		13.46	13.73	18.10	23.71	34.12	41.51	41.84	42.98	49.18	55.46	57.09	59.70	61.11	67.19	101.64
Au	$L\beta_5$		3	1	79	6	11.914	3.12132	5		13.46	13.73	18.10	23.72	34.12	41.51	41.84	42.98	49.19	55.46	57.09	59.70	61.11	67.19	101.64
Sn	$L\beta_{10}$	B	1	.01	50	6	3.971	3.12170	5		13.46	13.73	18.11	23.72	34.12	41.52	41.84	42.99	49.19	55.47	57.10	59.71	61.12	67.20	101.66
Pd	$K\beta_1$		6	18	46	6	23.815	3.12312	6		13.47	13.73	18.11	23.73	34.14	41.54	41.86	43.01	49.22	55.50	57.13	59.74	61.15	67.24	101.72
Er	$L\beta_3$		2	6	68	6	7.938	3.12320	4		13.47	13.73	18.11	23.73	34.14	41.54	41.86	43.01	49.22	55.50			61.15	67.24	101.73
Br	$K\alpha_{1,2}$		3	150	35	6	11.907	3.12330	5		13.47	13.73	18.11	23.73	34.14	41.54	41.87	43.01	49.22	55.50	57.13	59.74	61.15	67.24	101.73
Hg	$L\beta_{15}$		3	1	80	6	11.902	3.12453	5		13.48	13.74	18.12	23.74	34.15	41.55	41.88	43.03	49.24	55.52	57.15	59.77	61.18	67.27	101.79
Re	L_1-N_1	B	3	.01	75	6	11.896	3.12600	4		13.48	13.75	18.13	23.75	34.17	41.58	41.90	43.05	49.27	55.55	57.18	59.80	61.21	67.31	101.85
Pd	$K\beta_3$		6	8	46	6	23.787	3.12674	6		13.48	13.75	18.13	23.76	34.18	41.59	41.91	43.06	49.28	55.57	57.20	59.82	61.23	67.32	101.89
Fr	$L\alpha_2$	H	3	10	87	6	11.893	3.12690	5		13.49	13.75	18.14	23.76	34.18	41.59	41.92	43.06	49.28	55.57	57.20	59.82	61.23	67.33	101.89
W	Ls	B	2	.01	74	6	7.925	3.12840	4		13.49	13.76	18.14	23.77	34.20	41.61	41.94	43.08	49.31	55.60			61.26	67.36	101.96
Np	Ll		3	3	93	6	11.887	3.12840	4		13.49	13.76	18.14	23.77	34.20	41.61	41.94	43.08	49.31	55.60	57.23	59.85	61.26	67.36	101.96
Te	$K\beta_2$	D	8	6	52	6	31.698	3.12850	6		13.49	13.76	18.15	23.77	34.20	41.61	41.94	43.09	49.31	55.60	57.23	59.85	61.26	67.37	101.97
Gd	$L\gamma_6$		2	.01	64	6	7.924	3.12880	4		13.49	13.76	18.15	23.77	34.20	41.61	41.94	43.09	49.31	55.61			61.27	67.37	101.98
Th	$M_3-O_{4,5}$		1	1	90	6	3.959	3.13100	3		13.50	13.77	18.16	23.79	34.23	41.64	41.97	43.12	49.35	55.65	57.28	59.91	61.32	67.43	102.08
Br	$K\alpha_2$		3	50	35	6	11.876	3.13146	5		13.51	13.77	18.16	23.79	34.23	41.65	41.98	43.13	49.36	55.66	57.29	59.92	61.33	67.44	102.10
Sr	$K\beta_1$		4	16	38	6	15.833	3.13168	5		13.51	13.77	18.16	23.80	34.23	41.65	41.98	43.13	49.36	55.66	57.30	59.92	61.33	67.44	102.11
Re	$L\gamma_8$		3	.1	75	6	11.874	3.13194	5		13.51	13.77	18.17	23.80	34.24	41.66	41.99	43.14	49.37	55.67	57.30	59.93	61.34	67.45	102.12
Sr	$K\beta_3$		4	8	38	6	15.822	3.13380	5		13.52	13.78	18.18	23.81	34.26	41.68	42.01	43.16	49.40	55.70	57.34	59.97	61.38	67.50	102.21
Ho	$L\beta_{2,15}$		2	20	67	6	7.910	3.13420	4		13.52	13.78	18.18	23.82	34.26	41.69	42.02	43.17	49.40	55.71			61.39	67.51	102.22
As	$K\beta_2$		3	1	33	6	11.862	3.13500	5		13.52	13.79	18.18	23.82	34.27	41.70	42.03	43.18	49.42	55.73	57.36	59.99	61.41	67.53	102.26
Au	$L_3-O_{2,3}$	8	3	.01	79	6	11.862	3.13500	4		13.52	13.79	18.18	23.82	34.27	41.70	42.03	43.18	49.42	55.73	57.36	59.99	61.41	67.53	102.26
Er	$L\beta_6$		2	.1	68	6	7.908	3.13500	4		13.52	13.79	18.18	23.82	34.27	41.70	42.03	43.18	49.42	55.73			61.41	67.53	102.26
Ba	Ll		1	2	56	6	3.953	3.13550	4		13.52	13.79	18.19	23.83	34.28	41.71	42.04	43.19	49.43	55.73	57.37	60.00	61.42	67.54	102.28
Sm	$K\alpha_2$		10	50	62	6	39.516	3.13698	6		13.53	13.80	18.19	23.84	34.29	41.73	42.06	43.21	49.45	55.76	57.40	60.03	61.45	67.57	102.35
W	$L\gamma_{11}$	B	3	.01	74	6	11.853	3.13740	4		13.53	13.80	18.20	23.84	34.30	41.73	42.06	43.21	49.46	55.77	57.41	60.04	61.46	67.58	102.37
Cd	$L\gamma_2$		1	5	48	6	3.951	3.13770	4		13.53	13.80	18.20	23.84	34.30	41.74	42.07	43.22	49.46	55.78	57.42	60.05	61.46	67.59	102.38
Pr	$K\alpha_2$		9	50	59	6	35.544	3.13874	6		13.54	13.80	18.21	23.85	34.31	41.75	42.08	43.23	49.48	55.80	57.44	60.07	61.49	67.62	102.43
Hf	$L\alpha_1$		2	100	72	6	7.898	3.13916	5		13.54	13.80	18.21	23.85	34.32	41.76	42.09	43.24	49.49	55.81			61.50	67.63	102.45
W	L_1-N_4	B	3	.01	74	6	11.842	3.14040	4		13.54	13.81	18.21	23.86	34.33	41.78	42.11	43.26	49.51	55.83	57.47	60.10	61.52	67.66	102.51
Gd	$L\gamma_8$		2	.1	64	6	7.892	3.14140	4		13.55	13.81	18.22	23.87	34.34	41.79	42.12	43.27	49.52	55.85			61.54	67.68	102.55
Au	Lu	B	3	.01	79	6	11.834	3.14256	5		13.55	13.82	18.23	23.88	34.36	41.81	42.14	43.29	49.54	55.87	57.51	60.15	61.57	67.71	102.60
Zr	$K\alpha_1$		4	100	40	6	15.772	3.14372	5		13.56	13.82	18.23	23.89	34.37	41.82	42.15	43.31	49.56	55.89	57.54	60.17	61.60	67.74	102.66
Hg	$L\beta_1$		3	50	80	6	11.821	3.14604	5		13.57	13.84	18.25	23.91	34.40	41.85	42.19	43.34	49.60	55.94	57.58	60.22	61.65	67.80	102.76
As	$K\beta_5$	B	3	.05	33	6	11.819	3.14640	4		13.57	13.84	18.25	23.91	34.40	41.86	42.19	43.34	49.61	55.95	57.59	60.23	61.65	67.80	102.78
In	AL_2		1		49	6	3.939	3.14730	4		13.57	13.84	18.26	23.92	34.41	41.87	42.20	43.36	49.62	55.96	57.61	60.25	61.67	67.83	102.82
I	$L\alpha_1$		1	100	53	6	3.937	3.14860	5		13.58	13.85	18.26	23.93	34.43	41.89	42.22	43.38	49.65	55.99	57.64	60.28	61.70	67.86	102.88
Tl	$L\beta_6$		3	.1	81	6	11.810	3.14889	5		13.58	13.85	18.26	23.93	34.43	41.89	42.23	43.38	49.65	55.99	57.64	60.28	61.71	67.86	102.89
Au	$L\beta_7$		3	.1	79	6	11.809	3.14922	5		13.58	13.85	18.27	23.93	34.43	41.90	42.23	43.39	49.66	56.00	57.65	60.29	61.71	67.87	102.91
Zr	$K\alpha_{1,2}$		4	150	40	6	15.744	3.14934	5		13.58	13.85	18.27	23.93	34.43	41.90	42.23	43.39	49.66	56.00	57.65	60.29	61.72	67.88	102.91
Po	$L\gamma_1$		4	10	84	6	15.741	3.14992	5		13.59	13.85	18.27	23.94	34.44	41.91	42.24	43.40	49.67	56.01	57.66	60.31	61.73	67.89	102.94
Sb	$L\beta_3$		1	6	51	6	3.932	3.15258	5		13.60	13.86	18.29	23.96	34.47	41.95	42.28	43.43	49.71	56.07	57.72	60.36	61.79	67.96	103.06
Sn	AL_3		1		50	6	3.928	3.15570	4		13.61	13.88	18.30	23.98	34.51	41.99	42.32	43.48	49.77	56.13	57.78	60.43	61.86	68.03	103.20
Lu	Ln		2	1	71	6	7.856	3.15580	4		13.61	13.88	18.30	23.98	34.51	41.99	42.32	43.48	49.77	56.13			61.86	68.03	103.21
Ac	$L\beta_1$	H	4	50	89	6	15.710	3.15612	5		13.61	13.88	18.31	23.98	34.51	41.99	42.33	43.49	49.77	56.13	57.79	60.44	61.86	68.04	103.22
Sn	$L\beta_7$		1	.1	50	6	3.927	3.15640	4		13.61	13.88	18.31	23.99	34.51	42.00	42.33	43.49	49.78	56.14	57.79	60.44	61.87	68.05	103.24
Bi	$L\gamma_3$		4	2	83	6	15.708	3.15668	5		13.61	13.88	18.31	23.99	34.52	42.00	42.33	43.49	49.78	56.14	57.80	60.45	61.88	68.06	103.25
Tb	$L\gamma_5$		2	.1	65	6	7.852	3.15740	4		13.62	13.89	18.31	23.99	34.52	42.01	42.34	43.50	49.79	56.16			61.89	68.07	103.28
Re	Lt	B	2	.01	75	6	7.851	3.15780	4		13.62	13.89	18.32	24.00	34.53	42.02	42.35	43.51	49.80	56.17			61.90	68.08	103.30
I	$L\alpha_2$		1	10	53	6	3.925	3.15791	5		13.62	13.89	18.32	24.00	34.53	42.02	42.35	43.51	49.80	56.17	57.82	60.47	61.90	68.09	103.31
Ce	$K\beta_1$		10	22	58	6	39.251	3.15816	6		13.62	13.89	18.32	24.00	34.53	42.02	42.36	43.51	49.81	56.17	57.83	60.48	61.91	68.09	103.32
Te	$K\alpha_1$		7	100	52	6	27.468	3.15906	6		13.62	13.89	18.32	24.01	34.54	42.04	42.37	43.53	49.82	56.19	57.85	60.50	61.93	68.11	103.36
Zr	$K\alpha_2$		4	50	40	6	15.688	3.16060	5		13.63	13.90	18.33	24.02	34.56	42.06	42.39	43.55	49.85	56.22	57.88	60.53	61.96	68.15	103.43
Hf	$L\alpha_2$		2	10	72	6	7.843	3.16092	5		13.63	13.90	18.33	24.02	34.56	42.06	42.39	43.55	49.85	56.23			61.97	68.16	103.44
Mo	$K\beta_1$		5	17	42	6	19.605	3.16144	6		13.64	13.90	18.34	24.03	34.57	42.07	42.40	43.56	49.86	56.24	57.89	60.55	61.98	68.17	103.47
In	$L\gamma_1$		1	8	49	6	3.920	3.16213	5		13.64	13.91	18.34	24.03	34.58	42.08	42.41	43.57	49.87	56.25	57.91	60.56	62.00	68.19	103.50
Pt	$L\beta_9$	B	3	.01	78	6	11.756	3.16338	5		13.64	13.91	18.35	24.04	34.59	42.10	42.43	43.59	49.89	56.27	57.93	60.59	62.02	68.22	103.56
Mo	$K\beta_3$		5	7	42	6	19.587	3.16436	6		13.65	13.92	18.36	24.05	34.60	42.11	42.44	43.60	49.91	56.29	57.95	60.61	62.04	68.24	103.60

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Ce	$K\beta_3$		10	10	58	6	39.163	3.16520	6		13.65	13.92	18.36	24.05	34.61	42.12	42.45	43.62	49.93	56.31	57.97	60.63	62.06	68.26	103.64
Pa	$L\gamma_1$	H	5	10	91	6	19.565	3.16790	5		13.66	13.93	18.38	24.07	34.64	42.16	42.49	43.66	49.97	56.36	58.02	60.69	62.12	68.33	103.76
Cf	$L\alpha_1$		4	100	98	3	15.652	3.16800			13.66	13.93	18.38	24.08	34.64	42.16	42.49	43.66	49.97	56.36	58.02	60.69	62.12	68.33	103.77
Tl	$L\beta_{17}$	B	3	.01	81	6	11.738	3.16827	5		13.66	13.93	18.38	24.08	34.65	42.16	42.50	43.66	49.98	56.37	58.03	60.69	62.13	68.34	103.78
Te	$K\alpha_{1,2}$		7	150	52	6	27.377	3.16954	6		13.67	13.94	18.39	24.09	34.66	42.18	42.52	43.68	50.00	56.39	58.06	60.72	62.16	68.37	103.84
Os	Ll		2	3	76	6	7.821	3.16996	5		13.67	13.94	18.39	24.09	34.67	42.19	42.52	43.69	50.01	56.40			62.17	68.38	103.86
Th	$L\beta_4$		4	4	90	6	15.640	3.17028	5		13.67	13.94	18.39	24.09	34.67	42.19	42.53	43.69	50.01	56.41	58.07	60.74	62.17	68.39	103.87
Os	$L\gamma_5$		3	.1	76	6	11.728	3.17079	5		13.68	13.94	18.39	24.10	34.68	42.20	42.53	43.70	50.02	56.42	58.08	60.75	62.18	68.40	103.90
Rn	$L\alpha_1$	H	3	100	86	6	11.725	3.17169	5		13.68	13.95	18.40	24.10	34.69	42.21	42.55	43.71	50.03	56.44	58.10	60.77	62.20	68.42	103.94
As	$K\beta_1$		3	15	33	6	11.724	3.17190	5		13.68	13.95	18.40	24.11	34.69	42.21	42.55	43.71	50.04	56.44	58.10	60.77	62.21	68.43	103.95
As	$K\beta_3$		3	7	33	6	11.718	3.17349	5		13.69	13.96	18.41	24.12	34.71	42.24	42.57	43.74	50.06	56.47	58.13	60.80	62.24	68.47	104.02
Th	$L\beta_2$		4	20	90	6	15.621	3.17416	5		13.69	13.96	18.41	24.12	34.71	42.25	42.58	43.75	50.08	56.48	58.15	60.82	62.26	68.48	104.05
Er	$L\beta_1$		2	50	68	6	7.809	3.17460	4		13.69	13.96	18.41	24.13	34.72	42.25	42.59	43.75	50.08	56.49			62.27	68.50	104.07
Sn	$L\beta_{2,15}$		1	17	50	6	3.904	3.17505	5		13.69	13.96	18.42	24.13	34.72	42.26	42.59	43.76	50.09	56.50	58.17	60.84	62.28	68.51	104.09
Hg	L_3-N_3	B	3	.01	80	6	11.711	3.17550	4		13.70	13.97	18.42	24.13	34.73	42.26	42.60	43.77	50.10	56.51	58.18	60.85	62.29	68.52	104.12
Bi	Ln		3	1	83	6	11.710	3.17568	5		13.70	13.97	18.42	24.13	34.73	42.27	42.60	43.77	50.10	56.51	58.18	60.85	62.29	68.52	104.12
Dy	$L\beta_5$		2	.1	66	6	7.804	3.17674	5		13.70	13.97	18.43	24.14	34.74	42.28	42.62	43.78	50.12	56.53			62.31	68.55	104.17
Yb	L_2-M_2	8	2	.01	70	6	7.804	3.17688	5		13.70	13.97	18.43	24.14	34.74	42.28	42.62	43.79	50.12	56.54			62.32	68.55	104.18
Th	$L\gamma_3$		5	2	90	6	19.503	3.17795	5		13.71	13.98	18.43	24.15	34.76	42.30	42.63	43.80	50.14	56.56	58.22	60.90	62.34	68.58	104.23
Bk	$L\gamma_1$		6	10	97	3	23.389	3.18000			13.72	13.99	18.45	24.17	34.78	42.33	42.66	43.83	50.17	56.60	58.27	60.94	62.39	68.63	104.32
Eu	$L\gamma_3$		2	1	63	6	7.795	3.18060	4		13.72	13.99	18.45	24.17	34.79	42.34	42.67	43.84	50.18	56.61			62.40	68.64	104.35
In	$K\beta_1$		7	19	49	6	27.271	3.18181	6		13.72	13.99	18.46	24.18	34.80	42.35	42.69	43.86	50.21	56.63	58.30	60.98	62.42	68.67	104.41
Re	$L\gamma_1$		3	10	75	6	11.683	3.18297	5		13.73	14.00	18.46	24.19	34.81	42.37	42.70	43.87	50.22	56.65	58.33	61.01	62.45	68.70	104.46
Gd	$L\gamma_1$		2	5	64	6	7.784	3.18480	4		13.74	14.01	18.47	24.21	34.83	42.39	42.73	43.90	50.26	56.69			62.49	68.75	104.55
Pt	$L\beta_{10}$	B	3	.01	78	6	11.674	3.18549	5		13.74	14.01	18.48	24.21	34.84	42.40	42.74	43.91	50.27	56.70	58.38	61.06	62.50	68.76	104.58
Ta	L_1-$O_{4,5}$	B	3	.01	73	6	11.673	3.18576	5		13.74	14.01	18.48	24.21	34.84	42.41	42.74	43.91	50.27	56.71	58.38	61.06	62.51	68.77	104.59
W	$L\gamma_3$		3	2	74	6	11.672	3.18600	5		13.74	14.01	18.48	24.21	34.85	42.41	42.75	43.92	50.28	56.71	58.39	61.07	62.52	68.78	104.60
In	$K\beta_3$		7	8	49	6	27.233	3.18627	6		13.74	14.01	18.48	24.22	34.85	42.42	42.75	43.92	50.28	56.72	58.39	61.08	62.52	68.78	104.62
Cs	$K\beta_1$		9	21	55	6	34.981	3.18928	6		13.76	14.03	18.50	24.24	34.88	42.46	42.79	43.97	50.33	56.78	58.45	61.14	62.59	68.86	104.76
Sb	$L\beta_4$		1	4	51	6	3.886	3.19014	5		13.76	14.03	18.51	24.25	34.89	42.47	42.81	43.98	50.35	56.79	58.47	61.16	62.61	68.88	104.80
Te	$K\alpha_2$		7	50	52	6	27.197	3.19049	6		13.76	14.03	18.51	24.25	34.90	42.47	42.81	43.98	50.35	56.80	58.48	61.16	62.61	68.89	104.81
Ta	L_1-$N_{6,7}$	B	3	.01	73	6	11.655	3.19071	5		13.76	14.03	18.51	24.25	34.90	42.48	42.81	43.99	50.36	56.80	58.48	61.17	62.62	68.89	104.82
Eu	$L\gamma_2$		2	1	63	6	7.766	3.19220	4		13.77	14.04	18.52	24.26	34.92	42.50	42.83	44.01	50.38	56.83			62.65	68.93	104.89
Tl	L_1-M_1	B	3	.01	81	6	11.646	3.19320	4		13.77	14.04	18.52	24.27	34.93	42.51	42.85	44.02	50.40	56.85	58.53	61.22	62.67	68.95	104.94
Pb	L_2-M_2	B	3	.01	82	6	11.646	3.19320	4		13.77	14.04	18.52	24.27	34.93	42.51	42.85	44.02	50.40	56.85	58.53	61.22	62.67	68.95	104.94
Ta	$L\gamma_4$		3	.1	73	6	11.643	3.19401	5		13.78	14.05	18.53	24.28	34.94	42.52	42.86	44.03	50.41	56.87	58.55	61.24	62.69	68.97	104.98
Cm	$L\beta_1$		5	50	96	3	19.399	3.19500			13.78	14.05	18.53	24.28	34.95	42.54	42.87	44.05	50.43	56.89	58.57	61.26	62.71	69.00	105.02
Cs	$K\beta_3$		9	9	55	6	34.913	3.19545	6		13.78	14.05	18.54	24.29	34.95	42.54	42.88	44.06	50.44	56.90	58.58	61.27	62.72	69.01	105.04
Ta	$L\gamma_4$p		3	.1	73	6	11.635	3.19632	5		13.79	14.06	18.54	24.29	34.96	42.56	42.89	44.07	50.45	56.91	58.59	61.29	62.74	69.03	105.08
Dy	$L\beta_9$	B	2	.01	66	6	7.749	3.19946	5		13.80	14.07	18.56	24.32	35.00	42.60	42.94	44.11	50.50	56.97			62.81	69.11	105.23
Te	$K\beta_1$		8	20	52	6	30.990	3.19996	6		13.80	14.07	18.56	24.32	35.01	42.61	42.94	44.12	50.51	56.98	58.67	61.37	62.82	69.12	105.25
La	$K\beta_2$		10	7	57	6	38.723	3.20117	6		13.81	14.08	18.57	24.33	35.02	42.62	42.96	44.14	50.53	57.01	58.69	61.39	62.85	69.15	105.31
U	Ll		3	3	92	6	11.616	3.20136	5		13.81	14.08	18.57	24.33	35.02	42.63	42.96	44.14	50.54	57.01	58.69	61.40	62.85	69.15	105.32
Er	$L\beta_4$		2	5	68	6	7.744	3.20140	4		13.81	14.08	18.57	24.33	35.02	42.63	42.96	44.14	50.54	57.01			62.85	69.16	105.32
Pm	$K\alpha_1$	H	10	100	61	6	38.718	3.20160	6		13.81	14.08	18.57	24.33	35.02	42.63	42.97	44.14	50.54	57.02	58.70	61.40	62.86	69.16	105.33
Cs	$K\alpha_1$		8	100	55	6	30.968	3.20232	6		13.81	14.08	18.58	24.34	35.03	42.64	42.98	44.15	50.55	57.03	58.71	61.42	62.87	69.18	105.37
Ta	L_1-O_1	B	3	.01	73	6	11.610	3.20313	5		13.82	14.09	18.58	24.35	35.04	42.65	42.99	44.17	50.57	57.05	58.73	61.43	62.89	69.20	105.40
Au	$L\beta_3$		3	6	79	6	11.608	3.20355	5		13.82	14.09	18.58	24.35	35.05	42.66	42.99	44.17	50.57	57.05	58.74	61.44	62.90	69.21	105.42
W	$L\gamma_2$		3	1	74	6	11.606	3.20418	5		13.82	14.09	18.59	24.35	35.05	42.67	43.00	44.18	50.58	57.07	58.75	61.46	62.91	69.22	105.45
Hg	L_3-N_2	F	3	.01	80	6	11.605	3.20460	4		13.82	14.09	18.59	24.36	35.06	42.67	43.01	44.19	50.59	57.07	58.76	61.46	62.92	69.23	105.47
Te	$K\beta_3$		8	9	52	6	30.939	3.20527	6		13.83	14.10	18.59	24.36	35.07	42.68	43.02	44.20	50.60	57.09	58.77	61.48	62.94	69.25	105.50
Rn	$L\alpha_2$	H	3	10	86	6	11.596	3.20697	5		13.83	14.10	18.60	24.38	35.08	42.70	43.04	44.22	50.63	57.12	58.81	61.51	62.97	69.29	105.58
Dy	$L\beta_7$		2	.1	66	6	7.726	3.20894	5		13.84	14.11	18.62	24.39	35.11	42.73	43.07	44.25	50.66	57.16			63.02	69.34	105.68
Cd	$K\alpha_1$		6	100	48	6	23.170	3.21006	6		13.85	14.12	18.62	24.40	35.12	42.75	43.09	44.27	50.68	57.18	58.87	61.58	63.04	69.37	105.73
Rh	$K\beta_2$		6	4	45	6	23.169	3.21018	5		13.85	14.12	18.62	24.40	35.12	42.75	43.09	44.27	50.68	57.18	58.87	61.58	63.04	69.37	105.74
Au	$L\beta_2$		3	20	79	6	11.583	3.21066	5		13.85	14.12	18.63	24.40	35.13	42.76	43.09	44.28	50.69	57.19	58.88	61.59	63.06	69.38	105.76
Ra	$L\beta_3$		4	6	88	6	15.442	3.21092	5		13.85	14.12	18.63	24.41	35.13	42.76	43.10	44.28	50.70	57.20	58.89	61.60	63.06	69.39	105.77
Ce	$K\alpha_1$		9	100	58	6	34.714	3.21383	6		13.86	14.13	18.64	24.43	35.16	42.80	43.14	44.32	50.75	57.25	58.95	61.66	63.12	69.46	105.91
Cs	$K\alpha_{1,2}$		8	150	55	6	30.851	3.21444	6		13.86	14.14	18.65	24.43	35.17	42.81	43.15	44.33	50.76	57.27	58.96	61.67	63.14	69.48	105.94
Sm	$L\gamma_4$		2	.1	62	6	7.712	3.21456	5		13.87	14.14	18.65	24.44	35.17	42.81	43.15	44.33	50.76	57.27			63.14	69.48	105.94
Dy	$L\beta_{10}$	B	2	.01	66	6	7.712	3.21486	5		13.87	14.14	18.65	24.44	35.17	42.81	43.15	44.34	50.76	57.27			63.15	69.49	105.96
Ru	$K\alpha_1$		5	100	44	6	19.276	3.21541	6		13.87	14.14	18.65	24.44	35.18	42.82	43.16	44.34	50.77	57.28	58.98	61.69	63.16	69.50	105.98
Au	$L\beta_{15}$		3	1	79	6	11.565	3.21564	5		13.87	14.14	18.66	24.44	35.18	42.83	43.16	44.35	50.78	57.29	58.98	61.70	63.16	69.51	105.99
Cf	$L\alpha_2$		4	10	98	3	15.418	3.21600			13.87	14.14	18.66	24.45	35.19	42.83	43.17	44.35	50.78	57.30	58.99	61.71	63.17	69.52	106.01
Hg	$L\beta_4$		3	4	80	6	11.561	3.21666	5		13.87	14.15	18.66	24.45	35.19	42.84	43.18	44.36	50.79	57.31	59.00	61.72	63.19	69.53	106.04

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Pb	AM_1	H	1		82	6	3.853	3.21700	3		13.88	14.15	18.66	24.45	35.20	42.84	43.18	44.37	50.80	57.32	59.01	61.73	63.19	69.54	106.06
Pm	$K\alpha_{1,2}$	H	10	150	61	6	38.532	3.21708	6		13.88	14.15	18.66	24.45	35.20	42.85	43.19	44.37	50.80	57.32	59.01	61.73	63.20	69.54	106.06
Pt	$L\beta_5$		3	1	78	6	11.559	3.21720	4		13.88	14.15	18.66	24.46	35.20	42.85	43.19	44.37	50.80	57.32	59.01	61.73	63.20	69.55	106.07
Co	$K\beta_5$	B	2	.03	27	6	7.705	3.21782	5	4	13.88	14.15	18.67	24.46	35.21	42.86	43.20	44.38	50.81	57.33			63.21	69.56	106.10
Cd	$K\alpha_{1,2}$		6	150	48	6	23.106	3.21888	6		13.88	14.16	18.67	24.47	35.22	42.87	43.21	44.40	50.83	57.35	59.05	61.77	63.24	69.59	106.15
Ru	$K\alpha_{1,2}$		5	150	44	6	19.233	3.22262	6		13.90	14.17	18.70	24.50	35.26	42.92	43.26	44.45	50.89	57.42	59.12	61.85	63.32	69.68	106.32
W	$L\gamma_6$		3	.01	74	6	11.537	3.22344	5		13.90	14.18	18.70	24.50	35.27	42.93	43.27	44.46	50.91	57.44	59.14	61.87	63.34	69.70	106.36
Ta	Ls	B	2	.01	73	6	7.687	3.22528	5		13.91	14.19	18.71	24.52	35.29	42.96	43.30	44.49	50.94	57.48			63.38	69.75	106.45
Sb	$L\beta_1$		1	75	51	6	3.843	3.22567	5		13.91	14.19	18.71	24.52	35.30	42.97	43.31	44.49	50.95	57.48	59.18	61.91	63.38	69.76	106.47
Au	L_2-N_5	B	3	.01	79	6	11.525	3.22680	4		13.92	14.19	18.72	24.53	35.31	42.98	43.32	44.51	50.97	57.51	59.21	61.94	63.41	69.78	106.52
Ce	$K\alpha_{1,2}$		9	150	58	6	34.566	3.22760	6		13.92	14.20	18.73	24.54	35.32	42.99	43.33	44.52	50.98	57.52	59.22	61.95	63.43	69.80	106.56
Pt	L_3-$O_{2,3}$	B	3	.01	78	6	11.519	3.22830	4		13.92	14.20	18.73	24.54	35.33	43.00	43.34	44.53	50.99	57.54	59.24	61.97	63.44	69.82	106.59
Re	L_2-N_3	B	3	.01	75	6	11.513	3.23010	4		13.93	14.21	18.74	24.55	35.35	43.03	43.37	44.56	51.02	57.57	59.27	62.01	63.48	69.87	106.68
W	Lv	8	3	.01	74	6	11.509	3.23130	4		13.94	14.21	18.75	24.56	35.36	43.04	43.39	44.58	51.04	57.59	59.30	62.05	63.51	69.89	106.74
W	L_2-O_3	F	3	.01	74	6	11.505	3.23220	5		13.94	14.22	18.75	24.57	35.37	43.06	43.40	44.59	51.06	57.61	59.32	62.05	63.53	69.92	106.78
Cd	$K\alpha_2$		6	50	48	6	22.980	3.23653	6		13.96	14.24	18.78	24.60	35.42	43.12	43.46	44.65	51.13	57.70	59.40	62.14	63.62	70.02	106.99
Pt	Lu	B	3	.01	78	6	11.489	3.23688	5		13.96	14.24	18.78	24.61	35.42	43.12	43.46	44.66	51.14	57.70	59.41	62.15	63.63	70.03	107.00
Ru	$K\alpha_2$		5	50	44	6	19.147	3.23704	6		13.96	14.24	18.78	24.61	35.42	43.12	43.47	44.66	51.14	57.71	59.41	62.16	63.63	70.04	107.01
Cs	$K\alpha_2$		8	50	55	6	30.620	3.23868	6		13.97	14.24	18.79	24.62	35.44	43.15	43.49	44.68	51.17	57.74	59.45	62.19	63.67	70.08	107.09
Lu	$L\alpha_1$		2	100	71	6	7.654	3.23902	5		13.97	14.25	18.79	24.62	35.45	43.15	43.49	44.69	51.17	57.74			63.68	70.09	107.11
Hg	$L\beta_6$		3	.1	80	6	11.480	3.23925	5		13.97	14.25	18.79	24.63	35.45	43.16	43.50	44.69	51.18	57.75	59.46	62.20	63.68	70.09	107.12
Bk	$L\alpha_1$		4	100	97	3	15.304	3.24000			13.98	14.25	18.80	24.63	35.46	43.17	43.51	44.70	51.19	57.76	59.47	62.22	63.70	70.11	107.15
Ho	$L\beta_3$		2	6	67	6	7.650	3.24060	4		13.98	14.25	18.80	24.64	35.46	43.17	43.52	44.71	51.20	57.78			63.71	70.13	107.18
Co	$K\beta_{1,3}$		2	20	27	6	7.648	3.24158	5	4	13.98	14.26	18.81	24.64	35.48	43.19	43.53	44.73	51.22	57.79			63.73	70.15	107.23
Xe	$K\beta_2$	H	9	6	54	6	34.408	3.24234	5		13.99	14.26	18.81	24.65	35.48	43.20	43.54	44.74	51.23	57.81	59.52	62.27	63.75	70.17	107.27
Th	Lt	F	3	.01	90	6	11.468	3.24279	5		13.99	14.26	18.81	24.65	35.49	43.20	43.55	44.74	51.24	57.82	59.53	62.28	63.76	70.18	107.29
W	$L\gamma_8$		3	.1	74	6	11.466	3.24339	5		13.99	14.27	18.82	24.66	35.50	43.21	43.56	44.75	51.25	57.83	59.54	62.29	63.77	70.19	107.32
Am	$L\beta_3$		5	6	95	6	19.103	3.24455	5		14.00	14.27	18.82	24.67	35.51	43.23	43.57	44.77	51.27	57.85	59.57	62.32	63.80	70.22	107.37
Pa	M_3-O_1		1	.5	91	6	3.820	3.24500	3		14.00	14.27	18.83	24.67	35.51	43.24	43.58	44.78	51.27	57.86	59.58	62.33	63.81	70.23	107.39
Pt	$L\beta_7$		3	.1	78	6	11.460	3.24504	5		14.00	14.27	18.83	24.67	35.51	43.24	43.58	44.78	51.27	57.86	59.58	62.33	63.81	70.24	107.39
Dy	$L\beta_{2,15}$		2	20	66	6	7.634	3.24738	5		14.01	14.28	18.84	24.69	35.54	43.27	43.61	44.81	51.31	57.91			63.86	70.29	107.51
Ho	$L\beta_6$		2	.1	67	6	7.634	3.24740	4		14.01	14.28	18.84	24.69	35.54	43.27	43.61	44.81	51.31	57.91			63.86	70.29	107.51
Ta	$L\gamma_{11}$	F	3	.01	73	6	11.450	3.24780	5		14.01	14.28	18.84	24.69	35.55	43.28	43.62	44.82	51.32	57.92	59.63	62.39	63.87	70.30	107.53
Pm	$K\alpha_2$	H	10	50	61	6	38.165	3.24803	6		14.01	14.29	18.84	24.69	35.55	43.28	43.62	44.82	51.33	57.92	59.64	62.39	63.88	70.31	107.54
W	Lt	B	2	.01	74	6	7.631	3.24880	4		14.01	14.29	18.85	24.70	35.56	43.29	43.63	44.83	51.34	57.94			63.89	70.33	107.58
In	$L\gamma_5$		1	.1	49	6	3.815	3.24907	5		14.01	14.29	18.85	24.70	35.56	43.29	43.64	44.83	51.34	57.94	59.66	62.41	63.90	70.34	107.59
Au	$L\beta_1$		3	50	79	6	11.440	3.25059	5		14.02	14.30	18.86	24.71	35.58	43.31	43.66	44.86	51.37	57.97	59.69	62.44	63.93	70.37	107.66
Ta	L_1-N_4	B	3	.01	73	6	11.438	3.25131	5		14.02	14.30	18.86	24.72	35.59	43.32	43.67	44.87	51.38	57.98	59.70	62.46	63.95	70.39	107.70
Re	L_2-N_2	8	3	.01	75	6	11.436	3.25170	4		14.03	14.30	18.87	24.72	35.59	43.33	43.67	44.87	51.39	57.99	59.71	62.47	63.96	70.40	107.72
Bi	$L\gamma_1$		4	10	83	6	15.245	3.25244	5		14.03	14.31	18.87	24.73	35.60	43.34	43.68	44.88	51.40	58.01	59.73	62.48	63.97	70.42	107.75
At	$L\alpha_1$	H	3	100	85	6	11.425	3.25500	5		14.04	14.32	18.89	24.75	35.63	43.38	43.72	44.92	51.44	58.06	59.78	62.54	64.03	70.48	107.87
Ra	$L\beta_1$		4	50	88	6	15.233	3.25500	5		14.04	14.32	18.89	24.75	35.63	43.38	43.72	44.92	51.44	58.06	59.78	62.54	64.03	70.48	107.87
Ce	$K\alpha_2$		9	50	58	6	34.273	3.25515	6		14.04	14.32	18.89	24.75	35.63	43.38	43.72	44.92	51.45	58.06	59.78	62.54	64.03	70.49	107.88
Eu	$L\gamma_6$	A	2	.01	63	6	7.613	3.25640	4		14.05	14.32	18.89	24.76	35.64	43.40	43.74	44.94	51.47	58.08			64.06	70.52	107.94
Ag	AL_1		1		47	6	3.807	3.25640	4		14.05	14.32	18.89	24.76	35.64	43.40	43.74	44.94	51.47	58.08	59.81	62.57	64.06	70.52	107.94
Cd	$K\beta_2$		7	5	48	6	26.639	3.25730	6		14.05	14.33	18.90	24.76	35.65	43.41	43.75	44.95	51.48	58.10	59.82	62.59	64.08	70.54	107.99
Pb	$L\gamma_3$		4	2	82	6	15.215	3.25880	4		14.06	14.33	18.91	24.78	35.67	43.43	43.77	44.98	51.51	58.13	59.85	62.62	64.11	70.58	108.06
Lu	$L\alpha_2$		2	10	71	6	7.604	3.26058	5		14.06	14.34	18.92	24.79	35.69	43.45	43.80	45.00	51.54	58.17			64.15	70.62	108.15
Re	Ll		2	3	75	6	7.602	3.26112	5		14.07	14.34	18.92	24.79	35.70	43.46	43.81	45.01	51.55	58.18			64.16	70.64	108.17
Sb	$K\beta_2$	D	8	5	51	6	30.388	3.26343	6		14.08	14.35	18.93	24.81	35.72	43.49	43.84	45.04	51.59	58.22	59.95	62.72	64.21	70.69	108.28
Cf	$L\beta_2$		5	20	98	3	18.983	3.26500			14.08	14.36	18.94	24.82	35.74	43.52	43.86	45.07	51.61	58.25	59.98	62.75	64.25	70.73	108.36
Th	$L\gamma_1$		5	10	90	6	18.979	3.26565	5		14.09	14.36	18.95	24.83	35.75	43.52	43.87	45.08	51.62	58.26	59.99	62.77	64.26	70.75	108.39
Rb	$K\beta_2$		4	3	37	6	15.183	3.26580	5		14.09	14.36	18.95	24.83	35.75	43.53	43.87	45.08	51.63	58.27	60.00	62.77	64.27	70.75	108.40
Cs	Ll		1	2	55	6	3.794	3.26700	4		14.09	14.37	18.96	24.84	35.76	43.54	43.89	45.10	51.65	58.29	60.02	62.80	64.29	70.78	108.46
In	$L\beta_9$	B	1	.01	49	6	3.794	3.26763	5		14.10	14.37	18.96	24.84	35.77	43.55	43.90	45.10	51.66	58.30	60.03	62.81	64.31	70.80	108.49
Sn	$L\beta_6$		1	1	50	6	3.792	3.26901	5		14.10	14.38	18.97	24.86	35.79	43.57	43.92	45.12	51.68	58.33	60.06	62.84	64.34	70.83	108.55
Eu	$L\gamma_8$		2	.1	63	6	7.584	3.26920	4		14.10	14.38	18.97	24.86	35.79	43.57	43.92	45.13	51.68	58.33			64.34	70.84	108.56
Ir	$L\beta_9$	B	3	.01	77	6	11.375	3.26925	5		14.10	14.38	18.97	24.86	35.79	43.58	43.92	45.13	51.69	58.34	60.07	62.84	64.34	70.84	108.57
Au	L_3-N_3	B	3	.01	79	6	11.370	3.27078	5		14.11	14.39	18.98	24.87	35.81	43.60	43.94	45.15	51.71	58.37	60.10	62.88	64.38	70.88	108.64
Nb	$K\beta_2$		5	4	41	6	18.949	3.27080	5		14.11	14.39	18.98	24.87	35.81	43.60	43.94	45.15	51.71	58.37	60.10	62.88	64.38	70.88	108.64
Yb	Ln		2	1	70	6	7.579	3.27120	5		14.11	14.39	18.98	24.87	35.81	43.60	43.95	45.16	51.72	58.37			64.39	70.89	108.66
Pa	Ll		3	3	91	6	11.364	3.27240	4		14.12	14.39	18.99	24.88	35.82	43.62	43.97	45.17	51.74	58.40	60.13	62.91	64.41	70.92	108.72
Rh	$K\beta_1$		6	16	45	6	22.720	3.27363	6		14.12	14.40	18.99	24.89	35.84	43.64	43.98	45.19	51.76	58.42	60.15	62.94	64.44	70.95	108.78
In	$L\beta_{10}$	B	1	.01	49	6	3.786	3.27404	5		14.12	14.40	19.00	24.89	35.84	43.64	43.99	45.20	51.77	58.43	60.16	62.95	64.45	70.96	108.80
Hg	$L\beta_{17}$	8	3	.01	80	6	11.356	3.27480	4		14.13	14.40	19.00	24.90	35.85	43.65	44.00	45.21	51.78	58.44	60.18	62.96	64.46	70.98	108.84

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Cm	$L\gamma_1$		6	10	96	3	22.703	3.27600		14.13	14.41	19.01	24.91	35.86	43.67	44.02	45.23	51.80	58.47	60.20	62.99	64.49	71.01	108.90
Rh	$K\beta_3$		6	8	45	6	22.695	3.27720	6	14.14	14.41	19.02	24.92	35.88	43.69	44.03	45.24	51.82	58.49	60.23	63.01	64.52	71.04	108.96
Pb	Ln		3	1	82	6	11.347	3.27723	5	14.14	14.42	19.02	24.92	35.88	43.69	44.03	45.24	51.82	58.49	60.23	63.01	64.52	71.04	108.96
I	Ln		1	7	53	6	3.780	3.27979	5	14.15	14.43	19.03	24.94	35.91	43.72	44.07	45.28	51.86	58.54	60.28	63.07	64.58	71.10	109.08
La	$K\beta_1$		10	21	57	6	37.795	3.27983	6	14.15	14.43	19.03	24.94	35.91	43.72	44.07	45.28	51.86	58.54	60.28	63.07	64.58	71.10	109.08
Re	$L\gamma_5$		3	.1	75	6	11.332	3.28164	5	14.16	14.43	19.04	24.95	35.93	43.75	44.10	45.31	51.90	58.58	60.32	63.11	64.62	71.15	109.17
Gd	$L\gamma_5$		2	.1	64	6	7.553	3.28240	4	14.16	14.44	19.05	24.96	35.94	43.76	44.11	45.32	51.91	58.59			64.63	71.17	109.21
Th	M_3-O_1		1	.5	90	6	3.776	3.28300	3	14.16	14.44	19.05	24.96	35.94	43.77	44.12	45.33	51.92	58.60	60.34	63.14	64.65	71.18	109.24
La	$K\beta_3$		10	9	57	6	37.714	3.28686	6	14.18	14.46	19.07	24.99	35.99	43.82	44.17	45.38	51.98	58.68	60.42	63.22	64.73	71.28	109.43
Bk	$L\alpha_2$		4	10	97	3	15.080	3.28800		14.18	14.46	19.08	25.00	36.00	43.84	44.19	45.40	52.00	58.70	60.45	63.25	64.76	71.31	109.49
Am	$L\beta_1$		5	50	95	6	18.849	3.28827	6	14.18	14.46	19.08	25.00	36.00	43.84	44.19	45.41	52.01	58.71	60.45	63.25	64.76	71.31	109.50
Te	$L\alpha_1$		1	100	52	6	3.769	3.28920	5	14.19	14.47	19.09	25.01	36.01	43.86	44.20	45.42	52.02	58.73	60.47	63.27	64.78	71.34	109.55
At	$L\alpha_2$	H	3	10	85	6	11.303	3.29013	5	14.19	14.47	19.09	25.02	36.02	43.87	44.22	45.43	52.04	58.74	60.49	63.29	64.80	71.36	109.59
Ir	$L\beta_{10}$	8	3	.01	77	6	11.300	3.29106	5	14.20	14.48	19.10	25.03	36.04	43.88	44.23	45.45	52.06	58.76	60.51	63.31	64.82	71.38	109.64
Sb	$K\alpha_1$		7	100	51	6	26.355	3.29248	6	14.20	14.48	19.11	25.04	36.05	43.90	44.25	45.47	52.08	58.79	60.54	63.34	64.86	71.42	109.71
Ho	$L\beta_1$		2	50	67	6	7.524	3.29500	4	14.21	14.49	19.12	25.06	36.08	43.94	44.29	45.50	52.12	58.84			64.91	71.48	109.83
W	$L\gamma_1$		3	10	74	6	11.284	3.29565	5	14.22	14.50	19.12	25.06	36.09	43.95	44.29	45.51	52.13	58.85	60.60	63.41	64.93	71.50	109.86
Tl	L_2-M_2	F	3	.01	81	6	11.280	3.29673	5	14.22	14.50	19.13	25.07	36.10	43.96	44.31	45.53	52.15	58.87	60.62	63.43	64.95	71.52	109.92
Ta	$L\gamma_3$		3	2	73	6	11.276	3.29808	5	14.23	14.51	19.14	25.08	36.11	43.98	44.33	45.55	52.18	58.90	60.65	63.46	64.98	71.56	109.98
Te	$L\alpha_2$		1	10	52	6	3.758	3.29846	5	14.23	14.51	19.14	25.08	36.12	43.98	44.33	45.55	52.18	58.91	60.66	63.47	64.99	71.57	110.00
Au	L_3-N_2	8	3	.01	79	6	11.272	3.29904	5	14.23	14.51	19.14	25.09	36.13	43.99	44.34	45.56	52.19	58.92	60.67	63.48	65.00	71.58	110.03
Hg	L_1-M_1	B	3	.01	80	6	11.270	3.29970	4	14.23	14.51	19.15	25.09	36.13	44.00	44.35	45.57	52.20	58.93	60.68	63.50	65.02	71.60	110.06
Tb	$L\beta_5$		2	.1	65	6	7.508	3.30200	4	14.24	14.52	19.16	25.11	36.16	44.03	44.38	45.61	52.24	58.98			65.07	71.66	110.18
Hf	L_1-O_4	8	3	.01	72	6	11.260	3.30258	5	14.25	14.53	19.16	25.11	36.17	44.04	44.39	45.61	52.25	58.99	60.74	63.56	65.08	71.67	110.21
Sb	$K\alpha_{1,2}$		7	150	51	6	26.271	3.30291	6	14.25	14.53	19.17	25.12	36.17	44.05	44.40	45.62	52.26	58.99	60.75	63.57	65.09	71.68	110.22
Sn	$L\beta_3$		1	6	50	6	3.750	3.30585	5	14.26	14.54	19.18	25.14	36.20	44.09	44.44	45.66	52.31	59.05	60.81	63.63	65.15	71.75	110.37
Pt	$L\beta_2$		3	20	78	6	11.249	3.30600	5	14.26	14.54	19.18	25.14	36.20	44.09	44.44	45.66	52.31	59.06	60.81	63.63	65.15	71.76	110.38
Ag	$L\gamma_3$		1	2	47	6	3.749	3.30635	5	14.26	14.54	19.19	25.14	36.21	44.10	44.45	45.67	52.32	59.06	60.82	63.64	65.16	71.77	110.40
Hf	$L\gamma_4$		3	1	72	6	11.238	3.30909	5	14.28	14.56	19.20	25.17	36.24	44.13	44.49	45.71	52.36	59.12	60.87	63.70	65.22	71.83	110.53
Pt	$L\beta_3$	D	3	6	78	6	11.233	3.31074	5	14.28	14.56	19.21	25.18	36.26	44.16	44.51	45.73	52.39	59.15	60.91	63.73	65.26	71.88	110.61
Hf	$L\gamma_4$P		3	1	72	6	11.231	3.31128	5	14.28	14.57	19.22	25.18	36.26	44.16	44.52	45.74	52.40	59.16	60.92	63.75	65.27	71.89	110.64
Fr	$L\beta_3$	H	4	10	87	6	14.973	3.31156	5	14.29	14.57	19.22	25.18	36.27	44.17	44.52	45.74	52.40	59.16	60.93	63.75	65.28	71.90	110.66
Sm	$L\gamma_3$		2	1	62	6	7.485	3.31202	5	14.29	14.57	19.22	25.19	36.27	44.18	44.53	45.75	52.41	59.17			65.29	71.91	110.68
Ag	$L\gamma_2$		1	3	47	6	3.743	3.31216	5	14.29	14.57	19.22	25.19	36.27	44.18	44.53	45.75	52.41	59.18	60.94	63.77	65.29	71.91	110.69
Se	$K\alpha_1$		3	100	34	6	11.220	3.31431	5	14.30	14.58	19.23	25.21	36.30	44.21	44.56	45.79	52.45	59.22	60.98	63.81	65.34	71.97	110.79
Rb	$K\beta_1$		4	16	37	6	14.959	3.31472	5	14.30	14.58	19.24	25.21	36.30	44.21	44.56	45.79	52.46	59.23	60.99	63.82	65.35	71.98	110.81
Eu	$L\gamma_1$		2	5	63	6	7.479	3.31480	4	14.30	14.58	19.24	25.21	36.30	44.21	44.57	45.79	52.46	59.23			65.35	71.98	110.82
Y	$K\alpha_1$		4	100	39	6	14.956	3.31536	5	14.30	14.58	19.24	25.21	36.31	44.22	44.57	45.80	52.47	59.24	61.00	63.83	65.36	71.99	110.85
Ni	$K\alpha_1$		2	100	28	6	7.477	3.31582	6	14.30	14.59	19.24	25.22	36.32	44.23	44.58	45.81	52.48	59.25			65.37	72.00	110.87
Ta	$L\gamma_2$		3	1	73	6	11.215	3.31590	4	14.30	14.59	19.24	25.22	36.32	44.23	44.58	45.81	52.48	59.25	61.01	63.85	65.37	72.01	110.87
Cm	$L\alpha_1$		4	100	96	3	14.953	3.31600		14.31	14.59	19.24	25.22	36.32	44.23	44.58	45.81	52.48	59.25	61.02	63.85	65.38	72.01	110.88
Rb	$K\beta_3$		4	8	37	6	14.949	3.31684	5	14.31	14.59	19.25	25.23	36.33	44.24	44.59	45.82	52.49	59.27	61.03	63.87	65.39	72.03	110.92
Tb	$L\beta_7$		2	.1	65	6	7.474	3.31700	4	14.31	14.59	19.25	25.23	36.33	44.25	44.60	45.82	52.50	59.27			65.40	72.03	110.93
Ir	$L\beta_5$		3	.1	77	6	11.209	3.31755	5	14.31	14.59	19.25	25.23	36.34	44.25	44.60	45.83	52.51	59.28	61.05	63.88	65.41	72.05	110.96
Se	$K\alpha_{1,2}$		3	150	34	6	11.207	3.31835	5	14.32	14.60	19.26	25.24	36.34	44.26	44.62	45.84	52.52	59.30	61.06	63.90	65.43	72.07	111.00
Ni	$K\alpha_{1,2}$		2	150	28	6	7.471	3.31838	6	14.32	14.60	19.26	25.24	36.34	44.26	44.62	45.84	52.52	59.30			65.43	72.07	111.00
Nd	$K\alpha_1$		10	100	60	6	37.355	3.31846	6	14.32	14.60	19.26	25.24	36.35	44.27	44.62	45.85	52.52	59.30	61.07	63.90	65.43	72.07	111.00
Xe	$K\beta_1$	H	9	20	54	6	33.619	3.31848	5	14.32	14.60	19.26	25.24	36.35	44.27	44.62	45.85	52.52	59.30	61.07	63.90	65.43	72.07	111.00
Ho	$L\beta_4$		2	5	67	6	7.470	3.31900	4	14.32	14.60	19.26	25.24	36.35	44.27	44.63	45.85	52.53	59.31			65.44	72.08	111.03
Au	$L\beta_4$		3	4	79	6	11.203	3.31953	5	14.32	14.60	19.26	25.25	36.36	44.28	44.63	45.86	52.54	59.32	61.09	63.92	65.45	72.10	111.06
Hf	L_1-O_1	B	3	.01	72	6	11.201	3.31992	5	14.32	14.60	19.27	25.25	36.36	44.29	44.64	45.87	52.55	59.33	61.10	63.93	65.46	72.11	111.08
Sm	$L\gamma_2$		2	1	62	6	7.465	3.32088	5	14.33	14.61	19.27	25.26	36.37	44.30	44.65	45.88	52.56	59.35			65.48	72.13	111.12
Y	$K\alpha_{1,2}$		4	150	39	6	14.931	3.32097	5	14.33	14.61	19.27	25.26	36.37	44.30	44.65	45.88	52.56	59.35	61.12	63.95	65.49	72.13	111.13
Ni	$K\alpha_2$		2	50	28	6	7.460	3.32349	6	14.34	14.62	19.29	25.28	36.40	44.34	44.69	45.92	52.61	59.40			65.54	72.20	111.26
In	AL_3		1		49	6	3.730	3.32370	4	14.34	14.62	19.29	25.28	36.41	44.34	44.69	45.92	52.61	59.40	61.17	64.01	65.55	72.20	111.27
Sb	$K\alpha_2$		7	50	51	6	26.106	3.32379	6	14.34	14.62	19.29	25.28	36.41	44.34	44.69	45.92	52.61	59.40	61.17	64.02	65.55	72.20	111.27
In	$L\beta_7$		1	.1	49	6	3.729	3.32400	3	14.34	14.62	19.29	25.28	36.41	44.34	44.70	45.93	52.62	59.41	61.18	64.02	65.55	72.21	111.28
Xe	$K\beta_3$	H	9	9	54	6	33.556	3.32469	5	14.34	14.62	19.29	25.29	36.42	44.35	44.71	45.94	52.63	59.42	61.19	64.03	65.57	72.23	111.32
Cd	AL_2		1		48	6	3.727	3.32570	4	14.35	14.63	19.30	25.29	36.43	44.37	44.72	45.95	52.65	59.44	61.21	64.06	65.59	72.25	111.37
Cd	$K\beta_1$		7	19	48	6	26.091	3.32573	6	14.35	14.63	19.30	25.29	36.43	44.37	44.72	45.95	52.65	59.44	61.21	64.06	65.59	72.25	111.37
Se	$K\alpha_2$		3	50	34	6	11.179	3.32646	5	14.35	14.63	19.30	25.30	36.44	44.38	44.73	45.96	52.66	59.46	61.23	64.07	65.61	72.27	111.40
Hf	Ls	B	2	.01	72	6	7.452	3.32692	5	14.35	14.63	19.31	25.30	36.44	44.38	44.74	45.97	52.67	59.47			65.62	72.28	111.43
Ir	L_3-$O_{2,3}$	B	3	.01	77	6	11.175	3.32769	5	14.36	14.64	19.31	25.31	36.45	44.40	44.75	45.98	52.68	59.48	61.25	64.10	65.64	72.30	111.47
Ba	$K\beta_2$		10	7	56	6	37.251	3.32770	5	14.36	14.64	19.31	25.31	36.45	44.40	44.75	45.98	52.68	59.48	61.25	64.10	65.64	72.30	111.47
U	M_2-N_1		1	.01	92	6	3.724	3.32900	3	14.36	14.64	19.32	25.32	36.47	44.41	44.77	46.00	52.70	59.51	61.28	64.13	65.66	72.33	111.53

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Cd	$K\beta_3$		7	8	48	6	26.057	3.33011	6		14.37	14.65	19.33	25.33	36.48	44.43	44.78	46.02	52.72	59.53	61.30	64.15	65.69	72.36	111.59
Xe	$K\alpha_1$		8	100	54	6	29.774	3.33072	5		14.37	14.65	19.33	25.33	36.48	44.44	44.79	46.02	52.73	59.54	61.32	64.16	65.70	72.38	111.62
Nb	$K\beta_3$		5	7	41	6	18.603	3.33170	5		14.37	14.66	19.33	25.34	36.50	44.45	44.81	46.04	52.75	59.56	61.34	64.19	65.72	72.40	111.67
Y	$K\alpha_2$		4	50	39	6	14.880	3.33220	5		14.38	14.66	19.34	25.34	36.50	44.46	44.81	46.05	52.76	59.57	61.35	64.20	65.74	72.42	111.70
Au	$L\beta_6$		3	.1	79	6	11.158	3.33276	5		14.38	14.66	19.34	25.35	36.51	44.47	44.82	46.05	52.77	59.58	61.36	64.21	65.75	72.43	111.72
U	AM_4		1		92	6	3.719	3.33300	3		14.38	14.66	19.34	25.35	36.51	44.47	44.82	46.06	52.77	59.59	61.36	64.21	65.75	72.44	111.74
Nd	$K\alpha_{1,2}$		10	150	60	6	37.182	3.33388	6		14.38	14.67	19.35	25.36	36.52	44.48	44.84	46.07	52.78	59.60	61.38	64.23	65.77	72.46	111.78
Ir	Lu	B	3	.01	77	6	11.153	3.33435	5		14.38	14.67	19.35	25.36	36.53	44.49	44.84	46.08	52.79	59.61	61.39	64.24	65.78	72.47	111.80
Tb	$L\beta_{10}$		8	2	.01	65	6	7.435	3.33460	4		14.39	14.67	19.35	25.36	36.53	44.49	44.85	46.08	52.80	59.62			65.79	72.48	111.82
Pt	L_2-M_5	F	3	.01	78	6	11.149	3.33549	5		14.39	14.67	19.36	25.37	36.54	44.50	44.86	46.09	52.81	59.64	61.41	64.27	65.81	72.50	111.86
Cd	$L\gamma_1$		1	10	48	6	3.716	3.33564	5		14.39	14.67	19.36	25.37	36.54	44.51	44.86	46.10	52.81	59.64	61.42	64.27	65.81	72.50	111.87
La	$K\alpha_1$		9	100	57	6	33.436	3.33663	6		14.39	14.68	19.36	25.38	36.55	44.52	44.88	46.11	52.83	59.66	61.44	64.29	65.83	72.53	111.92
Sb	$K\beta_1$		8	20	51	6	29.721	3.33668	6		14.39	14.68	19.36	25.38	36.55	44.52	44.88	46.11	52.83	59.66	61.44	64.29	65.84	72.53	111.92
Ca	$SK\alpha_4$		1	2	20	1	3.715	3.33683	3	4	14.40	14.68	19.36	25.38	36.55	44.52	44.88	46.11	52.84	59.66	61.44	64.30	65.84	72.53	111.93
In	$L\beta_{2,15}$		1	17	49	6	3.713	3.33838	5		14.40	14.69	19.37	25.39	36.57	44.55	44.90	46.14	52.86	59.69	61.47	64.33	65.87	72.57	112.01
Ca	$SK\alpha_3$		1	2	20	1	3.711	3.34013	3	4	14.41	14.69	19.38	25.41	36.59	44.57	44.93	46.16	52.89	59.73	61.51	64.37	65.91	72.61	112.10
Ra	$L\beta_2$		4	20	88	6	14.839	3.34148	5		14.42	14.70	19.39	25.42	36.61	44.59	44.94	46.18	52.91	59.75	61.54	64.40	65.94	72.65	112.17
Po	$L\alpha_1$		3	100	84	6	11.129	3.34158	5		14.42	14.70	19.39	25.42	36.61	44.59	44.95	46.18	52.92	59.76	61.54	64.40	65.94	72.65	112.17
Ta	$L\gamma_6$		3	.01	73	6	11.129	3.34164	5		14.42	14.70	19.39	25.42	36.61	44.59	44.95	46.18	52.92	59.76	61.54	64.40	65.95	72.65	112.18
Sb	$K\beta_3$		8	9	51	6	29.674	3.34190	6		14.42	14.70	19.39	25.42	36.61	44.60	44.95	46.19	52.92	59.76	61.54	64.41	65.95	72.66	112.19
Xe	$K\alpha_{1,2}$	H	8	150	54	6	29.666	3.34280	5		14.42	14.71	19.40	25.43	36.62	44.61	44.96	46.20	52.94	59.78	61.56	64.43	65.97	72.68	112.23
Sn	$L\beta_4$		1	4	50	6	3.708	3.34335	5		14.42	14.71	19.40	25.43	36.63	44.62	44.97	46.21	52.95	59.79	61.57	64.44	65.98	72.70	112.26
Pu	$L\beta_3$		5	6	94	6	18.537	3.34355	5		14.42	14.71	19.40	25.43	36.63	44.62	44.97	46.21	52.95	59.79	61.58	64.44	65.99	72.70	112.27
Yb	$L\alpha_1$		2	100	70	6	7.414	3.34378	5		14.43	14.71	19.41	25.43	36.63	44.62	44.98	46.22	52.95	59.80			65.99	72.71	112.28
Ir	$L\beta_7$		3	.1	77	6	11.119	3.34467	5		14.43	14.71	19.41	25.44	36.64	44.63	44.99	46.23	52.97	59.82	61.60	64.47	66.01	72.73	112.33
W	L_2-N_3		8	3	.01	74	6	11.118	3.34470	4		14.43	14.71	19.41	25.44	36.64	44.63	44.99	46.23	52.97	59.82	61.60	64.47	66.01	72.73	112.33
Bk	$L\beta_2$		5	20	97	3	18.529	3.34500			14.43	14.71	19.41	25.44	36.65	44.64	44.99	46.23	52.97	59.82	61.61	64.47	66.02	72.74	112.35
Th	Ll		3	1	90	6	11.117	3.34524	5		14.43	14.72	19.41	25.44	36.65	44.64	45.00	46.24	52.98	59.83	61.61	64.48	66.03	72.74	112.36
Ta	Lt		8	2	.01	73	6	7.411	3.34530	5		14.43	14.72	19.41	25.45	36.65	44.64	45.00	46.24	52.98	59.83			66.03	72.75	112.36
Ta	L_1-N_1		8	3	.01	73	6	11.115	3.34563	5		14.43	14.72	19.42	25.45	36.65	44.65	45.00	46.24	52.99	59.83	61.62	64.49	66.03	72.75	112.38
Tl	AM_1		8	1		81	6	3.705	3.34600	3		14.44	14.72	19.42	25.45	36.66	44.65	45.01	46.25	52.99	59.84	61.63	64.49	66.04	72.76	112.40
Ta	Lv	B	3	.01	73	6	11.110	3.34740	4		14.44	14.73	19.43	25.46	36.67	44.67	45.03	46.27	53.02	59.87	61.66	64.53	66.07	72.80	112.47
La	$K\alpha_{1,2}$		9	150	57	6	33.299	3.35036	6		14.45	14.74	19.44	25.48	36.71	44.71	45.07	46.31	53.07	59.93	61.72	64.59	66.14	72.87	112.62
Ge	$K\beta_2$		3	.5	32	6	11.099	3.35058	5		14.46	14.74	19.45	25.49	36.71	44.72	45.07	46.32	53.07	59.93	61.72	64.59	66.14	72.88	112.63
Ta	L_2-O_3		8	3	.01	73	6	11.098	3.35079	5		14.46	14.74	19.45	25.49	36.71	44.72	45.08	46.32	53.07	59.94	61.73	64.60	66.15	72.88	112.64
Ta	L_2-O_2		8	3	.01	73	6	11.089	3.35367	5		14.47	14.75	19.46	25.51	36.75	44.76	45.12	46.36	53.12	59.99	61.78	64.66	66.21	72.96	112.79
W	Ll		2	3	74	6	7.386	3.35640	4		14.48	14.77	19.48	25.53	36.78	44.80	45.16	46.40	53.17	60.05			66.27	73.03	112.93
Ag	$K\alpha_1$		6	100	47	6	22.159	3.35644	7		14.48	14.77	19.48	25.53	36.78	44.80	45.16	46.40	53.17	60.05	61.84	64.72	66.28	73.03	112.93
Fr	$L\beta_1$	H	4	50	87	6	14.768	3.35760	5		14.49	14.77	19.49	25.54	36.79	44.82	45.17	46.42	53.19	60.07	61.86	64.75	66.30	73.06	112.99
Ca	$K\alpha_1$		1	100	20	6	3.691	3.35839	5	4	14.49	14.77	19.49	25.55	36.80	44.83	45.18	46.43	53.20	60.09	61.88	64.76	66.32	73.08	113.03
Ge	$K\beta_5$		8	3	.05	32	6	11.073	3.35850	4		14.49	14.77	19.49	25.55	36.80	44.83	45.19	46.43	53.21	60.09	61.88	64.77	66.32	73.08	113.04
Pb	$L\gamma_1$		4	10	82	6	14.762	3.35892	5		14.49	14.78	19.49	25.55	36.80	44.83	45.19	46.44	53.21	60.10	61.89	64.77	66.33	73.09	113.06
Bi	AM_2	H	1		83	6	3.690	3.35900	3		14.49	14.78	19.49	25.55	36.81	44.84	45.19	46.44	53.21	60.10	61.89	64.78	66.33	73.09	113.07
Ca	$K\alpha_{1,2}$		1	150	20	6	3.690	3.35948	5	4	14.49	14.78	19.50	25.55	36.81	44.84	45.20	46.45	53.22	60.11	61.90	64.79	66.34	73.10	113.09
Pt	$L\beta_1$		3	50	78	6	11.069	3.35970	5		14.49	14.78	19.50	25.56	36.81	44.85	45.20	46.45	53.23	60.11	61.91	64.79	66.35	73.11	113.10
Ta	$L\gamma_8$		3	.1	73	6	11.063	3.36150	4		14.50	14.79	19.51	25.57	36.83	44.87	45.23	46.47	53.26	60.15	61.94	64.83	66.39	73.15	113.19
Ca	$K\alpha_2$		1	50	20	6	3.687	3.36166	5	4	14.50	14.79	19.51	25.57	36.84	44.87	45.23	46.48	53.26	60.15	61.95	64.83	66.39	73.16	113.20
Ra	$L\beta_4$		4	4	88	6	14.745	3.36284	5		14.51	14.79	19.52	25.58	36.85	44.89	45.25	46.49	53.28	60.17	61.97	64.86	66.42	73.19	113.26
Cm	$L\alpha_2$		4	10	96	3	14.740	3.36400			14.51	14.80	19.52	25.59	36.86	44.91	45.26	46.51	53.30	60.20	62.00	64.88	66.44	73.22	113.32
Dy	$L\beta_6$		2	.1	66	6	7.369	3.36426	5		14.51	14.80	19.53	25.59	36.87	44.91	45.27	46.52	53.30	60.20			66.45	73.22	113.34
Hf	$L\gamma_{11}$		8	3	.01	72	6	11.053	3.36438	5		14.51	14.80	19.53	25.59	36.87	44.91	45.27	46.52	53.31	60.20	62.00	64.89	66.45	73.23	113.34
Dy	$L\beta_3$		2	6	66	6	7.369	3.36440	4		14.52	14.80	19.53	25.59	36.87	44.91	45.27	46.52	53.31	60.21			66.45	73.23	113.35
Nd	$K\alpha_2$		10	50	60	6	36.841	3.36472	6		14.52	14.80	19.53	25.60	36.87	44.92	45.27	46.52	53.31	60.21	62.01	64.90	66.46	73.24	113.36
Tl	$L\gamma_3$		4	2	81	6	14.734	3.36520	5		14.52	14.80	19.53	25.60	36.88	44.92	45.28	46.53	53.32	60.22	62.02	64.91	66.47	73.25	113.39
Ag	$K\alpha_{1,2}$		6	150	47	6	22.101	3.36522	6		14.52	14.80	19.53	25.60	36.88	44.92	45.28	46.53	53.32	60.22	62.02	64.91	66.47	73.25	113.39
W	L_2-N_2	B	3	.01	74	6	11.050	3.36540	4		14.52	14.80	19.53	25.60	36.88	44.93	45.28	46.53	53.32	60.23	62.02	64.91	66.48	73.25	113.40
Yb	$L\alpha_2$		2	10	70	6	7.366	3.36570	5		14.52	14.81	19.53	25.60	36.88	44.93	45.29	46.54	53.33	60.23			66.48	73.26	113.41
Tb	$L\beta_{2,15}$		2	20	65	6	7.365	3.36600	4		14.52	14.81	19.54	25.61	36.89	44.93	45.29	46.54	53.33	60.24			66.49	73.27	113.43
Xe	$K\alpha_2$	H	8	50	54	6	29.453	3.36696	5		14.53	14.81	19.54	25.61	36.90	44.95	45.31	46.55	53.35	60.26	62.06	64.95	66.51	73.29	113.48
Hf	L_1-N_4		8	3	.01	72	6	11.043	3.36750	5		14.53	14.81	19.54	25.62	36.90	44.96	45.31	46.56	53.36	60.27	62.07	64.96	66.52	73.31	113.51
Ac	$L\gamma_1$	H	5	10	89	6	18.405	3.36755	5		14.53	14.81	19.54	25.62	36.90	44.96	45.31	46.56	53.36	60.27	62.07	64.96	66.52	73.31	113.51
Pt	L_3-N_3		8	3	.01	78	6	11.042	3.36780	4		14.53	14.82	19.55	25.62	36.91	44.96	45.32	46.57	53.36	60.27	62.07	64.97	66.53	73.31	113.52
Ru	$K\beta_2$		6	3	44	6	22.070	3.36996	5		14.54	14.83	19.56	25.64	36.93	44.99	45.35	46.60	53.40	60.32	62.12	65.01	66.58	73.37	113.63
Am	$L\gamma_1$		6	10	95	6	22.061	3.37132	6		14.55	14.83	19.57	25.65	36.95	45.01	45.37	46.62	53.42	60.34	62.15	65.04	66.61	73.40	113.70
Tc	$K\alpha_1$	H	5	100	43	6	18.364	3.37510	5		14.56	14.85	19.59	25.68	36.99	45.06	45.42	46.67	53.49	60.42	62.22	65.12	66.69	73.50	113.90

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Po	$L\alpha_2$	H	3	10	84	6	11.014	3.37644	5		14.57	14.85	19.60	25.69	37.00	45.08	45.44	46.69	53.51	60.44	62.25	65.15	66.72	73.53	113.97
Ra	$L\gamma_3$		5	2	88	6	18.354	3.37690	5		14.57	14.86	19.60	25.69	37.01	45.09	45.45	46.70	53.52	60.45	62.26	65.16	66.73	73.54	114.00
I	$K\beta_2$	H	9	6	53	6	33.036	3.37707	5		14.57	14.86	19.60	25.69	37.01	45.09	45.45	46.70	53.52	60.46	62.26	65.17	66.74	73.55	114.00
La	$K\alpha_2$		9	50	57	6	33.028	3.37782	6		14.57	14.86	19.61	25.70	37.02	45.10	45.46	46.71	53.54	60.47	62.28	65.18	66.75	73.57	114.04
Os	$L\beta_9$	B	3	.01	76	6	11.005	3.37911	5		14.58	14.87	19.61	25.71	37.03	45.12	45.48	46.73	53.56	60.50	62.30	65.21	66.78	73.60	114.11
Tc	$K\alpha_{1,2}$	H	5	150	43	6	18.325	3.38226	5		14.59	14.88	19.63	25.73	37.07	45.16	45.52	46.78	53.61	60.56	62.37	65.28	66.85	73.68	114.28
Ag	$K\alpha_2$		6	50	47	6	21.987	3.38279	6		14.59	14.88	19.63	25.74	37.08	45.17	45.53	46.79	53.62	60.57	62.38	65.29	66.86	73.69	114.30
Tl	Ln		3	1	81	6	10.992	3.38307	5		14.60	14.88	19.64	25.74	37.08	45.17	45.53	46.79	53.63	60.57	62.39	65.30	66.87	73.70	114.32
Au	$L\beta_{17}$	B	3	.01	79	6	10.990	3.38394	5		14.60	14.89	19.64	25.74	37.09	45.19	45.55	46.80	53.64	60.59	62.40	65.32	66.89	73.72	114.36
Pu	$L\gamma_3$		6	2	94	6	21.979	3.38401	6		14.60	14.89	19.64	25.74	37.09	45.19	45.55	46.80	53.64	60.59	62.41	65.32	66.89	73.72	114.37
Sn	$L\beta_1$		1	75	50	6	3.662	3.38487	5		14.60	14.89	19.65	25.75	37.10	45.20	45.56	46.82	53.66	60.61	62.42	65.34	66.91	73.75	114.41
Ge	$K\beta_1$		3	14	32	6	10.980	3.38682	5		14.61	14.90	19.66	25.77	37.12	45.23	45.59	46.85	53.69	60.65	62.46	65.38	66.95	73.80	114.52
Ge	$K\beta_3$		3	7	32	6	10.976	3.38808	5		14.62	14.91	19.67	25.78	37.14	45.25	45.61	46.86	53.71	60.67	62.49	65.41	66.98	73.83	114.58
Pu	$L\beta_1$		5	50	94	6	18.291	3.38860	5		14.62	14.91	19.67	25.78	37.14	45.25	45.61	46.87	53.72	60.68	62.50	65.42	66.99	73.84	114.61
Tm	Ln		2	1	69	6	7.308	3.39260	4		14.64	14.93	19.69	25.81	37.19	45.31	45.67	46.93	53.79	60.76			67.08	73.94	114.82
Am	$L\alpha_1$		4	100	95	6	14.615	3.39275	6		14.64	14.93	19.69	25.81	37.19	45.31	45.67	46.93	53.79	60.77	62.58	65.51	67.09	73.95	114.83
Pt	L_3-N_2	B	3	.01	78	6	10.960	3.39300	4		14.64	14.93	19.69	25.81	37.19	45.31	45.68	46.94	53.80	60.77	62.59	65.51	67.09	73.95	114.84
Sm	$L\gamma_6$	A	2	.01	62	6	7.306	3.39332	5		14.64	14.93	19.70	25.82	37.20	45.32	45.68	46.94	53.80	60.78			67.10	73.96	114.86
Tc	$K\alpha_2$	H	5	50	43	6	18.248	3.39660	5		14.65	14.94	19.72	25.84	37.23	45.37	45.73	46.99	53.86	60.84	62.66	65.59	67.17	74.04	115.03
W	$L\gamma_5$		3	.1	74	6	10.947	3.39705	5		14.66	14.95	19.72	25.85	37.24	45.37	45.73	47.00	53.86	60.85	62.67	65.60	67.18	74.06	115.06
Os	$L\beta_{10}$	B	3	.01	76	6	10.936	3.40059	5		14.67	14.96	19.74	25.87	37.28	45.42	45.78	47.05	53.93	60.92	62.75	65.68	67.26	74.15	115.24
Au	L_1-M_1	F	3	.01	79	6	10.926	3.40359	5		14.69	14.97	19.76	25.90	37.31	45.46	45.83	47.09	53.98	60.98	62.81	65.74	67.33	74.22	115.40
Ir	$L\beta_2$		3	20	77	6	10.919	3.40596	5		14.70	14.98	19.77	25.91	37.34	45.50	45.86	47.13	54.02	61.03	62.86	65.79	67.38	74.28	115.53
Sn	$K\beta_2$		8	5	50	6	29.104	3.40732	6		14.70	14.99	19.78	25.93	37.35	45.52	45.88	47.15	54.04	61.05	62.88	65.82	67.41	74.32	115.60
Ba	$K\beta_1$		10	21	56	6	36.372	3.40811	6		14.70	14.99	19.78	25.93	37.36	45.53	45.89	47.16	54.05	61.07	62.90	65.84	67.43	74.34	115.64
Ag	$K\beta_2$		7	5	47	6	25.452	3.40922	6		14.71	15.00	19.79	25.94	37.38	45.54	45.91	47.17	54.07	61.09	62.92	65.87	67.46	74.37	115.70
Ta	L_2-N_5	B	3	.01	73	6	10.904	3.41061	5		14.72	15.01	19.80	25.95	37.39	45.56	45.93	47.19	54.10	61.12	62.95	65.90	67.49	74.40	115.78
Ir	$L\beta_{15}$		3	1	77	6	10.902	3.41121	5		14.72	15.01	19.80	25.96	37.40	45.57	45.94	47.20	54.11	61.13	62.96	65.91	67.50	74.42	115.81
Sm	$L\gamma_8$		2	.1	62	6	7.265	3.41268	5		14.72	15.01	19.81	25.97	37.42	45.59	45.96	47.23	54.13	61.16			67.53	74.45	115.89
Ta	$L\gamma_1$		3	10	73	6	10.893	3.41382	5		14.73	15.02	19.82	25.98	37.43	45.61	45.97	47.24	54.15	61.18	63.02	65.97	67.56	74.48	115.95
Ba	$K\beta_3$		10	7	56	6	36.298	3.41507	6		14.73	15.02	19.82	25.99	37.44	45.63	45.99	47.26	54.17	61.21	63.04	65.99	67.59	74.52	116.02
Hf	$L\gamma_3$		3	2	72	6	10.889	3.41523	5		14.74	15.03	19.82	25.99	37.44	45.63	45.99	47.26	54.18	61.21	63.05	66.00	67.59	74.52	116.03
Hg	L_2-M_2	B	3	.01	80	6	10.886	3.41610	4		14.74	15.03	19.83	25.99	37.45	45.64	46.00	47.28	54.19	61.23	63.06	66.02	67.61	74.54	116.07
Eu	$L\gamma_5$		2	.1	63	6	7.255	3.41700	4		14.74	15.03	19.83	26.00	37.46	45.65	46.02	47.29	54.21	61.25			67.63	74.56	116.12
Rn	$L\beta_3$	H	4	10	86	6	14.509	3.41744	5		14.75	15.04	19.84	26.00	37.47	45.66	46.02	47.29	54.21	61.26	63.09	66.05	67.64	74.58	116.14
Dy	$L\beta_1$		2	50	66	6	7.246	3.42124	5		14.76	15.05	19.86	26.03	37.51	45.71	46.08	47.35	54.28	61.33			67.73	74.67	116.35
Os	$L\beta_5$		3	.1	76	6	10.869	3.42150	4		14.76	15.05	19.86	26.03	37.52	45.72	46.08	47.35	54.28	61.34	63.18	66.13	67.73	74.68	116.36
Ir	$L\beta_3$		3	6	77	6	10.866	3.42255	5		14.77	15.06	19.87	26.04	37.53	45.73	46.10	47.37	54.30	61.36	63.20	66.16	67.75	74.71	116.42
Cm	$L8_2$		5	20	96	3	18.096	3.42500			14.78	15.07	19.88	26.06	37.56	45.77	46.13	47.41	54.34	61.41	63.25	66.21	67.81	74.77	116.55
Cd	$L\gamma_5$		1	.1	48	6	3.619	3.42551	5		14.78	15.07	19.88	26.07	37.56	45.77	46.14	47.41	54.35	61.42	63.26	66.22	67.82	74.78	116.58
Gd	$L\beta_5$		2	.1	64	6	7.236	3.42600	4		14.78	15.07	19.89	26.07	37.57	45.78	46.15	47.42	54.36	61.43			67.83	74.79	116.61
Pt	$L\beta_4$		3	4	78	6	10.852	3.42669	5		14.79	15.08	19.89	26.07	37.57	45.79	46.16	47.43	54.37	61.44	63.28	66.25	67.85	74.81	116.64
Pa	AM_4		1		91	6	3.615	3.42900	3		14.80	15.09	19.91	26.09	37.60	45.82	46.19	47.46	54.41	61.49	63.33	66.30	67.90	74.87	116.77
Cd	$L\beta_9$	B	1	.01	48	6	3.614	3.43015	5		14.80	15.09	19.91	26.10	37.61	45.84	46.20	47.48	54.43	61.51	63.35	66.32	67.93	74.90	116.83
Lu	$L\gamma_4$		3	.1	71	6	10.840	3.43050	4		14.80	15.09	19.91	26.10	37.62	45.84	46.21	47.49	54.44	61.51	63.36	66.33	67.93	74.91	116.85
Pt	$L\beta_6$		3	.1	78	6	10.840	3.43065	5		14.80	15.09	19.91	26.11	37.62	45.85	46.21	47.49	54.44	61.52	63.36	66.33	67.94	74.91	116.86
Si	$L\alpha_1$		3	100	83	6	10.837	3.43158	5		14.81	15.10	19.92	26.11	37.63	45.86	46.23	47.50	54.46	61.54	63.38	66.35	67.96	74.94	116.91
Am	$L\beta_4$		5	4	95	6	18.060	3.43195	5		14.81	15.10	19.92	26.12	37.63	45.86	46.23	47.51	54.46	61.54	63.39	66.36	67.97	74.95	116.93
Fr	$L\beta_2$		4	20	87	6	14.448	3.43200	3		14.81	15.10	19.92	26.12	37.64	45.86	46.23	47.51	54.46	61.54	63.39	66.36	67.97	74.95	116.93
Hf	$L\gamma_2$		3	1	72	6	10.832	3.43326	5		14.81	15.11	19.93	26.13	37.65	45.88	46.25	47.53	54.49	61.57	63.42	66.39	68.00	74.98	117.00
Sn	$K\alpha_1$		7	100	50	6	25.267	3.43419	6		14.82	15.11	19.94	26.13	37.66	45.90	46.26	47.54	54.50	61.59	63.44	66.41	68.02	75.00	117.05
Ru	$K\beta_1$		6	16	44	6	21.653	3.43489	6		14.82	15.11	19.94	26.14	37.67	45.91	46.27	47.55	54.51	61.60	63.45	66.43	68.03	75.02	117.09
In	$L\beta_6$		1	1	49	6	3.608	3.43606	5		14.83	15.12	19.95	26.15	37.68	45.92	46.29	47.57	54.53	61.63	63.48	66.45	68.06	75.05	117.15
Os	Lu	B	3	.01	76	6	10.823	3.43611	5		14.83	15.12	19.95	26.15	37.68	45.92	46.29	47.57	54.54	61.63	63.48	66.45	68.06	75.05	117.16
K	AK		1		19	6	3.607	3.43650	4		14.83	15.12	19.95	26.15	37.69	45.93	46.30	47.57	54.54	61.63	63.48	66.46	68.07	75.06	117.18
Cd	$L\beta_{10}$	B	1	.01	48	6	3.607	3.43670	4		14.83	15.12	19.95	26.15	37.69	45.93	46.30	47.58	54.55	61.64	63.49	66.47	68.07	75.07	117.19
Pd	AL_1		1		46	6	3.607	3.43690	4		14.83	15.12	19.95	26.15	37.69	45.93	46.30	47.58	54.55	61.64	63.49	66.47	68.08	75.07	117.20
Te	Ln		1	7	52	6	3.605	3.43832	5		14.84	15.13	19.96	26.17	37.71	45.95	46.32	47.60	54.57	61.67	63.52	66.50	68.11	75.11	117.28
Ru	$K\beta_3$		6	8	44	6	21.631	3.43840	6		14.84	15.13	19.96	26.17	37.71	45.96	46.32	47.60	54.57	61.67	63.52	66.50	68.11	75.11	117.28
Sb	$L\alpha_1$		1	100	51	6	3.604	3.43941	5		14.84	15.13	19.97	26.17	37.72	45.97	46.34	47.62	54.59	61.69	63.55	66.52	68.13	75.14	117.34
Gd	$L\beta_7$		2	.1	64	6	7.206	3.44060	4		14.85	15.14	19.97	26.18	37.73	45.99	46.35	47.64	54.61	61.72			68.16	75.17	117.40
Pa	M_2-N_1		1	.01	91	6	3.602	3.44100	3		14.85	15.14	19.98	26.19	37.74	45.99	46.36	47.64	54.62	61.72	63.58	66.56	68.17	75.18	117.42
Am	$L\alpha_2$		4	10	95	6	14.409	3.44105	6		14.85	15.14	19.98	26.19	37.74	45.99	46.36	47.64	54.62	61.73	63.58	66.56	68.17	75.18	117.43
K	$K\beta_5$	C	1	.01	19	6	3.602	3.44130	4	4	14.85	15.14	19.98	26.19	37.74	46.00	46.36	47.65	54.62	61.73	63.58	66.57	68.18	75.19	117.44
Pr	$K\alpha_1$		10	100	59	6	36.020	3.44140	6		14.85	15.14	19.98	26.19	37.74	46.00	46.37	47.65	54.63	61.73	63.59	66.57	68.18	75.19	117.45

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Dy	$L\beta_4$		2	5	66	6	7.203	3.44206	5		14.85	15.14	19.98	26.19	37.75	46.01	46.37	47.66	54.64	61.74			68.19	75.21	117.48
Sn	$K\alpha_{1,2}$		7	150	50	6	25.191	3.44459	6		14.86	15.16	20.00	26.21	37.78	46.04	46.41	47.69	54.68	61.80	63.65	66.64	68.25	75.27	117.62
Np	$L\beta_3$	H	5	6	93	6	17.986	3.44600	5		14.87	15.16	20.00	26.22	37.79	46.06	46.43	47.71	54.71	61.82	63.68	66.67	68.28	75.31	117.70
Hf	Lt	B	2	.01	72	6	7.194	3.44610	5		14.87	15.16	20.01	26.23	37.80	46.06	46.43	47.72	54.71	61.83			68.29	75.31	117.70
Ir	L_2-M_5	B	3	.01	77	6	10.789	3.44670	4		14.87	15.16	20.01	26.23	37.80	46.07	46.44	47.72	54.72	61.84	63.70	66.68	68.30	75.32	117.74
Os	$L\beta_7$		3	7	76	6	10.785	3.44799	5		14.88	15.17	20.02	26.24	37.82	46.09	46.46	47.74	54.74	61.86	63.72	66.71	68.33	75.36	117.81
Gd	$L\beta_9$	B	2	.01	64	6	7.190	3.44800	4		14.88	15.17	20.02	26.24	37.82	46.09	46.46	47.74	54.74	61.86			68.33	75.36	117.81
Sb	$L\alpha_2$		1	10	51	6	3.595	3.44840	5		14.88	15.17	20.02	26.24	37.82	46.10	46.47	47.75	54.75	61.87	63.73	66.72	68.34	75.37	117.83
Zr	$K\beta_2$		5	4	40	6	17.967	3.44965	5		14.88	15.18	20.03	26.25	37.84	46.11	46.48	47.77	54.77	61.90	63.76	66.75	68.37	75.40	117.90
Tm	$L\alpha_1$	H	2	100	69	6	7.179	3.45360	4		14.90	15.20	20.05	26.28	37.88	46.17	46.54	47.83	54.84	61.97			68.45	75.50	118.12
K	$K\beta_{1,3}$		1	15	19	6	3.589	3.45390	4	4	14.90	15.20	20.05	26.29	37.88	46.17	46.54	47.83	54.84	61.98	63.84	66.84	68.46	75.51	118.13
Sm	$L\gamma_1$		2	5	62	6	7.177	3.45448	5		14.91	15.20	20.05	26.29	37.89	46.18	46.55	47.84	54.85	61.99			68.47	75.52	118.17
I	$K\beta_1$		9	20	53	6	32.289	3.45514	6		14.91	15.20	20.06	26.30	37.90	46.19	46.56	47.85	54.86	62.01	63.87	66.87	68.49	75.54	118.20
Pr	$K\alpha_{1,2}$		10	150	59	6	35.860	3.45676	6		14.92	15.21	20.07	26.31	37.92	46.21	46.58	47.87	54.89	62.04	63.90	66.90	68.53	75.58	118.29
Ta	Ll		2	3	73	6	7.172	3.45682	5		14.92	15.21	20.07	26.31	37.92	46.22	46.59	47.87	54.89	62.04			68.53	75.58	118.30
I	$K\beta_3$		9	9	53	6	32.234	3.46108	6		14.93	15.23	20.09	26.34	37.97	46.28	46.65	47.94	54.96	62.12	63.99	67.00	68.62	75.69	118.53
Cs	$K\beta_2$		10	6	55	6	35.815	3.46110	5		14.93	15.23	20.09	26.34	37.97	46.28	46.65	47.94	54.97	62.12	63.99	67.00	68.62	75.70	118.53
Gd	$L\beta_{10}$	B	2	.01	64	6	7.159	3.46300	4		14.94	15.24	20.10	26.36	37.99	46.30	46.67	47.96	55.00	62.16			68.67	75.74	118.64
Rn	$L\beta_1$	H	4	50	86	6	14.313	3.46420	5		14.95	15.24	20.11	26.37	38.00	46.32	46.69	47.98	55.02	62.19	64.06	67.07	68.69	75.77	118.71
Kr	$K\beta_2$		4	3	36	6	14.312	3.46440	4		14.95	15.24	20.11	26.37	38.00	46.32	46.69	47.99	55.02	62.19	64.06	67.07	68.70	75.78	118.72
Sn	$K\alpha_2$		7	50	50	6	25.040	3.46537	6		14.95	15.25	20.12	26.37	38.02	46.34	46.71	48.00	55.04	62.21	64.08	67.09	68.72	75.80	118.77
Hf	$L\gamma_6$		3	.01	72	6	10.731	3.46557	5		14.95	15.25	20.12	26.38	38.02	46.34	46.71	48.00	55.04	62.21	64.09	67.10	68.72	75.81	118.78
Ta	L_2-N_3	8	3	.01	73	6	10.730	3.46590	4		14.96	15.25	20.12	26.38	38.02	46.34	46.71	48.01	55.05	62.22	64.09	67.10	68.73	75.82	118.80
Ba	$K\alpha_1$		9	100	56	6	32.188	3.46600	6		14.96	15.25	20.12	26.38	38.02	46.35	46.72	48.01	55.05	62.22	64.09	67.11	68.73	75.82	118.81
Bi	$L\alpha_2$		3	10	83	6	10.729	3.46608	5		14.96	15.25	20.12	26.38	38.02	46.35	46.72	48.01	55.05	62.22	64.10	67.11	68.74	75.82	118.81
I	$K\alpha_1$		8	100	53	6	28.607	3.46654	6		14.96	15.25	20.13	26.38	38.03	46.35	46.72	48.02	55.06	62.23	64.11	67.12	68.75	75.84	118.84
Ir	L_3-N_3	B	3	.01	77	6	10.723	3.46800	4		14.96	15.26	20.13	26.39	38.05	46.37	46.74	48.04	55.08	62.26	64.14	67.15	68.78	75.87	118.92
In	$L\beta_3$		1	6	49	6	3.572	3.46984	5		14.97	15.27	20.14	26.41	38.07	46.40	46.77	48.07	55.12	62.30	64.17	67.19	68.82	75.92	119.02
Tl	$L\gamma_1$		4	10	81	6	14.289	3.47008	5		14.97	15.27	20.15	26.41	38.07	46.40	46.77	48.07	55.12	62.30	64.18	67.20	68.83	75.93	119.04
Ra	$L\gamma_1$		5	10	88	6	17.845	3.47315	5		14.99	15.28	20.16	26.43	38.10	46.45	46.82	48.11	55.17	62.36	64.24	67.26	68.90	76.01	119.21
Pu	$L\alpha_1$		4	100	94	6	14.276	3.47320	5		14.99	15.28	20.16	26.44	38.10	46.45	46.82	48.11	55.17	62.37	64.24	67.26	68.90	76.01	119.21
Pu	$L\gamma_1$		6	10	94	6	21.414	3.47329	6		14.99	15.28	20.16	26.44	38.11	46.45	46.82	48.12	55.18	62.37	64.25	67.27	68.90	76.01	119.22
Ir	$L\beta_1$		3	50	77	6	10.706	3.47343	5		14.99	15.28	20.17	26.44	38.11	46.45	46.82	48.12	55.18	62.37	64.25	67.27	68.90	76.01	119.22
Hf	Lv	B	3	.01	72	6	10.702	3.47490	5		14.99	15.29	20.17	26.45	38.12	46.47	46.84	48.14	55.20	62.40	64.28	67.30	68.94	76.05	119.31
Tm	$L\alpha_2$		2	10	69	6	7.132	3.47620	4		15.00	15.30	20.18	26.46	38.14	46.49	46.86	48.16	55.23	62.43			68.97	76.08	119.38
Hg	$L\gamma_3$		4	2	80	6	14.262	3.47660	5		15.00	15.30	20.18	26.46	38.14	46.50	46.87	48.17	55.23	62.43	64.31	67.34	68.97	76.09	119.40
Hg	AM_1	H	1		80	6	3.564	3.47800	3		15.01	15.30	20.19	26.47	38.16	46.52	46.89	48.19	55.26	62.46	64.34	67.37	69.01	76.13	119.48
I	$K\alpha_{1,2}$		8	150	53	6	28.508	3.47857	6		15.01	15.31	20.20	26.48	38.17	46.52	46.90	48.19	55.27	62.47	64.35	67.38	69.02	76.15	119.51
U	$M\gamma$		1	5	92	6	3.563	3.47900	3		15.01	15.31	20.20	26.48	38.17	46.53	46.90	48.20	55.27	62.48	64.36	67.39	69.03	76.16	119.54
Ag	$K\beta_1$		7	18	47	6	24.938	3.47948	6		15.01	15.31	20.20	26.48	38.18	46.54	46.91	48.21	55.28	62.49	64.37	67.40	69.04	76.17	119.57
Ba	$K\alpha_{1,2}$		9	150	56	6	32.062	3.47967	6		15.02	15.31	20.20	26.49	38.18	46.54	46.91	48.21	55.29	62.49	64.38	67.41	69.04	76.17	119.58
Sn	$K\beta_1$		8	19	50	6	28.481	3.48189	6		15.02	15.32	20.22	26.50	38.20	46.57	46.94	48.24	55.32	62.54	64.42	67.46	69.09	76.23	119.70
Lu	$L\gamma_{11}$	B	3	.01	71	6	10.676	3.48321	5		15.03	15.33	20.22	26.51	38.22	46.59	46.96	48.26	55.35	62.57	64.45	67.48	69.12	76.26	119.78
Ag	$K\beta_3$		7	8	47	6	24.907	3.48379	6		15.03	15.33	20.23	26.52	38.23	46.60	46.97	48.27	55.36	62.58	64.46	67.50	69.14	76.28	119.81
Hf	$L\gamma_8$		3	.8	72	6	10.674	3.48414	5		15.03	15.33	20.23	26.52	38.23	46.60	46.98	48.28	55.36	62.58	64.47	67.50	69.15	76.29	119.83
Tb	$L\beta_6$		2	.1	65	6	7.115	3.48440	4		15.04	15.33	20.23	26.52	38.23	46.61	46.98	48.28	55.37	62.59			69.15	76.30	119.84
Ta	L_2-N_2	F	3	.01	73	6	10.670	3.48543	5		15.04	15.34	20.24	26.53	38.24	46.62	46.99	48.30	55.38	62.61	64.50	67.53	69.17	76.32	119.90
Np	$L\gamma_3$		6	2	93	6	21.336	3.48600	4		15.04	15.34	20.24	26.53	38.25	46.63	47.00	48.30	55.39	62.62	64.51	67.55	69.19	76.34	119.94
Lu	L_1-N_4	B	3	.01	71	6	10.665	3.48681	5		15.05	15.34	20.24	26.54	38.26	46.64	47.01	48.32	55.41	62.64	64.53	67.56	69.21	76.36	119.98
Sn	$K\beta_3$		8	9	50	6	28.439	3.48702	6		15.05	15.34	20.25	26.54	38.26	46.64	47.02	48.32	55.41	62.64	64.53	67.57	69.21	76.36	119.99
Pr	$K\alpha_2$		10	50	59	6	35.544	3.48749	6		15.05	15.35	20.25	26.55	38.27	46.65	47.02	48.33	55.42	62.65	64.54	67.58	69.22	76.38	120.02
Fe	$K\beta_5$	B	2	.03	26	6	7.107	3.48840	4	4	15.05	15.35	20.25	26.55	38.28	46.66	47.04	48.34	55.44	62.67			69.24	76.40	120.07
Nd	$L\gamma_4$		2	.1	60	6	7.106	3.48900	4		15.06	15.35	20.26	26.56	38.28	46.67	47.04	48.35	55.45	62.68			69.26	76.41	120.11
Pd	$L\gamma_{2,3}$		1	5	46	6	3.553	3.48920	4		15.06	15.35	20.26	26.56	38.29	46.67	47.05	48.35	55.45	62.69	64.58	67.62	69.26	76.42	120.12
Gd	$L\beta_{2,15}$		2	20	64	6	7.102	3.49100	4		15.06	15.36	20.27	26.57	38.31	46.70	47.07	48.38	55.48	62.72			69.30	76.47	120.22
Hg	Ln		3	1	80	6	10.649	3.49200	4		15.07	15.37	20.27	26.58	38.32	46.71	47.09	48.39	55.50	62.74	64.63	67.68	69.32	76.49	120.28
Pb	AM_2	H	1		82	6	3.550	3.49200	3		15.07	15.37	20.27	26.58	38.32	46.71	47.09	48.39	55.50	62.74	64.63	67.68	69.32	76.49	120.28
Np	$L\beta_1$		5	50	93	6	17.747	3.49239	6		15.07	15.37	20.28	26.58	38.32	46.72	47.09	48.40	55.50	62.75	64.64	67.69	69.33	76.50	120.30
Tb	$L\beta_3$		2	6	65	6	7.095	3.49440	4		15.08	15.38	20.29	26.60	38.35	46.75	47.12	48.43	55.54	62.79			69.38	76.55	120.41
Re	$L\beta_9$	B	3	.01	75	6	10.642	3.49461	5		15.08	15.38	20.29	26.60	38.35	46.75	47.13	48.43	55.54	62.79	64.69	67.74	69.38	76.56	120.43
Ir	L_3-N_2	B	3	.01	77	6	10.636	3.49635	5		15.09	15.38	20.30	26.61	38.37	46.78	47.15	48.46	55.57	62.83	64.72	67.77	69.42	76.60	120.53
O	AM_5		1		92	6	3.545	3.49700	3		15.09	15.39	20.30	26.62	38.38	46.78	47.16	48.47	55.58	62.84	64.74	67.79	69.44	76.62	120.56
Pt	$L\beta_{17}$	B	3	.01	78	6	10.625	3.50010	4		15.10	15.40	20.32	26.64	38.41	46.83	47.20	48.51	55.64	62.90	64.80	67.86	69.51	76.70	120.74
Sr	$K\alpha_1$		4	100	38	6	14.163	3.50104	5		15.11	15.41	20.33	26.65	38.42	46.84	47.22	48.53	55.65	62.92	64.82	67.88	69.53	76.73	120.80
Ra	Ll		3	3	88	6	10.620	3.50157	5		15.11	15.41	20.33	26.66	38.43	46.85	47.22	48.53	55.66	62.93	64.83	67.89	69.54	76.74	120.83

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
I	$K\alpha_2$		8	50	53	6	28.312	3.50263	6		15.11	15.41	20.34	26.66	38.44	46.86	47.24	48.55	55.68	62.95	64.85	67.91	69.56	76.77	120.89
Cd	AL_3		1		48	6	3.537	3.50470	4		15.12	15.42	20.35	26.68	38.46	46.89	47.27	48.58	55.72	63.00	64.90	67.96	69.61	76.82	121.01
Sr	$K\alpha_{1,2}$		4	150	38	6	14.140	3.50660	5		15.13	15.43	20.36	26.69	38.49	46.92	47.30	48.61	55.75	63.03	64.94	68.00	69.66	76.87	121.12
Am	$L\beta_2$		5	20	95	6	17.673	3.50695	6		15.13	15.43	20.36	26.70	38.49	46.93	47.30	48.61	55.76	63.04	64.94	68.01	69.66	76.88	121.14
In	$L8_4$		1	4	49	6	3.535	3.50697	5		15.13	15.43	20.36	26.70	38.49	46.93	47.30	48.61	55.76	63.04	64.94	68.01	69.66	76.88	121.14
Ba	$K\alpha_2$		9	50	56	6	31.812	3.50701	6		15.13	15.43	20.36	26.70	38.49	46.93	47.30	48.61	55.76	63.04	64.95	68.01	69.66	76.88	121.14
Zr	$K\beta_1$		5	18	40	6	17.665	3.50865	5		15.14	15.44	20.37	26.71	38.51	46.95	47.33	48.64	55.79	63.07	64.98	68.04	69.70	76.92	121.24
Pt	L_1-M_1	B	3	.01	78	6	10.598	3.50886	5		15.14	15.44	20.37	26.71	38.51	46.95	47.33	48.64	55.79	63.08	64.98	68.05	69.71	76.93	121.25
Os	$L\beta_2$		3	20	76	6	10.597	3.50937	5		15.14	15.44	20.38	26.72	38.52	46.96	47.34	48.65	55.80	63.09	64.99	68.06	69.72	76.94	121.28
Zr	$K\beta_3$		5	9	40	6	17.651	3.51140	5		15.15	15.45	20.39	26.73	38.54	46.99	47.37	48.68	55.83	63.13	65.04	68.10	69.76	76.99	121.40
Au	L_2-M_2	B	3	.01	79	6	10.588	3.51240	4		15.16	15.46	20.39	26.74	38.55	47.00	47.38	48.69	55.85	63.15	65.06	68.13	69.79	77.02	121.45
Pd	$K\alpha_1$		6	100	46	6	21.174	3.51269	6		15.16	15.46	20.40	26.74	38.55	47.01	47.38	48.70	55.86	63.16	65.06	68.13	69.79	77.03	121.47
Er	Ln		2	1	68	6	7.057	3.51320	4		15.16	15.46	20.40	26.75	38.56	47.01	47.39	48.70	55.86	63.17			69.81	77.04	121.50
Fe	$K\beta_{1,3}$		2	20	26	6	7.057	3.51322	5	4	15.16	15.46	20.40	26.75	38.56	47.01	47.39	48.71	55.86	63.17			69.81	77.04	121.50
Kr	$K\beta_1$		4	16	36	6	14.110	3.51400	4		15.16	15.46	20.40	26.75	38.57	47.03	47.40	48.72	55.88	63.18	65.09	68.16	69.82	77.06	121.55
Cd	$L\beta_{2,15}$		1	25	48	6	3.528	3.51408	5		15.16	15.46	20.40	26.75	38.57	47.03	47.40	48.72	55.88	63.18	65.09	68.16	69.83	77.06	121.55
Os	$L8_{15}$		3	1	76	6	10.580	3.51501	5		15.17	15.47	20.41	26.76	38.58	47.04	47.42	48.73	55.90	63.20	65.11	68.18	69.85	77.09	121.61
Kr	$K\beta_3$		4	8	36	6	14.102	3.51600	4		15.17	15.47	20.42	26.77	38.59	47.05	47.43	48.75	55.91	63.22	65.13	68.21	69.87	77.11	121.66
Ag	AL_2		1		47	6	3.525	3.51640	4		15.17	15.47	20.42	26.77	38.60	47.06	47.44	48.75	55.92	63.23	65.14	68.22	69.88	77.12	121.69
Re	$L\beta_{10}$	B	3	.01	75	6	10.575	3.51654	5		15.18	15.47	20.42	26.77	38.60	47.06	47.44	48.75	55.92	63.23	65.14	68.22	69.88	77.13	121.70
Sr	$K\alpha_2$		4	50	38	6	14.095	3.51772	5		15.18	15.48	20.43	26.78	38.61	47.08	47.46	48.77	55.94	63.26	65.17	68.24	69.91	77.16	121.76
Ta	$L\gamma_5$		3	.1	73	6	10.569	3.51870	4		15.18	15.48	20.43	26.79	38.62	47.09	47.47	48.79	55.96	63.28	65.19	68.27	69.93	77.18	121.82
Te	$K\beta_2$	D	9	6	52	6	31.698	3.51957	6		15.19	15.49	20.44	26.79	38.63	47.10	47.48	48.80	55.97	63.29	65.21	68.29	69.95	77.21	121.87
U	M_3-N_4		1	5	92	6	3.521	3.52100	3		15.19	15.49	20.44	26.81	38.65	47.13	47.50	48.82	56.00	63.32	65.24	68.32	69.98	77.24	121.96
Pu	$L\alpha_2$		4	10	94	6	14.082	3.52112	5		15.20	15.49	20.45	26.81	38.65	47.13	47.50	48.82	56.00	63.32	65.24	68.32	69.99	77.25	121.96
Pd	$K\alpha_{1,2}$		6	150	46	6	21.121	3.52143	6		15.20	15.50	20.45	26.81	38.65	47.13	47.51	48.83	56.01	63.33	65.25	68.33	69.99	77.26	121.98
Ag	$L\gamma_1$		1	10	47	6	3.519	3.52260	5		15.20	15.50	20.45	26.82	38.67	47.15	47.53	48.84	56.03	63.35	65.27	68.35	70.02	77.29	122.05
Pb	$L\alpha_1$		3	100	82	6	10.550	3.52503	5		15.21	15.51	20.47	26.84	38.70	47.18	47.56	48.88	56.07	63.40	65.32	68.41	70.07	77.35	122.19
At	$L\beta_3$	H	4	10	85	6	14.065	3.52540	5		15.21	15.51	20.47	26.84	38.70	47.19	47.57	48.88	56.08	63.41	65.33	68.41	70.08	77.36	122.21
As	$K\alpha_1$		3	100	33	6	10.542	3.52764	5		15.22	15.52	20.48	26.86	38.73	47.22	47.60	48.92	56.11	63.46	65.37	68.46	70.13	77.42	122.35
Pu	$L8_4$		5	4	94	6	17.553	3.53100	5		15.24	15.54	20.50	26.88	38.76	47.27	47.65	48.97	56.17	63.52	65.44	68.54	70.21	77.50	122.55
Re	$L\beta_5$		3	.1	75	6	10.530	3.53163	5		15.24	15.54	20.51	26.89	38.77	47.28	47.66	48.98	56.18	63.54	65.46	68.55	70.23	77.52	122.58
As	$K\alpha_{1,2}$		3	150	33	6	10.530	3.53163	5		15.24	15.54	20.51	26.89	38.77	47.28	47.66	48.98	56.18	63.54	65.46	68.55	70.23	77.52	122.58
Hf	L_2-N_5	B	3	.01	72	6	10.524	3.53364	5		15.25	15.55	20.52	26.90	38.79	47.30	47.68	49.01	56.22	63.58	65.50	68.60	70.27	77.57	122.70
Ir	$L8_6$		3	.1	77	6	10.523	3.53388	5		15.25	15.55	20.52	26.91	38.80	47.31	47.69	49.01	56.22	63.58	65.50	68.60	70.28	77.58	122.72
8f	$L\gamma_1$		3	10	72	6	10.514	3.53700	5		15.26	15.56	20.54	26.93	38.83	47.35	47.73	49.06	56.28	63.64	65.57	68.67	70.35	77.66	122.90
Th	M_2-N_1		1	.01	90	6	3.505	3.53700	3		15.26	15.56	20.54	26.93	38.83	47.35	47.73	49.06	56.28	63.64	65.57	68.67	70.35	77.66	122.90
Lu	$L\gamma_3$		3	1	71	6	10.509	3.53859	5		15.27	15.57	20.55	26.94	38.85	47.37	47.75	49.08	56.30	63.68	65.60	68.71	70.38	77.70	123.00
Os	$L\beta_3$		3	6	76	6	10.509	3.53865	5		15.27	15.57	20.55	26.94	38.85	47.38	47.76	49.08	56.30	63.68	65.60	68.71	70.39	77.70	123.00
Ir	$L8_4$		3	4	77	6	10.509	3.53874	5		15.27	15.57	20.55	26.94	38.85	47.38	47.76	49.08	56.31	63.68	65.61	68.71	70.39	77.71	123.01
Pd	$K\alpha_2$		6	50	46	6	21.017	3.53893	6		15.27	15.57	20.55	26.94	38.85	47.38	47.76	49.08	56.31	63.68	65.61	68.71	70.39	77.71	123.02
As	$K\alpha_2$		3	50	33	6	10.506	3.53961	5		15.28	15.58	20.55	26.95	38.86	47.39	47.77	49.09	56.32	63.70	65.62	68.73	70.41	77.73	123.06
Tc	$K\beta_2$	H	6	3	43	6	21.002	3.54144	5		15.28	15.58	20.56	26.96	38.88	47.42	47.80	49.12	56.35	63.73	65.66	68.77	70.45	77.78	123.17
Cs	$K8_1$		10	21	55	6	34.981	3.54364	6		15.29	15.59	20.58	26.98	38.91	47.45	47.83	49.15	56.39	63.78	65.71	68.82	70.50	77.83	123.30
Re	Lu	B	3	.01	75	6	10.492	3.54450	4		15.30	15.60	20.58	26.99	38.92	47.46	47.84	49.17	56.41	63.79	65.73	68.84	70.52	77.86	123.35
Mo	$K\alpha_1$		5	100	42	6	17.476	3.54650	6		15.31	15.61	20.59	27.00	38.94	47.49	47.87	49.20	56.44	63.83	65.77	68.88	70.56	77.91	123.47
Yb	L_1-$O_{4,5}$	B	3	.01	70	6	10.481	3.54810	4		15.31	15.61	20.60	27.02	38.96	47.51	47.89	49.22	56.47	63.87	65.80	68.92	70.60	77.95	123.57
Cs	$K\beta_3$		10	9	55	6	34.913	3.55050	6		15.32	15.62	20.62	27.03	38.99	47.54	47.93	49.26	56.51	63.92	65.85	68.97	70.66	78.01	123.71
U	$L\beta_3$		5	6	92	6	17.452	3.55145	5		15.33	15.63	20.62	27.04	39.00	47.56	47.94	49.27	56.53	63.93	65.87	68.99	70.68	78.04	123.77
Lu	Lt	B	2	.01	71	6	6.980	3.55200	4		15.33	15.63	20.63	27.05	39.00	47.57	47.95	49.28	56.54	63.95			70.69	78.05	123.80
Tb	$L\beta_1$		2	50	65	6	6.977	3.55360	4		15.34	15.64	20.64	27.06	39.02	47.59	47.97	49.30	56.56	63.98			70.73	78.09	123.90
Mo	$K\alpha_{1,2}$		5	150	42	6	17.441	3.55365	6		15.34	15.64	20.64	27.06	39.02	47.59	47.97	49.30	56.57	63.98	65.92	69.04	70.73	78.10	123.90
Eu	$L\beta_5$	A	2	.1	63	6	6.975	3.55440	4		15.34	15.64	20.64	27.06	39.03	47.60	47.98	49.31	56.58	63.99			70.75	78.12	123.95
In	$L\beta_1$		1	75	49	6	3.487	3.55531	5		15.34	15.65	20.65	27.07	39.04	47.61	47.99	49.33	56.59	64.01	65.95	69.08	70.77	78.14	124.00
Yb	$L\gamma_4$		3	.1	70	6	10.458	3.55590	4		15.35	15.65	20.65	27.08	39.05	47.62	48.00	49.34	56.60	64.02	65.96	69.09	70.78	78.15	124.04
Lu	$L\gamma_2$		3	1	71	6	10.458	3.55590	4		15.35	15.65	20.65	27.08	39.05	47.62	48.00	49.34	56.60	64.02	65.96	69.09	70.78	78.15	124.04
Np	$L\alpha_1$		4	100	93	6	13.942	3.55651	6		15.35	15.65	20.65	27.08	39.05	47.63	48.01	49.35	56.61	64.04	65.98	69.10	70.79	78.17	124.07
Th	AM_4		1		90	6	3.485	3.55700	3		15.35	15.65	20.66	27.09	39.06	47.64	48.02	49.35	56.62	64.05	65.99	69.11	70.80	78.18	124.10
I	Ll		1	7	53	6	3.484	3.55754	5		15.35	15.66	20.66	27.09	39.07	47.64	48.03	49.36	56.63	64.06	66.00	69.13	70.82	78.20	124.14
Re	$L\beta_7$		3	.1	75	6	10.451	3.55830	5		15.36	15.66	20.66	27.10	39.08	47.66	48.04	49.37	56.65	64.07	66.02	69.14	70.83	78.22	124.18
Sm	$L\gamma_5$		2	.1	62	6	6.967	3.55868	5		15.36	15.66	20.67	27.10	39.08	47.66	48.04	49.38	56.65	64.08			70.84	78.23	124.21
Pb	$L\alpha_2$		3	10	82	6	10.448	3.55944	5		15.36	15.66	20.67	27.10	39.09	47.67	48.05	49.39	56.67	64.10	66.04	69.17	70.86	78.25	124.25
In	$K\beta_2$		8	5	49	6	27.856	3.56000	5		15.36	15.67	20.67	27.11	39.09	47.68	48.06	49.40	56.68	64.11	66.05	69.18	70.87	78.26	124.29
Hf	Ll		2	3	72	6	6.958	3.56290	5		15.38	15.68	20.69	27.13	39.13	47.72	48.10	49.44	56.73	64.17			70.94	78.34	124.46
Yb	L_1-O_1	B	3	.01	70	6	10.429	3.56580	4		15.39	15.69	20.71	27.15	39.16	47.76	48.15	49.48	56.78	64.22	66.17	69.31	71.01	78.41	124.64

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Os	L_2-M_5	F	3	.01	76	6	10.423	3.56784	5		15.40	15.70	20.72	27.17	39.18	47.79	48.17	49.51	56.81	64.26	66.21	69.35	71.05	78.47	124.77
Mo	$K\alpha_2$		5	50	42	6	17.371	3.56795	6		15.40	15.70	20.72	27.17	39.19	47.79	48.18	49.51	56.81	64.27	66.22	69.36	71.06	78.47	124.77
Er	$L\alpha_1$		2	100	68	6	6.947	3.56850	5		15.40	15.70	20.72	27.17	39.19	47.80	48.18	49.52	56.82	64.28			71.07	78.48	124.81
Eu	$L\beta_7$		2	.1	63	6	6.944	3.57020	4		15.41	15.71	20.73	27.19	39.21	47.82	48.21	49.55	56.85	64.31			71.11	78.53	124.91
Ce	$K\alpha_1$		10	100	58	6	34.714	3.57092	6		15.41	15.71	20.74	27.19	39.22	47.83	48.22	49.56	56.86	64.33	66.28	69.42	71.12	78.55	124.96
Pd	$K\beta_2$		7	3	46	6	24.295	3.57160	6		15.41	15.72	20.74	27.20	39.23	47.84	48.23	49.57	56.88	64.34	66.29	69.44	71.14	78.57	125.00
Tb	$L\beta_4$		2	5	65	6	6.939	3.57280	4		15.42	15.72	20.75	27.21	39.24	47.86	48.25	49.59	56.90	64.37			71.17	78.60	125.07
At	$L\beta_1$	H	4	50	85	6	13.874	3.57396	5		15.42	15.73	20.76	27.22	39.25	47.88	48.26	49.60	56.92	64.39	66.34	69.49	71.19	78.63	125.14
U	M_4-O_2		1	1	92	6	3.466	3.57600	3		15.43	15.74	20.77	27.23	39.28	47.91	48.29	49.63	56.95	64.43	66.39	69.54	71.24	78.68	125.27
Pa	$M\gamma$		1	5	91	6	3.465	3.57700	3		15.44	15.74	20.77	27.24	39.29	47.92	48.31	49.65	56.97	64.45	66.41	69.56	71.26	78.71	125.33
Co	$K\alpha_1$		2	100	27	6	6.929	3.57793	6		15.44	15.75	20.78	27.25	39.30	47.93	48.32	49.66	56.99	64.47			71.28	78.73	125.39
Np	$L\gamma_1$		6	10	93	6	20.781	3.57899	6		15.45	15.75	20.79	27.26	39.31	47.95	48.33	49.68	57.01	64.49	66.45	69.60	71.31	78.76	125.45
Co	$K\alpha_{1,2}$		2	150	27	6	6.924	3.58052	6		15.45	15.76	20.79	27.27	39.33	47.97	48.36	49.70	57.03	64.52			71.34	78.80	125.55
Fr	$L\gamma_1$	H	5	10	87	6	17.300	3.58260	5		15.46	15.77	20.81	27.28	39.35	48.00	48.39	49.73	57.07	64.56	66.52	69.68	71.39	78.85	125.68
Eu	$L\beta_9$	B	2	.01	63	6	6.919	3.58320	4		15.46	15.77	20.81	27.29	39.36	48.01	48.40	49.74	57.08	64.58			71.41	78.87	125.72
In	$K\alpha_1$		7	100	49	6	24.206	3.58479	6		15.47	15.78	20.82	27.30	39.38	48.03	48.42	49.76	57.11	64.61	66.57	69.73	71.44	78.91	125.82
Co	$K\alpha_2$		2	50	27	6	6.914	3.58570	6		15.48	15.78	20.82	27.31	39.39	48.05	48.43	49.78	57.12	64.63			71.46	78.94	125.87
Hg	$L\gamma_1$		4	10	80	6	13.828	3.58584	5		15.48	15.78	20.83	27.31	39.39	48.05	48.43	49.78	57.12	64.63	66.59	69.75	71.47	78.94	125.88
Ce	$K\alpha_{1,2}$		10	150	58	6	34.566	3.58622	6		15.48	15.78	20.83	27.31	39.39	48.05	48.44	49.79	57.13	64.64	66.60	69.76	71.48	78.95	125.91
Ga	$K\beta_2$		3	.3	31	6	10.365	3.58800	5		15.49	15.79	20.84	27.33	39.41	48.08	48.46	49.81	57.16	64.67	66.64	69.80	71.52	79.00	126.02
Er	$L\alpha_2$		2	10	68	6	6.904	3.59100	4		15.50	15.80	20.86	27.35	39.45	48.12	48.51	49.86	57.21	64.73			71.59	79.08	126.21
Au	$L\gamma_3$		4	2	79	6	13.807	3.59132	5		15.50	15.81	20.86	27.35	39.45	48.13	48.51	49.86	57.22	64.74	66.71	69.88	71.59	79.08	126.23
U	$L\gamma_3$		6	2	92	6	20.709	3.59144	6		15.50	15.81	20.86	27.35	39.45	48.13	48.51	49.86	57.22	64.74	66.71	69.88	71.60	79.09	126.23
Os	$L\beta_1$		3	50	76	6	10.354	3.59181	5		15.50	15.81	20.86	27.36	39.46	48.13	48.52	49.87	57.23	64.75	66.72	69.89	71.60	79.10	126.26
Pu	$L\beta_2$		5	20	94	6	17.252	3.59255	5		15.51	15.81	20.86	27.36	39.47	48.14	48.53	49.88	57.24	64.76	66.73	69.90	71.62	79.12	126.30
Nd	$L\gamma_3$		2	1	60	6	6.900	3.59280	4		15.51	15.81	20.87	27.36	39.47	48.15	48.53	49.88	57.25	64.77			71.63	79.12	126.32
Ga	$K\beta_5$	B	3	.04	31	6	10.346	3.59430	4		15.51	15.82	20.88	27.37	39.49	48.17	48.55	49.90	57.27	64.80	66.77	69.94	71.66	79.16	126.41
In	$K\alpha_{1,2}$		7	150	49	6	24.136	3.59513	6		15.52	15.82	20.88	27.38	39.50	48.18	48.57	49.92	57.29	64.82	66.79	69.96	71.68	79.18	126.47
Lu	$L\gamma_6$		3	.01	71	6	10.341	3.59610	4		15.52	15.83	20.89	27.39	39.51	48.19	48.58	49.93	57.30	64.84	66.81	69.98	71.70	79.21	126.53
Pm	$L\gamma_1$		2	5	61	6	6.891	3.59780	4		15.53	15.83	20.90	27.40	39.53	48.22	48.60	49.96	57.33	64.87			71.74	79.26	126.63
Eu	$L\beta_{10}$		8	2	.01	63	6	6.889	3.59860	4		15.53	15.84	20.90	27.41	39.54	48.23	48.62	49.97	57.35	64.89			71.76	79.28	126.69
U	$L\beta_1$		5	50	92	6	17.217	3.59992	6		15.54	15.84	20.91	27.42	39.55	48.25	48.64	49.99	57.37	64.91	66.89	70.07	71.79	79.31	126.77
Sm	$L\alpha_1$		1	100	50	6	3.443	3.59994	5		15.54	15.84	20.91	27.42	39.55	48.25	48.64	49.99	57.37	64.91	66.89	70.07	71.79	79.31	126.77
Te	$K\beta_1$		9	20	52	6	30.990	3.59995	6		15.54	15.84	20.91	27.42	39.55	48.25	48.64	49.99	57.37	64.91	66.89	70.07	71.79	79.31	126.77
Pa	AM_5		1		91	6	3.442	3.60100	3		15.54	15.85	20.91	27.43	39.56	48.26	48.65	50.00	57.39	64.94	66.91	70.09	71.82	79.34	126.84
Os	L_3-N_2	B	3	.01	76	6	10.323	3.60258	5		15.55	15.85	20.92	27.44	39.58	48.29	48.67	50.03	57.42	64.97	66.94	70.13	71.85	79.38	126.94
Nd	$L\gamma_2$		2	1	60	6	6.882	3.60260	4		15.55	15.85	20.92	27.44	39.58	48.29	48.67	50.03	57.42	64.97			71.85	79.38	126.94
Xe	$K\beta_2$	H	10	6	54	6	34.408	3.60260	5		15.55	15.85	20.92	27.44	39.58	48.29	48.67	50.03	57.42	64.97	66.94	70.13	71.85	79.38	126.94
Cs	$K\alpha_1$		9	100	55	6	30.968	3.60261	6		15.55	15.86	20.92	27.44	39.58	48.29	48.67	50.03	57.42	64.97	66.94	70.13	71.85	79.38	126.94
Np	$L\alpha_2$		4	10	93	6	13.757	3.60418	6		15.56	15.86	20.93	27.45	39.60	48.31	48.70	50.05	57.44	65.00	66.98	70.16	71.89	79.42	127.04
Lu	L_2-$O_{2,3}$		8	3	.01	71	6	10.318	3.60420	4		15.56	15.86	20.93	27.45	39.60	48.31	48.70	50.05	57.44	65.00	66.98	70.16	71.89	79.42	127.04
Ag	$L\beta_9$	B	1	.01	47	6	3.439	3.60497	5		15.56	15.87	20.94	27.46	39.61	48.32	48.71	50.06	57.46	65.02	66.99	70.18	71.91	79.44	127.09
Cf	$L\gamma_1$		7	10	98	3	24.070	3.60500			15.56	15.87	20.94	27.46	39.61	48.32	48.71	50.06	57.46	65.02	66.99	70.18	71.91	79.45	127.09
Te	$K\beta_3$		9	9	52	6	30.939	3.60593	6		15.56	15.87	20.94	27.46	39.62	48.33	48.72	50.08	57.47	65.04	67.01	70.20	71.93	79.47	127.15
Sb	Ln		1	7	51	6	3.436	3.60765	5		15.57	15.88	20.95	27.48	39.64	48.36	48.75	50.10	57.50	65.07	67.05	70.24	71.97	79.52	127.26
Tc	$K\beta_1$	H	6	16	43	6	20.615	3.60780	5		15.57	15.88	20.95	27.48	39.64	48.36	48.75	50.11	57.51	65.07	67.05	70.24	71.97	79.52	127.27
Au	Lu		3	1	79	6	10.307	3.60819	5		15.57	15.88	20.96	27.48	39.65	48.37	48.75	50.11	57.51	65.08	67.06	70.25	71.98	79.53	127.30
Sn	$L\alpha_2$		1	10	50	6	3.435	3.60891	5		15.58	15.88	20.96	27.49	39.65	48.38	48.76	50.12	57.53	65.10	67.08	70.27	72.00	79.55	127.34
Te	$K\alpha_1$		8	100	52	6	27.468	3.61036	6		15.58	15.89	20.97	27.50	39.67	48.40	48.79	50.14	57.55	65.12	67.11	70.30	72.03	79.59	127.44
Gd	$L\beta_6$		2	.1	64	6	6.866	3.61080	4		15.58	15.89	20.97	27.50	39.68	48.40	48.79	50.15	57.56	65.13			72.04	79.60	127.46
Tc	$K\beta_3$	H	6	8	43	6	20.595	3.61128	5		15.59	15.89	20.97	27.51	39.68	48.41	48.80	50.16	57.57	65.14	67.13	70.32	72.05	79.61	127.50
Ag	$L\beta_{10}$	8	1	.01	47	6	3.432	3.61158	5		15.59	15.89	20.98	27.51	39.68	48.41	48.80	50.16	57.57	65.15	67.13	70.33	72.06	79.62	127.52
Pa	M_3-N_4		1	5	91	6	3.430	3.61400	3		15.60	15.91	20.99	27.53	39.71	48.45	48.84	50.20	57.61	65.20	67.18	70.38	72.12	79.68	127.67
Lu	$L\gamma_8$		3	.1	71	6	10.290	3.61410	4		15.60	15.91	20.99	27.53	39.71	48.45	48.84	50.20	57.62	65.20	67.19	70.39	72.12	79.69	127.68
W	$L\beta_9$	8	3	.01	74	6	10.289	3.61437	5		15.60	15.91	20.99	27.53	39.72	48.45	48.84	50.20	57.62	65.21	67.19	70.39	72.12	79.69	127.69
Cd	$L\beta_6$		1	1	48	6	3.429	3.61467	5		15.60	15.91	20.99	27.53	39.72	48.46	48.85	50.21	57.63	65.21	67.20	70.40	72.13	79.70	127.71
In	$K\alpha_2$		7	50	49	6	23.998	3.61581	6		15.61	15.91	21.00	27.54	39.73	48.47	48.86	50.22	57.65	65.24	67.22	70.42	72.16	79.73	127.79
Au	AM_1	H	1		79	6	3.428	3.61600	3		15.61	15.91	21.00	27.54	39.74	48.48	48.87	50.23	57.65	65.24	67.23	70.43	72.16	79.74	127.80
Cs	$K\alpha_{1,2}$		9	150	55	6	30.851	3.61624	6		15.61	15.92	21.00	27.55	39.74	48.48	48.87	50.23	57.65	65.24	67.23	70.43	72.17	79.74	127.82
Ag	$L\gamma_5$		1	.1	47	6	3.428	3.61638	5		15.61	15.92	21.00	27.55	39.74	48.48	48.87	50.23	57.66	65.25	67.23	70.44	72.17	79.75	127.82
Ce	$K\alpha_2$		10	50	58	6	34.273	3.61683	6		15.61	15.92	21.01	27.55	39.74	48.49	48.88	50.24	57.66	65.26	67.24	70.45	72.18	79.76	127.85
Cf	$L\beta_1$		6	50	98	3	20.557	3.61800			15.62	15.92	21.01	27.56	39.76	48.51	48.90	50.26	57.68	65.28	67.27	70.47	72.21	79.79	127.93
Re	$L\beta_2$		3	20	75	6	10.274	3.61980	5		15.62	15.93	21.02	27.57	39.78	48.53	48.92	50.28	57.72	65.32	67.31	70.51	72.25	79.84	128.05
Ir	$L\beta_{1,7}$	B	3	.01	77	6	10.271	3.62070	4		15.63	15.94	21.03	27.58	39.79	48.54	48.93	50.30	57.73	65.33	67.33	70.53	72.27	79.86	128.11
Tl	$L\alpha_1$		3	100	81	6	10.267	3.62217	5		15.63	15.94	21.04	27.59	39.81	48.57	48.96	50.32	57.76	65.36	67.36	70.57	72.30	79.90	128.20

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Te	$K\alpha_{1,2}$		8	150	52	6	27.377	3.62233	6	15.63	15.94	21.04	27.59	39.81	48.57	48.96	50.32	57.76	65.37	67.36	70.57	72.31	79.90	128.21
Eu	$L\beta_{2,15}$		2	20	63	6	6.842	3.62360	4	15.64	15.95	21.05	27.60	39.82	48.59	48.98	50.34	57.78	65.39			72.34	79.94	128.29
Ga	$K\beta_1$		3	14	31	6	10.263	3.62367	5	15.64	15.95	21.05	27.60	39.82	48.59	48.98	50.34	57.78	65.39	67.39	70.60	72.34	79.94	128.30
Re	$L\beta_{15}$		3	1	75	6	10.260	3.62457	5	15.64	15.95	21.05	27.61	39.83	48.60	48.99	50.35	57.80	65.41	67.41	70.62	72.36	79.96	128.36
Ga	$K\beta_3$		3	7	31	6	10.259	3.62505	5	15.65	15.95	21.06	27.61	39.84	48.61	49.00	50.36	57.81	65.42	67.42	70.63	72.37	79.98	128.39
Rh	AL_1		1		45	6	3.416	3.62900	3	15.66	15.97	21.08	27.64	39.88	48.66	49.05	50.42	57.88	65.50	67.50	70.72	72.46	80.08	128.65
Gd	$L\beta_3$		2	6	64	6	6.830	3.63000	4	15.67	15.98	21.08	27.65	39.90	48.68	49.07	50.44	57.89	65.52			72.49	80.11	128.71
Ir	L_1-M_1	B	3	.01	77	6	10.243	3.63060	4	15.67	15.98	21.09	27.66	39.90	48.69	49.08	50.44	57.90	65.54	67.53	70.75	72.50	80.12	128.75
Bi	Ls	B	3	.01	83	6	10.240	3.63150	4	15.67	15.98	21.09	27.66	39.91	48.70	49.09	50.46	57.92	65.55	67.55	70.78	72.52	80.15	128.81
Np	$L\beta_4$		5	4	93	6	17.058	3.63355	5	15.68	15.99	21.11	27.68	39.94	48.73	49.12	50.49	57.96	65.60	67.60	70.82	72.57	80.20	128.95
Tl	AM_2	H	1		81	6	3.411	3.63400	3	15.69	15.99	21.11	27.68	39.94	48.73	49.13	50.49	57.96	65.60	67.61	70.83	72.58	80.21	128.98
In	$K\beta_1$		8	19	49	6	27.271	3.63636	6	15.70	16.00	21.12	27.70	39.97	48.77	49.16	50.53	58.01	65.65	67.66	70.88	72.63	80.28	129.13
Po	$L\beta_3$		4	6	84	6	13.635	3.63640	4	15.70	16.00	21.12	27.70	39.97	48.77	49.16	50.53	58.01	65.65	67.66	70.88	72.63	80.28	129.14
W	$L\beta_{10}$	B	3	.01	74	6	10.226	3.63654	5	15.70	16.01	21.12	27.70	39.97	48.77	49.16	50.53	58.01	65.66	67.66	70.89	72.64	80.28	129.14
Pr	$L\gamma_4$		2	.1	59	6	6.814	3.63860	4	15.71	16.01	21.14	27.72	39.99	48.80	49.19	50.56	58.04	65.70			72.68	80.34	129.28
Pt	L_2-M_2	B	3	.01	78	6	10.219	3.63900	3	15.71	16.02	21.14	27.72	40.00	48.81	49.20	50.57	58.05	65.71	67.71	70.94	72.69	80.35	129.31
Os	$L\beta_6$		3	.1	76	6	10.215	3.64047	5	15.71	16.02	21.15	27.73	40.02	48.83	49.22	50.59	58.08	65.74	67.74	70.98	72.73	80.39	129.41
In	$K\beta_3$		8	8	49	6	27.233	3.64145	6	15.72	16.03	21.15	27.74	40.03	48.84	49.23	50.61	58.09	65.76	67.76	71.00	72.75	80.41	129.47
U	$L\alpha_1$		4	100	92	6	13.612	3.64256	6	15.72	16.03	21.16	27.75	40.04	48.86	49.25	50.62	58.11	65.78	67.79	71.02	72.78	80.44	129.55
Y	$K\beta_2$		5	4	39	6	17.013	3.64320	5	15.73	16.03	21.16	27.75	40.05	48.87	49.26	50.63	58.12	65.79	67.80	71.04	72.79	80.46	129.59
Cs	$K\alpha_2$		9	50	55	6	30.620	3.64351	6	15.73	16.04	21.16	27.76	40.05	48.87	49.26	50.64	58.13	65.80	67.81	71.04	72.80	80.47	129.61
Pd	$K\beta_1$		7	18	46	6	23.815	3.64364	6	15.73	16.04	21.17	27.76	40.05	48.87	49.27	50.64	58.13	65.80	67.81	71.05	72.80	80.47	129.62
Cd	$L\beta_3$		1	11	48	6	3.401	3.64495	5	15.73	16.04	21.17	27.77	40.07	48.89	49.28	50.66	58.16	65.83	67.84	71.08	72.83	80.50	129.71
Hf	$L\gamma_5$		3	.1	72	6	10.199	3.64611	5	15.74	16.05	21.18	27.78	40.08	48.91	49.30	50.67	58.18	65.85	67.86	71.10	72.86	80.54	129.78
Te	$K\alpha_2$		8	50	52	6	27.197	3.64627	6	15.74	16.05	21.18	27.78	40.08	48.91	49.30	50.68	58.18	65.85	67.87	71.11	72.86	80.54	129.79
W	$L\beta_5$		3	.1	74	6	10.199	3.64635	5	15.74	16.05	21.18	27.78	40.08	48.91	49.30	50.68	58.18	65.86	67.87	71.11	72.86	80.54	129.80
Pd	$K\beta_3$		7	8	46	6	23.787	3.64786	6	15.75	16.06	21.19	27.79	40.10	48.93	49.33	50.70	58.21	65.89	67.90	71.14	72.90	80.58	129.90
Ho	Ln		2	1	67	6	6.787	3.65280	4	15.77	16.08	21.22	27.83	40.16	49.00	49.40	50.77	58.29	65.99			73.01	80.71	130.23
Os	$L\beta_4$		3	4	76	6	10.174	3.65532	5	15.78	16.09	21.23	27.85	40.19	49.04	49.43	50.81	58.34	66.04	68.06	71.31	73.07	80.78	130.40
W	Lu	B	3	.01	74	6	10.172	3.65604	5	15.78	16.09	21.24	27.85	40.19	49.05	49.44	50.82	58.35	66.05	68.07	71.33	73.09	80.80	130.45
Tl	$L\alpha_2$		3	10	81	6	10.171	3.65625	5	15.78	16.09	21.24	27.86	40.20	49.05	49.45	50.83	58.35	66.06	68.08	71.33	73.09	80.81	130.47
Re	$L\beta_3$		3	6	75	6	10.158	3.66093	5	15.80	16.11	21.27	27.89	40.25	49.12	49.51	50.90	58.43	66.15	68.18	71.44	73.20	80.93	130.79
Pa	$L\beta_3$		5	6	91	6	16.927	3.66150	5	15.80	16.12	21.27	27.90	40.26	49.13	49.52	50.90	58.44	66.16	68.19	71.45	73.22	80.95	130.83
Yb	Lt	B	2	.01	70	6	6.770	3.66182	5	15.81	16.12	21.27	27.90	40.26	49.13	49.53	50.91	58.45	66.17			73.22	80.95	130.85
W	$L_3-O_{2,3}$	B	3	.01	74	6	10.152	3.66330	4	15.81	16.12	21.28	27.91	40.28	49.15	49.55	50.93	58.48	66.20	68.23	71.49	73.26	80.99	130.95
Lu	$L\gamma_1$		3	5	71	6	10.142	3.66684	5	15.83	16.14	21.30	27.94	40.32	49.20	49.60	50.98	58.54	66.27	68.30	71.57	73.34	81.09	131.19
Yb	$L\gamma_3$		3	1	70	6	10.141	3.66696	5	15.83	16.14	21.30	27.94	40.32	49.21	49.60	50.99	58.54	66.28	68.30	71.57	73.34	81.09	131.20
Sb	$K\beta_2$	D	9	5	51	6	30.388	3.67136	6	15.85	16.16	21.33	27.97	40.37	49.27	49.67	51.05	58.62	66.37	68.40	71.67	73.45	81.21	131.50
Lu	Ll		2	2	71	6	6.752	3.67200	4	15.85	16.16	21.33	27.98	40.38	49.28	49.67	51.06	58.63	66.38			73.46	81.23	131.55
W	$L\beta_7$		3	.1	74	6	10.127	3.67200	5	15.85	16.16	21.33	27.98	40.38	49.28	49.67	51.06	58.63	66.38	68.41	71.69	73.46	81.23	131.55
Tm	$L_1-O_{4,5}$	B	3	.01	69	6	10.108	3.67890	4	15.88	16.19	21.37	28.03	40.46	49.38	49.77	51.16	58.75	66.52	68.56	71.84	73.62	81.41	132.03
Th	$M\gamma$		1	5	90	6	3.369	3.67900	3	15.88	16.19	21.37	28.03	40.46	49.38	49.78	51.16	58.75	66.52	68.56	71.84	73.62	81.41	132.04
Rh	$K\alpha_1$		6	100	45	6	20.213	3.67967	6	15.88	16.20	21.38	28.04	40.47	49.39	49.79	51.17	58.76	66.54	68.57	71.86	73.64	81.43	132.08
Np	$L\beta_2$		5	20	93	6	16.837	3.68115	6	15.89	16.20	21.39	28.05	40.48	49.41	49.81	51.20	58.79	66.57	68.60	71.89	73.67	81.47	132.19
Br	$K8_2$		4	2	35	6	13.467	3.68184	5	15.89	16.21	21.39	28.05	40.49	49.42	49.82	51.21	58.80	66.58	68.62	71.91	73.69	81.49	132.24
Cd	$L\beta_4$		1	5	48	6	3.367	3.68203	5	15.89	16.21	21.39	28.06	40.49	49.42	49.82	51.21	58.80	66.58	68.62	71.91	73.69	81.50	132.25
Re	L_3-N_3	B	3	.01	75	6	10.092	3.68490	4	15.91	16.22	21.41	28.08	40.53	49.46	49.86	51.25	58.85	66.64	68.68	71.98	73.76	81.57	132.45
Rh	$L\gamma_{2,3}$		1	5	45	6	3.363	3.68550	4	15.91	16.22	21.41	28.08	40.53	49.47	49.87	51.26	58.87	66.65	68.70	71.99	73.77	81.59	132.49
Yb	$L\gamma_2$		3	1	70	6	10.088	3.68637	5	15.91	16.23	21.42	28.09	40.54	49.48	49.88	51.27	58.88	66.67	68.72	72.01	73.80	81.61	132.55
Xe	$K8_1$	H	10	20	54	6	33.619	3.68720	5	15.92	16.23	21.42	28.10	40.55	49.49	49.89	51.29	58.90	66.69	68.73	72.03	73.81	81.63	132.61
Po	$L\beta_1$		4	50	84	6	13.445	3.68800	4	15.92	16.23	21.43	28.10	40.56	49.51	49.91	51.30	58.91	66.71	68.75	72.05	73.83	81.66	132.67
Tm	$L\gamma_4$		3	.1	69	6	10.083	3.68820	4	15.92	16.23	21.43	28.10	40.56	49.51	49.91	51.30	58.91	66.71	68.75	72.05	73.84	81.66	132.68
Rh	$K\alpha_{1,2}$		6	150	45	6	20.165	3.68837	6	15.92	16.23	21.43	28.11	40.57	49.51	49.91	51.30	58.92	66.71	68.76	72.06	73.84	81.67	132.70
U	$L\gamma_1$		6	10	92	6	20.164	3.68862	6	15.92	16.24	21.43	28.11	40.57	49.52	49.91	51.31	58.92	66.72	68.76	72.06	73.85	81.67	132.71
8o	$L\alpha_1$		2	100	67	6	6.719	3.69000	4	15.93	16.24	21.44	28.12	40.58	49.54	49.93	51.33	58.94	66.75			73.88	81.71	132.81
U	$L\alpha_2$		4	10	92	6	13.437	3.69023	6	15.93	16.24	21.44	28.12	40.59	49.54	49.94	51.33	58.95	66.75	68.80	72.10	73.89	81.72	132.83
Pa	M_4-O_2		1	1	91	6	3.358	3.69100	3	15.93	16.25	21.44	28.13	40.60	49.55	49.95	51.34	58.96	66.77	68.81	72.11	73.90	81.74	132.88
Re	L_2-M_5	B	3	.01	75	6	10.074	3.69150	4	15.94	16.25	21.45	28.13	40.60	49.56	49.96	51.35	58.97	66.78	68.82	72.13	73.91	81.75	132.92
Gd	$L\beta_1$		2	50	64	6	6.712	3.69360	4	15.94	16.26	21.46	28.15	40.63	49.59	49.99	51.38	59.01	66.82			73.96	81.81	133.07
Sm	$L\beta_5$		2	.1	62	6	6.711	3.69400	5	15.95	16.26	21.46	28.15	40.63	49.59	49.99	51.39	59.01	66.83			73.97	81.82	133.10
Xe	$K\beta_3$	H	10	9	54	6	33.556	3.69410	5	15.95	16.26	21.46	28.15	40.63	49.59	49.99	51.39	59.02	66.83	68.88	72.18	73.98	81.82	133.10
Rn	$L\gamma_1$	H	5	10	86	6	16.768	3.69640	5	15.96	16.27	21.48	28.17	40.66	49.63	50.03	51.42	59.06	66.88	68.93	72.24	74.03	81.88	133.27
Ag	AL_3		1		47	6	3.350	3.69990	4	15.97	16.29	21.50	28.20	40.70	49.68	50.08	51.48	59.12	66.95	69.00	72.32	74.11	81.98	133.52
Pa	$L\gamma_3$		6	2	91	6	20.094	3.70140	4	15.98	16.29	21.50	28.21	40.71	49.70	50.10	51.50	59.14	66.98	69.03	72.35	74.15	82.02	133.63
Rb	$K\alpha_1$		4	100	37	6	13.393	3.70221	6	15.98	16.30	21.51	28.21	40.72	49.71	50.11	51.51	59.16	67.00	69.05	72.37	74.17	82.04	133.69

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Ag	$L\beta_{2,15}$		1	25	47	6	3.347	3.70335	5		15.99	16.30	21.52	28.22	40.74	49.73	50.13	51.53	59.18	67.02	69.08	72.39	74.19	82.07	133.77
Y	$K\beta_1$		5	16	39	6	16.735	3.70360	5		15.99	16.30	21.52	28.22	40.74	49.73	50.13	51.53	59.18	67.02	69.08	72.40	74.20	82.07	133.79
Rh	$K\alpha_2$		6	50	45	6	20.070	3.70578	6		16.00	16.31	21.53	28.24	40.77	49.76	50.16	51.56	59.22	67.07	69.13	72.45	74.25	82.13	133.95
Au	$L\gamma_1$		4	10	79	6	13.379	3.70600	5		16.00	16.31	21.53	28.24	40.77	49.76	50.17	51.57	59.23	67.07	69.13	72.45	74.25	82.14	133.96
Y	$K\beta_3$		5	8	39	6	16.723	3.70630	5		16.00	16.31	21.53	28.25	40.77	49.77	50.17	51.57	59.23	67.08	69.14	72.46	74.26	82.15	133.99
La	$K\alpha_1$		10	100	57	6	33.436	3.70737	6		16.00	16.32	21.54	28.25	40.78	49.78	50.19	51.59	59.25	67.10	69.16	72.48	74.29	82.18	134.06
Rb	$K\alpha_{1,2}$		4	150	37	6	13.373	3.70773	5		16.01	16.32	21.54	28.26	40.79	49.79	50.19	51.59	59.26	67.11	69.17	72.49	74.29	82.19	134.09
Gd	$L\beta_4$		2	5	64	6	6.686	3.70800	4		16.01	16.32	21.54	28.26	40.79	49.79	50.19	51.60	59.26	67.11			74.30	82.19	134.11
8k	$L\gamma_1$		7	10	97	3	23.389	3.71000			16.02	16.33	21.56	28.27	40.81	49.82	50.22	51.63	59.30	67.16	69.22	72.54	74.35	82.25	134.26
Nd	$L\gamma_8$		2	.1	60	6	6.682	3.71040	4		16.02	16.33	21.56	28.28	40.82	49.83	50.23	51.63	59.30	67.16			74.36	82.26	134.28
Pa	$L\beta_1$		5	50	91	6	16.699	3.71160	5		16.02	16.34	21.56	28.29	40.83	49.84	50.25	51.65	59.32	67.19	69.25	72.58	74.39	82.29	134.37
Pt	$L\gamma_3$		4	2	78	6	13.359	3.71164	5		16.02	16.34	21.56	28.29	40.83	49.85	50.25	51.65	59.32	67.19	69.25	72.58	74.39	82.29	134.38
Ho	$L\alpha_2$		2	10	67	6	6.679	3.71220	4		16.02	16.34	21.57	28.29	40.84	49.85	50.26	51.66	59.33	67.20			74.40	82.31	134.42
Sm	$L\beta_7$		2	.1	62	6	6.678	3.71252	5		16.03	16.34	21.57	28.29	40.84	49.86	50.26	51.67	59.34	67.21			74.41	82.32	134.44
Re	$L\beta_1$		3	50	75	6	10.008	3.71574	5		16.04	16.36	21.59	28.32	40.88	49.90	50.31	51.71	59.40	67.27	69.34	72.67	74.48	82.40	134.68
U	M8		1	60	92	6	3.336	3.71600	3		16.04	16.36	21.59	28.32	40.88	49.91	50.31	51.72	59.40	67.28	69.35	72.68	74.49	82.41	134.70
K	$SK\alpha_4$		1	3	19	1	3.335	3.71649	3	4	16.04	16.36	21.59	28.32	40.89	49.91	50.32	51.72	59.41	67.29	69.36	72.69	74.50	82.42	134.73
Te	Ll		1	7	52	6	3.335	3.71696	5		16.05	16.36	21.60	28.33	40.89	49.92	50.32	51.73	59.42	67.30	69.37	72.70	74.51	82.43	134.77
Po	$L\beta_2$		4	20	84	6	13.338	3.71748	5		16.05	16.36	21.60	28.33	40.90	49.93	50.33	51.74	59.43	67.31	69.38	72.71	74.52	82.45	134.81
Th	M_3-N_4		1	5	90	6	3.334	3.71800	3		16.05	16.37	21.60	28.34	40.91	49.94	50.34	51.75	59.44	67.32	69.39	72.73	74.54	82.46	134.84
Rb	$K\alpha_2$		4	50	37	6	13.333	3.71876	5		16.05	16.37	21.61	28.34	40.91	49.95	50.35	51.76	59.45	67.34	69.40	72.74	74.55	82.48	134.90
K	$SK\alpha_3$		1	3	19	1	3.332	3.72060	3	4	16.06	16.38	21.62	28.36	40.94	49.97	50.38	51.79	59.48	67.37	69.44	72.78	74.60	82.53	135.04
La	$K\alpha_{1,2}$		10	150	57	6	33.299	3.72262	6		16.07	16.39	21.63	28.37	40.96	50.00	50.41	51.82	59.52	67.41	69.49	72.83	74.64	82.59	135.19
Cd	$K\beta_2$		8	5	48	6	26.639	3.72262	6		16.07	16.39	21.63	28.37	40.96	50.00	50.41	51.82	59.52	67.42	69.49	72.83	74.64	82.59	135.19
Pd	AL_2		1		46	6	3.330	3.72280	4		16.07	16.39	21.63	28.37	40.96	50.01	50.41	51.82	59.52	67.42	69.49	72.83	74.65	82.59	135.20
Sm	$L\beta_9$	8	2	.01	62	6	6.659	3.72332	5		16.07	16.39	21.63	28.38	40.97	50.01	50.42	51.83	59.53	67.43			74.66	82.61	135.24
Hg	$L\alpha_1$		3	100	80	6	9.987	3.72360	5		16.07	16.39	21.64	28.38	40.97	50.02	50.42	51.83	59.53	67.44	69.51	72.85	74.67	82.61	135.26
Pd	$L\gamma_1$		1	10	46	6	3.328	3.72460	4		16.08	16.40	21.64	28.39	40.98	50.03	50.44	51.85	59.55	67.46	69.53	72.88	74.69	82.64	135.34
Mo	$K\beta_2$		6	4	42	6	19.962	3.72594	5		16.08	16.40	21.65	28.40	41.00	50.05	50.45	51.87	59.58	67.48	69.56	72.91	74.72	82.68	135.44
8k	$L\beta_1$		6	50	97	3	19.961	3.72600			16.08	16.40	21.65	28.40	41.00	50.05	50.46	51.87	59.58	67.48	69.56	72.91	74.72	82.68	135.44
Yb	$L\gamma_6$		3	.01	70	6	9.975	3.72813	5		16.09	16.41	21.66	28.41	41.02	50.08	50.49	51.90	59.61	67.53	69.60	72.96	74.77	82.74	135.60
Pt	Ln		3	1	78	6	9.973	3.72870	4		16.10	16.41	21.67	28.42	41.03	50.09	50.49	51.91	59.62	67.54	69.62	72.97	74.79	82.75	135.64
Th	AM_5		1		90	6	3.324	3.72900	3		16.10	16.42	21.67	28.42	41.03	50.09	50.50	51.91	59.63	67.55	69.62	72.98	74.79	82.76	135.67
Nb	$K\alpha_1$		5	100	41	6	16.612	3.73100	5		16.11	16.42	21.68	28.44	41.06	50.12	50.53	51.94	59.67	67.59	69.67	73.02	74.84	82.81	135.82
8r	$K\beta_1$		4	16	35	6	13.289	3.73116	5		16.11	16.42	21.68	28.44	41.06	50.13	50.53	51.94	59.67	67.59	69.67	73.02	74.84	82.82	135.83
Pa	$L\alpha_1$		4	100	91	6	13.288	3.73136	5		16.11	16.43	21.68	28.44	41.06	50.13	50.53	51.95	59.67	67.59	69.67	73.03	74.85	82.82	135.85
Pb	Ls	8	3	.01	82	6	9.966	3.73155	5		16.11	16.43	21.68	28.44	41.06	50.13	50.54	51.95	59.67	67.60	69.68	73.03	74.85	82.83	135.86
Br	$K\beta_3$		4	8	35	6	13.282	3.73308	5		16.12	16.43	21.69	28.45	41.08	50.15	50.56	51.97	59.70	67.63	69.71	73.07	74.89	82.87	135.98
W	$L\beta_2$		3	20	74	6	9.960	3.73380	5		16.12	16.44	21.69	28.46	41.09	50.16	50.57	51.98	59.71	67.64	69.73	73.08	74.91	82.89	136.03
Yb	L_2-$O_{2,3}$	8	3	.01	70	6	9.954	3.73590	4		16.13	16.45	21.71	28.48	41.11	50.19	50.60	52.01	59.75	67.69	69.77	73.13	74.96	82.95	136.19
Nb	$K\alpha_{1,2}$		5	150	41	6	16.581	3.73806	5		16.14	16.46	21.72	28.49	41.14	50.22	50.63	52.05	59.79	67.73	69.82	73.18	75.01	83.01	136.36
Cd	$L\beta_1$		1	42	48	6	3.316	3.73823	5		16.14	16.46	21.72	28.49	41.14	50.23	50.63	52.05	59.79	67.74	69.82	73.19	75.01	83.01	136.37
W	$L\beta_{15}$		3	1	74	6	9.946	3.73893	5		16.14	16.46	21.73	28.50	41.15	50.24	50.64	52.06	59.80	67.75	69.84	73.20	75.03	83.03	136.42
Ta	$L\beta_9$	B	3	.01	73	6	9.944	3.73980	4		16.14	16.46	21.73	28.51	41.16	50.25	50.66	52.07	59.82	67.77	69.85	73.22	75.05	83.05	136.49
Sm	$L\beta_{10}$	B	2	.01	62	6	6.629	3.73980	5		16.14	16.46	21.73	28.51	41.16	50.25	50.66	52.07	59.82	67.77			75.05	83.05	136.49
U	$L\beta_4$		5	4	92	6	16.573	3.73992	6		16.15	16.46	21.73	28.51	41.16	50.25	50.66	52.07	59.82	67.77	69.86	73.22	75.05	83.06	136.50
8i	M_1-N_3		1	.1	83	6	3.314	3.74000	3		16.15	16.46	21.73	28.51	41.16	50.25	50.66	52.08	59.82	67.77	69.86	73.23	75.05	83.06	136.50
K	$K\alpha_1$		1	100	19	6	3.313	3.74140	4	4	16.15	16.47	21.74	28.52	41.17	50.27	50.68	52.10	59.85	67.80	69.89	73.26	75.08	83.10	136.61
K	$K\alpha_{1,2}$		1	150	19	6	3.312	3.74243	4	4	16.16	16.47	21.75	28.53	41.19	50.29	50.69	52.11	59.87	67.82	69.91	73.28	75.11	83.12	136.69
Os	$L\beta_{17}$	8	3	.01	76	6	9.933	3.74400	4		16.16	16.48	21.75	28.54	41.20	50.31	50.72	52.14	59.89	67.85	69.94	73.32	75.15	83.17	136.81
K	$K\alpha_2$		1	50	19	6	3.310	3.74450	4	4	16.17	16.48	21.76	28.54	41.21	50.32	50.72	52.14	59.90	67.86	69.96	73.33	75.16	83.18	136.85
Cd	$K\alpha_1$		7	100	48	6	23.170	3.74507	6		16.17	16.49	21.76	28.55	41.22	50.33	50.73	52.15	59.91	67.88	69.97	73.34	75.17	83.20	136.90
Rh	$K\beta_2$		7	4	45	6	23.169	3.74521	5		16.17	16.49	21.76	28.55	41.22	50.33	50.73	52.15	59.92	67.88	69.97	73.34	75.17	83.20	136.91
Xe	$K\alpha_1$	H	9	100	54	6	29.774	3.74706	5		16.18	16.50	21.77	28.56	41.24	50.35	50.76	52.18	59.95	67.92	70.01	73.39	75.22	83.25	137.05
Eu	$L\beta_6$		2	.1	63	6	6.616	3.74740	4		16.18	16.50	21.77	28.56	41.24	50.36	50.77	52.19	59.95	67.92			75.23	83.26	137.08
Yb	$L\gamma_8$		3	.1	70	6	9.923	3.74769	5		16.18	16.50	21.78	28.57	41.25	50.36	50.77	52.19	59.96	67.93	70.02	73.40	75.23	83.27	137.10
Pr	$L\gamma_3$		2	1	59	6	6.615	3.74800	4		16.18	16.50	21.78	28.57	41.25	50.37	50.77	52.20	59.96	67.94			75.24	83.28	137.12
Ir	L_2-M_2	B	3	.01	77	6	9.915	3.75060	4		16.19	16.51	21.79	28.59	41.28	50.40	50.81	52.23	60.01	67.99	70.09	73.47	75.30	83.35	137.33
Nb	$K\alpha_2$		5	50	41	6	16.518	3.75220	5		16.20	16.52	21.80	28.60	41.30	50.43	50.84	52.26	60.04	68.02	70.12	73.50	75.34	83.39	137.45
I	$K\beta_2$	H	10	6	53	6	33.036	3.75230	5		16.20	16.52	21.80	28.60	41.30	50.43	50.84	52.26	60.04	68.03	70.12	73.51	75.34	83.39	137.46
Re	$L\beta_6$		3	.1	75	6	9.909	3.75300	5		16.20	16.52	21.81	28.61	41.31	50.44	50.85	52.27	60.05	68.04	70.14	73.52	75.36	83.41	137.51
La	$K\alpha_2$		10	50	57	6	33.028	3.75313	6		16.20	16.52	21.81	28.61	41.31	50.44	50.85	52.27	60.06	68.04	70.14	73.53	75.36	83.42	137.52
Sb	$K\beta_1$		9	20	51	6	29.721	3.75376	6		16.21	16.52	21.81	28.61	41.32	50.45	50.86	52.28	60.07	68.06	70.15	73.54	75.38	83.43	137.57
Bi	$L\beta_3$		4	6	83	6	13.208	3.75420	5		16.21	16.53	21.81	28.62	41.32	50.46	50.86	52.29	60.07	68.06	70.16	73.55	75.39	83.44	137.61
Cd	$K\alpha_{1,2}$		7	150	48	6	23.106	3.75536	6		16.21	16.53	21.82	28.63	41.34	50.47	50.88	52.31	60.09	68.09	70.19	73.58	75.41	83.48	137.70

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Nd	$L\gamma_1$		2	5	60	6	6.601	3.75580	4		16.21	16.53	21.82	28.63	41.34	50.48	50.89	52.31	60.10	68.10			75.42	83.49	137.73
Hg	$L\alpha_2$		3	10	80	6	9.896	3.75792	5		16.22	16.54	21.84	28.65	41.36	50.51	50.92	52.34	60.14	68.14	70.24	73.63	75.47	83.55	137.90
Pr	$L\gamma_2$		2	1	59	6	6.597	3.75820	4		16.22	16.54	21.84	28.65	41.37	50.51	50.92	52.35	60.14	68.15			75.48	83.55	137.92
Sb	$K\beta_3$		9	9	51	6	29.674	3.75963	6		16.23	16.55	21.85	28.66	41.38	50.53	50.94	52.37	60.17	68.18	70.28	73.67	75.51	83.59	138.04
Th	M_5-P_3		1	.01	90	6	3.297	3.76000	3		16.23	16.55	21.85	28.66	41.39	50.54	50.95	52.38	60.18	68.18	70.29	73.68	75.52	83.60	138.07
Xe	$K\alpha_{1,2}$	H	9	150	54	6	29.666	3.76065	5		16.24	16.56	21.85	28.67	41.40	50.55	50.96	52.39	60.19	68.20	70.30	73.70	75.54	83.62	138.12
Ta	$L\beta_{10}$	B	3	.01	73	6	9.888	3.76110	4		16.24	16.56	21.86	28.67	41.40	50.56	50.96	52.39	60.20	68.21	70.31	73.71	75.55	83.63	138.15
Pt	AM_1	H	1		78	6	3.295	3.76200	3		16.24	16.56	21.86	28.68	41.41	50.57	50.98	52.41	60.21	68.23	70.33	73.73	75.57	83.66	138.23
Ge	$K\alpha_1$		3	100	32	6	9.885	3.76216	6		16.24	16.56	21.86	28.68	41.41	50.57	50.98	52.41	60.21	68.23	70.33	73.73	75.57	83.66	138.24
Sb	$K\alpha_1$		8	100	51	6	26.355	3.76283	6		16.24	16.56	21.87	28.69	41.42	50.58	50.99	52.42	60.23	68.24	70.35	73.75	75.59	83.68	138.29
Sm	$L\beta_{2,15}$		2	20	62	6	6.586	3.76442	5		16.25	16.57	21.88	28.70	41.44	50.60	51.01	52.44	60.25	68.28			75.63	83.72	138.42
Ge	$K\alpha_{1,2}$		3	150	32	6	9.874	3.76612	6		16.26	16.58	21.89	28.71	41.46	50.63	51.04	52.47	60.28	68.31	70.42	73.82	75.67	83.77	138.56
Ta	$L\beta_5$		3	.1	73	6	9.873	3.76650	4		16.26	16.58	21.89	28.71	41.46	50.63	51.04	52.47	60.29	68.32	70.43	73.83	75.68	83.78	138.59
In	$L\alpha_1$		1	100	49	6	3.286	3.77192	5		16.28	16.61	21.92	28.76	41.53	50.71	51.12	52.55	60.39	68.43	70.54	73.95	75.80	83.93	139.03
Ta	Lu		8	3	.01	73	6	9.855	3.77334	5		16.29	16.61	21.93	28.77	41.54	50.73	51.14	52.58	60.41	68.46	70.57	73.99	75.84	83.97	139.14
Eu	$L\beta_3$		2	6	63	6	6.570	3.77340	4		16.29	16.61	21.93	28.77	41.54	50.73	51.14	52.58	60.41	68.46			75.84	83.97	139.15
U	$L\beta_2$		5	20	92	6	16.425	3.77340	6		16.29	16.61	21.93	28.77	41.54	50.73	51.14	52.58	60.41	68.46	70.58	73.99	75.84	83.97	139.15
Th	$L\beta_3$		5	6	90	6	16.423	3.77395	5		16.29	16.61	21.93	28.77	41.55	50.74	51.15	52.58	60.42	68.47	70.59	74.00	75.85	83.98	139.19
Ge	$K\alpha_2$		3	50	32	6	9.854	3.77403	6		16.29	16.61	21.93	28.77	41.55	50.74	51.15	52.59	60.42	68.47	70.59	74.00	75.85	83.99	139.20
Sb	$K\alpha_{1,2}$		8	150	51	6	26.271	3.77476	6		16.30	16.62	21.94	28.78	41.56	50.75	51.16	52.60	60.44	68.49	70.60	74.02	75.87	84.01	139.26
Cd	$K\alpha_2$		7	50	48	6	22.980	3.77595	6		16.30	16.62	21.94	28.79	41.57	50.77	51.18	52.61	60.46	68.51	70.63	74.05	75.90	84.04	139.36
Re	$L\beta_4$		3	4	75	6	9.845	3.77751	5		16.31	16.63	21.95	28.80	41.59	50.79	51.20	52.64	60.49	68.55	70.66	74.08	75.94	84.08	139.48
Lu	$L\gamma_5$		3	.1	71	6	9.841	3.77880	4		16.31	16.64	21.96	28.81	41.61	50.81	51.22	52.66	60.51	68.57	70.69	74.11	75.97	84.12	139.59
Pa	$L\alpha_2$	H	4	10	91	6	13.120	3.77928	5		16.32	16.64	21.96	28.81	41.61	50.82	51.23	52.66	60.52	68.58	70.70	74.12	75.98	84.13	139.63
Ta	L_3-$O_{2,3}$	B	3	.01	73	6	9.837	3.78030	4		16.32	16.64	21.97	28.82	41.62	50.83	51.24	52.68	60.54	68.60	70.72	74.15	76.00	84.16	139.71
In	$L\alpha_2$		1	10	49	6	3.279	3.78073	5		16.32	16.64	21.97	28.82	41.63	50.84	51.25	52.69	60.54	68.61	70.73	74.16	76.01	84.17	139.75
Hg	AM_2	H	1		80	6	3.277	3.78300	3		16.33	16.65	21.98	28.84	41.65	50.87	51.28	52.72	60.58	68.66	70.78	74.21	76.07	84.23	139.94
Xe	$K\alpha_2$	H	9	50	54	6	29.453	3.78783	5		16.35	16.68	22.01	28.88	41.71	50.94	51.35	52.79	60.67	68.76	70.89	74.32	76.18	84.36	140.34
W	$L\beta_3$		3	6	74	6	9.817	3.78807	5		16.35	16.68	22.01	28.88	41.71	50.94	51.36	52.80	60.67	68.76	70.89	74.32	76.19	84.37	140.36
Yb	Ll		2	2	70	6	6.544	3.78830	5		16.36	16.68	22.02	28.88	41.71	50.95	51.36	52.80	60.68	68.77			76.19	84.38	140.38
Sn	Ln		1	7	50	6	3.272	3.78876	5		16.36	16.68	22.02	28.89	41.72	50.95	51.37	52.81	60.69	68.78	70.91	74.34	76.20	84.39	140.42
Po	$L\beta_4$		4	4	84	6	13.083	3.79000	4		16.36	16.69	22.03	28.90	41.73	50.97	51.38	52.83	60.71	68.80	70.93	74.37	76.23	84.42	140.52
Ta	$L\beta_7$		3	.1	73	6	9.808	3.79155	5		16.37	16.69	22.03	28.91	41.75	50.99	51.41	52.85	60.73	68.84	70.97	74.40	76.27	84.47	140.65
Pd	$L\beta_9$	B	1	.01	46	6	3.269	3.79200	4		16.37	16.69	22.04	28.91	41.76	51.00	51.41	52.86	60.74	68.85	70.98	74.41	76.28	84.48	140.69
Mo	$K\beta_1$		6	17	42	6	19.605	3.79373	6		16.38	16.70	22.05	28.93	41.78	51.03	51.44	52.88	60.77	68.88	71.01	74.45	76.32	84.53	140.84
Mn	$K\beta_5$	B	2	.03	25	6	6.534	3.79420	4	4	16.38	16.70	22.05	28.93	41.78	51.03	51.45	52.89	60.78	68.89			76.33	84.54	140.88
Dy	Ln		2	1	66	6	6.533	3.79486	5		16.38	16.71	22.05	28.93	41.79	51.04	51.46	52.90	60.79	68.90			76.35	84.56	140.93
Mo	$K\beta_3$		6	7	42	6	19.587	3.79723	6		16.39	16.72	22.07	28.95	41.82	51.08	51.49	52.93	60.84	68.95	71.09	74.53	76.40	84.62	141.14
Ce	$L\gamma_4$		2	.1	58	6	6.527	3.79820	4		16.40	16.72	22.07	28.96	41.83	51.09	51.50	52.95	60.85	68.97			76.43	84.65	141.22
Sb	$K\alpha_2$		8	50	51	6	26.106	3.79862	6		16.40	16.72	22.08	28.96	41.83	51.10	51.51	52.96	60.86	68.98	71.12	74.57	76.44	84.66	141.25
Pd	$L\beta_{10}$	B	1	.01	46	6	3.263	3.79880	4		16.40	16.72	22.08	28.97	41.84	51.10	51.51	52.96	60.86	68.99	71.12	74.57	76.44	84.66	141.27
Cd	$K\beta_1$		8	19	48	6	26.091	3.80084	6		16.41	16.73	22.09	28.98	41.86	51.13	51.54	52.99	60.90	69.03	71.17	74.62	76.49	84.72	141.45
Pa	$L\gamma_1$	H	6	10	91	6	19.565	3.80148	5		16.41	16.74	22.09	28.99	41.87	51.14	51.55	53.00	60.91	69.04	71.18	74.63	76.51	84.74	141.50
W	L_3-N_3	B	3	.01	74	6	9.782	3.80160	4		16.41	16.74	22.09	28.99	41.87	51.14	51.55	53.00	60.91	69.04	71.18	74.63	76.51	84.74	141.51
Yb	$L\gamma_1$		3	5	70	6	9.778	3.80307	5		16.42	16.74	22.10	29.00	41.89	51.16	51.57	53.02	60.94	69.08	71.21	74.67	76.54	84.78	141.64
Tm	$L\gamma_3$		3	1	69	6	9.778	3.80340	4		16.42	16.74	22.10	29.00	41.89	51.17	51.58	53.03	60.94	69.08	71.22	74.68	76.55	84.79	141.67
Cd	$K\beta_3$		8	8	48	6	26.057	3.80584	6		16.43	16.76	22.12	29.02	41.92	51.20	51.62	53.06	60.99	69.13	71.27	74.73	76.61	84.86	141.88
Ag	$L\beta_6$		1	1	47	6	3.255	3.80774	5		16.44	16.76	22.13	29.03	41.94	51.23	51.64	53.09	61.02	69.17	71.31	74.78	76.65	84.91	142.05
Bi	$L\beta_1$		4	50	83	6	13.021	3.80791	6		16.44	16.76	22.13	29.04	41.94	51.23	51.65	53.09	61.02	69.18	71.32	74.78	76.66	84.91	142.06
Th	M_4-O_2		1	1	90	6	3.255	3.80800	3		16.44	16.77	22.13	29.04	41.94	51.23	51.65	53.10	61.03	69.18	71.32	74.78	76.66	84.92	142.07
Th	$L\gamma_3$		6	2	90	6	19.503	3.81354	5		16.47	16.79	22.16	29.08	42.01	51.31	51.73	53.18	61.12	69.29	71.44	74.91	76.79	85.07	142.56
At	$L\gamma_1$	H	5	10	85	6	16.249	3.81445	5		16.47	16.79	22.17	29.09	42.02	51.32	51.74	53.19	61.14	69.31	71.46	74.93	76.81	85.10	142.64
Dy	$L\alpha_1$		2	100	66	6	6.494	3.81762	5		16.48	16.81	22.19	29.11	42.05	51.37	51.79	53.24	61.20	69.38			76.89	85.18	142.92
W	L_2-M_5	B	3	.01	74	6	9.739	3.81840	4		16.49	16.81	22.19	29.12	42.06	51.38	51.80	53.25	61.21	69.39	71.55	75.02	76.91	85.20	142.99
Rh	$K\beta_1$		7	16	45	6	22.720	3.81923	6		16.49	16.82	22.20	29.12	42.07	51.39	51.81	53.27	61.23	69.41	71.56	75.04	76.93	85.23	143.06
Mn	$K\beta_{1,3}$		2	20	25	6	6.489	3.82042	5	4	16.50	16.82	22.20	29.13	42.09	51.41	51.83	53.28	61.25	69.44			76.96	85.26	143.17
Bi	$L\beta_2$		4	20	83	6	12.978	3.82072	5		16.50	16.82	22.21	29.14	42.09	51.42	51.83	53.29	61.25	69.44	71.60	75.07	76.96	85.27	143.20
Cm	$L\gamma_1$		7	10	96	3	22.703	3.82200			16.50	16.83	22.21	29.15	42.10	51.43	51.85	53.31	61.27	69.47	71.62	75.10	76.99	85.30	143.31
Pd	$L\gamma_5$		1	.1	46	6	3.243	3.82220	4		16.50	16.83	22.22	29.15	42.11	51.44	51.85	53.31	61.28	69.47	71.63	75.11	77.00	85.31	143.33
Tm	$L\gamma_2$		3	1	69	6	9.728	3.82260	4		16.50	16.83	22.22	29.15	42.11	51.44	51.86	53.32	61.29	69.48	71.64	75.12	77.01	85.32	143.37
Rh	$K\beta_3$		7	8	45	6	22.695	3.82340	6		16.51	16.83	22.22	29.16	42.12	51.45	51.87	53.33	61.30	69.50	71.65	75.14	77.03	85.34	143.44
Th	$L\alpha_1$		4	100	90	6	12.967	3.82400	5		16.51	16.84	22.23	29.16	42.13	51.46	51.88	53.34	61.31	69.51	71.67	75.15	77.04	85.36	143.49
Bi	Lt	B	3	.01	83	6	9.724	3.82440	4		16.51	16.84	22.23	29.16	42.13	51.47	51.89	53.34	61.32	69.52	71.67	75.16	77.05	85.37	143.53
Er	$L\gamma_4$		3	.1	68	6	9.721	3.82560	4		16.52	16.84	22.24	29.17	42.15	51.49	51.90	53.36	61.34	69.54	71.70	75.19	77.08	85.40	143.64
Th	$L\beta_1$		5	50	90	6	16.199	3.82605	6		16.52	16.85	22.24	29.18	42.15	51.49	51.91	53.37	61.35	69.55	71.71	75.20	77.09	85.42	143.68

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
Pa	$M\beta$		1	60	91	6	3.239	3.82700	3		16.52	16.85	22.24	29.18	42.16	51.51	51.92	53.38	61.36	69.57	71.73	75.22	77.11	85.44	143.77
Au	$L\alpha_1$		3	100	79	6	9.712	3.82920	5		16.53	16.86	22.26	29.20	42.19	51.54	51.96	53.42	61.40	69.62	71.78	75.27	77.17	85.50	143.97
W	L_3-N_2	B	3	.01	74	6	9.711	3.82950	4		16.53	16.86	22.26	29.20	42.19	51.54	51.96	53.42	61.41	69.62	71.79	75.28	77.17	85.51	144.00
Pt	$L\gamma_1$		4	10	78	6	12.940	3.83188	5		16.55	16.87	22.27	29.22	42.22	51.58	51.99	53.46	61.45	69.67	71.84	75.33	77.23	85.58	144.22
Ag	$L\beta_3$		1	11	47	6	3.234	3.83313	5		16.55	16.88	22.28	29.23	42.23	51.59	52.01	53.47	61.47	69.70	71.86	75.36	77.26	85.61	144.33
Sn	$K\beta_2$		9	5	50	6	29.104	3.83323	6		16.55	16.88	22.28	29.23	42.23	51.60	52.01	53.48	61.47	69.70	71.87	75.36	77.26	85.61	144.34
Bi	M_2-N_4		1	5	83	6	3.233	3.83400	3		16.55	16.88	22.28	29.24	42.24	51.61	52.03	53.49	61.49	69.72	71.88	75.38	77.28	85.64	144.41
Cm	$L\beta_1$		6	50	96	3	19.399	3.83400			16.55	16.88	22.28	29.24	42.24	51.61	52.03	53.49	61.49	69.72	71.88	75.38	77.28	85.64	144.41
Tl	Ls	B	3	.01	81	6	9.699	3.83421	5		16.56	16.88	22.29	29.24	42.24	51.61	52.03	53.49	61.49	69.72	71.89	75.39	77.29	85.64	144.43
Ru	AL_1	H	1		44	6	3.232	3.83500	3		16.56	16.88	22.29	29.25	42.25	51.62	52.04	53.50	61.51	69.74	71.90	75.40	77.30	85.66	144.51
Ir	$L\gamma_3$		4	2	77	6	12.922	3.83724	5		16.57	16.89	22.30	29.26	42.28	51.65	52.07	53.54	61.55	69.79	71.95	75.46	77.36	85.73	144.72
I	$K\beta_1$		10	20	53	6	32.289	3.83905	6		16.58	16.90	22.31	29.28	42.30	51.68	52.10	53.56	61.58	69.82	71.99	75.50	77.40	85.78	144.89
Dy	$L\alpha_2$		2	10	66	6	6.457	3.83982	5		16.58	16.91	22.32	29.28	42.31	51.69	52.11	53.58	61.59	69.84			77.42	85.80	144.96
Eu	$L\beta_1$		2	50	63	6	6.455	3.84060	4		16.58	16.91	22.32	29.29	42.32	51.70	52.12	53.59	61.60	69.86			77.44	85.82	145.03
W	$L\beta_1$		3	50	74	6	9.671	3.84543	6		16.60	16.93	22.35	29.33	42.37	51.77	52.19	53.66	61.69	69.96	72.13	75.65	77.55	85.95	145.49
I	$K\beta_3$		10	9	53	6	32.234	3.84564	6		16.60	16.93	22.35	29.33	42.38	51.78	52.20	53.66	61.69	69.96	72.14	75.65	77.56	85.96	145.51
Po	Ll		3	3	84	6	9.662	3.84870	4		16.62	16.95	22.37	29.35	42.41	51.82	52.24	53.71	61.75	70.02	72.20	75.72	77.63	86.04	145.81
Pa	$L\beta_4$		5	4	91	6	16.101	3.84950	4		16.62	16.95	22.38	29.36	42.42	51.83	52.25	53.72	61.76	70.04	72.22	75.74	77.65	86.07	145.89
Eu	$L\beta_4$		2	5	63	6	6.438	3.85100	4		16.63	16.96	22.38	29.37	42.44	51.85	52.27	53.74	61.79	70.07			77.69	86.11	146.03
Ba	$K\alpha_1$		10	100	56	6	32.188	3.85111	6		16.63	16.96	22.39	29.37	42.44	51.85	52.28	53.75	61.79	70.07	72.25	75.78	77.69	86.11	146.04
Zn	$K\beta_2$		3	.3	30	6	9.656	3.85116	5		16.63	16.96	22.39	29.37	42.44	51.86	52.28	53.75	61.79	70.08	72.25	75.78	77.69	86.11	146.05
Ta	$L\beta_2$		3	20	73	6	9.650	3.85362	5		16.64	16.97	22.40	29.39	42.47	51.89	52.31	53.78	61.84	70.13	72.31	75.83	77.75	86.18	146.29
Sr	$K\beta_2$		5	3	38	6	16.082	3.85405	5		16.64	16.97	22.40	29.40	42.47	51.90	52.32	53.79	61.84	70.14	72.32	75.84	77.76	86.19	146.33
Ir	Ln	D	3	1	77	6	9.649	3.85410	4		16.64	16.97	22.40	29.40	42.47	51.90	52.32	53.79	61.85	70.14	72.32	75.85	77.76	86.19	146.34
Zn	$K\beta_5$	B	3	.04	30	6	9.648	3.85440	4		16.64	16.97	22.40	29.40	42.48	51.90	52.32	53.79	61.85	70.14	72.33	75.85	77.77	86.20	146.37
Ru	$K\alpha_1$		6	100	44	6	19.276	3.85850	6		16.66	16.99	22.43	29.43	42.52	51.96	52.38	53.86	61.92	70.23	72.41	75.95	77.87	86.32	146.77
Ta	$L\beta_{15}$		3	1	73	6	9.638	3.85857	5		16.66	16.99	22.43	29.43	42.53	51.96	52.38	53.86	61.92	70.23	72.42	75.95	77.87	86.32	146.78
Au	$L\alpha_2$		3	10	79	6	9.626	3.86316	5		16.68	17.01	22.46	29.47	42.58	52.03	52.45	53.93	62.01	70.33	72.52	76.06	77.98	86.45	147.24
Ba	$K\alpha_{1,2}$		10	150	56	6	32.062	3.86630	6		16.69	17.02	22.47	29.49	42.62	52.07	52.50	53.97	62.06	70.39	72.58	76.13	78.05	86.53	147.56
Ru	$K\alpha_{1,2}$		6	150	44	6	19.233	3.86714	6		16.70	17.03	22.48	29.50	42.62	52.09	52.51	53.99	62.08	70.41	72.60	76.15	78.07	86.56	147.64
Pa	$L\beta_2$		5	20	91	6	16.022	3.86850	4		16.70	17.03	22.49	29.51	42.64	52.11	52.53	54.01	62.10	70.44	72.63	76.18	78.11	86.59	147.78
W	$L\beta_6$		3	.1	74	6	9.610	3.86967	5		16.71	17.04	22.49	29.52	42.65	52.12	52.55	54.03	62.12	70.46	72.66	76.21	78.14	86.63	147.90
Ag	$L\beta_4$		1	5	47	6	3.203	3.87023	5		16.71	17.04	22.50	29.52	42.66	52.13	52.55	54.03	62.13	70.47	72.67	76.22	78.15	86.64	147.96
Hf	$L\beta_9$	B	3	.01	72	6	9.607	3.87075	5		16.71	17.04	22.50	29.53	42.67	52.14	52.56	54.04	62.14	70.48	72.68	76.23	78.16	86.66	148.01
Ar	AK		1		18	6	3.202	3.87090	5		16.71	17.04	22.50	29.53	42.67	52.14	52.56	54.04	62.14	70.49	72.68	76.24	78.17	86.66	148.03
Nd	$L\gamma_5$		2	.1	60	6	6.405	3.87100	4		16.72	17.04	22.50	29.53	42.67	52.14	52.57	54.05	62.15	70.49			78.17	86.66	148.04
Tm	$L\gamma_6$		3	.01	69	6	9.606	3.87150	4		16.72	17.05	22.51	29.53	42.68	52.15	52.57	54.05	62.16	70.50	72.70	76.25	78.18	86.68	148.09
Th	$L\alpha_2$		4	10	90	6	12.807	3.87152	5		16.72	17.05	22.51	29.53	42.68	52.15	52.57	54.05	62.16	70.50	72.70	76.25	78.18	86.68	148.09
Pb	M_1-N_3		1	.1	82	6	3.201	3.87200	3		16.72	17.05	22.51	29.54	42.68	52.16	52.58	54.06	62.16	70.51	72.71	76.26	78.19	86.69	148.14
Fe	$K\alpha_1$		2	100	26	6	6.403	3.87208	6		16.72	17.05	22.51	29.54	42.68	52.16	52.58	54.06	62.17	70.51			78.19	86.69	148.15
Pr	$L\gamma_8$		2	.1	59	6	6.402	3.87240	4		16.72	17.05	22.51	29.54	42.69	52.16	52.59	54.07	62.17	70.52			78.20	86.70	148.18
Fe	$K\alpha_{1,2}$		2	150	26	6	6.398	3.87471	6		16.73	17.06	22.52	29.56	42.71	52.20	52.62	54.10	62.21	70.57			78.26	86.77	148.43
Pb	$L\beta_3$		4	6	82	6	12.791	3.87644	5		16.74	17.07	22.53	29.57	42.73	52.22	52.65	54.13	62.24	70.60	72.80	76.36	78.30	86.82	148.61
Re	$L\beta_{17}$	B	3	.01	75	6	9.589	3.87810	4		16.75	17.08	22.54	29.58	42.75	52.25	52.67	54.15	62.27	70.64	72.84	76.40	78.34	86.86	148.78
Fe	$K\alpha_2$		2	50	26	6	6.390	3.87996	6		16.75	17.08	22.56	29.60	42.77	52.27	52.70	54.18	62.31	70.68			78.38	86.91	148.98
Os	L_2-M_2	B	3	.01	76	6	9.584	3.88020	4		16.76	17.09	22.56	29.60	42.78	52.28	52.70	54.18	62.31	70.68	72.89	76.45	78.39	86.92	149.00
Ru	$K\alpha_2$		6	50	44	6	19.147	3.88445	6		16.77	17.10	22.58	29.63	42.82	52.34	52.76	54.25	62.39	70.77	72.98	76.55	78.49	87.04	149.46
Zn	$K\beta_{1,3}$		3	20	30	6	9.570	3.88575	5		16.78	17.11	22.59	29.64	42.84	52.36	52.78	54.27	62.41	70.80	73.01	76.58	78.52	87.08	149.60
Ar	$K\beta_{1,3}$		1	15	18	6	3.190	3.88600	4		16.78	17.11	22.59	29.65	42.84	52.36	52.79	54.27	62.41	70.80	73.01	76.59	78.53	87.08	149.63
Sb	Ll		1	7	51	6	3.188	3.88826	5		16.79	17.12	22.60	29.66	42.87	52.39	52.82	54.31	62.45	70.85	73.06	76.64	78.58	87.15	149.88
Ac	$L\beta_3$	H	5	10	89	6	15.929	3.89110	5		16.80	17.13	22.62	29.68	42.90	52.43	52.86	54.35	62.51	70.91	73.12	76.71	78.65	87.23	150.19
Bi	M_1-N_2		1	1	83	6	3.185	3.89200	3		16.81	17.14	22.63	29.69	42.91	52.45	52.87	54.36	62.52	70.93	73.14	76.73	78.67	87.25	150.29
Hf	$L\beta_5$		3	.1	72	6	9.553	3.89283	5		16.81	17.14	22.63	29.70	42.92	52.46	52.89	54.38	62.54	70.95	73.16	76.75	78.69	87.28	150.38
Sm	$L\beta_6$		2	.1	62	6	6.369	3.89286	5		16.81	17.14	22.63	29.70	42.92	52.46	52.89	54.38	62.54	70.95			78.69	87.28	150.38
8f	$L\beta_{10}$	F	3	.01	72	6	9.553	3.89292	5		16.81	17.14	22.63	29.70	42.92	52.46	52.89	54.38	62.54	70.95	73.16	76.75	78.70	87.28	150.39
Am	$L\beta_3$		6	6	95	6	19.103	3.89346	5		16.81	17.14	22.63	29.70	42.93	52.47	52.89	54.38	62.55	70.96	73.18	76.76	78.71	87.29	150.45
Ag	$K\beta_2$		8	5	47	6	25.452	3.89626	6		16.83	17.16	22.65	29.73	42.96	52.51	52.94	54.43	62.60	71.02	73.24	76.83	78.78	87.37	150.76
Ba	$K\alpha_2$		10	50	56	6	31.812	3.89668	6		16.83	17.16	22.65	29.73	42.97	52.51	52.94	54.43	62.61	71.03	73.25	76.84	78.79	87.38	150.81
Hf	Lu	F	3	.01	72	6	9.542	3.89727	5		16.83	17.16	22.66	29.73	42.97	52.52	52.95	54.44	62.62	71.04	73.26	76.85	78.80	87.40	150.88
Ru	$L\gamma_{2,3}$		1	.5	44	6	3.180	3.89770	4		16.83	17.16	22.66	29.74	42.98	52.53	52.96	54.45	62.62	71.05	73.27	76.86	78.81	87.41	150.93
I	$K\alpha_1$		9	100	53	6	28.607	3.89986	6		16.84	17.17	22.67	29.75	43.00	52.56	52.99	54.48	62.66	71.09	73.32	76.91	78.86	87.47	151.17
Bi	AM_3	H	1		83	6	3.175	3.90400	3		16.86	17.19	22.70	29.79	43.05	52.62	53.05	54.54	62.74	71.18	73.41	77.01	78.96	87.59	151.65
W	$L\beta_4$		3	4	74	6	9.524	3.90486	5		16.86	17.19	22.70	29.79	43.06	52.63	53.06	54.56	62.75	71.20	73.43	77.03	78.98	87.61	151.75
Pd	AL_3		1		46	6	3.172	3.90740	4		16.87	17.21	22.72	29.81	43.09	52.67	53.10	54.60	62.80	71.25	73.48	77.09	79.05	87.69	152.05
Bi	$L\beta_4$		4	4	83	6	12.689	3.90760	5		16.87	17.21	22.72	29.81	43.09	52.67	53.10	54.60	62.80	71.26	73.49	77.09	79.05	87.69	152.07

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Pd	$L\beta_{2,15}$		1	25	46	6	3.171	3.90887	5		16.88	17.21	22.73	29.82	43.11	52.69	53.12	54.62	62.82	71.28	73.51	77.12	79.08	87.73	152.22
Tm	Ll		2	2	69	6	6.341	3.91000	4		16.88	17.22	22.73	29.83	43.12	52.71	53.14	54.63	62.84	71.31			79.11	87.76	152.36
U	$M\alpha_1$		1	100	92	6	3.170	3.91000	3		16.88	17.22	22.73	29.83	43.12	52.71	53.14	54.63	62.84	71.31	73.54	77.15	79.11	87.76	152.36
Ce	$L\gamma_3$		2	1	58	6	6.340	3.91060	4		16.89	17.22	22.74	29.84	43.13	52.72	53.15	54.64	62.85	71.32			79.12	87.78	152.43
Te	$K\beta_2$		D10	6	52	6	31.698	3.91063	6		16.89	17.22	22.74	29.84	43.13	52.72	53.15	54.64	62.85	71.32	73.55	77.16	79.12	87.78	152.43
Pm	$L\beta_{2,15}$		2	20	61	6	6.338	3.91180	4		16.89	17.23	22.74	29.85	43.14	52.73	53.16	54.66	62.88	71.35			79.15	87.81	152.57
I	$K\alpha_{1,2}$		9	150	53	6	28.508	3.91339	6		16.90	17.23	22.75	29.86	43.16	52.76	53.19	54.69	62.90	71.38	73.61	77.23	79.19	87.85	152.76
Sr	$K\beta_1$		5	16	38	6	15.833	3.91460	5		16.90	17.24	22.76	29.87	43.17	52.77	53.20	54.70	62.93	71.40	73.64	77.25	79.22	87.89	152.91
Ir	M_1	H	1		77	6	3.166	3.91500	3		16.91	17.24	22.76	29.87	43.18	52.78	53.21	54.71	62.93	71.41	73.65	77.26	79.23	87.90	152.96
Ag	$K\alpha_1$		7	100	47	6	22.159	3.91585	7		16.91	17.24	22.77	29.88	43.19	52.79	53.22	54.72	62.95	71.43	73.67	77.28	79.25	87.92	153.06
Hf	$L\beta_7$		3	.1	72	6	9.494	3.91692	5		16.91	17.25	22.77	29.89	43.20	52.81	53.24	54.74	62.97	71.45	73.69	77.31	79.28	87.95	153.19
Sn	$K\beta_1$		9	19	50	6	28.481	3.91712	6		16.92	17.25	22.77	29.89	43.20	52.81	53.24	54.74	62.97	71.46	73.69	77.31	79.29	87.96	153.22
Sr	$K\beta_3$		5	8	38	6	15.822	3.91725	5		16.92	17.25	22.77	29.89	43.20	52.81	53.24	54.74	62.97	71.46	73.70	77.32	79.28	87.96	153.23
Cf	$L\beta_2$		6	20	98	3	18.983	3.91800			16.92	17.25	22.78	29.89	43.21	52.82	53.25	54.76	62.99	71.48	73.71	77.33	79.30	87.98	153.33
Th	$L\gamma_1$		6	10	90	6	18.979	3.91878	5		16.92	17.26	22.78	29.90	43.22	52.84	53.27	54.77	63.00	71.49	73.73	77.35	79.32	88.01	153.42
Yb	$L\gamma_5$		3	.1	70	6	9.489	3.91890	4		16.92	17.26	22.78	29.90	43.22	52.84	53.27	54.77	63.00	71.49	73.73	77.35	79.32	88.01	153.44
Ac	$L\alpha_1$	H	4	100	89	6	12.650	3.91972	5		16.93	17.26	22.79	29.91	43.23	52.85	53.28	54.78	63.02	71.51	73.75	77.37	79.34	88.03	153.54
Ta	$L\beta_3$		3	6	73	6	9.486	3.92034	5		16.93	17.26	22.79	29.91	43.24	52.86	53.29	54.79	63.03	71.53	73.76	77.39	79.36	88.05	153.62
Ce	$L\gamma_2$		2	1	58	6	6.324	3.92040	4		16.93	17.26	22.79	29.91	43.24	52.86	53.29	54.79	63.03	71.53			79.36	88.05	153.62
Kr	$K\alpha_1$		4	100	36	6	12.648	3.92040	4		16.93	17.26	22.79	29.91	43.24	52.86	53.29	54.79	63.03	71.53	73.77	77.39	79.36	88.05	153.62
Pr	$L\gamma_1$		2	5	59	6	6.321	3.92220	4		16.94	17.27	22.80	29.93	43.26	52.89	53.32	54.82	63.06	71.56			79.40	88.10	153.85
Sn	$K\beta_3$		9	9	50	6	28.439	3.92289	6		16.94	17.27	22.81	29.93	43.27	52.90	53.33	54.83	63.07	71.58	73.82	77.45	79.42	88.12	153.94
Pb	Lt	B	3	.01	82	6	9.479	3.92301	5		16.94	17.28	22.81	29.93	43.27	52.90	53.33	54.83	63.08	71.58	73.82	77.45	79.42	88.13	153.95
U	$M\alpha_2$		1	100	92	6	3.159	3.92400	3		16.95	17.28	22.81	29.94	43.28	52.91	53.34	54.85	63.09	71.60	73.85	77.47	79.45	88.15	154.08
Sn	$K\alpha_1$		8	100	50	6	25.267	3.92479	6		16.95	17.28	22.82	29.95	43.29	52.92	53.35	54.86	63.11	71.62	73.86	77.49	79.47	88.18	154.18
Sm	$L\beta_3$		2	6	62	6	6.317	3.92482	5		16.95	17.28	22.82	29.95	43.29	52.92	53.35	54.86	63.11	71.62			79.47	88.18	154.18
Nb	$K\beta_2$		6	4	41	6	18.949	3.92496	5		16.95	17.28	22.82	29.95	43.29	52.93	53.36	54.86	63.11	71.62	73.87	77.50	79.47	88.18	154.20
Kr	$K\alpha_{1,2}$		4	150	36	6	12.631	3.92573	4		16.95	17.29	22.82	29.96	43.30	52.94	53.37	54.87	63.13	71.64	73.88	77.51	79.49	88.20	154.30
Ta	L_3-N_3	B	3	.01	73	6	9.473	3.92580	4		16.95	17.29	22.83	29.96	43.30	52.94	53.37	54.87	63.13	71.64	73.88	77.52	79.49	88.20	154.31
Ag	$K\alpha_{1,2}$		7	150	47	6	22.101	3.92609	6		16.95	17.29	22.83	29.96	43.31	52.94	53.37	54.88	63.13	71.65	73.89	77.52	79.50	88.21	154.34
Pb	$L\beta_2$		4	20	82	6	12.621	3.92884	5		16.97	17.30	22.84	29.98	43.34	52.98	53.41	54.92	63.18	71.70	73.95	77.59	79.57	88.29	154.70
Zr	$K\alpha_1$		5	100	40	6	15.772	3.92965	5		16.97	17.30	22.85	29.99	43.35	52.99	53.43	54.93	63.20	71.72	73.97	77.61	79.58	88.31	154.80
Ru	$K\beta_2$		7	3	44	6	22.070	3.93162	5		16.98	17.31	22.86	30.00	43.37	53.02	53.45	54.96	63.23	71.76	74.01	77.65	79.63	88.37	155.06
Pb	$L\beta_1$		4	50	82	6	12.612	3.93164	5		16.98	17.31	22.86	30.00	43.37	53.02	53.45	54.96	63.23	71.76	74.01	77.65	79.63	88.37	155.06
Bi	M_3-$O_{4,5}$		1	1	83	6	3.153	3.93200	3		16.98	17.32	22.86	30.00	43.38	53.03	53.46	54.97	63.24	71.77	74.02	77.66	79.64	88.38	155.11
Am	$L\gamma_1$		7	10	95	6	22.061	3.93320	6		16.99	17.32	22.87	30.01	43.39	53.04	53.48	54.99	63.26	71.80	74.05	77.69	79.67	88.41	155.27
Ag	$L\beta_1$		1	42	47	6	3.150	3.93473	5		16.99	17.33	22.88	30.03	43.41	53.07	53.50	55.01	63.29	71.83	74.08	77.73	79.71	88.46	155.47
Au	M_2	H	1		79	6	3.149	3.93600	3		17.00	17.33	22.89	30.04	43.42	53.09	53.52	55.03	63.31	71.86	74.11	77.76	79.74	88.49	155.65
Kr	$K\alpha_2$		4	50	36	6	12.596	3.93640	4		17.00	17.33	22.89	30.04	43.43	53.09	53.52	55.03	63.32	71.86	74.12	77.76	79.75	88.50	155.70
Sn	$K\alpha_{1,2}$		8	150	50	6	25.191	3.93667	6		17.00	17.34	22.89	30.04	43.43	53.10	53.53	55.04	63.32	71.87	74.12	77.77	79.76	88.51	155.74
Zr	$K\alpha_{1,2}$		5	150	40	6	15.744	3.93668	5		17.00	17.34	22.89	30.04	43.43	53.10	53.53	55.04	63.32	71.87	74.12	77.77	79.76	88.51	155.74
Po	$L\gamma_1$		5	10	84	6	15.741	3.93740	5		17.00	17.34	22.89	30.05	43.44	53.11	53.54	55.05	63.33	71.88	74.14	77.79	79.77	88.53	155.84
Pt	$L\alpha_1$		3	100	78	6	9.441	3.93912	5		17.01	17.35	22.90	30.06	43.46	53.13	53.56	55.08	63.37	71.92	74.18	77.83	79.82	88.58	156.07
I	$K\alpha_2$		9	50	53	6	28.312	3.94046	6		17.02	17.35	22.91	30.07	43.47	53.15	53.58	55.10	63.39	71.95	74.21	77.86	79.85	88.62	156.25
Th	$M\beta$		1	60	90	6	3.145	3.94100	3		17.02	17.36	22.91	30.07	43.48	53.16	53.59	55.10	63.40	71.96	74.22	77.87	79.86	88.64	156.33
Hg	Ls	F	3	.01	80	6	9.435	3.94143	5		17.02	17.36	22.92	30.08	43.48	53.16	53.60	55.11	63.41	71.97	74.23	77.88	79.87	88.65	156.39
Rh	AL_2		1		45	6	3.144	3.94250	4		17.03	17.36	22.92	30.09	43.50	53.18	53.61	55.13	63.43	71.99	74.25	77.91	79.90	88.68	156.54
Rh	$L\gamma_1$		1	10	45	6	3.143	3.94370	4		17.03	17.37	22.93	30.10	43.51	53.20	53.63	55.15	63.45	72.02	74.28	77.94	79.93	88.71	156.71
Er	$L\gamma_3$		3	1	68	6	9.429	3.94380	4		17.03	17.37	22.93	30.10	43.51	53.20	53.63	55.15	63.45	72.02	74.28	77.94	79.93	88.71	156.72
Ac	$L\beta_1$	H	5	50	89	6	15.710	3.94515	5		17.04	17.37	22.94	30.11	43.53	53.22	53.65	55.17	63.47	72.05	74.31	77.97	79.96	88.75	156.91
Bi	$L\gamma_3$		5	2	83	6	15.708	3.94585	5		17.04	17.38	22.94	30.11	43.54	53.23	53.66	55.18	63.49	72.06	74.33	77.99	79.98	88.77	157.01
Tm	$L\gamma_1$		3	5	69	6	9.424	3.94590	4		17.04	17.38	22.94	30.11	43.54	53.23	53.66	55.18	63.49	72.06	74.33	77.99	79.98	88.77	157.02
Am	$L\beta_1$		6	50	95	6	18.849	3.94593	6		17.04	17.38	22.94	30.11	43.54	53.23	53.66	55.18	63.49	72.06	74.33	77.99	79.98	88.78	157.02
Tb	Ln		2	1	65	6	6.283	3.94600	4		17.04	17.38	22.94	30.11	43.54	53.23	53.67	55.18	63.49	72.07			79.98	88.78	157.03
Ag	$K\alpha_2$		7	50	47	6	21.987	3.94659	6		17.04	17.38	22.95	30.12	43.54	53.24	53.67	55.19	63.50	72.08	74.34	78.00	80.00	88.79	157.12
Pu	$L\gamma_3$		7	2	94	6	21.979	3.94801	6		17.05	17.39	22.96	30.13	43.56	53.26	53.69	55.21	63.53	72.11	74.37	78.04	80.03	88.83	157.32
Bi	Ll		3	3	83	6	9.419	3.94830	5		17.05	17.39	22.96	30.13	43.56	53.26	53.70	55.22	63.53	72.11	74.38	78.04	80.04	88.84	157.36
Ta	L_3-N_2	B	3	.01	73	6	9.414	3.95010	4		17.06	17.40	22.97	30.15	43.59	53.29	53.73	55.24	63.56	72.15	74.42	78.09	80.08	88.89	157.63
Zr	$K\alpha_2$		5	50	40	6	15.688	3.95075	5		17.06	17.40	22.97	30.15	43.59	53.30	53.73	55.25	63.57	72.17	74.43	78.10	80.10	88.91	157.72
Tb	$L\alpha_1$		2	100	65	6	6.272	3.95300	4		17.07	17.41	22.99	30.17	43.62	53.33	53.77	55.29	63.61	72.21			80.15	88.98	158.06
Cd	$L\alpha_1$		1	100	48	6	3.133	3.95635	5		17.09	17.42	23.01	30.19	43.66	53.38	53.82	55.34	63.68	72.29	74.56	78.23	80.23	89.07	158.56
Ta	L_2-M_5	B	3	.01	73	6	9.398	3.95691	5		17.09	17.43	23.01	30.20	43.66	53.39	53.83	55.35	63.69	72.30	74.57	78.25	80.25	89.09	158.65
Cf	$L\alpha_1$		5	100	98	3	15.652	3.96000			17.10	17.44	23.03	30.22	43.70	53.43	53.87	55.39	63.74	72.36	74.64	78.32	80.32	89.18	159.13
Sn	$K\alpha_2$		8	50	50	6	25.040	3.96042	6		17.10	17.44	23.03	30.23	43.71	53.44	53.88	55.40	63.75	72.37	74.65	78.33	80.33	89.19	159.20
Ho	L_1-$O_{4,5}$	B	3	.01	67	6	9.385	3.96240	4		17.11	17.45	23.04	30.24	43.73	53.47	53.91	55.43	63.78	72.41	74.69	78.38	80.38	89.24	159.51

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)	LiF (200)
								10^{-}																	
Th	$L\beta_4$		5	4	90	6	15.640	3.96285	5		17.11	17.45	23.04	30.25	43.73	53.48	53.91	55.44	63.79	72.42	74.70	78.39	80.39	89.26	159.58
Er	$L\gamma_2$		3	1	68	6	9.384	3.96300	4		17.12	17.45	23.04	30.25	43.74	53.48	53.91	55.44	63.79	72.43	74.70	78.39	80.40	89.26	159.61
Ir	$L\gamma_1$		4	10	77	6	12.510	3.96340	5		17.12	17.45	23.05	30.25	43.74	53.48	53.92	55.44	63.80	72.43	74.71	78.40	80.41	89.27	159.67
Cd	$L\alpha_2$		1	10	48	6	3.126	3.96496	5		17.12	17.46	23.06	30.26	43.76	53.51	53.94	55.47	63.83	72.47	74.75	78.44	80.45	89.32	159.92
La	$L\gamma_4$		2	.1	57	6	6.251	3.96600	4		17.13	17.47	23.06	30.27	43.77	53.52	53.96	55.48	63.85	72.49			80.47	89.35	160.09
Ac	$L\alpha_2$	H	4	10	89	6	12.499	3.96712	5		17.13	17.47	23.07	30.28	43.78	53.54	53.98	55.50	63.87	72.51	74.79	78.49	80.50	89.38	160.28
Os	$L\gamma_3$		4	2	76	6	12.498	3.96744	5		17.13	17.47	23.07	30.28	43.79	53.54	53.98	55.51	63.87	72.52	74.80	78.50	80.51	89.39	160.33
Ho	$L\gamma_4$		3	.1	67	6	9.373	3.96750	4		17.14	17.47	23.07	30.28	43.79	53.54	53.98	55.51	63.88	72.52	74.80	78.50	80.51	89.39	160.34
Th	$L\beta_2$		5	20	90	6	15.621	3.96770	5		17.14	17.47	23.07	30.28	43.79	53.55	53.98	55.51	63.88	72.53	74.81	78.50	80.51	89.40	160.38
Pb	M_2-N		1	5	82	6	3.124	3.96800	3		17.14	17.48	23.07	30.29	43.79	53.55	53.99	55.51	63.88	72.53	74.81	78.51	80.52	89.40	160.43
Se	$K\beta_1$		4	16	34	6	12.494	3.96872	5		17.14	17.48	23.08	30.29	43.80	53.56	54.00	55.53	63.90	72.55	74.83	78.53	80.54	89.42	160.55
Se	$K\beta_3$		4	8	34	6	12.487	3.97072	5		17.15	17.49	23.09	30.31	43.82	53.59	54.03	55.56	63.93	72.59	74.87	78.57	80.59	89.48	160.89
Pt	$L\alpha_2$		3	10	78	6	9.360	3.97296	5		17.16	17.50	23.10	30.32	43.85	53.62	54.06	55.59	63.97	72.64	74.92	78.63	80.64	89.55	161.27
Tb	$L\alpha_2$		2	10	65	6	6.237	3.97500	4		17.17	17.51	23.12	30.34	43.87	53.65	54.09	55.62	64.01	72.68			80.69	89.60	161.63
Ag	$K\beta_1$		8	18	47	6	24.938	3.97655	6		17.17	17.51	23.12	30.35	43.89	53.68	54.11	55.64	64.04	72.71	75.00	78.71	80.73	89.65	161.91
Hf	$L\beta_2$		3	20	72	6	9.346	3.97917	5		17.19	17.52	23.14	30.37	43.92	53.71	54.15	55.68	64.09	72.77	75.06	78.77	80.79	89.72	162.39
Ta	$L\beta_1$		3	50	73	6	9.342	3.98094	5		17.19	17.53	23.15	30.39	43.94	53.74	54.18	55.71	64.12	72.81	75.10	78.81	80.84	89.77	162.73
Ag	$K\beta_3$		8	8	47	6	24.907	3.98148	6		17.20	17.53	23.15	30.39	43.95	53.75	54.19	55.72	64.13	72.82	75.11	78.83	80.85	89.79	162.83
In	Ln		1	7	49	6	3.112	3.98327	5		17.20	17.54	23.16	30.40	43.97	53.77	54.21	55.75	64.16	72.86	75.15	78.87	80.89	89.84	163.17
Hf	$L\beta_{15}$		3	1	72	6	9.336	3.98349	5		17.20	17.54	23.17	30.41	43.97	53.78	54.22	55.75	64.16	72.86	75.16	78.87	80.90	89.85	163.22
Os	Ln		3	1	76	6	9.335	3.98355	5		17.20	17.54	23.17	30.41	43.97	53.78	54.22	55.75	64.17	72.86	75.16	78.88	80.90	89.85	163.23
Ta	$L\beta_6$		3	.1	73	6	9.314	3.99282	5		17.25	17.59	23.22	30.48	44.08	53.91	54.35	55.89	64.33	73.06	75.36	79.10	81.13	90.12	165.15
Sm	$L\beta_1$		2	50	62	6	6.204	3.99612	5		17.26	17.60	23.24	30.51	44.12	53.96	54.40	55.94	64.39	73.13			81.21	90.21	165.89
Nb	$K\beta_3$		6	7	41	6	18.603	3.99804	5		17.27	17.61	23.25	30.52	44.14	53.99	54.43	55.97	64.43	73.17	75.48	79.22	81.26	90.27	166.34
Te	$K\beta_1$		10	20	52	6	30.990	3.99995	6		17.28	17.62	23.26	30.54	44.16	54.02	54.46	56.00	64.46	73.21	75.52	79.26	81.30	90.32	166.81
Sm	$L\beta_4$		2	5	62	6	6.195	4.00190	5		17.28	17.63	23.27	30.55	44.19	54.05	54.49	56.03	64.50	73.25			81.35	90.38	167.30
Tl	$L\beta_3$		4	6	81	6	12.388	4.00248	5		17.29	17.63	23.28	30.56	44.19	54.05	54.50	56.04	64.51	73.26	75.58	79.32	81.37	90.39	167.45
Cs	$K\alpha_1$		10	100	55	6	30.968	4.00290	6		17.29	17.63	23.28	30.56	44.20	54.06	54.50	56.05	64.51	73.27	75.59	79.33	81.38	90.41	167.56
Am	Ll		4	3	95	6	12.381	4.00480	4		17.30	17.64	23.29	30.57	44.22	54.09	54.53	56.07	64.55	73.31	75.63	79.38	81.42	90.46	168.07
In	$K\beta_2$		9	5	49	6	27.856	4.00500	5		17.30	17.64	23.29	30.57	44.22	54.09	54.53	56.08	64.55	73.32	75.63	79.38	81.43	90.47	168.13
Te	$K\beta_3$		10	9	52	6	30.939	4.00659	6		17.31	17.65	23.30	30.59	44.24	54.11	54.56	56.10	64.58	73.35	75.67	79.42	81.47	90.51	168.57
Ru	$K\beta_1$		7	16	44	6	21.653	4.00737	6		17.31	17.65	23.31	30.59	44.25	54.13	54.57	56.11	64.60	73.37	75.69	79.44	81.49	90.54	168.80
Lu	$L\beta_9$	B	3	.01	71	6	9.280	4.00740	4		17.31	17.65	23.31	30.59	44.25	54.13	54.57	56.11	64.60	73.37	75.69	79.44	81.49	90.54	168.80
W	L_1-M_1	B	3	.01	74	6	9.275	4.00950	4		17.32	17.66	23.32	30.61	44.28	54.16	54.60	56.15	64.63	73.41	75.73	79.49	81.54	90.60	169.43
Re	L_2-M_2	B	3	.01	75	6	9.274	4.00980	4		17.32	17.66	23.32	30.61	44.28	54.16	54.60	56.15	64.64	73.42	75.74	79.50	81.55	90.61	169.53
Ru	$K\beta_3$		7	8	44	6	21.631	4.01147	6		17.33	17.67	23.33	30.63	44.30	54.19	54.63	56.18	64.67	73.46	75.78	79.54	81.59	90.65	170.06
Pu	$L\beta_3$		6	6	94	6	18.537	4.01226	5		17.33	17.67	23.33	30.63	44.31	54.20	54.64	56.19	64.68	73.47	75.79	79.56	81.61	90.68	170.33
Tl	M_1-N_3		1	1	81	6	3.089	4.01300	3		17.33	17.67	23.34	30.64	44.32	54.21	54.65	56.20	64.70	73.49	75.81	79.57	81.62	90.70	170.58
Ra	$L\beta_3$		5	6	88	6	15.442	4.01365	5		17.34	17.68	23.34	30.64	44.32	54.22	54.66	56.21	64.71	73.50	75.83	79.59	81.64	90.72	170.81
Bk	$L\beta_2$		6	20	97	3	18.529	4.01400			17.34	17.68	23.35	30.65	44.33	54.22	54.67	56.21	64.71	73.51	75.83	79.60	81.65	90.73	170.93
W	$L\beta_{17}$	B	3	.01	74	6	9.260	4.01610	4		17.35	17.69	23.36	30.66	44.35	54.25	54.70	56.25	64.75	73.55	75.88	79.65	81.70	90.79	171.72
Pd	$L\beta_6$		1	1	46	6	3.087	4.01620	4		17.35	17.69	23.36	30.66	44.35	54.26	54.70	56.25	64.75	73.56	75.88	79.65	81.70	90.79	171.76
Cs	$K\alpha_{1,2}$		10	150	55	6	30.851	4.01805	6		17.36	17.70	23.37	30.68	44.37	54.28	54.73	56.28	64.79	73.60	75.92	79.69	81.75	90.84	172.53
Nd	$L\beta_7$		2	.1	60	6	6.170	4.01840	4		17.36	17.70	23.37	30.68	44.38	54.29	54.73	56.28	64.79	73.60			81.76	90.85	172.68
Ra	$L\alpha_1$		4	100	88	6	12.338	4.01892	5		17.36	17.70	23.37	30.68	44.38	54.29	54.74	56.29	64.80	73.61	75.94	79.72	81.77	90.87	172.92
Er	$L\gamma_6$		3	.01	68	6	9.253	4.01910	4		17.36	17.70	23.38	30.69	44.39	54.30	54.74	56.29	64.81	73.62	75.95	79.72	81.78	90.87	173.00
Cf	$L\alpha_2$		5	10	98	3	15.418	4.02000			17.36	17.71	23.38	30.69	44.40	54.31	54.75	56.31	64.82	73.64	75.97	79.74	81.80	90.90	173.44
Ga	$K\alpha_1$		3	100	31	6	9.250	4.02025	6		17.36	17.71	23.38	30.69	44.40	54.31	54.76	56.31	64.83	73.64	75.97	79.75	81.80	90.91	173.56
Pa	$M\alpha_1$		1	100	91	6	3.082	4.02200	3		17.37	17.71	23.39	30.71	44.42	54.34	54.78	56.34	64.86	73.68	76.01	79.79	81.85	90.96	174.52
Ga	$K\alpha_{1,2}$		3	150	31	6	9.241	4.02415	5		17.38	17.72	23.41	30.72	44.45	54.37	54.82	56.37	64.90	73.73	76.06	79.84	81.90	91.02	176.01
Tl	Lt	B	3	.01	81	6	9.240	4.02462	5		17.38	17.73	23.41	30.73	44.45	54.38	54.82	56.38	64.91	73.74	76.07	79.85	81.91	91.03	176.40
Lu	$L\beta_5$		3	.1	71	6	9.238	4.02549	5		17.39	17.73	23.41	30.74	44.46	54.39	54.84	56.39	64.92	73.75	76.09	79.87	81.93	91.06	177.31
Lu	$L\beta_{10}$	B	3	.01	71	6	9.230	4.02900	4		17.40	17.75	23.43	30.76	44.50	54.44	54.89	56.44	64.99	73.83	76.17	79.96	82.02	91.16	
Pb	$L\beta_4$		4	4	82	6	12.304	4.03000	4		17.41	17.75	23.44	30.77	44.51	54.46	54.90	56.46	65.00	73.85	76.19	79.98	82.04	91.19	
Er	Ll		2	2	68	6	6.152	4.03000	3		17.41	17.75	23.44	30.77	44.51	54.46	54.90	56.46	65.00	73.85			82.04	91.19	
Ga	$K\alpha_2$		3	50	31	6	9.223	4.03197	5		17.42	17.76	23.45	30.79	44.54	54.49	54.93	56.49	65.04	73.89	76.23	80.03	82.09	91.25	
Nd	$L\beta_9$	B	2	.01	60	6	6.147	4.03300	4		17.42	17.76	23.46	30.79	44.55	54.50	54.95	56.50	65.06	73.92			82.12	91.28	
Pd	$L\beta_3$		1	11	46	6	3.072	4.03460	4		17.43	17.77	23.47	30.81	44.57	54.52	54.97	56.53	65.09	73.95	76.29	80.09	82.16	91.32	
Pa	$M\alpha_2$		1	100	91	6	3.072	4.03500	3		17.43	17.77	23.47	30.81	44.57	54.53	54.98	56.54	65.10	73.96	76.30	80.10	82.17	91.34	
Lu	L_3-$O_{2,3}$	B	3	.01	71	6	9.215	4.03572	5		17.43	17.78	23.47	30.82	44.58	54.54	54.99	56.55	65.11	73.97	76.32	80.12	82.19	91.36	
Ta	$L\beta_4$		3	4	73	6	9.211	4.03743	5		17.44	17.78	23.48	30.83	44.60	54.57	55.01	56.57	65.14	74.01	76.36	80.16	82.23	91.41	
Pr	$L\gamma_5$		2	.1	59	6	6.135	4.04100	4		17.45	17.80	23.50	30.86	44.64	54.62	55.06	56.63	65.20	74.09			82.32	91.51	
Ac	$L\gamma_1$	H	6	10	89	6	18.405	4.04106	5		17.46	17.80	23.50	30.86	44.64	54.62	55.07	56.63	65.21	74.09	76.44	80.24	82.32	91.51	
Tl	$L\beta_2$		4	20	81	6	12.270	4.04124	5		17.46	17.80	23.51	30.86	44.64	54.62	55.07	56.63	65.21	74.09	76.44	80.25	82.32	91.52	
Rh	$L\gamma_5$		1	.1	45	6	3.064	4.04510	4		17.47	17.82	23.53	30.89	44.69	54.68	55.13	56.69	65.28	74.17	76.53	80.34	82.42	91.63	

El	Line	C	N	I	Z	R	KeV	Lambda	P 10^{-}	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Pb	AM_3	H	1		82	6	3.063	4.04700	3		16.39	17.48	17.83	23.54	30.90	44.71	54.71	55.15	56.72	65.31	74.21	76.57	80.39	82.47	91.68
Ce	$L\gamma_6$		2	.1	58	6	6.125	4.04740	4		16.39	17.48	17.83	23.54	30.91	44.72	54.71	55.16	56.72	65.32	74.22			82.48	91.70
Nd	$L\beta_{10}$	B	2	.01	60	6	6.125	4.04740	4		16.39	17.48	17.83	23.54	30.91	44.72	54.71	55.16	56.72	65.32	74.22			82.48	91.70
Cs	$K\alpha_2$		10	50	55	6	30.620	4.04835	6		16.40	17.49	17.83	23.55	30.91	44.73	54.73	55.17	56.74	65.34	74.24	76.60	80.42	82.50	91.72
Lu	$L\beta_7$		3	.1	71	6	9.186	4.04847	5		16.40	17.49	17.83	23.55	30.91	44.73	54.73	55.18	56.74	65.34	74.25	76.60	80.42	82.50	91.73
Pb	Ll		3	3	82	6	9.183	4.04970	5		16.40	17.49	17.84	23.56	30.92	44.74	54.75	55.19	56.76	65.36	74.27	76.63	80.45	82.53	91.76
8k	$L\alpha_1$		5	100	97	3	15.304	4.05000			16.40	17.49	17.84	23.56	30.93	44.75	54.75	55.20	56.76	65.37	74.28	76.64	80.46	82.54	91.77
Tc	$K\alpha_1$	H	6	100	43	6	18.364	4.05012	5		16.40	17.49	17.84	23.56	30.93	44.75	54.75	55.20	56.77	65.37	74.28	76.64	80.46	82.54	91.78
Hf	L_3-N_3	B	3	.01	72	6	9.179	4.05159	5		16.41	17.50	17.85	23.57	30.94	44.77	54.77	55.22	56.79	65.40	74.31	76.67	80.50	82.58	91.82
Pu	$L\gamma_1$		7	10	94	6	21.414	4.05217	6		16.41	17.50	17.85	23.57	30.94	44.77	54.78	55.23	56.80	65.41	74.33	76.68	80.51	82.59	91.84
Ra	$L\gamma_3$		6	2	88	6	18.354	4.05228	5		16.41	17.50	17.85	23.57	30.94	44.77	54.78	55.23	56.80	65.41	74.33	76.69	80.51	82.60	91.84
Ir	$L\alpha_1$		3	100	77	6	9.174	4.05384	5		16.42	17.51	17.86	23.58	30.96	44.79	54.81	55.25	56.82	65.44	74.36	76.72	80.55	82.64	91.88
Au	Ls	B	3	.01	79	6	9.173	4.05393	5		16.42	17.51	17.86	23.58	30.96	44.79	54.81	55.26	56.82	65.44	74.36	76.72	80.55	82.64	91.89
Tc	AL_1	H	1		43	6	3.055	4.05800	3		16.43	17.53	17.87	23.60	30.99	44.84	54.87	55.32	56.89	65.51	74.45	76.81	80.65	82.74	92.01
Tc	$K\alpha_{1,2}$	H	6	150	43	6	18.325	4.05872	5		16.44	17.53	17.88	23.61	31.00	44.85	54.88	55.33	56.90	65.53	74.47	76.83	80.67	82.76	92.03
Hf	$L\beta_3$		3	6	72	6	9.162	4.05900	5		16.44	17.53	17.88	23.61	31.00	44.85	54.88	55.33	56.90	65.53	74.47	76.84	80.67	82.76	92.04
Tl	$L\beta_1$		4	50	81	6	12.211	4.06052	5		16.44	17.54	17.89	23.62	31.01	44.87	54.90	55.35	56.93	65.56	74.50	76.87	80.71	82.80	92.08
Te	$K\alpha_1$		9	100	52	6	27.468	4.06165	6		16.45	17.54	17.89	23.63	31.02	44.88	54.92	55.37	56.94	65.58	74.53	76.90	80.74	82.83	92.11
Bi	$L\gamma_1$		5	10	83	6	15.245	4.06555	5		16.47	17.56	17.91	23.65	31.05	44.93	54.98	55.43	57.00	65.65	74.61	76.98	80.83	82.93	92.23
Ra	$L\alpha_2$		4	10	88	6	12.194	4.06624	5		16.47	17.56	17.91	23.65	31.05	44.94	54.99	55.44	57.01	65.66	74.63	77.00	80.85	82.94	92.25
Pu	$L\beta_1$		6	50	94	6	18.291	4.06632	5		16.47	17.57	17.91	23.65	31.05	44.94	54.99	55.44	57.01	65.66	74.63	77.00	80.85	82.95	92.25
Np	$L\gamma_3$		7	2	93	6	21.336	4.06700	4		16.47	17.57	17.91	23.66	31.06	44.94	55.00	55.45	57.02	65.68	74.64	77.02	80.87	82.96	92.27
Tm	$L\gamma_5$		3	.1	69	6	9.143	4.06740	4		16.47	17.57	17.92	23.66	31.06	44.95	55.00	55.46	57.03	65.68	74.65	77.03	80.87	82.97	92.28
Ra	$L\beta_1$		5	50	88	6	15.233	4.06875	5		16.48	17.58	17.92	23.67	31.07	44.97	55.02	55.48	57.05	65.71	74.68	77.06	80.91	83.01	92.32
Pb	M_3-$O_{4,5}$		1	1	82	6	3.046	4.06900	3		16.48	17.58	17.92	23.67	31.08	44.97	55.03	55.48	57.06	65.71	74.69	77.06	80.91	83.01	92.33
Os	AM_1	H	1		76	6	3.045	4.07100	3		16.49	17.59	17.93	23.68	31.09	44.99	55.06	55.51	57.09	65.75	74.73	77.11	80.96	83.06	92.39
Pd	$L\beta_4$		1	5	46	6	3.045	4.07110	4		16.49	17.59	17.93	23.68	31.09	44.99	55.06	55.51	57.09	65.75	74.73	77.11	80.96	83.07	92.39
Sn	Ll		1	7	50	6	3.044	4.07165	5		16.49	17.59	17.94	23.69	31.10	45.00	55.07	55.52	57.10	65.76	74.74	77.12	80.98	83.08	92.41
Nd	$L\beta_{2,15}$		2	20	60	6	6.088	4.07200	4		16.49	17.59	17.94	23.69	31.10	45.00	55.07	55.52	57.10	65.77	74.75			83.09	92.42
Pb	$L\gamma_3$		5	2	82	6	15.215	4.07350	4		16.50	17.60	17.94	23.70	31.11	45.02	55.09	55.55	57.12	65.79	74.78	77.16	81.02	83.13	92.46
Te	$K\alpha_{1,2}$		9	150	52	6	27.377	4.07512	6		16.50	17.60	17.95	23.71	31.12	45.04	55.12	55.57	57.15	65.82	74.82	77.20	81.06	83.17	92.51
Tc	$K\alpha_2$	H	6	50	43	6	18.248	4.07592	5		16.51	17.61	17.95	23.71	31.13	45.05	55.13	55.58	57.16	65.84	74.84	77.22	81.08	83.19	92.53
8f	L_3-N_2	B	3	.01	72	6	9.122	4.07661	5		16.51	17.61	17.96	23.71	31.14	45.06	55.14	55.59	57.17	65.85	74.85	77.23	81.10	83.20	92.55
Sb	$K\beta_2$	D	10	5	51	6	30.388	4.07929	6		16.52	17.62	17.97	23.73	31.16	45.09	55.18	55.63	57.21	65.90	74.91	77.29	81.16	83.27	92.63
Pd	$K\beta_2$		8	3	46	6	24.295	4.08182	6		16.53	17.63	17.98	23.75	31.18	45.12	55.22	55.67	57.25	65.95	74.96	77.35	81.22	83.33	92.71
La	$L\gamma_3$		2	1	57	6	6.073	4.08200	4		16.53	17.63	17.98	23.75	31.18	45.12	55.22	55.67	57.25	65.95	74.97			83.34	92.71
Rb	$K\beta_2$		5	3	37	6	15.183	4.08225	5		16.53	17.63	17.98	23.75	31.18	45.12	55.22	55.68	57.26	65.95	74.97	77.36	81.23	83.34	92.72
Pm	$L\beta_3$		2	6	61	6	6.070	4.08420	4		16.54	17.64	17.99	23.76	31.19	45.15	55.25	55.70	57.29	65.99	75.01			83.39	92.77
Ir	$L\alpha_2$		3	10	77	6	9.098	4.08750	5		16.55	17.66	18.01	23.78	31.22	45.18	55.30	55.75	57.34	66.05	75.08	77.48	81.36	83.47	92.87
Pu	Ll		4	3	94	6	12.122	4.09040	4		16.57	17.67	18.02	23.80	31.24	45.22	55.34	55.80	57.38	66.10	75.15	77.54	81.43	83.55	92.96
In	$K\beta_1$		9	19	49	6	27.271	4.09090	6		16.57	17.67	18.02	23.80	31.25	45.22	55.35	55.80	57.39	66.11	75.16	77.55	81.44	83.56	92.97
La	$L\gamma_2$		2	1	57	6	6.059	4.09200	4		16.57	17.68	18.03	23.81	31.26	45.24	55.37	55.82	57.41	66.13	75.18			83.59	93.00
Er	$L\gamma_1$		3	5	68	6	9.087	4.09230	4		16.57	17.68	18.03	23.81	31.26	45.24	55.37	55.82	57.41	66.14	75.19	77.58	81.47	83.59	93.01
8o	$L\gamma_3$		3	1	67	6	9.086	4.09290	4		16.58	17.68	18.03	23.81	31.26	45.25	55.38	55.83	57.42	66.15	75.20	77.60	81.49	83.61	93.03
Pt	AM_2		1		78	6	3.029	4.09300	3		16.58	17.68	18.03	23.81	31.26	45.25	55.38	55.84	57.42	66.15	75.20	77.60	81.49	83.61	93.03
Gd	$L\alpha_1$		2	100	64	6	6.056	4.09360	4		16.58	17.68	18.03	23.81	31.27	45.25	55.39	55.84	57.43	66.16	75.22			83.63	93.05
In	$K\beta_3$		9	8	49	6	27.233	4.09663	6		16.59	17.70	18.05	23.83	31.29	45.29	55.43	55.89	57.48	66.22	75.28	77.68	81.58	83.70	93.14
In	$K\alpha_1$		8	100	49	6	24.206	4.09690	6		16.59	17.70	18.05	23.83	31.29	45.29	55.44	55.89	57.48	66.22	75.29	77.69	81.58	83.71	93.15
Ce	$L\gamma_1$		2	5	58	6	6.051	4.09740	4		16.60	17.70	18.05	23.84	31.30	45.30	55.45	55.90	57.49	66.23	75.30			83.72	93.16
Pd	$K\alpha_1$		7	100	46	6	21.174	4.09813	6		16.60	17.70	18.05	23.84	31.30	45.31	55.46	55.91	57.50	66.24	75.31	77.72	81.61	83.74	93.19
Gd	Ln		2	1	64	6	6.049	4.09880	4		16.60	17.71	18.06	23.85	31.31	45.32	55.47	55.92	57.51	66.26	75.33			83.76	93.21
Os	$L\gamma_1$		4	10	76	6	12.093	4.10012	5		16.61	17.71	18.06	23.85	31.32	45.33	55.49	55.94	57.53	66.28	75.36	77.76	81.66	83.79	93.24
Te	$K\alpha_2$		9	50	52	6	27.197	4.10206	6		16.61	17.72	18.07	23.86	31.33	45.35	55.51	55.97	57.56	66.31	75.40	77.80	81.71	83.84	93.30
Re	$L\gamma_3$		4	2	75	6	12.080	4.10452	5		16.62	17.73	18.08	23.88	31.35	45.38	55.55	56.01	57.60	66.36	75.45	77.86	81.77	83.90	93.38
Bi	M_3-O_1		1	.5	83	6	3.020	4.10500	3		16.63	17.73	18.08	23.88	31.36	45.39	55.56	56.01	57.61	66.37	75.46	77.87	81.78	83.91	93.39
Pd	$K\alpha_{1,2}$		7	150	46	6	21.121	4.10833	6		16.64	17.75	18.10	23.90	31.38	45.43	55.61	56.06	57.66	66.43	75.53	77.95	81.86	84.00	93.49
In	$K\alpha_{1,2}$		8	150	49	6	24.136	4.10872	6		16.64	17.75	18.10	23.90	31.39	45.43	55.61	56.07	57.66	66.44	75.54	77.95	81.87	84.01	93.50
Ho	$L\gamma_2$		3	1	67	6	9.049	4.10940	4		16.64	17.75	18.10	23.91	31.39	45.44	55.62	56.08	57.67	66.45	75.56	77.97	81.89	84.02	93.52
Cm	$L\beta_2$		6	20	96	3	18.096	4.11000			16.65	17.76	18.11	23.91	31.40	45.45	55.63	56.09	57.68	66.46	75.57	77.98	81.90	84.04	93.54
Bk	$L\alpha_2$		5	10	97	3	15.080	4.11000			16.65	17.76	18.11	23.91	31.40	45.45	55.63	56.09	57.68	66.46	75.57	77.98	81.90	84.04	93.54
Lu	$L\beta_2$		3	1	71	6	9.047	4.11036	5		16.65	17.76	18.11	23.91	31.40	45.45	55.64	56.09	57.69	66.47	75.58	77.99	81.91	84.05	93.55
Lu	$L\beta_{15}$		3	20	71	6	9.038	4.11450	4		16.66	17.77	18.13	23.94	31.43	45.50	55.70	56.15	57.75	66.54	75.67	78.09	82.01	84.15	93.67
Gd	$L\alpha_2$		2	10	64	6	6.024	4.11560	4		16.67	17.78	18.13	23.94	31.44	45.51	55.71	56.17	57.77	66.56	75.69			84.18	93.70
Tl	M_2-N_4		1	1	81	6	3.012	4.11600	3		16.67	17.78	18.13	23.95	31.44	45.52	55.72	56.18	57.78	66.57	75.70	78.12	82.05	84.19	93.72
Am	$L\beta_4$		6	4	95	6	18.060	4.11834	5		16.68	17.79	18.14	23.96	31.46	45.54	55.75	56.21	57.81	66.61	75.75	78.17	82.10	84.25	93.79

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Cf	$L\gamma_1$		8	10	98	3	24.070	4.12000			16.69	17.80	18.15	23.97	31.48	45.56	55.78	56.24	57.84	66.64	75.79	78.21	82.14	84.29	93.83
Re	Ln		3	1	75	6	9.026	4.12026	5		16.69	17.80	18.15	23.97	31.48	45.57	55.78	56.24	57.84	66.65	75.79	78.22	82.15	84.30	93.84
Fr	$L\alpha_1$	H	4	100	87	6	12.029	4.12196	5		16.70	17.81	18.16	23.98	31.49	45.59	55.81	56.27	57.87	66.68	75.83	78.25	82.19	84.34	93.89
Hf	$L\beta_1$		3	50	72	6	9.021	4.12230	5		16.70	17.81	18.16	23.98	31.49	45.59	55.81	56.27	57.87	66.68	75.84	78.26	82.20	84.35	93.90
Hf	$L\beta_6$		3	.1	72	6	9.021	4.12230	5		16.70	17.81	18.16	23.98	31.49	45.59	55.81	56.27	57.87	66.68	75.84	78.26	82.20	84.35	93.90
Dy	$L\gamma_4$		3	.1	66	6	9.018	4.12377	5		16.70	17.82	18.17	23.99	31.50	45.61	55.83	56.29	57.90	66.71	75.87	78.29	82.23	84.39	93.95
Pd	$K\alpha_2$		7	50	46	6	21.017	4.12875	6		16.72	17.84	18.19	24.02	31.54	45.67	55.91	56.37	57.97	66.80	75.98	78.41	82.36	84.51	94.09
Rh	AL_3		1		45	6	3.002	4.12990	4		16.73	17.84	18.19	24.03	31.55	45.68	55.92	56.38	57.99	66.82	76.00	78.43	82.38	84.54	94.13
Hg	Lt	F	3	.01	80	6	9.004	4.13010	4		16.73	17.84	18.19	24.03	31.55	45.68	55.93	56.39	57.99	66.83	76.01	78.44	82.39	84.54	94.14
Rh	$L\beta_{2,15}$		1	25	45	6	3.001	4.13100	4		16.73	17.85	18.20	24.04	31.56	45.69	55.94	56.40	58.01	66.84	76.02	78.46	82.41	84.57	94.16
Tc	$K\beta_2$	H	7	3	43	6	21.002	4.13168	5		16.74	17.85	18.20	24.04	31.57	45.70	55.95	56.41	58.02	66.86	76.04	78.47	82.43	84.58	94.18
In	$K\alpha_2$		8	50	49	6	23.998	4.13235	6		16.74	17.85	18.20	24.04	31.57	45.71	55.96	56.42	58.03	66.87	76.05	78.49	82.44	84.60	94.20
Hg	$L\beta_3$		4	6	80	6	11.993	4.13432	5		16.75	17.86	18.21	24.06	31.59	45.73	55.99	56.45	58.06	66.90	76.10	78.53	82.49	84.65	94.26
Np	$L\beta_3$	H	6	6	93	6	17.986	4.13520	5		16.75	17.87	18.22	24.06	31.59	45.74	56.00	56.46	58.07	66.92	76.12	78.55	82.51	84.67	94.29
Th	$M\alpha_1$		1	100	90	6	2.996	4.13810	4		16.76	17.88	18.23	24.08	31.62	45.77	56.04	56.51	58.12	66.97	76.18	78.62	82.58	84.75	94.37
Pr	$L\beta_3$	H	5	10	87	6	14.973	4.13945	5		16.77	17.88	18.24	24.09	31.63	45.79	56.06	56.53	58.14	67.00	76.21	78.65	82.62	84.78	94.41
Zr	$K\beta_2$		6	4	40	6	17.967	4.13958	5		16.77	17.88	18.24	24.09	31.63	45.79	56.07	56.53	58.14	67.00	76.21	78.65	82.62	84.78	94.42
Cr	$K\beta_5$	B	2	.03	24	6	5.986	4.14174	5	4	16.78	17.89	18.25	24.10	31.65	45.82	56.10	56.56	58.17	67.04	76.26			84.84	94.48
Cu	$K\beta_5$	B	3	.03	29	6	8.976	4.14327	5		16.78	17.90	18.25	24.11	31.66	45.83	56.12	56.58	58.20	67.07	76.29	78.74	82.71	84.88	94.53
Rb	$K\beta_1$		5	16	37	6	14.959	4.14340	5		16.78	17.90	18.25	24.11	31.66	45.84	56.12	56.58	58.20	67.07	76.29	78.74	82.71	84.88	94.53
Y	$K\alpha_1$		5	100	39	6	14.956	4.14420	5		16.79	17.90	18.26	24.11	31.66	45.85	56.13	56.60	58.21	67.09	76.31	78.76	82.73	84.90	94.56
Cm	$L\alpha_1$		5	100	96	3	14.953	4.14500			16.79	17.91	18.26	24.12	31.67	45.86	56.15	56.61	58.22	67.10	76.33	78.78	82.75	84.92	94.58
Rb	$K\beta_3$		5	8	37	6	14.949	4.14605	5		16.79	17.91	18.27	24.12	31.68	45.87	56.16	56.62	58.24	67.12	76.35	78.80	82.78	84.95	94.61
Pd	$L\beta_1$		1	42	46	6	2.990	4.14622	5		16.79	17.91	18.27	24.13	31.68	45.87	56.16	56.63	58.24	67.12	76.36	78.80	82.78	84.95	94.62
Th	$M\alpha_2$		1	100	90	6	2.986	4.15100	3		16.81	17.93	18.29	24.15	31.72	45.93	56.23	56.70	58.31	67.21	76.46	78.91	82.90	85.07	94.76
Ba	$L\gamma_4$		2	.1	56	6	5.972	4.15120	4		16.81	17.93	18.29	24.15	31.72	45.93	56.24	56.70	58.32	67.21	76.46			85.08	94.77
Y	$K\alpha_{1,2}$		5	150	39	6	14.931	4.15121	5		16.81	17.93	18.29	24.16	31.72	45.93	56.24	56.70	58.32	67.21	76.46	78.92	82.90	85.08	94.77
Yb	$L\beta_9$	B	3	.01	70	6	8.958	4.15140	4		16.82	17.94	18.29	24.16	31.72	45.93	56.24	56.70	58.32	67.22	76.47	78.92	82.91	85.08	94.77
Tl	Ll		3	3	81	6	8.952	4.15431	5		16.83	17.95	18.30	24.17	31.74	45.96	56.28	56.75	58.37	67.27	76.53	78.99	82.98	85.16	94.86
Ag	$L\alpha_1$		1	100	47	6	2.984	4.15443	5		16.83	17.95	18.30	24.17	31.75	45.97	56.28	56.75	58.37	67.27	76.53	78.99	82.98	85.16	94.86
Tl	$L\beta_4$		4	4	81	6	11.929	4.15672	5		16.84	17.96	18.31	24.19	31.76	45.99	56.32	56.78	58.40	67.32	76.58	79.04	83.04	85.22	94.93
Br	$K\alpha_1$		4	100	35	6	11.922	4.15896	5		16.85	17.97	18.32	24.20	31.78	46.02	56.35	56.82	58.44	67.36	76.63	79.09	83.09	85.27	95.00
Hg	$L\beta_2$		4	20	80	6	11.922	4.15900	5		16.85	17.97	18.32	24.20	31.78	46.02	56.35	56.82	58.44	67.36	76.63	79.09	83.09	85.28	95.00
Ta	$L\beta_{17}$	B	3	.01	73	6	8.941	4.15920	4		16.85	17.97	18.32	24.20	31.78	46.02	56.36	56.82	58.44	67.36	76.64	79.10	83.10	85.28	95.01
Pm	$L\beta_1$		2	50	61	6	5.960	4.15940	4		16.85	17.97	18.33	24.20	31.78	46.02	56.36	56.82	58.44	67.36	76.64			85.29	95.01
Yb	$L\beta_5$		3	.1	70	6	8.938	4.16088	5		16.85	17.98	18.33	24.21	31.80	46.04	56.38	56.84	58.47	67.39	76.67	79.14	83.14	85.32	95.06
Ag	$L\alpha_2$		1	10	47	6	2.978	4.16294	5		16.86	17.99	18.34	24.22	31.81	46.07	56.41	56.88	58.50	67.43	76.72	79.18	83.19	85.38	95.12
Xe	$K\alpha_1$	H	10	100	54	6	29.774	4.16340	5		16.86	17.99	18.34	24.23	31.82	46.07	56.42	56.88	58.51	67.44	76.73	79.19	83.20	85.39	95.13
Pd	$K\beta_1$		8	18	46	6	23.815	4.16416	6		16.87	17.99	18.35	24.23	31.82	46.08	56.43	56.89	58.52	67.45	76.75	79.21	83.22	85.41	95.16
Br	$K\alpha_{1,2}$		4	150	35	6	11.907	4.16440	5		16.87	17.99	18.35	24.23	31.82	46.08	56.43	56.90	58.52	67.46	76.75	79.22	83.22	85.41	95.16
Y	$K\alpha_2$		5	50	39	6	14.880	4.16525	5		16.87	18.00	18.35	24.24	31.83	46.09	56.44	56.91	58.53	67.47	76.77	79.24	83.24	85.43	95.19
Ra	$L\gamma_1$		6	10	88	6	17.845	4.16778	5		16.88	18.01	18.36	24.25	31.85	46.12	56.48	56.95	58.57	67.52	76.82	79.29	83.31	85.50	95.26
Pt	Ls	B	3	.01	78	6	8.921	4.16850	4		16.89	18.01	18.37	24.26	31.86	46.13	56.49	56.96	58.58	67.53	76.84	79.31	83.32	85.52	95.29
Pd	$K\beta_3$		8	8	46	6	23.787	4.16898	6		16.89	18.01	18.37	24.26	31.86	46.14	56.50	56.97	58.59	67.54	76.85	79.32	83.34	85.53	95.30
Fr	$L\alpha_2$	H	4	10	87	6	11.893	4.16920	5		16.89	18.01	18.37	24.26	31.86	46.14	56.50	56.97	58.59	67.54	76.86	79.33	83.34	85.53	95.31
Yb	L_3-$O_{2,3}$	B	3	.01	70	6	8.919	4.16940	4		16.89	18.01	18.37	24.26	31.86	46.14	56.51	56.97	58.60	67.55	76.86	79.33	83.35	85.54	95.31
Cr	$K\beta_{1,3}$		2	18	24	6	5.946	4.16974	5	4	16.89	18.02	18.37	24.26	31.87	46.14	56.51	56.98	58.60	67.55	76.87			85.55	95.32
Sb	$K\beta_1$		10	20	51	6	29.721	4.17085	6		16.89	18.02	18.38	24.27	31.87	46.16	56.53	56.99	58.62	67.57	76.89	79.36	83.38	85.58	95.36
Np	Ll		4	3	93	6	11.887	4.17120	4		16.90	18.02	18.38	24.27	31.88	46.16	56.53	57.00	58.63	67.58	76.90	79.37	83.39	85.59	95.37
Ho	Ll		2	2	67	6	5.942	4.17200	4		16.90	18.03	18.38	24.28	31.88	46.17	56.54	57.01	58.64	67.60	76.92			85.61	95.39
Os	$L\alpha_1$		3	100	76	6	8.910	4.17363	5		16.91	18.03	18.39	24.29	31.90	46.19	56.57	57.03	58.66	67.63	76.95	79.43	83.45	85.65	95.44
Yb	$L8_{10}$	B	3	.01	70	6	8.908	4.17450	4		16.91	18.04	18.39	24.29	31.90	46.20	56.58	57.05	58.68	67.64	76.97	79.45	83.47	85.67	95.47
Br	$K\alpha_2$		4	50	35	6	11.876	4.17528	5		16.91	18.04	18.40	24.30	31.91	46.21	56.59	57.06	58.69	67.66	76.99	79.46	83.49	85.69	95.49
Np	$L\gamma_1$		7	10	93	6	20.781	4.17549	6		16.91	18.04	18.40	24.30	31.91	46.21	56.60	57.06	58.69	67.66	76.99	79.47	83.50	85.69	95.50
Hf	$L\beta_4$		3	4	72	6	8.904	4.17660	5		16.92	18.05	18.40	24.30	31.92	46.22	56.61	57.08	58.71	67.68	77.02	79.50	83.52	85.72	95.53
Cu	$K\beta_{1,3}$		3	20	29	6	8.904	4.17665	6		16.92	18.05	18.40	24.31	31.92	46.23	56.61	57.08	58.71	67.68	77.02	79.50	83.52	85.72	95.53
Ra	$L\beta_2$		5	20	88	6	14.839	4.17685	5		16.92	18.05	18.40	24.31	31.92	46.23	56.62	57.08	58.71	67.69	77.02	79.50	83.53	85.73	95.54
Ho	$L\gamma_6$		3	.01	67	6	8.903	4.17690	4		16.92	18.05	18.40	24.31	31.92	46.23	56.62	57.08	58.71	67.69	77.02	79.50	83.53	85.73	95.54
Sb	$K\beta_3$		10	9	51	6	29.674	4.17737	6		16.92	18.05	18.40	24.31	31.92	46.23	56.62	57.09	58.72	67.69	77.03	79.51	83.54	85.74	95.55
Cu	$K\beta_3$		3	6	29	6	8.901	4.17780	4		16.92	18.05	18.41	24.31	31.93	46.24	56.63	57.10	58.73	67.70	77.04	79.52	83.55	85.75	95.57
Xe	$K\alpha_{1,2}$	H	10	150	54	6	29.666	4.17850	5		16.93	18.05	18.41	24.32	31.93	46.25	56.64	57.11	58.74	67.72	77.06	79.54	83.57	85.77	95.59
Ru	AL_2		1		44	6	2.966	4.18000	3		16.93	18.06	18.42	24.33	31.95	46.26	56.66	57.13	58.76	67.74	77.09	79.57	83.61	85.81	95.63
Ru	$L\gamma_1$		1	1	44	6	2.964	4.18220	4		16.94	18.07	18.43	24.34	31.96	46.29	56.70	57.16	58.80	67.78	77.14	79.62	83.66	85.87	95.70
Pr	$L\beta_7$		2	.1	59	6	5.926	4.18380	4		16.95	18.08	18.43	24.35	31.98	46.31	56.72	57.19	58.82	67.81	77.17			85.91	95.75
Yb	$L\beta_7$		3	.1	70	6	8.887	4.18440	4		16.95	18.08	18.44	24.35	31.98	46.32	56.73	57.20	58.83	67.82	77.19	79.67	83.71	85.92	95.77

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Cd	$K\beta_2$		9	5	48	6	26.639	4.18795	6		16.96	18.09	18.45	24.37	32.01	46.36	56.78	57.25	58.88	67.89	77.26	79.75	83.80	86.01	95.87
U	$L\gamma_3$		7	2	92	6	20.709	4.19002	6		16.97	18.10	18.46	24.38	32.02	46.38	56.81	57.28	58.92	67.93	77.31	79.80	83.85	86.07	95.94
Np	$L\beta_1$		6	50	93	6	17.747	4.19087	6		16.98	18.11	18.46	24.39	32.03	46.39	56.82	57.29	58.93	67.94	77.33	79.82	83.87	86.09	95.96
Ar	$K\alpha_1$		1	100	18	6	2.957	4.19180	5		16.98	18.11	18.47	24.39	32.04	46.40	56.84	57.31	58.94	67.96	77.35	79.84	83.90	86.11	95.99
Ar	$K\alpha_{1,2}$		1	150	18	6	2.957	4.19278	5		16.98	18.12	18.47	24.40	32.05	46.41	56.85	57.32	58.96	67.98	77.37	79.86	83.92	86.14	96.02
Cd	Ln		1	1	48	6	2.956	4.19315	5		16.99	18.12	18.48	24.40	32.05	46.42	56.86	57.33	58.96	67.99	77.38	79.87	83.93	86.15	96.03
Hg	$L\beta_1$		4	50	80	6	11.821	4.19472	5		16.99	18.12	18.48	24.41	32.06	46.44	56.88	57.35	58.99	68.01	77.41	79.91	83.97	86.19	96.08
Ar	$K\alpha_2$		1	50	18	6	2.955	4.19474	5		16.99	18.12	18.48	24.41	32.06	46.44	56.88	57.35	58.99	68.01	77.41	79.91	83.97	86.19	96.08
Ho	$L\gamma_8$		3	.1	67	6	8.865	4.19490	4		16.99	18.13	18.48	24.41	32.06	46.44	56.88	57.35	58.99	68.02	77.42	79.91	83.97	86.19	96.09
Fr	$L\beta_1$	H	5	50	87	6	14.768	4.19700	5		17.00	18.13	18.49	24.43	32.08	46.46	56.91	57.38	59.02	68.06	77.46	79.96	84.02	86.24	96.15
Tl	AM_3	H	1		81	6	2.953	4.19800	3		17.01	18.14	18.50	24.43	32.09	46.48	56.93	57.40	59.04	68.07	77.48	79.98	84.05	86.27	96.18
Pb	$L\gamma_1$		5	10	82	6	14.762	4.19865	5		17.01	18.14	18.50	24.44	32.09	46.48	56.94	57.41	59.05	68.09	77.50	80.00	84.06	86.29	96.20
Pr	$L\beta_9$	B	2	.01	59	6	5.902	4.20080	4		17.02	18.15	18.51	24.45	32.11	46.51	56.97	57.44	59.08	68.13	77.55			86.34	96.27
Ra	$L8_4$		5	4	88	6	14.745	4.20355	5		17.03	18.16	18.52	24.46	32.13	46.54	57.01	57.48	59.13	68.18	77.61	80.11	84.18	86.41	96.35
Mn	$K\alpha_1$		2	100	25	6	5.898	4.20364	6	4	17.03	18.16	18.52	24.46	32.13	46.54	57.01	57.48	59.13	68.18	77.61			86.41	96.35
Lu	$L\beta_3$		3	6	71	6	8.845	4.20420	5		17.03	18.17	18.52	24.47	32.14	46.55	57.02	57.49	59.14	68.19	77.62	80.13	84.20	86.43	96.37
Cm	$L\alpha_2$		5	10	96	3	14.740	4.20500			17.03	18.17	18.53	24.47	32.14	46.56	57.03	57.50	59.15	68.20	77.64	80.14	84.22	86.45	96.39
Mn	$K\alpha_{1,2}$		2	150	25	6	5.894	4.20628	5	4	17.04	18.17	18.53	24.48	32.15	46.57	57.05	57.52	59.17	68.23	77.67			86.48	96.43
Tl	$L\gamma_3$		5	2	81	6	14.734	4.20650	5		17.04	18.18	18.53	24.48	32.15	46.58	57.05	57.53	59.17	68.23	77.67	80.18	84.26	86.49	96.44
Os	$L\alpha_2$		3	10	76	6	8.840	4.20702	5		17.04	18.18	18.54	24.48	32.16	46.58	57.06	57.53	59.18	68.24	77.68	80.19	84.27	86.50	96.45
Nd	$L\beta_6$		2	.1	60	6	5.892	4.20780	4		17.05	18.18	18.54	24.49	32.16	46.59	57.07	57.54	59.19	68.26	77.70			86.52	96.48
Am	$L\beta_2$		6	20	95	6	17.673	4.20834	6		17.05	18.18	18.54	24.49	32.17	46.60	57.08	57.55	59.20	68.27	77.71	80.22	84.30	86.53	96.49
Xe	$K\alpha_2$	H	10	50	54	6	29.453	4.20870	5		17.05	18.19	18.54	24.49	32.17	46.60	57.09	57.56	59.20	68.27	77.72	80.23	84.31	86.54	96.51
Tc	$K\beta_1$	H	7	16	43	6	20.615	4.20910	5		17.05	18.19	18.55	24.50	32.17	46.61	57.09	57.56	59.21	68.28	77.73	80.24	84.32	86.55	96.52
Zr	$K\beta_1$		6	18	40	6	17.665	4.21038	5		17.06	18.19	18.55	24.50	32.18	46.62	57.11	57.58	59.23	68.30	77.76	80.27	84.35	86.59	96.56
Mn	$K\alpha_2$		2	50	25	6	5.887	4.21156	5	4	17.06	18.20	18.56	24.51	32.19	46.63	57.13	57.60	59.25	68.32	77.78			86.62	96.59
Tc	$K\beta_3$	H	7	8	43	6	20.595	4.21316	5		17.07	18.20	18.56	24.52	32.21	46.65	57.15	57.63	59.27	68.35	77.82	80.33	84.42	86.66	96.64
Zr	$K8_3$		6	9	40	6	17.651	4.21368	5		17.07	18.21	18.57	24.52	32.21	46.66	57.16	57.63	59.28	68.36	77.83	80.34	84.43	86.67	96.66
Pr	$L\beta_{10}$	B	2	.01	59	6	5.883	4.21420	4		17.07	18.21	18.57	24.53	32.21	46.67	57.17	57.64	59.29	68.37	77.84			86.68	96.67
Tl	M_3-$O_{4,5}$		1	.5	81	6	2.940	4.21600	3		17.08	18.22	18.58	24.54	32.23	46.69	57.20	57.67	59.32	68.41	77.88	80.40	84.49	86.73	96.73
Er	$L\gamma_5$		3	.1	68	6	8.812	4.22010	4		17.10	18.24	18.59	24.56	32.26	46.73	57.26	57.73	59.38	68.48	77.97	80.49	84.59	86.84	96.85
Ce	$L\gamma_5$		2	.1	58	6	5.874	4.22060	4		17.10	18.24	18.60	24.56	32.26	46.74	57.26	57.74	59.39	68.49	77.98			86.85	96.87
Cf	$L\beta_1$		7	50	98	3	20.557	4.22100			17.10	18.24	18.60	24.57	32.27	46.75	57.27	57.74	59.40	68.50	77.99	80.51	84.62	86.86	96.88
Rn	$L\alpha_1$	H	4	100	86	6	11.725	4.22892	5		17.13	18.27	18.63	24.61	32.33	46.84	57.39	57.86	59.52	68.65	78.16	80.69	84.81	87.06	97.12
As	$K\beta_1$		4	15	33	6	11.724	4.22920	5		17.13	18.27	18.64	24.62	32.33	46.84	57.39	57.87	59.52	68.65	78.17	80.70	84.82	87.07	97.13
As	$K8_3$		4	7	33	6	11.718	4.23132	5		17.14	18.28	18.64	24.63	32.35	46.87	57.42	57.90	59.56	68.69	78.22	80.75	84.87	87.12	97.20
Sb	$K\alpha_1$		9	100	51	6	26.355	4.23318	6		17.15	18.29	18.65	24.64	32.36	46.89	57.45	57.92	59.58	68.72	78.26	80.79	84.92	87.17	97.26
Re	AM_1	H	1		75	6	2.926	4.23600	3		17.16	18.30	18.67	24.66	32.39	46.92	57.49	57.97	59.63	68.78	78.32	80.86	84.99	87.24	97.34
Pu	$L\beta_4$		6	4	94	6	17.553	4.23720	5		17.17	18.31	18.67	24.66	32.39	46.94	57.51	57.98	59.65	68.80	78.35	80.88	85.02	87.28	97.38
Pr	$L\beta_{2,15}$		2	20	59	6	5.849	4.23880	4		17.17	18.32	18.68	24.67	32.41	46.95	57.53	58.01	59.67	68.83	78.38			87.32	97.43
Sk	$L\gamma_1$		8	10	97	3	23.389	4.24000			17.18	18.32	18.68	24.68	32.42	46.97	57.55	58.03	59.69	68.85	78.41	80.95	85.09	87.35	97.47
Am	$L\alpha_1$		5	100	95	6	14.615	4.24093	6		17.18	18.33	18.69	24.69	32.42	46.98	57.57	58.04	59.70	68.87	78.43	80.97	85.11	87.37	97.49
Au	Lt	B	3	.01	79	6	8.769	4.24098	5		17.18	18.33	18.69	24.69	32.42	46.98	57.57	58.04	59.70	68.87	78.43	80.97	85.11	87.37	97.50
Rh	$L8_6$		1	3	45	6	2.922	4.24170	4		17.18	18.33	18.69	24.69	32.43	46.99	57.58	58.05	59.72	68.88	78.45	80.99	85.13	87.39	97.52
Eu	$L\alpha_1$		2	100	63	6	5.845	4.24180	4		17.18	18.33	18.69	24.69	32.43	46.99	57.58	58.05	59.72	68.88	78.45			87.39	97.52
Re	$L\gamma_1$		4	10	75	6	11.683	4.24396	5		17.19	18.34	18.70	24.70	32.45	47.01	57.61	58.09	59.75	68.92	78.50	81.04	85.18	87.45	97.59
Pb	M_3-O_1		1	.5	82	6	2.921	4.24400	3		17.19	18.34	18.70	24.70	32.45	47.02	57.61	58.09	59.75	68.93	78.50	81.04	85.18	87.45	97.59
Yb	$L8_{2,15}$		3	20	70	6	8.757	4.24650	5		17.20	18.35	18.71	24.72	32.47	47.04	57.65	58.12	59.79	68.97	78.55	81.10	85.25	87.52	97.67
Sb	$K\alpha_{1,2}$		9	150	51	6	26.271	4.24660	6		17.20	18.35	18.71	24.72	32.47	47.05	57.65	58.13	59.79	68.97	78.55	81.10	85.25	87.52	97.67
W	$L\gamma_3$		4	2	74	6	11.672	4.24800	5		17.21	18.36	18.72	24.73	32.48	47.06	57.67	58.15	59.81	69.00	78.58	81.13	85.28	87.55	97.71
Dy	$L\gamma_3$		3	1	66	6	8.752	4.24920	5		17.21	18.36	18.72	24.73	32.49	47.08	57.69	58.16	59.83	69.02	78.61	81.16	85.31	87.59	97.75
Ho	$L\gamma_1$		3	5	67	6	8.746	4.25220	4		17.23	18.37	18.74	24.75	32.51	47.11	57.73	58.21	59.88	69.08	78.68	81.23	85.39	87.66	97.84
Rh	$L\beta_3$		1	11	45	6	2.915	4.25220	4		17.23	18.37	18.74	24.75	32.51	47.11	57.73	58.21	59.88	69.08	78.68	81.23	85.39	87.66	97.84
Nd	$L\beta_3$		2	6	60	6	5.828	4.25360	4		17.23	18.38	18.74	24.76	32.52	47.13	57.75	58.23	59.90	69.10	78.71			87.70	97.89
Mo	$K\alpha_1$		6	100	42	6	17.476	4.25580	6		17.24	18.39	18.75	24.77	32.54	47.15	57.79	58.26	59.93	69.14	78.76	81.31	85.48	87.76	97.95
Lu	$L\beta_6$		3	.1	71	6	8.736	4.25670	4		17.25	18.39	18.76	24.78	32.55	47.16	57.80	58.28	59.95	69.16	78.78	81.34	85.50	87.78	97.98
Sn	$K8_2$		10	5	50	6	29.104	4.25915	6		17.26	18.41	18.77	24.79	32.57	47.19	57.84	58.31	59.99	69.21	78.83	81.39	85.56	87.84	98.06
Ir	AM_2	H	1		77	6	2.910	4.26000	3		17.26	18.41	18.77	24.80	32.57	47.20	57.85	58.33	60.00	69.22	78.85	81.41	85.58	87.87	98.08
U	$L8_3$		6	6	92	6	17.452	4.26174	5		17.27	18.42	18.78	24.81	32.59	47.22	57.87	58.35	60.03	69.25	78.89	81.45	85.63	87.91	98.14
Eu	$L\alpha_2$		2	10	63	6	5.816	4.26300	4		17.27	18.42	18.79	24.82	32.60	47.24	57.89	58.37	60.05	69.28	78.92			87.94	98.18
Eu	Ln		2	1	63	6	5.816	4.26300	4		17.27	18.42	18.79	24.82	32.60	47.24	57.89	58.37	60.05	69.28	78.92			87.94	98.18
W	Ln		3	1	74	6	8.723	4.26330	5		17.27	18.42	18.79	24.82	32.60	47.24	57.90	58.38	60.05	69.28	78.92	81.49	85.66	87.95	98.19
Mo	$K\alpha_{1,2}$		6	150	42	6	17.441	4.26438	6		17.28	18.43	18.79	24.82	32.61	47.25	57.91	58.39	60.07	69.30	78.95	81.51	85.69	87.98	98.22
Hg	Ll		3	3	80	6	8.720	4.26480	4		17.28	18.43	18.79	24.83	32.61	47.26	57.92	58.40	60.07	69.31	78.96	81.52	85.70	87.99	98.23
Dy	$L\gamma_2$		3	1	66	6	8.713	4.26834	5		17.29	18.45	18.81	24.85	32.64	47.30	57.97	58.45	60.13	69.38	79.03	81.60	85.79	88.08	98.34

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Tb	L_1-$O_{4,5}$	8	3	.01	65	6	8.712	4.26840	4		17.29	18.45	18.81	24.85	32.64	47.30	57.97	58.45	60.13	69.38	79.04	81.61	85.79	88.08	98.34
Ba	$L\gamma_3$		2	1	56	6	5.808	4.26840	4		17.29	18.45	18.81	24.85	32.64	47.30	57.97	58.45	60.13	69.38	79.04			88.08	98.34
U	Ll		4	3	92	6	11.616	4.26848	5		17.29	18.45	18.81	24.85	32.64	47.30	57.97	58.45	60.13	69.38	79.04	81.61	85.79	88.09	98.35
In	Ll		1	7	49	6	2.904	4.26873	5		17.29	18.45	18.81	24.85	32.64	47.31	57.98	58.46	60.14	69.38	79.04	81.61	85.80	88.09	98.35
Lu	$L\beta_1$		3	50	71	6	8.708	4.27077	5		17.30	18.46	18.82	24.86	32.66	47.33	58.01	58.49	60.17	69.42	79.09	81.66	85.85	88.14	98.42
Au	$L\beta_3$		4	6	79	6	11.608	4.27140	5		17.31	18.46	18.82	24.87	32.66	47.34	58.02	58.50	60.18	69.43	79.10	81.68	85.87	88.16	98.44
Rn	$L\beta_3$	H	5	10	86	6	14.509	4.27180	5		17.31	18.46	18.82	24.87	32.67	47.34	58.02	58.50	60.18	69.44	79.11	81.68	85.88	88.17	98.45
Sb	$K\alpha_2$		9	50	51	6	26.106	4.27344	6		17.31	18.47	18.83	24.88	32.68	47.36	58.05	58.53	60.21	69.47	79.15	81.72	85.92	88.21	98.50
Cd	$K\beta_1$		9	19	48	6	26.091	4.27594	6		17.32	18.48	18.84	24.89	32.70	47.39	58.09	58.57	60.25	69.52	79.20	81.78	85.98	88.28	98.58
Rn	$L\alpha_2$	H	4	10	86	6	11.596	4.27596	5		17.32	18.48	18.84	24.89	32.70	47.39	58.09	58.57	60.25	69.52	79.20	81.78	85.98	88.28	98.58
Ba	$L\gamma_2$		2	1	56	6	5.796	4.27740	4		17.33	18.48	18.85	24.90	32.71	47.41	58.11	58.59	60.27	69.55	79.23			88.32	98.62
Cd	$K\alpha_1$		8	100	48	6	23.170	4.28008	6		17.34	18.50	18.86	24.92	32.73	47.44	58.15	58.63	60.31	69.59	79.29	81.88	86.08	88.39	98.71
Rh	$K\beta_2$		8	4	45	6	23.169	4.28024	5		17.34	18.50	18.86	24.92	32.73	47.44	58.15	58.63	60.31	69.60	79.30	81.88	86.09	88.39	98.71
An	$L\beta_2$		4	20	79	6	11.583	4.28088	5		17.34	18.50	18.87	24.92	32.74	47.45	58.16	58.64	60.32	69.61	79.31	81.90	86.10	88.41	98.73
Mo	$K\alpha_2$		6	50	42	6	17.371	4.28154	6		17.35	18.50	18.87	24.93	32.74	47.46	58.17	58.65	60.33	69.62	79.33	81.91	86.12	88.42	98.75
Cd	$K\beta_3$		9	8	48	6	26.057	4.28157	6		17.35	18.50	18.87	24.93	32.74	47.46	58.17	58.65	60.34	69.62	79.33	81.91	86.12	88.43	98.75
Tb	$L\gamma_4$		3	.1	65	6	8.683	4.28280	4		17.35	18.51	18.87	24.93	32.75	47.47	58.19	58.67	60.35	69.65	79.35	81.94	86.15	88.46	98.79
La	$L\gamma_1$		2	5	57	6	5.788	4.28360	4		17.36	18.51	18.88	24.94	32.76	47.48	58.20	58.68	60.37	69.66	79.37			88.48	98.82
Ru	$L\gamma_5$		1	.1	44	6	2.891	4.28730	4		17.37	18.53	18.89	24.96	32.79	47.52	58.25	58.74	60.42	69.73	79.45	82.04	86.26	88.57	98.93
Rh	$L\beta_4$		1	5	45	6	2.890	4.28880	4		17.38	18.53	18.90	24.97	32.80	47.54	58.28	58.76	60.45	69.76	79.49	82.08	86.30	88.61	98.98
Hg	$L\beta_4$		4	4	80	6	11.561	4.28888	5		17.38	18.53	18.90	24.97	32.80	47.54	58.28	58.76	60.45	69.76	79.49	82.08	86.30	88.62	98.98
Fr	$L\beta_2$		5	20	87	6	14.448	4.29000	3		17.38	18.54	18.91	24.98	32.81	47.56	58.29	58.78	60.47	69.78	79.51	82.11	86.33	88.65	99.02
Hf	L_1-M_1	8	3	.01	72	6	8.667	4.29075	5		17.38	18.54	18.91	24.98	32.82	47.57	58.31	58.79	60.48	69.79	79.53	82.12	86.35	88.66	99.04
Ta	L_2-M_2	8	3	.01	73	6	8.666	4.29144	5		17.39	18.55	18.91	24.98	32.82	47.57	58.32	58.80	60.49	69.81	79.55	82.14	86.37	88.68	99.06
Cd	$K\alpha_{1,2}$		8	150	48	6	23.106	4.29184	6		17.39	18.55	18.91	24.99	32.82	47.58	58.32	58.81	60.50	69.81	79.56	82.15	86.38	88.69	99.07
Rh	$K\alpha_1$		7	100	45	6	20.213	4.29295	6		17.39	18.55	18.92	24.99	32.83	47.59	58.34	58.82	60.51	69.83	79.58	82.18	86.41	88.72	99.11
Ir	Ls	8	3	.01	77	6	8.658	4.29540	4		17.40	18.56	18.93	25.01	32.85	47.62	58.38	58.86	60.55	69.88	79.63	82.23	86.47	88.79	99.19
Re	$L\alpha_1$		3	100	75	6	8.651	4.29870	5		17.42	18.58	18.94	25.03	32.88	47.66	58.42	58.91	60.60	69.94	79.71	82.31	86.55	88.87	99.29
Fr	$L\gamma_1$	H	6	10	87	6	17.300	4.29912	5		17.42	18.58	18.95	25.03	32.88	47.66	58.43	58.91	60.61	69.95	79.72	82.32	86.56	88.88	99.30
Au	M_1-N_3		1	1	79	6	2.883	4.30000	3		17.42	18.58	18.95	25.03	32.89	47.67	58.44	58.93	60.62	69.97	79.74	82.34	86.58	88.91	99.33
Tm	$L\beta_9$	8	3	.01	69	6	8.647	4.30080	4		17.43	18.59	18.95	25.04	32.89	47.68	58.46	58.94	60.63	69.98	79.75	82.36	86.60	88.93	99.36
Am	$L\alpha_2$		5	10	95	6	14.409	4.30133	6		17.43	18.59	18.96	25.04	32.90	47.69	58.46	58.95	60.64	69.99	79.77	82.37	86.62	88.94	99.37
Rh	$K\alpha_{1,2}$		7	150	45	6	20.165	4.30310	6		17.43	18.60	18.96	25.05	32.91	47.71	58.49	58.97	60.67	70.02	79.81	82.41	86.66	88.99	99.43
U	$L\gamma_1$		7	10	92	6	20.164	4.30339	6		17.44	18.60	18.97	25.05	32.92	47.71	58.49	58.98	60.68	70.03	79.81	82.42	86.67	88.99	99.44
Mo	AL_1	H	1		42	6	2.880	4.30400	3		17.44	18.60	18.97	25.06	32.92	47.72	58.50	58.99	60.68	70.04	79.83	82.43	86.68	89.01	99.46
Tm	$L\beta_5$		3	.1	69	6	8.639	4.30470	4		17.44	18.60	18.97	25.06	32.93	47.73	58.51	59.00	60.70	70.05	79.84	82.45	86.70	89.03	99.48
Zn	$K\alpha_1$		3	100	30	6	8.637	4.30546	6		17.44	18.61	18.97	25.07	32.93	47.74	58.53	59.01	60.71	70.07	79.86	82.47	86.72	89.05	99.50
Hf	$L\beta_{17}$	8	3	.01	72	6	8.630	4.30929	5		17.46	18.62	18.99	25.09	32.96	47.78	58.58	59.07	60.77	70.14	79.94	82.56	86.82	89.15	99.62
Zn	$K\alpha_{1,2}$		3	150	30	6	8.630	4.30931	6		17.46	18.62	18.99	25.09	32.96	47.78	58.58	59.07	60.77	70.14	79.94	82.56	86.82	89.15	99.62
Pu	$L\beta_2$		6	20	94	6	17.252	4.31106	5		17.47	18.63	19.00	25.10	32.98	47.80	58.61	59.09	60.79	70.17	79.98	82.60	86.86	89.20	99.68
Cd	$K\alpha_2$		8	50	48	6	22.980	4.31538	6		17.48	18.65	19.02	25.13	33.01	47.86	58.67	59.16	60.86	70.25	80.08	82.70	86.97	89.31	99.81
Zn	$K\alpha_2$		3	50	30	6	8.614	4.31700	6		17.49	18.66	19.03	25.14	33.02	47.87	58.70	59.18	60.89	70.28	80.12	82.74	87.01	89.35	99.87
Dy	Ll		2	2	66	6	5.742	4.31754	5		17.49	18.66	19.03	25.14	33.03	47.88	58.71	59.19	60.90	70.29	80.13			89.37	99.88
Pa	$L\gamma_3$		7	2	91	6	20.094	4.31830	4		17.50	18.66	19.03	25.14	33.03	47.89	58.72	59.20	60.91	70.31	80.14	82.77	87.04	89.39	99.91
U	$L8_1$		6	50	92	6	17.217	4.31990	6		17.50	18.67	19.04	25.15	33.04	47.91	58.74	59.23	60.93	70.34	80.18	82.81	87.08	89.43	99.96
Lu	$L8_4$		3	5	71	6	8.605	4.32168	5		17.51	18.68	19.05	25.16	33.06	47.93	58.77	59.25	60.96	70.37	80.22	82.85	87.13	89.47	100.01
Tm	$L\beta_{10}$	8	3	.01	69	6	8.602	4.32300	4		17.52	18.68	19.05	25.17	33.07	47.94	58.79	59.27	60.98	70.40	80.25	82.88	87.16	89.51	100.06
Rh	$K\alpha_2$		7	50	45	6	20.070	4.32341	6		17.52	18.69	19.05	25.17	33.07	47.95	58.79	59.28	60.99	70.40	80.26	82.89	87.17	89.52	100.07
U	M_3-N_1		1	1	92	6	2.863	4.33000	3		17.54	18.71	19.08	25.21	33.12	48.03	58.89	59.38	61.09	70.53	80.41	83.04	87.34	89.69	100.28
Rn	$L\beta_1$	H	5	50	86	6	14.313	4.33025	5		17.55	18.72	19.08	25.21	33.13	48.03	58.90	59.38	61.09	70.53	80.41	83.05	87.34	89.70	100.28
Kr	$K\beta_2$		5	3	36	6	14.312	4.33050	4		17.55	18.72	19.09	25.22	33.13	48.03	58.90	59.39	61.10	70.54	80.42	83.05	87.35	89.71	100.29
Re	$L\alpha_2$		3	10	75	6	8.585	4.33188	5		17.55	18.72	19.09	25.22	33.14	48.05	58.92	59.41	61.12	70.56	80.45	83.09	87.39	89.74	100.34
I	$K\alpha_1$		10	100	53	6	28.607	4.33318	6		17.56	18.73	19.10	25.23	33.15	48.06	58.94	59.43	61.14	70.59	80.48	83.12	87.42	89.78	100.38
Nd	$L8_4$		2	5	60	6	5.721	4.33380	4		17.56	18.73	19.10	25.23	33.15	48.07	58.95	59.44	61.15	70.60	80.49			89.79	100.40
Nd	$L8_1$		2	50	60	6	5.721	4.33380	4		17.56	18.73	19.10	25.23	33.15	48.07	58.95	59.44	61.15	70.60	80.49			89.79	100.40
Au	$L8_1$		4	50	79	6	11.440	4.33412	5		17.56	18.73	19.10	25.24	33.16	48.08	58.95	59.44	61.15	70.60	80.50	83.14	87.44	89.80	100.41
Dy	$L\gamma_6$		3	.01	66	6	8.574	4.33737	5		17.57	18.75	19.12	25.26	33.18	48.11	59.00	59.49	61.21	70.66	80.57	83.21	87.52	89.89	100.51
Tl	$L\gamma_1$		5	10	81	6	14.289	4.33760	5		17.58	18.75	19.12	25.26	33.18	48.12	59.01	59.50	61.21	70.67	80.58	83.22	87.53	89.89	100.52
At	$L\alpha_1$	H	4	100	85	6	11.425	4.34000	5		17.59	18.76	19.13	25.27	33.20	48.15	59.04	59.53	61.25	70.71	80.63	83.28	87.59	89.96	100.59
Pu	$L\alpha_1$		5	100	94	6	14.276	4.34150	5		17.59	18.76	19.13	25.28	33.21	48.16	59.06	59.55	61.27	70.74	80.66	83.31	87.63	90.00	100.64
Hg	$L\gamma_3$		5	2	80	6	14.262	4.34575	5		17.61	18.78	19.15	25.31	33.25	48.21	59.13	59.62	61.34	70.82	80.76	83.41	87.74	90.11	100.78
Mo	$K\beta_2$		7	4	42	6	19.962	4.34693	5		17.61	18.79	19.16	25.31	33.26	48.23	59.14	59.64	61.35	70.84	80.79	83.44	87.77	90.14	100.81
Bk	$L\beta_1$		7	50	97	3	19.961	4.34700			17.61	18.79	19.16	25.31	33.26	48.23	59.15	59.64	61.36	70.84	80.79	83.44	87.77	90.14	100.82
Cs	$L\gamma_4$		2	.1	55	6	5.702	4.34820	4		17.62	18.79	19.16	25.32	33.27	48.24	59.16	59.66	61.37	70.87	80.81			90.17	100.86
I	$K\alpha_{1,2}$		10	150	53	6	28.508	4.34821	6		17.62	18.79	19.16	25.32	33.27	48.24	59.16	59.66	61.37	70.87	80.81	83.47	87.80	90.17	100.86

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Sn	$K\beta_1$		10	19	50	6	28.481	4.35236	6		17.64	18.81	19.18	25.34	33.30	48.29	59.23	59.72	61.44	70.95	80.91	83.57	87.90	90.28	100.99
Hg	AM_3	H	1		80	6	2.846	4.35500	3		17.65	18.82	19.19	25.36	33.32	48.32	59.27	59.76	61.48	70.99	80.97	83.63	87.97	90.35	101.07
Yb	$L\beta_3$		3	6	70	6	8.535	4.35699	5		17.65	18.83	19.20	25.37	33.34	48.35	59.30	59.79	61.51	71.03	81.01	83.68	88.02	90.41	101.14
Sn	$K\beta_3$		10	9	50	6	28.439	4.35877	6		17.66	18.84	19.21	25.38	33.35	48.37	59.32	59.82	61.54	71.07	81.05	83.72	88.07	90.45	101.19
Pt	Lt		8	3	.01	78	6	8.531	4.35900	4		17.66	18.84	19.21	25.38	33.35	48.37	59.33	59.82	61.54	71.07	81.06	83.72	88.07	90.46	101.20
Np	$L\beta_4$			6	4	93	6	17.058	4.36026	5		17.67	18.85	19.22	25.39	33.36	48.38	59.34	59.84	61.56	71.09	81.08	83.75	88.10	90.49	101.24
Ce	$L\beta_7$	D	2	.1	58	6	5.685	4.36120	4		17.67	18.85	19.22	25.40	33.37	48.40	59.36	59.85	61.58	71.11	81.11			90.52	101.27
Pa	Ll			4	3	91	6	11.364	4.36320	4		17.68	18.86	19.23	25.41	33.39	48.42	59.39	59.88	61.61	71.15	81.15	83.82	88.18	90.57	101.33
Rh	$K\beta_1$			8	16	45	6	22.720	4.36484	6		17.69	18.87	19.24	25.42	33.40	48.44	59.41	59.91	61.64	71.18	81.19	83.86	88.22	90.61	101.39
Pd	$L\alpha_1$			1	100	46	6	2.838	4.36767	5		17.70	18.88	19.25	25.44	33.42	48.47	59.46	59.95	61.68	71.23	81.25	83.93	88.29	90.69	101.48
Cm	$L\gamma_1$			8	10	96	3	22.703	4.36800			17.70	18.88	19.25	25.44	33.42	48.48	59.46	59.95	61.68	71.24	81.26	83.93	88.30	90.70	101.49
Ru	AL_3			1		44	6	2.837	4.36900	3		17.70	18.88	19.26	25.44	33.43	48.49	59.47	59.97	61.70	71.26	81.28	83.96	88.33	90.72	101.52
Rh	$K\beta_3$			8	8	45	6	22.695	4.36960	6		17.71	18.89	19.26	25.45	33.44	48.49	59.48	59.98	61.71	71.27	81.29	83.97	88.34	90.74	101.54
Ru	$L\beta_{2,15}$			1	1	44	6	2.835	4.37180	4		17.72	18.90	19.27	25.46	33.45	48.52	59.52	60.01	61.74	71.31	81.34	84.02	88.40	90.80	101.61
Y	$K\beta_2$			6	4	39	6	17.013	4.37184	5		17.72	18.90	19.27	25.46	33.45	48.52	59.52	60.01	61.74	71.31	81.35	84.03	88.40	90.80	101.61
Rh	$L\beta_1$			1	42	45	6	2.834	4.37414	5		17.72	18.91	19.28	25.47	33.47	48.55	59.55	60.05	61.78	71.35	81.40	84.08	88.46	90.86	101.69
Pd	$L\alpha_2$			1	10	46	6	2.833	4.37588	5		17.73	18.91	19.29	25.48	33.49	48.57	59.58	60.07	61.81	71.39	81.44	84.12	88.50	90.91	101.74
Sr	$K\alpha_1$			5	100	38	6	14.163	4.37630	5		17.73	18.92	19.29	25.49	33.49	48.57	59.58	60.08	61.81	71.40	81.45	84.13	88.51	90.92	101.76
Ce	$L\beta_9$	B	2	.01	58	6	5.664	4.37700	4		17.74	18.92	19.29	25.49	33.49	48.58	59.59	60.09	61.83	71.41	81.46			90.94	101.78
I	$K\alpha_2$			10	50	53	6	28.312	4.37829	6		17.74	18.92	19.30	25.50	33.50	48.60	59.61	60.11	61.85	71.43	81.49	84.18	88.56	90.97	101.82
Au	Ll			3	3	79	6	8.493	4.37892	5		17.74	18.93	19.30	25.50	33.51	48.60	59.62	60.12	61.86	71.44	81.50	84.19	88.58	90.99	101.84
Mo	$L\gamma_{2,3}$			1	.5	42	6	2.830	4.38000	4		17.75	18.93	19.31	25.51	33.52	48.62	59.64	60.14	61.87	71.46	81.53	84.22	88.61	91.02	101.87
Pr	$L\beta_6$			2	.1	59	6	5.659	4.38120	4		17.75	18.94	19.31	25.52	33.53	48.63	59.66	60.15	61.89	71.49	81.56			91.05	101.91
Sr	$K\alpha_{1,2}$			5	150	38	6	14.140	4.38325	5		17.76	18.95	19.32	25.53	33.54	48.66	59.69	60.19	61.92	71.53	81.60	84.30	88.69	91.10	101.98
Ag	$K\beta_2$			9	5	47	6	25.452	4.38329	6		17.76	18.95	19.32	25.53	33.54	48.66	59.69	60.19	61.92	71.53	81.60	84.30	88.69	91.10	101.98
Ho	$L\gamma_5$			3	.1	67	6	8.480	4.38540	4		17.77	18.96	19.33	25.54	33.56	48.68	59.72	60.22	61.96	71.57	81.65	84.35	88.75	91.16	102.05
At	$L\alpha_2$	H	4	10	85	6	11.303	4.38684	5		17.78	18.96	19.34	25.55	33.57	48.70	59.74	60.24	61.98	71.59	81.68	84.38	88.78	91.20	102.10
Ce	$L\beta_{10}$	B	2	.01	58	6	5.645	4.39160	4		17.80	18.98	19.36	25.58	33.61	48.75	59.81	60.31	62.05	71.68	81.79			91.33	102.25
Tm	$L\beta_{2,15}$			3	20	69	6	8.467	4.39200	4		17.80	18.98	19.36	25.58	33.61	48.76	59.82	60.32	62.06	71.69	81.80	84.50	88.91	91.34	102.26
Kr	$K\beta_1$			5	16	36	6	14.110	4.39250	4		17.80	18.99	19.36	25.58	33.62	48.77	59.83	60.33	62.07	71.70	81.81	84.51	88.93	91.35	102.28
Pa	$L\beta_3$			6	6	91	6	16.927	4.39380	5		17.81	18.99	19.37	25.59	33.63	48.78	59.85	60.35	62.09	71.72	81.84	84.55	88.96	91.39	102.32
W	$L\gamma_1$			4	10	74	6	11.284	4.39420	5		17.81	18.99	19.37	25.59	33.63	48.79	59.85	60.35	62.10	71.73	81.85	84.55	88.97	91.40	102.33
Kr	$K\beta_3$			5	8	36	6	14.102	4.39500	4		17.81	19.00	19.37	25.60	33.64	48.79	59.86	60.36	62.11	71.75	81.87	84.57	88.99	91.42	102.36
Cl	AK			1		17	6	2.819	4.39710	4		17.82	19.01	19.38	25.61	33.65	48.82	59.90	60.40	62.14	71.79	81.92	84.62	89.05	91.47	102.43
Sr	$K\alpha_2$			5	50	38	6	14.095	4.39715	5		17.82	19.01	19.38	25.61	33.65	48.82	59.90	60.40	62.14	71.79	81.92	84.62	89.05	91.47	102.43
Ta	$L\gamma_3$			4	2	73	6	11.276	4.39744	5		17.82	19.01	19.38	25.61	33.66	48.82	59.90	60.40	62.15	71.79	81.92	84.63	89.05	91.48	102.44
Yb	$L\beta_6$			3	.1	70	6	8.455	4.39830	4		17.82	19.01	19.39	25.62	33.66	48.83	59.91	60.41	62.16	71.81	81.94	84.65	89.08	91.51	102.47
Sm	$L\alpha_1$			2	100	62	6	5.635	4.39960	5		17.83	19.02	19.39	25.62	33.67	48.85	59.93	60.43	62.18	71.83	81.97			91.54	102.51
Pu	$L\alpha_2$			5	10	94	6	14.082	4.40140	5		17.84	19.03	19.40	25.63	33.69	48.87	59.96	60.46	62.21	71.87	82.01	84.73	89.16	91.59	102.57
Cl	$K\beta$			1	8	17	6	2.815	4.40340	4	3	17.84	19.03	19.41	25.65	33.70	48.89	59.99	60.49	62.24	71.91	82.06	84.77	89.21	91.64	102.63
At	$L\beta_3$	H	5	10	85	6	14.065	4.40675	5		17.86	19.05	19.43	25.67	33.73	48.93	60.04	60.54	62.29	71.97	82.13	84.85	89.29	91.73	102.74
W	AM_1	H	1		74	6	2.813	4.40700	3		17.86	19.05	19.43	25.67	33.73	48.94	60.05	60.55	62.30	71.97	82.14	84.86	89.30	91.74	102.75
Pt	$L\beta_2$			4	20	78	6	11.249	4.40800	5		17.86	19.05	19.43	25.67	33.74	48.95	60.06	60.56	62.31	71.99	82.16	84.88	89.33	91.77	102.78
La	$L\gamma_5$			2	.1	57	6	5.620	4.41120	4		17.88	19.07	19.44	25.69	33.76	48.99	60.11	60.61	62.36	72.05	82.23			91.85	102.89
Ta	Ln			3	1	73	6	8.427	4.41318	5		17.88	19.08	19.45	25.70	33.78	49.01	60.14	60.64	62.39	72.09	82.28	85.01	89.46	91.90	102.95
Pt	$L\beta_3$	D	4	6	78	6	11.233	4.41432	5		17.89	19.08	19.46	25.71	33.79	49.02	60.16	60.66	62.41	72.11	82.31	85.03	89.49	91.93	102.99
Sn	$K\alpha_1$			9	100	50	6	25.267	4.41539	6		17.89	19.09	19.46	25.72	33.80	49.04	60.17	60.67	62.43	72.13	82.33	85.06	89.52	91.96	103.02
Tb	$L\gamma_3$			3	1	65	6	8.422	4.41540	4		17.89	19.09	19.46	25.72	33.80	49.04	60.17	60.67	62.43	72.13	82.33	85.06	89.52	91.96	103.02
Np	$L\beta_2$			6	20	93	6	16.837	4.41738	6		17.90	19.10	19.47	25.73	33.81	49.06	60.20	60.70	62.46	72.17	82.37	85.11	89.57	92.02	103.09
Ce	$L\beta_{2,15}$			2	20	58	6	5.612	4.41740	4		17.90	19.10	19.47	25.73	33.81	49.06	60.20	60.70	62.46	72.17	82.38			92.02	103.09
Dy	$L\gamma_1$			3	5	66	6	8.417	4.41798	5		17.90	19.10	19.48	25.73	33.82	49.07	60.21	60.71	62.47	72.18	82.39	85.12	89.58	92.03	103.11
Ag	Ln			1	1	47	6	2.806	4.41830	4		17.91	19.10	19.48	25.73	33.82	49.07	60.22	60.72	62.47	72.19	82.40	85.13	89.59	92.04	103.12
Se	$K\alpha_1$			4	100	34	6	11.220	4.41908	5		17.91	19.10	19.48	25.74	33.83	49.08	60.23	60.73	62.49	72.20	82.41	85.15	89.61	92.06	103.14
Os	Ls	B	3	.01	76	6	8.413	4.42050	4		17.91	19.11	19.49	25.75	33.84	49.10	60.25	60.75	62.51	72.23	82.45	85.18	89.65	92.10	103.19
Sm	$L\alpha_2$			2	10	62	6	5.607	4.42124	5		17.92	19.11	19.49	25.75	33.84	49.11	60.26	60.76	62.52	72.24	82.46			92.12	103.21
Se	$K\alpha_{1,2}$			4	150	34	6	11.207	4.42447	5		17.93	19.13	19.50	25.77	33.87	49.14	60.31	60.81	62.57	72.30	82.54	85.27	89.75	92.21	103.32
Mo	$K\beta_1$			7	17	42	6	19.605	4.42602	6		17.94	19.13	19.51	25.78	33.88	49.16	60.33	60.83	62.60	72.33	82.57	85.31	89.79	92.25	103.37
Au	$L\beta_4$			4	4	79	6	11.203	4.42604	5		17.94	19.13	19.51	25.78	33.88	49.16	60.33	60.83	62.60	72.33	82.57	85.31	89.79	92.25	103.37
Yb	$L\beta_1$			3	50	70	6	8.400	4.42695	5		17.94	19.14	19.51	25.79	33.89	49.17	60.35	60.85	62.61	72.35	82.59	85.33	89.81	92.27	103.40
Sn	$K\alpha_{1,2}$			9	150	50	6	25.191	4.42875	6		17.95	19.14	19.52	25.80	33.90	49.19	60.37	60.88	62.64	72.39	82.63	85.38	89.86	92.32	103.46
W	$L\alpha_1$			3	100	74	6	8.396	4.42917	5		17.95	19.15	19.52	25.80	33.91	49.20	60.38	60.88	62.65	72.39	82.64	85.39	89.87	92.33	103.47
Tb	$L\gamma_2$			3	1	65	6	8.396	4.42920	4		17.95	19.15	19.53	25.80	33.91	49.20	60.38	60.88	62.65	72.39	82.64	85.39	89.87	92.34	103.47
Mo	$K\beta_3$			7	7	42	6	19.587	4.43010	6		17.95	19.15	19.53	25.80	33.91	49.21	60.39	60.90	62.66	72.41	82.66	85.41	89.89	92.36	103.50
Au	M_2-N_4			1	.5	79	6	2.797	4.43200	3		17.96	19.16	19.54	25.82	33.93	49.23	60.42	60.93	62.69	72.45	82.71	85.45	89.94	92.41	103.57
Os	AM_2	H	1		76	6	2.796	4.43300	3		17.97	19.16	19.54	25.82	33.94	49.24	60.44	60.94	62.71	72.47	82.73	85.48	89.97	92.44	103.60

El	Line	C	W	I	Z	R	KeV	Lambda	P A 10^{-}	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Pr	$L\beta_3$		2	6	59	6	5.591	4.43440	4	17.97	19.17	19.55	25.83	33.95	49.26	60.46	60.96	62.73	72.49	82.76			92.48	103.65
Pa	$L\gamma_1$	H	7	10	91	6	19.565	4.43506	5	17.97	19.17	19.55	25.83	33.95	49.27	60.47	60.97	62.74	72.50	82.78	85.53	90.02	92.49	103.67
Se	$K\alpha_2$		4	50	34	6	11.179	4.43528	5	17.97	19.17	19.55	25.84	33.95	49.27	60.47	60.98	62.74	72.51	82.78	85.53	90.03	92.50	103.67
Rn	$L\gamma_1$	H	6	10	86	6	16.768	4.43568	5	17.98	19.18	19.55	25.84	33.96	49.28	60.48	60.98	62.75	72.52	82.79	85.54	90.04	92.51	103.69
Tc	AL_2	H	1		43	6	2.794	4.43600	3	17.98	19.18	19.56	25.84	33.96	49.28	60.48	60.99	62.75	72.52	82.80	85.55	90.05	92.52	103.70
Sm	Ln		2	1	62	6	5.588	4.43648	5	17.98	19.18	19.56	25.84	33.96	49.29	60.49	60.99	62.76	72.53	82.81			92.53	103.71
W	M_1-$O_{2,3}$		1	.01	74	6	2.792	4.44000	2	17.99	19.19	19.57	25.86	33.99	49.33	60.54	61.05	62.82	72.60	82.89	85.65	90.15	92.63	103.83
Hf	L_2-M_2	B	3	.01	72	6	8.372	4.44192	5	18.00	19.20	19.58	25.87	34.01	49.35	60.57	61.08	62.85	72.63	82.93	85.69	90.20	92.68	103.89
Gd	L_1-$O_{4,5}$	B	3	.01	64	6	8.372	4.44210	4	18.00	19.20	19.58	25.88	34.01	49.35	60.57	61.08	62.85	72.64	82.94	85.70	90.20	92.68	103.90
Y	$K\beta_1$		6	16	39	6	16.735	4.44432	5	18.01	19.21	19.59	25.89	34.03	49.38	60.61	61.11	62.88	72.68	82.99	85.75	90.26	92.74	103.97
Np	$L\alpha_1$		5	100	93	6	13.942	4.44564	6	18.02	19.22	19.60	25.90	34.04	49.39	60.63	61.13	62.90	72.71	83.02	85.78	90.30	92.78	104.02
Y	$K\beta_3$		6	8	39	6	16.723	4.44756	5	18.02	19.23	19.61	25.91	34.05	49.42	60.66	61.16	62.93	72.74	83.06	85.83	90.35	92.83	104.08
Th	$L\gamma_3$		7	2	90	6	19.503	4.44913	5	18.03	19.23	19.61	25.92	34.06	49.44	60.68	61.19	62.96	72.77	83.10	85.86	90.39	92.87	104.13
In	$K\beta_2$		10	5	49	6	27.856	4.45000	5	18.03	19.24	19.62	25.92	34.07	49.45	60.69	61.20	62.97	72.79	83.12	85.88	90.41	92.90	104.16
Pa	M_3-N_1		1	1	91	6	2.786	4.45000	3	18.03	19.24	19.62	25.92	34.07	49.45	60.69	61.20	62.97	72.79	83.12	85.88	90.41	92.90	104.16
Gd	$L\gamma_4$		3	.1	64	6	8.354	4.45170	4	18.04	19.24	19.63	25.93	34.08	49.47	60.72	61.23	63.00	72.82	83.16	85.93	90.45	92.94	104.22
Pa	$L\beta_1$		6	50	91	6	16.699	4.45392	5	18.05	19.25	19.64	25.95	34.10	49.49	60.75	61.26	63.04	72.86	83.21	85.98	90.51	93.00	104.29
Er	$L\beta_5$		3	.1	68	6	8.349	4.45440	4	18.05	19.26	19.64	25.95	34.10	49.50	60.76	61.27	63.04	72.87	83.22	85.99	90.52	93.02	104.31
Po	$L\alpha_1$		4	100	84	6	11.129	4.45544	5	18.06	19.26	19.64	25.96	34.11	49.51	60.77	61.28	63.06	72.89	83.24	86.02	90.55	93.04	104.34
Sn	$K\alpha_2$		9	50	50	6	25.040	4.45548	6	18.06	19.26	19.64	25.96	34.11	49.51	60.77	61.28	63.06	72.89	83.24	86.02	90.55	93.05	104.34
Er	$L\beta_9$	B	3	.01	68	6	8.345	4.45650	4	18.06	19.27	19.65	25.96	34.12	49.52	60.79	61.30	63.08	72.91	83.27	86.04	90.58	93.07	104.37
Pt	M_1-N_3		1	1	78	6	2.779	4.46000	3	18.08	19.28	19.66	25.98	34.15	49.56	60.84	61.35	63.13	72.98	83.35	86.12	90.67	93.17	104.49
W	$L\alpha_2$		3	10	74	6	8.334	4.46229	5	18.09	19.29	19.67	26.00	34.17	49.59	60.88	61.39	63.17	73.02	83.40	86.18	90.73	93.23	104.57
Cs	$L\gamma_3$		2	1	55	6	5.552	4.46560	4	18.10	19.31	19.69	26.02	34.19	49.63	60.93	61.44	63.22	73.08	83.47			93.32	104.68
Ni	$K\beta_5$	B	3	.03	28	6	8.327	4.46586	5 4	18.10	19.31	19.69	26.02	34.20	49.63	60.93	61.44	63.22	73.09	83.48	86.27	90.82	93.33	104.69
At	$L\beta_1$	H	5	50	85	6	13.874	4.46745	5	18.11	19.31	19.70	26.03	34.21	49.65	60.96	61.47	63.25	73.12	83.52	86.30	90.86	93.37	104.74
Tb	Ll		2	2	65	6	5.546	4.47040	4	18.12	19.33	19.71	26.04	34.23	49.69	61.00	61.51	63.30	73.18	83.58			93.45	104.84
Cm	$L\beta_1$		7	50	96	3	19.399	4.47300		18.13	19.34	19.72	26.06	34.25	49.72	61.04	61.55	63.34	73.23	83.64	86.44	91.01	93.52	104.92
Ag	$K\beta_1$		9	18	47	6	24.938	4.47362	6	18.13	19.34	19.72	26.06	34.26	49.73	61.05	61.56	63.35	73.24	83.66	86.45	91.02	93.54	104.94
Yb	$L\beta_4$		3	5	70	6	8.312	4.47414	5	18.13	19.34	19.73	26.07	34.26	49.73	61.06	61.57	63.35	73.25	83.67	86.46	91.04	93.55	104.96
Cs	$L\gamma_2$		2	1	55	6	5.541	4.47420	4	18.13	19.34	19.73	26.07	34.26	49.73	61.06	61.57	63.36	73.25	83.67			93.55	104.96
Ag	$K\alpha_1$		8	100	47	6	22.159	4.47526	7	18.14	19.35	19.73	26.07	34.27	49.75	61.07	61.58	63.37	73.27	83.70	86.49	91.07	93.58	105.00
Nb	$K\alpha_1$		6	100	41	6	16.612	4.47720	5	18.15	19.36	19.74	26.08	34.28	49.77	61.10	61.61	63.40	73.31	83.74	86.54	91.12	93.64	105.06
Ir	Lt	B	3	.01	77	6	8.303	4.47900	4	18.15	19.36	19.75	26.09	34.30	49.79	61.13	61.64	63.43	73.34	83.78	86.58	91.16	93.69	105.12
Ag	$K\beta_3$		9	8	47	6	24.907	4.47916	6	18.15	19.36	19.75	26.10	34.30	49.79	61.13	61.64	63.43	73.34	83.79	86.59	91.17	93.69	105.13
Pt	$L\beta_1$		4	50	78	6	11.069	4.47960	5	18.16	19.37	19.75	26.10	34.30	49.80	61.14	61.65	63.44	73.35	83.80	86.60	91.18	93.70	105.14
Cd	Ll		1	2	48	6	2.767	4.48014	5	18.16	19.37	19.75	26.10	34.31	49.80	61.15	61.66	63.45	73.36	83.81	86.61	91.19	93.72	105.16
Er	$L\beta_7$		3	.1	68	6	8.297	4.48230	4	18.17	19.38	19.76	26.11	34.32	49.83	61.18	61.69	63.48	73.40	83.86	86.66	91.25	93.78	105.23
Er	$L\beta_{10}$	B	3	.01	68	6	8.297	4.48230	4	18.17	19.38	19.76	26.11	34.32	49.83	61.18	61.69	63.48	73.40	83.86	86.66	91.25	93.78	105.23
Hg	$L\gamma_1$		5	10	80	6	13.828	4.48230	5	18.17	19.38	19.76	26.11	34.32	49.83	61.18	61.69	63.48	73.40	83.86	86.66	91.25	93.78	105.23
Ba	$L\gamma_1$		2	5	56	6	5.530	4.48300	4	18.17	19.38	19.76	26.12	34.33	49.84	61.19	61.70	63.49	73.42	83.87			93.79	105.26
Nb	$K\alpha_{1,2}$		6	150	41	6	16.581	4.48568	5	18.18	19.39	19.78	26.13	34.35	49.87	61.23	61.74	63.54	73.47	83.93	86.74	91.34	93.87	105.35
Ru	$L\beta_3$		1	3	44	6	2.763	4.48660	4	18.18	19.40	19.78	26.14	34.36	49.88	61.24	61.76	63.55	73.48	83.96	86.76	91.36	93.89	105.38
Ru	$L\beta_6$		1	3	44	6	2.763	4.48660	4	18.18	19.40	19.78	26.14	34.36	49.88	61.24	61.76	63.55	73.48	83.96	86.76	91.36	93.89	105.38
Ag	$K\alpha_{1,2}$		8	150	47	6	22.101	4.48696	6	18.19	19.40	19.78	26.14	34.36	49.88	61.25	61.76	63.56	73.49	83.96	86.77	91.37	93.90	105.39
U	$L\beta_4$		6	4	92	6	16.573	4.48791	6	18.19	19.40	19.79	26.15	34.37	49.90	61.26	61.78	63.57	73.51	83.99	86.80	91.40	93.93	105.42
Au	$L\gamma_3$		5	2	79	6	13.807	4.48915	5	18.19	19.41	19.79	26.15	34.38	49.91	61.28	61.80	63.59	73.53	84.01	86.83	91.43	93.96	105.46
Ru	$K\beta_2$		8	3	44	6	22.070	4.49328	5	18.21	19.43	19.81	26.18	34.41	49.96	61.35	61.86	63.66	73.61	84.11	86.93	91.54	94.08	105.60
Am	$L\gamma_1$		8	10	95	6	22.061	4.49509	6	18.22	19.43	19.82	26.19	34.43	49.98	61.37	61.89	63.69	73.65	84.15	86.97	91.58	94.13	105.66
Pt	Ll		3	3	78	6	8.267	4.49850	4	18.23	19.45	19.83	26.21	34.45	50.02	61.42	61.94	63.74	73.71	84.23	87.05	91.67	94.22	105.78
Ni	$K\beta_{1,3}$		3	20	28	6	8.263	4.50040	6	18.24	19.46	19.84	26.22	34.47	50.04	61.45	61.97	63.77	73.75	84.27	87.10	91.72	94.27	105.84
Ru	$K\alpha_1$		7	100	44	6	19.276	4.50158	6	18.25	19.46	19.85	26.23	34.48	50.06	61.47	61.99	63.79	73.77	84.30	87.13	91.75	94.30	105.88
Po	$L\alpha_2$	H	4	10	84	6	11.014	4.50192	5	18.25	19.46	19.85	26.23	34.48	50.06	61.48	61.99	63.79	73.78	84.31	87.14	91.76	94.31	105.89
Nb	$K\alpha_2$		6	50	41	6	16.518	4.50264	5	18.25	19.47	19.85	26.23	34.49	50.07	61.49	62.00	63.81	73.79	84.32	87.15	91.78	94.33	105.92
Np	$L\alpha_2$		5	10	93	6	13.757	4.50522	6	18.26	19.48	19.86	26.25	34.51	50.10	61.53	62.04	63.85	73.84	84.38	87.22	91.85	94.40	106.00
U	M_1-P_3		2	.01	92	6	5.502	4.50600	3	18.26	19.48	19.87	26.25	34.51	50.11	61.54	62.05	63.86	73.85	84.40			94.42	106.03
Pr	$L\beta_4$		2	5	59	6	5.497	4.51000	4	18.28	19.50	19.88	26.28	34.54	50.16	61.60	62.12	63.92	73.93	84.49			94.53	106.17
Ag	$K\alpha_2$		8	50	47	6	21.987	4.51038	6	18.28	19.50	19.89	26.28	34.55	50.16	61.60	62.12	63.93	73.94	84.50	87.34	91.99	94.55	106.18
Tb	$L\gamma_6$		3	.01	65	6	8.245	4.51050	4	18.28	19.50	19.89	26.28	34.55	50.16	61.61	62.12	63.93	73.94	84.51	87.34	91.99	94.55	106.18
Ru	$K\alpha_{1,2}$		7	150	44	6	19.233	4.51167	6	18.29	19.51	19.89	26.29	34.56	50.18	61.62	62.14	63.95	73.96	84.53	87.37	92.02	94.58	106.22
Pu	$L\gamma_3$		8	2	94	6	21.979	4.51201	6	18.29	19.51	19.89	26.29	34.56	50.18	61.63	62.15	63.95	73.97	84.54	87.38	92.03	94.59	106.23
Te	$K\alpha_1$		10	100	52	6	27.468	4.51295	6	18.29	19.51	19.90	26.30	34.57	50.19	61.64	62.16	63.97	73.99	84.56	87.40	92.05	94.62	106.27
Ge	$K\beta_1$		4	14	32	6	10.980	4.51576	5	18.30	19.52	19.91	26.31	34.59	50.23	61.69	62.20	64.01	74.04	84.63	87.47	92.13	94.69	106.36
Ge	$K\beta_3$		4	7	32	6	10.976	4.51744	5	18.31	19.53	19.92	26.32	34.60	50.25	61.71	62.23	64.04	74.07	84.67	87.51	92.17	94.74	106.42
Pr	$L\beta_1$		2	50	59	6	5.488	4.51760	4	18.31	19.53	19.92	26.32	34.60	50.25	61.71	62.23	64.04	74.08	84.67			94.74	106.42

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Au	AM_3		1	79	6		2.744	4.51800	3		18.31	19.53	19.92	26.33	34.61	50.25	61.72	62.24	64.05	74.08	84.68	87.53	92.19	94.75	106.44
Tm	$L\beta_3$		3	6 69	6		8.229	4.51890	4		18.32	19.54	19.92	26.33	34.61	50.26	61.73	62.25	64.06	74.10	84.70	87.55	92.21	94.78	106.47
Au	M_3-$O_{4,5}$		1	.5 79	6		2.741	4.52200	3		18.33	19.55	19.94	26.35	34.64	50.30	61.78	62.30	64.11	74.16	84.77	87.62	92.29	94.87	106.57
Ru	$L\beta_4$		1	3 44	6		2.741	4.52300	4		18.33	19.56	19.94	26.36	34.65	50.31	61.80	62.31	64.13	74.18	84.79	87.65	92.32	94.89	106.61
Te	$K\alpha_{1,2}$		10	150 52	6		27.377	4.52791	6		18.35	19.58	19.96	26.38	34.69	50.37	61.87	62.39	64.21	74.27	84.91	87.77	92.45	95.03	106.77
U	$L\beta_2$		6	20 92	6		16.425	4.52809	6		18.35	19.58	19.97	26.39	34.69	50.37	61.87	62.39	64.21	74.28	84.91	87.77	92.45	95.03	106.78
Th	$L\beta_3$		6	6 90	6		16.423	4.52874	5		18.36	19.58	19.97	26.39	34.69	50.38	61.88	62.40	64.22	74.29	84.93	87.79	92.47	95.05	106.80
Tb	$L\gamma_6$		3	.1 65	6		8.211	4.52910	4		18.36	19.58	19.97	26.39	34.69	50.39	61.89	62.41	64.23	74.30	84.94	87.80	92.48	95.06	106.81
Ru	$K\alpha_2$		7	50 44	6		19.147	4.53186	6		18.37	19.59	19.98	26.41	34.72	50.42	61.93	62.45	64.27	74.35	85.00	87.86	92.55	95.14	106.91
Bi	$M\gamma$		1	5 83	6		2.735	4.53200	3		18.37	19.60	19.98	26.41	34.72	50.42	61.93	62.45	64.27	74.35	85.00	87.87	92.56	95.14	106.91
V	$K\beta_5$	B	2	.02 23	6		5.462	4.53902	5	4	18.40	19.63	20.01	26.45	34.77	50.50	62.04	62.56	64.38	74.49	85.17			95.34	107.15
Ir	$L\beta_2$		4	20 77	6		10.919	4.54128	5		18.41	19.64	20.02	26.46	34.79	50.53	62.07	62.59	64.42	74.53	85.22	88.09	92.80	95.40	107.23
Er	$L\beta_{2,15}$		3	20 68	6		8.188	4.54197	5		18.41	19.64	20.03	26.47	34.80	50.54	62.08	62.61	64.43	74.54	85.23	88.11	92.82	95.42	107.25
Am	$L\beta_3$		7	6 95	6		19.103	4.54237	5		18.41	19.64	20.03	26.47	34.80	50.54	62.09	62.61	64.44	74.55	85.24	88.12	92.83	95.43	107.27
In	$K\beta_1$		10	19 49	6		27.271	4.54545	6		18.42	19.65	20.04	26.49	34.82	50.58	62.14	62.66	64.49	74.61	85.32	88.19	92.91	95.51	107.37
Po	$L\beta_3$		5	6 84	6		13.635	4.54550	4		18.43	19.65	20.04	26.49	34.82	50.58	62.14	62.66	64.49	74.61	85.32	88.20	92.91	95.52	107.37
Tm	$L\beta_6$		3	.1 69	6		8.176	4.54860	4		18.44	19.67	20.06	26.51	34.85	50.62	62.18	62.71	64.54	74.67	85.39	88.27	93.00	95.60	107.48
La	$L\beta_7$		2	.1 57	6		5.449	4.55000	3		18.44	19.67	20.06	26.52	34.86	50.63	62.21	62.73	64.56	74.70	85.42			95.64	107.53
Ta	$L\gamma_1$		4	10 73	6		10.893	4.55176	5		18.45	19.68	20.07	26.53	34.87	50.66	62.23	62.76	64.59	74.73	85.46	88.35	93.08	95.69	107.59
In	$K\beta_3$		10	8 49	6		27.233	4.55181	6		18.45	19.68	20.07	26.53	34.87	50.66	62.23	62.76	64.59	74.73	85.46	88.35	93.08	95.69	107.59
O	$L\alpha_1$		5	100 92	6		13.612	4.55319	6		18.46	19.69	20.08	26.53	34.89	50.67	62.25	62.78	64.61	74.76	85.50	88.38	93.12	95.73	107.64
Re	Ls	B	3	.01 75	6		8.167	4.55340	4		18.46	19.69	20.08	26.54	34.89	50.68	62.26	62.78	64.61	74.76	85.50	88.39	93.12	95.74	107.65
Hf	$L\gamma_3$		4	2 72	6		10.889	4.55364	5		18.46	19.69	20.08	26.54	34.89	50.68	62.26	62.78	64.62	74.77	85.51	88.39	93.13	95.74	107.65
Dy	$L\gamma_5$		3	.1 66	6		8.165	4.55472	5		18.46	19.69	20.08	26.54	34.90	50.69	62.28	62.80	64.63	74.79	85.53	88.42	93.16	95.77	107.69
Te	$K\alpha_2$		10	50 52	6		27.197	4.55784	6		18.48	19.71	20.10	26.56	34.92	50.73	62.32	62.85	64.68	74.85	85.60	88.50	93.24	95.86	107.80
Ir	$L\beta_3$		4	6 77	6		10.866	4.56340	5		18.50	19.73	20.12	26.60	34.97	50.79	62.41	62.93	64.77	74.96	85.73	88.63	93.39	96.01	107.99
Ce	$L\beta_6$		2	.1 58	6		5.433	4.56360	4		18.50	19.73	20.12	26.60	34.97	50.80	62.41	62.94	64.77	74.96	85.74			96.02	108.00
La	$L\beta_9$	B	2	.01 57	6		5.432	4.56400	3		18.50	19.74	20.13	26.60	34.97	50.80	62.42	62.94	64.78	74.97	85.75			96.03	108.01
Pm	$L\alpha_1$		2	100 61	6		5.432	4.56440	4		18.50	19.74	20.13	26.60	34.97	50.81	62.42	62.95	64.79	74.97	85.76			96.04	108.03
Ta	$L\alpha_1$		3	100 73	6		8.145	4.56591	5		18.51	19.74	20.13	26.61	34.99	50.82	62.45	62.97	64.81	75.00	85.79	88.69	93.46	96.08	108.08
Th	M_3-N_1		1	1 90	6		2.714	4.56800	3		18.52	19.75	20.14	26.62	35.00	50.85	62.48	63.00	64.84	75.04	85.84	88.75	93.51	96.14	108.15
V	$K\beta_{1,3}$		2	20 23	6		5.426	4.56880	5	4	18.52	19.76	20.15	26.63	35.01	50.86	62.49	63.02	64.86	75.06	85.86			96.16	108.18
Pt	$L\beta_4$		4	4 78	6		10.852	4.56892	5		18.52	19.76	20.15	26.63	35.01	50.86	62.49	63.02	64.86	75.06	85.86	88.77	93.54	96.17	108.18
Hf	Ln		3	1 72	6		8.138	4.56975	5		18.52	19.76	20.15	26.63	35.02	50.87	62.51	63.03	64.87	75.08	85.88	88.79	93.56	96.19	108.21
Bi	M_3-N_4		1	5 83	6		2.712	4.57100	3		18.53	19.77	20.16	26.64	35.03	50.89	62.53	63.05	64.89	75.10	85.91	88.82	93.59	96.23	108.25
Cf	LB_2		7	20 98	3		18.983	4.57100			18.53	19.77	20.16	26.64	35.03	50.89	62.53	63.05	64.89	75.10	85.91	88.82	93.59	96.23	108.25
Th	$L\gamma_1$		7	10 90	6		18.979	4.57191	5		18.53	19.77	20.16	26.65	35.03	50.90	62.54	63.07	64.91	75.12	85.93	88.84	93.62	96.25	108.29
Bi	AM_4	H	1	83	6		2.711	4.57200	3		18.53	19.77	20.16	26.65	35.03	50.90	62.54	63.07	64.91	75.12	85.93	88.84	93.62	96.25	108.29
Nb	AL_1	H	1	41	6		2.710	4.57500	3		18.55	19.78	20.17	26.66	35.06	50.93	62.59	63.11	64.96	75.18	86.00	88.92	93.70	96.34	108.39
Bi	$L\alpha_1$		4	100 83	6		10.837	4.57544	5		18.55	19.79	20.18	26.67	35.06	50.94	62.59	63.12	64.96	75.19	86.01	88.93	93.71	96.35	108.41
At	$L\gamma_1$	H	6	10 85	6		16.249	4.57734	5		18.56	19.79	20.18	26.68	35.08	50.96	62.62	63.15	64.99	75.22	86.06	88.98	93.76	96.40	108.47
Nb	$K\beta_2$		7	4 41	6		18.949	4.57912	5		18.56	19.80	20.19	26.69	35.09	50.98	62.65	63.18	65.02	75.26	86.10	89.02	93.81	96.45	108.54
Cr	$K\alpha_1$		2	100 24	6		5.414	4.57940	5	4	18.56	19.80	20.19	26.69	35.09	50.99	62.65	63.18	65.03	75.26	86.11			96.46	108.55
Ru	$K\beta_1$		8	16 44	6		21.653	4.57986	6		18.57	19.80	20.20	26.69	35.10	50.99	62.66	63.19	65.03	75.27	86.12	89.04	93.83	96.47	108.56
La	LB_{10}	B	2	.01 57	6		5.413	4.58000	3		18.57	19.81	20.20	26.69	35.10	50.99	62.66	63.19	65.04	75.28	86.12			96.48	108.57
Cr	$K\alpha_{1,2}$		2	150 24	6		5.411	4.58200	5	4	18.57	19.81	20.21	26.71	35.11	51.02	62.69	63.22	65.07	75.31	86.17			96.53	108.64
Ru	$K\beta_3$		8	8 44	6		21.631	4.58454	6		18.58	19.82	20.22	26.72	35.13	51.05	62.73	63.26	65.11	75.36	86.23	89.15	93.95	96.61	108.72
Ta	AM_1	H	1	73	6		2.704	4.58500	3		18.59	19.83	20.22	26.72	35.14	51.05	62.74	63.27	65.12	75.37	86.24	89.16	93.97	96.62	108.74
Pm	$L\alpha_2$		2	10 61	6		5.407	4.58520	4		18.59	19.83	20.22	26.72	35.14	51.05	62.74	63.27	65.12	75.38	86.24			96.62	108.75
Cr	$K\alpha_2$		2	50 24	6		5.405	4.58721	6	4	18.60	19.84	20.23	26.74	35.15	51.08	62.77	63.30	65.15	75.41	86.29			96.68	108.82
Gd	$L\gamma_3$		3	1 64	6		8.104	4.58910	4		18.60	19.84	20.24	26.75	35.17	51.10	62.80	63.33	65.18	75.45	86.33	89.26	94.08	96.73	108.88
Bi	M_4-$P_{2,3}$		1	.01 83	6		2.701	4.59000	2		18.61	19.85	20.24	26.75	35.18	51.11	62.81	63.34	65.19	75.47	86.35	89.29	94.10	96.76	108.92
Tb	$L\gamma_1$		3	5 65	6		8.100	4.59090	4		18.61	19.85	20.25	26.76	35.18	51.12	62.83	63.36	65.21	75.49	86.38	89.31	94.12	96.78	108.95
Tm	$L\beta_1$		3	50 69	6		8.100	4.59120	4		18.61	19.85	20.25	26.76	35.19	51.13	62.83	63.36	65.21	75.49	86.38	89.32	94.13	96.79	108.96
Th	$L\beta_1$		6	50 90	6		16.199	4.59126	6		18.61	19.85	20.25	26.76	35.19	51.13	62.83	63.36	65.21	75.49	86.38	89.32	94.13	96.79	108.96
Pd	$K\beta_2$		9	3 46	6		24.295	4.59205	6		18.62	19.86	20.25	26.77	35.19	51.14	62.85	63.38	65.23	75.51	86.40	89.34	94.16	96.82	108.99
Os	$L\beta_7$		4	7 76	6		10.785	4.59732	5		18.64	19.88	20.27	26.80	35.23	51.20	62.93	63.46	65.31	75.61	86.53	89.47	94.30	96.96	109.17
Rh	$L\alpha_1$		1	100 45	6		2.696	4.59743	5		18.64	19.88	20.27	26.80	35.24	51.20	62.93	63.46	65.31	75.61	86.53	89.47	94.30	96.97	109.18
Ta	$L\alpha_2$		3	10 73	6		8.086	4.59879	5		18.64	19.89	20.28	26.81	35.25	51.22	62.95	63.48	65.34	75.64	86.56	89.50	94.34	97.01	109.22
Gd	$L\gamma_2$		3	1 64	6		8.086	4.59930	4		18.65	19.89	20.28	26.81	35.25	51.22	62.96	63.49	65.34	75.65	86.57	89.52	94.35	97.02	109.24
Lu	L_2-M_2	B	3	.01 71	6		8.084	4.59999	5		18.65	19.89	20.29	26.81	35.26	51.23	62.97	63.50	65.35	75.66	86.59	89.53	94.37	97.04	109.27
Pt	M_2-N_4		1	.5 78	6		2.694	4.60100	3		18.65	19.90	20.29	26.82	35.26	51.24	62.98	63.51	65.37	75.68	86.61	89.56	94.40	97.07	109.30
Br	$K\beta_2$		5	2 35	6		13.467	4.60230	5		18.66	19.90	20.30	26.83	35.27	51.26	63.00	63.53	65.39	75.71	86.64	89.59	94.43	97.10	109.35
Am	$L\beta_1$		7	50 95	6		18.849	4.60358	6		18.66	19.91	20.30	26.83	35.28	51.27	63.02	63.55	65.41	75.73	86.67	89.62	94.47	97.14	109.39
Os	Lt	B	3	.01 76	6		8.077	4.60410	4		18.66	19.91	20.30	26.84	35.29	51.28	63.03	63.56	65.42	75.74	86.69	89.64	94.48	97.16	109.41

El	Line	C	N	I	Z	R	KeV	Lambda	P A 10^{-}	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Rh	$L\alpha_2$		1	10	45	6	2.692	4.60545	5	18.67	19.92	20.31	26.84	35.30	51.30	63.05	63.58	65.44	75.77	86.72	89.67	94.52	97.19	109.46
La	$L\beta_{2,15}$		2	20	57	6	5.383	4.60600	4	18.67	19.92	20.31	26.85	35.30	51.30	63.06	63.59	65.45	75.78	86.73			97.21	109.48
U	M_1-O_3		2	.01	92	6	5.380	4.60800	3	18.68	19.93	20.32	26.86	35.32	51.33	63.09	63.62	65.48	75.82	86.78			97.27	109.55
In	$K\alpha_1$		9	100	49	6	24.206	4.60902	6	18.68	19.93	20.33	26.87	35.33	51.34	63.10	63.64	65.50	75.84	86.80	89.76	94.61	97.29	109.58
Po	$L\beta_1$		5	50	84	6	13.445	4.61000	4	18.69	19.94	20.33	26.87	35.33	51.35	63.12	63.65	65.51	75.86	86.82	89.78	94.64	97.32	109.62
U	$L\alpha_2$		5	10	92	6	13.437	4.61279	6	18.70	19.95	20.34	26.89	35.36	51.38	63.16	63.69	65.56	75.91	86.89	89.85	94.71	97.40	109.72
Ho	$L\beta_5$		3	.1	67	6	8.061	4.61340	4	18.70	19.95	20.35	26.89	35.36	51.39	63.17	63.70	65.57	75.92	86.90	89.87	94.73	97.42	109.74
Ba	$L\gamma_5$		2	.1	56	6	5.370	4.61700	4	18.72	19.97	20.36	26.91	35.39	51.43	63.23	63.76	65.63	75.99	86.99			97.52	109.86
Pa	$L\beta_4$		6	4	91	6	16.101	4.61940	4	18.73	19.98	20.37	26.93	35.41	51.46	63.26	63.80	65.66	76.04	87.05	90.01	94.89	97.59	109.95
Re	AM_2	H	1		75	6	2.683	4.62000	3	18.73	19.98	20.37	26.93	35.41	51.47	63.27	63.81	65.67	76.05	87.06	90.03	94.91	97.60	109.97
Ru	$L8_1$		1	45	44	6	2.683	4.62058	5	18.73	19.98	20.38	26.93	35.42	51.48	63.28	63.82	65.68	76.06	87.07	90.04	94.92	97.62	109.99
Si	$L\alpha_2$		4	10	83	6	10.729	4.62144	5	18.74	19.99	20.38	26.94	35.43	51.49	63.29	63.83	65.70	76.08	87.09	90.06	94.95	97.65	110.02
Cu	$K\alpha_1$		3	100	29	6	8.046	4.62169	6	18.74	19.99	20.38	26.94	35.43	51.49	63.30	63.83	65.70	76.08	87.10	90.07	94.95	97.65	110.03
Ce	$L\beta_3$		2	6	58	6	5.364	4.62180	4	18.74	19.99	20.38	26.94	35.43	51.49	63.30	63.83	65.70	76.08	87.10			97.66	110.03
In	$K\alpha_{1,2}$		9	150	49	6	24.136	4.62231	6	18.74	19.99	20.39	26.95	35.43	51.50	63.31	63.84	65.71	76.09	87.11	90.09	94.97	97.67	110.05
Gd	$L1$		2	2	64	6	5.361	4.62440	4	18.75	20.00	20.39	26.96	35.45	51.52	63.34	63.87	65.74	76.13	87.16			97.73	110.13
Sr	$K\beta_2$		6	3	38	6	16.082	4.62486	5	18.75	20.00	20.40	26.96	35.45	51.53	63.35	63.88	65.75	76.14	87.17	90.15	95.04	97.74	110.14
U	M_4-N_3		1	.01	92	6	2.680	4.62500	3	18.75	20.00	20.40	26.96	35.45	51.53	63.35	63.88	65.75	76.15	87.18	90.15	95.04	97.75	110.15
Ir	$L1$	D	3	3	77	6	8.040	4.62540	4	18.75	20.00	20.40	26.96	35.46	51.53	63.35	63.89	65.76	76.15	87.19	90.16	95.05	97.76	110.16
Cu	$K\alpha_{1,2}$		3	150	29	6	8.040	4.62551	6	18.75	20.00	20.40	26.96	35.46	51.54	63.36	63.89	65.76	76.16	87.19	90.17	95.06	97.76	110.17
Rb	$K\alpha_1$		5	100	37	6	13.393	4.62776	6	18.76	20.01	20.41	26.98	35.48	51.56	63.39	63.93	65.80	76.20	87.24	90.22	95.12	97.83	110.25
Tc	AL_3	H	1		43	6	2.677	4.63000	3	18.77	20.02	20.42	26.99	35.49	51.59	63.43	63.96	65.83	76.24	87.30	90.28	95.18	97.89	110.33
Ir	M_1-N_3	H	1	.5	77	6	2.677	4.63100	3	18.77	20.03	20.42	27.00	35.50	51.60	63.44	63.98	65.85	76.26	87.32	90.30	95.21	97.92	110.36
Pu	$L\gamma_1$		8	10	94	6	21.414	4.63106	6	18.78	20.03	20.42	27.00	35.50	51.60	63.44	63.98	65.85	76.26	87.32	90.30	95.21	97.92	110.36
Ir	$L\beta_1$		4	50	77	6	10.706	4.63124	5	18.78	20.03	20.43	27.00	35.50	51.60	63.44	63.98	65.85	76.27	87.32	90.31	95.21	97.92	110.37
Eu	$L\gamma_4$		3	.1	63	6	8.029	4.63170	4	18.78	20.03	20.43	27.00	35.51	51.61	63.45	63.99	65.86	76.28	87.34	90.32	95.23	97.94	110.39
Au	$L\gamma_1$		5	10	79	6	13.379	4.63250	5	18.78	20.03	20.43	27.01	35.51	51.62	63.46	64.00	65.87	76.29	87.35	90.34	95.25	97.96	110.41
Cu	$K\alpha_2$		3	50	29	6	8.026	4.63317	6	18.78	20.04	20.43	27.01	35.52	51.63	63.47	64.01	65.89	76.30	87.37	90.36	95.26	97.98	110.44
Tm	$L\beta_4$		3	5	69	6	8.024	4.63440	4	18.79	20.04	20.44	27.02	35.53	51.64	63.49	64.03	65.91	76.33	87.40	90.39	95.30	98.01	110.48
Rb	$K\alpha_{1,2}$		5	150	37	6	13.373	4.63466	5	18.79	20.04	20.44	27.02	35.53	51.65	63.50	64.03	65.91	76.33	87.41	90.39	95.31	98.02	110.49
Cf	$L\gamma_1$		9	10	98	3	24.070	4.63500		18.79	20.05	20.44	27.02	35.53	51.65	63.50	64.04	65.91	76.34	87.41	90.40	95.31	98.03	110.50
Pt	$L\gamma_3$		5	2	78	6	13.359	4.63955	5	18.81	20.07	20.46	27.05	35.57	51.70	63.57	64.11	65.99	76.43	87.52	90.52	95.44	98.16	110.67
Pa	$L\beta_2$		6	20	91	6	16.022	4.64220	4	18.82	20.08	20.47	27.06	35.59	51.74	63.61	64.15	66.03	76.48	87.58	90.58	95.51	98.24	110.76
Ho	$L\beta_{10}$	B	3	.01	67	6	8.005	4.64580	4	18.84	20.09	20.49	27.08	35.62	51.78	63.67	64.20	66.09	76.55	87.67	90.67	95.61	98.34	110.89
Po	$L\beta_2$		5	20	84	6	13.338	4.64685	5	18.84	20.10	20.49	27.09	35.63	51.79	63.68	64.22	66.10	76.57	87.69	90.70	95.64	98.37	110.93
Np	$L\gamma_3$		8	2	93	6	21.336	4.64800	4	18.84	20.10	20.50	27.10	35.64	51.81	63.70	64.24	66.12	76.59	87.72	90.73	95.67	98.40	110.97
Rb	$K\alpha_2$		5	50	37	6	13.333	4.64845	5	18.85	20.10	20.50	27.10	35.64	51.81	63.71	64.25	66.13	76.60	87.73	90.74	95.68	98.41	110.98
In	$K\alpha_2$		9	50	49	6	23.998	4.64890	6	18.85	20.11	20.50	27.10	35.64	51.82	63.71	64.25	66.14	76.61	87.74	90.75	95.69	98.43	111.00
Cd	$K8_2$		10	5	48	6	26.639	4.65328	6	18.87	20.13	20.52	27.13	35.68	51.87	63.78	64.32	66.21	76.70	87.85	90.86	95.81	98.55	111.16
Nb	$L\gamma_{2,3}$		1	.5	41	6	2.663	4.65420	4	18.87	20.13	20.53	27.13	35.68	51.88	63.80	64.33	66.22	76.71	87.87	90.88	95.84	98.58	111.19
Pb	M_2-N_1		1	.01	82	6	2.663	4.65500	3	18.87	20.13	20.53	27.14	35.69	51.89	63.81	64.35	66.24	76.73	87.89	90.90	95.86	98.60	111.22
Pd	Ln		1	1	46	6	2.660	4.66050	4	18.90	20.16	20.56	27.17	35.73	51.95	63.89	64.43	66.32	76.84	88.02	91.04	96.01	98.76	111.42
Br	$K\beta_1$		5	16	35	6	13.289	4.66395	5	18.91	20.17	20.57	27.19	35.76	52.00	63.95	64.49	66.38	76.90	88.10	91.13	96.10	98.86	111.54
Pa	$L\alpha_1$		5	100	91	6	13.288	4.66420	5	18.91	20.17	20.57	27.19	35.76	52.00	63.95	64.49	66.38	76.91	88.11	91.13	96.11	98.87	111.55
Nb	$K\beta_3$		7	7	41	6	18.603	4.66438	5	18.91	20.17	20.57	27.20	35.77	52.00	63.95	64.49	66.39	76.91	88.11	91.14	96.11	98.87	111.56
Br	$K\beta_3$		5	8	35	6	13.282	4.66635	5	18.92	20.18	20.58	27.21	35.78	52.02	63.98	64.52	66.42	76.95	88.16	91.19	96.17	98.93	111.63
Ra	$L1$		4	3	88	6	10.620	4.66876	5	18.93	20.19	20.59	27.22	35.80	52.05	64.02	64.56	66.46	77.00	88.21	91.25	96.23	99.00	111.72
Ac	$L\beta_3$	H	6	10	89	6	15.929	4.66932	5	18.93	20.20	20.59	27.22	35.80	52.06	64.03	64.57	66.47	77.01	88.23	91.26	96.25	99.01	111.74
Pb	$M\gamma$		1	5	82	6	2.652	4.67400	3	18.95	20.22	20.62	27.25	35.84	52.12	64.10	64.64	66.54	77.10	88.34	91.38	96.38	99.15	111.91
Os	$L8_2$		4	20	76	6	10.597	4.67916	5	18.97	20.24	20.64	27.28	35.88	52.18	64.18	64.72	66.62	77.20	88.46	91.51	96.52	99.30	112.09
Pu	$L\beta_3$		7	6	94	6	18.537	4.68097	5	18.98	20.25	20.65	27.29	35.90	52.20	64.21	64.75	66.65	77.24	88.50	91.55	96.57	99.35	112.16
Bk	$L\beta_2$		7	20	97	3	18.529	4.68300		18.99	20.26	20.66	27.31	35.91	52.22	64.24	64.78	66.69	77.28	88.55	91.60	96.62	99.41	112.23
Pd	$K\alpha_1$		8	100	46	6	21.174	4.68358	6	18.99	20.26	20.66	27.31	35.92	52.23	64.25	64.79	66.70	77.29	88.57	91.62	96.64	99.42	112.25
Pd	$K\beta_1$		9	18	46	6	23.815	4.68468	6	18.99	20.26	20.66	27.32	35.93	52.24	64.26	64.81	66.71	77.31	88.59	91.65	96.67	99.45	112.29
Er	$L\beta_3$		3	6	68	6	7.938	4.68480	4	18.99	20.26	20.66	27.32	35.93	52.25	64.27	64.81	66.71	77.31	88.60	91.65	96.67	99.46	112.30
Pt	AM_3		1		78	6	2.645	4.68600	3	19.00	20.27	20.67	27.32	35.94	52.26	64.28	64.83	66.73	77.34	88.62	91.68	96.71	99.49	112.34
Pd	$K\beta_3$		9	8	46	6	23.787	4.69011	6	19.02	20.29	20.69	27.35	35.97	52.31	64.35	64.89	66.80	77.42	88.72	91.78	96.82	99.61	112.49
W	Ls	B	3	.01	74	6	7.925	4.69260	4	19.03	20.30	20.70	27.36	35.99	52.34	64.39	64.93	66.84	77.46	88.78	91.85	96.89	99.68	112.58
Bi	$L\beta_3$		5	6	83	6	13.208	4.69275	5	19.03	20.30	20.70	27.36	35.99	52.34	64.39	64.93	66.84	77.47	88.79	91.85	96.89	99.69	112.59
Gd	$L\gamma_6$		3	.01	64	6	7.924	4.69320	4	19.03	20.30	20.70	27.37	35.99	52.35	64.39	64.94	66.85	77.48	88.80	91.86	96.91	99.70	112.61
Pt	$M_3-O_{4,5}$		1	.5	78	6	2.641	4.69400	3	19.03	20.30	20.70	27.37	36.00	52.36	64.41	64.95	66.86	77.49	88.82	91.88	96.93	99.72	112.63
Pd	$K\alpha_{1,2}$		8	150	46	6	21.121	4.69524	6	19.04	20.31	20.71	27.38	36.01	52.37	64.43	64.97	66.88	77.52	88.85	91.91	96.96	99.76	112.68
Cl	$SK\alpha_4$		1	4	17	1	2.640	4.69567	3 3	19.04	20.31	20.71	27.38	36.01	52.38	64.43	64.98	66.89	77.52	88.86	91.92	96.97	99.77	112.70
Cs	$L\gamma_1$		2	5	55	6	5.279	4.69600	4	19.04	20.31	20.71	27.38	36.02	52.38	64.44	64.98	66.90	77.53	88.86			99.78	112.71
Sr	$K\beta_1$		6	16	38	6	15.833	4.69752	5	19.05	20.32	20.72	27.39	36.03	52.40	64.46	65.01	66.92	77.56	88.90	91.97	97.02	99.83	112.76

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Ce	$L\beta_4$		2	5	58	6	5.276	4.69940	4		19.05	20.33	20.73	27.40	36.04	52.42	64.49	65.04	66.95	77.60	88.95			99.88	112.83
Pb	$L\alpha_1$		4	100	82	6	10.550	4.70004	5		19.06	20.33	20.73	27.41	36.05	52.43	64.50	65.05	66.96	77.61	88.96	92.03	97.09	99.90	112.86
Sr	$K\beta_3$		6	8	38	6	15.822	4.70070	5		19.06	20.33	20.73	27.41	36.05	52.44	64.51	65.06	66.97	77.62	88.98	92.05	97.11	99.92	112.88
Ho	$L\beta_{2,15}$		3	20	67	6	7.910	4.70130	4		19.06	20.34	20.74	27.41	36.06	52.44	64.52	65.07	66.98	77.63	88.99	92.07	97.13	99.94	112.90
Er	$L\beta_6$		3	.1	68	6	7.908	4.70250	4		19.07	20.34	20.74	27.42	36.07	52.46	64.54	65.08	67.00	77.66	89.02	92.10	97.16	99.97	112.95
Au	M_3-O_1		1	.1	79	6	2.636	4.70300	3		19.07	20.34	20.74	27.42	36.07	52.46	64.55	65.09	67.01	77.67	89.03	92.11	97.18	99.99	112.97
As	$K\alpha_1$		4	100	33	6	10.542	4.70352	5		19.07	20.34	20.75	27.43	36.08	52.47	64.55	65.10	67.02	77.68	89.04	92.12	97.19	100.00	112.98
Sb	$K\alpha_1$		10	100	51	6	26.355	4.70354	6		19.07	20.35	20.75	27.43	36.08	52.47	64.55	65.10	67.02	77.68	89.04	92.12	97.19	100.00	112.99
Ag	Ll		1	2	47	6	2.633	4.70760	4		19.09	20.36	20.77	27.45	36.11	52.52	64.62	65.16	67.08	77.76	89.14	92.22	97.30	100.12	113.13
Hf	$L\alpha_1$		3	100	72	6	7.898	4.70874	5		19.09	20.37	20.77	27.46	36.12	52.53	64.63	65.18	67.10	77.78	89.17	92.25	97.33	100.15	113.18
As	$K\alpha_{1,2}$		4	150	33	6	10.530	4.70884	5		19.09	20.37	20.77	27.46	36.12	52.53	64.63	65.18	67.10	77.78	89.17	92.26	97.34	100.15	113.18
Cl	$SK\alpha_3$		1	4	17	1	2.631	4.71100	3	3	19.10	20.38	20.78	27.47	36.14	52.56	64.67	65.22	67.14	77.83	89.22	92.31	97.40	100.22	113.26
Gd	$L\gamma_8$		3	.1	64	6	7.892	4.71210	4		19.11	20.38	20.79	27.48	36.14	52.57	64.69	65.23	67.15	77.85	89.25	92.34	97.43	100.25	113.30
Ce	$L\beta_1$		2	50	58	6	5.261	4.71220	4		19.11	20.38	20.79	27.48	36.14	52.58	64.69	65.24	67.16	77.85	89.25			100.25	113.30
Ac	$L\gamma_1$	H	7	10	89	6	18.405	4.71457	5		19.12	20.39	20.80	27.49	36.16	52.60	64.72	65.27	67.19	77.90	89.31	92.40	97.50	100.32	113.39
Pb	M_3-N_4		1	5	82	6	2.629	4.71500	3		19.12	20.40	20.80	27.50	36.17	52.61	64.73	65.28	67.20	77.90	89.32	92.41	97.51	100.33	113.41
Zr	$K\alpha_1$		6	100	40	6	15.772	4.71558	5		19.12	20.40	20.80	27.50	36.17	52.62	64.74	65.29	67.21	77.92	89.33	92.43	97.52	100.35	113.43
Hf	$L\gamma_1$		4	10	72	6	10.514	4.71600	5		19.12	20.40	20.80	27.50	36.17	52.62	64.75	65.29	67.22	77.92	89.34	92.44	97.54	100.36	113.44
Os	$L\beta_3$		4	6	76	6	10.509	4.71820	5		19.13	20.41	20.81	27.51	36.19	52.65	64.78	65.33	67.25	77.97	89.40	92.49	97.60	100.43	113.53
Ir	$L\beta_4$		4	4	77	6	10.509	4.71832	5		19.13	20.41	20.81	27.52	36.19	52.65	64.78	65.33	67.26	77.97	89.40	92.50	97.60	100.43	113.53
Sb	$K\alpha_{1,2}$		10	150	51	6	26.271	4.71845	6		19.13	20.41	20.81	27.52	36.19	52.65	64.78	65.33	67.26	77.97	89.40	92.50	97.60	100.43	113.54
Pd	$K\alpha_2$		8	50	46	6	21.017	4.71857	6		19.13	20.41	20.81	27.52	36.20	52.65	64.78	65.33	67.26	77.97	89.40	92.50	97.61	100.44	113.54
Mo	AL_2		1		42	6	2.627	4.71900	3		19.13	20.41	20.82	27.52	36.20	52.66	64.79	65.34	67.27	77.98	89.42	92.51	97.62	100.45	113.56
As	$K\alpha_2$		4	50	33	6	10.506	4.71948	5		19.14	20.41	20.82	27.52	36.20	52.66	64.80	65.35	67.27	77.99	89.43	92.53	97.63	100.46	113.57
Tc	$K\beta_2$	H	8	3	43	6	21.002	4.72192	5		19.15	20.43	20.83	27.54	36.22	52.69	64.84	65.39	67.31	78.04	89.49	92.59	97.70	100.54	113.66
Zr	$K\alpha_{1,2}$		6	150	40	6	15.744	4.72402	5		19.16	20.43	20.84	27.55	36.24	52.72	64.87	65.42	67.35	78.08	89.54	92.64	97.76	100.60	113.74
Pa	$L\alpha_2$	H	5	10	91	6	13.120	4.72410	5		19.16	20.43	20.84	27.55	36.24	52.72	64.87	65.42	67.35	78.08	89.54	92.64	97.76	100.60	113.75
Po	$L\gamma_1$		6	10	84	6	15.741	4.72488	5		19.16	20.44	20.84	27.55	36.25	52.73	64.88	65.43	67.36	78.10	89.56	92.66	97.78	100.62	113.77
Tc	$K\alpha_1$	H	7	100	43	6	18.364	4.72514	5		19.16	20.44	20.84	27.56	36.25	52.73	64.89	65.44	67.37	78.10	89.56	92.67	97.79	100.63	113.78
Mo	$L\gamma_1$		1	1	42	6	2.623	4.72580	4		19.16	20.44	20.85	27.56	36.25	52.74	64.90	65.45	67.38	78.12	89.58	92.69	97.81	100.65	113.81
Ra	$L\gamma_3$		7	2	88	6	18.354	4.72766	5		19.17	20.45	20.85	27.57	36.27	52.76	64.92	65.48	67.41	78.15	89.62	92.73	97.86	100.70	113.88
Cl	$K\alpha_1$		1	100	17	6	2.622	4.72780	4	3	19.17	20.45	20.86	27.57	36.27	52.76	64.93	65.48	67.41	78.16	89.63	92.74	97.86	100.71	113.88
Cl	$K\alpha_{1,2}$		1	150	17	6	2.621	4.72877	4	3	19.17	20.46	20.86	27.58	36.28	52.77	64.94	65.49	67.42	78.17	89.65	92.76	97.89	100.74	113.92
Cl	$K\alpha_2$		1	50	17	6	2.620	4.73070	4	3	19.18	20.46	20.87	27.59	36.29	52.80	64.97	65.52	67.46	78.21	89.70	92.81	97.94	100.79	113.99
Lu	Ln		3	1	71	6	7.856	4.73370	4		19.20	20.48	20.88	27.61	36.32	52.83	65.02	65.57	67.50	78.27	89.77	92.89	98.03	100.88	114.10
Ac	$L\beta_1$	H	6	50	89	6	15.710	4.73418	5		19.20	20.48	20.88	27.61	36.32	52.84	65.03	65.58	67.51	78.28	89.78	92.90	98.04	100.89	114.12
Bi	$L\gamma_3$		6	2	83	6	15.708	4.73502	5		19.20	20.48	20.89	27.61	36.33	52.85	65.04	65.59	67.53	78.30	89.80	92.92	98.06	100.92	114.15
Tc	$K\alpha_{1,2}$	H	7	150	43	6	18.325	4.73517	5		19.20	20.48	20.89	27.62	36.33	52.85	65.04	65.59	67.53	78.30	89.80	92.92	98.07	100.92	114.16
Th	$L\gamma_5$		3	.1	65	6	7.852	4.73610	4		19.20	20.49	20.89	27.62	36.33	52.86	65.06	65.61	67.54	78.32	89.83	92.95	98.09	100.95	114.19
Re	Lt	8	3	.01	75	6	7.851	4.73670	4		19.21	20.49	20.90	27.62	36.34	52.87	65.06	65.62	67.55	78.33	89.84	92.96	98.11	100.97	114.22
Po	$L\beta_4$		5	4	84	6	13.083	4.73750	4		19.21	20.49	20.90	27.63	36.35	52.88	65.08	65.63	67.57	78.35	89.86	92.98	98.13	100.99	114.25
Nd	$L\alpha_1$		2	100	60	6	5.229	4.74080	4		19.22	20.51	20.91	27.65	36.37	52.92	65.13	65.68	67.62	78.41	89.94			101.09	114.37
Zr	$K\alpha_2$		6	50	40	6	15.688	4.74090	5		19.22	20.51	20.91	27.65	36.37	52.92	65.13	65.68	67.62	78.41	89.94	93.07	98.23	101.09	114.37
Hf	$L\alpha_2$		3	10	72	6	7.843	4.74138	5		19.23	20.51	20.92	27.65	36.38	52.93	65.14	65.69	67.63	78.42	89.95	93.08	98.24	101.11	114.39
Pu	$L\beta_1$		7	50	94	6	18.291	4.74404	5		19.24	20.52	20.93	27.67	36.40	52.96	65.18	65.73	67.67	78.48	90.02	93.15	98.32	101.18	114.49
Pb	$L\alpha_2$		4	10	82	6	10.448	4.74592	5		19.25	20.53	20.94	27.68	36.41	52.98	65.21	65.76	67.70	78.51	90.06	93.20	98.37	101.24	114.56
Sb	$K\alpha_2$		10	50	51	6	26.106	4.74827	6		19.25	20.54	20.95	27.69	36.43	53.01	65.24	65.80	67.74	78.56	90.12	93.26	98.43	101.31	114.65
Cd	$K\beta_1$		10	19	48	6	26.091	4.75105	6		19.27	20.55	20.96	27.71	36.45	53.04	65.29	65.84	67.78	78.61	90.19	93.33	98.51	101.39	114.75
Cf	$L\alpha_1$		6	100	98	3	15.652	4.75200			19.27	20.56	20.96	27.72	36.46	53.05	65.30	65.86	67.80	78.63	90.21	93.35	98.54	101.42	114.79
Os	Ll		3	3	76	6	7.821	4.75494	5		19.28	20.57	20.98	27.73	36.48	53.09	65.35	65.90	67.85	78.69	90.28	93.43	98.62	101.50	114.90
Tc	$K\alpha_2$	H	7	50	43	6	18.248	4.75524	5		19.28	20.57	20.98	27.74	36.49	53.09	65.35	65.91	67.85	78.70	90.29	93.44	98.63	101.51	114.91
Th	$L8_4$		6	4	90	6	15.640	4.75542	5		19.28	20.57	20.98	27.74	36.49	53.09	65.35	65.91	67.86	78.70	90.29	93.44	98.63	101.52	114.92
Pb	AM_4		1		82	6	2.606	4.75700	3		19.29	20.58	20.99	27.75	36.50	53.11	65.38	65.93	67.88	78.73	90.33	93.48	98.68	101.57	114.98
Cd	$K\beta_3$		10	8	48	6	26.057	4.75730	6		19.29	20.58	20.99	27.75	36.50	53.12	65.38	65.94	67.89	78.74	90.34	93.49	98.69	101.57	114.99
La	$L8_6$		2	.1	57	6	5.211	4.75800	4		19.29	20.58	20.99	27.75	36.51	53.13	65.39	65.95	67.90	78.75	90.36			101.60	115.02
Bi	$L\beta_1$		5	50	83	6	13.021	4.75989	6		19.30	20.59	21.00	27.76	36.52	53.15	65.42	65.98	67.93	78.79	90.40	93.56	98.76	101.65	115.09
Ba	$L\beta_7$		2	.1	56	6	5.207	4.76120	4		19.31	20.60	21.00	27.77	36.53	53.16	65.44	66.00	67.95	78.81	90.43			101.69	115.14
Th	$L\beta_2$		6	20	90	6	15.621	4.76124	5		19.31	20.60	21.00	27.77	36.53	53.16	65.44	66.00	67.95	78.82	90.43	93.59	98.80	101.69	115.14
Nd	$L\alpha_2$		2	10	60	6	5.207	4.76140	4		19.31	20.60	21.01	27.77	36.54	53.17	65.45	66.00	67.95	78.82	90.44			101.70	115.14
Er	$L\beta_1$		3	50	68	6	7.809	4.76190	4		19.31	20.60	21.01	27.77	36.54	53.17	65.45	66.01	67.96	78.83	90.45	93.61	98.82	101.71	115.16
Bi	AM_5	H	1		83	6	2.602	4.76400	3		19.32	20.61	21.02	27.79	36.56	53.20	65.49	66.04	67.99	78.87	90.50	93.66	98.88	101.77	115.24
Dy	$L\beta_5$		3	.1	66	6	7.804	4.76511	5		19.32	20.61	21.02	27.79	36.56	53.21	65.50	66.06	68.01	78.89	90.53	93.69	98.91	101.81	115.29
Yb	L_2-M_2	B	3	.01	70	6	7.804	4.76532	5		19.32	20.62	21.02	27.80	36.57	53.21	65.51	66.06	68.02	78.90	90.53	93.69	98.91	101.81	115.29
Bk	$L\gamma_1$		9	10	97	3	23.389	4.77000			19.34	20.64	21.04	27.82	36.60	53.27	65.58	66.14	68.09	78.99	90.65	93.81	99.04	101.95	115.47
Eu	$L\gamma_3$		3	1	63	6	7.795	4.77090	4		19.35	20.64	21.05	27.83	36.61	53.28	65.59	66.15	68.11	79.01	90.67	93.84	99.07	101.98	115.51

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Np	$L\gamma_1$		8	10	93	6	20.781	4.77198	6		19.35	20.64	21.05	27.83	36.62	53.29	65.61	66.17	68.12	79.03	90.70	93.87	99.10	102.01	115.55
8a	$L\beta_{10}$	B	2	.01	56	6	5.193	4.77380	4		19.36	20.65	21.06	27.85	36.63	53.32	65.64	66.20	68.15	79.06	90.74			102.06	115.62
Bi	$L\beta_2$		5	20	83	6	12.978	4.77590	5		19.37	20.66	21.07	27.86	36.65	53.34	65.67	66.23	68.19	79.11	90.79	93.97	99.21	102.13	115.70
Gd	$L\gamma_1$		3	5	64	6	7.784	4.77720	4		19.37	20.67	21.08	27.87	36.66	53.36	65.69	66.25	68.21	79.13	90.82	94.00	99.25	102.16	115.75
Th	$L\alpha_1$		5	100	90	6	12.967	4.78000	5		19.38	20.68	21.09	27.88	36.68	53.39	65.73	66.29	68.25	79.19	90.89	94.07	99.33	102.25	115.85
Ir	M_2-N_4		1	.2	77	6	2.593	4.78000	3		19.38	20.68	21.09	27.88	36.68	53.39	65.73	66.29	68.25	79.19	90.89	94.07	99.33	102.25	115.85
I	$L\gamma_4$		2	.1	53	6	5.184	4.78260	4		19.40	20.69	21.10	27.90	36.70	53.42	65.77	66.33	68.30	79.24	90.95			102.32	115.95
Eu	$L\gamma_2$		3	1	63	6	7.766	4.78830	4		19.42	20.72	21.13	27.93	36.75	53.49	65.86	66.42	68.39	79.35	91.09	94.29	99.56	102.49	116.17
U	$L\gamma_3$		8	2	92	6	20.709	4.78859	6		19.42	20.72	21.13	27.93	36.75	53.49	65.87	66.43	68.39	79.36	91.10	94.29	99.57	102.50	116.18
Os	$L\beta_1$		4	50	76	6	10.354	4.78908	5		19.42	20.72	21.13	27.94	36.76	53.50	65.87	66.44	68.40	79.37	91.11	94.31	99.58	102.52	116.20
Eu	Ll		2	2	63	6	5.176	4.78960	4		19.42	20.72	21.13	27.94	36.76	53.51	65.88	66.44	68.41	79.38	91.12			102.53	116.22
Pt	$L\gamma_1$		5	10	78	6	12.940	4.78985	5		19.42	20.72	21.13	27.94	36.76	53.51	65.89	66.45	68.41	79.38	91.13	94.33	99.60	102.54	116.23
Os	M_1-N_3		1	.5	76	6	2.588	4.79000	2		19.43	20.72	21.13	27.94	36.76	53.51	65.89	66.45	68.42	79.38	91.13	94.33	99.61	102.55	116.24
Cm	$L\beta_2$		7	20	96	3	18.096	4.79500			19.45	20.74	21.16	27.97	36.80	53.57	65.97	66.53	68.50	79.48	91.26	94.46	99.75	102.69	116.43
Ir	$L\gamma_3$		5	2	77	6	12.922	4.79655	5		19.45	20.75	21.16	27.98	36.81	53.59	65.99	66.55	68.52	79.52	91.29	94.50	99.79	102.74	116.49
Dy	$L\beta_9$	B	3	.01	66	6	7.749	4.79919	5		19.46	20.76	21.17	28.00	36.84	53.62	66.03	66.59	68.57	79.57	91.36	94.57	99.87	102.82	116.59
Er	$L\beta_4$		3	5	68	6	7.744	4.80210	4		19.48	20.78	21.19	28.01	36.86	53.66	66.08	66.64	68.61	79.63	91.43	94.64	99.95	102.91	116.70
Am	$L\beta_4$		7	4	95	6	18.060	4.80473	5		19.49	20.79	21.20	28.03	36.88	53.69	66.12	66.68	68.66	79.68	91.49	94.71	100.03	102.99	116.81
8a	$L\beta_{2,15}$		2	20	56	6	5.156	4.80870	5		19.50	20.80	21.22	28.05	36.91	53.74	66.18	66.74	68.72	79.76	91.59			103.10	116.96
Tc	$K\beta_1$	H	8	16	43	6	20.615	4.81040	5		19.51	20.81	21.22	28.06	36.92	53.76	66.21	66.77	68.75	79.79	91.63	94.86	100.19	103.16	117.03
Dy	$L\beta_7$		3	.1	66	6	7.726	4.81341	5		19.52	20.83	21.24	28.08	36.95	53.79	66.25	66.82	68.80	79.85	91.71	94.94	100.27	103.25	117.14
W	AM_2	H	1		74	6	2.574	4.81500	3		19.53	20.83	21.24	28.09	36.96	53.81	66.28	66.84	68.82	79.88	91.75	94.98	100.32	103.29	117.20
Tc	$K\beta_3$	H	8	8	43	6	20.595	4.81504	5		19.53	20.83	21.24	28.09	36.96	53.81	66.28	66.84	68.82	79.88	91.75	94.98	100.32	103.30	117.21
Cd	$K\alpha_1$		9	100	48	6	23.170	4.81509	6		19.53	20.83	21.25	28.09	36.96	53.81	66.28	66.84	68.83	79.88	91.75	94.98	100.32	103.30	117.21
Rh	$K\beta_2$		9	4	45	6	23.169	4.81527	5		19.53	20.83	21.25	28.09	36.96	53.82	66.28	66.85	68.83	79.89	91.75	94.98	100.33	103.30	117.22
Ra	$L\beta_3$		6	6	88	6	15.442	4.81638	5		19.53	20.84	21.25	28.10	36.97	53.83	66.30	66.86	68.85	79.91	91.78	95.01	100.36	103.34	117.26
Nd	Ln		2	1	60	6	5.145	4.81880	4		19.54	20.85	21.26	28.11	36.99	53.86	66.34	66.90	68.89	79.96	91.84			103.41	117.35
La	$L\beta_3$		2	6	57	6	5.143	4.82100	4		19.55	20.86	21.27	28.13	37.01	53.89	66.37	66.94	68.92	80.00	91.89			103.47	117.44
Sm	$L\gamma_4$		3	.1	62	6	7.712	4.82184	5		19.56	20.86	21.28	28.13	37.02	53.90	66.38	66.95	68.94	80.02	91.91	95.15	100.51	103.50	117.47
Dy	$L\beta_{10}$	8	3	.01	66	6	7.712	4.82229	5		19.56	20.86	21.28	28.13	37.02	53.90	66.39	66.96	68.94	80.03	91.93	95.17	100.53	103.51	117.49
Bi	M_5-O_2		1	1	83	6	2.570	4.82300	3		19.56	20.87	21.28	28.14	37.03	53.91	66.40	66.97	68.95	80.04	91.94	95.18	100.55	103.53	117.52
Tl	$M\gamma$		1	3	81	6	2.570	4.82300	3		19.56	20.87	21.28	28.14	37.03	53.91	66.40	66.97	68.95	80.04	91.94	95.18	100.55	103.53	117.52
Cf	$L\alpha_2$		6	10	98	3	15.418	4.82400			19.56	20.87	21.28	28.14	37.03	53.92	66.42	66.98	68.97	80.06	91.97	95.21	100.58	103.57	117.56
Cf	$L\beta_1$		8	50	98	3	20.557	4.82400			19.56	20.87	21.28	28.14	37.03	53.92	66.42	66.98	68.97	80.06	91.97	95.21	100.58	103.57	117.56
Np	$L\beta_3$	H	7	6	93	6	17.986	4.82440	5		19.57	20.87	21.29	28.15	37.04	53.93	66.42	66.99	68.98	80.07	91.98	95.22	100.59	103.58	117.57
Re	$L\beta_2$		4	20	75	6	10.274	4.82640	5		19.57	20.88	21.30	28.16	37.05	53.95	66.45	67.02	69.01	80.11	92.03	95.27	100.65	103.64	117.65
Co	$K\beta_5$	B	3	.03	27	6	7.705	4.82673	5	4	19.58	20.88	21.30	28.16	37.05	53.95	66.46	67.03	69.02	80.12	92.03	95.28	100.65	103.65	117.66
Cd	$K\alpha_{1,2}$		9	150	48	6	23.106	4.82832	6		19.58	20.89	21.30	28.17	37.07	53.97	66.48	67.05	69.04	80.15	92.07	95.32	100.70	103.70	117.73
Zr	$K\beta_2$		7	4	40	6	17.967	4.82951	5		19.59	20.90	21.31	28.18	37.08	53.99	66.50	67.07	69.06	80.17	92.10	95.35	100.73	103.73	117.77
Tl	$L\alpha_1$		4	100	81	6	10.267	4.82956	5		19.59	20.90	21.31	28.18	37.08	53.99	66.50	67.07	69.06	80.17	92.10	95.36	100.74	103.73	117.77
Ga	$K\beta_1$		4	14	31	6	10.263	4.83156	5		19.60	20.90	21.32	28.19	37.09	54.01	66.53	67.10	69.09	80.21	92.15	95.41	100.79	103.79	117.85
Ga	$K\beta_3$		4	7	31	6	10.259	4.83340	5		19.60	20.91	21.33	28.20	37.11	54.04	66.56	67.13	69.12	80.25	92.20	95.46	100.85	103.85	117.93
Cs	$L\gamma_5$		2	.1	55	6	5.128	4.83480	4		19.61	20.92	21.33	28.21	37.12	54.05	66.58	67.15	69.15	80.28	92.23			103.89	117.98
Mo	$L\gamma_5$		1	.1	42	6	2.563	4.83690	4		19.62	20.93	21.34	28.22	37.14	54.08	66.62	67.19	69.18	80.32	92.28	95.55	100.95	103.96	118.06
Ta	$L\beta_5$	B	3	.01	73	6	7.687	4.83792	5		19.62	20.93	21.35	28.23	37.14	54.09	66.63	67.20	69.20	80.34	92.31	95.57	100.98	103.99	118.10
Th	$L\alpha_2$		5	10	90	6	12.807	4.83940	5		19.63	20.94	21.35	28.24	37.16	54.11	66.66	67.23	69.22	80.37	92.35	95.61	101.02	104.03	118.16
Pb	$L\beta_3$		5	6	82	6	12.791	4.84555	5		19.65	20.97	21.38	28.27	37.20	54.18	66.75	67.32	69.32	80.49	92.50	95.77	101.19	104.22	118.41
Ru	$L\alpha_1$		1	100	44	6	2.558	4.84575	5		19.55	20.97	21.38	28.27	37.21	54.18	66.76	67.33	69.33	80.50	92.50	95.78	101.20	104.22	118.41
Ru	$L\alpha_2$		1	10	44	6	2.554	4.85381	5		19.69	21.00	21.42	28.32	37.27	54.28	66.88	67.45	69.46	80.66	92.70	95.99	101.43	104.47	118.73
Cd	$K\alpha_2$		9	50	48	6	22.980	4.85480	6		19.69	21.01	21.42	28.33	37.28	54.29	66.90	67.47	69.47	80.68	92.73	96.02	101.46	104.50	118.77
Lu	$L\alpha_1$		3	100	71	6	7.654	4.85853	5		19.71	21.02	21.44	28.35	37.31	54.34	66.95	67.53	69.54	80.75	92.82	96.11	101.57	104.61	118.92
Bk	$L\alpha_1$		6	100	97	3	15.304	4.86000			19.71	21.03	21.45	28.36	37.32	54.36	66.98	67.55	69.56	80.78	92.86	96.15	101.61	104.66	118.98
Ho	$L\beta_3$		3	6	67	6	7.650	4.86090	4		19.72	21.03	21.45	28.36	37.33	54.37	66.99	67.56	69.57	80.80	92.88	96.18	101.64	104.69	119.02
Ir	AM_3		1		77	6	2.550	4.86100	3		19.72	21.03	21.45	28.36	37.33	54.37	66.99	67.57	69.58	80.80	92.88	96.18	101.64	104.69	119.02
Co	$K\beta_{1,3}$		3	20	27	6	7.648	4.86237	5	4	19.72	21.04	21.46	28.37	37.34	54.39	67.01	67.59	69.60	80.83	92.91	96.21	101.68	104.73	119.08
Ra	$L\gamma_1$		7	10	88	6	17.845	4.86241	5		19.72	21.04	21.46	28.37	37.34	54.39	67.01	67.59	69.60	80.83	92.92	96.21	101.68	104.73	119.08
Tl	M_3-N_4		1	1	81	6	2.548	4.86500	3		19.73	21.05	21.47	28.39	37.36	54.42	67.06	67.63	69.64	80.88	92.98	96.28	101.76	104.81	119.18
Ir	M_3-$O_{4,5}$		1	.5	77	6	2.546	4.86900	3		19.75	21.07	21.49	28.41	37.39	54.47	67.12	67.69	69.71	80.96	93.08	96.39	101.87	104.93	119.34
Ag	$K\beta_2$		10	5	47	6	25.452	4.87032	6		19.75	21.07	21.49	28.42	37.40	54.48	67.14	67.71	69.73	80.99	93.11	96.42	101.91	104.97	119.40
Dy	$L\beta_{2,15}$		3	20	66	6	7.634	4.87107	5		19.76	21.08	21.49	28.42	37.41	54.49	67.15	67.73	69.74	81.00	93.13	96.44	101.93	105.00	119.43
Ho	$L\beta_6$		3	.1	67	6	7.634	4.87110	4		19.76	21.08	21.50	28.43	37.41	54.49	67.15	67.73	69.74	81.00	93.13	96.44	101.93	105.00	119.43
W	Lt	B	3	.01	74	6	7.631	4.87320	4		19.77	21.09	21.50	28.44	37.42	54.52	67.18	67.76	69.78	81.05	93.18	96.50	101.99	105.06	119.51
Os	$L\beta_4$		4	4	76	6	10.174	4.87376	5		19.77	21.09	21.51	28.44	37.43	54.52	67.19	67.77	69.78	81.06	93.20	96.51	102.01	105.08	119.53
Tl	$L\alpha_2$		4	10	81	6	10.171	4.87500	5		19.77	21.09	21.51	28.45	37.44	54.54	67.21	67.79	69.81	81.08	93.23	96.55	102.05	105.12	119.59
Pt	M_3-O_1		1	.01	78	6	2.542	4.87600	3		19.78	21.10	21.52	28.45	37.45	54.55	67.23	67.80	69.82	81.10	93.25	96.57	102.08	105.15	119.63

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
8i	$L\gamma_1$		6	10	83	6	15.245	4.87866	5	19.79	21.11	21.53	28.47	37.47	54.58	67.27	67.85	69.87	81.16	93.32	96.64	102.15	105.23	119.73
Zr	AL_1	H	1		40	6	2.541	4.87900	3	19.79	21.11	21.53	28.47	37.47	54.59	67.27	67.85	69.87	81.16	93.33	96.65	102.16	105.24	119.75
Re	$L\beta_3$		4	6	75	6	10.158	4.88124	5	19.80	21.12	21.54	28.49	37.49	54.61	67.31	67.89	69.91	81.21	93.38	96.71	102.23	105.31	119.84
Ra	$L\beta_1$		6	50	88	6	15.233	4.88250	5	19.80	21.13	21.55	28.49	37.50	54.63	67.33	67.91	69.93	81.23	93.42	96.74	102.26	105.35	119.89
Th	M_1-O_3		2	.01	90	6	5.076	4.88400	3	19.81	21.13	21.55	28.50	37.51	54.65	67.35	67.93	69.95	81.26	93.45			105.39	119.95
8i	$L\beta_4$		5	4	83	6	12.689	4.88450	5	19.81	21.14	21.55	28.50	37.51	54.65	67.36	67.94	69.96	81.27	93.46	96.80	102.32	105.41	119.97
Eu	$L\gamma_6$	A	3	.01	63	6	7.613	4.88460	4	19.81	21.14	21.56	28.51	37.52	54.66	67.36	67.94	69.96	81.28	93.47	96.80	102.33	105.41	119.97
U	M_2-O_4		2	.01	92	6	5.074	4.88600	3	19.82	21.14	21.56	28.51	37.53	54.67	67.38	67.96	69.99	81.30	93.50			105.46	120.03
Tc	$L\beta_1$	H	1	45	43	6	2.536	4.88730	4	19.82	21.15	21.57	28.52	37.54	54.69	67.40	67.98	70.01	81.33	93.53	96.87	102.40	105.50	120.08
Pb	$L\gamma_3$		6	2	82	6	15.215	4.88820	4	19.83	21.15	21.57	28.53	37.54	54.70	67.42	68.00	70.02	81.35	93.56	96.89	102.43	105.52	120.12
Lu	$L\gamma_1$		4	5	71	6	10.142	4.88912	5	19.83	21.16	21.58	28.53	37.55	54.71	67.43	68.01	70.04	81.37	93.58	96.92	102.46	105.55	120.16
Np	$L\beta_1$		7	50	93	6	17.747	4.88935	6	19.83	21.16	21.58	28.53	37.55	54.71	67.44	68.01	70.04	81.37	93.59	96.93	102.46	105.56	120.17
Lu	$L\alpha_2$		3	10	71	6	7.604	4.89087	5	19.84	21.16	21.58	28.54	37.57	54.73	67.46	68.04	70.07	81.40	93.62	96.97	102.51	105.61	120.23
Re	Ll		3	3	75	6	7.602	4.89168	5	19.84	21.17	21.59	28.55	37.57	54.74	67.47	68.05	70.08	81.42	93.64	96.99	102.53	105.63	120.26
I	$L\gamma_{2,3}$		2	2	53	6	5.065	4.89500	4	19.86	21.18	21.60	28.57	37.60	54.78	67.52	68.10	70.13	81.49	93.73			105.73	120.40
La	$L\beta_4$		2	5	57	6	5.061	4.89860	4	19.87	21.20	21.62	28.59	37.63	54.83	67.58	68.16	70.19	81.56	93.82			105.84	120.54
Rb	$K\beta_2$		6	3	37	6	15.183	4.89870	5	19.87	21.20	21.62	28.59	37.63	54.83	67.58	68.16	70.19	81.56	93.82	97.17	102.74	105.85	120.55
Ac	$L\alpha_1$	H	5	100	89	6	12.650	4.89965	5	19.87	21.20	21.62	28.60	37.64	54.84	67.60	68.18	70.21	81.58	93.84	97.20	102.77	105.88	120.59
Kr	$K\alpha_1$		5	100	36	6	12.648	4.90050	4	19.88	21.21	21.63	28.60	37.64	54.85	67.61	68.19	70.22	81.60	93.86	97.22	102.79	105.90	120.62
Eu	$L\gamma_8$		3	.1	63	6	7.584	4.90380	4	19.89	21.22	21.64	28.62	37.67	54.89	67.66	68.24	70.28	81.66	93.95	97.31	102.89	106.01	120.76
Sn	$K\alpha_1$		10	100	50	6	25.267	4.90599	6	19.90	21.23	21.65	28.63	37.69	54.91	67.70	68.28	70.31	81.71	94.00	97.37	102.95	106.07	120.85
Rh	$K\alpha_1$		8	100	45	6	20.213	4.90623	6	19.90	21.23	21.65	28.63	37.69	54.92	67.70	68.28	70.32	81.71	94.01	97.37	102.96	106.08	120.86
Yb	Ln		3	1	70	6	7.579	4.90680	5	19.90	21.23	21.65	28.64	37.69	54.92	67.71	68.29	70.33	81.72	94.02	97.39	102.97	106.10	120.88
Kr	$K\alpha_{1,2}$		5	150	36	6	12.631	4.90716	4	19.91	21.24	21.66	28.64	37.70	54.93	67.71	68.30	70.33	81.73	94.03	97.40	102.99	106.11	120.90
Bi	$M\beta$		1	60	83	6	2.525	4.90900	3	19.91	21.24	21.66	28.65	37.71	54.95	67.74	68.33	70.36	81.77	94.08	97.45	103.04	106.17	120.97
Am	$L\beta_2$		7	20	95	6	17.673	4.90973	6	19.92	21.25	21.67	28.66	37.72	54.96	67.75	68.34	70.38	81.78	94.10	97.47	103.06	106.19	121.00
Rh	$K\beta_1$		9	16	45	6	22.720	4.91044	6	19.92	21.25	21.67	28.66	37.72	54.97	67.77	68.35	70.39	81.80	94.11	97.48	103.08	106.21	121.03
Th	M_4-N_3		1	.01	90	6	2.524	4.91100	3	19.92	21.25	21.67	28.66	37.73	54.98	67.77	68.36	70.40	81.81	94.13	97.50	103.10	106.23	121.05
Pb	$L\beta_2$		5	20	82	6	12.621	4.91105	5	19.92	21.25	21.67	28.66	37.73	54.98	67.78	68.36	70.40	81.81	94.13	97.50	103.10	106.23	121.06
Zr	$K\beta_1$		7	18	40	6	17.665	4.91211	5	19.93	21.26	21.68	28.67	37.73	54.99	67.79	68.37	70.42	81.83	94.16	97.53	103.13	106.26	121.10
Mo	AL_3		1		42	6	2.523	4.91300	3	19.93	21.26	21.68	28.67	37.74	55.00	67.81	68.39	70.43	81.85	94.18	97.55	103.16	106.29	121.14
Cm	$L\gamma_1$		9	10	96	3	22.703	4.91400		19.93	21.27	21.69	28.68	37.75	55.01	67.82	68.40	70.45	81.87	94.20	97.58	103.19	106.32	121.18
Pb	$L\beta_1$		5	50	82	6	12.612	4.91455	5	19.94	21.27	21.69	28.68	37.75	55.02	67.83	68.41	70.46	81.88	94.22	97.59	103.20	106.34	121.20
Rh	$K\beta_3$		9	8	45	6	22.695	4.91580	6	19.94	21.27	21.69	28.69	37.76	55.03	67.85	68.43	70.48	81.91	94.25	97.63	103.24	106.38	121.25
Zr	$K\beta_3$		7	9	40	6	17.651	4.91596	5	19.94	21.27	21.70	28.69	37.77	55.04	67.85	68.44	70.48	81.91	94.25	97.63	103.24	106.38	121.26
La	$L\beta_1$		2	50	57	6	5.041	4.91782	5	19.95	21.28	21.70	28.70	37.78	55.06	67.88	68.46	70.51	81.95	94.30			106.44	121.34
Rh	$K\alpha_{1,2}$		8	150	45	6	20.165	4.91783	6	19.95	21.28	21.70	28.70	37.78	55.06	67.88	68.47	70.51	81.95	94.30	97.68	103.30	106.44	121.34
U	$L\gamma_1$		8	10	92	6	20.164	4.91816	6	19.95	21.28	21.71	28.71	37.78	55.06	67.89	68.47	70.51	81.95	94.31	97.69	103.31	106.45	121.35
Kr	$K\alpha_2$		5	50	36	6	12.596	4.92050	4	19.96	21.29	21.72	28.72	37.80	55.09	67.92	68.51	70.55	82.00	94.37	97.75	103.38	106.53	121.45
Sn	$K\alpha_{1,2}$		10	150	50	6	25.191	4.92084	6	19.96	21.30	21.72	28.72	37.80	55.10	67.93	68.51	70.56	82.01	94.37	97.76	103.39	106.54	121.46
Rh	Ln		1	1	45	6	2.519	4.92170	4	19.97	21.30	21.72	28.73	37.81	55.11	67.94	68.53	70.57	82.03	94.40	97.78	103.41	106.56	121.50
Mo	$L8_{2,15}$		1	1	42	6	2.518	4.92320	4	19.97	21.31	21.73	28.74	37.82	55.12	67.97	68.55	70.60	82.06	94.43	97.82	103.46	106.61	121.56
Gd	$L\gamma_5$		3	.1	64	6	7.553	4.92360	4	19.97	21.31	21.73	28.74	37.83	55.13	67.97	68.56	70.60	82.06	94.44	97.84	103.47	106.62	121.58
Pr	$L\alpha_1$		2	100	59	6	5.033	4.92600	4	19.98	21.32	21.74	28.75	37.85	55.16	68.01	68.59	70.64	82.11	94.50			106.70	121.68
8k	$L\alpha_2$		6	10	97	3	15.080	4.93200		20.01	21.34	21.77	28.79	37.89	55.23	68.10	68.69	70.74	82.23	94.66	98.06	103.72	106.88	121.93
Pa	$L\gamma_3$		8	2	91	6	20.094	4.93520	4	20.02	21.36	21.78	28.81	37.92	55.27	68.15	68.74	70.80	82.30	94.74	98.15	103.81	106.99	122.06
Rh	$K\alpha_2$		8	50	45	6	20.070	4.94104	6	20.04	21.38	21.81	28.84	37.97	55.34	68.25	68.83	70.89	82.42	94.88	98.30	103.99	107.17	122.31
Ho	$L\beta_1$		3	50	67	6	7.524	4.94250	4	20.05	21.39	21.81	28.85	37.98	55.36	68.27	68.86	70.92	82.45	94.92	98.34	104.03	107.21	122.37
Pu	$L8_4$		7	4	94	6	17.553	4.94340	5	20.05	21.39	21.82	28.86	37.98	55.37	68.28	68.87	70.93	82.47	94.94	98.37	104.06	107.24	122.41
Pr	$L\alpha_2$		2	10	59	6	5.013	4.94580	4	20.06	21.40	21.83	28.87	38.00	55.40	68.32	68.91	70.97	82.51	95.00			107.32	122.51
U	$M\zeta_1$		1	1	92	6	2.506	4.94600	3	20.05	21.41	21.83	28.87	38.00	55.40	68.32	68.91	70.97	82.52	95.01	98.44	104.13	107.32	122.52
Sn	$K\alpha_2$		10	50	50	6	25.040	4.95053	6	20.08	21.43	21.85	28.90	38.04	55.46	68.40	68.98	71.05	82.61	95.12	98.56	104.27	107.47	122.71
Tl	AM_4	H	1		81	6	2.503	4.95200	3	20.09	21.43	21.86	28.91	38.05	55.47	68.42	69.01	71.07	82.64	95.16	98.60	104.31	107.51	122.77
Pd	Ll		1	2	46	6	2.503	4.95250	4	20.09	21.43	21.86	28.91	38.06	55.48	68.43	69.02	71.08	82.65	95.17	98.61	104.33	107.53	122.79
Tb	$L8_5$		3	.1	65	6	7.508	4.95300	4	20.09	21.44	21.86	28.91	38.06	55.49	68.43	69.02	71.09	82.66	95.19	98.62	104.34	107.55	122.81
Zr	$L\gamma_{2,3}$		1	.5	40	6	2.502	4.95360	4	20.10	21.44	21.86	28.92	38.07	55.49	68.44	69.03	71.10	82.67	95.20	98.64	104.36	107.56	122.84
Ir	$L\gamma_1$		5	10	77	6	12.510	4.95425	5	20.10	21.44	21.87	28.92	38.07	55.50	68.45	69.04	71.11	82.69	95.22	98.66	104.38	107.58	122.87
Re	$L8_1$		4	50	75	6	10.008	4.95432	5	20.10	21.44	21.87	28.92	38.07	55.50	68.45	69.04	71.11	82.69	95.22	98.66	104.38	107.59	122.87
Pb	AM_5		1		82	6	2.502	4.95500	3	20.10	21.45	21.87	28.93	38.08	55.51	68.47	69.06	71.12	82.70	95.24	98.68	104.40	107.61	122.90
Os	M_2-N_4		1	.2	76	6	2.502	4.95500	3	20.10	21.45	21.87	28.93	38.08	55.51	68.47	69.06	71.12	82.70	95.24	98.68	104.40	107.61	122.90
Ac	$L\alpha_2$	H	5	10	89	6	12.499	4.95890	5	20.12	21.46	21.89	28.95	38.11	55.56	68.53	69.12	71.19	82.78	95.34	98.78	104.52	107.73	123.06
Os	$L\gamma_3$		5	2	76	6	12.498	4.95930	5	20.12	21.46	21.89	28.95	38.11	55.56	68.53	69.12	71.19	82.79	95.35	98.79	104.53	107.74	123.08
Se	$K\beta_1$		5	16	34	6	12.494	4.96090	5	20.13	21.47	21.90	28.96	38.12	55.58	68.56	69.15	71.22	82.82	95.39	98.84	104.58	107.80	123.15
Se	$K\beta_3$		5	8	34	6	12.487	4.96340	5	20.14	21.48	21.91	28.98	38.14	55.61	68.60	69.19	71.26	82.87	95.45	98.90	104.65	107.87	123.26
Sm	Ll		2	2	62	6	4.994	4.96460	4	20.14	21.49	21.91	28.98	38.15	55.63	68.62	69.21	71.28	82.90	95.48			107.91	123.31

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Hg	$L\alpha_1$		4	100	80	6	9.987	4.96480	5		20.14	21.49	21.91	28.98	38.15	55.63	68.62	69.21	71.28	82.90	95.49	98.94	104.69	107.92	123.32
Mo	$K\alpha_1$		7	100	42	6	17.476	4.96510	6		20.14	21.49	21.91	28.99	38.16	55.63	68.62	69.22	71.29	82.91	95.49	98.95	104.70	107.93	123.33
8a	$L\beta_6$		2	.1	56	6	4.993	4.96520	4		20.14	21.49	21.92	28.99	38.16	55.63	68.63	69.22	71.29	82.91	95.50			107.93	123.33
Fr	$L\beta_3$	H	6	10	87	6	14.973	4.96734	5		20.15	21.50	21.93	29.00	38.18	55.66	68.66	69.25	71.33	82.95	95.55	99.01	104.77	108.00	123.42
Mo	$K\beta_2$		8	4	42	6	19.962	4.96792	5		20.15	21.50	21.93	29.00	38.18	55.67	68.67	69.26	71.34	82.96	95.56	99.03	104.79	108.02	123.45
8k	$L\beta_1$		8	50	97	3	19.961	4.96800			20.15	21.50	21.93	29.00	38.18	55.67	68.67	69.26	71.34	82.97	95.57	99.03	104.79	108.02	123.45
Sm	$L\gamma_3$		3	1	62	6	7.485	4.96803	5		20.15	21.50	21.93	29.00	38.18	55.67	68.67	69.26	71.34	82.97	95.57	99.03	104.79	108.02	123.45
Cs	$L\beta_7$		2	.1	55	6	4.989	4.96980	4		20.16	21.51	21.94	29.01	38.19	55.69	68.70	69.29	71.37	83.00	95.61			108.08	123.53
Cs	$L\beta_6$	F	2	.01	55	6	4.988	4.97040	4		20.16	21.51	21.94	29.02	38.20	55.70	68.71	69.30	71.38	83.02	95.63			108.10	123.56
Ag	$K\beta_1$		10	18	47	6	24.938	4.97069	6		20.17	21.51	21.94	29.02	38.20	55.70	68.71	69.31	71.38	83.02	95.63	99.10	104.87	108.11	123.57
U	$L\beta_3$		7	6	92	6	17.452	4.97203	5		20.17	21.52	21.95	29.03	38.21	55.72	68.73	69.33	71.40	83.05	95.67	99.14	104.91	108.15	123.63
Rb	$K8_1$		6	16	37	6	14.959	4.97208	5		20.17	21.52	21.95	29.03	38.21	55.72	68.73	69.33	71.41	83.05	95.67	99.14	104.91	108.15	123.63
Eu	$L\gamma_1$		3	5	63	6	7.479	4.97220	4		20.17	21.52	21.95	29.03	38.21	55.72	68.74	69.33	71.41	83.05	95.67	99.14	104.91	108.15	123.63
Y	$K\alpha_1$		6	100	39	6	14.956	4.97304	5		20.18	21.52	21.95	29.03	38.22	55.73	68.75	69.34	71.42	83.07	95.69	99.16	104.94	108.18	123.67
Ni	$K\alpha_1$		3	100	28	6	7.477	4.97373	6		20.18	21.53	21.95	29.04	38.23	55.74	68.76	69.35	71.43	83.08	95.71	99.18	104.96	108.20	123.70
Cm	$L\alpha_1$		6	100	96	3	14.953	4.97400			20.18	21.53	21.95	29.04	38.23	55.74	68.76	69.36	71.44	83.09	95.72	99.19	104.97	108.21	123.71
Mo	$K\alpha_{1,2}$		7	150	42	6	17.441	4.97511	6		20.18	21.53	21.96	29.05	38.24	55.76	68.78	69.38	71.46	83.11	95.75	99.22	105.00	108.25	123.76
Rb	$K\beta_3$		6	8	37	6	14.949	4.97526	5		20.18	21.53	21.96	29.05	38.24	55.76	68.78	69.38	71.46	83.11	95.75	99.22	105.01	108.25	123.76
Tb	$L\beta_7$		3	.1	65	6	7.474	4.97550	4		20.19	21.54	21.96	29.05	38.24	55.76	68.79	69.38	71.46	83.12	95.76	99.23	105.01	108.26	123.78
Ag	$K8_3$		10	8	47	6	24.907	4.97685	6		20.19	21.54	21.97	29.06	38.25	55.78	68.81	69.40	71.48	83.15	95.79	99.27	105.05	108.30	123.83
Ni	$K\alpha_{1,2}$		3	150	28	6	7.471	4.97756	6		20.19	21.54	21.97	29.06	38.26	55.79	68.82	69.41	71.50	83.16	95.81	99.29	105.08	108.32	123.86
W	$L\beta_2$		4	20	74	6	9.960	4.97840	5		20.20	21.55	21.97	29.06	38.26	55.80	68.83	69.43	71.51	83.18	95.83	99.31	105.10	108.35	123.90
Ho	$L\beta_4$		3	5	67	6	7.470	4.97850	4		20.20	21.55	21.97	29.07	38.26	55.80	68.84	69.43	71.51	83.18	95.83	99.31	105.10	108.35	123.90
Sm	$L\gamma_2$		3	1	62	6	7.465	4.98132	5		20.21	21.56	21.99	29.08	38.29	55.83	68.88	69.47	71.56	83.24	95.91	99.39	105.19	108.44	124.03
Y	$K\alpha_{1,2}$		6	150	39	6	14.931	4.98146	5		20.21	21.56	21.99	29.08	38.29	55.83	68.88	69.48	71.56	83.24	95.91	99.39	105.19	108.45	124.03
Cs	$L\beta_{10}$	B	2	.01	55	6	4.974	4.98400	4		20.22	21.57	22.00	29.10	38.31	55.86	68.92	69.52	71.60	83.29	95.97			108.53	124.14
Hg	$M\gamma$		1	3	80	6	2.487	4.98400	3		20.22	21.57	22.00	29.10	38.31	55.86	68.92	69.52	71.60	83.29	95.97	99.46	105.27	108.53	124.14
Ni	$K\alpha_2$		3	50	28	6	7.460	4.98524	6		20.23	21.58	22.01	29.11	38.32	55.88	68.94	69.54	71.62	83.32	96.01	99.49	105.31	108.57	124.20
Hf	Ls		8	3	.01	72	6	7.452	4.99038	5		20.25	21.60	22.03	29.14	38.36	55.94	69.02	69.62	71.71	83.42	96.14	99.63	105.46	108.73	124.42
Mo	$K\alpha_2$		7	50	42	6	17.371	4.99513	6		20.27	21.62	22.05	29.16	38.40	56.00	69.10	69.70	71.79	83.52	96.26	99.76	105.61	108.89	124.63
Ti	$K8_5$		8	2	.02	22	6	4.961	4.99700	4	4	20.27	21.63	22.06	29.18	38.41	56.02	69.13	69.72	71.82	83.56	96.31			108.95	124.71
Y	$K\alpha_2$		6	50	39	6	14.880	4.99830	5		20.28	21.63	22.06	29.18	38.42	56.04	69.15	69.75	71.84	83.59	96.34	99.85	105.70	108.99	124.77
Tb	$L\beta_{10}$		8	3	.01	65	6	7.435	5.00190	4		20.29	21.65	22.08	29.21	38.45	56.08	69.21	69.80	71.90	83.66	96.43	99.95	105.81	109.10	124.92
Tl	$L\beta_3$			5	6	81	6	12.388	5.00310	5		20.30	21.66	22.08	29.21	38.46	56.10	69.22	69.82	71.92	83.68	96.46	99.98	105.85	109.14	124.98
Pb	M_4-O_2			1	1	82	6	2.477	5.00400	3		20.30	21.66	22.09	29.22	38.47	56.11	69.24	69.84	71.93	83.70	96.49	100.01	105.87	109.17	125.02
Am	Ll			5	3	95	6	12.381	5.00600	4		20.31	21.67	22.10	29.23	38.48	56.13	69.27	69.87	71.97	83.74	96.54	100.06	105.93	109.24	125.10
V	$K\alpha_1$		2	100	23	6	4.951	5.00712	5	4	20.32	21.67	22.10	29.24	38.49	56.15	69.29	69.89	71.99	83.77	96.57			109.27	125.15
V	$K\alpha_{1,2}$		2	150	23	6	4.949	5.00966	5	4	20.33	21.68	22.11	29.25	38.51	56.18	69.33	69.93	72.03	83.82	96.63			109.35	125.27
Hg	$L\alpha_2$		4	10	80	6	9.896	5.01056	5		20.33	21.69	22.12	29.26	38.52	56.19	69.34	69.94	72.04	83.84	96.65	100.18	106.07	109.38	125.31
Ra	$L\beta_2$		6	20	88	6	14.839	5.01222	5		20.34	21.70	22.13	29.27	38.53	56.21	69.37	69.97	72.07	83.87	96.70	100.23	106.12	109.44	125.38
Mo	$L\beta_3$		1	3	42	6	2.473	5.01330	4		20.34	21.70	22.13	29.27	38.54	56.22	69.39	69.99	72.09	83.89	96.72	100.26	106.16	109.47	125.43
V	$K\alpha_2$		2	50	23	6	4.944	5.01476	5	4	20.35	21.71	22.14	29.28	38.55	56.24	69.41	70.01	72.11	83.92	96.76			109.52	125.49
Fr	$L\gamma_1$	H	7	10	87	6	17.300	5.01564	5		20.35	21.71	22.14	29.29	38.56	56.25	69.42	70.02	72.13	83.94	96.78	100.32	106.23	109.55	125.53
Yb	$L\alpha_1$		3	100	70	6	7.414	5.01567	5		20.35	21.71	22.14	29.29	38.56	56.25	69.42	70.02	72.13	83.94	96.79	100.32	106.23	109.55	125.53
Ge	$K\alpha_1$		4	100	32	6	9.885	5.01621	6		20.35	21.71	22.14	29.29	38.57	56.26	69.43	70.03	72.14	83.95	96.80	100.34	106.24	109.57	125.56
Ta	Lt	B	3	.01	73	6	7.411	5.01795	5		20.36	21.72	22.15	29.30	38.58	56.28	69.46	70.06	72.17	83.99	96.84	100.39	106.30	109.62	125.63
S	AK			1		16	6	2.470	5.01850	4		20.36	21.72	22.15	29.30	38.58	56.28	69.47	70.07	72.18	84.00	96.86	100.40	106.31	109.64	125.66
Ta	AM_2	H	1			73	6	2.469	5.02000	3		20.37	21.73	22.16	29.31	38.60	56.30	69.49	70.09	72.20	84.03	96.90	100.44	106.36	109.69	125.72
Ge	$K\alpha_{1,2}$		4	150	32	6	9.874	5.02149	6		20.37	21.74	22.17	29.32	38.61	56.32	69.52	70.12	72.23	84.06	96.94	100.48	106.41	109.74	125.79
Te	$L\gamma_4$		2	.1	52	6	4.936	5.02260	4		20.38	21.74	22.17	29.33	38.62	56.33	69.53	70.13	72.24	84.08	96.96			109.77	125.84
S	$K\beta x$		1	7	16	6	2.468	5.02330	4	3	20.38	21.74	22.18	29.33	38.62	56.34	69.54	70.15	72.26	84.10	96.98	100.53	106.46	109.80	125.87
Cs	$L\beta_{2,15}$		2	20	55	6	4.935	5.02360	4		20.38	21.75	22.18	29.33	38.62	56.35	69.55	70.15	72.26	84.11	96.99			109.81	125.89
Ra	$L\alpha_1$		5	100	88	6	12.338	5.02365	5		20.38	21.75	22.18	29.33	38.63	56.35	69.55	70.15	72.26	84.11	96.99	100.54	106.47	109.81	125.89
Pr	Ln		2	1	59	6	4.935	5.02400	3		20.38	21.75	22.18	29.34	38.63	56.35	69.55	70.16	72.27	84.11	97.00			109.82	125.90
Ti	$K\beta_{1,3}$		2	20	22	6	4.931	5.02782	5	4	20.40	21.76	22.20	29.36	38.66	56.40	69.62	70.22	72.33	84.19	97.10			109.94	126.07
Pu	$L\beta_2$		7	20	94	6	17.252	5.02957	5		20.41	21.77	22.20	29.37	38.67	56.42	69.64	70.25	72.36	84.23	97.14	100.71	106.65	110.00	126.15
Nb	AL_2	H	1			41	6	2.464	5.03100	3		20.41	21.78	22.21	29.38	38.68	56.44	69.67	70.27	72.38	84.26	97.18	100.75	106.70	110.05	126.22
S	$K\beta_1$		1	7	16	6	2.464	5.03160	4	3	20.42	21.78	22.21	29.38	38.69	56.44	69.68	70.28	72.39	84.27	97.20	100.76	106.71	110.07	126.24
Ge	$K\alpha_2$		4	50	32	6	9.854	5.03204	6		20.42	21.78	22.21	29.39	38.69	56.45	69.68	70.29	72.40	84.2H	97.21	100.77	106.73	110.08	126.26
Ba	$L\beta_3$		2	6	56	6	4.926	5.03280	4		20.42	21.79	22.22	29.39	38.70	56.46	69.69	70.30	72.41	84.29	97.23			110.10	126.30
W	Ll		3	3	74	6	7.386	5.03460	4		20.43	21.79	22.23	29.40	38.71	56.48	69.72	70.33	72.44	84.33	97.27	100.84	106.81	110.16	126.38
Ag	$K\alpha_1$		9	100	47	6	22.159	5.03466	7		20.43	21.79	22.23	29.40	38.71	56.48	69.72	70.33	72.45	84.33	97.28	100.85	106.81	110.17	126.38
Nb	$L\gamma_1$		1	1	41	6	2.461	5.03610	4		20.43	21.80	22.23	29.41	38.72	56.50	69.75	70.35	72.47	84.36	97.31	100.89	106.85	110.21	126.45
Fr	$L\beta_1$	H	6	50	87	6	14.768	5.03640	5		20.44	21.80	22.23	29.41	38.73	56.50	69.75	70.36	72.47	84.37	97.32	100.89	106.86	110.22	126.46
Re	$L8_4$		4	4	75	6	9.845	5.03668	5		20.44	21.80	22.23	29.41	38.73	56.51	69.76	70.36	72.48	84.37	97.33	100.90	106.87	110.23	126.47

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Pb	$L\beta_4$		5	4	82	6	12.304	5.03750	4	20.44	21.81	22.24	29.42	38.74	56.52	69.77	70.37	72.49	84.39	97.35	100.92	106.90	110.26	126.51
Pb	$L\gamma_1$		6	10	82	6	14.762	5.03838	5	20.44	21.81	22.24	29.42	38.74	56.53	69.78	70.39	72.51	84.41	97.37	100.95	106.92	110.29	126.55
U	$L\beta_1$		7	50	92	6	17.217	5.03989	6	20.45	21.82	22.25	29.43	38.75	56.55	69.81	70.41	72.53	84.44	97.41	100.99	106.97	110.34	126.62
Os	AM_3	H	1		76	6	2.458	5.04300	3	20.46	21.83	22.26	29.45	38.78	56.58	69.86	70.46	72.58	84.51	97.49	101.08	107.06	110.44	126.76
Ra	$L\beta_4$		6	4	88	6	14.745	5.04426	5	20.47	21.84	22.27	29.46	38.79	56.60	69.88	70.48	72.61	84.53	97.52	101.11	107.10	110.48	126.82
Cm	$L\alpha_2$		6	10	96	3	14.740	5.04600		20.47	21.84	22.28	29.47	38.80	56.62	69.90	70.51	72.63	84.57	97.57	101.16	107.16	110.54	126.89
Dy	$L\beta_6$		3	.1	66	6	7.369	5.04639	5	20.48	21.85	22.28	29.47	38.81	56.63	69.91	70.52	72.64	84.58	97.58	101.17	107.17	110.55	126.91
Dy	$L\beta_3$		3	6	66	6	7.369	5.04660	4	20.48	21.85	22.28	29.47	38.81	56.63	69.91	70.52	72.64	84.58	97.58	101.18	107.18	110.56	126.92
Tl	$L\gamma_3$		6	2	81	6	14.734	5.04780	5	20.48	21.85	22.28	29.48	38.82	56.64	69.93	70.54	72.66	84.60	97.62	101.21	107.21	110.59	126.98
Ag	$K\alpha_{1,2}$		9	150	47	6	22.101	5.04783	6	20.48	21.85	22.28	29.48	38.82	56.64	69.93	70.54	72.66	84.60	97.62	101.21	107.21	110.60	126.98
Yb	$L\alpha_2$		3	10	70	6	7.366	5.04855	5	20.49	21.86	22.29	29.48	38.82	56.65	69.94	70.55	72.68	84.62	97.64	101.23	107.24	110.62	127.01
Mo	$L\beta_4$		1	3	42	6	2.455	5.04880	4	20.49	21.86	22.29	29.49	38.83	56.66	69.95	70.55	72.68	84.63	97.64	101.24	107.24	110.63	127.02
Mo	$L\beta_6$		1	3	42	6	2.455	5.04880	4	20.49	21.86	22.29	29.49	38.83	56.66	69.95	70.55	72.68	84.63	97.64	101.24	107.24	110.63	127.02
Tb	$L\beta_{2,15}$		3	20	65	6	7.365	5.04900	4	20.49	21.86	22.29	29.49	38.83	56.66	69.95	70.56	72.68	84.63	97.65	101.24	107.25	110.63	127.03
U	$M\zeta_2$		1	.1	92	6	2.455	5.05000	3	20.49	21.86	22.29	29.49	38.84	56.67	69.97	70.57	72.70	84.65	97.67	101.27	107.28	110.67	127.08
W	$L\beta_3$		4	6	74	6	9.817	5.05076	5	20.49	21.86	22.30	29.50	38.84	56.68	69.98	70.59	72.71	84.67	97.69	101.29	107.30	110.69	127.11
Tl	$L\beta_2$		5	20	81	6	12.270	5.05155	5	20.50	21.87	22.30	29.50	38.85	56.69	69.99	70.60	72.73	84.68	97.71	101.31	107.33	110.72	127.15
Pa	M_2-O_4		2	.01	91	6	4.905	5.05400	3	20.51	21.88	22.31	29.52	38.87	56.72	70.03	70.64	72.77	84.73	97.78			110.80	127.26
Ru	$K\beta_2$		9	3	44	6	22.070	5.05494	5	20.51	21.88	22.32	29.52	38.88	56.73	70.05	70.65	72.78	84.75	97.80	101.41	107.43	110.83	127.30
Am	$L\gamma_1$		9	10	95	6	22.061	5.05697	6	20.52	21.89	22.33	29.53	38.89	56.76	70.08	70.69	72.82	84.79	97.85	101.46	107.50	110.90	127.40
Mo	$K\beta_1$		8	17	42	6	19.605	5.05830	6	20.53	21.90	22.33	29.54	38.90	56.77	70.10	70.71	72.84	84.82	97.89	101.50	107.54	110.94	127.46
Mo	$K\beta_3$		8	7	42	6	19.587	5.06298	6	20.54	21.92	22.35	29.57	38.94	56.83	70.17	70.78	72.92	84.92	98.01	101.63	107.68	111.09	127.67
Pa	$L\gamma_1$	H	8	10	91	6	19.565	5.06864	5	20.57	21.94	22.38	29.60	38.98	56.90	70.26	70.87	73.01	85.04	98.16	101.79	107.86	111.28	127.93
Yb	$L\gamma_1$		4	5	70	6	9.778	5.07076	5	20.58	21.95	22.39	29.62	39.00	56.92	70.30	70.91	73.05	85.08	98.21	101.85	107.92	111.35	128.03
Ag	$K\alpha_2$		9	50	47	6	21.987	5.07418	6	20.59	21.97	22.40	29.64	39.03	56.97	70.35	70.96	73.11	85.15	98.30	101.94	108.03	111.46	128.19
Tl	$L\beta_1$		5	50	81	6	12.211	5.07565	5	20.60	21.97	22.41	29.65	39.04	56.98	70.38	70.99	73.13	85.18	98.34	101.98	108.07	111.51	128.26
Pb	$M\beta$		1	60	82	6	2.442	5.07600	3	20.60	21.98	22.41	29.65	39.04	56.99	70.38	70.99	73.14	85.19	98.35	101.99	108.09	111.52	128.27
Pu	$L\gamma_3$		9	2	94	6	21.979	5.07601	6	20.60	21.98	22.41	29.65	39.04	56.99	70.38	70.99	73.14	85.19	98.35	101.99	108.09	111.52	128.27
Ra	$L\alpha_2$		5	10	88	6	12.194	5.08280	5	20.63	22.01	22.44	29.69	39.10	57.07	70.49	71.10	73.25	85.33	98.53	102.18	108.30	111.75	128.59
Th	$L\gamma_3$		8	2	90	6	19.503	5.08472	5	20.63	22.01	22.45	29.70	39.11	57.10	70.52	71.13	73.28	85.37	98.58	102.23	108.36	111.81	128.68
Np	$L\beta_4$		7	4	93	6	17.058	5.08697	5	20.64	22.02	22.46	29.71	39.13	57.12	70.56	71.17	73.32	85.42	98.64	102.30	108.43	111.89	128.79
Tm	Ln		3	1	69	6	7.308	5.08890	4	20.65	22.03	22.47	29.72	39.15	57.15	70.59	71.20	73.35	85.46	98.69	102.35	108.49	111.95	128.88
Am	$L\alpha_1$		6	100	95	6	14.615	5.08912	6	20.65	22.03	22.47	29.73	39.15	57.15	70.59	71.20	73.36	85.46	98.69	102.36	108.49	111.96	128.89
Sm	$L\gamma_6$	A	3	.01	62	6	7.306	5.08998	5	20.66	22.04	22.47	29.73	39.16	57.16	70.60	71.22	73.37	85.48	98.72	102.38	108.52	111.99	128.93
Pa	$M\zeta_1$		1	1	91	6	2.434	5.09200	3	20.66	22.05	22.48	29.74	39.17	57.18	70.64	71.25	73.40	85.52	98.77	102.44	108.58	112.06	129.02
Y	$K\beta_2$		7	4	39	6	17.013	5.10048	5	20.70	22.08	22.52	29.79	39.24	57.29	70.77	71.39	73.55	85.70	98.99	102.68	108.85	112.34	129.43
Pd	$K\beta_2$		10	3	46	6	24.295	5.10228	6	20.71	22.09	22.53	29.80	39.25	57.31	70.80	71.42	73.58	85.73	99.04	102.73	108.91	112.40	129.51
Au	$L\alpha_1$		4	100	79	6	9.712	5.10560	5	20.72	22.11	22.54	29.82	39.28	57.35	70.85	71.47	73.63	85.80	99.13	102.82	109.01	112.51	129.67
Ba	$L\beta_4$		2	5	56	6	4.851	5.11060	4	20.74	22.13	22.57	29.85	39.32	57.41	70.93	71.55	73.72	85.91	99.26			112.68	129.91
Cm	$L\beta_1$		8	50	96	3	19.399	5.11200		20.75	22.13	22.57	29.86	39.33	57.43	70.95	71.57	73.74	85.94	99.30	103.00	109.21	112.73	129.98
Pu	Ll		5	3	94	6	12.122	5.11300	4	20.75	22.14	22.58	29.87	39.34	57.44	70.97	71.59	73.76	85.96	99.32	103.03	109.24	112.76	130.02
Tc	$L\alpha_1$	H	1	100	43	6	2.424	5.11480	4	20.76	22.15	22.58	29.88	39.35	57.46	71.00	71.62	73.79	86.00	99.37	103.08	109.30	112.82	130.11
Bi	$M\alpha_1$		1	100	83	6	2.422	5.11800	3	20.77	22.16	22.60	29.90	39.38	57.50	71.05	71.67	73.84	86.06	99.45	103.17	109.40	112.93	130.27
Sm	$L\gamma_8$		3	.1	62	6	7.265	5.11902	5	20.77	22.16	22.60	29.90	39.39	57.52	71.07	71.69	73.86	86.08	99.48	103.20	109.43	112.96	130.32
In	$K\alpha_1$		10	100	49	6	24.206	5.12113	6	20.78	22.17	22.61	29.92	39.41	57.54	71.10	71.72	73.89	86.13	99.54	103.26	109.50	113.04	130.42
Ce	$L\alpha_1$		2	100	58	6	4.839	5.12300	4	20.79	22.18	22.62	29.93	39.42	57.56	71.13	71.75	73.92	86.17	99.59			113.10	130.51
Os	$L\gamma_1$		5	10	76	6	12.093	5.12515	5	20.80	22.19	22.63	29.94	39.44	57.59	71.16	71.79	73.96	86.21	99.64	103.37	109.63	113.17	130.61
Eu	$L\gamma_5$		3	.1	63	6	7.255	5.12550	4	20.80	22.19	22.63	29.94	39.44	57.60	71.17	71.79	73.97	86.22	99.65	103.38	109.64	113.18	130.63
Pa	$L\beta_3$		7	6	91	6	16.927	5.12610	5	20.80	22.19	22.63	29.95	39.45	57.60	71.18	71.80	73.98	86.23	99.67	103.40	109.66	113.20	130.66
Rn	$L\beta_3$	H	6	10	86	6	14.509	5.12616	5	20.80	22.20	22.64	29.95	39.45	57.60	71.18	71.80	73.98	86.23	99.67	103.40	109.66	113.21	130.66
W	$L\beta_1$		4	50	74	6	9.671	5.12724	6	20.81	22.20	22.64	29.95	39.45	57.62	71.20	71.82	74.00	86.26	99.70	103.43	109.70	113.24	130.71
Bi	$M\alpha_2$		1	100	83	6	2.416	5.13000	3	20.82	22.21	22.65	29.97	39.48	57.65	71.24	71.86	74.04	86.31	99.77	103.51	109.78	113.34	130.85
Re	$L\gamma_3$		5	2	75	6	12.080	5.13065	5	20.82	22.21	22.66	29.97	39.48	57.66	71.25	71.87	74.05	86.33	99.79	103.53	109.80	113.36	130.88
Po	Ll		4	3	84	6	9.662	5.13160	4	20.83	22.22	22.66	29.98	39.49	57.67	71.27	71.89	74.07	86.35	99.81	103.55	109.83	113.39	130.93
Dy	$L\beta_1$		3	50	66	6	7.246	5.13186	5	20.83	22.22	22.66	29.98	39.49	57.67	71.27	71.89	74.07	86.35	99.82	103.56	109.84	113.40	130.94
Te	$L\gamma_{2,3}$		2	2	52	6	4.828	5.13480	4	20.84	22.23	22.67	30.00	39.51	57.71	71.32	71.94	74.12	86.41	99.90			113.50	131.08
In	$K\alpha_{1,2}$		10	150	49	6	24.136	5.13590	6	20.84	22.24	22.68	30.01	39.52	57.72	71.34	71.96	74.14	86.44	99.93	103.68	109.97	113.54	131.14
Ba	$L\beta_1$		2	50	56	6	4.827	5.13642	5	20.85	22.24	22.68	30.01	39.53	57.73	71.35	71.97	74.15	86.45	99.94			113.56	131.16
Ta	$L\beta_2$		4	20	73	6	9.650	5.13816	5	20.85	22.25	22.69	30.02	39.54	57.75	71.37	72.00	74.18	86.49	99.99	103.74	110.04	113.61	131.25
Gd	$L\beta_5$		3	.1	64	6	7.236	5.13900	4	20.86	22.25	22.69	30.02	39.55	57.76	71.39	72.01	74.19	86.50	100.01	103.76	110.07	113.64	131.29
Ce	$L\alpha_2$		2	10	58	6	4.822	5.14120	4	20.87	22.26	22.70	30.04	39.57	57.79	71.42	72.05	74.23	86.55	100.07			113.72	131.40
Ru	$K\alpha_1$		8	100	44	6	19.276	5.14466	6	20.88	22.28	22.72	30.06	39.59	57.83	71.48	72.10	74.29	86.62	100.16	103.93	110.25	113.84	131.57
Au	$M\gamma$		1	3	79	6	2.409	5.14500	3	20.88	22.28	22.72	30.06	39.60	57.84	71.48	72.11	74.30	86.63	100.17	103.93	110.26	113.85	131.59
Fr	$L\beta_2$		6	20	87	6	14.448	5.14800	3	20.89	22.29	22.73	30.08	39.62	57.87	71.53	72.16	74.35	86.69	100.25	104.02	110.36	113.95	131.74
Cf	$L\gamma_1$		10	10	98	3	24.070	5.15000		20.90	22.30	22.74	30.09	39.64	57.90	71.56	72.19	74.38	86.73	100.30	104.08	110.42	114.02	131.84

El	Line	C	N	I	Z	R	Kev	Lambda	P 10^{-4}	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Au	$L\alpha_2$		4	10	79	6	9.626	5.15088	5		20.90	22.30	22.75	30.10	39.64	57.91	71.58	72.20	74.39	86.75	100.33	104.10	110.45	114.05	131.88
Nb	$L\gamma_5$		1	.1	41	6	2.406	5.15170	4		20.91	22.31	22.75	30.10	39.65	57.92	71.59	72.22	74.41	86.77	100.35	104.13	110.48	114.08	131.92
Ru	$K\beta_1$		9	16	44	6	21.653	5.15234	6		20.91	22.31	22.75	30.10	39.66	57.93	71.60	72.23	74.42	86.78	100.37	104.14	110.50	114.10	131.95
Fr	$L\alpha_1$	H	5	100	87	6	12.029	5.15245	5		20.91	22.31	22.75	30.10	39.66	57.93	71.60	72.23	74.42	86.79	100.37	104.15	110.50	114.10	131.96
Tl	AM_5	H	1		81	6	2.406	5.15300	3		20.91	22.31	22.76	30.11	39.66	57.93	71.61	72.24	74.43	86.80	100.38	104.16	110.52	114.12	131.98
Np	$L\beta_2$		7	20	93	6	16.837	5.15361	6		20.92	22.32	22.76	30.11	39.67	57.94	71.62	72.25	74.44	86.81	100.40	104.18	110.54	114.14	132.01
Ru	$K\alpha_{1,2}$		8	150	44	6	19.233	5.15619	6		20.93	22.33	22.77	30.13	39.69	57.97	71.66	72.29	74.48	86.86	100.47	104.25	110.62	114.23	132.14
Hg	AM_4	H	1		80	6	2.404	5.15700	3		20.93	22.33	22.77	30.13	39.69	57.98	71.68	72.30	74.50	86.88	100.49	104.28	110.65	114.26	132.18
Ru	$K8_3$		9	8	44	6	21.631	5.15760	6		20.93	22.33	22.78	30.14	39.70	57.99	71.69	72.31	74.51	86.89	100.51	104.29	110.66	114.28	132.21
Gd	$L\beta_7$		3	.1	64	6	7.206	5.16090	4		20.95	22.35	22.79	30.16	39.72	58.03	71.74	72.36	74.56	86.96	100.59	104.39	110.77	114.39	132.38
Am	$L\alpha_2$		6	10	95	6	14.409	5.16160	6		20.95	22.35	22.79	30.16	39.73	58.04	71.75	72.38	74.58	86.98	100.61	104.41	110.79	114.42	132.42
Dy	$L\beta_4$		3	5	66	6	7.203	5.16309	5		20.96	22.36	22.80	30.17	39.74	58.06	71.77	72.40	74.60	87.01	100.65	104.45	110.84	114.47	132.49
I	$L\gamma_1$		2	8	53	6	4.800	5.16488	5		20.96	22.37	22.81	30.18	39.76	58.08	71.80	72.43	74.63	87.05	100.70			114.53	132.58
In	$K\alpha_2$		10	50	49	6	23.998	5.16544	6		20.96	22.37	22.81	30.18	39.76	58.09	71.81	72.44	74.64	87.06	100.72	104.52	110.92	114.55	132.61
Hg	$L\beta_3$		5	6	80	6	11.993	5.16790	5		20.97	22.38	22.82	30.20	39.78	58.12	71.85	72.48	74.68	87.11	100.78	104.59	111.00	114.64	132.73
Pb	M_5-O_3		1	.01	82	6	2.399	5.16800	3		20.98	22.38	22.82	30.20	39.78	58.12	71.85	72.48	74.68	87.11	100.78	104.59	111.00	114.64	132.74
Hf	Lt	B	3	.01	72	6	7.194	5.16915	5		20.98	22.38	22.83	30.20	39.79	58.13	71.87	72.50	74.70	87.14	100.81	104.63	111.04	114.68	132.80
W	M_1-N_3		1	.5	74	6	2.397	5.17200	3		20.99	22.40	22.84	30.22	39.81	58.17	71.92	72.55	74.75	87.20	100.89	104.71	111.13	114.78	132.94
Gd	$L\beta_9$		8	3	.01	64	7.190	5.17200	4		20.99	22.40	22.84	30.22	39.81	58.17	71.92	72.55	74.75	87.20	100.89	104.71	111.13	114.78	132.94
Sn	$L\gamma_1$	H	7	10	86	6	16.768	5.17496	5		21.00	22.41	22.85	30.24	39.84	58.20	71.96	72.59	74.80	87.26	100.97	104.79	111.22	114.88	133.09
Mo	$L8_1$		1	45	42	6	2.394	5.17708	5		21.01	22.42	22.86	30.25	39.85	58.23	72.00	72.63	74.84	87.30	101.03	104.85	111.29	114.95	133.20
Ru	$K\alpha_2$		8	50	44	6	19.147	5.17926	6		21.02	22.43	22.87	30.26	39.87	58.26	72.03	72.66	74.87	87.35	101.09	104.92	111.36	115.03	133.31
Tm	$L\alpha_1$	H	3	100	69	6	7.179	5.18040	4		21.03	22.43	22.88	30.27	39.88	58.27	72.05	72.68	74.89	87.37	101.12	104.95	111.40	115.07	133.37
Zn	$K\beta_{1,3}$		4	20	30	6	9.570	5.18100	5		21.03	22.44	22.88	30.28	39.89	58.28	72.06	72.69	74.90	87.39	101.13	104.97	111.42	115.09	133.40
Sm	$L\gamma_1$		3	5	62	6	7.177	5.18172	5		21.03	22.44	22.88	30.28	39.89	58.29	72.07	72.70	74.92	87.40	101.15	104.99	111.44	115.11	133.44
Y	$K\beta_1$		7	16	39	6	16.735	5.18504	5		21.05	22.45	22.90	30.30	39.92	58.33	72.13	72.76	74.97	87.47	101.24	105.08	111.55	115.23	133.61
Ta	Ll		3	3	73	6	7.172	5.18523	5		21.05	22.45	22.90	30.30	39.92	58.33	72.13	72.76	74.98	87.48	101.25	105.09	111.56	115.24	133.62
Au	M_3-N_4		1	1	79	6	2.390	5.18600	3		21.05	22.46	22.90	30.31	39.93	58.34	72.14	72.77	74.99	87.49	101.27	105.11	111.58	115.26	133.66
Cs	$L\beta_6$		2	.1	55	6	4.780	5.18640	4		21.05	22.46	22.90	30.31	39.93	58.35	72.15	72.78	75.00	87.50	101.28			115.28	133.68
Y	$K\beta_3$		7	8	39	6	16.723	5.18882	5		21.06	22.47	22.92	30.32	39.95	58.38	72.19	72.82	75.04	87.55	101.34	105.19	111.67	115.36	133.81
Am	$L\beta_3$		8	6	95	6	19.103	5.19128	5		21.07	22.48	22.93	30.34	39.97	58.41	72.23	72.86	75.08	87.60	101.41	105.26	111.75	115.45	133.93
Pa	Mz_2		1	.1	91	6	2.387	5.19300	3		21.08	22.49	22.93	30.35	39.98	58.43	72.25	72.89	75.11	87.64	101.46	105.31	111.81	115.51	134.02
Gd	$L8_{10}$		8	3	.01	64	7.159	5.19450	4		21.08	22.49	22.94	30.36	39.99	58.45	72.28	72.91	75.13	87.67	101.50	105.36	111.86	115.56	134.10
Tl	$L\beta_4$		5	4	81	6	11.929	5.19590	5		21.09	22.50	22.95	30.36	40.00	58.46	72.30	72.93	75.16	87.70	101.53	105.40	111.90	115.61	134.17
Tl	M_4-O_2		1	.1	81	6	2.386	5.19600	3		21.09	22.50	22.95	30.37	40.01	58.46	72.30	72.94	75.16	87.70	101.54	105.40	111.91	115.61	134.18
Pa	$L\beta_1$		7	50	91	6	16.599	5.19624	5		21.09	22.50	22.95	30.37	40.01	58.47	72.31	72.94	75.16	87.71	101.54	105.41	111.92	115.62	134.19
Rn	$L\beta_1$	H	6	50	86	6	14.313	5.19630	5		21.09	22.50	22.95	30.37	40.01	58.47	72.31	72.94	75.16	87.71	101.55	105.41	111.92	115.62	134.19
Kr	$K8_2$		6	3	36	6	14.312	5.19660	4		21.09	22.50	22.95	30.37	40.01	58.47	72.31	72.95	75.17	87.72	101.55	105.42	111.93	115.63	134.21
Br	$K\alpha_1$		5	100	35	6	11.922	5.19870	5		21.10	22.51	22.96	30.38	40.03	58.50	72.35	72.98	75.20	87.76	101.61	105.48	112.00	115.71	134.32
Hg	$L\beta_2$		5	20	80	6	11.922	5.19875	5		21.10	22.51	22.96	30.38	40.03	58.50	72.35	72.98	75.21	87.76	101.61	105.48	112.00	115.71	134.32
Ru	Ln		1	1	44	6	2.382	5.20500	4		21.13	22.54	22.99	30.42	40.08	58.57	72.45	73.08	75.31	87.90	101.78	105.66	112.20	115.93	134.65
Tl	$L\gamma_1$		6	10	81	6	14.289	5.20512	5		21.13	22.54	22.99	30.42	40.08	58.58	72.45	73.08	75.31	87.90	101.78	105.66	112.21	115.93	134.66
Pd	$K8_1$		10	18	46	6	23.815	5.20520	6		21.13	22.54	22.99	30.42	40.08	58.58	72.45	73.09	75.31	87.90	101.79	105.67	112.21	115.94	134.66
Br	$K\alpha_{1,2}$		5	150	35	6	11.907	5.20550	5		21.13	22.54	22.99	30.42	40.08	58.58	72.46	73.09	75.32	87.91	101.79	105.67	112.22	115.95	134.68
W	$L8_4$		4	4	74	6	9.524	5.20648	5		21.13	22.55	22.99	30.43	40.09	58.59	72.47	73.11	75.34	87.93	101.82	105.70	112.25	115.98	134.73
Pu	$L\alpha_1$		6	100	94	6	14.276	5.20980	5		21.15	22.56	23.01	30.45	40.12	58.63	72.53	73.16	75.39	88.00	101.91	105.80	112.36	116.10	134.90
Pu	$L\gamma_1$		9	10	94	6	21.414	5.20994	6		21.15	22.56	23.01	30.45	40.12	58.64	72.53	73.16	75.40	88.00	101.91	105.80	112.36	116.10	134.91
Pd	$K8_3$		10	8	46	6	23.787	5.21123	6		21.15	22.57	23.02	30.46	40.13	58.65	72.55	73.18	75.42	88.03	101.95	105.84	112.41	116.15	134.98
Fr	$L\alpha_2$	H	5	10	87	6	11.893	5.21150	5		21.15	22.57	23.02	30.46	40.13	58.66	72.55	73.19	75.42	88.03	101.96	105.85	112.42	116.16	134.99
Np	Ll		5	3	93	6	11.887	5.21400	4		21.16	22.58	23.03	30.47	40.15	58.69	72.59	73.23	75.46	88.09	102.02	105.92	112.50	116.25	135.13
Tm	$L\alpha_2$		3	10	69	6	7.132	5.21430	4		21.17	22.58	23.03	30.47	40.15	58.69	72.60	73.23	75.47	88.09	102.03	105.93	112.51	116.26	135.14
Hg	$L\gamma_3$		6	2	80	6	14.262	5.21490	5		21.17	22.58	23.03	30.48	40.16	58.70	72.61	73.24	75.48	88.11	102.05	105.95	112.53	116.28	135.18
Rh	Ll		1	3	45	6	2.376	5.21690	4		21.18	22.59	23.04	30.49	40.17	58.72	72.64	73.28	75.51	88.15	102.10	106.01	112.59	116.35	135.28
Y	AL_1	H	1		39	6	2.376	5.21700	3		21.18	22.59	23.04	30.49	40.17	58.72	72.64	73.28	75.52	88.15	102.11	106.01	112.60	116.35	135.29
Br	$K\alpha_2$		5	50	35	6	11.876	5.21910	5		21.19	22.60	23.05	30.50	40.19	58.75	72.68	73.31	75.55	88.19	102.16	106.07	112.67	116.43	135.40
Nb	$K\alpha_1$		7	100	41	6	16.612	5.22340	5		21.20	22.62	23.07	30.53	40.23	58.80	72.74	73.38	75.62	88.29	102.28	106.20	112.81	116.58	135.63
Cf	$L\beta_2$		8	20	98	3	18.983	5.22400			21.21	22.62	23.07	30.53	40.23	58.81	72.75	73.39	75.63	88.30	102.30	106.21	112.83	116.60	135.66
Th	$L\gamma_1$		8	10	90	6	18.979	5.22504	5		21.21	22.63	23.08	30.54	40.24	58.82	72.77	73.41	75.65	88.32	102.32	106.24	112.86	116.64	135.72
Tb	$L8_6$		3	.1	65	6	7.115	5.22660	4		21.22	22.64	23.08	30.55	40.25	58.84	72.80	73.44	75.68	88.35	102.37	106.29	112.91	116.69	135.80
Ta	$L\beta_3$		4	6	73	6	9.486	5.22712	5		21.22	22.64	23.09	30.55	40.26	58.85	72.80	73.44	75.69	88.37	102.38	106.30	112.93	116.71	135.83
Np	$L\gamma_3$		9	2	93	6	21.336	5.22900	4		21.23	22.65	23.10	30.56	40.27	58.87	72.84	73.47	75.72	88.41	102.43	106.36	112.99	116.78	135.93
Nb	AL_3	H	1		41	6	2.370	5.23000	3		21.23	22.65	23.10	30.57	40.28	58.88	72.85	73.49	75.74	88.43	102.46	106.39	113.03	116.81	135.99
Fe	$K8_5$		8	3	.03	26	7.107	5.23260	4	4	21.24	22.66	23.11	30.58	40.30	58.92	72.89	73.53	75.78	88.48	102.53	106.47	113.11	116.91	136.13
Nb	$K\beta_2$		8	4	41	6	18.949	5.23328	5		21.24	22.67	23.11	30.59	40.31	58.92	72.90	73.54	75.79	88.50	102.55	106.49	113.13	116.93	136.17
Nb	$K\alpha_{1,2}$		7	150	41	6	16.581	5.23329	5		21.24	22.67	23.11	30.59	40.31	58.92	72.90	73.54	75.79	88.50	102.55	106.49	113.14	116.93	136.17

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Nd	$L\gamma_4$		3	.1	60	6	7.106	5.23350	4		21.24	22.67	23.12	30.59	40.31	58.93	72.91	73.55	75.80	88.50	102.56	106.49	113.14	116.94	136.18
Re	AM_3	H	1		75	6	2.368	5.23400	3		21.25	22.67	23.12	30.59	40.31	58.93	72.92	73.56	75.81	88.51	102.57	106.51	113.16	116.96	136.20
U	$L\beta_4$		7	4	92	6	16.573	5.23589	6		21.25	22.68	23.13	30.60	40.33	58.96	72.95	73.59	75.84	88.55	102.62	106.56	113.22	117.02	136.31
Th	M_2-O_4		2	1	90	6	4.735	5.23600	3		21.25	22.68	23.13	30.60	40.33	58.96	72.95	73.59	75.84	88.55	102.62			117.03	136.31
Gd	$L\beta_{2,15}$		3	20	64	6	7.102	5.23650	4		21.26	22.68	23.13	30.61	40.33	58.96	72.96	73.60	75.85	88.57	102.64	106.58	113.24	117.05	136.34
Nb	$L\beta_{2,15}$		1	1	41	6	2.367	5.23790	4		21.26	22.69	23.14	30.62	40.34	58.98	72.98	73.62	75.87	88.60	102.68	106.62	113.29	117.10	136.42
Ce	Ln		2	1	58	6	4.731	5.24060	4		21.27	22.70	23.15	30.63	40.36	59.02	73.02	73.66	75.92	88.65	102.75			117.19	136.57
Tb	$L\beta_3$		3	6	65	6	7.095	5.24160	4		21.28	22.70	23.15	30.64	40.37	59.03	73.04	73.68	75.93	88.67	102.78	106.73	113.41	117.23	136.62
Hg	$L\beta_1$		5	50	80	6	11.821	5.24340	5		21.28	22.71	23.16	30.65	40.39	59.05	73.07	73.71	75.97	88.71	102.83	106.78	113.47	117.29	136.72
Th	$M\zeta_1$		1	1	90	6	2.363	5.24500	3		21.29	22.72	23.17	30.66	40.40	59.07	73.09	73.74	75.99	88.75	102.87	106.83	113.52	117.35	136.81
Tl	$M\beta$		1	55	81	6	2.362	5.24900	3		21.31	22.73	23.18	30.68	40.43	59.12	73.16	73.80	76.06	88.83	102.98	106.95	113.66	117.49	137.03
Sr	$K\alpha_1$		6	100	38	6	14.163	5.25156	5		21.32	22.75	23.20	30.70	40.45	59.15	73.20	73.84	76.10	88.89	103.05	107.02	113.74	117.59	137.17
Pt	$L\alpha_1$		4	100	78	6	9.441	5.25216	5		21.32	22.75	23.20	30.70	40.46	59.16	73.21	73.85	76.11	88.90	103.07	107.04	113.76	117.61	137.20
Nb	$K\alpha_2$		7	50	41	6	16.518	5.25308	5		21.32	22.75	23.20	30.71	40.46	59.17	73.22	73.87	76.13	88.92	103.09	107.07	113.79	117.64	137.26
Cs	$L\beta_3$		2	6	55	6	4.716	5.25700	4		21.34	22.77	23.22	30.73	40.50	59.22	73.29	73.93	76.20	89.00	103.20			117.78	137.47
Sr	$K\alpha_{1,2}$		6	150	38	6	14.140	5.25990	5		21.35	22.78	23.23	30.75	40.52	59.25	73.34	73.98	76.25	89.07	103.28	107.27	114.02	117.89	137.64
Tm	$L\gamma_1$		4	5	69	6	9.424	5.26120	4		21.36	22.79	23.24	30.76	40.53	59.27	73.36	74.00	76.27	89.09	103.32	107.31	114.07	117.93	137.71
Am	$L\beta_1$		8	50	95	6	18.849	5.26124	6		21.36	22.79	23.24	30.76	40.53	59.27	73.36	74.00	76.27	89.09	103.32	107.31	114.07	117.94	137.71
Bi	Ll		4	3	83	6	9.419	5.26440	5		21.37	22.80	23.25	30.77	40.56	59.31	73.41	74.05	76.32	89.16	103.40	107.40	114.17	118.05	137.89
Pd	$K\alpha_1$		9	100	46	6	21.174	5.26903	6		21.39	22.82	23.27	30.80	40.59	59.37	73.48	74.13	76.40	89.26	103.53	107.54	114.33	118.22	138.15
Er	Ln		3	1	68	6	7.057	5.26980	4		21.39	22.83	23.28	30.81	40.60	59.38	73.50	74.14	76.42	89.28	103.55	107.56	114.36	118.25	138.20
Fe	$K\beta_{1,3}$		3	20	26	6	7.057	5.26983	5	4	21.39	22.83	23.28	30.81	40.60	59.38	73.50	74.14	76.42	89.28	103.55	107.56	114.36	118.25	138.20
Kr	$K\beta_1$		6	16	36	6	14.110	5.27100	4		21.40	22.83	23.28	30.81	40.61	59.39	73.52	74.16	76.44	89.30	103.59	107.60	114.40	118.29	138.27
Kr	$K\beta_3$		6	8	36	6	14.102	5.27400	4		21.41	22.84	23.30	30.83	40.63	59.43	73.56	74.21	76.49	89.37	103.67	107.69	114.50	118.40	138.44
Sr	$K\alpha_2$		6	50	38	6	14.095	5.27658	5		21.42	22.86	23.31	30.85	40.65	59.46	73.61	74.25	76.53	89.42	103.74	107.76	114.58	118.49	138.59
Sb	$L\gamma_4$		2	.1	51	6	4.696	5.27960	4		21.43	22.87	23.32	30.87	40.68	59.50	73.66	74.30	76.58	89.49	103.82			118.60	138.76
Pu	$L\alpha_2$		6	10	94	6	14.082	5.28168	5		21.44	22.88	23.33	30.88	40.69	59.52	73.69	74.34	76.62	89.53	103.88	107.92	114.76	118.68	138.88
Pd	$K\alpha_{1,2}$		9	150	46	6	21.121	5.28214	6		21.44	22.88	23.33	30.88	40.70	59.53	73.70	74.35	76.63	89.54	103.89	107.93	114.77	118.70	138.91
U	$L\beta_2$		7	20	92	6	16.425	5.28277	6		21.45	22.88	23.34	30.88	40.70	59.54	73.71	74.36	76.64	89.56	103.91	107.95	114.79	118.72	138.94
Y	$L\gamma_{2,3}$		1	.5	39	6	2.346	5.28300	4		21.45	22.88	23.34	30.89	40.70	59.54	73.71	74.36	76.64	89.56	103.92	107.96	114.80	118.73	138.96
Th	$L\beta_3$		7	6	90	6	16.423	5.28353	5		21.45	22.89	23.34	30.89	40.71	59.55	73.72	74.37	76.65	89.57	103.93	107.97	114.82	118.75	138.99
Pb	$M\alpha_1$		1	100	82	6	2.345	5.28600	3		21.46	22.90	23.35	30.90	40.73	59.58	73.76	74.41	76.69	89.63	104.00	108.04	114.90	118.84	139.13
Rn	$L\alpha_1$	H	5	100	86	6	11.725	5.28615	5		21.46	22.90	23.35	30.90	40.73	59.58	73.76	74.41	76.70	89.63	104.00	108.05	114.91	118.84	139.14
As	$K\beta_1$		5	15	33	6	11.724	5.28650	5		21.46	22.90	23.35	30.91	40.73	59.58	73.77	74.42	76.70	89.64	104.01	108.06	114.92	118.86	139.16
At	$L\beta_3$	H	6	10	85	6	14.065	5.28810	5		21.47	22.91	23.36	30.92	40.75	59.60	73.79	74.44	76.73	89.67	104.06	108.11	114.98	118.92	139.25
As	$K\beta_3$		5	7	33	6	11.718	5.28915	5		21.47	22.91	23.36	30.92	40.75	59.62	73.81	74.46	76.75	89.69	104.09	108.14	115.01	118.95	139.31
Pt	$L\alpha_2$		4	10	78	6	9.360	5.29728	5		21.51	22.95	23.40	30.97	40.82	59.72	73.94	74.60	76.89	89.87	104.31	108.38	115.29	119.25	139.79
Pb	$M\alpha_2$		1	100	82	6	2.339	5.29900	3		21.51	22.95	23.41	30.98	40.83	59.74	73.97	74.62	76.92	89.91	104.36	108.43	115.35	119.32	139.89
Bk	$L\gamma_1$		10	10	97	3	23.389	5.30000			21.52	22.96	23.41	30.99	40.84	59.75	73.99	74.64	76.93	89.93	104.39	108.46	115.38	119.35	139.95
Re	$L\gamma_1$		5	10	75	6	11.683	5.30495	5		21.54	22.98	23.44	31.02	40.88	59.81	74.07	74.72	77.02	90.04	104.53	108.61	115.55	119.54	140.25
Hf	$L\beta_2$		4	20	72	6	9.346	5.30556	5		21.54	22.98	23.44	31.02	40.89	59.82	74.08	74.73	77.03	90.05	104.55	108.63	115.57	119.56	140.28
Ta	$L\beta_1$		4	50	73	6	9.342	5.30792	5		21.55	22.99	23.45	31.04	40.91	59.85	74.12	74.77	77.07	90.10	104.61	108.70	115.65	119.65	140.42
Pd	$K\alpha_2$		9	50	46	6	21.017	5.30839	6		21.55	22.99	23.45	31.04	40.91	59.86	74.12	74.78	77.08	90.11	104.62	108.72	115.67	119.66	140.45
W	$L\gamma_3$		5	2	74	6	11.672	5.31000	5		21.55	23.00	23.46	31.05	40.92	59.88	74.15	74.81	77.11	90.14	104.67	108.76	115.72	119.72	140.55
Nb	$L\beta_3$		1	3	41	6	2.334	5.31020	4		21.56	23.00	23.46	31.05	40.92	59.88	74.15	74.81	77.11	90.15	104.67	108.77	115.73	119.73	140.56
Tc	$K\beta_2$	H	9	3	43	6	21.002	5.31216	5		21.57	23.01	23.47	31.06	40.94	59.90	74.19	74.84	77.14	90.19	104.73	108.83	115.80	119.80	140.68
I	$L\gamma_5$		2	.1	53	6	4.665	5.31420	5		21.58	23.02	23.48	31.07	40.96	59.93	74.22	74.87	77.18	90.24	104.79			119.88	140.80
Pt	$M\gamma$		1	3	78	6	2.331	5.31900	3		21.50	23.04	23.50	31.10	40.99	59.99	74.30	74.95	77.26	90.34	104.92	109.04	116.03	120.06	141.10
Lu	Lt	B	3	.01	71	6	6.980	5.32800	4		21.63	23.08	23.54	31.16	41.07	60.10	74.44	75.10	77.42	90.53	105.17	109.31	116.34	120.40	141.65
Tb	$L\beta_1$		3	50	65	6	6.977	5.33040	4		21.64	23.09	23.55	31.17	41.09	60.13	74.48	75.14	77.46	90.59	105.24	109.38	116.43	120.49	141.80
Nb	$K\beta_3$		8	7	41	6	18.603	5.33072	5		21.64	23.09	23.55	31.17	41.09	60.13	74.49	75.15	77.46	90.59	105.25	109.39	116.44	120.50	141.82
La	$L\alpha_1$		2	100	57	6	4.650	5.33140	5		21.65	23.10	23.55	31.18	41.09	60.14	74.50	75.16	77.47	90.61	105.27			120.52	141.86
Eu	$L\beta_5$	A	3	.1	63	6	6.975	5.33160	4		21.65	23.10	23.55	31.18	41.10	60.14	74.50	75.16	77.48	90.61	105.28	109.42	116.47	120.53	141.87
Cs	$L\beta_4$		2	5	55	6	4.649	5.33320	4		21.65	23.10	23.56	31.19	41.11	60.16	74.53	75.19	77.51	90.65	105.32			120.59	141.97
S	$SK\alpha_4$		1	45	16	1	2.324	5.33415	3	3	21.66	23.11	23.57	31.19	41.12	60.18	74.54	75.20	77.52	90.67	105.35	109.50	116.56	120.63	142.03
Np	$L\alpha_1$		6	100	93	6	13.942	5.33477	6		21.66	23.11	23.57	31.20	41.12	60.18	74.55	75.21	77.53	90.68	105.36	109.51	116.58	120.65	142.07
U	Ll		5	3	92	6	11.616	5.33560	5		21.66	23.11	23.57	31.20	41.13	60.19	74.57	75.23	77.55	90.70	105.39	109.54	116.61	120.68	142.12
Sm	$L\gamma_5$		3	.1	62	6	6.967	5.33802	5		21.67	23.12	23.58	31.22	41.15	60.22	74.61	75.27	77.59	90.75	105.46	109.61	116.69	120.77	142.27
Au	$L\beta_3$		5	6	79	6	11.608	5.33925	5		21.68	23.13	23.59	31.22	41.16	60.24	74.63	75.29	77.61	90.78	105.49	109.65	116.74	120.82	142.35
Th	$M\zeta_2$		1	.1	90	6	2.321	5.34000	3		21.68	23.13	23.59	31.23	41.16	60.25	74.64	75.30	77.62	90.80	105.51	109.67	116.76	120.85	142.40
At	$L\gamma_1$	H	7	10	85	6	16.249	5.34023	5		21.68	23.13	23.59	31.23	41.17	60.25	74.64	75.31	77.63	90.80	105.52	109.68	116.77	120.86	142.41
S	$SK\alpha_3$		1	45	16	1	2.321	5.34077	3	3	21.68	23.14	23.60	31.23	41.17	60.26	74.65	75.31	77.64	90.81	105.53	109.70	116.79	120.88	142.45
Hf	Ll		3	3	72	6	6.958	5.34435	5		21.70	23.15	23.61	31.25	41.20	60.30	74.71	75.37	77.70	90.89	105.63	109.81	116.91	121.01	142.67
Rn	$L\alpha_2$	H	5	10	86	6	11.596	5.34495	5		21.70	23.16	23.61	31.26	41.20	60.31	74.72	75.38	77.71	90.90	105.65	109.82	116.93	121.04	142.71
Nb	$L\beta_4$		1	3	41	6	2.319	5.34550	4		21.70	23.16	23.62	31.26	41.21	60.32	74.73	75.39	77.72	90.92	105.67	109.84	116.95	121.06	142.75

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Pu	$L\beta_3$		8	6	94	6	18.537	5.34968	5		21.72	23.18	23.64	31.29	41.24	60.37	74.80	75.46	77.79	91.01	105.79	109.97	117.10	121.22	143.01
Cd	$K\alpha_1$		10	100	48	6	23.170	5.35010	6		21.72	23.18	23.64	31.29	41.25	60.37	74.81	75.47	77.80	91.02	105.80	109.98	117.11	121.23	143.04
Rh	$K\beta_2$		10	4	45	6	23.169	5.35030	5		21.72	23.18	23.64	31.29	41.25	60.38	74.81	75.47	77.80	91.02	105.80	109.99	117.12	121.24	143.05
La	$L\alpha_2$		2	10	57	6	4.633	5.35066	5		21.73	23.18	23.64	31.29	41.25	60.38	74.81	75.48	77.81	91.03	105.81			121.25	143.07
Au	$L\beta_2$		5	20	79	6	11.583	5.35110	5		21.73	23.18	23.64	31.29	41.25	60.39	74.82	75.49	77.81	91.04	105.83	110.01	117.15	121.27	143.10
Nd	Ll		2	2	60	6	4.632	5.35203	4		21.73	23.19	23.65	31.30	41.26	60.40	74.84	75.50	77.83	91.06	105.85			121.30	143.16
Bk	$L\beta_2$		8	20	97	3	18.529	5.35200			21.73	23.19	23.65	31.30	41.26	60.40	74.84	75.50	77.83	91.06	105.85	110.04	117.18	121.30	143.16
Er	$L\alpha_1$		3	100	68	6	6.947	5.35275	5		21.73	23.19	23.65	31.30	41.27	60.41	74.85	75.51	77.84	91.07	105.87	110.06	117.21	121.33	143.21
S	$SK\alpha'$		1	.3	16	1	2.316	5.35329	3	3	21.74	23.19	23.65	31.31	41.27	60.41	74.86	75.52	77.85	91.09	105.89	110.08	117.23	121.35	143.24
Eu	$L\beta_7$		3	.1	63	6	6.944	5.35530	4		21.74	23.20	23.66	31.32	41.29	60.44	74.89	75.55	77.89	91.13	105.94	110.14	117.30	121.43	143.37
Th	$L8_1$		7	50	90	6	16.199	5.35647	6		21.75	23.21	23.67	31.33	41.30	60.45	74.91	75.57	77.91	91.15	105.98	110.18	117.34	121.47	143.45
Pt	M_3-N_4		1	1	78	6	2.314	5.35700	3		21.75	23.21	23.67	31.33	41.30	60.46	74.92	75.58	77.92	91.17	105.99	110.19	117.36	121.50	143.48
W	M_2-N_4		1	.1	74	6	2.314	5.35700	3		21.75	23.21	23.67	31.33	41.30	60.46	74.92	75.58	77.92	91.17	105.99	110.19	117.36	121.50	143.48
Tb	$L8_4$		3	5	65	6	6.939	5.35920	4		21.76	23.22	23.68	31.34	41.32	60.49	74.95	75.62	77.95	91.21	106.06	110.26	117.43	121.58	143.63
Hg	AM_5	H	1		80	6	2.313	5.36000	2		21.76	23.22	23.68	31.35	41.33	60.50	74.97	75.63	77.97	91.23	106.08	110.28	117.46	121.61	143.68
Ga	$K\alpha_1$		4	100	31	6	9.250	5.36033	6		21.77	23.22	23.68	31.35	41.33	60.50	74.97	75.64	77.97	91.24	106.09	110.30	117.47	121.62	143.70
At	$L8_1$	H	6	50	85	6	13.874	5.36094	5		21.77	23.23	23.69	31.35	41.33	60.51	74.98	75.65	77.99	91.25	106.10	110.31	117.50	121.65	143.74
Hg	$L8_4$		5	4	80	6	11.561	5.36110	5		21.77	23.23	23.69	31.35	41.33	60.51	74.99	75.65	77.99	91.26	106.11	110.32	117.50	121.65	143.75
Nb	$L8_6$		1	3	41	6	2.312	5.36130	4		21.77	23.23	23.69	31.36	41.34	60.51	74.99	75.65	77.99	91.26	106.12	110.32	117.51	121.66	143.76
Cd	$K\alpha_{1,2}$		10	150	48	6	23.106	5.36480	6		21.78	23.24	23.70	31.38	41.36	60.56	75.05	75.71	78.05	91.34	106.21	110.43	117.63	121.79	143.99
Ga	$K\alpha_{1,2}$		4	150	31	6	9.241	5.36554	5		21.79	23.25	23.71	31.38	41.37	60.57	75.06	75.72	78.06	91.35	106.24	110.46	117.66	121.82	144.04
Co	$K\alpha_1$		3	100	27	6	6.929	5.36689	6		21.79	23.25	23.71	31.39	41.38	60.58	75.08	75.75	78.09	91.38	106.27	110.50	117.71	121.87	144.13
Cs	$L\beta_1$		2	50	55	6	4.619	5.36740	4		21.79	23.25	23.72	31.39	41.38	60.59	75.09	75.76	78.10	91.39	106.29			121.89	144.16
Np	$L\gamma_1$		9	10	93	6	20.781	5.36848	6		21.80	23.26	23.72	31.40	41.39	60.60	75.11	75.77	78.12	91.42	106.32	110.55	117.76	121.94	144.24
Co	$K\alpha_{1,2}$		3	150	27	6	6.924	5.37078	6		21.81	23.27	23.73	31.41	41.41	60.63	75.14	75.81	78.16	91.47	106.39	110.62	117.84	122.02	144.39
S	$K\alpha_1$		1	100	16	6	2.307	5.37216	5	3	21.81	23.27	23.74	31.42	41.42	60.65	75.17	75.83	78.18	91.50	106.42	110.66	117.89	122.08	144.48
S	$K\alpha_{1,2}$		1	150	16	6	2.307	5.37309	5	3	21.82	23.28	23.74	31.43	41.43	60.66	75.18	75.85	78.20	91.52	106.45	110.69	117.92	122.11	144.54
Au	AM_4		1		79	6	2.307	5.37400	3		21.82	23.28	23.75	31.43	41.44	60.67	75.20	75.87	78.21	91.54	106.48	110.72	117.96	122.15	144.60
Eu	$L8_9$	B	3	.01	63	6	6.919	5.37480	4		21.82	23.29	23.75	31.44	41.44	60.68	75.21	75.88	78.23	91.56	106.50	110.74	117.99	122.18	144.66
S	$K\alpha_2$		1	50	16	6	2.306	5.37496	5	3	21.83	23.29	23.75	31.44	41.45	60.68	75.21	75.88	78.23	91.56	106.50	110.75	117.99	122.18	144.67
Ga	$K\alpha_2$		4	50	31	6	9.223	5.37596	5		21.83	23.29	23.75	31.44	41.45	60.70	75.23	75.90	78.25	91.58	106.53	110.78	118.03	122.22	144.73
Zr	AL_2		1		40	6	2.305	5.37800	3		21.84	23.30	23.76	31.46	41.47	60.72	75.26	75.93	78.28	91.63	106.59	110.84	118.10	122.30	144.87
Co	$K\alpha_2$		3	50	27	6	6.914	5.37855	6		21.84	23.30	23.77	31.46	41.47	60.73	75.27	75.94	78.29	91.64	106.61	110.86	118.12	122.32	144.91
Hg	$L\gamma_1$		6	10	80	6	13.828	5.37876	5		21.84	23.30	23.77	31.46	41.48	60.73	75.28	75.94	78.29	91.64	106.61	110.86	118.13	122.33	144.92
Ta	$L8_4$		4	4	73	6	9.211	5.38324	5		21.86	23.32	23.79	31.49	41.51	60.79	75.35	76.02	78.37	91.74	106.74	111.00	118.29	122.51	145.23
Zr	$L\gamma_1$		1	1	40	6	2.302	5.38430	4		21.86	23.33	23.79	31.49	41.52	60.80	75.37	76.04	78.39	91.76	106.77	111.03	118.32	122.55	145.30
Er	$L\alpha_2$		3	10	68	6	6.904	5.38650	4		21.87	23.34	23.80	31.51	41.54	60.83	75.40	76.07	78.43	91.81	106.83	111.10	118.40	122.63	145.45
Au	$L\gamma_3$		6	2	79	6	13.807	5.38698	5		21.87	23.34	23.80	31.51	41.54	60.83	75.41	76.08	78.44	91.82	106.85	111.12	118.42	122.65	145.48
U	$L\gamma_3$		9	2	92	6	20.709	5.38717	6		21.88	23.34	23.80	31.51	41.54	60.84	75.41	76.08	78.44	91.83	106.85	111.12	118.43	122.66	145.49
Ac	$L\gamma_1$	H	8	10	89	6	18.405	5.38808	5		21.88	23.34	23.81	31.52	41.55	60.85	75.43	76.10	78.46	91.85	106.88	111.15	118.46	122.69	145.56
Nd	$L\gamma_3$		3	1	60	6	6.900	5.38920	4		21.88	23.35	23.81	31.52	41.56	60.86	75.45	76.12	78.47	91.87	106.91	111.19	118.50	122.74	145.63
Pa	$L8_4$		7	4	91	6	16.101	5.38930	4		21.88	23.35	23.81	31.52	41.56	60.86	75.45	76.12	78.48	91.87	106.91	111.19	118.50	122.74	145.64
Sb	$L\gamma_{2,3}$		2	2	51	6	4.599	5.39060	4		21.89	23.36	23.82	31.53	41.57	60.88	75.47	76.14	78.50	91.90	106.95			122.79	145.73
Cd	$K\alpha_2$		10	50	48	6	22.980	5.39422	6		21.90	23.37	23.84	31.55	41.60	60.93	75.53	76.20	78.56	91.98	107.06	111.34	118.68	122.93	145.98
Sr	$K8_2$		7	3	38	6	16.082	5.39567	5		21.91	23.38	23.84	31.56	41.61	60.94	75.55	76.23	78.59	92.01	107.10	111.39	118.73	122.99	146.08
Pm	$L\gamma_1$		3	5	61	6	6.891	5.39670	4		21.91	23.38	23.85	31.57	41.62	60.96	75.57	76.24	78.61	92.04	107.13	111.42	118.77	123.03	146.15
Eu	$L8_{10}$	8	3	.01	63	6	6.889	5.39790	4		21.92	23.39	23.85	31.58	41.63	60.97	75.59	76.26	78.63	92.06	107.16	111.46	118.81	123.08	146.24
Pb	Ll		4	3	82	6	9.183	5.39960	5		21.93	23.40	23.86	31.59	41.64	60.99	75.62	76.29	78.66	92.10	107.21	111.51	118.87	123.14	146.36
Ta	M_1-N_3		1	.5	73	6	2.296	5.40000	2		21.93	23.40	23.86	31.59	41.65	61.00	75.63	76.30	78.66	92.11	107.22	111.52	118.89	123.16	146.38
Tc	$K\alpha_1$	H	8	100	43	6	18.364	5.40016	5		21.93	23.40	23.86	31.59	41.65	61.00	75.63	76.30	78.67	92.11	107.23	111.53	118.89	123.17	146.39
Ra	$L\gamma_3$		8	2	88	6	18.354	5.40304	5		21.94	23.41	23.88	31.61	41.67	61.04	75.68	76.35	78.72	92.18	107.31	111.62	118.99	123.28	146.60
Nd	$L\gamma_2$		3	1	60	6	6.882	5.40390	4		21.94	23.41	23.88	31.61	41.68	61.05	75.69	76.36	78.73	92.19	107.33	111.64	119.03	123.31	146.66
Ir	$L\alpha_1$		4	100	77	6	9.174	5.40512	5		21.95	23.42	23.88	31.62	41.69	61.06	75.71	76.38	78.75	92.22	107.37	111.68	119.07	123.36	146.74
Np	$L\alpha_2$		6	10	93	6	13.757	5.40627	6		21.95	23.42	23.89	31.63	41.70	61.08	75.73	76.40	78.77	92.25	107.40	111.72	119.11	123.41	146.83
Mo	$L\alpha_1$		1	100	42	6	2.293	5.40655	5		21.96	23.43	23.89	31.63	41.70	61.08	75.73	76.41	78.78	92.25	107.41	111.73	119.12	123.42	146.85
Tc	$K\alpha_{1,2}$	H	8	150	43	6	18.325	5.41162	5		21.98	23.45	23.91	31.66	41.74	61.14	75.82	76.49	78.86	92.37	107.56	111.89	119.30	123.62	147.21
Tc	$K\beta_1$	H	9	16	43	6	20.615	5.41170	5		21.98	23.45	23.91	31.66	41.74	61.14	75.82	76.49	78.87	92.37	107.56	111.89	119.31	123.62	147.22
Hf	$L8_3$		4	6	72	6	9.162	5.41200	5		21.98	23.45	23.92	31.66	41.74	61.15	75.82	76.50	78.87	92.37	107.57	111.90	119.32	123.63	147.24
Mo	$L\alpha_2$		1	10	42	6	2.289	5.41437	5		21.99	23.46	23.93	31.67	41.76	61.18	75.86	76.54	78.91	92.43	107.64	111.97	119.40	123.73	147.41
Pa	$L8_2$		7	20	91	6	16.022	5.41590	4		21.99	23.47	23.93	31.68	41.78	61.20	75.89	76.56	78.94	92.46	107.68	112.02	119.46	123.79	147.52
Gd	$L8_6$		3	.1	64	6	6.866	5.41620	4		21.99	23.47	23.93	31.69	41.78	61.20	75.89	76.57	78.94	92.47	107.69	112.03	119.47	123.80	147.54
Tc	$K\beta_3$	H	9	8	43	6	20.595	5.41692	5		22.00	23.47	23.94	31.69	41.78	61.21	75.90	76.58	78.96	92.48	107.71	112.05	119.50	123.83	147.59
Au	$L8_1$		5	50	79	6	11.440	5.41765	5		22.00	23.47	23.94	31.69	41.79	61.22	75.92	76.59	78.97	92.50	107.73	112.07	119.52	123.86	147.65
Pu	$L8_1$		8	50	94	6	18.291	5.42176	5		22.02	23.49	23.96	31.72	41.82	61.27	75.98	76.66	79.04	92.59	107.85	112.20	119.67	124.02	147.95
Te	$L\gamma_1$		2	8	52	6	4.570	5.42482	5		22.03	23.51	23.97	31.74	41.85	61.31	76.03	76.71	79.09	92.66	107.94			124.14	148.17

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
At	$L\alpha_1$	H	5	100	85	6	11.425	5.42500	5		22.03	23.51	23.97	31.74	41.85	61.31	76.04	76.72	79.10	92.66	107.95	112.31	119.79	124.15	148.19
Cf	$L\beta_1$		9	50	98	3	20.557	5.42700			22.04	23.52	23.98	31.75	41.87	61.34	76.07	76.75	79.13	92.71	108.00	112.37	119.86	124.23	148.34
I	$L\beta_9$	8	2	.01	53	6	4.568	5.42704	5		22.04	23.52	23.98	31.75	41.87	61.34	76.07	76.75	79.13	92.71	108.00			124.23	148.34
Hg	$M\beta$		1	50	80	6	2.282	5.43180	4		22.06	23.54	24.00	31.78	41.90	61.40	76.15	76.83	79.22	92.81	108.14	112.52	120.04	124.42	148.69
Tc	$K\alpha_2$	H	8	50	43	6	18.248	5.43456	5		22.07	23.55	24.02	31.80	41.93	61.43	76.20	76.88	79.26	92.87	108.22	112.61	120.14	124.53	148.90
W	AM_3	H	1		74	6	2.281	5.43500	3		22.07	23.55	24.02	31.80	41.93	61.44	76.20	76.88	79.27	92.88	108.24	112.62	120.16	124.55	148.94
Eu	$L\beta_{2/15}$		3	20	63	6	6.842	5.43540	4		22.07	23.55	24.02	31.80	41.93	61.44	76.21	76.89	79.28	92.89	108.25	112.63	120.17	124.56	148.97
I	$L\beta_{10}$	B	2	.01	53	6	4.556	5.44208	5		22.10	23.58	24.05	31.84	41.99	61.52	76.32	77.00	79.40	93.04	108.44			124.83	149.48
Gd	$L\beta_3$		3	6	64	6	6.830	5.44500	4		22.11	23.59	24.06	31.86	42.01	61.56	76.37	77.05	79.45	93.10	108.53	112.94	120.52	124.95	149.70
Ac	$L\beta_3$	H	7	10	89	6	15.929	5.44754	5		22.12	23.61	24.07	31.87	42.03	61.59	76.41	77.09	79.49	93.16	108.60	113.02	120.62	125.05	149.90
Ir	$L\alpha_2$		4	10	77	6	9.098	5.45003	5		22.13	23.62	24.09	31.89	42.05	61.62	76.45	77.13	79.53	93.22	108.67	113.10	120.71	125.15	150.10
Pa	Ll		5	3	91	6	11.364	5.45400	4		22.15	23.63	24.10	31.91	42.08	61.67	76.52	77.20	79.60	93.30	108.79	113.22	120.85	125.31	150.41
Po	$L\beta_3$		6	6	84	6	13.635	5.45460	4		22.15	23.64	24.11	31.92	42.09	61.68	76.53	77.21	79.62	93.32	108.81	113.24	120.88	125.34	150.46
Rh	$K\beta_1$		10	16	45	6	22.720	5.45605	6		22.16	23.64	24.11	31.92	42.10	61.70	76.55	77.24	79.64	93.35	108.85	113.29	120.93	125.40	150.58
Er	$L\gamma_1$		4	5	68	6	9.087	5.45640	4		22.16	23.65	24.11	31.93	42.10	61.70	76.56	77.24	79.65	93.36	108.86	113.30	120.94	125.41	150.60
I	$L8_7$		2	.1	53	6	4.543	5.45760	4		22.17	23.65	24.12	31.93	42.11	61.72	76.58	77.26	79.67	93.38	108.90			125.46	150.70
Pr	$L\gamma_4$		3	.1	59	6	6.814	5.45790	4		22.17	23.65	24.12	31.94	42.12	61.72	76.58	77.27	79.67	93.39	108.91	113.35	121.00	125.47	150.72
Tl	$M\alpha_1$		1	100	81	6	2.270	5.46000	3		22.17	23.66	24.13	31.95	42.13	61.75	76.62	77.30	79.71	93.44	108.97	113.42	121.08	125.56	150.89
Cm	$L\gamma_1$		10	10	96	3	22.703	5.46000			22.17	23.66	24.13	31.95	42.13	61.75	76.62	77.30	79.71	93.44	108.97	113.42	121.08	125.56	150.89
Rh	$K\beta_3$		10	8	45	6	22.695	5.46200	6		22.18	23.67	24.14	31.96	42.15	61.77	76.65	77.34	79.74	93.48	109.03	113.48	121.15	125.64	151.06
U	$L\alpha_1$		6	100	92	6	13.612	5.46383	6		22.19	23.68	24.15	31.97	42.16	61.80	76.68	77.37	79.78	93.52	109.08	113.54	121.22	125.72	151.20
Tl	$M\alpha_2$		1	100	81	6	2.265	5.47200	3		22.22	23.71	24.18	32.02	42.23	61.90	76.82	77.50	79.92	93.71	109.32	113.80	121.52	126.05	151.88
Ho	Ln		3	1	67	6	6.787	5.47920	4		22.25	23.75	24.22	32.06	42.29	61.99	76.94	77.62	80.05	93.87	109.53	114.03	121.79	126.35	152.49
La	Ln		2	1	57	6	4.524	5.48000	3		22.26	23.75	24.22	32.07	42.29	62.00	76.95	77.64	80.06	93.88	109.56			126.38	152.56
Cm	$L8_2$		8	20	96	3	18.096	5.48000			22.26	23.75	24.22	32.07	42.29	62.00	76.95	77.64	80.06	93.88	109.56	114.06	121.82	126.38	152.56
Sr	$K8_1$		7	16	38	6	15.833	5.48044	5		22.26	23.75	24.22	32.07	42.30	62.01	76.96	77.64	80.07	93.89	109.57	114.07	121.84	126.40	152.59
At	$L\alpha_2$	H	5	10	85	6	11.303	5.48355	5		22.27	23.76	24.24	32.09	42.32	62.04	77.01	77.70	80.12	93.96	109.66	114.17	121.96	126.53	152.86
Sr	$K\beta_3$		7	8	38	6	15.822	5.48415	5		22.27	23.77	24.24	32.09	42.33	62.05	77.02	77.71	80.13	93.98	109.68	114.19	121.98	126.55	152.91
Lu	$L\beta_{15}$		4	20	71	6	9.038	5.48600	4		22.28	23.78	24.25	32.10	42.34	62.08	77.05	77.74	80.17	94.02	109.74	114.25	122.05	126.63	153.07
Am	$L8_4$		8	4	95	6	18.060	5.49112	5		22.30	23.80	24.27	32.14	42.38	62.14	77.13	77.82	80.26	94.13	109.89	114.42	122.24	126.84	153.53
Nb	$L\beta_1$		1	45	41	6	2.257	5.49230	4		22.31	23.80	24.28	32.14	42.39	62.15	77.15	77.84	80.28	94.16	109.92	114.46	122.29	126.89	153.63
Yb	Lt	B	3	.01	70	6	6.770	5.49273	5		22.31	23.80	24.28	32.14	42.40	62.16	77.16	77.85	80.28	94.17	109.94	114.47	122.31	126.91	153.67
W	$L\gamma_1$		5	10	74	6	11.284	5.49275	5		22.31	23.80	24.28	32.14	42.40	62.16	77.16	77.85	80.28	94.17	109.94	114.47	122.31	126.91	153.67
Hf	$L\beta_1$		4	50	72	6	9.021	5.49640	5		22.32	23.82	24.29	32.17	42.43	62.21	77.22	77.91	80.35	94.25	110.05	114.59	122.44	127.06	154.00
Ta	$L\gamma_3$		5	2	73	6	11.276	5.49680	5		22.33	23.82	24.30	32.17	42.43	62.21	77.23	77.92	80.36	94.26	110.06	114.60	122.46	127.08	154.03
Ti	$K\alpha_1$		2	100	22	6	4.510	5.49702	5	4	22.33	23.82	24.30	32.17	42.43	62.21	77.23	77.92	80.36	94.27	110.06			127.09	154.05
Zr	$L\gamma_5$		1	.1	40	6	2.255	5.49770	4		22.33	23.83	24.30	32.17	42.44	62.22	77.24	77.94	80.37	94.28	110.08	114.63	122.49	127.12	154.12
Ti	$K\alpha_{1/2}$		2	150	22	6	4.508	5.49945	5	4	22.34	23.83	24.31	32.19	42.45	62.24	77.27	77.97	80.40	94.32	110.14			127.19	154.28
Ir	$M\gamma$		1	1	77	6	2.254	5.50000	3		22.34	23.84	24.31	32.19	42.46	62.25	77.28	77.97	80.41	94.33	110.15	114.71	122.58	127.21	154.33
I	$L\beta_{2/15}$		2	17	53	6	4.507	5.50106	5		22.34	23.84	24.31	32.19	42.46	62.26	77.30	77.99	80.43	94.36	110.18			127.26	154.42
Zr	$K\alpha_1$		7	100	40	6	15.772	5.50151	5		22.35	23.84	24.32	32.20	42.47	62.27	77.31	78.00	80.44	94.37	110.20	114.75	122.64	127.28	154.46
Ru	Ll		1	3	44	6	2.252	5.50350	4		22.35	23.85	24.33	32.21	42.48	62.30	77.34	78.03	80.47	94.41	110.26	114.82	122.71	127.36	154.65
Ti	$K\alpha_2$		2	50	22	6	4.504	5.50432	5	4	22.36	23.86	24.33	32.21	42.49	62.31	77.35	78.05	80.49	94.43	110.28			127.40	154.72
U	M_1-N_3		2	.1	92	6	4.503	5.50600	3		22.36	23.86	24.34	32.22	42.50	62.33	77.38	78.08	80.52	94.47	110.33			127.47	154.88
Lu	Ll		3	2	71	6	6.752	5.50800	4		22.37	23.87	24.35	32.24	42.52	62.35	77.41	78.11	80.55	94.51	110.39	114.97	122.89	127.55	155.07
Pt	$L\beta_2$		5	20	78	6	11.249	5.51000	5		22.38	23.88	24.36	32.25	42.54	62.38	77.45	78.14	80.59	94.56	110.45	115.03	122.96	127.64	155.26
Zr	$K\alpha_{1/2}$		7	150	40	6	15.744	5.51135	5		22.39	23.89	24.36	32.26	42.55	62.39	77.47	78.17	80.61	94.59	110.49	115.08	123.01	127.69	155.38
Po	$L\gamma_1$		7	10	84	6	15.741	5.51236	5		22.39	23.89	24.37	32.26	42.56	62.41	77.49	78.18	80.63	94.61	110.52	115.11	123.05	127.74	155.48
Np	$L8_3$	H	8	6	93	6	17.986	5.51360	5		22.40	23.90	24.37	32.27	42.57	62.42	77.51	78.20	80.65	94.64	110.56	115.15	123.10	127.79	155.60
Pt	$L8_3$	D	5	6	78	6	11.233	5.51790	5		22.41	23.92	24.39	32.30	42.60	62.48	77.58	78.28	80.73	94.74	110.69	115.29	123.27	127.97	156.02
Zr	$K8_2$		8	4	40	6	17.967	5.51944	5		22.42	23.92	24.40	32.31	42.61	62.50	77.61	78.30	80.76	94.77	110.74	115.34	123.33	128.04	156.17
Rh	$K\alpha_1$		9	100	45	6	20.213	5.51951	6		22.42	23.92	24.40	32.31	42.61	62.50	77.61	78.30	80.76	94.77	110.74	115.34	123.33	128.04	156.17
Sr	$K8_2$		6	2	35	6	13.467	5.52276	5		22.43	23.94	24.41	32.33	42.64	62.54	77.66	78.36	80.81	94.85	110.84	115.45	123.45	128.18	156.50
Ac	$L8_1$	H	7	50	89	6	15.710	5.52321	5		22.43	23.94	24.41	32.33	42.64	62.54	77.67	78.37	80.82	94.86	110.85	115.46	123.47	128.20	156.54
Se	$K\alpha_1$		5	100	34	6	11.220	5.52385	5		22.44	23.94	24.42	32.33	42.65	62.55	77.68	78.38	80.83	94.87	110.87	115.49	123.50	128.22	156.61
Bi	$L\gamma_3$		7	2	83	6	15.708	5.52419	5		22.44	23.94	24.42	32.33	42.65	62.56	77.68	78.38	80.84	94.88	110.88	115.50	123.51	128.24	156.64
Sc	$K8_5$		2	.02	21	6	4.486	5.52680	4	4	22.45	23.95	24.43	32.35	42.67	62.59	77.73	78.43	80.89	94.94	110.96			128.35	156.90
Se	$K\alpha_{1/2}$		5	150	34	6	11.207	5.53059	5		22.47	23.97	24.45	32.37	42.70	62.64	77.79	78.49	80.95	95.02	111.07	115.71	123.76	128.51	157.29
Zr	$K\alpha_2$		7	50	40	6	15.688	5.53105	5		22.47	23.97	24.45	32.38	42.71	62.64	77.80	78.50	80.96	95.03	111.08	115.72	123.77	128.53	157.34
Po	$L8_1$		6	50	84	6	13.445	5.53200	4		22.47	23.98	24.45	32.38	42.72	62.65	77.82	78.52	80.98	95.05	111.11	115.75	123.81	128.57	157.44
Au	$L8_4$		5	4	79	6	11.203	5.53255	5		22.47	23.98	24.46	32.38	42.72	62.66	77.82	78.52	80.99	95.07	111.13	115.77	123.83	128.60	157.49
Rh	$K\alpha_{1/2}$		9	150	45	6	20.165	5.53256	6		22.47	23.98	24.46	32.38	42.72	62.66	77.82	78.52	80.99	95.07	111.13	115.77	123.83	128.60	157.50
U	$L\gamma_1$		9	10	92	6	20.164	5.53293	6		22.48	23.98	24.46	32.39	42.72	62.67	77.83	78.53	80.99	95.08	111.14	115.78	123.85	128.61	157.53
Ho	$L\alpha_1$		3	100	67	6	6.719	5.53500	4		22.48	23.99	24.47	32.40	42.74	62.69	77.87	78.57	81.03	95.12	111.20	115.85	123.93	128.70	157.75
U	$L\alpha_2$		6	10	92	6	13.437	5.53535	6		22.48	23.99	24.47	32.40	42.74	62.70	77.87	78.57	81.04	95.13	111.21	115.86	123.94	128.72	157.79

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
								10^{-}																	
Si	M_3-N_1		1	1	83	6	2.239	5.53700	3		22.49	24.00	24.48	32.41	42.76	62.72	77.90	78.60	81.07	95.17	111.26	115.92	124.00	128.79	157.96
Tl	Ll		4	3	81	6	8.952	5.53908	5		22.50	24.01	24.49	32.42	42.77	62.74	77.93	78.64	81.10	95.22	111.33	115.99	124.09	128.88	158.18
Ir	M_3-N_4		1	.1	77	6	2.238	5.54000	3		22.50	24.01	24.49	32.43	42.78	62.76	77.95	78.65	81.12	95.24	111.36	116.02	124.12	128.92	158.28
Gd	$L\beta_1$		3	50	64	6	6.712	5.54040	4		22.51	24.01	24.49	32.43	42.78	62.76	77.96	78.66	81.13	95.25	111.37	116.03	124.14	128.94	158.33
Sm	$L\beta_5$		3	.1	62	6	6.711	5.54100	5		22.51	24.02	24.49	32.43	42.79	62.77	77.97	78.67	81.14	95.26	111.39	116.05	124.16	128.96	158.39
Cf	$L\alpha_1$		7	100	98	3	15.652	5.54400			22.52	24.03	24.51	32.45	42.81	62.81	78.02	78.72	81.19	95.33	111.48	116.15	124.28	129.09	158.72
Se	$K\alpha_2$		5	50	34	6	11.179	5.54410	5		22.52	24.03	24.51	32.45	42.81	62.81	78.02	78.72	81.19	95.33	111.48	116.15	124.28	129.10	158.73
Th	$L\beta_4$		7	4	90	6	15.640	5.54799	5		22.54	24.05	24.53	32.48	42.84	62.86	78.08	78.79	81.26	95.42	111.60	116.28	124.43	129.27	159.16
Ba	$L\alpha_1$		2	100	56	6	4.465	5.55190	5		22.55	24.07	24.54	32.50	42.88	62.91	78.15	78.85	81.33	95.51	111.72			129.44	159.61
Pa	$L\gamma_3$		9	2	91	6	20.094	5.55210	4		22.55	24.07	24.54	32.50	42.88	62.91	78.15	78.86	81.33	95.51	111.72	116.42	124.60	129.45	159.63
Rb	$K\alpha_1$		6	100	37	6	13.393	5.55332	6		22.56	24.07	24.55	32.51	42.89	62.92	78.17	78.88	81.35	95.54	111.76	116.46	124.64	129.50	159.77
Th	$L\beta_2$		7	20	90	6	15.621	5.55478	5		22.56	24.08	24.56	32.52	42.90	62.94	78.20	78.90	81.38	95.57	111.80	116.51	124.70	129.56	159.94
Sn	$L\gamma_4$		2	.1	50	6	4.463	5.55500	4		22.57	24.08	24.56	32.52	42.90	62.94	78.20	78.91	81.38	95.58	111.81			129.57	159.96
Ra	$L\gamma_1$		8	10	88	6	17.845	5.55704	5		22.57	24.09	24.57	32.53	42.92	62.97	78.23	78.94	81.42	95.62	111.87	116.58	124.79	129.66	160.20
Rh	$K\alpha_2$		9	50	45	6	20.070	5.55867	6		22.58	24.09	24.57	32.54	42.93	62.99	78.26	78.97	81.45	95.66	111.92	116.64	124.85	129.73	160.40
Au	$L\gamma_1$		6	10	79	6	13.379	5.55900	5		22.58	24.10	24.57	32.54	42.93	63.00	78.27	78.97	81.46	95.67	111.93	116.65	124.87	129.75	160.44
Sc	$K\beta_{1,3}$		2	20	21	6	4.460	5.55920	4	4	22.58	24.10	24.58	32.54	42.94	63.00	78.27	78.98	81.46	95.67	111.94			129.76	160.46
Rb	$K\alpha_{1,2}$		6	150	37	6	13.373	5.56159	5		22.59	24.11	24.59	32.56	42.95	63.03	78.31	79.02	81.50	95.73	112.01	116.74	124.97	129.86	160.75
Gd	$L\beta_4$		3	5	64	6	6.686	5.56200	4		22.59	24.11	24.59	32.56	42.96	63.03	78.32	79.02	81.51	95.74	112.02	116.75	124.99	129.88	160.80
Os	$L\alpha_1$		4	100	76	6	8.910	5.56484	5		22.61	24.12	24.60	32.58	42.98	63.07	78.37	79.07	81.56	95.80	112.11	116.85	125.10	130.00	161.15
Nd	$L\gamma_6$		3	.1	60	6	6.682	5.56560	4		22.61	24.13	24.60	32.58	42.99	63.08	78.38	79.09	81.57	95.82	112.14	116.87	125.13	130.04	161.24
Pt	$L\gamma_3$		6	2	78	6	13.359	5.56746	5		22.62	24.13	24.61	32.59	43.00	63.10	78.41	79.12	81.61	95.86	112.19	116.93	125.20	130.12	161.48
Pr	Ll		2	2	59	6	4.452	5.56820	4		22.62	24.14	24.62	32.60	43.01	63.11	78.42	79.13	81.62	95.88	112.21			130.15	161.57
Ho	$L\alpha_2$		3	10	67	6	6.679	5.56830	4		22.62	24.14	24.62	32.60	43.01	63.11	78.42	79.13	81.62	95.88	112.22	116.96	125.24	130.16	161.58
Sm	$L\beta_7$		3	.1	62	6	6.678	5.56878	5		22.62	24.14	24.62	32.60	43.01	63.12	78.43	79.14	81.63	95.89	112.23	116.98	125.25	130.18	161.64
Hf	$L\beta_4$		4	4	72	6	8.904	5.56880	5		22.62	24.14	24.62	32.60	43.01	63.12	78.43	79.14	81.63	95.89	112.23	116.98	125.26	130.18	161.65
Cu	$K\beta_{1,3}$		4	20	29	6	8.904	5.56887	6		22.62	24.14	24.62	32.60	43.01	63.12	78.43	79.14	81.63	95.89	112.24	116.98	125.26	130.18	161.66
Po	$L\alpha_1$		5	100	84	6	11.129	5.56930	5		22.62	24.14	24.62	32.61	43.02	63.13	78.44	79.15	81.64	95.90	112.25	116.99	125.28	130.20	161.71
Ta	M_2-N_4		1	.2	73	6	2.225	5.57000	3		22.63	24.14	24.62	32.61	43.02	63.13	78.45	79.16	81.65	95.92	112.27	117.02	125.30	130.23	161.80
Cu	$K\beta_3$		4	6	29	6	8.901	5.57040	4		22.63	24.15	24.63	32.61	43.03	63.14	78.46	79.17	81.66	95.93	112.28	117.03	125.32	130.25	161.85
Ba	$L\alpha_2$		2	10	56	6	4.450	5.57106	5		22.63	24.15	24.63	32.62	43.03	63.15	78.47	79.18	81.67	95.94	112.30			130.28	161.94
Po	$L\beta_2$		6	20	84	6	13.338	5.57622	5		22.65	24.17	24.65	32.65	43.07	63.21	78.56	79.27	81.76	96.06	112.46	117.23	125.55	130.51	162.62
Rb	$K\alpha_2$		6	50	37	6	13.333	5.57814	5		22.66	24.18	24.66	32.66	43.09	63.24	78.59	79.30	81.80	96.10	112.52	117.29	125.63	130.60	162.88
Zr	AL_3		1		40	6	2.222	5.57900	3		22.66	24.18	24.66	32.66	43.10	63.25	78.60	79.31	81.81	96.12	112.55	117.32	125.66	130.63	162.99
Te	$L\gamma_5$		2	.1	52	6	4.443	5.58014	5		22.67	24.19	24.67	32.67	43.11	63.26	78.62	79.33	81.83	96.15	112.58			130.68	163.15
Au	AM_5		1		79	6	2.220	5.58400	3		22.69	24.21	24.69	32.69	43.14	63.31	78.69	79.40	81.90	96.24	112.70	117.49	125.86	130.86	163.70
Sm	$L\beta_9$	B	3	.01	62	6	6.659	5.58498	5		22.69	24.21	24.69	32.70	43.14	63.32	78.70	79.41	81.92	96.26	112.73	117.52	125.90	130.90	163.84
Zr	$L\beta_{2,15}$		1		1	40	6	2.219	5.58630	4		22.69	24.22	24.70	32.71	43.16	63.34	78.73	79.44	81.94	96.29	112.77	117.57	125.96	130.96	164.03
Np	$L\beta_1$		8	50	93	6	17.747	5.58782	6		22.70	24.22	24.70	32.72	43.17	63.36	78.75	79.46	81.97	96.33	112.82	117.62	126.02	131.03	164.25
Mo	$K\beta_2$		9	4	42	6	19.962	5.58891	5		22.71	24.23	24.71	32.72	43.18	63.37	78.77	79.48	81.99	96.35	112.85	117.66	126.06	131.08	164.42
Sk	$L\beta_1$		9	50	97	3	19.961	5.58900			22.71	24.23	24.71	32.72	43.18	63.37	78.77	79.48	81.99	96.35	112.85	117.66	126.06	131.08	164.43
Pt	AM_4	H	1		78	6	2.218	5.59000	2		22.71	24.23	24.71	32.73	43.19	63.39	78.79	79.50	82.01	96.38	112.89	117.69	126.10	131.13	164.58
Sr	AL_1	H	1		38	6	2.217	5.59200	3		22.72	24.24	24.72	32.74	43.20	63.41	78.82	79.53	82.04	96.42	112.95	117.76	126.18	131.22	164.89
Ag	$K\alpha_1$		10	100	47	6	22.159	5.59407	7		22.73	24.25	24.73	32.75	43.22	63.44	78.86	79.57	82.08	96.47	113.01	117.83	126.27	131.31	165.21
Br	$K\beta_1$		6	16	35	6	13.289	5.59674	5		22.74	24.26	24.74	32.77	43.24	63.47	78.90	79.62	82.13	96.53	113.09	117.92	126.38	131.43	165.64
Pa	$L\alpha_1$		6	100	91	6	13.288	5.59704	5		22.74	24.26	24.75	32.77	43.24	63.48	78.91	79.62	82.13	96.54	113.10	117.93	126.39	131.45	165.68
Pt	$L\beta_1$		5	50	78	6	11.069	5.59950	5		22.75	24.27	24.76	32.79	43.26	63.51	78.95	79.66	82.18	96.59	113.18	118.02	126.49	131.56	166.09
Br	$K\beta_3$		6	8	35	6	13.282	5.59962	5		22.75	24.28	24.76	32.79	43.26	63.51	78.95	79.66	82.18	96.60	113.18	118.02	126.49	131.56	166.11
Lu	$L\beta_3$		4	6	71	6	8.845	5.60560	5		22.77	24.30	24.78	32.82	43.31	63.58	79.05	79.77	82.29	96.73	113.37	118.22	126.74	131.84	167.16
Ag	$K\alpha_{1,2}$		10	150	47	6	22.101	5.60870	6		22.79	24.32	24.80	32.84	43.34	63.62	79.10	79.82	82.34	96.81	113.47	118.33	126.86	131.98	167.73
Os	$L\alpha_2$		4	10	76	6	8.840	5.60936	5		22.79	24.32	24.80	32.85	43.34	63.63	79.11	79.83	82.35	96.82	113.49	118.35	126.89	132.01	167.86
Sm	$L\beta_{10}$	B	3	.01	62	6	6.629	5.60970	5		22.79	24.32	24.80	32.85	43.35	63.64	79.12	79.84	82.36	96.83	113.50	118.36	126.90	132.02	167.92
Am	$L\beta_2$		8	20	95	6	17.673	5.61112	6		22.80	24.33	24.81	32.86	43.36	63.65	79.14	79.86	82.38	96.86	113.54	118.41	126.96	132.09	168.20
Zr	$K\beta_1$		8	18	40	6	17.665	5.61384	5		22.81	24.34	24.82	32.87	43.38	63.69	79.19	79.91	82.43	96.92	113.63	118.51	127.07	132.21	168.75
Ru	$K\beta_2$		10	3	44	6	22.070	5.61660	5		22.82	24.35	24.83	32.89	43.40	63.72	79.24	79.95	82.48	96.99	113.71	118.60	127.19	132.34	169.34
Zr	$K\beta_3$		8	9	40	6	17.651	5.61824	5		22.83	24.36	24.84	32.90	43.41	63.74	79.26	79.98	82.51	97.02	113.76	118.66	127.25	132.42	169.70
Am	$L\gamma_1$		10	10	95	6	22.061	5.61886	6		22.83	24.36	24.84	32.90	43.42	63.75	79.27	79.99	82.52	97.04	113.78	118.68	127.28	132.45	169.84
Ra	$L\beta_3$		7	6	88	6	15.442	5.61911	5		22.83	24.36	24.84	32.91	43.42	63.76	79.28	80.00	82.53	97.04	113.79	118.69	127.29	132.46	169.90
Eu	$L\beta_6$		3	.1	63	6	6.616	5.62110	4		22.84	24.37	24.85	32.92	43.44	63.78	79.31	80.03	82.56	97.09	113.85	118.76	127.37	132.55	170.37
Pr	$L\gamma_3$		3	1	59	6	6.615	5.62200	4		22.84	24.37	24.86	32.92	43.45	63.79	79.33	80.05	82.58	97.11	113.88	118.79	127.41	132.59	170.59
Au	$M\beta$		1	50	79	6	2.204	5.62400	3		22.85	24.38	24.87	32.93	43.46	63.82	79.36	80.08	82.61	97.16	113.94	118.86	127.49	132.69	171.10
Po	$L\alpha_2$	H	5	10	84	6	11.014	5.62740	5		22.85	24.40	24.88	32.96	43.49	63.86	79.42	80.14	82.68	97.24	114.05	118.97	127.63	132.84	172.04
W	M_3-O_1		1	.01	74	6	2.203	5.62800	3		22.87	24.40	24.88	32.96	43.49	63.87	79.43	80.15	82.69	97.25	114.07	118.99	127.66	132.87	172.22
Cf	$L\alpha_2$		7	10	98	3	15.418	5.62800			22.87	24.40	24.88	32.96	43.49	63.87	79.43	80.15	82.69	97.25	114.07	118.99	127.66	132.87	172.22
Si	$L\beta_3$		6	6	83	6	13.208	5.63130	5		22.88	24.41	24.90	32.98	43.52	63.91	79.49	80.21	82.74	97.33	114.17	119.11	127.79	133.03	173.28

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)	NaCl (200)
Zr	$L\beta_3$		1	3	40	6	2.201	5.63300	4		22.89	24.42	24.91	32.99	43.53	63.93	79.51	80.24	82.78	97.37	114.23	119.17	127.86	133.11	173.90
Nd	$L\gamma_1$		3	5	60	6	6.601	5.63370	4		22.89	24.43	24.91	32.99	43.54	63.94	79.53	80.25	82.79	97.38	114.25	119.19	127.89	133.14	174.17
U	M_2-N_4		2	5	92	6	4.400	5.63400	3		22.89	24.43	24.91	32.99	43.54	63.94	79.53	80.25	82.79	97.39	114.26			133.15	174.29
Pr	$L\gamma_2$		3	1	59	6	6.597	5.63730	4		22.90	24.44	24.93	33.01	43.57	63.99	79.59	80.31	82.85	97.47	114.36	119.32	128.04	133.31	175.85
Ag	$K\alpha_2$		10	50	47	6	21.987	5.63798	6		22.91	24.44	24.93	33.02	43.57	64.00	79.60	80.32	82.86	97.48	114.38	119.34	128.07	133.34	176.25
Pu	$L\gamma_3$		10	2	94	6	21.979	5.64001	6		22.92	24.45	24.94	33.03	43.59	64.02	79.63	80.36	82.90	97.53	114.45	119.41	128.16	133.44	177.85
Sr	$L\gamma_{2,3}$		1	.1	38	6	2.196	5.64450	4		22.93	24.47	24.96	33.06	43.63	64.08	79.71	80.43	82.98	97.63	114.59	119.57	128.35	133.65	
Ge	$K\beta_1$		5	14	32	6	10.980	5.64470	5		22.94	24.47	24.96	33.06	43.63	64.08	79.71	80.44	82.99	97.64	114.60	119.57	128.35	133.66	
Sm	$L\beta_{2,15}$		3	20	62	6	6.586	5.64663	5		22.94	24.48	24.97	33.07	43.65	64.11	79.74	80.47	83.02	97.68	114.66	119.64	128.43	133.75	
Ge	$K\beta_3$		5	7	32	6	10.976	5.64680	5		22.94	24.48	24.97	33.07	43.65	64.11	79.75	80.47	83.02	97.69	114.66	119.65	128.44	133.76	
Hg	$M\alpha$		1	100	80	6	2.195	5.64760	4		22.95	24.49	24.97	33.08	43.65	64.12	79.76	80.49	83.04	97.70	114.69	119.68	128.48	133.80	
Pu	$L\beta_4$		8	4	94	6	17.553	5.64960	5		22.96	24.50	24.98	33.09	43.67	64.14	79.80	80.52	83.07	97.75	114.75	119.75	128.56	133.89	
Ta	AM_3	H	1		73	6	2.194	5.65000	3		22.96	24.50	24.98	33.09	43.67	64.15	79.80	80.53	83.08	97.76	114.76	119.76	128.58	133.91	
Eu	$L\beta_3$		3	6	63	6	6.570	5.66010	4		23.00	24.54	25.03	33.15	43.75	64.28	79.97	80.70	83.26	97.99	115.08	120.11	129.00	134.39	
Yb	$L\beta_{2,15}$		4	20	70	6	8.757	5.66200	5		23.01	24.55	25.04	33.16	43.77	64.30	80.01	80.73	83.30	98.04	115.14	120.18	129.08	134.48	
Sn	$L\gamma_{2,3}$		2	2	50	6	4.376	5.66540	4		23.02	24.56	25.05	33.18	43.80	64.34	80.06	80.79	83.36	98.12	115.25			134.65	
Zr	$L\beta_4$		1	3	40	6	2.187	5.66810	4		23.03	24.58	25.07	33.20	43.82	64.38	80.11	80.84	83.41	98.18	115.34	120.39	129.34	134.78	
Pa	$L\alpha_2$	H	6	10	91	6	13.120	5.66892	5		23.03	24.58	25.07	33.21	43.83	64.39	80.12	80.85	83.42	98.20	115.37	120.42	129.38	134.82	
Ho	$L\gamma_1$		4	5	67	6	8.746	5.66960	4		23.04	24.58	25.07	33.21	43.83	64.40	80.13	80.86	83.43	98.22	115.39	120.45	129.41	134.85	
Ta	M_3-$O_{4,5}$		1	.01	73	6	2.186	5.67000	2		23.04	24.58	25.07	33.21	43.84	64.40	80.14	80.87	83.44	98.23	115.40	120.46	129.43	134.87	
Bk	$L\alpha_1$		7	100	97	3	15.304	5.67000			23.04	24.58	25.07	33.21	43.84	64.40	80.14	80.87	83.44	98.23	115.40	120.46	129.43	134.87	
I	$L\beta_6$		2	1	53	6	4.370	5.67344	5		23.05	24.60	25.09	33.23	43.86	64.45	80.20	80.93	83.50	98.31	115.51			135.04	
Mo	$K\alpha_1$		8	100	42	6	17.476	5.67440	6		23.06	24.60	25.09	33.24	43.87	64.46	80.22	80.95	83.52	98.33	115.54	120.62	129.61	135.09	
Ir	$L\beta_2$		5	20	77	6	10.919	5.67660	5		23.07	24.61	25.10	33.25	43.89	64.49	80.25	80.98	83.56	98.38	115.61	120.70	129.71	135.19	
Te	$L\beta_9$		8	2	.01	52	6	4.366	5.67794	5		23.07	24.62	25.11	33.26	43.90	64.50	80.28	81.01	83.58	98.41	115.65			135.26	
Os	$M\gamma$		1	1	76	6	2.182	5.68200	3		23.09	24.64	25.13	33.28	43.93	64.56	80.35	81.08	83.66	98.51	115.78	120.89	129.94	135.46	
U	$L\beta_3$		8	6	92	6	17.452	5.68232	5		23.09	24.64	25.13	33.29	43.94	64.56	80.35	81.08	83.66	98.51	115.79	120.90	129.95	135.48	
Yb	$L\ell$		3	2	70	6	6.544	5.68245	5		23.09	24.64	25.13	33.29	43.94	64.56	80.35	81.09	83.66	98.52	115.80	120.90	129.96	135.48	
Po	$L\beta_4$		6	4	84	6	13.083	5.68500	4		23.10	24.65	25.14	33.30	43.96	64.59	80.40	81.13	83.71	98.58	115.88	120.99	130.07	135.61	
Mo	$K\alpha_{1,2}$		8	150	42	6	17.441	5.68584	6		23.10	24.65	25.14	33.31	43.96	64.60	80.41	81.14	83.73	98.60	115.91	121.02	130.11	135.65	
Hg	$L\ell$		4	3	80	6	8.720	5.68640	4		23.11	24.66	25.15	33.31	43.97	64.61	80.42	81.15	83.74	98.61	115.93	121.04	130.13	135.68	
Ta	$L\gamma_1$		5	10	73	6	10.893	5.68970	5		23.12	24.67	25.16	33.33	44.00	64.65	80.48	81.21	83.80	98.69	116.03	121.16	130.27	135.84	
Mo	$K\beta_1$		9	17	42	6	19.605	5.69059	6		23.12	24.68	25.17	33.34	44.00	64.66	80.49	81.23	83.81	98.71	116.06	121.19	130.31	135.88	
Mn	$K\beta_5$		8	3	.03	25	6	6.534	5.69130	4	4	23.13	24.68	25.17	33.34	44.01	64.67	80.50	81.24	83.82	98.72	116.08	121.22	130.34	135.92
Te	$L\beta_{10}$		F	2	.01	52	6	4.356	5.69152	5		23.13	24.68	25.17	33.34	44.01	64.68	80.51	81.24	83.83	98.73	116.09			135.93	
Si	$L\gamma_1$		7	10	83	6	15.245	5.69177	5		23.13	24.68	25.17	33.34	44.01	64.68	80.51	81.25	83.83	98.74	116.10	121.24	130.36	135.94	
Hf	$L\gamma_3$		5	2	72	6	10.889	5.69205	5		23.13	24.68	25.17	33.34	44.01	64.68	80.52	81.25	83.84	98.74	116.11	121.25	130.38	135.96	
Oy	Ln		3	1	66	6	6.533	5.69229	5		23.13	24.68	25.17	33.35	44.02	64.69	80.52	81.26	83.84	98.75	116.12	121.25	130.39	135.97	
Lu	$L\beta_1$		4	50	71	6	8.708	5.69436	5		23.14	24.69	25.18	33.36	44.03	64.71	80.56	81.29	83.88	98.80	116.18	121.33	130.48	136.07	
Mo	$K\beta_3$		9	7	42	6	19.587	5.69585	6		23.15	24.70	25.19	33.37	44.05	64.73	80.58	81.32	83.91	98.83	116.23	121.38	130.54	136.15	
Ra	$L\beta_1$		7	50	88	6	15.233	5.69625	5		23.15	24.70	25.19	33.37	44.05	64.74	80.59	81.32	83.91	98.84	116.24	121.40	130.56	136.17	
Ce	$L\gamma_4$		3	.1	58	6	6.527	5.69730	4		23.15	24.71	25.20	33.38	44.06	64.75	80.61	81.34	83.93	98.86	116.28	121.43	130.61	136.22	
Pa	$L\gamma_1$	H	9	10	91	6	19.565	5.70222	5		23.17	24.73	25.22	33.41	44.10	64.81	80.69	81.43	84.02	98.98	116.44	121.61	130.82	136.47	
Pb	$L\gamma_3$		7	2	82	6	15.215	5.70290	4		23.17	24.73	25.22	33.41	44.10	64.82	80.70	81.44	84.03	99.00	116.46	121.64	130.85	136.50	
Sb	$L\gamma_1$		2	8	51	6	4.347	5.70318	5		23.18	24.73	25.22	33.41	44.11	64.83	80.71	81.44	84.04	99.00	116.47			136.51	
Pb	M_3-N_1		1	1	82	6	2.173	5.70400	3		23.18	24.73	25.23	33.42	44.11	64.84	80.72	81.46	84.05	99.02	116.49	121.67	130.90	136.56	
Ir	$L\beta_3$		5	6	77	6	10.866	5.70425	5		23.18	24.74	25.23	33.42	44.11	64.84	80.73	81.46	84.06	99.03	116.50	121.68	130.91	136.57	
Mo	$K\alpha_2$		8	50	42	6	17.371	5.70872	6		23.20	24.76	25.25	33.45	44.15	64.90	80.80	81.54	84.14	99.13	116.65	121.84	131.11	136.79	
Zr	$L\beta_6$		1	3	40	6	2.171	5.71010	4		23.20	24.76	25.25	33.45	44.16	64.91	80.83	81.56	84.17	99.17	116.69	121.89	131.17	136.86	
Pt	$L\beta_4$		5	4	78	6	10.852	5.71115	5		23.21	24.77	25.26	33.46	44.17	64.93	80.84	81.58	84.18	99.19	116.73	121.93	131.22	136.92	
Bi	$L\beta_1$		6	50	83	6	13.021	5.71187	6		23.21	24.77	25.26	33.46	44.18	64.94	80.86	81.59	84.20	99.21	116.75	121.96	131.25	136.95	
Rb	$K\beta_2$		7	3	37	6	15.183	5.71515	5		23.23	24.78	25.28	33.48	44.20	64.98	80.91	81.65	84.26	99.29	116.86	122.08	131.39	137.12	
Bi	$L\alpha_1$		5	100	83	6	10.837	5.71930	5		23.24	24.80	25.30	33.51	44.24	65.03	80.98	81.72	84.33	99.38	116.99	122.23	131.58	137.33	
Th	$L\gamma_3$		9	2	90	6	19.503	5.72031	5		23.25	24.81	25.30	33.52	44.24	65.04	81.00	81.74	84.35	99.41	117.03	122.26	131.62	137.39	
Os	M_3-N_4		1	.1	76	6	2.166	5.72400	3		23.26	24.82	25.32	33.54	44.27	65.09	81.06	81.80	84.42	99.49	117.15	122.40	131.79	137.58	
Nb	$L\alpha_1$		1	100	41	6	2.166	5.72430	4		23.26	24.82	25.32	33.54	44.28	65.09	81.07	81.81	84.42	99.50	117.16	122.41	131.80	137.59	
Ru	$K\beta_1$		10	16	44	6	21.653	5.72482	6		23.27	24.83	25.32	33.54	44.28	65.10	81.08	81.82	84.43	99.51	117.17	122.43	131.82	137.62	
Ba	Ln		2	1	56	6	4.330	5.72540	4		23.27	24.83	25.32	33.55	44.29	65.11	81.09	81.83	84.44	99.53	117.19			137.65	
Dy	$L\alpha_1$		3	100	66	6	6.494	5.72643	5		23.27	24.83	25.33	33.55	44.29	65.12	81.10	81.85	84.46	99.55	117.23	122.49	131.90	137.70	
Te	$L\beta_7$		2	.1	52	6	4.329	5.72680	4		23.27	24.84	25.33	33.55	44.30	65.13	81.11	81.85	84.47	99.56	117.24			137.72	
Mn	$K\beta_{1,3}$		3	20	25	6	6.489	5.73063	5	4	23.29	24.85	25.35	33.58	44.33	65.18	81.18	81.92	84.54	99.65	117.36	122.64	132.08	137.92	
Ru	$K\beta_3$		10	8	44	6	21.631	5.73067	6		23.29	24.85	25.35	33.58	44.33	65.18	81.18	81.92	84.54	99.65	117.37	122.64	132.09	137.92	
Si	$L\beta_2$		6	20	83	6	12.978	5.73108	5		23.29	24.85	25.35	33.58	44.33	65.18	81.18	81.93	84.55	99.66	117.38	122.66	132.10	137.94	
Re	$L\alpha_1$		4	100	75	6	8.651	5.73160	5		23.29	24.86	25.35	33.58	44.34	65.19	81.19	81.94	84.56	99.67	117.40	122.68	132.13	137.97	
Nb	$L\alpha_2$		1	10	41	6	2.163	5.73190	4		23.29	24.86	25.35	33.58	44.34	65.19	81.20	81.94	84.56	99.68	117.41	122.69	132.14	137.99	

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)
								10^{-}																	
Fr	$L\gamma_1$	H	8	10	87	6	17.300	5.73216	5		9.39	23.30	24.86	25.35	33.59	44.34	65.20	81.20	81.95	84.57	99.69	117.41	122.70	132.15	138.00
Th	$L\alpha_1$		6	100	90	6	12.967	5.73600	5		9.40	23.31	24.88	25.37	33.61	44.37	65.24	81.27	82.01	84.64	99.78	117.54	122.84	132.33	138.20
Zn	$K\alpha_1$		4	100	30	6	8.637	5.74062	6		9.41	23.33	24.90	25.39	33.64	44.41	65.30	81.35	82.09	84.72	99.89	117.69	123.01	132.54	138.44
Zn	$K\alpha_{1,2}$		4	150	30	6	8.630	5.74575	6		9.42	23.35	24.92	25.41	33.67	44.45	65.37	81.44	82.18	84.81	100.01	117.86	123.20	132.77	138.71
Os	$L\beta_7$		5	7	76	6	10.785	5.74665	5		9.42	23.36	24.92	25.42	33.67	44.46	65.38	81.45	82.20	84.83	100.03	117.89	123.23	132.81	138.76
Pt	$L\gamma_1$		6	10	78	6	12.940	5.74782	5		9.42	23.36	24.93	25.42	33.68	44.47	65.40	81.47	82.22	84.85	100.06	117.93	123.27	132.86	138.82
Pu	$L\beta_2$		8	20	94	6	17.252	5.74808	5		9.42	23.36	24.93	25.42	33.68	44.47	65.40	81.48	82.22	84.86	100.07	117.94	123.28	132.88	138.84
I	$L\beta_3$		2	6	53	6	4.313	5.74858	5		9.42	23.36	24.93	25.43	33.69	44.47	65.41	81.48	82.23	84.86	100.08	117.96			138.86
Cm	$L\beta_1$		9	50	96	3	19.399	5.75100			9.43	23.37	24.94	25.44	33.70	44.49	65.44	81.53	82.27	84.91	100.13	118.04	123.39	133.01	138.99
Bk	$L\alpha_2$		7	10	97	3	15.080	5.75400			9.43	23.39	24.95	25.45	33.72	44.52	65.47	81.58	82.33	84.96	100.21	118.14	123.50	133.15	139.15
Ir	$L\gamma_3$		6	2	77	6	12.922	5.75586	5		9.43	23.39	24.96	25.46	33.73	44.53	65.50	81.61	82.36	85.00	100.25	118.20	123.57	133.23	139.25
Zn	$K\alpha_2$		4	50	30	6	8.614	5.75600	6		9.43	23.39	24.96	25.46	33.73	44.54	65.50	81.61	82.36	85.00	100.25	118.20	123.57	133.24	139.26
Y	AL_2		1		39	6	2.154	5.75600	3		9.43	23.39	24.96	25.46	33.73	44.54	65.50	81.61	82.36	85.00	100.25	118.20	123.58	133.24	139.26
Dy	$L\alpha_2$		3	10	66	6	6.457	5.75973	5		9.44	23.41	24.98	25.48	33.75	44.57	65.55	81.68	82.43	85.07	100.34	118.33	123.71	133.41	139.46
U	$L\beta_1$		8	50	92	6	17.217	5.75987	6		9.44	23.41	24.98	25.48	33.75	44.57	65.55	81.68	82.43	85.07	100.35	118.33	123.72	133.42	139.47
Eu	$L\beta_1$		3	50	63	6	6.455	5.76090	4		9.44	23.41	24.99	25.48	33.76	44.58	65.56	81.70	82.45	85.09	100.37	118.37	123.76	133.47	139.52
Lu	$L\beta_4$		4	5	71	6	8.605	5.76224	5		9.44	23.42	24.99	25.49	33.77	44.59	65.58	81.72	82.47	85.11	100.40	118.41	123.81	133.53	139.59
Te	$L\beta_{2,15}$		2	17	52	6	4.301	5.76434	5		9.45	23.43	25.00	25.50	33.78	44.60	65.61	81.76	82.51	85.15	100.45	118.48			139.71
Au	M_5-O_3		1	.01	79	6	2.149	5.76700	3		9.45	23.44	25.01	25.51	33.80	44.62	65.64	81.80	82.55	85.20	100.52	118.57	123.98	133.75	139.85
Re	$L\alpha_2$		4	10	75	6	8.585	5.77584	5		9.47	23.48	25.05	25.55	33.85	44.70	65.75	81.95	82.71	85.36	100.73	118.87	124.32	134.16	140.34
Eu	$L\beta_4$		3	5	63	6	6.438	5.77650	4		9.47	23.48	25.05	25.55	33.85	44.70	65.76	81.96	82.72	85.37	100.74	118.89	124.34	134.19	140.37
Bi	$L\alpha_2$		5	10	83	6	10.729	5.77680	5		9.47	23.48	25.06	25.55	33.86	44.70	65.77	81.97	82.72	85.38	100.75	118.90	124.35	134.21	140.39
Ce	Ll		2	2	58	6	4.287	5.78340	4		9.48	23.51	25.08	25.58	33.90	44.76	65.85	82.08	82.84	85.50	100.91	119.12			140.75
P	AK	H	1		15	6	2.143	5.78400	3		9.48	23.51	25.09	25.59	33.90	44.76	65.86	82.09	82.85	85.51	100.92	119.14	124.62	134.55	140.79
Cs	$L\alpha_1$		2	100	55	6	4.286	5.78480	4		9.48	23.51	25.09	25.59	33.90	44.77	65.87	82.11	82.86	85.53	100.94	119.17			140.83
Ru	$K\alpha_1$		9	100	44	6	19.276	5.78775	6		9.49	23.52	25.10	25.60	33.92	44.79	65.91	82.16	82.91	85.58	101.01	119.27	124.76	134.72	141.00
Pu	$L\gamma_1$		10	10	94	6	21.414	5.78882	6		9.49	23.53	25.11	25.61	33.93	44.80	65.92	82.18	82.93	85.60	101.04	119.30	124.81	134.77	141.06
Ir	$L\beta_1$		5	50	77	6	10.706	5.78905	5		9.49	23.53	25.11	25.61	33.93	44.80	65.92	82.18	82.94	85.60	101.04	119.31	124.81	134.79	141.07
Fr	$L\beta_3$	H	7	10	87	6	14.973	5.79523	5		9.50	23.56	25.14	25.64	33.97	44.86	66.00	82.29	83.05	85.72	101.19	119.52	125.05	135.08	141.42
P	$K\beta$		1	3	15	6	2.139	5.79600	3	3	9.50	23.56	25.14	25.64	33.97	44.86	66.01	82.30	83.06	85.73	101.21	119.55	125.08	135.12	141.46
Ru	$K\alpha_{1,2}$		9	150	44	6	19.233	5.80072	6		9.51	23.58	25.16	25.66	34.00	44.90	66.07	82.38	83.14	85.82	101.33	119.71	125.26	135.34	141.73
Rb	$K\beta_1$		7	16	37	6	14.959	5.80076	5		9.51	23.58	25.16	25.66	34.00	44.90	66.07	82.38	83.14	85.82	101.33	119.71	125.26	135.35	141.73
Y	$K\alpha_1$		7	100	39	6	14.956	5.80188	5		9.51	23.58	25.17	25.67	34.01	44.91	66.09	82.40	83.16	85.84	101.35	119.75	125.30	135.40	141.79
Cm	$L\alpha_1$		7	100	96	3	14.953	5.80300			9.51	23.59	25.17	25.67	34.01	44.92	66.10	82.42	83.18	85.86	101.38	119.79	125.34	135.45	141.86
P	$K\beta_1$		1	3	15	0	2.136	5.80380	3	3	9.51	23.59	25.17	25.68	34.02	44.93	66.11	82.44	83.20	85.87	101.40	119.81	125.38	135.49	141.90
Cs	$L\alpha_2$		2	10	55	6	4.272	5.80400	4		9.51	23.59	25.18	25.68	34.02	44.93	66.12	82.44	83.20	85.88	101.40	119.82			141.92
Rb	$K\beta_3$		7	8	37	6	14.949	5.80447	5		9.51	23.59	25.18	25.68	34.02	44.93	66.12	82.45	83.21	85.89	101.42	119.84	125.40	135.52	141.94
Nd	$L\gamma_5$		3	.1	60	6	6.405	5.80650	4		9.52	23.60	25.19	25.69	34.04	44.95	66.15	82.48	83.24	85.92	101.47	119.90	125.48	135.62	142.06
Th	$L\alpha_2$		6	10	90	6	12.807	5.80728	5		9.52	23.61	25.19	25.69	34.04	44.95	66.16	82.50	83.26	85.94	101.48	119.93	125.51	135.66	142.10
Fe	$K\alpha_1$		3	100	26	6	6.403	5.80813	6		9.52	23.61	25.19	25.69	34.05	44.96	66.17	82.51	83.27	85.95	101.50	119.96	125.54	135.70	142.15
Pr	$L\gamma_8$		3	.1	59	6	6.402	5.80860	4		9.52	23.61	25.20	25.70	34.05	44.96	66.18	82.52	83.28	85.96	101.52	119.98	125.56	135.72	142.18
Yb	$L\beta_3$		4	6	70	6	8.535	5.80932	5		9.52	23.61	25.20	25.70	34.05	44.97	66.18	82.53	83.29	85.98	101.53	120.00	125.59	135.76	142.22
Np	$L\gamma_3$		10	2	93	6	21.336	5.81000	4		9.52	23.62	25.20	25.70	34.06	44.98	66.19	82.54	83.30	85.99	101.55	120.02	125.61	135.79	142.26
Pt	AM_5	H	1		78	6	2.134	5.81000	2		9.52	23.62	25.20	25.70	34.06	44.98	66.19	82.54	83.30	85.99	101.55	120.02	125.61	135.79	142.26
Os	M_2-N_1		1	.01	76	6	2.134	5.81000	2		9.52	23.62	25.20	25.70	34.06	44.98	66.19	82.54	83.30	85.99	101.55	120.02	125.61	135.79	142.26
Y	$K\alpha_{1,2}$		7	150	39	6	14.931	5.81170	5		9.52	23.62	25.21	25.71	34.07	44.99	66.22	82.57	83.33	86.02	101.59	120.08	125.68	135.87	142.36
Fe	$K\alpha_{1,2}$		3	150	26	6	6.398	5.81206	6		9.53	23.62	25.21	25.71	34.07	44.99	66.22	82.58	83.34	86.03	101.60	120.09	125.69	135.89	142.38
Np	$L\beta_4$		8	4	93	6	17.058	5.81368	5		9.53	23.63	25.22	25.72	34.08	45.01	66.24	82.61	83.37	86.06	101.64	120.15	125.75	135.97	142.47
Pb	$L\beta_3$		6	6	82	6	12.791	5.81466	5		9.53	23.64	25.22	25.72	34.08	45.01	66.25	82.62	83.39	86.07	101.66	120.18	125.79	136.02	142.53
Fe	$K\alpha_2$		3	50	26	6	6.390	5.81994	6		9.54	23.66	25.25	25.75	34.12	45.06	66.32	82.72	83.48	86.17	101.79	120.36	126.00	136.28	142.84
Pa	M_2-N_4		2	5	91	6	4.260	5.82000	3		9.54	23.66	25.25	25.75	34.12	45.06	66.32	82.72	83.48	86.17	101.79	120.37			142.84
I	$L\beta_4$		2	4	53	6	4.257	5.82414	5		9.55	23.67	25.26	25.77	34.14	45.09	66.38	82.79	83.55	86.25	101.89	120.51			143.08
Ru	$K\alpha_2$		9	50	44	6	19.147	5.82667	6		9.55	23.69	25.28	25.78	34.16	45.11	66.41	82.83	83.60	86.30	101.95	120.60	126.26	136.61	143.23
Pt	$M\beta$		1	50	78	6	2.127	5.82800	3		9.55	23.69	25.28	25.78	34.17	45.12	66.42	82.85	83.62	86.32	101.99	120.64	126.31	136.67	143.31
Y	$K\beta_2$		8	4	39	6	17.013	5.82912	5		9.55	23.70	25.29	25.79	34.17	45.13	66.44	82.87	83.64	86.34	102.01	120.68	126.35	136.73	143.38
Ta	M_3-O_1		1	.01	73	6	2.126	5.83000	2		9.55	23.70	25.29	25.79	34.18	45.14	66.45	82.89	83.66	86.36	102.03	120.71	126.39	136.77	143.43
Ir	AM_4	H	1		77	6	2.126	5.83000	2		9.55	23.70	25.29	25.79	34.18	45.14	66.45	82.89	83.66	86.36	102.03	120.71	126.39	136.77	143.43
Y	$K\alpha_2$		7	50	39	6	14.880	5.83135	5		9.56	23.70	25.30	25.80	34.19	45.15	66.47	82.91	83.68	86.38	102.07	120.76	126.44	136.84	143.51
Ra	Ll		5	3	88	6	10.620	5.83595	5		9.56	23.72	25.32	25.82	34.21	45.19	66.53	82.99	83.76	86.47	102.18	120.92	126.62	137.07	143.79
Zr	$L\beta_1$		1	45	40	6	2.124	5.83600	4		9.56	23.72	25.32	25.82	34.21	45.19	66.53	82.99	83.76	86.47	102.18	120.92	126.62	137.07	143.79
P	$SK\beta'$		1	.1	15	0	2.123	5.83767	2	2	9.57	23.73	25.32	25.83	34.22	45.20	66.55	83.02	83.79	86.50	102.22	120.98	126.68	137.16	143.89
Au	Ll		4	3	79	6	8.493	5.83856	5		9.57	23.73	25.33	25.83	34.23	45.21	66.56	83.04	83.81	86.51	102.24	121.01	126.72	137.20	143.94
Sm	$L\beta_6$		3	.1	62	6	6.369	5.83929	5		9.57	23.74	25.33	25.83	34.23	45.22	66.57	83.05	83.82	86.53	102.26	121.03	126.75	137.24	143.99
U	M_1-N_2		2	1	92	6	4.245	5.84000	2		9.57	23.74	25.33	25.84	34.24	45.22	66.58	83.06	83.83	86.54	102.28	121.06			144.03
Au	$M\alpha_1$		1	100	79	6	2.123	5.84000	3		9.57	23.74	25.33	25.84	34.24	45.22	66.58	83.06	83.83	86.54	102.28	121.06	126.78	137.27	144.03

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ 10^{-}	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)
Am	$L\beta_3$		9	6	95	6	19.103	5.84019	5	9.57	23.74	25.33	25.84	34.24	45.22	66.58	83.07	83.84	86.54	102.28	121.06	126.78	137.28	144.04
Mo	Ln		1	1	42	6	2.120	5.84750	4	9.58	23.77	25.37	25.87	34.28	45.28	66.68	83.19	83.96	86.68	102.46	121.32	127.07	137.65	144.49
Ra	$L\beta_2$		7	20	88	6	14.839	5.84759	5	9.58	23.77	25.37	25.87	34.28	45.28	66.68	83.20	83.97	86.68	102.46	121.32	127.07	137.65	144.49
Os	$L8_2$		5	20	76	6	10.597	5.84895	5	9.59	23.78	25.37	25.88	34.29	45.29	66.69	83.22	83.99	86.71	102.50	121.37	127.13	137.72	144.58
In	$L\gamma_4$		2	.1	49	6	4.236	5.85280	4	9.59	23.79	25.39	25.90	34.32	45.33	66.74	83.29	84.06	86.78	102.59	121.50			144.81
Au	$M\alpha_2$		1	100	79	6	2.118	5.85400	3	9.59	23.80	25.40	25.90	34.32	45.34	66.76	83.31	84.08	86.80	102.62	121.55	127.33	137.98	144.89
Pd	$K\alpha_1$		10	100	46	6	21.174	5.85448	6	9.60	23.80	25.40	25.90	34.33	45.34	66.77	83.32	84.09	86.81	102.63	121.56	127.35	138.00	144.92
Tm	$L\beta_{2,15}$		4	20	69	6	8.467	5.85600	4	9.60	23.81	25.40	25.91	34.33	45.35	66.79	83.34	84.11	86.84	102.67	121.62	127.41	138.08	145.01
Pa	$L\beta_3$		8	6	91	6	16.927	5.85840	5	9.60	23.82	25.42	25.92	34.35	45.37	66.82	83.38	84.16	86.88	102.73	121.70	127.50	138.20	145.16
Bi	$L8_4$		6	4	83	6	12.689	5.86140	5	9.61	23.83	25.43	25.93	34.37	45.40	66.86	83.44	84.21	86.94	102.80	121.80	127.62	138.36	145.35
Sb	$L\gamma_5$		2	.1	51	6	4.228	5.86374	5	9.61	23.84	25.44	25.95	34.38	45.41	66.89	83.48	84.25	86.98	102.86	121.89			145.49
Tm	Ll		3	2	69	6	6.341	5.86500	4	9.61	23.84	25.44	25.95	34.39	45.43	66.90	83.50	84.27	87.00	102.89	121.93	127.76	138.54	145.57
Ce	$L\gamma_3$		3	1	58	6	6.340	5.86590	4	9.61	23.85	25.45	25.95	34.39	45.43	66.91	83.51	84.29	87.02	102.91	121.96	127.80	138.59	145.63
Pm	$L\beta_{2,15}$		3	20	61	6	6.338	5.86770	4	9.62	23.85	25.46	25.96	34.41	45.45	66.94	83.55	84.32	87.05	102.95	122.03	127.87	138.68	145.74
Th	M_1-N_3		2	.1	90	6	4.225	5.86800	3	9.62	23.86	25.46	25.96	34.41	45.45	66.94	83.55	84.33	87.06	102.96	122.04			145.76
Pd	$K\alpha_{1,2}$		10	150	46	6	21.121	5.86905	6	9.62	23.86	25.46	25.97	34.41	45.46	66.95	83.57	84.34	87.08	102.99	122.07	127.93	138.75	145.83
I	$L\beta_1$		2	75	53	6	4.220	5.87488	5	9.63	23.88	25.49	26.00	34.45	45.51	67.03	83.67	84.45	87.19	103.13	122.28			146.20
Pb	$L\alpha_1$		5	100	82	6	10.550	5.87505	5	9.63	23.88	25.49	26.00	34.45	45.51	67.03	83.67	84.45	87.19	103.13	122.29	128.17	139.07	146.21
Y	$L\gamma_5$		1	.1	39	6	2.110	5.87540	4	9.63	23.89	25.49	26.00	34.45	45.51	67.04	83.68	84.46	87.20	103.14	122.30	128.18	139.08	146.24
Fr	$L\beta_1$	H	7	50	87	6	14.768	5.87580	5	9.63	23.89	25.49	26.00	34.45	45.51	67.04	83.69	84.46	87.20	103.15	122.31	128.20	139.11	146.26
Cf	$L8_2$		9	20	98	3	18.983	5.87700		9.63	23.89	25.50	26.00	34.46	45.52	67.06	83.71	84.49	87.23	103.18	122.36	128.24	139.17	146.34
Pb	$L\gamma_1$		7	10	82	6	14.762	5.87811	5	9.63	23.90	25.50	26.01	34.47	45.53	67.07	83.73	84.51	87.25	103.21	122.39	128.29	139.23	146.41
Th	$L\gamma_1$		9	10	90	6	18.979	5.87817	5	9.63	23.90	25.50	26.01	34.47	45.53	67.07	83.73	84.51	87.25	103.21	122.40	128.29	139.23	146.41
As	$K\alpha_1$		5	100	33	6	10.542	5.87940	5	9.64	23.90	25.51	26.02	34.48	45.54	67.09	83.75	84.53	87.27	103.24	122.44	128.34	139.29	146.49
Ac	$L\alpha_1$	H	6	100	89	6	12.650	5.87958	5	9.64	23.90	25.51	26.02	34.48	45.54	67.09	83.75	84.53	87.27	103.25	122.45	128.35	139.30	146.51
Ce	$L\gamma_2$		3	1	58	6	6.324	5.88060	4	9.64	23.91	25.51	26.02	34.48	45.55	67.10	83.77	84.55	87.29	103.27	122.48	128.39	139.36	146.57
Kr	$K\alpha_1$		6	100	36	6	12.648	5.88060	4	9.64	23.91	25.51	26.02	34.48	45.55	67.10	83.77	84.55	87.29	103.27	122.48	128.39	139.36	146.57
Pr	$L\gamma_1$		3	5	59	6	6.321	5.88330	4	9.64	23.92	25.53	26.03	34.50	45.57	67.14	83.82	84.60	87.34	103.34	122.58	128.50	139.50	146.75
Tl	M_3-N_1		1	1	81	6	2.107	5.88400	3	9.64	23.92	25.53	26.04	34.50	45.58	67.15	83.83	84.61	87.36	103.36	122.60	128.53	139.54	146.79
Ra	$L\beta_4$		7	4	88	6	14.745	5.88497	5	9.65	23.93	25.53	26.04	34.51	45.59	67.16	83.85	84.63	87.38	103.38	122.64	128.57	139.59	146.86
Re	$M\gamma$		1	1	75	6	2.106	5.88500	3	9.65	23.93	25.53	26.04	34.51	45.59	67.16	83.85	84.63	87.38	103.38	122.64	128.57	139.59	146.86
As	$K\alpha_{1,2}$		5	150	33	6	10.530	5.88605	5	9.65	23.93	25.54	26.05	34.52	45.60	67.17	83.87	84.65	87.40	103.41	122.68	128.61	139.65	146.93
Cm	$L\alpha_2$		7	10	96	3	14.740	5.88700		9.65	23.93	25.54	26.05	34.52	45.61	67.19	83.88	84.66	87.41	103.43	122.71	128.65	139.70	146.99
Sm	$L8_3$		3	6	62	6	6.317	5.88723	5	9.65	23.93	25.54	26.05	34.52	45.61	67.19	83.89	84.67	87.42	103.43	122.72	128.66	139.71	147.01
Nb	$K8_2$		9	4	41	6	18.949	5.88744	5	9.65	23.94	25.54	26.05	34.52	45.61	67.19	83.89	84.67	87.42	103.44	122.73	128.66	139.72	147.02
Kr	$K\alpha_{1,2}$		6	150	36	6	12.631	5.88860	4	9.65	23.94	25.55	26.06	34.53	45.62	67.21	83.91	84.69	87.44	103.47	122.77	128.71	139.78	147.10
Tl	$L\gamma_3$		7	2	81	6	14.734	5.88910	5	9.65	23.94	25.55	26.06	34.53	45.62	67.21	83.92	84.70	87.45	103.48	122.79	128.73	139.81	147.13
Np	$L\beta_2$		8	20	93	6	16.837	5.88984	6	9.65	23.95	25.55	26.06	34.54	45.63	67.22	83.93	84.71	87.47	103.50	122.81	128.76	139.85	147.18
Dy	$L\gamma_1$		4	5	66	6	8.417	5.89064	5	9.65	23.95	25.56	26.07	34.54	45.64	67.23	83.95	84.73	87.48	103.52	122.84	128.79	139.89	147.23
Pb	$L8_2$		6	20	82	6	12.621	5.89326	5	9.66	23.96	25.57	26.08	34.56	45.66	67.27	83.99	84.77	87.53	103.58	122.93	128.90	140.03	147.40
Hf	$L\gamma_1$		5	10	72	6	10.514	5.89500	5	9.65	23.97	25.58	26.09	34.57	45.67	67.29	84.02	84.80	87.56	103.63	123.00	128.97	140.12	147.52
U	M_3-$O_{4,5}$		2	1	92	6	4.205	5.89600	3	9.66	23.97	25.58	26.09	34.58	45.68	67.30	84.04	84.82	87.58	103.65	123.03			147.59
Pb	$L8_1$		6	50	82	6	12.612	5.89746	5	9.67	23.98	25.59	26.10	34.59	45.69	67.32	84.07	84.85	87.61	103.69	123.08	129.07	140.25	147.68
Os	$L\beta_3$		5	6	76	6	10.509	5.89775	5	9.67	23.98	25.59	26.10	34.59	45.69	67.33	84.07	84.85	87.61	103.69	123.09	129.08	140.27	147.70
Ir	$L\beta_4$		5	4	77	6	10.509	5.89790	5	9.67	23.98	25.59	26.10	34.59	45.69	67.33	84.07	84.86	87.62	103.70	123.10	129.09	140.28	147.71
Pd	$K\alpha_2$		10	50	46	6	21.017	5.89821	6	9.67	23.98	25.59	26.10	34.59	45.70	67.33	84.08	84.86	87.62	103.71	123.11	129.10	140.29	147.73
As	$K\alpha_2$		5	50	33	6	10.506	5.89935	5	9.67	23.98	25.60	26.11	34.60	45.71	67.35	84.10	84.88	87.64	103.73	123.15	129.15	140.36	147.81
Tc	$K8_2$	H	10	3	43	6	21.002	5.90240	5	9.67	24.00	25.61	26.12	34.62	45.73	67.39	84.15	84.94	87.70	103.81	123.26	129.27	140.52	148.02
Yb	$L8_1$		4	50	70	6	8.400	5.90260	5	9.67	24.00	25.61	26.12	34.62	45.73	67.39	84.16	84.94	87.70	103.81	123.27	129.28	140.53	148.03
Kr	$K\alpha_2$		6	50	36	6	12.596	5.90460	4	9.68	24.01	25.62	26.13	34.63	45.75	67.41	84.19	84.98	87.74	103.86	123.34	129.36	140.64	148.17
W	$L\alpha_1$		4	100	74	6	8.396	5.90556	5	9.68	24.01	25.62	26.13	34.63	45.76	67.43	84.21	84.99	87.76	103.89	123.38	129.40	140.69	148.23
Rn	$L\gamma_1$	H	8	10	86	6	16.768	5.91424	5	9.69	24.05	25.66	26.17	34.69	45.83	67.54	84.36	85.15	87.92	104.10	123.69	129.76	141.17	149.83
Am	$L\beta_1$		9	50	95	6	18.849	5.91889	6	9.70	24.07	25.68	26.19	34.71	45.87	67.60	84.44	85.23	88.01	104.22	123.86	129.95	141.42	149.15
Tb	Ln		3	1	65	6	6.283	5.91900	4	9.70	24.07	25.68	26.19	34.72	45.87	67.60	84.44	85.23	88.01	104.22	123.86	129.96	141.43	149.16
Y	$K8_1$		8	16	39	6	16.735	5.92576	5	9.71	24.09	25.71	26.22	34.76	45.92	67.69	84.56	85.35	88.14	104.39	124.11	130.24	141.80	149.64
Tb	$L\alpha_1$		3	100	65	6	6.272	5.92950	4	9.72	24.11	25.73	26.24	34.78	45.95	67.74	84.63	85.42	88.21	104.48	124.24	130.40	142.01	149.91
Y	$K8_3$		8	8	39	6	16.723	5.93008	5	9.72	24.11	25.73	26.24	34.78	45.96	67.74	84.64	85.43	88.22	104.50	124.27	130.42	142.05	149.95
Re	M_3-N_4		1	.01	75	6	2.090	5.93100	3	9.72	24.12	25.74	26.25	34.79	45.97	67.76	84.65	85.45	88.23	104.52	124.30	130.46	142.10	150.02
Pb	$L\alpha_2$		5	10	82	6	10.448	5.93240	5	9.72	24.12	25.74	26.25	34.80	45.98	67.77	84.68	85.47	88.26	104.56	124.35	130.52	142.19	150.12
Am	$L\alpha_1$		7	100	95	6	14.615	5.93731	6	9.73	24.14	25.76	26.28	34.83	46.02	67.84	84.77	85.56	88.35	104.68	124.53	130.72	142.45	150.47
Pa	$L8_1$		8	50	91	6	16.699	5.93856	5	9.73	24.15	25.77	26.28	34.83	46.03	67.85	84.79	85.58	88.38	104.71	124.58	130.78	142.53	150.57
Te	$L\beta_6$		2	1	52	6	4.173	5.94176	5	9.74	24.16	25.78	26.30	34.85	46.05	67.90	84.84	85.64	88.44	104.79	124.69			150.80
Ir	$L\gamma_1$		6	10	77	6	12.510	5.94510	5	9.74	24.17	25.80	26.31	34.87	46.08	67.94	84.90	85.70	88.50	104.87	124.82	131.05	142.90	151.05
Sb	$L\beta_9$	B	2	.01	51	6	4.170	5.94522	5	9.74	24.17	25.80	26.31	34.87	46.08	67.94	84.91	85.70	88.50	104.88	124.82			151.06
La	$L\gamma_4$		3	.1	57	6	6.251	5.94900	4	9.75	24.19	25.82	26.33	34.90	46.11	67.99	84.97	85.77	88.57	104.97	124.96	131.22	143.12	151.34

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)
W	$L\alpha_2$		4	10	74	6	8.334	5.94972	5		9.75	24.19	25.82	26.33	34.90	46.12	68.00	84.98	85.78	88.59	104.99	124.99	131.25	143.17	151.40
Ac	$L\alpha_2$	H	6	10	89	6	12.499	5.95068	5		9.75	24.20	25.82	26.34	34.91	46.13	68.01	85.00	85.80	88.60	105.01	125.02	131.29	143.22	151.47
Os	$L\gamma_3$		6	2	76	6	12.498	5.95116	5		9.75	24.20	25.82	26.34	34.91	46.13	68.02	85.01	85.81	88.61	105.03	125.04	131.31	143.25	151.51
Se	$K\beta_1$		6	16	34	6	12.494	5.95308	5		9.76	24.21	25.83	26.35	34.92	46.15	68.04	85.04	85.84	88.65	105.07	125.11	131.39	143.36	151.65
Se	$K\beta_3$		6	8	34	6	12.487	5.95608	5		9.76	24.22	25.85	26.36	34.94	46.17	68.08	85.10	85.89	88.71	105.15	125.22	131.52	143.54	151.88
Sb	$L\beta_{10}$	8	2	.01	51	6	4.161	5.95834	5		9.77	24.23	25.86	26.37	34.95	46.19	68.11	85.14	85.93	88.75	105.21	125.31			152.06
In	$L\gamma_{2,3}$		2	2	49	6	4.160	5.96000	4		9.77	24.24	25.86	26.38	34.96	46.20	68.13	85.17	85.96	88.78	105.25	125.37			152.18
Y	AL_3		1		39	6	2.079	5.96200	3		9.77	24.24	25.87	26.39	34.98	46.22	68.16	85.20	86.00	88.82	105.30	125.44	131.77	143.88	152.34
Tb	$L\alpha_2$		3	10	65	6	6.237	5.96250	4		9.77	24.25	25.87	26.39	34.98	46.22	68.16	85.21	86.01	88.83	105.31	125.46	131.79	143.91	152.38
Np	$L\gamma_1$		10	10	93	6	20.781	5.96498	6		9.78	24.26	25.89	26.40	34.99	46.24	68.20	85.25	86.05	88.87	105.37	125.55	131.90	144.06	152.57
Yb	$L\beta_4$		4	5	70	6	8.312	5.96552	5		9.78	24.26	25.89	26.40	35.00	46.25	68.20	85.26	86.06	88.88	105.39	125.57	131.92	144.09	152.62
Nb	$K\alpha_1$		8	100	41	6	16.612	5.96960	5		9.78	24.27	25.91	26.42	35.02	46.28	68.26	85.34	86.14	88.96	105.49	125.73	132.10	144.33	152.94
Rn	$L\beta_3$	H	7	10	86	6	14.509	5.98052	5		9.80	24.32	25.95	26.47	35.09	46.37	68.40	85.53	86.33	89.17	105.77	126.14	132.57	144.99	153.83
Nb	$K\alpha_{1,2}$		8	150	41	6	16.581	5.98090	5		9.80	24.32	25.96	26.47	35.09	46.37	68.40	85.54	86.34	89.17	105.78	126.15	132.59	145.01	153.86
Y	$L\beta_3$		1	3	39	6	2.072	5.98320	4		9.81	24.33	25.97	26.48	35.10	46.39	68.43	85.58	86.38	89.22	105.83	126.24	132.69	145.15	154.05
O	$L\beta_4$		8	4	92	6	16.573	5.98388	6		9.81	24.33	25.97	26.49	35.11	46.40	68.44	85.59	86.39	89.23	105.85	126.26	132.72	145.20	154.10
U	$L\gamma_3$		10	2	92	6	20.709	5.98574	6		9.81	24.34	25.98	26.49	35.12	46.41	68.47	85.62	86.43	89.26	105.90	126.33	132.80	145.31	154.26
Os	$L\beta_1$		5	50	76	6	10.354	5.98635	5		9.81	24.34	25.98	26.50	35.12	46.42	68.48	85.63	86.44	89.28	105.91	126.36	132.83	145.35	154.31
Cs	Ln		2	1	55	6	4.141	5.98640	4		9.81	24.34	25.98	26.50	35.12	46.42	68.48	85.63	86.44	89.28	105.91	126.36			154.31
Pt	M_5-O_3		1	.01	78	6	2.070	5.98700	3		9.81	24.35	25.98	26.50	35.13	46.42	68.48	85.64	86.45	89.29	105.93	126.38	132.86	145.39	154.37
Sm	$L\beta_1$		3	50	62	6	6.204	5.99418	5		9.82	24.38	26.01	26.53	35.17	46.48	68.58	85.77	86.58	89.42	106.11	126.65	133.17	145.83	154.98
Nb	$K\beta_3$		9	7	41	6	18.603	5.99706	5		9.83	24.39	26.03	26.55	35.19	46.51	68.61	85.82	86.63	89.48	106.19	126.76	133.30	146.01	155.23
Pt	Ll		4	3	78	6	8.267	5.99800	4		9.83	24.39	26.03	26.55	35.19	46.52	68.63	85.84	86.65	89.50	106.21	126.80	133.34	146.07	155.31
Ni	$K\beta_{1,3}$		4	20	28	6	8.263	6.00054	6		9.84	24.40	26.04	26.56	35.21	46.54	68.66	85.88	86.69	89.54	106.27	126.90	133.46	146.23	155.53
Sn	$L\gamma_1$		2	8	50	6	4.130	6.00230	5		9.84	24.41	26.05	26.57	35.22	46.55	68.68	85.92	86.72	89.58	106.32	126.96			155.69
Sm	$L\beta_4$		3	5	62	6	6.195	6.00285	5		9.84	24.41	26.05	26.57	35.22	46.55	68.69	85.93	86.73	89.59	106.33	126.99	133.56	146.37	155.73
Nb	$K\alpha_2$		8	50	41	6	16.518	6.00352	5		9.84	24.41	26.06	26.57	35.23	46.56	68.70	85.94	86.75	89.60	106.35	127.01	133.59	146.42	155.79
Tl	$L\beta_3$		6	6	81	6	12.388	6.00372	5		9.84	24.42	26.06	26.58	35.23	46.56	68.70	85.94	86.75	89.60	106.36	127.02	133.60	146.43	155.81
Fr	$L\beta_2$		7	20	87	6	14.448	6.00600	3		9.84	24.43	26.07	26.59	35.24	46.58	68.73	85.98	86.79	89.65	106.41	127.11	133.70	146.57	156.02
Am	Ll		6	3	95	6	12.381	6.00720	4		9.85	24.43	26.07	26.59	35.25	46.59	68.75	86.00	86.81	89.67	106.44	127.15	133.75	146.65	156.12
Rb	AL_1	H	1		37	6	2.063	6.00800	3		9.85	24.43	26.08	26.59	35.25	46.60	68.76	86.02	86.83	89.69	106.46	127.18	133.79	146.70	156.20
Sb	$L\beta_7$		2	.1	51	6	4.125	6.01040	4		9.85	24.44	26.09	26.61	35.27	46.62	68.79	86.06	86.87	89.73	106.53	127.28			156.41
La	Ll		2	2	57	6	4.124	6.01200	3		9.85	24.45	26.09	26.61	35.28	46.63	68.81	86.09	86.90	89.76	106.57	127.34			156.56
Tc	$K\beta_1$	H	10	16	43	6	20.615	6.01300	5		9.86	24.45	26.10	26.62	35.28	46.64	68.82	86.11	86.92	89.78	106.59	127.38	134.01	147.02	156.65
Te	$L\beta_3$		2	6	52	6	4.120	6.01786	5		9.86	24.47	26.12	26.64	35.31	46.68	68.89	86.19	87.00	89.87	106.72	127.56			157.11
Pu	$L\beta_3$		9	6	94	6	18.537	6.01839	5		9.86	24.48	26.12	26.64	35.32	46.68	68.89	86.20	87.01	89.88	106.73	127.58	134.25	147.37	157.16
Y	$L\beta_4$		1	3	39	6	2.060	6.01860	4		9.86	24.48	26.12	26.64	35.32	46.68	68.90	86.21	87.02	89.89	106.74	127.59	134.26	147.38	157.18
Tc	$K\beta_3$	H	10	8	43	6	20.595	6.01880	5		9.87	24.48	26.12	26.64	35.32	46.69	68.90	86.21	87.02	89.89	106.74	127.60	134.27	147.40	157.19
Bk	$L\beta_2$		9	20	97	3	18.529	6.02100			9.87	24.49	26.13	26.65	35.33	46.70	68.93	86.25	87.06	89.93	106.80	127.68	134.37	147.54	157.40
Am	$L\alpha_2$		7	10	95	6	14.409	6.02186	6		9.87	24.49	26.14	26.66	35.34	46.71	68.94	86.26	87.08	89.95	106.82	127.72	134.41	147.60	157.48
Th	M_2-N_4		2	5	90	6	4.117	6.02200	3		9.87	24.49	26.14	26.66	35.34	46.71	68.94	86.27	87.08	89.95	106.82	127.72			157.50
Tm	$L\beta_3$		4	6	69	6	8.229	6.02520	4		9.88	24.50	26.15	26.67	35.36	46.74	68.98	86.32	87.14	90.01	106.90	127.85	134.56	147.82	157.81
Nd	$L\beta_7$		3	.1	60	6	6.170	6.02760	4		9.88	24.51	26.16	26.68	35.37	46.76	69.01	86.37	87.18	90.06	106.97	127.94	134.67	147.98	158.04
Ra	$L\alpha_1$		6	100	88	6	12.338	6.02838	5		9.88	24.52	26.17	26.69	35.38	46.76	69.02	86.38	87.20	90.07	106.99	127.97	134.71	148.03	158.12
Cf	$L\beta_1$		10	50	98	3	20.557	6.03000			9.88	24.52	26.17	26.69	35.39	46.78	69.04	86.41	87.22	90.10	107.03	128.03	134.78	148.13	158.28
Re	$L\beta_2$		5	20	75	6	10.274	6.03300	5		9.89	24.54	26.19	26.71	35.41	46.80	69.08	86.46	87.28	90.16	107.10	128.15	134.92	148.33	158.58
Xe	$L\alpha_1$	H	2	100	54	6	4.109	6.03320	4		9.89	24.54	26.19	26.71	35.41	46.80	69.09	86.47	87.28	90.16	107.11	128.16			158.60
Tl	$L\alpha_1$		5	100	81	6	10.267	6.03695	5		9.89	24.55	26.20	26.73	35.43	46.84	69.14	86.53	87.35	90.24	107.21	128.31	135.10	148.60	158.98
U	$L\beta_2$		8	20	92	6	16.425	6.03745	6		9.90	24.55	26.21	26.73	35.43	46.84	69.14	86.54	87.36	90.25	107.22	128.33	135.12	148.63	159.03
Ir	$M\beta$		1	45	77	6	2.053	6.03800	3		9.90	24.56	26.21	26.73	35.44	46.84	69.15	86.55	87.37	90.26	107.23	128.35	135.15	148.67	159.08
Th	$L\beta_3$		8	6	90	6	16.423	6.03832	5		9.90	24.56	26.21	26.73	35.44	46.85	69.15	86.56	87.38	90.26	107.24	128.36	135.16	148.69	159.12
Ga	$K\beta_1$		5	14	31	6	10.263	6.03945	5		9.90	24.56	26.21	26.74	35.45	46.86	69.17	86.58	87.40	90.28	107.27	128.40	135.21	148.77	159.23
Ga	$K\beta_3$		5	7	31	6	10.259	6.04175	5		9.90	24.57	26.22	26.75	35.46	46.87	69.20	86.62	87.44	90.33	107.33	128.49	135.32	148.93	159.47
Pb	$L\beta_4$		6	4	82	6	12.304	6.04500	4		9.91	24.59	26.24	26.76	35.48	46.90	69.24	86.68	87.50	90.39	107.41	128.62	135.47	149.15	159.82
Er	Ll		3	2	68	6	6.152	6.04500	3		9.91	24.59	26.24	26.76	35.48	46.90	69.24	86.68	87.50	90.39	107.41	128.62	135.47	149.15	159.82
Rb	$L\gamma_{2,3}$		1	.1	37	6	2.050	6.04580	4		9.91	24.59	26.24	26.77	35.48	46.91	69.25	86.69	87.51	90.41	107.43	128.65	135.51	149.20	159.90
Sb	$L\beta_{2,15}$		2	17	51	6	4.100	6.04670	5		9.91	24.59	26.25	26.77	35.49	46.92	69.26	86.71	87.53	90.42	107.46	128.69			160.00
Pt	$M\alpha_1$		1	100	78	6	2.050	6.04700	3		9.91	24.59	26.25	26.77	35.49	46.92	69.27	86.71	87.53	90.43	107.47	128.70	135.56	149.29	160.03
Nd	$L\beta_9$	B	3	.01	60	6	6.147	6.04950	4		9.92	24.60	26.26	26.78	35.51	46.94	69.30	86.76	87.58	90.48	107.53	128.80	135.68	149.46	160.30
Ir	AM_5	H	1		77	6	2.049	6.05000	2		9.92	24.61	26.26	26.78	35.51	46.94	69.31	86.77	87.59	90.49	107.54	128.82	135.70	149.49	160.36
Er	$L\beta_{2,15}$		4	20	68	6	8.188	6.05595	5		9.93	24.63	26.29	26.81	35.55	46.99	69.38	86.87	87.70	90.60	107.70	129.06	135.98	149.91	161.02
Pt	$M\alpha_2$		1	100	78	6	2.046	6.05800	3		9.93	24.64	26.30	26.82	35.56	47.01	69.41	86.91	87.73	90.64	107.75	129.14	136.08	150.05	161.25
Pr	$L\gamma_5$		3	.1	59	6	6.135	6.06150	4		9.94	24.65	26.31	26.84	35.58	47.04	69.46	86.97	87.80	90.71	107.84	129.28	136.24	150.30	161.66
Ac	$L\gamma_1$	H	9	10	89	6	18.405	6.06159	5		9.94	24.65	26.31	26.84	35.58	47.04	69.46	86.97	87.80	90.71	107.84	129.28	136.25	150.31	161.67
Sc	$K\alpha_1$		2	100	21	6	4.090	6.06180	4	4	9.94	24.66	26.31	26.84	35.58	47.04	69.46	86.98	87.80	90.71	107.85	129.29			161.69

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)	ADP (112)
								10^{-}																	
Tl	$L\beta_2$		6	20	81	6	12.270	6.06186	5		9.94	24.66	26.31	26.84	35.58	47.04	69.46	86.98	87.80	90.71	107.85	129.29	136.26	150.33	161.70
Rn	$L\beta_1$	H	7	50	86	6	14.313	6.06235	5		9.94	24.66	26.32	26.84	35.58	47.04	69.47	86.99	87.81	90.72	107.86	129.31	136.28	150.36	161.76
Kr	$K\beta_2$		7	3	36	6	14.312	6.06270	4		9.94	24.66	26.32	26.84	35.59	47.05	69.47	86.99	87.82	90.73	107.87	129.32	136.30	150.39	161.80
P	$SK\alpha_6$		1	.01	15	1	2.044	6.06322	3	3	9.94	24.66	26.32	26.84	35.59	47.05	69.48	87.00	87.83	90.74	107.89	129.35	136.32	150.43	161.86
Sc	$K\alpha_{1,2}$		2	150	21	6	4.088	6.06400	4	4	9.94	24.66	26.32	26.85	35.59	47.06	69.49	87.02	87.84	90.75	107.91	129.38			161.95
Sc	$K\alpha_2$		2	50	21	6	4.085	6.06840	4	4	9.95	24.68	26.34	26.87	35.62	47.09	69.55	87.10	87.92	90.84	108.02	129.55			162.48
Zr	$L\alpha_1$		1	100	40	6	2.042	6.07050	4		9.95	24.69	26.35	26.88	35.63	47.11	69.58	87.13	87.96	90.88	108.07	129.64	136.67	150.95	162.74
Nd	$L\beta_{10}$	B	3	.01	60	6	6.125	6.07110	4		9.95	24.69	26.35	26.88	35.64	47.12	69.58	87.14	87.97	90.89	108.09	129.66	136.70	151.00	162.82
Ce	$L\gamma_6$		3	.1	58	6	6.125	6.07110	4		9.95	24.69	26.35	26.88	35.64	47.12	69.58	87.14	87.97	90.89	108.09	129.66	136.70	151.00	162.82
Tl	$L\gamma_1$		7	10	81	6	14.289	6.07264	5		9.95	24.70	26.36	26.89	35.65	47.13	69.60	87.17	88.00	90.92	108.13	129.72	136.77	151.11	163.01
Os	AM_4		8	1		76	6	2.041	6.07300	3		9.95	24.70	26.36	26.89	35.65	47.13	69.61	87.18	88.01	90.93	108.14	129.74	136.79	151.13	163.06
Tc	$K\alpha_1$	H	9	100	43	6	18.364	6.07518	5		9.96	24.71	26.37	26.90	35.66	47.15	69.64	87.22	88.05	90.97	108.20	129.83	136.89	151.30	163.33
P	$SK\alpha_5$		1	.01	15	1	2.040	6.07525	3	3	9.96	24.71	26.37	26.90	35.66	47.15	69.64	87.22	88.05	90.97	108.20	129.83	136.89	151.30	163.34
Pa	M_3-$O_{4,5}$		2	1	91	6	4.080	6.07600	3		9.96	24.71	26.38	26.90	35.67	47.16	69.65	87.23	88.06	90.98	108.22	129.86			163.44
Zr	$L\alpha_2$		1	10	40	6	2.040	6.07780	4		9.96	24.72	26.38	26.91	35.68	47.17	69.67	87.27	88.09	91.02	108.26	129.93	137.01	151.49	163.68
Pu	$L\alpha_1$		7	100	94	6	14.276	6.07810	5		9.96	24.72	26.39	26.91	35.68	47.17	69.67	87.27	88.10	91.02	108.27	129.94	137.03	151.51	163.71
Ra	$L\gamma_3$		9	2	88	6	18.354	6.07842	5		9.96	24.72	26.39	26.91	35.68	47.18	69.68	87.28	88.10	91.03	108.28	129.96	137.04	151.54	163.76
Hg	$L\gamma_3$		7	2	80	6	14.262	6.08405	5		9.97	24.75	26.41	26.94	35.72	47.22	69.75	87.38	88.21	91.14	108.43	130.18	137.32	151.96	164.52
Ta	$L\alpha_1$		4	100	73	6	8.145	6.08788	5		9.98	24.76	26.43	26.96	35.74	47.25	69.80	87.45	88.28	91.21	108.53	130.34	137.50	152.25	165.06
Tc	$K\alpha_{1,2}$	H	9	150	43	6	18.325	6.08808	5		9.98	24.76	26.43	26.96	35.74	47.26	69.81	87.45	88.28	91.21	108.53	130.35	137.51	152.26	165.09
Hg	M_3-N_1		1	1	80	6	2.035	6.09000	2		9.98	24.77	26.44	26.96	35.75	47.27	69.83	87.48	88.32	91.25	108.58	130.43	137.60	152.41	165.37
Tl	$L\beta_1$		6	50	81	6	12.211	6.09077	5		9.98	24.78	26.44	26.97	35.76	47.28	69.84	87.50	88.33	91.27	108.60	130.46	137.64	152.47	165.48
W	$M\gamma$		1	1	74	6	2.035	6.09200	3		9.99	24.78	26.45	26.97	35.76	47.29	69.86	87.52	88.35	91.29	108.64	130.51	137.70	152.56	165.66
Os	$L8_4$		5	4	76	6	10.174	6.09220	5		9.99	24.78	26.45	26.97	35.77	47.29	69.86	87.52	88.36	91.29	108.64	130.52	137.71	152.58	165.69
Te	$L8_4$		2	4	52	6	4.069	6.09322	5		9.99	24.79	26.45	26.98	35.77	47.30	69.87	87.54	88.37	91.31	108.67	130.56			165.85
Tl	$L\alpha_2$		5	10	81	6	10.171	6.09375	5		9.99	24.79	26.45	26.98	35.77	47.30	69.88	87.55	88.38	91.32	108.68	130.58	137.79	152.70	165.93
Y	$L\beta_6$		1	3	39	6	2.034	6.09420	4		9.99	24.79	26.46	26.98	35.78	47.31	69.89	87.56	88.39	91.33	108.69	130.60	137.81	152.73	165.99
Ra	$L\alpha_2$		6	10	88	6	12.194	6.09936	5		10.00	24.81	26.48	27.01	35.81	47.35	69.95	87.65	88.49	91.43	108.83	130.81	138.06	153.14	166.81
Pu	$L\beta_1$		9	50	94	6	18.291	6.09948	5		10.00	24.81	26.48	27.01	35.81	47.35	69.96	87.66	88.49	91.43	108.83	130.81	138.07	153.14	166.83
Re	$L8_3$		5	6	75	6	10.158	6.10155	5		10.00	24.82	26.49	27.02	35.82	47.37	69.98	87.69	88.53	91.47	108.89	130.90	138.17	153.31	167.17
At	$L\gamma_1$	H	8	10	85	6	16.249	6.10312	5		10.00	24.83	26.50	27.02	35.83	47.38	70.00	87.72	88.56	91.50	108.93	130.96	138.24	153.43	167.43
Nd	$L8_{2,15}$		3	20	60	6	6.088	6.10800	4		10.01	24.85	26.52	27.05	35.86	47.42	70.07	87.81	88.65	91.60	109.06	131.16	138.48	153.82	168.30
P	$SK\alpha_4$		1	5	15	1	2.029	6.10881	3	3	10.01	24.85	26.52	27.05	35.87	47.43	70.08	87.82	88.66	91.61	109.08	131.20	138.53	153.89	168.45
Lu	$L\gamma_1$		5	5	71	6	10.142	6.11140	5		10.02	24.86	26.53	27.06	35.88	47.45	70.11	87.87	88.71	91.66	109.15	131.30	138.65	154.10	168.93
Tc	$K\alpha_2$	H	9	50	43	6	18.248	6.11388	5		10.02	24.87	26.54	27.07	35.90	47.47	70.15	87.92	88.75	91.71	109.21	131.41	138.78	154.30	169.43
P	$SK\alpha_3$		1	5	15	1	2.027	6.11663	3	3	10.03	24.88	26.56	27.08	35.91	47.49	70.18	87.97	88.80	91.77	109.28	131.52	138.91	154.53	170.00
Tb	$L\gamma_1$		4	5	65	6	8.100	6.12120	4		10.03	24.90	26.58	27.11	35.94	47.53	70.24	88.05	88.89	91.85	109.40	131.71	139.14	154.91	171.03
Tm	$L\beta_1$		4	50	69	6	8.100	6.12160	4		10.03	24.90	26.58	27.11	35.94	47.53	70.25	88.06	88.89	91.86	109.42	131.73	139.16	154.94	171.13
Th	$L8_1$		8	50	90	6	16.199	6.12168	6		10.03	24.90	26.58	27.11	35.94	47.53	70.25	88.06	88.90	91.86	109.42	131.73	139.17	154.95	171.15
La	$L\gamma_3$		3	1	57	6	6.073	6.12300	4		10.04	24.91	26.58	27.11	35.95	47.54	70.27	88.08	88.92	91.89	109.45	131.79	139.23	155.06	171.47
Pm	$L\beta_3$		3	6	61	6	6.070	6.12630	4		10.04	24.92	26.60	27.13	35.97	47.57	70.31	88.14	88.98	91.95	109.54	131.93	139.40	155.34	172.34
Sr	$K\alpha_1$		7	100	38	6	14.163	6.12682	5		10.04	24.92	26.60	27.13	35.98	47.58	70.32	88.15	88.99	91.96	109.55	131.95	139.43	155.39	172.49
P	$SK\alpha'$		1	.5	15	1	2.022	6.13096	3	3	10.05	24.94	26.62	27.15	36.00	47.61	70.37	88.22	89.07	92.04	109.66	132.12	139.64	155.75	173.78
Ta	$L\alpha_2$		4	10	73	6	8.086	6.13172	5		10.05	24.94	26.62	27.15	36.01	47.62	70.38	88.24	89.08	92.06	109.68	132.15	139.68	155.81	174.05
Rh	$K\alpha_1$		10	100	45	6	20.213	6.13279	6		10.05	24.95	26.63	27.16	36.01	47.62	70.39	88.26	89.10	92.08	109.71	132.20	139.73	155.91	174.45
W	M_3-N_4		1	.1	74	6	2.021	6.13400	3		10.05	24.95	26.63	27.16	36.02	47.63	70.41	88.28	89.12	92.10	109.74	132.25	139.79	156.01	174.93
Pu	Ll		6	3	94	6	12.122	6.13560	4		10.06	24.96	26.64	27.17	36.03	47.65	70.43	88.31	89.15	92.13	109.79	132.32	139.87	156.15	175.66
Sr	$K\alpha_{1,2}$		7	150	38	6	14.140	6.13655	5		10.06	24.96	26.64	27.17	36.03	47.66	70.44	88.33	89.17	92.15	109.81	132.36	139.92	156.24	176.16
La	$L\gamma_2$		3	1	57	6	6.059	6.13800	4		10.06	24.97	26.65	27.18	36.04	47.67	70.46	88.35	89.20	92.18	109.85	132.42	140.00	156.37	177.07
Gd	$L\alpha_1$		3	100	64	6	6.056	6.14040	4		10.06	24.98	26.66	27.19	36.06	47.69	70.49	88.40	89.24	92.23	109.91	132.52	140.12	156.58	
Ce	$L\gamma_1$		3	5	58	6	6.051	6.14610	4		10.07	25.00	26.69	27.22	36.09	47.73	70.57	88.50	89.35	92.34	110.07	132.76	140.41	157.10	
Rh	$K\alpha_{1,2}$		10	150	45	6	20.165	6.14729	6		10.08	25.01	26.69	27.22	36.10	47.74	70.59	88.52	89.37	92.36	110.10	132.81	140.48	157.21	
U	$L\gamma_1$		10	10	92	6	20.164	6.14770	6		10.08	25.01	26.69	27.23	36.10	47.75	70.59	88.53	89.37	92.37	110.11	132.83	140.50	157.25	
Gd	Ln		3	1	64	6	6.049	6.14820	4		10.08	25.01	26.70	27.23	36.11	47.75	70.60	88.54	89.38	92.38	110.12	132.85	140.52	157.29	
Ca	$K8_5$	C	2	.01	20	6	4.032	6.14920	4	4	10.08	25.02	26.70	27.23	36.11	47.76	70.61	88.56	89.40	92.40	110.15	132.90			
Kr	$K8_1$		7	16	36	6	14.110	6.14950	4		10.08	25.02	26.70	27.23	36.11	47.76	70.61	88.56	89.41	92.40	110.16	132.91	140.59	157.42	
Os	$L\gamma_1$		6	10	76	6	12.093	6.15018	5		10.08	25.02	26.70	27.24	36.12	47.77	70.62	88.57	89.42	92.42	110.17	132.94	140.63	157.48	
Mo	Ll		1	3	42	6	2.015	6.15080	4		10.08	25.02	26.71	27.24	36.12	47.77	70.63	88.58	89.43	92.43	110.19	132.96	140.66	157.54	
Kr	$K8_3$		7	8	36	6	14.102	6.15300	4		10.09	25.03	26.72	27.25	36.13	47.79	70.66	88.62	89.47	92.47	110.25	133.06	140.77	157.74	
Te	$L\beta_1$		2	75	52	6	4.029	6.15354	5		10.09	25.03	26.72	27.25	36.14	47.80	70.67	88.63	89.48	92.48	110.26	133.08			
Sr	$K\alpha_2$		7	50	38	6	14.095	6.15601	5		10.09	25.04	26.73	27.26	36.15	47.82	70.70	88.68	89.53	92.53	110.33	133.19	140.93	158.03	
Re	$L\gamma_3$		6	2	75	6	12.080	6.15678	5		10.09	25.05	26.73	27.27	36.16	47.82	70.71	88.69	89.54	92.54	110.35	133.22	140.97	158.10	
P	$K\alpha_1$	H	1	100	15	6	2.013	6.15700	3	3	10.09	25.05	26.73	27.27	36.16	47.82	70.71	88.70	89.55	92.55	110.36	133.23	140.98	158.13	
P	$K\alpha_{1,2}$	H	1	150	15	6	2.013	6.15800	3	3	10.09	25.05	26.74	27.27	36.16	47.83	70.73	88.72	89.56	92.57	110.38	133.27	141.03	158.22	
Pa	$L\beta_4$		8	4	91	6	16.101	6.15920	4		10.10	25.06	26.74	27.28	36.17	47.84	70.74	88.74	89.59	92.59	110.42	133.33	141.10	158.34	

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)	Si (111)
								10^{-}																	
P	$K\alpha_2$	H	1	50	15	6	2.012	6.16000	3	3	7.01	10.10	25.06	26.75	27.28	36.18	47.85	70.75	88.75	89.60	92.61	110.44	133.36	141.14	158.42
Pu	$L\alpha_2$		7	10	94	6	14.082	6.16196	5		7.02	10.10	25.07	26.76	27.29	36.19	47.86	70.78	88.79	89.64	92.64	110.49	133.44	141.24	158.61
Si	M_4-N_3		1	.01	83	6	2.012	6.16200	3		7.02	10.10	25.07	26.76	27.29	36.19	47.87	70.78	88.79	89.64	92.65	110.49	133.45	141.25	158.61
Cu	$K\alpha_1$		4	100	29	6	8.046	6.16225	6		7.02	10.10	25.07	26.76	27.29	36.19	47.87	70.78	88.79	89.64	92.65	110.50	133.46	141.26	158.64
Cm	$L\beta_2$		9	20	96	3	18.096	6.16500			7.02	10.11	25.08	26.77	27.30	36.21	47.89	70.82	88.84	89.69	92.70	110.57	133.58	141.40	158.91
Sr	$K\beta_2$		8	3	38	6	16.082	6.16648	5		7.02	10.11	25.09	26.78	27.31	36.22	47.90	70.84	88.87	89.72	92.73	110.61	133.64	141.48	159.06
Ir	Ll	D	4	3	77	6	8.040	6.16720	4		7.02	10.11	25.09	26.78	27.31	36.22	47.91	70.85	88.88	89.73	92.75	110.63	133.67	141.52	159.13
Cu	$K\alpha_{1,2}$		4	150	29	6	8.040	6.16735	6		7.02	10.11	25.09	26.78	27.31	36.22	47.91	70.85	88.89	89.74	92.75	110.63	133.68	141.53	159.15
Pa	$L\gamma_3$		10	2	91	6	20.094	6.16900	4		7.02	10.11	25.10	26.79	27.32	36.23	47.92	70.87	88.92	89.77	92.78	110.68	133.75	141.62	159.31
At	$L\beta_3$	H	7	10	85	6	14.065	6.16945	5		7.02	10.11	25.10	26.79	27.32	36.23	47.93	70.88	88.92	89.78	92.79	110.69	133.77	141.64	159.36
Sn	$L\gamma_5$		2	.1	50	6	4.018	6.16950	5		7.02	10.11	25.10	26.79	27.32	36.23	47.93	70.88	88.93	89.78	92.79	110.69	133.77		
Sr	AL_2		1		38	6	2.008	6.17300	3		7.03	10.12	25.12	26.80	27.34	36.26	47.96	70.92	88.99	89.84	92.86	110.79	133.92	141.83	159.73
Gd	$L\alpha_2$		3	10	64	6	6.024	6.17340	4		7.03	10.12	25.12	26.81	27.34	36.26	47.96	70.93	89.00	89.85	92.87	110.80	133.94	141.85	159.77
Rh	$K\alpha_2$		10	50	45	6	20.070	6.17630	6		7.03	10.12	25.13	26.82	27.35	36.28	47.98	70.97	89.05	89.90	92.92	110.87	134.07	142.01	160.07
Am	$L\beta_4$		9	4	95	6	18.060	6.17751	5		7.03	10.13	25.13	26.82	27.36	36.28	47.99	70.98	89.07	89.93	92.95	110.91	134.12	142.07	160.20
Cu	$K\alpha_2$		4	50	29	6	8.026	6.17756	6		7.03	10.13	25.13	26.82	27.36	36.28	47.99	70.99	89.07	89.93	92.95	110.91	134.12	142.08	160.20
Tm	$L\beta_4$		4	5	69	6	8.024	6.17920	4		7.04	10.13	25.14	26.83	27.37	36.29	48.01	71.01	89.10	89.96	92.98	110.95	134.20	142.17	160.38
Ca	$K\beta_{1,3}$		2	15	20	6	4.012	6.17940	4	4	7.04	10.13	25.14	26.83	27.37	36.29	48.01	71.01	89.11	89.96	92.98	110.96	134.20		
Fr	$L\alpha_1$	H	6	100	87	6	12.029	6.18294	5		7.04	10.13	25.16	26.85	27.38	36.32	48.04	71.06	89.17	90.03	93.05	111.05	134.36	142.37	160.78
Pa	$L\beta_2$		8	20	91	6	16.022	6.18960	4		7.05	10.15	25.18	26.88	27.41	36.36	48.09	71.14	89.29	90.15	93.18	111.23	134.65	142.73	161.53
Re	$L\beta_1$		5	50	75	6	10.008	6.19290	5		7.05	10.15	25.20	26.89	27.43	36.38	48.12	71.19	89.35	90.21	93.25	111.32	134.80	142.91	161.91
Hg	$L\beta_3$		6	6	80	6	11.993	6.20148	5		7.06	10.17	25.23	26.93	27.47	36.43	48.19	71.30	89.51	90.37	93.42	111.56	135.18	143.39	162.93
Np	$L\beta_3$	H	9	6	93	6	17.986	6.20280	5		7.06	10.17	25.24	26.94	27.47	36.44	48.20	71.32	89.53	90.40	93.44	111.59	135.24	143.46	163.10
Hg	$L\alpha_1$		5	100	80	6	9.987	6.20600	5		7.07	10.17	25.25	26.95	27.49	36.46	48.23	71.36	89.59	90.45	93.51	111.68	135.39	143.64	163.50
Zr	$K\beta_2$		9	4	40	6	17.967	6.20937	5		7.07	10.18	25.27	26.97	27.50	36.48	48.26	71.41	89.65	90.52	93.57	111.77	135.54	143.83	163.93
Mo	$K\beta_2$		10	4	42	6	19.962	6.20990	5		7.07	10.18	25.27	26.97	27.51	36.48	48.26	71.41	89.66	90.53	93.58	111.78	135.56	143.86	164.00
Bk	$L\beta_1$		10	50	97	3	19.961	6.21000			7.07	10.18	25.27	26.97	27.51	36.48	48.26	71.41	89.67	90.53	93.58	111.79	135.57	143.87	164.02
Nb	Ln		1	1	41	6	1.996	6.21090	4		7.07	10.18	25.27	26.97	27.51	36.49	48.27	71.43	89.68	90.55	93.60	111.81	135.61	143.92	164.14
Y	$L\beta_1$		1	45	39	6	1.995	6.21200	4		7.07	10.18	25.28	26.98	27.52	36.49	48.28	71.44	89.70	90.57	93.62	111.84	135.66	143.98	164.28
Cr	$K\beta_5$	B	3	.03	24	6	5.986	6.21261	5	4	7.07	10.18	25.28	26.98	27.52	36.50	48.28	71.45	89.71	90.58	93.64	111.86	135.68	144.02	164.36
W	$L\beta_2$		5	20	74	6	9.960	6.22300	5		7.09	10.20	25.32	27.03	27.57	36.56	48.37	71.59	89.90	90.77	93.84	112.14	136.16	144.61	165.83
Np	$L\alpha_1$		7	100	93	6	13.942	6.22390	6		7.09	10.20	25.33	27.03	27.57	36.57	48.38	71.60	89.92	90.79	93.86	112.17	136.20	144.66	165.96
Ac	$L\beta_3$	H	8	10	89	6	15.929	6.22576	5		7.09	10.21	25.33	27.04	27.58	36.58	48.39	71.62	89.96	90.82	93.89	112.22	136.28	144.77	166.24
Sa	$L\gamma_4$		3	.1	56	6	5.972	6.22680	4		7.09	10.21	25.34	27.04	27.58	36.58	48.40	71.64	89.97	90.84	93.91	112.25	136.33	144.83	166.40
U	M_3-O_1		2	.5	92	6	3.979	6.23000	3		7.09	10.21	25.35	27.06	27.60	36.60	48.43	71.68	90.03	90.90	93.98	112.33	136.48		
Sn	$L8_9$	B	2	.01	50	6	3.979	6.23026	5		7.09	10.21	25.35	27.06	27.60	36.60	48.43	71.68	90.04	90.91	93.98	112.34	136.49		
Sb	$L\beta_6$		2	1	51	6	3.979	6.23026	5		7.09	10.21	25.35	27.06	27.60	36.60	48.43	71.68	90.04	90.91	93.98	112.34	136.49		
Tl	$L\beta_4$		6	4	81	6	11.929	6.23508	5		7.10	10.22	25.37	27.08	27.62	36.63	48.47	71.75	90.13	91.00	94.08	112.47	136.71	145.32	167.75
Br	$K\alpha_1$		6	100	35	6	11.922	6.23844	5		7.10	10.23	25.39	27.09	27.63	36.65	48.50	71.79	90.19	91.06	94.14	112.57	136.87	145.51	168.34
Hg	$L8_2$		6	20	80	6	11.922	6.23849	5		7.10	10.23	25.39	27.09	27.64	36.65	48.50	71.79	90.19	91.06	94.15	112.57	136.87	145.52	168.35
Pm	$L\beta_1$		3	50	61	6	5.960	6.23910	4		7.10	10.23	25.39	27.10	27.64	36.66	48.50	71.80	90.20	91.07	94.16	112.58	136.90	145.55	168.45
Sn	$L\beta_{10}$	B	2	.01	50	6	3.971	6.24340	5		7.11	10.23	25.41	27.12	27.66	36.68	48.54	71.86	90.28	91.15	94.24	112.70	137.10		
Er	$L\beta_3$		4	6	68	6	7.938	6.24640	4		7.11	10.24	25.42	27.13	27.67	36.70	48.56	71.90	90.34	91.21	94.30	112.79	137.24	145.99	169.87
Sr	$K\alpha_{1,2}$		6	150	35	6	11.907	6.24660	5		7.11	10.24	25.42	27.13	27.67	36.70	48.56	71.90	90.34	91.21	94.31	112.79	137.25	146.00	169.91
Ra	$L\gamma_1$		9	10	88	6	17.845	6.25167	5		7.12	10.25	25.44	27.15	27.69	36.73	48.61	71.97	90.43	91.31	94.41	112.93	137.49	146.31	171.02
Fr	$L\alpha_2$	H	6	10	87	6	11.893	6.25380	5		7.12	10.25	25.45	27.16	27.70	36.75	48.62	72.00	90.47	91.35	94.45	112.99	137.59	146.44	171.53
At	$L\beta_1$	H	7	50	85	6	13.874	6.25443	5		7.12	10.25	25.45	27.17	27.71	36.75	48.63	72.01	90.48	91.36	94.46	113.01	137.62	146.47	171.69
Cr	$K\beta_{1,3}$		3	18	24	6	5.946	6.25461	5	4	7.12	10.25	25.45	27.17	27.71	36.75	48.63	72.01	90.49	91.36	94.46	113.01	137.63	146.49	171.74
Np	Ll		6	3	93	6	11.887	6.25680	4		7.12	10.26	25.46	27.18	27.72	36.77	48.65	72.04	90.53	91.40	94.51	113.07	137.73	146.62	172.31
Ho	Ll		3	2	67	6	5.942	6.25800	4		7.13	10.26	25.47	27.18	27.72	36.77	48.66	72.05	90.55	91.43	94.53	113.11	137.79	146.69	172.65
Au	M_3-N_1		1	1	79	6	1.981	6.25900	3		7.13	10.26	25.47	27.19	27.73	36.78	48.67	72.07	90.57	91.45	94.55	113.13	137.84	146.75	172.94
Ir	$M\alpha_1$		1	100	77	6	1.980	6.26200	3		7.13	10.26	25.48	27.20	27.74	36.80	48.69	72.11	90.62	91.50	94.61	113.22	137.98	146.94	173.89
Th	M_3-$O_{4,5}$		2	1	90	6	3.959	6.26200	3		7.13	10.26	25.48	27.20	27.74	36.80	48.69	72.11	90.62	91.50	94.61	113.22	137.98		
Br	$K\alpha_2$		6	50	35	6	11.876	6.26292	5		7.13	10.27	25.49	27.20	27.75	36.80	48.70	72.12	90.64	91.52	94.63	113.24	138.02	146.99	174.22
Hg	$L\alpha_2$		5	10	80	6	9.896	6.26320	5		7.13	10.27	25.49	27.20	27.75	36.80	48.70	72.12	90.65	91.52	94.63	113.25	138.04	147.01	174.32
Sr	$K\beta_1$		8	16	38	6	15.833	6.26336	5		7.13	10.27	25.49	27.20	27.75	36.81	48.70	72.12	90.65	91.53	94.64	113.26	138.04	147.02	174.38
Os	$M\beta$		1	45	76	6	1.978	6.26700	3		7.14	10.27	25.50	27.22	27.76	36.83	48.73	72.17	90.72	91.60	94.71	113.36	138.22	147.25	175.96
Sr	$K\beta_3$		8	8	38	6	15.822	6.26760	5		7.14	10.27	25.51	27.22	27.77	36.83	48.74	72.18	90.73	91.61	94.72	113.37	138.25	147.28	176.28
Ho	$L8_{2,15}$		4	20	67	6	7.910	6.26840	4		7.14	10.28	25.51	27.23	27.77	36.84	48.74	72.19	90.74	91.62	94.74	113.40	138.28	147.33	176.76
Ge	$K\alpha_1$		5	100	32	6	9.885	6.27027	6		7.14	10.28	25.52	27.24	27.78	36.85	48.76	72.22	90.78	91.66	94.77	113.45	138.37	147.45	178.37
Sa	Ll		2	2	56	6	3.953	6.27100	4		7.14	10.28	25.52	27.24	27.78	36.85	48.77	72.23	90.79	91.67	94.79	113.47	138.41		
Ir	$M\alpha_2$		1	100	77	6	1.975	6.27500	3		7.15	10.29	25.54	27.26	27.80	36.88	48.80	72.28	90.86	91.75	94.87	113.58	138.60	147.75	
Hg	$L\gamma_1$		7	10	80	6	13.828	6.27522	5		7.15	10.29	25.54	27.26	27.80	36.88	48.80	72.28	90.87	91.75	94.87	113.59	138.61	147.76	
Cd	$L\gamma_2$		2	5	48	6	3.951	6.27540	4		7.15	10.29	25.54	27.26	27.80	36.88	48.80	72.28	90.87	91.75	94.88	113.59	138.62		
Pr	$L\beta_7$		3	.1	59	6	5.926	6.27570	4		7.15	10.29	25.54	27.26	27.80	36.88	48.81	72.29	90.88	91.76	94.88	113.60	138.64	147.79	

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)	Ge (111)
Ge	$K\alpha_{1,2}$		5	150	32	6	9.874	6.27686	6		5.54	7.15	10.29	25.54	27.26	27.81	36.89	48.81	72.30	90.90	91.78	94.91	113.63	138.69	147.87
Hf	$L\alpha_1$		4	100	72	6	7.898	6.27832	5		5.54	7.15	10.29	25.55	27.27	27.82	36.90	48.83	72.32	90.93	91.81	94.93	113.67	138.76	147.96
W	M_2-N_1		1	.01	74	6	1.974	6.28000	2		5.54	7.15	10.29	25.56	27.28	27.82	36.91	48.84	72.35	90.96	91.84	94.97	113.72	138.84	148.07
Au	$L\gamma_3$		7	2	79	6	13.807	6.28481	5		5.54	7.16	10.30	25.58	27.30	27.84	36.94	48.88	72.41	91.05	91.93	95.06	113.85	139.08	148.37
Np	$L\beta_1$		9	50	93	6	17.747	6.28630	6		5.54	7.16	10.30	25.58	27.31	27.85	36.95	48.89	72.43	91.07	91.96	95.09	113.90	139.15	148.47
Zr	$K\alpha_1$		8	100	40	6	15.772	6.28744	5		5.54	7.16	10.31	25.59	27.31	27.86	36.95	48.90	72.45	91.10	91.98	95.12	113.93	139.21	148.54
Ge	$K\alpha_2$		5	50	32	6	9.854	6.29005	6		5.55	7.16	10.31	25.60	27.32	27.87	36.97	48.92	72.48	91.14	92.03	95.17	114.00	139.34	148.71
Hg	$L\beta_1$		6	50	80	6	11.821	6.29208	5		5.55	7.16	10.31	25.61	27.33	27.88	36.98	48.94	72.51	91.18	92.07	95.21	114.06	139.44	148.85
Re	$L\beta_4$		5	4	75	6	9.845	6.29585	5		5.55	7.17	10.32	25.62	27.35	27.89	37.00	48.97	72.56	91.25	92.14	95.28	114.16	139.62	149.09
Sr	$L\gamma_5$		1	.1	38	6	1.969	6.29610	4		5.55	7.17	10.32	25.62	27.35	27.90	37.00	48.97	72.56	91.26	92.14	95.29	114.17	139.63	149.11
I	$L\alpha_1$		2	100	53	6	3.937	6.29720	5		5.55	7.17	10.32	25.63	27.35	27.90	37.01	48.98	72.58	91.28	92.16	95.31	114.20	139.69	
Zr	$K\alpha_{1,2}$		8	150	40	6	15.744	6.29869	5		5.55	7.17	10.33	25.64	27.36	27.91	37.02	49.00	72.60	91.30	92.19	95.34	114.24	139.76	149.28
Po	$L\gamma_1$		8	10	84	6	15.741	6.29984	5		5.56	7.17	10.33	25.64	27.37	27.91	37.03	49.01	72.61	91.33	92.21	95.36	114.28	139.82	149.36
Os	AM_5	H	1		76	6	1.968	6.30000	2		5.56	7.17	10.33	25.64	27.37	27.91	37.03	49.01	72.61	91.33	92.22	95.37	114.28	139.83	149.37
Pr	$L\beta_9$	8	3	.01	59	6	5.902	6.30120	4		5.56	7.18	10.33	25.65	27.37	27.92	37.04	49.02	72.63	91.35	92.24	95.39	114.31	139.89	149.45
Sb	$L\beta_3$		2	6	51	6	3.932	6.30516	5		5.56	7.18	10.34	25.66	27.39	27.94	37.06	49.05	72.68	91.43	92.32	95.47	114.43	140.09	
Mn	$K\alpha_1$		3	100	25	6	5.898	6.30546	6	4	5.56	7.18	10.34	25.66	27.39	27.94	37.06	49.05	72.69	91.43	92.32	95.48	114.43	140.10	149.73
Np	$L\alpha_2$		7	10	93	6	13.757	6.30731	6		5.56	7.18	10.34	25.67	27.40	27.95	37.07	49.07	72.71	91.47	92.36	95.51	114.49	140.19	149.86
Mn	$K\alpha_{1,2}$		3	150	25	6	5.894	6.30942	5	4	5.56	7.18	10.34	25.68	27.41	27.96	37.09	49.08	72.74	91.50	92.40	95.56	114.55	140.30	150.00
Nd	$L\beta_6$		3	.1	60	6	5.892	6.31170	4		5.57	7.19	10.35	25.69	27.42	27.97	37.10	49.10	72.77	91.55	92.44	95.60	114.61	140.41	150.15
Ta	$M\gamma$		1	1	73	6	1.964	6.31200	3		5.57	7.19	10.35	25.69	27.42	27.97	37.10	49.11	72.77	91.55	92.45	95.61	114.62	140.43	150.17
Ac	$L\beta_1$	H	8	50	89	6	15.710	6.31224	5		5.57	7.19	10.35	25.69	27.42	27.97	37.10	49.11	72.78	91.56	92.45	95.61	114.63	140.44	150.19
Am	$L\beta_2$		9	20	95	6	17.673	6.31251	6		5.57	7.19	10.35	25.69	27.42	27.97	37.10	49.11	72.78	91.56	92.45	95.62	114.63	140.45	150.21
Sn	$L\beta_7$		2	.1	50	6	3.927	6.31280	4		5.57	7.19	10.35	25.69	27.42	27.97	37.11	49.11	72.78	91.57	92.46	95.62	114.64	140.47	
Si	$L\gamma_3$		8	2	83	6	15.708	6.31336	5		5.57	7.19	10.35	25.70	27.43	27.97	37.11	49.12	72.79	91.58	92.47	95.63	114.66	140.50	150.27
W	$L\beta_3$		5	6	74	6	9.817	6.31345	5		5.57	7.19	10.35	25.70	27.43	27.97	37.11	49.12	72.79	91.58	92.47	95.64	114.66	140.50	150.27
Zr	$K\beta_1$		9	18	40	6	17.665	6.31557	5		5.57	7.19	10.35	25.71	27.44	27.98	37.12	49.14	72.82	91.62	92.51	95.68	114.72	140.61	150.42
I	$L\alpha_2$		2	10	53	6	3.925	6.31582	5		5.57	7.19	10.35	25.71	27.44	27.98	37.12	49.14	72.82	91.62	92.52	95.68	114.73	140.62	
Mn	$K\alpha_2$		3	50	25	6	5.887	6.31734	5	4	5.57	7.19	10.36	25.71	27.44	27.99	37.13	49.15	72.85	91.65	92.55	95.71	114.77	140.70	150.54
Zr	$K\beta_3$		9	9	40	6	17.651	6.32052	5		5.57	7.20	10.36	25.73	27.46	28.01	37.15	49.18	72.89	91.71	92.61	95.78	114.86	140.86	150.76
Zr	$K\alpha_2$		8	50	40	6	15.688	6.32120	5		5.57	7.20	10.36	25.73	27.46	28.01	37.16	49.18	72.90	91.72	92.62	95.79	114.88	140.90	150.81
Pr	$L\beta_{10}$	8	3	.01	59	6	5.883	6.32130	4		5.57	7.20	10.36	25.73	27.46	28.01	37.16	49.18	72.90	91.73	92.62	95.79	114.88	140.90	150.82
Hf	$L\alpha_2$		4	10	72	6	7.843	6.32184	5		5.57	7.20	10.36	25.73	27.46	28.01	37.16	49.19	72.91	91.74	92.63	95.80	114.90	140.93	150.85
Mo	$K\beta_1$		10	17	42	6	19.605	6.32288	6		5.58	7.20	10.36	25.74	27.47	28.02	37.17	49.20	72.92	91.76	92.65	95.83	114.93	140.98	150.93
In	$L\gamma_1$		2	8	49	6	3.920	6.32426	5		5.58	7.20	10.37	25.74	27.47	28.02	37.18	49.21	72.94	91.78	92.68	95.85	114.97	141.05	
Mo	$K\beta_3$		10	7	42	6	19.587	6.32872	6		5.58	7.21	10.37	25.76	27.49	28.04	37.20	49.24	73.00	91.86	92.76	95.94	115.09	141.28	151.34
Re	AM_4	H	1		75	6	1.958	6.33000	2		5.58	7.21	10.38	25.76	27.50	28.05	37.21	49.26	73.01	91.89	92.79	95.97	115.13	141.35	151.43
Ce	$L\gamma_5$		3	.1	58	6	5.874	6.33090	4		5.58	7.21	10.38	25.77	27.50	28.05	37.22	49.26	73.03	91.91	92.80	95.99	115.16	141.39	151.49
Pa	$L\gamma_1$	H	10	10	91	6	19.565	6.33580	5		5.59	7.21	10.39	25.79	27.53	28.07	37.25	49.30	73.09	92.00	92.90	96.08	115.30	141.65	151.84
Cf	$L\alpha_1$		8	100	98	3	15.652	6.33600			5.59	7.21	10.39	25.79	27.53	28.08	37.25	49.31	73.10	92.00	92.90	96.09	115.30	141.66	151.86
Yb	$L\gamma_1$		5	5	70	6	9.778	6.33845	5		5.59	7.22	10.39	25.80	27.54	28.09	37.26	49.33	73.13	92.05	92.95	96.14	115.37	141.79	152.03
Os	$L1$		4	3	76	6	7.821	6.33992	5		5.59	7.22	10.39	25.81	27.54	28.09	37.27	49.34	73.15	92.07	92.98	96.17	115.41	141.86	152.14
Th	$L\beta_4$		8	4	90	6	15.640	6.34056	5		5.59	7.22	10.39	25.81	27.55	28.10	37.28	49.34	73.16	92.09	92.99	96.18	115.43	141.90	152.19
Rn	$L\alpha_1$	H	6	100	86	6	11.725	6.34338	5		5.59	7.22	10.40	25.82	27.56	28.11	37.29	49.37	73.19	92.14	93.04	96.24	115.51	142.04	152.40
As	$K\beta_1$		6	15	33	6	11.724	6.34380	5		5.59	7.22	10.40	25.82	27.56	28.11	37.30	49.37	73.20	92.15	93.05	96.25	115.52	142.07	152.43
As	$K\beta_3$		6	7	33	6	11.718	6.34698	5		5.60	7.23	10.40	25.84	27.57	28.13	37.31	49.40	73.24	92.21	93.11	96.31	115.62	142.23	152.66
Th	$L\beta_2$		8	20	90	6	15.621	6.34832	5		5.60	7.23	10.41	25.84	27.58	28.13	37.32	49.41	73.26	92.23	93.14	96.34	115.65	142.30	152.76
Er	$L\beta_1$		4	50	68	6	7.809	6.34920	4		5.60	7.23	10.41	25.84	27.58	28.14	37.33	49.41	73.27	92.25	93.15	96.35	115.68	142.35	152.83
Sn	$L\beta_{2,1,5}$		2	17	50	6	3.904	6.35010	5		5.60	7.23	10.41	25.85	27.59	28.14	37.33	49.42	73.28	92.27	93.17	96.37	115.70	142.40	
Ta	M_3-N_4		1	.01	73	6	1.951	6.35300	3		5.60	7.23	10.41	25.86	27.60	28.15	37.35	49.45	73.32	92.32	93.22	96.43	115.79	142.55	153.11
Pu	$L\beta_4$		9	4	94	6	17.553	6.35580	5		5.60	7.24	10.42	25.87	27.61	28.17	37.37	49.47	73.36	92.37	93.28	96.49	115.87	142.70	153.32
Th	$L\gamma_3$		10	2	90	6	19.503	6.35590	5		5.60	7.24	10.42	25.87	27.61	28.17	37.37	49.47	73.36	92.37	93.28	96.49	115.87	142.71	153.33
Pr	$L\beta_{2,1,5}$		3	20	59	6	5.849	6.35820	4		5.61	7.24	10.42	25.88	27.62	28.18	37.38	49.49	73.39	92.42	93.32	96.54	115.94	142.83	153.51
Eu	$L\alpha_1$		3	100	63	6	5.845	6.36270	4		5.61	7.25	10.43	25.90	27.64	28.20	37.41	49.53	73.45	92.50	93.41	96.63	116.07	143.07	153.85
Po	$L\beta_3$		7	6	84	6	13.635	6.36370	4		5.61	7.25	10.43	25.90	27.65	28.20	37.42	49.54	73.47	92.52	93.43	96.65	116.10	143.13	153.93
Re	$L\gamma_1$		6	10	75	6	11.683	6.36594	5		5.61	7.25	10.44	25.91	27.66	28.21	37.43	49.55	73.50	92.56	93.47	96.69	116.16	143.25	154.11
Sr	$L\beta_3$		1	3	38	6	1.947	6.36720	4		5.61	7.25	10.44	25.92	27.66	28.22	37.44	49.56	73.51	92.59	93.50	96.72	116.20	143.32	154.20
Gd	$L\gamma_1$		4	5	64	6	7.784	6.36960	4		5.62	7.25	10.44	25.93	27.68	28.23	37.45	49.58	73.55	92.63	93.54	96.77	116.27	143.45	154.39
W	$L\gamma_3$		6	2	74	6	11.672	6.37200	5		5.62	7.26	10.45	25.94	27.69	28.24	37.47	49.60	73.58	92.68	93.59	96.82	116.34	143.58	154.58
U	$L\alpha_1$		7	100	92	6	13.612	6.37447	6		5.62	7.26	10.45	25.95	27.70	28.25	37.48	49.62	73.61	92.72	93.64	96.87	116.41	143.71	154.78
Sb	$L\beta_4$		2	4	51	6	3.886	6.38028	5		5.63	7.27	10.46	25.97	27.72	28.28	37.52	49.67	73.69	92.83	93.75	96.98	116.58	144.03	
Nd	$L\beta_3$		3	6	60	6	5.828	6.38040	4		5.63	7.27	10.46	25.97	27.72	28.28	37.52	49.67	73.69	92.84	93.75	96.99	116.58	144.04	155.26
Au	$L\alpha_1$		5	100	79	6	9.712	6.38200	5		5.63	7.27	10.46	25.98	27.73	28.28	37.53	49.69	73.71	92.87	93.78	97.02	116.63	144.13	155.39
Mo	$K\alpha_1$		9	100	42	6	17.476	6.38370	6		5.63	7.27	10.46	25.99	27.74	28.29	37.54	49.70	73.74	92.90	93.81	97.05	116.68	144.22	155.54
Pb	M_4-N_3		1	.01	82	6	1.942	6.38400	3		5.63	7.27	10.47	25.99	27.74	28.29	37.54	49.70	73.74	92.90	93.82	97.06	116.68	144.24	155.56

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)
Sr	AL_3		1		38	6	1.941	6.38700	3		5.63	7.27	10.47	26.00	27.75	28.31	37.56	49.73	73.78	92.96	93.88	97.12	116.77	144.41	155.81
Cm	$L\beta_1$		10	50	96	3	19.399	6.39000			5.63	7.28	10.48	26.01	27.77	28.32	37.58	49.75	73.82	93.02	93.93	97.18	116.86	144.57	156.06
U	$L\beta_3$		9	6	92	6	17.452	6.39261	5		5.64	7.28	10.48	26.02	27.78	28.33	37.59	49.78	73.86	93.07	93.98	97.23	116.94	144.72	156.28
Eu	$L\alpha_2$		3	10	63	6	5.816	6.39450	4		5.64	7.28	10.48	26.03	27.79	28.34	37.60	49.79	73.88	93.10	94.02	97.27	116.99	144.83	156.45
Eu	Ln		3	1	63	6	5.816	6.39450	4		5.64	7.28	10.48	26.03	27.79	28.34	37.60	49.79	73.88	93.10	94.02	97.27	116.99	144.83	156.45
Mo	$K\alpha_{1,2}$		9	150	42	6	17.441	6.39657	6		5.64	7.28	10.49	26.04	27.79	28.35	37.62	49.81	73.91	93.14	94.06	97.31	117.05	144.95	156.62
Ba	$L\gamma_3$		3	1	56	6	5.808	6.40260	4		5.65	7.29	10.50	26.07	27.82	28.38	37.65	49.86	73.99	93.26	94.18	97.44	117.23	145.29	157.15
Sr	$L\beta_4$		1	3	38	6	1.936	6.40260	4		5.65	7.29	10.50	26.07	27.82	28.38	37.65	49.86	73.99	93.26	94.18	97.44	117.23	145.29	157.15
U	Ll		6	3	92	6	11.616	6.40272	5		5.65	7.29	10.50	26.07	27.82	28.38	37.65	49.86	73.99	93.26	94.18	97.44	117.23	145.30	157.16
Er	$L\beta_4$		4	5	68	6	7.744	6.40280	4		5.65	7.29	10.50	26.07	27.82	28.38	37.66	49.86	73.99	93.26	94.18	97.44	117.23	145.30	157.17
Au	$L\beta_3$		6	6	79	6	11.608	6.40709	5		5.65	7.30	10.50	26.08	27.84	28.40	37.68	49.90	74.05	93.34	94.26	97.53	117.36	145.55	157.55
W	$L\beta_1$		5	50	74	6	9.671	6.40904	6		5.65	7.30	10.51	26.09	27.85	28.41	37.69	49.91	74.08	93.38	94.30	97.57	117.42	145.66	157.73
Rn	$L\alpha_2$	H	6	10	86	6	11.596	6.41394	5		5.66	7.30	10.51	26.11	27.87	28.43	37.72	49.95	74.14	93.47	94.39	97.67	117.56	145.94	158.18
Po	Ll		5	3	84	6	9.662	6.41450	4		5.66	7.30	10.52	26.11	27.87	28.43	37.73	49.96	74.15	93.48	94.40	97.68	117.58	145.98	158.23
Ba	$L\gamma_2$		3	1	56	6	5.796	6.41610	4		5.66	7.31	10.52	26.12	27.88	28.44	37.74	49.97	74.17	93.51	94.44	97.71	117.63	146.07	158.38
Au	$L\beta_2$		6	20	79	6	11.583	6.42132	5		5.65	7.31	10.53	26.14	27.90	28.46	37.77	50.01	74.24	93.61	94.54	97.82	117.78	146.38	158.88
Ra	$L\beta_3$		8	6	88	6	15.442	6.42184	5		5.66	7.31	10.53	26.15	27.91	28.46	37.77	50.02	74.25	93.62	94.55	97.83	117.80	146.41	158.92
Mo	$K\alpha_2$		9	50	42	6	17.371	6.42231	6		5.66	7.31	10.53	26.15	27.91	28.47	37.77	50.02	74.26	93.63	94.56	97.84	117.81	146.44	158.97
Ta	$L\beta_2$		5	20	73	6	9.650	6.42270	5		5.66	7.31	10.53	26.15	27.91	28.47	37.78	50.03	74.26	93.64	94.56	97.85	117.82	146.46	159.01
La	$L\gamma_1$		3	5	57	6	5.788	6.42540	4		5.67	7.32	10.53	26.16	27.92	28.48	37.79	50.05	74.30	93.69	94.62	97.90	117.90	146.62	159.27
Ru	$K\alpha_1$		10	100	44	6	19.276	6.43083	6		5.57	7.32	10.54	26.18	27.95	28.50	37.83	50.09	74.37	93.79	94.72	98.01	118.06	146.94	159.81
Cf	$L\alpha_2$		8	10	98	3	15.418	6.43200			5.67	7.32	10.54	26.19	27.95	28.51	37.83	50.10	74.39	93.81	94.74	98.04	118.10	147.01	159.92
Hg	$L\beta_4$		6	4	80	6	11.561	6.43332	5		5.67	7.33	10.55	26.19	27.96	28.52	37.84	50.11	74.41	93.84	94.77	98.07	118.14	147.09	160.06
Au	$L\alpha_2$		5	10	79	6	9.626	6.43860	5		5.68	7.33	10.56	26.21	27.98	28.54	37.87	50.16	74.48	93.94	94.87	98.17	118.29	147.41	160.60
Br	$K\beta_2$		7	2	35	6	13.467	6.44322	5		5.68	7.34	10.56	26.23	28.00	28.56	37.90	50.20	74.54	94.03	94.96	98.27	118.43	147.70	161.09
Ru	$K\alpha_{1,2}$		10	150	44	6	19.233	6.44524	6		5.68	7.34	10.57	26.24	28.01	28.57	37.91	50.21	74.57	94.07	95.00	98.31	118.49	147.82	161.30
Fr	$L\gamma_1$	H	9	10	87	6	17.300	6.44868	5		5.59	7.34	10.57	26.26	28.03	28.59	37.94	50.24	74.61	94.13	95.07	98.38	118.59	148.03	161.68
Y	$L\alpha_1$		1	100	39	6	1.922	6.44880	4		5.69	7.34	10.57	26.26	28.03	28.59	37.94	50.24	74.61	94.13	95.07	98.38	118.60	148.04	161.69
Sb	$L\beta_1$		2	75	51	6	3.843	6.45134	5		5.69	7.35	10.58	26.27	28.04	28.60	37.95	50.26	74.65	94.18	95.12	98.44	118.67	148.20	
Po	$L\beta_1$		7	50	84	6	13.445	6.45400	4		5.69	7.35	10.58	26.28	28.05	28.61	37.97	50.29	74.69	94.23	95.17	98.49	118.75	148.37	162.27
Pt	M_3-N_1		1	1	78	6	1.920	6.45500	3		5.69	7.35	10.58	26.28	28.05	28.61	37.97	50.30	74.70	94.25	95.19	98.51	118.78	148.43	162.39
Y	$L\alpha_2$		1	10	39	6	1.920	6.45580	4		5.69	7.35	10.58	26.29	28.06	28.62	37.98	50.30	74.71	94.27	95.20	98.53	118.81	148.48	162.48
U	$L\alpha_2$		7	10	92	6	13.437	6.45790	6		5.69	7.35	10.59	26.29	28.07	28.63	37.99	50.32	74.74	94.31	95.25	98.57	118.87	148.61	162.72
Pu	$L\beta_2$		9	20	94	6	17.252	6.46659	5		5.70	7.36	10.60	26.33	28.11	28.67	38.04	50.39	74.86	94.47	95.41	98.75	119.13	149.16	163.77
Kr	AL_1	H	1		36	6	1.916	6.47000	2		5.71	7.37	10.61	26.34	28.12	28.68	38.07	50.42	74.90	94.54	95.48	98.82	119.23	149.38	164.20
Ru	$K\alpha_2$		10	50	44	6	19.147	6.47408	6		5.71	7.37	10.61	26.36	28.14	28.70	38.09	50.45	74.96	94.62	95.56	98.91	119.36	149.65	164.73
Zn	$K\beta_{1,3}$		5	20	30	6	9.570	6.47625	5		5.71	7.37	10.62	26.37	28.15	28.71	38.10	50.47	74.99	94.66	95.60	98.95	119.42	149.79	165.02
Dy	Ll		3	2	66	6	5.742	6.47631	5		5.71	7.37	10.62	26.37	28.15	28.71	38.10	50.47	74.99	94.66	95.60	98.95	119.43	149.79	165.03
Os	$M\alpha$	D	1	100	76	6	1.914	6.47800	3		5.71	7.38	10.62	26.38	28.16	28.72	38.11	50.49	75.01	94.69	95.64	98.99	119.48	149.91	165.26
Lu	$L\alpha_1$		4	100	71	6	7.654	6.47804	5		5.71	7.38	10.62	26.38	28.16	28.72	38.11	50.49	75.01	94.69	95.64	98.99	119.48	149.91	165.26
Rb	$K\alpha_1$		7	100	37	6	13.393	6.47887	6		5.71	7.38	10.62	26.38	28.16	28.72	38.12	50.49	75.02	94.71	95.65	99.00	119.50	149.96	165.37
U	$L\beta_1$		9	50	92	6	17.217	6.47986	6		5.71	7.38	10.62	26.39	28.16	28.73	38.13	50.50	75.04	94.73	95.67	99.02	119.53	150.03	165.51
Bk	$L\alpha_1$		8	100	97	3	15.304	6.48000			5.71	7.38	10.62	26.39	28.16	28.73	38.13	50.50	75.04	94.73	95.68	99.03	119.54	150.04	165.53
Ho	$L\beta_3$		4	6	67	6	7.650	6.48120	4		5.72	7.38	10.63	26.39	28.17	28.73	38.13	50.51	75.05	94.76	95.70	99.05	119.57	150.12	165.70
Co	$K\beta_{1,3}$		4	20	27	6	7.648	6.48316	5	4	5.72	7.38	10.63	26.40	28.18	28.74	38.15	50.53	75.08	94.79	95.74	99.09	119.63	150.25	165.98
Au	$L\gamma_1$		7	10	79	6	13.379	6.48550	5		5.72	7.39	10.63	26.41	28.19	28.75	38.16	50.55	75.11	94.84	95.78	99.14	119.70	150.40	166.32
Rb	$K\alpha_{1,2}$		7	150	37	6	13.373	6.48852	5		5.72	7.39	10.64	26.42	28.20	28.77	38.18	50.57	75.15	94.90	95.84	99.20	119.80	150.61	166.77
Am	$L\beta_3$		10	6	95	6	19.103	6.48910	5		5.72	7.39	10.64	26.42	28.21	28.77	38.18	50.58	75.16	94.91	95.85	99.22	119.81	150.65	166.86
Pa	M_3-O_1		2	.5	91	6	3.820	6.49000	3		5.72	7.39	10.64	26.43	28.21	28.77	38.19	50.59	75.17	94.92	95.87	99.24	119.84	150.71	
Dy	$L\beta_{2,15}$		4	20	66	6	7.634	6.49476	5		5.73	7.40	10.65	26.45	28.23	28.79	38.22	50.63	75.24	95.02	95.96	99.33	119.99	151.03	167.76
Pt	$L\gamma_3$		7	2	78	6	13.359	6.49537	5		5.73	7.40	10.65	26.45	28.23	28.80	38.22	50.63	75.25	95.03	95.98	99.35	120.01	151.07	167.86
In	$L\gamma_5$		2	.1	49	6	3.815	6.49814	5		5.73	7.40	10.65	26.46	28.25	28.81	38.24	50.65	75.28	95.08	96.03	99.40	120.09	151.26	
Nd	$L\beta_4$		3	5	60	6	5.721	6.50070	4		5.73	7.40	10.66	26.47	28.26	28.82	38.25	50.68	75.32	95.13	96.08	99.46	120.17	151.44	168.78
Nd	$L\beta_1$		3	50	60	6	5.721	6.50070	4		5.73	7.40	10.66	26.47	28.26	28.82	38.25	50.68	75.32	95.13	96.08	99.46	120.17	151.44	168.78
Au	$L\beta_1$		6	50	79	6	11.440	6.50118	5		5.73	7.40	10.66	26.47	28.26	28.82	38.26	50.68	75.33	95.14	96.09	99.47	120.18	151.47	168.86
Re	$M\beta$		1	45	75	6	1.906	6.50400	3		5.74	7.41	10.66	26.49	28.27	28.84	38.27	50.70	75.36	95.19	96.15	99.53	120.27	151.67	169.39
Bi	$L\gamma_1$		8	10	83	6	15.245	6.50488	5		5.74	7.41	10.66	26.49	28.28	28.84	38.28	50.71	75.38	95.21	96.16	99.54	120.30	151.73	169.55
Po	$L\beta_2$		7	20	84	6	13.338	6.50559	5		5.74	7.41	10.67	26.49	28.29	28.84	38.28	50.72	75.39	95.22	96.18	99.56	120.32	151.78	169.69
Rb	$K\alpha_2$		7	50	37	6	13.333	6.50783	5		5.74	7.41	10.67	26.50	28.29	28.85	38.30	50.74	75.42	95.27	96.22	99.61	120.39	151.94	170.14
W	$L\beta_4$		5	4	74	6	9.524	6.50810	5		5.74	7.41	10.67	26.50	28.29	28.85	38.30	50.74	75.42	95.27	96.23	99.61	120.40	151.95	170.19
At	$L\alpha_1$	H	6	100	85	6	11.425	6.50999	5		5.74	7.41	10.67	26.51	28.30	28.86	38.31	50.75	75.45	95.31	96.26	99.65	120.45	152.09	170.59
Ra	$L\beta_1$		8	50	88	6	15.233	6.51000	5		5.74	7.41	10.67	26.51	28.30	28.86	38.31	50.75	75.45	95.31	96.26	99.65	120.45	152.09	170.59
Pb	$L\gamma_3$		8	2	82	6	15.215	6.51760	4		5.75	7.42	10.68	26.54	28.33	28.90	38.36	50.82	75.55	95.46	96.41	99.81	120.69	152.63	172.39
Nb	Ll		1	3	41	6	1.902	6.51760	4		5.75	7.42	10.68	26.54	28.33	28.90	38.36	50.82	75.55	95.46	96.41	99.81	120.69	152.63	172.39
Sr	$L\beta_6$		1	3	38	6	1.901	6.51910	4		5.75	7.42	10.69	26.55	28.34	28.90	38.37	50.83	75.57	95.49	96.44	99.84	120.73	152.74	172.80

El	Line	C	N	I	Z	R	KeV	Lambda	P Δ	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)	Ge (111)
								10^{-}																
Bi	$M\zeta_1$		1	1	83	6	1.901	6.52100	3	5.75	7.43	10.69	26.56	28.35	28.91	38.38	50.85	75.60	95.52	96.48	99.88	120.79	152.88	173.35
Lu	$L\alpha_2$		4	10	71	6	7.604	6.52116	5	5.75	7.43	10.69	26.56	28.35	28.91	38.38	50.85	75.60	95.53	96.48	99.88	120.80	152.89	173.40
Re	Ll		4	3	75	6	7.602	6.52224	5	5.75	7.43	10.69	26.56	28.35	28.92	38.38	50.86	75.61	95.55	96.50	99.91	120.83	152.97	173.74
Cs	$L\gamma_4$		3	.1	55	6	5.702	6.52230	4	5.75	7.43	10.69	26.56	28.35	28.92	38.39	50.86	75.61	95.55	96.51	99.91	120.83	152.97	173.75
Br	$K\beta_1$		7	16	35	6	13.289	6.52953	5	5.76	7.44	10.70	26.59	28.38	28.95	38.43	50.92	75.71	95.69	96.65	100.06	121.06	153.51	176.85
Pa	$L\alpha_1$		7	100	91	6	13.288	6.52988	5	5.76	7.44	10.71	26.59	28.39	28.95	38.43	50.92	75.72	95.69	96.65	100.07	121.07	153.53	177.08
Cf	$L\beta_2$		10	20	98	3	18.983	6.53000		5.76	7.44	10.71	26.59	28.39	28.95	38.43	50.92	75.72	95.70	96.66	100.07	121.07	153.54	177.16
Th	$L\gamma_1$		10	10	90	6	18.979	6.53130	5	5.76	7.44	10.71	26.60	28.39	28.96	38.44	50.93	75.74	95.72	96.68	100.10	121.11	153.64	178.32
Rb	$K\beta_2$		8	3	37	6	15.183	6.53160	5	5.76	7.44	10.71	26.60	28.39	28.96	38.44	50.93	75.74	95.73	96.69	100.10	121.12	153.66	178.73
Br	$K\beta_3$		7	8	35	6	13.282	6.53289	5	5.76	7.44	10.71	26.61	28.40	28.97	38.45	50.95	75.76	95.75	96.71	100.13	121.16	153.76	
Ta	$L\beta_3$		5	6	73	6	9.486	6.53390	5	5.76	7.44	10.71	26.61	28.40	28.97	38.46	50.95	75.77	95.77	96.73	100.15	121.19	153.84	
Cs	Ll		2	2	55	6	3.794	6.53400	4	5.76	7.44	10.71	26.61	28.40	28.97	38.46	50.95	75.77	95.77	96.74	100.15	121.20	153.84	
In	$L\beta_9$	B	2	.01	49	6	3.794	6.53526	5	5.76	7.44	10.71	26.62	28.41	28.98	38.46	50.96	75.79	95.80	96.76	100.18	121.24	153.94	
Sn	$L\beta_6$		2	1	50	6	3.792	6.53802	5	5.77	7.45	10.72	26.63	28.42	28.99	38.48	50.99	75.83	95.85	96.82	100.24	121.32	154.15	
Np	$L\beta_4$		9	4	93	6	17.058	6.54039	5	5.77	7.45	10.72	26.64	28.43	29.00	38.50	51.01	75.86	95.90	96.86	100.29	121.40	154.33	
Nb	$K\beta_2$		10	4	41	6	18.949	6.54160	5	5.77	7.45	10.72	26.64	28.44	29.01	38.50	51.02	75.88	95.92	96.89	100.31	121.43	154.42	
Ce	$L\beta_7$	D	3	.1	58	6	5.685	6.54180	4	5.77	7.45	10.72	26.64	28.44	29.01	38.50	51.02	75.88	95.93	96.89	100.32	121.44	154.44	
Hf	$M\gamma$		1	1	72	6	1.894	6.54400	3	5.77	7.45	10.73	26.65	28.45	29.02	38.52	51.04	75.91	95.97	96.93	100.36	121.51	154.61	
Pa	Ll		6	3	91	6	11.364	6.54480	4	5.77	7.45	10.73	26.65	28.45	29.02	38.52	51.04	75.92	95.98	96.95	100.38	121.53	154.67	
In	$L\beta_{10}$	8	2	.01	49	6	3.786	6.54808	5	5.77	7.46	10.74	26.67	28.47	29.04	38.54	51.07	75.97	96.05	97.01	100.45	121.64	154.93	
Y	$K\beta_2$		9	4	39	6	17.013	6.55776	5	5.78	7.47	10.75	26.71	28.51	29.08	38.60	51.15	76.10	96.24	97.21	100.65	121.94	155.70	
I	Ln		2	7	53	6	3.780	6.55958	5	5.78	7.47	10.75	26.72	28.52	29.09	38.61	51.17	76.12	96.27	97.24	100.69	122.00	155.85	
Re	AM_5	H	1		75	6	1.890	6.56000	3	5.78	7.47	10.75	26.72	28.52	29.09	38.62	51.17	76.13	96.28	97.25	100.70	122.01	155.88	
Pt	$L\alpha_1$		5	100	78	6	9.441	6.56520	5	5.79	7.48	10.76	26.74	28.54	29.11	38.65	51.22	76.20	96.38	97.35	100.81	122.18	156.31	
Ce	$L\beta_9$	8	3	.01	58	6	5.664	6.56550	4	5.79	7.48	10.76	26.74	28.54	29.11	38.65	51.22	76.20	96.39	97.36	100.82	122.18	156.34	
Th	M_3-O_1		2	.5	90	6	3.776	6.56600	3	5.79	7.48	10.76	26.74	28.55	29.12	38.65	51.22	76.21	96.40	97.37	100.83	122.20	156.38	
Bi	$L\beta_3$		7	6	83	6	13.208	6.56985	5	5.79	7.48	10.77	26.76	28.56	29.13	38.68	51.25	76.26	96.47	97.45	100.91	122.32	156.70	
Pr	$L\beta_6$		3	.1	59	6	5.659	6.57180	4	5.80	7.48	10.77	26.77	28.57	29.14	38.69	51.27	76.29	96.51	97.48	100.95	122.38	156.87	
Bk	$L\alpha_2$		8	10	97	3	15.080	6.57600		5.80	7.49	10.78	26.78	28.59	29.16	38.71	51.31	76.35	96.59	97.57	101.04	122.62	157.23	
Tm	$L\gamma_1$		5	5	69	6	9.424	6.57650	4	5.80	7.49	10.78	26.79	28.59	29.16	38.72	51.31	76.35	96.60	97.58	101.05	122.63	157.27	
Am	$L\beta_1$		10	50	95	6	18.849	6.57655	6	5.80	7.49	10.78	26.79	28.59	29.16	38.72	51.31	76.35	96.60	97.58	101.05	122.63	157.28	
Te	$L\alpha_1$		2	100	52	6	3.769	6.57840	5	5.80	7.49	10.78	26.79	28.60	29.17	38.73	51.33	76.38	96.64	97.62	101.09	122.59	157.44	
At	$L\alpha_2$	H	6	10	85	6	11.303	6.58026	5	5.80	7.49	10.79	26.80	28.61	29.18	38.74	51.34	76.41	96.68	97.65	101.13	122.65	157.60	
Bi	Ll		5	3	83	6	9.419	6.58050	5	5.80	7.49	10.79	26.80	28.61	29.18	38.74	51.34	76.41	96.68	97.66	101.13	122.66	157.62	
Bi	$M\zeta_2$		1	.1	83	6	1.882	6.58500	3	5.81	7.50	10.80	26.82	28.63	29.20	38.77	51.38	76.47	96.77	97.75	101.23	122.80	158.02	
Ce	$L\beta_{10}$	8	3	.01	58	6	5.645	6.58740	4	5.81	7.50	10.80	26.83	28.64	29.21	38.78	51.40	76.50	96.82	97.80	101.28	122.88	158.24	
Ho	$L\beta_1$		4	50	67	6	7.524	6.59000	4	5.81	7.50	10.80	26.84	28.65	29.23	38.80	51.42	76.54	96.87	97.85	101.33	122.96	158.47	
W	AM_4	H	1		74	6	1.881	6.59000	2	5.81	7.50	10.80	26.84	28.65	29.23	38.80	51.42	76.54	96.87	97.85	101.33	122.96	158.47	
Pa	$L\beta_3$		9	6	91	6	16.927	6.59070	5	5.81	7.51	10.81	26.85	28.66	29.23	38.80	51.43	76.55	96.88	97.86	101.35	122.99	158.54	
W	$L\gamma_1$		6	10	74	6	11.284	6.59130	5	5.81	7.51	10.81	26.85	28.66	29.23	38.81	51.43	76.56	96.89	97.87	101.36	123.01	158.59	
Ta	$L\gamma_3$		6	2	73	6	11.276	6.59616	5	5.82	7.51	10.81	26.87	28.68	29.25	38.84	51.47	76.62	96.99	97.97	101.46	123.16	159.05	
Te	$L\alpha_2$		2	10	52	6	3.758	6.59692	5	5.82	7.51	10.82	26.87	28.68	29.26	38.84	51.48	76.63	97.00	97.99	101.48	123.19	159.12	
Sm	$L\alpha_1$		3	100	62	6	5.635	6.59940	5	5.82	7.52	10.82	26.88	28.69	29.27	38.86	51.50	76.67	97.05	98.03	101.53	123.27	159.35	
Zr	Ln		1	1	40	6	1.876	6.60690	4	5.83	7.52	10.83	26.91	28.73	29.30	38.90	51.56	76.77	97.20	98.18	101.69	123.51	160.08	
Sn	$L\beta_3$		2	6	50	6	3.750	6.61170	5	5.83	7.53	10.84	26.93	28.75	29.32	38.93	51.60	76.84	97.29	98.28	101.80	123.66	160.56	
Pt	$L\beta_2$		6	20	78	6	11.249	6.61200	5	5.83	7.53	10.84	26.93	28.75	29.33	38.93	51.61	76.84	97.30	98.29	101.80	123.67	160.59	
Ag	$L\gamma_3$		2	2	47	6	3.749	6.61270	5	5.83	7.53	10.84	26.94	28.75	29.33	38.94	51.61	76.85	97.31	98.30	101.82	123.69	160.66	
Pa	$L\alpha_2$	H	7	10	91	6	13.120	6.61374	5	5.83	7.53	10.84	26.94	28.76	29.33	38.94	51.62	76.87	97.33	98.32	101.84	123.73	160.77	
La	$L\gamma_5$		3	.1	57	6	5.620	6.61680	4	5.84	7.54	10.85	26.95	28.77	29.35	38.96	51.65	76.91	97.39	98.38	101.90	123.83	161.08	
Pt	$L\beta_3$	D	6	6	78	6	11.233	6.62148	5	5.84	7.54	10.86	26.97	28.79	29.37	38.99	51.69	76.97	97.49	98.48	102.00	123.98	161.58	
Pt	$L\alpha_2$		5	10	78	6	9.360	6.62160	5	5.84	7.54	10.86	26.97	28.79	29.37	38.99	51.69	76.97	97.49	98.48	102.01	123.98	161.59	
Fr	$L\beta_3$	H	8	10	87	6	14.973	6.62312	5	5.84	7.54	10.86	26.98	28.80	29.38	39.00	51.70	76.99	97.52	98.51	102.04	124.03	161.75	
Sr	$L\beta_1$		1	45	38	6	1.871	6.62390	4	5.84	7.54	10.86	26.98	28.80	29.38	39.01	51.71	77.00	97.53	98.53	102.06	124.06	161.84	
Ag	$L\gamma_2$		2	3	47	6	3.743	6.62432	5	5.84	7.54	10.86	26.98	28.81	29.38	39.01	51.71	77.01	97.54	98.53	102.07	124.07	161.88	
Np	$L\beta_2$		9	20	93	6	16.837	6.62607	6	5.84	7.55	10.86	26.99	28.81	29.39	39.02	51.72	77.03	97.58	98.57	102.10	124.13	162.07	
Ce	$L\beta_{2,15}$		3	20	58	6	5.612	6.62610	4	5.84	7.55	10.86	26.99	28.81	29.39	39.02	51.73	77.04	97.58	98.57	102.10	124.13	162.08	
Se	$K\alpha_1$		6	100	34	6	11.220	6.62862	5	5.85	7.55	10.87	27.00	28.82	29.40	39.04	51.75	77.07	97.63	98.62	102.16	124.21	162.35	
Rb	$K\beta_1$		8	16	37	6	14.959	6.62944	5	5.85	7.55	10.87	27.01	28.83	29.40	39.04	51.75	77.08	97.64	98.64	102.17	124.24	162.45	
Eu	$L\gamma_1$		4	5	63	6	7.479	6.62960	4	5.85	7.55	10.87	27.01	28.83	29.41	39.04	51.75	77.08	97.65	98.64	102.18	124.24	162.46	
Y	$K\alpha_1$		8	100	39	6	14.956	6.63072	5	5.85	7.55	10.87	27.01	28.83	29.41	39.05	51.76	77.10	97.67	98.66	102.20	124.28	162.59	
Ni	$K\alpha_1$		4	100	28	6	7.477	6.63164	6	5.85	7.55	10.87	27.02	28.84	29.41	39.05	51.77	77.11	97.69	98.68	102.22	124.31	162.69	
Sm	$L\alpha_2$		3	10	62	6	5.607	6.63186	5	5.85	7.55	10.87	27.02	28.84	29.42	39.06	51.77	77.11	97.69	98.69	102.23	124.32	162.72	
Hf	$L\beta_2$		5	20	72	6	9.346	6.63195	5	5.85	7.55	10.87	27.02	28.84	29.42	39.06	51.77	77.12	97.69	98.69	102.23	124.32	162.73	
Cm	$L\alpha_1$		8	100	96	3	14.953	6.63200		5.85	7.55	10.87	27.02	28.84	29.42	39.06	51.77	77.12	97.69	98.69	102.23	124.32	162.73	
Po	$L\beta_4$		7	4	84	6	13.083	6.63250	4	5.85	7.55	10.87	27.02	28.84	29.42	39.06	51.78	77.12	97.70	98.70	102.24	124.34	162.79	

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Rb	$K\beta_3$		8	8	37	6	14.949	6.63368	5		4.75	5.85	7.55	10.88	27.02	28.85	29.42	39.07	51.79	77.14	97.73	98.72	102.27	124.38	162.93
Ta	$L\beta_1$		5	50	73	6	9.342	6.63490	5		4.75	5.85	7.56	10.88	27.03	28.85	29.43	39.07	51.80	77.16	97.75	98.75	102.29	124.42	163.07
Se	$K\alpha_{1,2}$		6	150	34	6	11.207	6.63671	5		4.75	5.85	7.56	10.88	27.04	28.86	29.44	39.09	51.81	77.18	97.79	98.78	102.33	124.48	163.28
Ni	$K\alpha_{1,2}$		4	150	28	6	7.471	6.63675	6		4.75	5.85	7.56	10.88	27.04	28.86	29.44	39.09	51.81	77.18	97.79	98.78	102.33	124.48	163.28
Ho	$L\beta_4$		4	5	67	6	7.470	6.63800	4		4.76	5.85	7.56	10.88	27.04	28.87	29.44	39.09	51.83	77.20	97.81	98.81	102.36	124.52	163.43
Au	$L\beta_4$		6	4	79	6	11.203	6.63906	5		4.76	5.85	7.56	10.88	27.05	28.87	29.45	39.10	51.83	77.21	97.83	98.83	102.38	124.55	163.56
Y	$K\alpha_{1,2}$		8	150	39	6	14.931	6.64194	5		4.76	5.86	7.56	10.89	27.06	28.88	29.46	39.12	51.86	77.25	97.89	98.89	102.44	124.65	163.91
Rb	AL_2	H	1		37	6	1.866	6.64400	3		4.76	5.86	7.57	10.89	27.07	28.89	29.47	39.13	51.88	77.28	97.93	98.93	102.49	124.72	164.16
Ni	$K\alpha_2$		4	50	28	6	7.460	6.64699	6		4.76	5.86	7.57	10.90	27.08	28.91	29.48	39.15	51.90	77.32	97.99	98.99	102.55	124.82	164.53
In	$L\beta_7$		2	.1	49	6	3.729	6.64800	3		4.76	5.86	7.57	10.90	27.08	28.91	29.49	39.15	51.91	77.34	98.01	99.01	102.57	124.85	164.66
Pr	$L\beta_3$		3	6	59	6	5.591	6.65160	4		4.77	5.87	7.57	10.91	27.10	28.93	29.51	39.18	51.94	77.39	98.08	99.08	102.65	124.97	165.13
Se	$K\alpha_2$		6	50	34	6	11.179	6.65292	5		4.77	5.87	7.58	10.91	27.10	28.93	29.51	39.19	51.95	77.40	98.11	99.11	102.68	125.01	165.31
Rn	$L\gamma_1$	H	9	10	86	6	16.768	6.65352	5		4.77	5.87	7.58	10.91	27.11	28.94	29.51	39.19	51.96	77.41	98.12	99.12	102.69	125.03	165.39
Sm	Ln		3	1	62	6	5.588	6.65472	5		4.77	5.87	7.58	10.91	27.11	28.94	29.52	39.20	51.97	77.43	98.14	99.15	102.72	125.07	165.55
U	M_2-N_1		2	.01	92	6	3.724	6.65800	3		4.77	5.87	7.58	10.92	27.12	28.96	29.53	39.22	51.99	77.47	98.21	99.21	102.79	125.18	166.00
Nb	$K\beta_3$		10	7	41	6	18.603	6.66340	5		4.77	5.88	7.59	10.92	27.15	28.98	29.56	39.25	52.04	77.55	98.32	99.32	102.90	125.36	166.78
Bi	$L\beta_1$		7	50	83	6	13.021	6.66385	6		4.77	5.88	7.59	10.93	27.15	28.98	29.56	39.25	52.04	77.56	98.33	99.33	102.91	125.37	166.85
Y	$K\alpha_2$		8	50	39	6	14.880	6.66440	5		4.77	5.88	7.59	10.93	27.15	28.98	29.56	39.26	52.05	77.56	98.34	99.34	102.93	125.39	166.93
Y	$K\beta_1$		9	16	39	6	16.735	6.66648	5		4.78	5.88	7.59	10.93	27.16	28.99	29.57	39.27	52.06	77.59	98.38	99.38	102.97	125.46	167.24
Ir	M_3-N_1		1	.5	77	6	1.859	6.66900	3		4.78	5.88	7.59	10.93	27.17	29.00	29.58	39.28	52.09	77.63	98.43	99.44	103.03	125.55	167.64
Cd	$L\gamma_1$		2	10	48	6	3.716	6.67128	5		4.78	5.88	7.60	10.94	27.18	29.01	29.59	39.30	52.10	77.66	98.47	99.48	103.07	125.62	168.00
Y	$K\beta_3$		9	8	39	6	16.723	6.67134	5		4.78	5.88	7.60	10.94	27.18	29.01	29.59	39.30	52.10	77.66	98.47	99.48	103.08	125.62	168.01
Ca	$SK\alpha_4$		2	2	20	1	3.715	6.67365	3	4	4.78	5.89	7.60	10.94	27.19	29.02	29.61	39.31	52.12	77.69	98.52	99.53	103.13	125.70	168.40
In	$L\beta_{2,15}$		2	17	49	6	3.713	6.67676	5		4.78	5.89	7.60	10.95	27.20	29.04	29.62	39.33	52.15	77.73	98.58	99.59	103.19	125.81	168.94
Ca	$SK\alpha_3$		2	2	20	1	3.711	6.68027	3	4	4.79	5.89	7.61	10.95	27.22	29.05	29.64	39.35	52.18	77.78	98.65	99.66	103.27	125.92	169.58
Pa	$L\beta_1$		9	50	91	6	16.699	6.68088	5		4.79	5.89	7.61	10.95	27.22	29.06	29.64	39.36	52.18	77.79	98.66	99.68	103.28	125.94	169.69
Ra	$L\beta_2$		8	20	88	6	14.839	6.68296	5		4.79	5.89	7.61	10.96	27.23	29.07	29.65	39.37	52.20	77.82	98.71	99.72	103.33	126.01	170.10
Po	$L\alpha_1$		6	100	84	6	11.129	6.68316	5		4.79	5.89	7.61	10.96	27.23	29.07	29.65	39.37	52.20	77.82	98.71	99.72	103.33	126.02	170.13
Bi	$L\beta_2$		7	20	83	6	12.978	6.68626	5		4.79	5.90	7.61	10.96	27.24	29.08	29.66	39.39	52.23	77.87	98.77	99.79	103.40	126.13	170.77
Sn	$L\beta_4$		2	4	50	6	3.708	6.68670	5		4.79	5.90	7.61	10.96	27.24	29.08	29.66	39.39	52.23	77.87	98.78	99.80	103.41	126.14	170.87
Pu	$L\beta_3$		10	6	94	6	18.537	6.68710	5		4.79	5.90	7.62	10.96	27.25	29.08	29.67	39.39	52.24	77.88	98.79	99.80	103.42	126.15	170.95
Yb	$L\alpha_1$		4	100	70	6	7.414	6.68756	5		4.79	5.90	7.62	10.96	27.25	29.09	29.67	39.40	52.24	77.88	98.80	99.81	103.43	126.17	171.05
Bk	$L\beta_2$		10	20	97	3	18.529	6.69000			4.79	5.90	7.62	10.97	27.26	29.10	29.68	39.41	52.26	77.92	98.85	99.86	103.48	126.25	171.60
Th	$L\alpha_1$		7	100	90	6	12.967	6.69200	5		4.79	5.90	7.62	10.97	27.27	29.11	29.69	39.42	52.28	77.95	98.89	99.90	103.52	126.32	172.08
Cs	$L\gamma_3$		3	1	55	6	5.552	6.69840	4		4.80	5.91	7.63	10.98	27.29	29.13	29.72	39.46	52.33	78.03	99.02	100.03	103.66	126.54	173.87
Ga	$K\alpha_1$		5	100	31	6	9.250	6.70041	6		4.80	5.91	7.63	10.99	27.30	29.14	29.73	39.48	52.35	78.06	99.06	100.07	103.71	126.60	174.55
Tb	Ll		3	2	65	6	5.546	6.70560	4		4.80	5.91	7.64	10.99	27.32	29.17	29.75	39.51	52.39	78.13	99.16	100.18	103.82	126.78	176.93
Pt	$L\gamma_1$		7	10	78	6	12.940	6.70579	5		4.80	5.91	7.64	10.99	27.32	29.17	29.75	39.51	52.39	78.14	99.16	100.18	103.82	126.79	177.06
Ga	$K\alpha_{1,2}$		5	150	31	6	9.241	6.70692	5		4.80	5.91	7.64	11.00	27.33	29.17	29.76	39.52	52.40	78.15	99.19	100.21	103.85	126.83	177.95
Cs	$L\gamma_2$		3	1	55	6	5.541	6.71130	4		4.81	5.92	7.64	11.00	27.35	29.19	29.78	39.54	52.44	78.21	99.27	100.30	103.94	126.98	
W	Ll		4	3	74	6	7.386	6.71280	4		4.81	5.92	7.64	11.01	27.35	29.20	29.78	39.55	52.45	78.23	99.30	100.33	103.98	127.03	
Ir	$L\gamma_3$		7	2	77	6	12.922	6.71517	5		4.81	5.92	7.65	11.01	27.36	29.21	29.79	39.57	52.47	78.27	99.35	100.38	104.03	127.11	
Fr	$L\beta_1$	H	8	50	87	6	14.768	6.71520	5		4.81	5.92	7.65	11.01	27.36	29.21	29.79	39.57	52.47	78.27	99.35	100.38	104.03	127.11	
Nb	$K\alpha_1$		9	100	41	6	16.612	6.71580	5		4.81	5.92	7.65	11.01	27.36	29.21	29.80	39.57	52.48	78.28	99.36	100.39	104.04	127.13	
Ca	$K\alpha_1$		2	100	20	6	3.691	6.71678	5	4	4.81	5.92	7.65	11.01	27.37	29.22	29.80	39.58	52.49	78.29	99.38	100.41	104.06	127.16	
Pb	$L\gamma_1$		8	10	82	6	14.762	6.71784	5		4.81	5.92	7.65	11.01	27.37	29.22	29.81	39.58	52.50	78.30	99.41	100.43	104.09	127.20	
Ca	$K\alpha_{1,2}$		2	150	20	6	3.690	6.71896	5	4	4.81	5.93	7.65	11.02	27.38	29.23	29.81	39.59	52.51	78.32	99.43	100.45	104.11	127.24	
Pt	$L\beta_1$		6	50	78	6	11.069	6.71940	5		4.81	5.93	7.65	11.02	27.38	29.23	29.81	39.59	52.51	78.33	99.44	100.46	104.12	127.25	
Ga	$K\alpha_2$		5	50	31	6	9.223	6.71995	5		4.81	5.93	7.65	11.02	27.38	29.23	29.82	39.60	52.51	78.33	99.45	100.47	104.13	127.27	
Ca	$K\alpha_2$		2	50	20	6	3.687	6.72332	5	4	4.82	5.93	7.66	11.02	27.40	29.25	29.83	39.62	52.54	78.38	99.52	100.54	104.21	127.39	
Ba	$L\gamma_1$		3	5	56	6	5.530	6.72450	4		4.82	5.93	7.66	11.03	27.40	29.25	29.84	39.62	52.55	78.40	99.54	100.57	104.23	127.43	
Ra	$L\beta_4$		8	4	88	6	14.745	6.72568	5		4.82	5.93	7.66	11.03	27.41	29.26	29.84	39.63	52.56	78.41	99.56	100.59	104.26	127.47	
Cm	$L\alpha_2$		8	10	96	3	14.740	6.72800			4.82	5.93	7.66	11.03	27.42	29.27	29.85	39.65	52.58	78.44	99.61	100.64	104.31	127.55	
Nb	$K\alpha_{1,2}$		9	150	41	6	16.581	6.72852	5		4.82	5.93	7.66	11.03	27.42	29.27	29.85	39.65	52.59	78.45	99.62	100.65	104.32	127.57	
Dy	$L\beta_3$		4	6	66	6	7.369	6.72880	4		4.82	5.93	7.66	11.03	27.42	29.27	29.86	39.65	52.59	78.46	99.63	100.66	104.33	127.58	
Re	$M\alpha$		1	100	75	6	1.842	6.72900	3		4.82	5.93	7.66	11.03	27.42	29.27	29.86	39.65	52.59	78.46	99.63	100.66	104.33	127.58	
Ta	$L\beta_4$		5	4	73	6	9.211	6.72905	5		4.82	5.93	7.66	11.03	27.42	29.27	29.86	39.65	52.59	78.46	99.63	100.66	104.33	127.59	
Tl	$L\gamma_3$		8	2	81	6	14.734	6.73040	5		4.82	5.94	7.66	11.03	27.43	29.28	29.86	39.66	52.60	78.48	99.66	100.69	104.36	127.63	
Yb	$L\alpha_2$		4	10	70	6	7.366	6.73140	5		4.82	5.94	7.67	11.04	27.43	29.28	29.87	39.67	52.61	78.49	99.68	100.71	104.38	127.67	
U	$L\beta_4$		9	4	92	6	16.573	6.73186	6		4.82	5.94	7.67	11.04	27.43	29.28	29.87	39.67	52.61	78.50	99.69	100.72	104.39	127.68	
Tb	$L\beta_{2,15}$		4	20	65	6	7.365	6.73200	4		4.82	5.94	7.67	11.04	27.43	29.28	29.87	39.67	52.61	78.50	99.69	100.72	104.40	127.69	
Ac	$L\gamma_1$	H	10	10	89	6	18.405	6.73510	5		4.83	5.94	7.67	11.04	27.44	29.30	29.88	39.69	52.64	78.54	99.75	100.79	104.47	127.80	
Si	AK	H	1		14	6	1.840	6.73800	3		4.83	5.94	7.67	11.05	27.46	29.31	29.90	39.71	52.67	78.58	99.81	100.84	104.53	127.90	
Pb	$M\zeta_1$		1	1	82	6	1.839	6.74000	3		4.83	5.94	7.68	11.05	27.47	29.32	29.91	39.72	52.68	78.61	99.85	100.89	104.57	127.97	
Pb	Ll		5	3	82	6	9.183	6.74950	5		4.84	5.95	7.69	11.07	27.50	29.36	29.95	39.78	52.76	78.74	100.04	101.08	104.78	128.30	

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EOOT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)
								10^{-}																	
Tc	$K\alpha_1$	H	10	100	43	6	18.364	6.75020	5		4.84	5.95	7.69	11.07	27.51	29.36	29.95	39.78	52.77	78.75	100.06	101.10	104.80	128.32	
Po	$L\alpha_2$	H	6	10	84	6	11.014	6.75288	5		4.84	5.96	7.69	11.07	27.52	29.38	29.96	39.80	52.79	78.79	100.11	101.15	104.86	128.42	
Si	$K\beta$		1	2	14	6	1.836	6.75300	3	2	4.84	5.96	7.69	11.07	27.52	29.38	29.97	39.80	52.79	78.79	100.12	101.15	104.86	128.42	
Ra	$L\gamma_3$		10	2	88	6	18.354	6.75380	5		4.84	5.96	7.69	11.07	27.52	29.38	29.97	39.80	52.80	78.80	100.13	101.17	104.88	128.45	
Nb	$K\alpha_2$		9	50	41	6	16.518	6.75396	5		4.84	5.96	7.69	11.07	27.52	29.38	29.97	39.81	52.80	78.81	100.13	101.17	104.88	128.46	
Rb	$L\gamma_5$	A	1	.1	37	6	1.835	6.75530	4		4.84	5.96	7.69	11.08	27.53	29.39	29.98	39.81	52.81	78.82	100.16	101.20	104.91	128.50	
Ir	$L\alpha_1$		5	100	77	6	9.174	6.75640	5		4.84	5.96	7.69	11.08	27.53	29.39	29.98	39.82	52.82	78.84	100.18	101.22	104.93	128.54	
W	$M\beta$		1	45	74	6	1.835	6.75700	3		4.84	5.96	7.69	11.08	27.54	29.40	29.98	39.82	52.83	78.85	100.20	101.24	104.95	128.56	
U	M_1-P_3		3	.01	92	6	5.502	6.75900	3		4.84	5.96	7.70	11.08	27.54	29.40	29.99	39.84	52.84	78.88	100.24	101.28	104.99	128.63	
Tc	$K\alpha_{1,2}$	H	10	150	43	6	18.325	6.76453	5		4.85	5.97	7.70	11.09	27.57	29.43	30.02	39.87	52.89	78.95	100.35	101.39	105.11	128.83	
Pr	$L\beta_4$		3	5	59	6	5.497	6.76500	4		4.85	5.97	7.70	11.09	27.57	29.43	30.02	39.87	52.89	78.96	100.36	101.40	105.12	128.84	
Hf	$L\beta_3$		5	6	72	6	9.162	6.76500	5		4.85	5.97	7.70	11.09	27.57	29.43	30.02	39.87	52.89	78.96	100.36	101.40	105.12	128.84	
Lu	$M\gamma$		1	1	71	6	1.832	6.76800	3		4.85	5.97	7.71	11.10	27.58	29.44	30.03	39.89	52.92	79.00	100.42	101.46	105.19	128.95	
Sn	$L\beta_1$		2	75	50	6	3.662	6.76974	5		4.85	5.97	7.71	11.10	27.59	29.45	30.04	39.90	52.93	79.03	100.45	101.50	105.23	129.01	
Ge	$K\beta_1$		6	14	32	6	10.980	6.77364	5		4.85	5.97	7.71	11.11	27.60	29.47	30.06	39.93	52.97	79.08	100.53	101.58	105.32	129.15	
Th	$L\alpha_2$		7	10	90	6	12.807	6.77516	5		4.85	5.97	7.72	11.11	27.61	29.48	30.07	39.94	52.98	79.10	100.57	101.61	105.35	129.21	
Ge	$K\beta_3$		6	7	32	6	10.976	6.77616	5		4.85	5.98	7.72	11.11	27.62	29.48	30.07	39.94	52.99	79.12	100.59	101.63	105.37	129.24	
Pr	$L\beta_1$		3	50	59	6	5.488	6.77640	4		4.85	5.98	7.72	11.11	27.62	29.48	30.07	39.94	52.99	79.12	100.59	101.64	105.38	129.25	
Pu	$L\beta_1$		10	50	94	6	18.291	6.77720	5		4.86	5.98	7.72	11.11	27.62	29.49	30.08	39.95	53.00	79.13	100.61	101.65	105.39	129.28	
Si	$K\beta_1$		1	2	14	1	1.829	6.77800	3	2	4.86	5.98	7.72	11.11	27.62	29.49	30.08	39.95	53.00	79.14	100.62	101.67	105.41	129.31	
Pb	$L\beta_3$		7	6	82	6	12.791	6.78377	5		4.86	5.98	7.73	11.12	27.65	29.51	30.11	39.99	53.05	79.22	100.74	101.79	105.54	129.51	
Am	$L\alpha_1$		8	100	95	6	14.615	6.78550	6		4.86	5.98	7.73	11.13	27.65	29.52	30.11	40.00	53.07	79.25	100.78	101.83	105.58	129.57	
Rb	$L\beta_3$		1	3	37	6	1.826	6.78760	4		4.86	5.99	7.73	11.13	27.66	29.53	30.12	40.01	53.08	79.28	100.82	101.87	105.63	129.65	
U	$L\beta_2$		9	20	92	6	16.425	6.79213	6		4.87	5.99	7.73	11.14	27.68	29.55	30.14	40.04	53.12	79.34	100.91	101.97	105.73	129.81	
Th	$L\beta_3$		9	6	90	6	16.423	6.79311	5		4.87	5.99	7.74	11.14	27.69	29.56	30.15	40.05	53.13	79.35	100.93	101.99	105.75	129.85	
Tc	$K\alpha_2$	H	10	50	43	6	18.248	6.79320	5		4.87	5.99	7.74	11.14	27.69	29.56	30.15	40.05	53.13	79.35	100.93	101.99	105.75	129.85	
Pb	$M\zeta_2$		1	.1	82	6	1.822	6.80200	3		4.87	6.00	7.75	11.15	27.72	29.60	30.19	40.10	53.20	79.48	101.11	102.17	105.95	130.17	
W	M_4-O_2		1	.01	74	6	1.821	6.80600	3		4.88	6.00	7.75	11.16	27.74	29.61	30.21	40.12	53.24	79.53	101.20	102.25	106.04	130.32	
V	$K\beta_5$	B	3	.02	23	6	5.462	6.80853	5	4	4.88	6.00	7.75	11.16	27.75	29.62	30.22	40.14	53.26	79.57	101.25	102.31	106.09	130.41	
Ir	$L\beta_2$		6	20	77	6	10.919	6.81192	5		4.88	6.01	7.76	11.17	27.76	29.64	30.23	40.16	53.29	79.62	101.32	102.38	106.17	130.53	
Ir	$L\alpha_2$		5	10	77	6	9.098	6.81250	5		4.88	6.01	7.76	11.17	27.77	29.64	30.24	40.16	53.29	79.62	101.33	102.39	106.18	130.55	
Si	SKβ'		1	.1	14	1	1.819	6.81574	2	2	4.88	6.01	7.76	11.18	27.78	29.66	30.25	40.18	53.32	79.67	101.40	102.46	106.25	130.67	
Er	$L\gamma_1$		5	5	68	6	9.087	6.82050	4		4.89	6.01	7.77	11.18	27.80	29.68	30.27	40.21	53.36	79.74	101.49	102.56	106.36	130.85	
Rb	$L\beta_4$		1	3	37	6	1.817	6.82070	4		4.89	6.02	7.77	11.18	27.80	29.68	30.27	40.22	53.36	79.74	101.50	102.56	106.37	130.85	
La	$L\beta_7$		3	.1	57	6	5.449	6.82500	3		4.89	6.02	7.77	11.19	27.82	29.70	30.29	40.24	53.40	79.80	101.59	102.65	106.46	131.01	
Ta	$L\gamma_1$		6	10	73	6	10.893	6.82764	5		4.89	6.02	7.78	11.19	27.83	29.71	30.30	40.26	53.42	79.84	101.64	102.71	106.52	131.11	
W	AM_5	H	1		74	6	1.815	6.83000	2		4.89	6.02	7.78	11.20	27.84	29.72	30.32	40.27	53.44	79.87	101.69	102.76	106.57	131.20	
Hf	$L\gamma_3$		6	2	72	6	10.889	6.83046	5		4.89	6.02	7.78	11.20	27.84	29.72	30.32	40.28	53.44	79.88	101.70	102.77	106.59	131.21	
Rn	$L\beta_3$	H	8	10	86	6	14.509	6.83488	5		4.90	6.03	7.78	11.21	27.86	29.74	30.34	40.30	53.48	79.94	101.79	102.86	106.68	131.38	
Bi	$L\beta_4$		7	4	83	6	12.689	6.83830	5		4.90	6.03	7.79	11.21	27.87	29.76	30.35	40.32	53.51	79.99	101.86	102.93	106.76	131.50	
Oy	$L\beta_1$		4	50	66	6	7.246	6.84248	5		4.90	6.03	7.79	11.22	27.89	29.78	30.37	40.35	53.55	80.05	101.95	103.02	106.86	131.66	
Ir	$L\beta_3$		6	6	77	6	10.866	6.84509	5		4.90	6.04	7.80	11.22	27.90	29.79	30.38	40.37	53.57	80.08	102.00	103.07	106.92	131.76	
Ce	$L\beta_6$		3	.1	58	6	5.433	6.84540	4		4.90	6.04	7.80	11.22	27.90	29.79	30.39	40.37	53.57	80.09	102.01	103.08	106.92	131.77	
La	$L\beta_9$	B	3	.01	57	6	5.432	6.84600	3		4.90	6.04	7.80	11.23	27.91	29.79	30.39	40.37	53.58	80.09	102.02	103.09	106.94	131.79	
Pm	$L\alpha_1$		3	100	61	6	5.432	6.84660	4		4.91	6.04	7.80	11.23	27.91	29.79	30.39	40.37	53.58	80.10	102.03	103.11	106.95	131.81	
Cm	$L\beta_2$		10	20	96	3	18.096	6.85000			4.91	6.04	7.80	11.23	27.92	29.81	30.41	40.40	53.61	80.15	102.10	103.18	107.03	131.94	
Cd	$L\gamma_5$		2	.1	48	6	3.619	6.85102	5		4.91	6.04	7.80	11.23	27.93	29.81	30.41	40.40	53.62	80.17	102.12	103.20	107.05	131.98	
V	$K\beta_{1,3}$		3	20	23	6	5.426	6.85320	5	4	4.91	6.04	7.80	11.24	27.94	29.82	30.42	40.42	53.64	80.20	102.17	103.25	107.10	132.06	
Pt	$L\beta_4$		6	4	78	6	10.852	6.85337	5		4.91	6.04	7.80	11.24	27.94	29.82	30.42	40.42	53.64	80.20	102.17	103.25	107.10	132.07	
Lu	$L\beta_{15}$		5	20	71	6	9.038	6.85750	4		4.91	6.05	7.81	11.24	27.95	29.84	30.44	40.44	53.67	80.26	102.26	103.34	107.20	132.22	
Ac	$L\alpha_1$	H	7	100	89	6	12.650	6.85951	5		4.91	6.05	7.81	11.25	27.96	29.85	30.45	40.45	53.69	80.29	102.30	103.38	107.24	132.30	
Cd	$L\beta_9$	B	2	.01	48	6	3.614	6.86030	5		4.91	6.05	7.81	11.25	27.97	29.85	30.45	40.46	53.70	80.30	102.31	103.40	107.26	132.33	
Kr	$K\alpha_1$		7	100	36	6	12.648	6.86070	4		4.92	6.05	7.81	11.25	27.97	29.86	30.45	40.46	53.70	80.30	102.32	103.40	107.27	132.34	
Rb	AL_3	H	1		37	6	1.806	6.86200	3		4.92	6.05	7.81	11.25	27.97	29.86	30.46	40.47	53.71	80.32	102.35	103.43	107.30	132.39	
Sr	$L\alpha_1$		1	100	38	6	1.806	6.86280	4		4.92	6.05	7.82	11.25	27.98	29.87	30.46	40.47	53.72	80.33	102.37	103.45	107.32	132.42	
Bi	$L\alpha_1$		6	100	83	6	10.837	6.86316	5		4.92	6.05	7.82	11.25	27.98	29.87	30.47	40.48	53.72	80.34	102.37	103.46	107.32	132.44	
Am	$L\beta_4$		10	4	95	6	18.060	6.86390	5		4.92	6.05	7.82	11.25	27.98	29.87	30.47	40.48	53.73	80.35	102.39	103.47	107.34	132.46	
Fr	$L\beta_2$		8	20	87	6	14.448	6.86400	3		4.92	6.05	7.82	11.25	27.98	29.87	30.47	40.48	53.73	80.35	102.39	103.47	107.34	132.47	
At	$L\gamma_1$	H	9	10	85	6	16.249	6.86601	5		4.92	6.06	7.82	11.26	27.99	29.88	30.48	40.49	53.75	80.38	102.43	103.52	107.39	132.54	
Cr	$K\alpha_1$		3	100	24	6	5.414	6.86910	5	4	4.92	6.06	7.82	11.26	28.00	29.89	30.49	40.51	53.77	80.42	102.50	103.58	107.46	132.66	
Sr	$L\alpha_2$		1	10	38	6	1.804	6.86970	4		4.92	6.06	7.82	11.26	28.00	29.90	30.50	40.52	53.78	80.43	102.51	103.59	107.47	132.68	
La	$L8_{10}$	B	3	.01	57	6	5.413	6.87000	3		4.92	6.06	7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60	107.48	132.70	
Ta	AM_4	H	1		73	6	1.804	6.87000	2		4.92	6.06	7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60	107.48	132.70	
Hg	$M\delta$		1	.01	80	6	1.804	6.87000	2		4.92	6.06	7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60	107.48	132.70	
Kr	$K\alpha_{1,2}$		7	150	36	6	12.631	6.87003	4		4.92	6.06	7.82	11.26	28.01	29.90	30.50	40.52	53.78	80.43	102.52	103.60	107.48	132.70	

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Hf	$L\beta_1$		5	50	72	6	9.021	6.87050	5		4.92	6.06	7.82	11.27	28.01	29.90	30.50	40.52	53.78	80.44	102.53	103.61	107.49	132.72	
In	$L\beta_6$		2	1	49	6	3.608	6.87212	5		4.92	6.06	7.83	11.27	28.01	29.91	30.51	40.53	53.80	80.46	102.56	103.65	107.53	132.78	
Cr	$K\alpha_{1,2}$		3	150	24	6	5.411	6.87300	5	4	4.92	6.06	7.83	11.27	28.02	29.91	30.51	40.54	53.80	80.48	102.58	103.66	107.55	132.81	
Cd	$L\beta_{10}$	8	2	.01	48	6	3.607	6.87340	4		4.92	6.06	7.83	11.27	28.02	29.91	30.51	40.54	53.81	80.48	102.59	103.67	107.56	132.83	
Pb	$L\beta_2$		7	20	82	6	12.621	6.87547	5		4.93	6.06	7.83	11.27	28.03	29.92	30.52	40.55	53.83	80.51	102.63	103.72	107.60	132.91	
Te	Ln		2	7	52	6	3.605	6.87664	5		4.93	6.06	7.83	11.28	28.03	29.93	30.53	40.56	53.84	80.53	102.65	103.74	107.63	132.95	
Pm	$L\alpha_2$		3	10	61	6	5.407	6.87780	4		4.93	6.07	7.83	11.28	28.04	29.93	30.53	40.57	53.85	80.54	102.68	103.77	107.66	132.99	
Sb	$L\alpha_1$		2	100	51	6	3.604	6.87882	5		4.93	6.07	7.83	11.28	28.04	29.94	30.54	40.57	53.85	80.56	102.70	103.79	107.68	133.03	
Pb	$L\beta_1$		7	50	82	6	12.612	6.88037	5		4.93	6.07	7.84	11.28	28.05	29.94	30.54	40.58	53.87	80.58	102.73	103.82	107.72	133.09	
Cr	$K\alpha_2$		3	50	24	6	5.405	6.88082	6	4	4.93	6.07	7.84	11.28	28.05	29.95	30.55	40.59	53.87	80.59	102.74	103.83	107.73	133.11	
Pa	M_2-N_1		2	.01	91	6	3.602	6.88200	3		4.93	6.07	7.84	11.28	28.06	29.95	30.55	40.59	53.88	80.60	102.77	103.86	107.75	133.16	
Am	$L\alpha_2$		8	10	95	6	14.409	6.88213	6		4.93	6.07	7.84	11.28	28.06	29.95	30.55	40.59	53.88	80.60	102.77	103.86	107.76	133.16	
K	$K\beta_5$	C	2	.01	19	6	3.602	6.88260	4	4	4.93	6.07	7.84	11.29	28.06	29.95	30.55	40.60	53.89	80.61	102.78	103.87	107.77	133.18	
Dy	$L\beta_4$		4	5	66	6	7.203	6.88412	5		4.93	6.07	7.84	11.29	28.06	29.96	30.56	40.61	53.90	80.63	102.81	103.90	107.80	133.24	
Th	$L\beta_1$		9	50	90	6	16.199	6.88689	6		4.93	6.07	7.84	11.29	28.08	29.97	30.57	40.62	53.92	80.67	102.87	103.96	107.86	133.34	
Kr	$K\alpha_2$		7	50	36	6	12.596	6.88870	4		4.94	6.08	7.85	11.30	28.08	29.98	30.58	40.63	53.94	80.70	102.91	104.00	107.91	133.41	
Os	M_3-N_1		1	.5	76	6	1.799	6.89000	2		4.94	6.08	7.85	11.30	28.09	29.99	30.59	40.64	53.95	80.72	102.93	104.03	107.94	133.46	
Np	$L\beta_3$	H	10	6	93	6	17.986	6.89200	5		4.94	6.08	7.85	11.30	28.10	30.00	30.60	40.65	53.97	80.74	102.97	104.07	107.98	133.54	
Os	$L\beta_7$		6	7	76	6	10.785	6.89598	5		4.94	6.08	7.85	11.31	28.11	30.01	30.62	40.68	54.00	80.80	103.06	104.15	108.07	133.70	
Sb	$L\alpha_2$		2	10	51	6	3.595	6.89680	5		4.94	6.08	7.85	11.31	28.12	30.02	30.62	40.68	54.01	80.81	103.08	104.17	108.09	133.73	
Zr	$K\beta_2$		10	4	40	6	17.967	6.89930	5		4.94	6.08	7.86	11.31	28.13	30.03	30.63	40.70	54.03	80.85	103.13	104.22	108.15	133.82	
Tm	$L\alpha_1$	H	4	100	69	6	7.179	6.90720	4		4.95	6.09	7.87	11.33	28.16	30.06	30.67	40.75	54.09	80.96	103.29	104.39	108.33	134.13	
K	$K\beta_{1,3}$		2	15	19	6	3.589	6.90780	4	4	4.95	6.09	7.87	11.33	28.16	30.07	30.67	40.75	54.10	80.97	103.31	104.41	108.34	134.16	
Sm	$L\gamma_1$		4	5	62	6	7.177	6.90896	5		4.95	6.09	7.87	11.33	28.17	30.07	30.67	40.76	54.11	80.98	103.33	104.43	108.37	134.20	
La	$L\beta_{2,15}$		3	20	57	6	5.383	6.90900	4		4.95	6.09	7.87	11.33	28.17	30.07	30.67	40.76	54.11	80.98	103.33	104.43	108.37	134.20	
O	M_1-O_3		3	.01	92	6	5.380	6.91200	3		4.95	6.10	7.87	11.33	28.18	30.09	30.69	40.78	54.13	81.03	103.39	104.50	108.44	134.32	
Ta	Ll		4	3	73	6	7.172	6.91364	5		4.95	6.10	7.87	11.34	28.19	30.09	30.70	40.79	54.15	81.05	103.43	104.53	108.48	134.39	
Zr	Ll		1	3	40	6	1.792	6.91850	4		4.96	6.10	7.88	11.34	28.21	30.11	30.72	40.82	54.19	81.12	103.53	104.63	108.59	134.58	
Tl	Ll		5	3	81	6	8.952	6.92385	5		4.96	6.11	7.89	11.35	28.23	30.14	30.74	40.85	54.23	81.19	103.64	104.75	108.71	134.79	
Ba	$L\gamma_5$		3	.1	56	6	5.370	6.92550	4		4.96	6.11	7.89	11.36	28.24	30.15	30.75	40.86	54.25	81.22	103.68	104.79	108.75	134.86	
Rn	$L\beta_1$	H	8	50	85	6	14.313	6.92840	5		4.96	6.11	7.89	11.36	28.25	30.16	30.76	40.88	54.27	81.26	103.74	104.85	108.82	134.97	
Kr	$K\beta_2$		8	3	36	6	14.312	6.92880	4		4.96	6.11	7.89	11.36	28.25	30.16	30.76	40.88	54.28	81.26	103.75	104.86	108.83	134.99	
Pa	$L\beta_4$		9	4	91	6	16.101	6.92910	4		4.96	6.11	7.89	11.36	28.25	30.16	30.77	40.88	54.28	81.27	103.75	104.86	108.83	135.00	
Bi	$L\alpha_2$		6	10	83	6	10.729	6.93216	5		4.97	6.11	7.89	11.37	28.26	30.18	30.78	40.90	54.31	81.31	103.82	104.93	108.91	135.12	
Ce	$L\beta_3$		3	6	58	6	5.364	6.93270	4		4.97	6.11	7.90	11.37	28.27	30.18	30.78	40.90	54.31	81.32	103.83	104.94	108.92	135.14	
Ir	$L\gamma_1$		7	10	77	6	12.510	6.93595	5		4.97	6.12	7.90	11.37	28.28	30.19	30.80	40.93	54.34	81.37	103.90	105.01	108.99	135.27	
Gd	Ll		3	2	64	6	5.361	6.93660	4		4.97	6.12	7.90	11.37	28.28	30.19	30.80	40.93	54.34	81.38	103.91	105.02	109.01	135.30	
Sr	$K\beta_2$		9	3	38	6	16.082	6.93729	5		4.97	6.12	7.90	11.38	28.29	30.20	30.80	40.93	54.35	81.39	103.93	105.04	109.02	135.33	
In	$L\beta_3$		2	6	49	6	3.572	6.93968	5		4.97	6.12	7.90	11.38	28.30	30.21	30.81	40.95	54.37	81.42	103.98	105.09	109.08	135.42	
Tl	$L\gamma_1$		8	10	81	6	14.289	6.94016	5		4.97	6.12	7.90	11.38	28.30	30.21	30.82	40.95	54.37	81.43	103.99	105.10	109.09	135.44	
Ac	$L\alpha_2$	H	7	10	89	6	12.499	6.94246	5		4.97	6.12	7.91	11.38	28.31	30.22	30.83	40.97	54.39	81.46	104.04	105.15	109.14	135.54	
Os	$L\gamma_3$		7	2	76	6	12.498	6.94302	5		4.97	6.12	7.91	11.38	28.31	30.22	30.83	40.97	54.40	81.47	104.05	105.16	109.16	135.56	
Se	$K\beta_1$		7	16	34	6	12.494	6.94526	5		4.98	6.12	7.91	11.39	28.32	30.23	30.84	40.98	54.42	81.50	104.09	105.21	109.21	135.65	
Ra	$L\gamma_1$		10	10	88	6	17.845	6.94630	5		4.98	6.13	7.91	11.39	28.32	30.24	30.84	40.99	54.43	81.51	104.12	105.23	109.23	135.69	
Pu	$L\alpha_1$		8	100	94	6	14.276	6.94640	5		4.98	6.13	7.91	11.39	28.32	30.24	30.84	40.99	54.43	81.51	104.12	105.24	109.24	135.70	
Ir	$L\beta_1$		6	50	77	6	10.706	6.94685	5		4.98	6.13	7.91	11.39	28.33	30.24	30.85	40.99	54.43	81.52	104.13	105.25	109.25	135.71	
Se	$K\beta_3$		7	8	34	6	12.487	6.94876	5		4.98	6.13	7.91	11.39	28.33	30.25	30.86	41.00	54.45	81.55	104.17	105.29	109.29	135.79	
Tm	$L\alpha_2$		4	10	69	6	7.132	6.95240	4		4.98	6.13	7.92	11.40	28.35	30.27	30.87	41.03	54.48	81.60	104.25	105.36	109.37	135.94	
Hg	$L\gamma_3$		8	2	80	6	14.262	6.95320	5		4.98	6.13	7.92	11.40	28.35	30.27	30.88	41.03	54.48	81.61	104.26	105.38	109.39	135.97	
Os	$L\alpha_1$		5	100	76	6	8.910	6.95605	5		4.98	6.13	7.92	11.41	28.36	30.28	30.89	41.05	54.51	81.65	104.32	105.44	109.46	136.09	
U	$M\gamma$		2	5	92	6	3.563	6.95800	3		4.98	6.14	7.92	11.41	28.37	30.29	30.90	41.06	54.52	81.68	104.36	105.49	109.51	136.17	
Br	AL_1	H	1		35	6	1.781	6.95900	3		4.99	6.14	7.93	11.41	28.38	30.29	30.90	41.07	54.53	81.69	104.39	105.51	109.53	136.21	
Hf	$L\beta_4$		5	4	72	6	8.904	6.96100	5		4.99	6.14	7.93	11.41	28.38	30.30	30.91	41.08	54.55	81.72	104.43	105.55	109.58	136.29	
Cu	$K\beta_{1,3}$		5	20	29	6	8.904	6.96109	6		4.99	6.14	7.93	11.41	28.38	30.30	30.91	41.08	54.55	81.72	104.43	105.55	109.58	136.30	
Cu	$K\beta_3$		5	6	29	6	8.901	6.96300	4		4.99	6.14	7.93	11.42	28.39	30.31	30.92	41.09	54.57	81.75	104.47	105.59	109.62	136.37	
Pa	$L\beta_2$		9	20	91	6	16.022	6.96330	4		4.99	6.14	7.93	11.42	28.39	30.31	30.92	41.09	54.57	81.76	104.48	105.60	109.63	136.39	
Tl	Mz_1		1	2	81	6	1.777	6.97400	3		5.00	6.15	7.94	11.44	28.44	30.36	30.97	41.16	54.66	81.91	104.70	105.83	109.88	136.83	
Pd	$L\gamma_{2,3}$		2	5	46	6	3.553	6.97840	4		5.00	6.15	7.95	11.44	28.46	30.38	30.99	41.19	54.70	81.97	104.80	105.93	109.98	137.01	
Gd	$L\beta_{2,15}$		4	20	64	6	7.102	6.98200	4		5.00	6.16	7.95	11.45	28.47	30.40	31.01	41.21	54.73	82.02	104.88	106.01	110.07	137.16	
W	$M\alpha_1$		1	100	74	6	1.775	6.98300	3		5.00	6.16	7.95	11.45	28.48	30.40	31.01	41.22	54.74	82.04	104.90	106.03	110.09	137.20	
Rb	$L\beta_6$		1	3	37	6	1.775	6.98420	4		5.00	6.16	7.95	11.45	28.48	30.41	31.02	41.22	54.75	82.05	104.92	106.06	110.12	137.25	
Np	$L\beta_1$		10	50	93	6	17.747	6.98478	6		5.00	6.16	7.95	11.45	28.48	30.41	31.02	41.23	54.75	82.06	104.93	106.07	110.13	137.28	
Tb	$L\beta_3$		4	6	65	6	7.095	6.98880	4		5.01	6.16	7.96	11.46	28.50	30.43	31.04	41.25	54.79	82.12	105.02	106.16	110.23	137.45	
W	$M\alpha_2$		1	100	74	6	1.773	6.99200	3		5.01	6.17	7.96	11.47	28.51	30.44	31.05	41.27	54.81	82.16	105.09	106.23	110.30	137.58	
Sr	$K\alpha_1$		8	100	38	6	14.163	7.00208	5		5.02	6.18	7.97	11.48	28.56	30.49	31.10	41.33	54.90	82.31	105.30	106.45	110.54	138.01	

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ra	$L l$		6	3	88	6	10.620	7.00314	5		5.02	6.18	7.98	11.48	28.56	30.49	31.10	41.34	54.91	82.32	105.33	106.47	110.56	138.05	
Ac	$L\beta_3$	H	9	10	89	6	15.929	7.00398	5		5.02	6.18	7.98	11.48	28.56	30.50	31.11	41.34	54.92	82.34	105.35	106.49	110.58	138.09	
Tl	$L\beta_3$		7	6	81	6	12.388	7.00434	5		5.02	6.18	7.98	11.49	28.56	30.50	31.11	41.35	54.92	82.34	105.35	106.50	110.59	138.11	
W	M_5-O_3		1	.01	74	6	1.770	7.00500	3		5.02	6.18	7.98	11.49	28.57	30.50	31.11	41.35	54.92	82.35	105.37	106.51	110.61	138.13	
Lu	$L\beta_3$		5	6	71	6	8.845	7.00700	5		5.02	6.18	7.98	11.49	28.58	30.51	31.12	41.36	54.94	82.38	105.41	106.55	110.66	138.22	
Am	$L l$		7	3	95	6	12.381	7.00840	4		5.02	6.18	7.98	11.49	28.58	30.51	31.13	41.37	54.95	82.40	105.44	106.58	110.69	138.28	
Os	$L\alpha_2$		5	10	76	6	8.840	7.01170	5		5.02	6.18	7.99	11.50	28.60	30.53	31.14	41.39	54.98	82.45	105.51	106.66	110.77	138.42	
Sr	$K\alpha_{1,2}$		8	150	38	6	14.140	7.01320	5		5.02	6.18	7.99	11.50	28.60	30.54	31.15	41.40	54.99	82.47	105.54	106.69	110.80	138.49	
Am	$L\beta_2$		10	20	95	6	17.673	7.01390	6		5.02	6.19	7.99	11.50	28.60	30.54	31.15	41.41	55.00	82.48	105.56	106.70	110.82	138.52	
In	$L\beta_4$		2	4	49	6	3.535	7.01394	5		5.02	6.19	7.99	11.50	28.60	30.54	31.15	41.41	55.00	82.48	105.56	106.71	110.82	138.52	
Zr	$K\beta_1$		10	18	40	6	17.665	7.01730	5		5.03	6.19	7.99	11.51	28.62	30.55	31.17	41.43	55.03	82.53	105.63	106.78	110.90	138.66	
Os	$L\beta_2$		6	20	76	6	10.597	7.01874	5		5.03	6.19	7.99	11.51	28.62	30.56	31.17	41.44	55.04	82.55	105.66	106.81	110.93	138.73	
Si	$SK\alpha_6$		1	.1	14	1	1.766	7.01995	3	3	5.03	6.19	7.99	11.51	28.63	30.57	31.18	41.44	55.05	82.56	105.69	106.84	110.96	138.78	
Zr	$K\beta_3$		10	9	40	6	17.651	7.02280	5		5.03	6.19	8.00	11.52	28.64	30.58	31.19	41.46	55.08	82.61	105.75	106.90	111.03	138.90	
Ta	$M\beta$		1	45	73	6	1.765	7.02300	3		5.03	6.19	8.00	11.52	28.64	30.58	31.19	41.46	55.08	82.61	105.75	106.91	111.03	138.91	
Yb	$M\gamma$		1	1	70	6	1.765	7.02400	3		5.03	6.19	8.00	11.52	28.65	30.58	31.20	41.47	55.09	82.62	105.78	106.93	111.06	138.95	
Fe	$K\beta_{1,3}$		4	20	26	6	7.057	7.02644	5	4	5.03	6.20	8.00	11.52	28.66	30.60	31.21	41.48	55.11	82.66	105.83	106.98	111.12	139.06	
Kr	$K\beta_1$		8	16	36	6	14.110	7.02800	4		5.04	6.20	8.00	11.52	28.66	30.60	31.22	41.49	55.12	82.68	105.86	107.02	111.15	139.13	
Cd	$L\beta_{2,15}$		2	25	48	6	3.528	7.02816	5		5.04	6.20	8.00	11.52	28.66	30.60	31.22	41.49	55.12	82.68	105.87	107.02	111.16	139.14	
Si	$SK\alpha_5$		1	.2	14	1	1.763	7.02957	3	3	5.04	6.20	8.01	11.53	28.67	30.61	31.22	41.50	55.13	82.70	105.90	107.05	111.19	139.20	
Kr	$K\beta_3$		8	8	36	6	14.102	7.03200	4		5.04	6.20	8.01	11.53	28.68	30.62	31.23	41.52	55.15	82.74	105.95	107.10	111.25	139.30	
Tl	Mz_2		1	1	81	6	1.763	7.03200	3		5.04	6.20	8.01	11.53	28.68	30.62	31.23	41.52	55.15	82.74	105.95	107.10	111.25	139.30	
Ra	$L\alpha_1$		7	100	88	6	12.338	7.03310	5		5.04	6.20	8.01	11.53	28.68	30.63	31.24	41.52	55.16	82.75	105.97	107.13	111.27	139.35	
Sr	$K\alpha_2$		8	50	38	6	14.095	7.03544	5		5.04	6.20	8.01	11.54	28.69	30.64	31.25	41.54	55.18	82.79	106.02	107.18	111.33	139.46	
Y	Ln		1	1	39	6	1.761	7.04060	4		5.04	6.21	8.02	11.55	28.72	30.66	31.27	41.57	55.23	82.86	106.13	107.29	111.45	139.68	
U	M_3-N_4		2	5	92	6	3.521	7.04200	3		5.05	6.21	8.02	11.55	28.72	30.66	31.28	41.58	55.24	82.88	106.16	107.32	111.49	139.75	
Pu	$L\alpha_2$		8	10	94	6	14.082	7.04224	5		5.05	6.21	8.02	11.55	28.72	30.67	31.28	41.58	55.24	82.88	106.17	107.33	111.49	139.76	
Cs	$L\gamma_1$		3	5	55	6	5.279	7.04400	4		5.05	6.21	8.02	11.55	28.73	30.67	31.29	41.59	55.26	82.91	106.21	107.37	111.53	139.84	
Ag	$L\gamma_1$		2	10	47	6	3.519	7.04520	5		5.05	6.21	8.02	11.55	28.73	30.68	31.29	41.60	55.27	82.93	106.23	107.40	111.56	139.89	
Sr	$K\beta_1$		9	16	38	6	15.833	7.04628	5		5.05	6.21	8.02	11.55	28.74	30.68	31.30	41.61	55.28	82.94	106.26	107.42	111.59	139.94	
Ce	$L\beta_4$		3	5	58	6	5.276	7.04910	4		5.05	6.22	8.03	11.56	28.75	30.70	31.31	41.62	55.30	82.98	106.32	107.48	111.66	140.06	
Pb	$L\alpha_1$		6	100	82	6	10.550	7.05006	5		5.05	6.22	8.03	11.56	28.76	30.70	31.32	41.63	55.31	83.00	106.34	107.50	111.68	140.11	
At	$L\beta_3$	H	8	10	85	6	14.065	7.05080	5		5.05	6.22	8.03	11.56	28.76	30.70	31.32	41.63	55.31	83.01	106.36	107.52	111.70	140.14	
Sr	$K\beta_3$		9	8	38	6	15.822	7.05105	5		5.05	6.22	8.03	11.56	28.76	30.71	31.32	41.64	55.32	83.01	106.36	107.52	111.70	140.15	
Pb	$L\beta_4$		7	4	82	6	12.304	7.05250	4		5.05	6.22	8.03	11.56	28.77	30.71	31.33	41.64	55.33	83.03	106.39	107.56	111.74	140.22	
As	$K\alpha_1$		6	100	33	6	10.542	7.05528	5		5.05	6.22	8.04	11.57	28.78	30.72	31.34	41.66	55.35	83.07	106.45	107.62	111.81	140.34	
Pu	$L\beta_4$		10	4	94	6	17.553	7.06200	5		5.06	6.23	8.04	11.58	28.80	30.75	31.37	41.70	55.41	83.17	106.60	107.77	111.97	140.64	
As	$K\alpha_{1,2}$		6	150	33	6	10.530	7.06326	5		5.06	6.23	8.04	11.58	28.81	30.76	31.38	41.71	55.42	83.19	106.63	107.80	112.00	140.70	
Si	$SK\alpha_4$		1	3	14	1	1.754	7.06654	3	3	5.06	6.23	8.05	11.59	28.82	30.77	31.39	41.73	55.45	83.23	106.70	107.87	112.08	140.85	
Ce	$L\beta_1$		3	50	58	6	5.261	7.06830	4		5.06	6.23	8.05	11.59	28.83	30.78	31.40	41.74	55.46	83.26	106.74	107.91	112.12	140.93	
Tl	$L\beta_2$		7	20	81	6	12.270	7.07216	5		5.07	6.24	8.05	11.60	28.85	30.80	31.42	41.77	55.50	83.32	106.82	107.99	112.21	141.11	
Zr	$K\alpha_1$		9	100	40	6	15.772	7.07337	5		5.07	6.24	8.06	11.60	28.85	30.80	31.42	41.77	55.51	83.33	106.85	108.02	112.24	141.16	
Hf	$L\gamma_1$		6	10	72	6	10.514	7.07400	5		5.07	6.24	8.06	11.60	28.85	30.81	31.43	41.78	55.51	83.34	106.86	108.04	112.26	141.19	
Th	M_2-N_1		2	.01	90	6	3.505	7.07400	3		5.07	6.24	8.06	11.60	28.85	30.81	31.43	41.78	55.51	83.34	106.86	108.04	112.26	141.19	
Rb	$L\beta_1$		1	45	37	6	1.752	7.07590	4		5.07	6.24	8.06	11.60	28.86	30.82	31.43	41.79	55.53	83.37	106.90	108.08	112.30	141.28	
Si	$SK\alpha_3$		1	6	14	1	1.752	7.07677	3	3	5.07	6.24	8.06	11.60	28.87	30.82	31.44	41.79	55.53	83.38	106.92	108.10	112.32	141.32	
Os	$L\beta_3$		6	6	76	6	10.509	7.07730	5		5.07	6.24	8.06	11.61	28.87	30.82	31.44	41.80	55.54	83.39	106.93	108.11	112.34	141.34	
Ir	$L\beta_4$		6	4	77	6	10.509	7.07748	5		5.07	6.24	8.06	11.61	28.87	30.82	31.44	41.80	55.54	83.39	106.94	108.11	112.34	141.35	
Yb	$L\beta_{2,15}$		5	20	70	6	8.757	7.07750	5		5.07	6.24	8.06	11.61	28.87	30.82	31.44	41.80	55.54	83.39	106.94	108.11	112.34	141.35	
As	$K\alpha_2$		6	50	33	6	10.506	7.07922	5		5.07	6.24	8.06	11.61	28.88	30.83	31.45	41.81	55.56	83.42	106.97	108.15	112.38	141.43	
Zr	$K\alpha_{1,2}$		9	150	40	6	15.744	7.08602	5		5.08	6.25	8.07	11.62	28.91	30.86	31.48	41.85	55.61	83.52	107.12	108.30	112.55	141.75	
Ho	$L\gamma_1$		5	5	67	6	8.746	7.08700	4		5.08	6.25	8.07	11.62	28.91	30.87	31.48	41.86	55.62	83.53	107.15	108.33	112.57	141.79	
Po	$L\gamma_1$		9	10	84	6	15.741	7.08732	5		5.08	6.25	8.07	11.62	28.91	30.87	31.49	41.86	55.62	83.53	107.15	108.33	112.58	141.81	
Ta	M_5-$O_{2,3}$		1	.01	73	6	1.748	7.09000	2		5.08	6.25	8.07	11.63	28.92	30.88	31.50	41.88	55.65	83.57	107.21	108.39	112.64	141.93	
Mo	$K\alpha_1$		10	100	42	6	17.476	7.09300	6		5.08	6.26	8.08	11.63	28.93	30.89	31.51	41.89	55.67	83.62	107.28	108.46	112.72	142.08	
Si	$SK\alpha'$		1	.5	14	1	1.747	7.09430	3	3	5.08	6.26	8.08	11.63	28.94	30.90	31.52	41.90	55.68	83.63	107.31	108.49	112.75	142.14	
Au	M_4-N_3		1	.01	79	6	1.746	7.10100	3		5.09	6.26	8.09	11.64	28.97	30.93	31.55	41.94	55.74	83.73	107.45	108.64	112.91	142.45	
Ac	$L\beta_1$	H	9	50	89	6	15.710	7.10127	5		5.09	6.26	8.09	11.64	28.97	30.93	31.55	41.95	55.74	83.74	107.46	108.65	112.92	142.47	
Bi	$L\gamma_3$		9	2	83	6	15.708	7.10253	5		5.09	6.26	8.09	11.65	28.97	30.93	31.56	41.95	55.75	83.75	107.49	108.67	112.95	142.53	
U	$L\beta_3$		10	6	92	6	17.452	7.10290	5		5.09	6.26	8.09	11.65	28.98	30.94	31.56	41.96	55.76	83.76	107.49	108.68	112.96	142.54	
Tl	$L\beta_1$		7	50	81	6	12.211	7.10590	5		5.09	6.27	8.09	11.65	28.99	30.95	31.57	41.97	55.78	83.80	107.56	108.75	113.03	142.69	
Tb	$L\beta_1$		4	50	65	6	6.977	7.10720	4		5.09	6.27	8.09	11.65	28.99	30.96	31.58	41.98	55.79	83.82	107.59	108.78	113.06	142.75	
Mo	$K\alpha_{1,2}$		10	150	42	6	17.441	7.10730	6		5.09	6.27	8.09	11.65	28.99	30.96	31.58	41.98	55.80	83.82	107.59	108.78	113.06	142.75	
Hg	$L l$		5	3	80	6	8.720	7.10800	4		5.09	6.27	8.10	11.66	29.00	30.96	31.58	41.99	55.80	83.83	107.61	108.80	113.08	142.79	
Ta	AM_5	8	1		73	6	1.743	7.11000	2		5.09	6.27	8.10	11.66	29.01	30.97	31.59	42.00	55.82	83.86	107.65	108.84	113.13	142.88	

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
In	$L\beta_1$		2	75	49	6	3.487	7.11062	5		5.09	6.27	8.10	11.66	29.01	30.97	31.59	42.00	55.82	83.87	107.66	108.86	113.14	142.91	
Nd	$L\alpha_1$		3	100	60	6	5.229	7.11120	4		5.09	6.27	8.10	11.66	29.01	30.97	31.60	42.01	55.83	83.88	107.68	108.87	113.16	142.94	
Zr	$K\alpha_2$		9	50	40	6	15.688	7.11135	5		5.09	6.27	8.10	11.66	29.01	30.97	31.60	42.01	55.83	83.88	107.68	108.87	113.16	142.95	
Np	$L\alpha_1$		8	100	93	6	13.942	7.11302	6		5.10	6.27	8.10	11.66	29.02	30.98	31.60	42.02	55.84	83.91	107.72	108.91	113.20	143.03	
I	Ll		2	7	53	6	3.484	7.11508	5		5.10	6.27	8.10	11.67	29.03	30.99	31.61	42.03	55.86	83.94	107.76	108.96	113.25	143.13	
Ra	$L\alpha_2$		7	10	88	6	12.194	7.11592	5		5.10	6.28	8.10	11.67	29.03	30.99	31.62	42.04	55.87	83.95	107.78	108.98	113.27	143.17	
Lu	$L\beta_1$		5	50	71	6	8.708	7.11795	5		5.10	6.28	8.11	11.67	29.04	31.00	31.63	42.05	55.89	83.98	107.83	109.02	113.32	143.27	
Pb	$L\alpha_2$		6	10	82	6	10.448	7.11888	5		5.10	6.28	8.11	11.67	29.04	31.01	31.63	42.05	55.89	83.99	107.85	109.04	113.35	143.31	
Si	$K\alpha_1$		1	100	14	6	1.740	7.12542	5	3	5.10	6.28	8.12	11.68	29.07	31.04	31.66	42.10	55.95	84.09	107.99	109.19	113.51	143.63	
Hf	Ll		4	3	72	6	6.958	7.12580	5		5.11	6.28	8.12	11.69	29.07	31.04	31.66	42.10	55.95	84.09	108.00	109.20	113.52	143.65	
Si	$K\alpha_{1,2}$		1	150	14	6	1.739	7.12624	5	3	5.11	6.28	8.12	11.69	29.07	31.04	31.66	42.10	55.96	84.10	108.01	109.21	113.53	143.67	
Si	$K\alpha_2$		1	50	14	6	1.739	7.12791	5	3	5.11	6.29	8.12	11.69	29.08	31.05	31.67	42.11	55.97	84.12	108.05	109.25	113.57	143.75	
Cf	$L\alpha_1$		9	100	98	3	15.652	7.12800			5.11	6.29	8.12	11.69	29.08	31.05	31.67	42.11	55.97	84.12	108.05	109.25	113.57	143.76	
Th	$L\beta_4$		9	4	90	6	15.640	7.13313	5		5.11	6.29	8.12	11.70	29.10	31.07	31.70	42.14	56.02	84.20	108.16	109.37	113.70	144.01	
Mo	$K\alpha_2$		10	50	42	6	17.371	7.13590	6		5.11	6.29	8.13	11.70	29.11	31.08	31.71	42.16	56.04	84.24	108.22	109.43	113.76	144.15	
Er	$L\alpha_1$		4	100	68	6	6.947	7.13700	5		5.11	6.29	8.13	11.70	29.12	31.09	31.71	42.17	56.05	84.25	108.25	109.45	113.79	144.20	
La	$L\beta_6$		3	.1	57	6	5.211	7.13700	4		5.11	6.29	8.13	11.70	29.12	31.09	31.71	42.17	56.05	84.25	108.25	109.45	113.79	144.20	
Ba	$L\beta_7$		3	.1	56	6	5.207	7.14180	4		5.12	6.30	8.13	11.71	29.14	31.11	31.73	42.20	56.09	84.32	108.35	109.56	113.91	144.44	
Th	$L\beta_2$		9	20	90	6	15.621	7.14186	5		5.12	6.30	8.13	11.71	29.14	31.11	31.74	42.20	56.09	84.32	108.36	109.56	113.91	144.44	
Nd	$L\alpha_2$		3	10	60	6	5.207	7.14210	4		5.12	6.30	8.13	11.71	29.14	31.11	31.74	42.20	56.09	84.33	108.36	109.57	113.92	144.46	
Th	$L\beta_4$		4	5	65	6	6.939	7.14560	4		5.12	6.30	8.14	11.72	29.15	31.13	31.75	42.22	56.12	84.38	108.44	109.65	114.00	144.63	
At	$L\beta_1$	H	8	50	85	6	13.874	7.14792	5		5.12	6.30	8.14	11.72	29.16	31.14	31.76	42.23	56.14	84.41	108.49	109.70	114.06	144.75	
U	M_4-O_2		2	1	92	6	3.466	7.15200	3		5.12	6.31	8.15	11.73	29.18	31.16	31.78	42.26	56.18	84.47	108.58	109.79	114.16	144.96	
Pa	$M\gamma$		2	5	91	6	3.465	7.15400	3		5.13	6.31	8.15	11.73	29.19	31.16	31.79	42.27	56.19	84.50	108.63	109.84	114.21	145.06	
Co	$K\alpha_1$		4	100	27	6	6.929	7.15586	6		5.13	6.31	8.15	11.73	29.20	31.17	31.80	42.28	56.21	84.53	108.67	109.88	114.26	145.15	
Pu	Ll		7	3	94	6	12.122	7.15819	4		5.13	6.31	8.15	11.74	29.21	31.18	31.81	42.30	56.23	84.56	108.72	109.94	114.31	145.27	
Ba	$L\beta_{10}$	B	3	.01	56	6	5.193	7.16070	4		5.13	6.32	8.16	11.74	29.22	31.19	31.82	42.31	56.25	84.60	108.78	109.99	114.38	145.40	
Co	$K\alpha_{1,2}$		4	150	27	6	6.924	7.16103	6		5.13	6.32	8.16	11.74	29.22	31.20	31.82	42.32	56.25	84.60	108.78	110.00	114.39	145.42	
Re	$L\alpha_1$		5	100	75	6	8.651	7.16450	5		5.13	6.32	8.16	11.75	29.23	31.21	31.84	42.34	56.28	84.65	108.86	110.08	114.47	145.60	
Fr	$L\gamma_1$	H	10	10	87	6	17.300	7.16520	5		5.13	6.32	8.16	11.75	29.24	31.21	31.84	42.34	56.29	84.66	108.88	110.10	114.49	145.63	
Kr	AL_2		1		36	6	1.729	7.16800	3		5.14	6.32	8.16	11.75	29.25	31.23	31.85	42.36	56.31	84.70	108.94	110.16	114.56	145.78	
Co	$K\alpha_2$		4	50	27	6	6.914	7.17140	6		5.14	6.32	8.17	11.76	29.26	31.24	31.87	42.38	56.34	84.75	109.02	110.24	114.64	145.95	
Hg	$L\gamma_1$		8	10	80	6	13.828	7.17168	5		5.14	6.32	8.17	11.76	29.26	31.24	31.87	42.38	56.35	84.76	109.02	110.24	114.65	145.97	
I	$L\gamma_4$		3	.1	53	6	5.184	7.17390	4		5.14	6.33	8.17	11.76	29.27	31.25	31.88	42.40	56.36	84.79	109.07	110.29	114.71	146.08	
Os	$L\gamma_1$		7	10	76	6	12.093	7.17520	5		5.14	6.33	8.17	11.77	29.28	31.26	31.89	42.40	56.38	84.81	109.10	110.32	114.74	146.15	
Zn	$K\alpha_1$		5	100	30	6	8.637	7.17577	6		5.14	6.33	8.17	11.77	29.28	31.26	31.89	42.41	56.38	84.82	109.11	110.34	114.75	146.18	
Er	$L\alpha_2$		4	10	68	6	6.904	7.18200	4		5.15	6.33	8.18	11.78	29.31	31.29	31.92	42.45	56.43	84.91	109.25	110.48	114.91	146.51	
Zn	$K\alpha_{1,2}$		5	150	30	6	8.630	7.18218	6		5.15	6.33	8.18	11.78	29.31	31.29	31.92	42.45	56.44	84.91	109.26	110.49	114.91	146.52	
Au	$L\gamma_3$		8	2	79	6	13.807	7.18264	5		5.15	6.33	8.18	11.78	29.31	31.29	31.92	42.45	56.44	84.92	109.27	110.50	114.92	146.55	
Re	$L\gamma_3$		7	2	75	6	12.080	7.18291	5		5.15	6.33	8.18	11.78	29.31	31.29	31.92	42.45	56.44	84.92	109.27	110.50	114.93	146.56	
Os	$L\beta_1$		6	50	75	6	10.354	7.18362	5		5.15	6.34	8.18	11.78	29.31	31.30	31.93	42.46	56.45	84.93	109.29	110.52	114.95	146.60	
En	Ll		3	2	63	6	5.176	7.18440	4		5.15	6.34	8.18	11.78	29.32	31.30	31.93	42.46	56.45	84.94	109.31	110.54	114.97	146.64	
Pu	$L\beta_2$		10	20	94	6	17.252	7.18510	5		5.15	6.34	8.18	11.78	29.32	31.30	31.93	42.46	56.46	84.95	109.32	110.55	114.99	146.68	
Zn	$K\alpha_2$		5	50	30	6	8.614	7.19500	6		5.15	6.35	8.19	11.80	29.36	31.35	31.98	42.53	56.55	85.10	109.55	110.78	115.23	147.21	
Pm	$L\gamma_1$		4	5	61	6	6.891	7.19560	4		5.16	6.35	8.20	11.80	29.36	31.35	31.98	42.53	56.55	85.11	109.56	110.79	115.25	147.24	
U	$L\beta_1$		10	50	92	6	17.217	7.19984	6		5.16	6.35	8.20	11.81	29.38	31.37	32.00	42.56	56.59	85.17	109.65	110.89	115.36	147.47	
Sn	$L\alpha_1$		2	100	50	6	3.443	7.19988	5		5.16	6.35	8.20	11.81	29.38	31.37	32.00	42.56	56.59	85.17	109.66	110.89	115.36	147.47	
Lu	$L8_4$		5	5	71	6	8.605	7.20280	5		5.16	6.35	8.20	11.81	29.39	31.38	32.01	42.57	56.61	85.21	109.72	110.96	115.43	147.63	
Np	$L\alpha_2$		8	10	93	6	13.757	7.20836	6		5.16	6.36	8.21	11.82	29.42	31.41	32.04	42.61	56.66	85.29	109.85	111.09	115.57	147.94	
Ag	$L\beta_9$	8	2	.01	47	6	3.439	7.20994	5		5.17	6.36	8.21	11.82	29.42	31.41	32.05	42.62	56.67	85.32	109.88	111.13	115.61	148.03	
Ba	$L\beta_{2,15}$		3	20	56	6	5.156	7.21305	5		5.17	6.36	8.22	11.83	29.43	31.43	32.06	42.64	56.70	85.36	109.95	111.20	115.69	148.20	
Fr	$L\alpha_1$	H	7	100	87	6	12.029	7.21343	5		5.17	6.36	8.22	11.83	29.44	31.43	32.06	42.64	56.70	85.37	109.96	111.21	115.70	148.22	
Sb	Ln		2	7	51	6	3.436	7.21530	5		5.17	6.36	8.22	11.83	29.44	31.44	32.07	42.65	56.72	85.40	110.00	111.25	115.74	148.33	
Sn	$L\alpha_2$		2	10	50	6	3.435	7.21782	5		5.17	6.37	8.22	11.84	29.45	31.45	32.08	42.67	56.74	85.43	110.06	111.31	115.81	148.47	
Re	$L\alpha_2$		5	10	75	6	8.585	7.21980	5		5.17	6.37	8.22	11.84	29.46	31.46	32.09	42.68	56.76	85.46	110.11	111.35	115.86	148.58	
Ag	$L\beta_{10}$	8	2	.01	47	6	3.432	7.22316	5		5.17	6.37	8.23	11.85	29.48	31.47	32.11	42.70	56.79	85.51	110.18	111.43	115.94	148.77	
Ra	$L\beta_3$		9	6	88	6	15.442	7.22457	5		5.18	6.37	8.23	11.85	29.48	31.48	32.11	42.71	56.80	85.53	110.22	111.47	115.98	148.85	
Pa	M_3-N_4		2	5	91	6	3.430	7.22800	3		5.18	6.37	8.23	11.85	29.50	31.50	32.13	42.73	56.83	85.58	110.29	111.55	116.07	149.04	
Nd	Ln		3	1	60	6	5.145	7.22820	4		5.18	6.37	8.23	11.85	29.50	31.50	32.13	42.73	56.83	85.58	110.30	111.55	116.07	149.06	
Cd	$L\beta_6$		2	1	48	6	3.429	7.22934	5		5.18	6.38	8.23	11.86	29.50	31.50	32.13	42.74	56.84	85.60	110.32	111.58	116.10	149.12	
La	$L\beta_3$		3	6	57	6	5.143	7.23150	4		5.19	6.38	8.24	11.86	29.51	31.51	32.14	42.75	56.86	85.63	110.37	111.63	116.16	149.25	
Ag	$L\gamma_5$		2	.1	47	6	3.428	7.23276	5		5.18	6.38	8.24	11.86	29.52	31.52	32.15	42.76	56.87	85.65	110.40	111.66	116.19	149.32	
Hg	$L\beta_3$		7	6	80	6	11.993	7.23506	5		5.18	6.38	8.24	11.87	29.53	31.53	32.16	42.77	56.89	85.69	110.45	111.71	116.25	149.45	
Cf	$L\alpha_2$		9	10	98	3	15.418	7.23600			5.18	6.38	8.24	11.87	29.53	31.53	32.16	42.78	56.90	85.70	110.48	111.73	116.27	149.51	
Re	$L\beta_2$		6	20	75	6	10.274	7.23960	5		5.19	6.38	8.25	11.87	29.55	31.55	32.18	42.80	56.93	85.75	110.56	111.82	116.36	149.72	

El	Line	C	N	I	Z	R	KeV	Lambda	P Å 10^{-}	Lmel (Pilm)	Llign (Pilm)	Lstear (Pilm)	Llaur (Pilm)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Tl	$L\alpha_1$		6	100	81	6	10.267	7.24434	5	5.19	6.39	8.25	11.88	29.57	31.57	32.20	42.83	56.97	85.82	110.67	111.93	116.48	149.99	
Eu	$L\beta_{2,15}$		4	20	63	6	6.842	7.24720	4	5.19	6.39	8.25	11.89	29.58	31.58	32.22	42.85	56.99	85.86	110.73	111.99	116.56	150.16	
Ga	$K\beta_1$		6	14	31	6	10.263	7.24734	5	5.19	6.39	8.25	11.89	29.58	31.58	32.22	42.85	56.99	85.87	110.73	112.00	116.56	150.17	
Kr	L_2-N_3	B	1	.01	36	6	1.710	7.25000	3	5.19	6.39	8.26	11.89	29.59	31.59	32.23	42.87	57.02	85.90	110.80	112.06	116.63	150.33	
Ga	$K\beta_3$		6	7	31	6	10.259	7.25010	5	5.19	6.39	8.26	11.89	29.59	31.59	32.23	42.87	57.02	85.91	110.80	112.06	116.63	150.34	
Ta	$M\alpha$		1	100	73	6	1.709	7.25200	3	5.20	6.40	8.26	11.89	29.60	31.60	32.24	42.88	57.03	85.93	110.84	112.11	116.68	150.45	
Cs	$L\gamma_5$		3	.1	55	6	5.128	7.25220	4	5.20	6.40	8.26	11.89	29.60	31.60	32.24	42.88	57.04	85.94	110.85	112.11	116.68	150.46	
Gd	$L\beta_3$		4	6	64	6	6.830	7.26000	4	5.20	6.40	8.27	11.91	29.63	31.64	32.27	42.93	57.10	86.05	111.03	112.29	116.88	150.93	
Yb	$L\beta_3$		5	6	70	6	8.535	7.26165	5	5.20	6.40	8.27	11.91	29.64	31.65	32.28	42.94	57.12	86.08	111.06	112.33	116.93	151.03	
Kr	$L\beta_3$		1	1	36	6	1.706	7.26400	3	5.20	6.41	8.27	11.91	29.65	31.66	32.29	42.95	57.14	86.11	111.12	112.39	116.99	151.18	
Np	$L\beta_4$		10	4	93	6	17.058	7.26710	5	5.21	6.41	8.28	11.92	29.66	31.67	32.31	42.97	57.16	86.16	111.19	112.46	117.07	151.37	
Po	$L\beta_3$		8	6	84	6	13.635	7.27280	4	5.21	6.41	8.28	11.93	29.68	31.70	32.33	43.01	57.21	86.24	111.32	112.60	117.21	151.72	
Tl	$L8_4$		7	4	81	6	11.929	7.27426	5	5.21	6.42	8.28	11.93	29.69	31.70	32.34	43.02	57.23	86.26	111.35	112.63	117.25	151.81	
Br	$K\alpha_1$		7	100	35	6	11.922	7.27818	5	5.21	6.42	8.29	11.94	29.71	31.72	32.36	43.04	57.26	86.32	111.44	112.72	117.35	152.06	
Hg	$L8_2$		7	20	80	6	11.922	7.27824	5	5.21	6.42	8.29	11.94	29.71	31.72	32.36	43.04	57.26	86.32	111.45	112.73	117.35	152.06	
Kr	$L\gamma_5$		1	.1	36	6	1.703	7.27900	3	5.22	6.42	8.29	11.94	29.71	31.72	32.36	43.05	57.27	86.33	111.46	112.74	117.37	152.11	
U	$L\alpha_1$		8	100	92	6	13.612	7.28511	6	5.22	6.43	8.30	11.95	29.74	31.75	32.39	43.09	57.32	86.42	111.60	112.89	117.53	152.50	
Y	$K\beta_2$		10	4	39	6	17.013	7.28640	5	5.22	6.43	8.30	11.95	29.74	31.76	32.39	43.09	57.33	86.44	111.63	112.92	117.57	152.59	
Br	$K\alpha_{1,2}$		7	150	35	6	11.907	7.28770	5	5.22	6.43	8.30	11.95	29.75	31.76	32.40	43.10	57.34	86.46	111.66	112.95	117.60	152.67	
Cd	$L\beta_3$		2	11	48	6	3.401	7.28990	5	5.22	6.43	8.30	11.96	29.76	31.77	32.41	43.11	57.36	86.49	111.72	113.00	117.66	152.81	
Bk	$L\alpha_1$		9	100	97	3	15.304	7.29000		5.22	6.43	8.30	11.96	29.76	31.77	32.41	43.12	57.36	86.49	111.72	113.00	117.66	152.82	
Fr	$L\alpha_2$	H	7	10	87	6	11.893	7.29609	5	5.23	6.43	8.31	11.97	29.78	31.80	32.44	43.15	57.41	86.59	111.86	113.15	117.82	153.22	
Au	Ll		5	3	79	6	8.493	7.29820	5	5.23	6.44	8.31	11.97	29.79	31.81	32.45	43.17	57.43	86.62	111.91	113.20	117.87	153.36	
Np	Ll		7	3	93	6	11.887	7.29960	4	5.23	6.44	8.31	11.97	29.80	31.82	32.46	43.18	57.44	86.64	111.94	113.23	117.91	153.45	
Ta	M_5-O_3		1	.01	73	6	1.698	7.30000	2	5.23	6.44	8.31	11.97	29.80	31.82	32.46	43.18	57.45	86.64	111.95	113.24	117.92	153.48	
Hf	$M\beta$		1	45	72	6	1.697	7.30300	3	5.23	6.44	8.32	11.98	29.81	31.83	32.47	43.20	57.47	86.69	112.02	113.31	118.00	153.68	
Kr	$L8_4$		1	1	36	6	1.697	7.30400	3	5.23	6.44	8.32	11.98	29.81	31.84	32.48	43.20	57.48	86.70	112.04	113.34	118.02	153.74	
Br	$K\alpha_2$		7	50	35	6	11.876	7.30674	5	5.23	6.44	8.32	11.98	29.83	31.85	32.49	43.22	57.50	86.74	112.11	113.40	118.10	153.93	
Os	$L8_4$		6	4	76	6	10.174	7.31063	5	5.24	6.45	8.33	11.99	29.84	31.87	32.51	43.24	57.54	86.80	112.20	113.50	118.20	154.19	
Tl	$L\alpha_2$		6	10	81	6	10.171	7.31250	5	5.24	6.45	8.33	11.99	29.85	31.87	32.51	43.26	57.55	86.83	112.24	113.54	118.25	154.32	
Bi	$L\gamma_1$		9	10	83	6	15.245	7.31799	5	5.24	6.45	8.33	12.00	29.87	31.90	32.54	43.29	57.60	86.91	112.37	113.67	118.39	154.70	
Rb	$L\alpha_1$		1	100	37	6	1.694	7.31830	4	5.24	6.45	8.34	12.00	29.87	31.90	32.54	43.29	57.60	86.91	112.38	113.68	118.40	154.72	
Tm	$L\beta_{2,15}$		5	20	69	6	8.467	7.32000	4	5.24	6.46	8.34	12.00	29.88	31.91	32.55	43.30	57.62	86.94	112.42	113.72	118.44	154.84	
Re	$L8_3$		6	6	75	6	10.158	7.32186	5	5.25	6.46	8.34	12.01	29.89	31.92	32.56	43.31	57.63	86.97	112.46	113.76	118.49	154.97	
Pa	$L\beta_3$		10	6	91	6	16.927	7.32300	5	5.25	6.46	8.34	12.01	29.89	31.92	32.56	43.32	57.64	86.98	112.49	113.79	118.52	155.06	
Ra	$L\beta_1$		9	50	88	6	15.233	7.32375	5	5.25	6.46	8.34	12.01	29.90	31.92	32.57	43.33	57.65	86.99	112.50	113.81	118.54	155.11	
Rb	$L\alpha_2$		1	10	37	6	1.692	7.32510	4	5.25	6.46	8.34	12.01	29.90	31.93	32.57	43.33	57.66	87.02	112.54	113.84	118.58	155.20	
Th	M_1-O_3		3	.01	90	6	5.076	7.32600	3	5.25	6.46	8.34	12.01	29.91	31.93	32.58	43.34	57.67	87.03	112.56	113.86	118.60	155.27	
U	M_2-O_4		3	.01	92	6	5.074	7.32900	3	5.25	6.46	8.35	12.02	29.92	31.95	32.59	43.36	57.70	87.07	112.63	113.94	118.68	155.48	
Pb	$L\gamma_3$		9	2	82	6	15.215	7.33230	4	5.25	6.47	8.35	12.03	29.93	31.96	32.60	43.38	57.72	87.12	112.70	114.02	118.77	155.72	
Lu	$L\gamma_1$		6	5	71	6	10.142	7.33368	5	5.25	6.47	8.35	12.03	29.94	31.97	32.61	43.39	57.74	87.14	112.74	114.05	118.80	155.82	
Hg	$L\beta_1$		7	50	80	6	11.821	7.34076	5	5.26	6.47	8.36	12.04	29.97	32.00	32.64	43.43	57.80	87.25	112.90	114.22	118.99	156.34	
I	$L\gamma_{2,3}$		3	2	53	6	5.065	7.34250	4	5.26	6.48	8.36	12.04	29.98	32.01	32.65	43.44	57.81	87.27	112.94	114.26	119.04	156.47	
Lu	Ll		4	2	71	6	6.752	7.34400	4	5.26	6.48	8.36	12.04	29.98	32.01	32.66	43.45	57.83	87.30	112.98	114.30	119.08	156.59	
La	$L8_4$		3	5	57	6	5.061	7.34790	4	5.26	6.48	8.37	12.05	30.00	32.03	32.68	43.48	57.86	87.35	113.07	114.39	119.18	156.88	
Rb	$K\beta_2$		9	3	37	6	15.183	7.34805	5	5.26	6.48	8.37	12.05	30.00	32.03	32.68	43.48	57.86	87.36	113.08	114.40	119.19	156.89	
Y	Ll		1	3	39	6	1.685	7.35630	4	5.27	6.49	8.38	12.06	30.03	32.07	32.71	43.53	57.93	87.48	113.27	114.60	119.40	157.53	
Th	$M\gamma$		2	5	90	6	3.369	7.35800	3	5.27	6.49	8.38	12.07	30.04	32.08	32.72	43.54	57.95	87.50	113.31	114.64	119.45	157.67	
W	M_3-N_1		1	.5	74	6	1.684	7.36000	3	5.27	6.49	8.38	12.07	30.05	32.09	32.73	43.55	57.96	87.53	113.36	114.69	119.50	157.82	
Np	$L\beta_2$		10	20	93	6	16.837	7.36230	6	5.27	6.49	8.39	12.07	30.06	32.10	32.74	43.56	57.98	87.57	113.41	114.74	119.56	158.01	
Dy	$L\gamma_1$		5	5	66	6	8.417	7.36330	5	5.28	6.49	8.39	12.08	30.06	32.10	32.75	43.57	57.99	87.58	113.44	114.77	119.59	158.09	
Br	$K\beta_2$		8	2	35	6	13.467	7.36368	5	5.28	6.49	8.39	12.08	30.06	32.10	32.75	43.57	58.00	87.59	113.44	114.77	119.60	158.12	
Cd	$L\beta_4$		2	5	48	6	3.367	7.36406	5	5.28	6.49	8.39	12.08	30.07	32.10	32.75	43.58	58.00	87.59	113.45	114.78	119.61	158.15	
Rh	$L\gamma_{2,3}$		2	5	45	6	3.363	7.37100	4	5.28	6.50	8.40	12.09	30.09	32.14	32.78	43.62	58.06	87.70	113.62	114.95	119.80	158.72	
Pt	M_4-N_3		1	.01	78	6	1.682	7.37100	3	5.28	6.50	8.40	12.09	30.09	32.14	32.78	43.62	58.06	87.70	113.62	114.95	119.80	158.72	
Po	$L\beta_1$		8	50	84	6	13.445	7.37600	4	5.28	6.51	8.40	12.10	30.12	32.16	32.80	43.65	58.10	87.77	113.74	115.08	119.93	159.13	
La	$L\beta_1$		3	50	57	6	5.041	7.37673	5	5.29	6.51	8.40	12.10	30.12	32.16	32.81	43.65	58.11	87.78	113.75	115.09	119.95	159.20	
Yb	$L8_1$		5	50	70	6	8.400	7.37825	5	5.29	6.51	8.40	12.10	30.12	32.17	32.81	43.66	58.12	87.81	113.79	115.13	119.99	159.32	
Ho	$L\alpha_1$		4	100	67	6	6.719	7.38000	4	5.29	6.51	8.41	12.10	30.13	32.18	32.82	43.68	58.14	87.83	113.83	115.17	120.04	159.47	
U	$L\alpha_2$		8	10	92	6	13.437	7.38046	6	5.29	6.51	8.41	12.10	30.13	32.18	32.82	43.68	58.14	87.84	113.84	115.18	120.05	159.51	
W	$L\alpha_1$		5	100	74	6	8.396	7.38195	5	5.29	6.51	8.41	12.11	30.14	32.18	32.83	43.69	58.15	87.86	113.88	115.22	120.09	159.64	
Pa	M_4-O_2		2	1	91	6	3.358	7.38200	3	5.29	6.51	8.41	12.11	30.14	32.18	32.83	43.69	58.15	87.86	113.88	115.22	120.09	159.65	
Gd	$L\beta_1$		4	50	64	6	6.712	7.38720	4	5.29	6.52	8.41	12.12	30.16	32.21	32.86	43.72	58.20	87.94	114.00	115.35	120.23	160.10	
Pr	$L\alpha_1$		3	100	59	6	5.033	7.38900	4	5.29	6.52	8.42	12.12	30.17	32.22	32.86	43.73	58.21	87.97	114.05	115.39	120.28	160.26	
Kr	AL_3		1		36	6	1.677	7.39200	3	5.30	6.52	8.42	12.12	30.18	32.23	32.88	43.75	58.24	88.01	114.12	115.47	120.36	160.53	

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Rn	$L\gamma_1$	H	10	10	86	6	16.768	7.39280	5		5.30	6.52	8.42	12.12	30.19	32.23	32.88	43.75	58.25	88.02	114.14	115.49	120.38	160.60	
8k	$L\alpha_2$		9	10	97	3	15.080	7.39800			5.30	6.52	8.43	12.13	30.21	32.26	32.91	43.79	58.29	88.10	114.26	115.61	120.53	161.08	
Rn	$L\alpha_1$	H	7	100	86	6	11.725	7.40061	5		5.30	6.53	8.43	12.14	30.22	32.27	32.92	43.80	58.31	88.14	114.33	115.68	120.60	161.32	
As	$K\beta_1$		7	15	33	6	11.724	7.40110	5		5.30	6.53	8.43	12.14	30.22	32.27	32.92	43.81	58.32	88.15	114.34	115.69	120.61	161.37	
Rb	$K\alpha_1$		8	100	37	6	13.393	7.40442	6		5.30	6.53	8.43	12.14	30.23	32.29	32.93	43.83	58.35	88.20	114.42	115.77	120.70	161.69	
As	$K\beta_3$		7	7	33	6	11.718	7.40481	5		5.31	6.53	8.43	12.14	30.24	32.29	32.94	43.83	58.35	88.20	114.43	115.78	120.71	161.72	
Ag	$L\beta_{2,15}$		2	25	47	6	3.347	7.40670	5		5.31	6.53	8.44	12.15	30.24	32.30	32.94	43.84	58.37	88.23	114.47	115.83	120.76	161.91	
Y	$K\beta_1$		10	16	39	6	16.735	7.40720	5		5.31	6.53	8.44	12.15	30.25	32.30	32.95	43.84	58.37	88.24	114.48	115.84	120.78	161.95	
Au	$L\gamma_1$		8	10	79	6	13.379	7.41200	5		5.31	6.54	8.44	12.16	30.27	32.32	32.97	43.87	58.41	88.31	114.60	115.96	120.91	162.43	
Y	$K\beta_3$		10	8	39	6	16.723	7.41260	5		5.31	6.54	8.44	12.16	30.27	32.32	32.97	43.88	58.42	88.32	114.61	115.97	120.92	162.49	
Rb	$K\alpha_{1,2}$		8	150	37	6	13.373	7.41546	5		5.31	6.54	8.45	12.16	30.28	32.33	32.98	43.90	58.44	88.36	114.68	116.05	121.00	162.78	
Gd	$L\beta_4$		4	5	64	6	6.686	7.41600	4		5.31	6.54	8.45	12.16	30.28	32.34	32.99	43.90	58.45	88.37	114.70	116.06	121.02	162.83	
Pr	$L\alpha_2$		3	10	59	6	5.013	7.41870	4		5.32	6.54	8.45	12.17	30.29	32.35	33.00	43.92	58.47	88.41	114.76	116.13	121.09	163.11	
Pa	$L\beta_1$		10	50	91	6	16.699	7.42320	5		5.32	6.55	8.45	12.17	30.31	32.37	33.02	43.94	58.51	88.48	114.87	116.24	121.21	163.59	
Pt	$L\gamma_3$		8	2	78	6	13.359	7.42328	5		5.32	6.55	8.45	12.17	30.31	32.37	33.02	43.94	58.51	88.48	114.87	116.24	121.21	163.60	
Ho	$L\alpha_2$		4	10	67	6	6.679	7.42440	4		5.32	6.55	8.46	12.18	30.32	32.37	33.03	43.95	58.52	88.50	114.90	116.27	121.25	163.72	
Re	$L\gamma_1$		7	10	75	6	11.683	7.42693	5		5.32	6.55	8.46	12.18	30.33	32.39	33.04	43.97	58.54	88.54	114.96	116.33	121.31	163.99	
Re	$L\beta_1$		6	50	75	6	10.008	7.43148	5		5.32	6.55	8.46	12.19	30.35	32.41	33.06	44.00	58.58	88.61	115.07	116.44	121.44	164.50	
U	$M\beta$		2	60	92	6	3.336	7.43200	3		5.32	6.55	8.46	12.19	30.35	32.41	33.06	44.00	58.59	88.61	115.08	116.46	121.45	164.56	
K	$SK\alpha_4$		2	3	19	1	3.335	7.43298	3	4	5.33	6.56	8.47	12.19	30.35	32.41	33.07	44.00	58.59	88.63	115.11	116.48	121.48	164.67	
Te	$L1$		2	7	52	6	3.335	7.43392	5		5.33	6.56	8.47	12.19	30.36	32.42	33.07	44.01	58.60	88.64	115.13	116.50	121.51	164.78	
W	$L\gamma_3$		7	2	74	6	11.672	7.43400	5		5.33	6.56	8.47	12.19	30.36	32.42	33.07	44.01	58.60	88.64	115.13	116.51	121.51	164.79	
Po	$L\beta_2$		8	20	84	6	13.338	7.43496	5		5.33	6.56	8.47	12.19	30.36	32.42	33.07	44.02	58.61	88.66	115.15	116.53	121.54	164.90	
Th	M_3-N_4		2	5	90	6	3.334	7.43600	3		5.33	6.56	8.47	12.20	30.37	32.43	33.08	44.02	58.62	88.67	115.18	116.56	121.56	165.02	
W	$L\alpha_2$		5	10	74	6	8.334	7.43715	5		5.33	6.56	8.47	12.20	30.37	32.43	33.08	44.03	58.63	88.69	115.21	116.58	121.60	165.15	
Rb	$K\alpha_2$		8	50	37	6	13.333	7.43752	5		5.33	6.56	8.47	12.20	30.37	32.43	33.09	44.03	58.63	88.70	115.22	116.59	121.61	165.20	
K	$SK\alpha_3$		2	3	19	1	3.332	7.44120	3	4	5.33	6.56	8.48	12.20	30.39	32.45	33.10	44.06	58.66	88.75	115.31	116.69	121.71	165.64	
Sm	$L1$		3	2	62	6	4.994	7.44690	4		5.34	6.57	8.48	12.21	30.41	32.48	33.13	44.09	58.71	88.84	115.44	116.83	121.87	166.36	
Hg	$L\alpha_1$		6	100	80	6	9.987	7.44720	5		5.34	6.57	8.48	12.21	30.41	32.48	33.13	44.09	58.72	88.84	115.45	116.84	121.87	166.39	
Ba	$L\beta_6$		3	.1	56	6	4.993	7.44780	4		5.34	6.57	8.48	12.22	30.42	32.48	33.13	44.10	58.72	88.85	115.47	116.85	121.89	166.47	
Pd	$L\gamma_1$		2	10	46	6	3.328	7.44920	4		5.34	6.57	8.48	12.22	30.42	32.49	33.14	44.11	58.73	88.87	115.50	116.89	121.93	166.66	
Fr	$L\beta_3$	H	9	10	87	6	14.973	7.45101	5		5.34	6.57	8.49	12.22	30.43	32.49	33.15	44.12	58.75	88.90	115.54	116.93	121.98	166.90	
Cs	$L\beta_7$		3	.1	55	6	4.989	7.45470	4		5.34	6.57	8.49	12.23	30.44	32.51	33.16	44.14	58.78	88.96	115.63	117.02	122.08	167.40	
Cs	$L\beta_9$	F	3	.01	55	6	4.988	7.45560	4		5.34	6.58	8.49	12.23	30.45	32.51	33.17	44.15	58.79	88.97	115.66	117.05	122.11	167.52	
Yb	$L\beta_4$		5	5	70	6	8.312	7.45690	5		5.34	6.58	8.49	12.23	30.45	32.52	33.17	44.15	58.80	88.99	115.69	117.08	122.14	167.71	
Rb	$K\beta_1$		9	16	37	6	14.959	7.45812	5		5.34	6.58	8.49	12.23	30.46	32.53	33.18	44.16	58.81	89.01	115.72	117.11	122.18	167.88	
Y	$K\alpha_1$		9	100	39	6	14.956	7.45956	5		5.34	6.58	8.50	12.23	30.46	32.53	33.19	44.17	58.82	89.03	115.75	117.15	122.22	168.09	
Cm	$L\alpha_1$		9	100	96	3	14.953	7.46100			5.35	6.58	8.50	12.24	30.47	32.54	33.19	44.18	58.84	89.05	115.79	117.18	122.26	168.31	
Nb	$K\alpha_1$		10	100	41	6	16.612	7.46200	5		5.35	6.58	8.50	12.24	30.47	32.54	33.20	44.19	58.84	89.07	115.81	117.21	122.28	168.46	
Br	$K\beta_1$		8	16	35	6	13.289	7.46232	5		5.35	6.58	8.50	12.24	30.48	32.54	33.20	44.19	58.85	89.07	115.82	117.21	122.29	168.51	
Pa	$L\alpha_1$		9	100	91	6	13.288	7.46272	5		5.35	6.58	8.50	12.24	30.48	32.55	33.20	44.19	58.85	89.08	115.83	117.22	122.30	168.57	
Rb	$K\beta_3$		9	8	37	6	14.949	7.46289	5		5.35	6.58	8.50	12.24	30.48	32.55	33.20	44.19	58.85	89.08	115.84	117.23	122.31	168.60	
Au	Mz_1		1	2	79	6	1.660	7.46600	3		5.35	6.58	8.50	12.25	30.49	32.56	33.22	44.21	58.88	89.13	115.91	117.31	122.40	169.08	
Br	$K\beta_3$		8	8	35	6	13.282	7.46616	5		5.35	6.58	8.50	12.25	30.49	32.56	33.22	44.21	58.88	89.13	115.92	117.31	122.40	169.11	
W	$L\beta_2$		6	20	74	6	9.960	7.46760	5		5.35	6.59	8.51	12.25	30.50	32.57	33.22	44.22	58.89	89.15	115.95	117.35	122.44	169.34	
U	$L1$		7	3	92	6	11.616	7.46984	5		5.35	6.59	8.51	12.25	30.51	32.58	33.23	44.23	58.91	89.18	116.01	117.40	122.50	169.72	
Y	$K\alpha_{1,2}$		9	150	39	6	14.931	7.47219	5		5.35	6.59	8.51	12.26	30.52	32.59	33.24	44.25	58.93	89.22	116.06	117.46	122.57	170.13	
Au	$L\beta_3$		7	6	79	6	11.608	7.47494	5		5.36	6.59	8.51	12.26	30.53	32.60	33.26	44.27	58.96	89.26	116.13	117.53	122.65	170.63	
Cs	$L\beta_{10}$	B	3	.01	55	6	4.974	7.47600	4		5.36	6.59	8.52	12.26	30.53	32.61	33.26	44.27	58.97	89.28	116.16	117.56	122.68	170.83	
Nb	$K\alpha_{1,2}$		10	150	41	6	16.581	7.47613	5		5.36	6.59	8.52	12.26	30.53	32.61	33.26	44.27	58.97	89.28	116.16	117.56	122.68	170.86	
Cd	$L\beta_1$		2	42	48	6	3.316	7.47646	5		5.36	6.59	8.52	12.26	30.54	32.61	33.26	44.28	58.97	89.28	116.17	117.57	122.69	170.92	
U	$L\beta_4$		10	4	92	6	16.573	7.47985	6		5.36	6.60	8.52	12.27	30.55	32.62	33.28	44.30	59.00	89.34	116.25	117.66	122.78	171.60	
Bi	M_1-N_3		2	.1	83	6	3.314	7.48000	3		5.36	6.60	8.52	12.27	30.55	32.62	33.28	44.30	59.00	89.34	116.26	117.66	122.79	171.63	
K	$K\alpha_1$		2	100	19	6	3.313	7.48280	4	4	5.36	6.60	8.52	12.27	30.56	32.64	33.29	44.32	59.03	89.38	116.32	117.73	122.87	172.24	
Rn	$L\alpha_2$	H	7	10	86	6	11.596	7.48293	5		5.36	6.60	8.52	12.27	30.56	32.64	33.29	44.32	59.03	89.38	116.33	117.74	122.87	172.27	
K	$K\alpha_{1,2}$		2	150	19	6	3.312	7.48487	4	4	5.36	6.60	8.53	12.28	30.57	32.65	33.30	44.33	59.04	89.41	116.38	117.78	122.93	172.72	
K	$K\alpha_2$		2	50	19	6	3.310	7.48900	4	4	5.37	6.61	8.53	12.28	30.59	32.66	33.32	44.35	59.08	89.47	116.48	117.89	123.04	173.79	
Au	$L\beta_2$		7	20	79	6	11.583	7.49154	5		5.37	6.61	8.53	12.29	30.60	32.68	33.33	44.37	59.10	89.51	116.54	117.95	123.11	174.56	
Ti	$K\beta_5$	B	3	.02	22	6	4.961	7.49550	4	4	5.37	6.61	8.54	12.29	30.62	32.69	33.35	44.39	59.14	89.57	116.64	118.05	123.23	176.03	
Y	$K\alpha_2$		9	50	39	6	14.880	7.49745	5		5.37	6.61	8.54	12.30	30.62	32.70	33.36	44.41	59.15	89.60	116.69	118.10	123.28	177.01	
Pt	$L1$		5	3	78	6	8.267	7.49750	4		5.37	6.61	8.54	12.30	30.62	32.70	33.36	44.41	59.15	89.60	116.69	118.11	123.28	177.04	
Ni	$K\beta_{1,3}$		5	20	28	6	8.263	7.50067	6		5.37	6.62	8.54	12.30	30.64	32.72	33.37	44.43	59.18	89.65	116.77	118.19	123.37		
Se	AL_1		1		34	6	1.652	7.50300	3		5.38	6.62	8.55	12.31	30.65	32.73	33.39	44.44	59.20	89.69	116.82	118.25	123.44		
Nb	$K\alpha_2$		10	50	41	6	16.518	7.50440	5		5.38	6.62	8.55	12.31	30.65	32.73	33.39	44.45	59.21	89.71	116.86	118.28	123.48		
Hg	$L\beta_4$		7	4	80	6	11.561	7.50554	5		5.38	6.62	8.55	12.31	30.66	32.74	33.40	44.46	59.22	89.73	116.89	118.31	123.51		

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Bi	$L\beta_3$		8	6	83	6	13.208	7.50840	5		5.38	6.62	8.55	12.32	30.67	32.75	33.41	44.48	59.25	89.77	116.96	118.38	123.59		
Kr	$L\beta_6$		1	.1	36	6	1.651	7.51000	3		5.38	6.62	8.55	12.32	30.68	32.76	33.42	44.49	59.26	89.79	117.00	118.42	123.64		
V	$K\alpha_1$		3	100	23	6	4.951	7.51068	5	4	5.38	6.62	8.55	12.32	30.68	32.76	33.42	44.49	59.27	89.80	117.02	118.44	123.66		
Nd	$L\gamma_1$		4	5	60	6	6.601	7.51160	4		5.38	6.62	8.56	12.32	30.68	32.77	33.42	44.50	59.27	89.82	117.04	118.47	123.68		
V	$K\alpha_{1,2}$		3	150	23	6	4.949	7.51450	5	4	5.38	6.63	8.56	12.33	30.69	32.78	33.44	44.51	59.30	89.86	117.11	118.54	123.77		
Hg	$L\alpha_2$		6	10	80	6	9.896	7.51584	5		5.38	6.63	8.56	12.33	30.70	32.78	33.44	44.52	59.31	89.88	117.14	118.57	123.80		
Sr	Ln		1	1	38	6	1.649	7.51710	4		5.39	6.63	8.56	12.33	30.71	32.79	33.45	44.53	59.32	89.90	117.18	118.61	123.84		
Ra	$L\beta_2$		9	20	88	6	14.839	7.51833	5		5.39	6.63	8.56	12.33	30.71	32.80	33.46	44.54	59.33	89.92	117.21	118.64	123.87		
Th	M_5-P_3		2	.01	90	6	3.297	7.52000	3		5.39	6.63	8.57	12.33	30.72	32.80	33.46	44.55	59.35	89.95	117.25	118.68	123.92		
V	$K\alpha_2$		3	50	23	6	4.944	7.52214	5	4	5.39	6.63	8.57	12.34	30.73	32.81	33.47	44.56	59.37	89.98	117.30	118.74	123.98		
Au	$M\zeta_2$		1	1	79	6	1.648	7.52300	3		5.39	6.64	8.57	12.34	30.73	32.82	33.48	44.57	59.37	89.99	117.32	118.76	124.01		
Ge	$K\alpha_1$		6	100	32	6	9.885	7.52432	6		5.39	6.64	8.57	12.34	30.74	32.82	33.48	44.57	59.39	90.01	117.36	118.79	124.05		
Sm	$L\beta_{2,15}$		4	20	62	6	6.586	7.52884	5		5.39	6.64	8.58	12.35	30.75	32.84	33.50	44.60	59.42	90.08	117.47	118.91	124.18		
Tm	$L8_3$		5	6	69	6	8.229	7.53150	4		5.40	6.64	8.58	12.35	30.77	32.85	33.52	44.62	59.45	90.12	117.54	118.98	124.25		
Ge	$K\alpha_{1,2}$		6	150	32	6	9.874	7.53223	6		5.40	6.64	8.58	12.35	30.77	32.86	33.52	44.62	59.45	90.13	117.55	119.00	124.27		
Te	$L\gamma_4$		3	.1	52	6	4.936	7.53390	4		5.40	6.64	8.58	12.36	30.78	32.87	33.53	44.63	59.47	90.16	117.60	119.04	124.32		
Cs	$L\beta_{2,15}$		3	20	55	6	4.935	7.53540	4		5.40	6.65	8.58	12.36	30.78	32.87	33.53	44.64	59.48	90.18	117.63	119.08	124.36		
Pr	Ln		3	1	59	6	4.935	7.53600	3		5.40	6.65	8.58	12.36	30.78	32.87	33.54	44.65	59.49	90.19	117.65	119.09	124.38		
Hf	$M\alpha$		1	100	72	6	1.644	7.53900	3		5.40	6.65	8.59	12.37	30.80	32.89	33.55	44.67	59.51	90.23	117.72	119.17	124.47		
Ti	$K\beta_{1,3}$		3	20	22	6	4.931	7.54173	5	4	5.40	6.65	8.59	12.37	30.81	32.90	33.56	44.68	59.54	90.28	117.79	119.24	124.55		
In	$L\alpha_1$		2	100	49	6	3.286	7.54384	5		5.40	6.65	8.59	12.37	30.82	32.91	33.57	44.70	59.55	90.31	117.85	119.30	124.61		
Er	$M\gamma$		1	1	68	6	1.643	7.54600	3		5.41	6.66	8.60	12.38	30.83	32.92	33.58	44.71	59.57	90.34	117.90	119.35	124.67		
Eu	$L\beta_3$		4	6	63	6	6.570	7.54680	4		5.41	6.66	8.60	12.38	30.83	32.92	33.59	44.71	59.58	90.35	117.92	119.37	124.69		
U	$L\beta_2$		10	20	92	6	16.425	7.54681	6		5.41	6.66	8.60	12.38	30.83	32.92	33.59	44.71	59.58	90.35	117.92	119.37	124.69		
Th	$L\beta_3$		10	6	90	6	16.423	7.54790	5		5.41	6.66	8.60	12.38	30.83	32.93	33.59	44.72	59.59	90.37	117.95	119.40	124.73		
Ge	$K\alpha_2$		6	50	32	6	9.854	7.54807	6		5.41	6.66	8.60	12.38	30.84	32.93	33.59	44.72	59.59	90.37	117.95	119.41	124.73		
Ba	$L\beta_3$		3	6	56	6	4.926	7.54920	4		5.41	6.66	8.60	12.38	30.84	32.93	33.60	44.73	59.60	90.39	117.98	119.44	124.76		
Fr	$L\beta_1$	H	9	50	87	6	14.768	7.55460	5		5.41	6.66	8.60	12.39	30.86	32.96	33.62	44.76	59.65	90.47	118.12	119.58	124.92		
Re	$L\beta_4$		6	4	75	6	9.845	7.55502	5		5.41	6.66	8.61	12.39	30.86	32.96	33.62	44.77	59.65	90.48	118.13	119.59	124.93		
Pb	$L\gamma_1$		9	10	82	6	14.762	7.55757	5		5.41	6.67	8.61	12.40	30.87	32.97	33.64	44.78	59.67	90.52	118.19	119.65	125.01		
Pa	$L\alpha_2$	H	8	10	91	6	13.120	7.55856	5		5.42	6.67	8.61	12.40	30.88	32.98	33.64	44.79	59.68	90.53	118.22	119.68	125.04		
In	$L\alpha_2$		2	10	49	6	3.279	7.56146	5		5.42	6.67	8.61	12.40	30.89	32.99	33.65	44.81	59.71	90.58	118.29	119.76	125.12		
Ra	$L\beta_4$		9	4	88	6	14.745	7.56639	5		5.42	6.67	8.62	12.41	30.91	33.01	33.68	44.84	59.75	90.65	118.42	119.88	125.26		
Cm	$L\alpha_2$		9	10	96	3	14.740	7.56900			5.42	6.68	8.62	12.41	30.92	33.02	33.69	44.85	59.77	90.69	118.48	119.95	125.34		
Er	$L\beta_{2,15}$		5	20	68	6	8.188	7.56995	5		5.42	6.68	8.62	12.42	30.93	33.03	33.69	44.86	59.78	90.71	118.51	119.98	125.37		
Tl	$L\gamma_3$		9	2	81	6	14.734	7.57170	5		5.42	6.68	8.62	12.42	30.93	33.04	33.70	44.87	59.80	90.73	118.55	120.02	125.42		
Kr	$L\beta_1$		1	35	36	6	1.636	7.57600	3		5.43	6.68	8.63	12.43	30.95	33.05	33.72	44.90	59.83	90.80	118.66	120.14	125.55		
W	$L\beta_3$		6	6	74	6	9.817	7.57614	5		5.43	6.68	8.63	12.43	30.95	33.05	33.72	44.90	59.84	90.80	118.67	120.14	125.55		
Yb	Ll		4	2	70	6	6.544	7.57660	5		5.43	6.68	8.63	12.43	30.95	33.06	33.72	44.90	59.84	90.81	118.68	120.15	125.56		
Sn	Ln		2	7	50	6	3.272	7.57752	5		5.43	6.68	8.63	12.43	30.96	33.06	33.73	44.91	59.85	90.82	118.70	120.18	125.59		
Po	$L\beta_4$		8	4	84	6	13.083	7.58000	4		5.43	6.69	8.63	12.43	30.97	33.07	33.74	44.92	59.87	90.86	118.76	120.24	125.66		
Pa	M_2-O_4		3	.01	91	6	4.905	7.58100	3		5.43	6.69	8.63	12.43	30.97	33.08	33.74	44.93	59.88	90.88	118.79	120.27	125.69		
Pd	$L\beta_9$	B	2	.01	46	6	3.269	7.58400	4		5.43	6.69	8.64	12.44	30.99	33.09	33.76	44.95	59.90	90.92	118.87	120.35	125.78		
Au	$L\beta_1$		7	50	79	6	11.440	7.58471	5		5.43	6.69	8.64	12.44	30.99	33.09	33.76	44.95	59.91	90.93	118.88	120.37	125.80		
At	$L\alpha_1$	H	7	100	85	6	11.425	7.59499	5		5.44	6.70	8.65	12.46	31.03	33.14	33.81	45.02	60.00	91.09	119.15	120.64	126.11		
Pd	$L\beta_{10}$	B	2	.01	46	6	3.263	7.59760	4		5.44	6.70	8.65	12.46	31.04	33.15	33.82	45.03	60.02	91.13	119.21	120.71	126.18		
Er	M_3-N_4		1	.1	68	6	1.631	7.60000	2		5.45	6.70	8.66	12.47	31.05	33.16	33.83	45.05	60.04	91.17	119.28	120.77	126.26		
Lu	$M\beta$		1	45	71	6	1.631	7.60100	3		5.45	6.70	8.66	12.47	31.06	33.17	33.83	45.05	60.05	91.18	119.30	120.80	126.29		
Yb	$L\gamma_1$		6	5	70	6	9.778	7.60614	5		5.45	6.71	8.66	12.48	31.08	33.19	33.86	45.09	60.10	91.26	119.43	120.93	126.44		
Ta	$L\alpha_1$		5	100	73	6	8.145	7.60985	5		5.45	6.71	8.67	12.48	31.09	33.21	33.88	45.11	60.13	91.32	119.53	121.03	126.55		
Ta	M_3-N_1		1	.5	73	6	1.628	7.61200	3		5.45	6.71	8.67	12.49	31.10	33.22	33.89	45.12	60.15	91.35	119.59	121.09	126.61		
Ag	$L\beta_6$		2	1	47	6	3.255	7.61548	5		5.46	6.72	8.67	12.49	31.12	33.23	33.90	45.14	60.18	91.41	119.68	121.18	126.72		
Bi	$L\beta_1$		8	50	83	6	13.021	7.61582	6		5.46	6.72	8.67	12.49	31.12	33.23	33.90	45.15	60.18	91.41	119.69	121.19	126.73		
Th	M_4-O_2		2	1	90	6	3.255	7.61600	3		5.46	6.72	8.67	12.49	31.12	33.23	33.90	45.15	60.18	91.42	119.69	121.20	126.73		
At	$L\gamma_1$	H	10	10	85	6	16.249	7.62890	5		5.47	6.73	8.69	12.51	31.17	33.29	33.96	45.23	60.30	91.62	120.02	121.54	127.12		
Am	$L\alpha_1$		9	100	95	6	14.615	7.63368	6		5.47	6.73	8.70	12.52	31.19	33.31	33.98	45.26	60.34	91.69	120.15	121.67	127.27		
Dy	$L\alpha_1$		4	100	66	6	6.494	7.63524	5		5.47	6.73	8.70	12.52	31.20	33.32	33.99	45.27	60.35	91.71	120.19	121.71	127.31		
Pa	Ll		7	3	91	6	11.364	7.63560	4		5.47	6.73	8.70	12.52	31.20	33.32	33.99	45.27	60.35	91.72	120.20	121.72	127.33		
Mn	$K\beta_{1,3}$		4	20	25	6	6.489	7.64084	5	4	5.47	6.74	8.70	12.53	31.22	33.35	34.02	45.30	60.40	91.80	120.34	121.86	127.48		
Bi	$L\beta_2$		8	20	83	6	12.978	7.64144	5		5.47	6.74	8.70	12.53	31.23	33.35	34.02	45.31	60.41	91.81	120.35	121.88	127.50		
Pd	$L\gamma_5$		2	.1	46	6	3.243	7.64440	4		5.48	6.74	8.71	12.54	31.24	33.36	34.03	45.33	60.43	91.85	120.43	121.96	127.59		
Ir	M_4-N_3		1	.01	77	6	1.621	7.64500	3		5.48	6.74	8.71	12.54	31.24	33.36	34.04	45.33	60.44	91.86	120.45	121.98	127.61		
Th	$L\alpha_1$		8	100	90	6	12.967	7.64800	5		5.48	6.75	8.71	12.54	31.25	33.38	34.05	45.35	60.46	91.91	120.52	122.06	127.70		
Tb	$L\gamma_1$		5	5	65	6	8.100	7.65150	4		5.48	6.75	8.72	12.55	31.27	33.39	34.07	45.37	60.49	91.96	120.62	122.15	127.81		
Tm	$L\beta_1$		5	50	69	6	8.100	7.65200	4		5.48	6.75	8.72	12.55	31.27	33.40	34.07	45.37	60.50	91.97	120.63	122.16	127.82		

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Th	$L\beta_1$		10	50	90	6	16.199	7.65210	6		5.48	6.75	8.72	12.55	31.27	33.40	34.07	45.37	60.50	91.97	120.63	122.17	127.83		
Pa	$M\beta$		2	60	91	6	3.239	7.65400	3		5.48	6.75	8.72	12.55	31.28	33.40	34.08	45.39	60.51	92.00	120.68	122.22	127.89		
Au	$L\alpha_1$		6	100	79	6	9.712	7.65840	5		5.49	6.75	8.72	12.56	31.30	33.42	34.10	45.41	60.55	92.07	120.80	122.34	128.02		
Pt	$L\gamma_1$		8	10	78	6	12.940	7.66376	5		5.49	6.76	8.73	12.57	31.32	33.45	34.12	45.45	60.60	92.15	120.94	122.48	128.19		
Ta	$L\alpha_2$		5	10	73	6	8.086	7.66465	5		5.49	6.76	8.73	12.57	31.32	33.45	34.13	45.45	60.61	92.17	120.96	122.51	128.21		
Ba	$L\beta_4$		3	5	56	6	4.851	7.66590	4		5.49	6.76	8.73	12.57	31.33	33.46	34.13	45.46	60.62	92.19	121.00	122.54	128.25		
Ag	$L\beta_3$		2	11	47	6	3.234	7.66626	5		5.49	6.76	8.73	12.58	31.33	33.46	34.13	45.46	60.62	92.19	121.00	122.55	128.26		
Bi	M_2-N_4		2	5	83	6	3.233	7.66800	3		5.49	6.76	8.73	12.58	31.34	33.47	34.14	45.47	60.64	92.22	121.05	122.60	128.32		
Ir	$L\gamma_3$		8	2	77	6	12.922	7.67448	5		5.50	6.77	8.74	12.59	31.36	33.50	34.17	45.51	60.69	92.32	121.22	122.78	128.52		
At	$L\alpha_2$	H	7	10	85	6	11.303	7.67696	5		5.50	6.77	8.74	12.59	31.38	33.51	34.18	45.53	60.72	92.36	121.29	122.84	128.59		
Dy	$L\alpha_2$		4	10	66	6	6.457	7.67964	5		5.50	6.77	8.75	12.60	31.39	33.52	34.20	45.55	60.74	92.40	121.36	122.92	128.68		
Eu	$L\beta_1$		4	50	63	6	6.455	7.68120	4		5.50	6.77	8.75	12.60	31.39	33.53	34.20	45.56	60.75	92.43	121.40	122.96	128.73		
Ce	$L\alpha_1$		3	100	58	6	4.839	7.68450	4		5.51	6.78	8.75	12.61	31.41	33.54	34.22	45.58	60.78	92.48	121.49	123.05	128.83		
Rn	$L8_3$	H	9	10	86	6	14.509	7.68924	5		5.51	6.78	8.76	12.61	31.43	33.56	34.24	45.61	60.82	92.55	121.61	123.18	128.98		
W	$L\gamma_1$		7	10	74	6	11.284	7.68985	5		5.51	6.78	8.76	12.61	31.43	33.57	34.24	45.61	60.83	92.56	121.63	123.20	128.99		
W	$L\beta_1$		6	50	74	6	9.671	7.69085	6		5.51	6.78	8.76	12.62	31.43	33.57	34.25	45.62	60.84	92.58	121.66	123.23	129.03		
Ta	$L\gamma_3$		7	2	73	6	11.276	7.69552	5		5.51	6.79	8.77	12.62	31.45	33.59	34.27	45.65	60.88	92.65	121.78	123.36	129.17		
Po	Ll		6	3	84	6	9.662	7.69740	4		5.51	6.79	8.77	12.63	31.46	33.60	34.28	45.66	60.89	92.68	121.83	123.41	129.23		
Pa	$L\beta_4$		10	4	91	6	16.101	7.69900	4		5.52	6.79	8.77	12.63	31.47	33.61	34.28	45.67	60.91	92.70	121.88	123.45	129.28		
Eu	$L\beta_4$		4	5	63	6	6.438	7.70200	4		5.52	6.79	8.77	12.63	31.48	33.62	34.30	45.69	60.93	92.75	121.96	123.53	129.38		
Te	$L\gamma_{2,3}$		3	2	52	6	4.828	7.70220	4		5.52	6.79	8.77	12.63	31.48	33.62	34.30	45.69	60.94	92.75	121.96	123.54	129.38		
Cu	$K\alpha_1$		5	100	29	6	8.046	7.70281	6		5.52	6.79	8.77	12.64	31.48	33.62	34.30	45.69	60.94	92.76	121.98	123.56	129.40		
Ba	$L\beta_1$		3	50	56	6	4.827	7.70463	5		5.52	6.80	8.78	12.64	31.49	33.63	34.31	45.70	60.96	92.79	122.03	123.61	129.46		
Ta	$L\beta_2$		6	20	73	6	9.650	7.70724	5		5.52	6.80	8.78	12.64	31.50	33.64	34.32	45.72	60.98	92.83	122.10	123.68	129.54		
Sr	$K\beta_2$		10	3	38	6	16.082	7.70810	5		5.52	6.80	8.78	12.64	31.51	33.65	34.33	45.72	60.99	92.85	122.12	123.70	129.57		
Ir	Ll	D	5	3	77	6	8.040	7.70900	4		5.52	6.80	8.78	12.65	31.51	33.65	34.33	45.73	61.00	92.86	122.14	123.73	129.60		
Cu	$K\alpha_{1,2}$		5	150	29	6	8.040	7.70919	6		5.52	6.80	8.78	12.65	31.51	33.65	34.33	45.73	61.00	92.86	122.15	123.73	129.60		
Ce	$L\alpha_2$		3	10	58	6	4.822	7.71180	4		5.53	6.80	8.78	12.65	31.52	33.66	34.34	45.75	61.02	92.90	122.22	123.81	129.68		
Pt	$L\beta_2$		7	20	78	6	11.249	7.71399	5		5.53	6.80	8.79	12.65	31.53	33.67	34.35	45.76	61.04	92.94	122.28	123.87	129.75		
Cu	$K\alpha_2$		5	50	29	6	8.026	7.72195	6		5.53	6.81	8.80	12.67	31.56	33.71	34.39	45.81	61.11	93.06	122.49	124.09	130.01		
Fr	$L\beta_2$		9	20	87	6	14.448	7.72200	3		5.53	6.81	8.80	12.67	31.56	33.71	34.39	45.81	61.11	93.06	122.49	124.09	130.01		
Tm	$L\beta_4$		5	5	69	6	8.024	7.72400	4		5.53	6.81	8.80	12.67	31.57	33.72	34.40	45.82	61.13	93.09	122.55	124.15	130.07		
Pt	$L\beta_3$	D	7	6	78	6	11.233	7.72506	5		5.53	6.81	8.80	12.67	31.58	33.72	34.40	45.83	61.14	93.11	122.58	124.18	130.11		
Au	$L\alpha_2$		6	10	79	6	9.626	7.72632	5		5.54	6.81	8.80	12.67	31.58	33.73	34.41	45.84	61.15	93.13	122.61	124.21	130.15		
Se	$K\alpha_1$		7	100	34	6	11.220	7.73339	5		5.54	6.82	8.81	12.69	31.61	33.76	34.44	45.88	61.21	93.24	122.80	124.41	130.37		
Pa	$L8_2$		10	20	91	6	16.022	7.73700	4		5.54	6.82	8.81	12.69	31.63	33.78	34.46	45.91	61.24	93.30	122.90	124.51	130.49		
Pt	Mz_1		1	2	78	6	1.602	7.73800	3		5.54	6.82	8.81	12.69	31.63	33.78	34.46	45.91	61.25	93.31	122.93	124.54	130.52		
Ag	$L\beta_4$		2	5	47	6	3.203	7.74046	5		5.55	6.83	8.82	12.70	31.64	33.79	34.47	45.93	61.27	93.35	123.00	124.61	130.60		
Am	$L\alpha_2$		9	10	95	6	14.409	7.74239	6		5.55	6.83	8.82	12.70	31.65	33.80	34.48	45.94	61.29	93.38	123.05	124.66	130.66		
Se	$K\alpha_{1,2}$		7	150	34	6	11.207	7.74283	5		5.55	6.83	8.82	12.70	31.65	33.80	34.49	45.94	61.29	93.39	123.06	124.68	130.68		
Th	$L\alpha_2$		8	10	90	6	12.807	7.74304	5		5.55	6.83	8.82	12.70	31.65	33.80	34.49	45.94	61.29	93.39	123.07	124.68	130.68		
Pb	M_1-N_3		2	.1	82	6	3.201	7.74400	3		5.55	6.83	8.82	12.70	31.66	33.81	34.49	45.95	61.30	93.41	123.09	124.71	130.71		
Fe	$K\alpha_1$		4	100	26	6	6.403	7.74417	6		5.55	6.83	8.82	12.70	31.66	33.81	34.49	45.95	61.30	93.41	123.10	124.71	130.72		
Au	$L\beta_4$		7	4	79	6	11.203	7.74556	5		5.55	6.83	8.82	12.71	31.66	33.82	34.50	45.96	61.32	93.43	123.13	124.75	130.76		
I	$L\gamma_1$		3	8	53	6	4.800	7.74732	5		5.55	6.83	8.82	12.71	31.67	33.82	34.51	45.97	61.33	93.46	123.18	124.80	130.82		
Fe	$K\alpha_{1,2}$		4	150	26	6	6.398	7.74941	6		5.55	6.83	8.83	12.71	31.68	33.83	34.52	45.98	61.35	93.49	123.24	124.86	130.89		
Pb	$L8_3$		8	6	82	6	12.791	7.75288	5		5.55	6.84	8.83	12.72	31.69	33.85	34.53	46.00	61.38	93.55	123.34	124.96	131.00		
Br	AL_2	H	1		35	6	1.599	7.75300	3		5.55	6.84	8.83	12.72	31.69	33.85	34.53	46.01	61.38	93.55	123.34	124.96	131.00		
Fe	$K\alpha_2$		4	50	26	6	6.390	7.75992	6		5.56	6.84	8.84	12.73	31.72	33.88	34.56	46.05	61.44	93.66	123.53	125.16	131.23		
Se	$K\alpha_2$		7	50	34	6	11.179	7.76174	5		5.56	6.85	8.84	12.73	31.73	33.89	34.57	46.06	61.46	93.69	123.58	125.21	131.29		
Br	$L\beta_{3,4}$	8	1	2	35	6	1.596	7.76700	3		5.56	6.85	8.85	12.74	31.75	33.91	34.60	46.09	61.50	93.77	123.72	125.36	131.46		
Zn	$K\beta_{1,3}$		6	20	30	6	9.570	7.77150	5		5.57	6.85	8.85	12.75	31.77	33.93	34.62	46.12	61.54	93.84	123.85	125.49	131.61		
Ar	$K\beta_{1,3}$		2	15	18	6	3.190	7.77200	4		5.57	6.85	8.85	12.75	31.77	33.94	34.62	46.12	61.55	93.85	123.86	125.51	131.62		
Sb	Ll		2	7	51	6	3.188	7.77652	5		5.57	6.86	8.86	12.76	31.79	33.96	34.64	46.15	61.59	93.92	123.99	125.64	131.77		
Cs	$L8_6$		3	.1	55	6	4.780	7.77960	4		5.57	6.86	8.86	12.76	31.81	33.97	34.65	46.17	61.61	93.97	124.07	125.72	131.87		
Ac	$L\beta_3$	H	10	10	89	6	15.929	7.78220	5		5.58	6.86	8.86	12.77	31.82	33.98	34.67	46.19	61.64	94.01	124.14	125.80	131.96		
Bi	M_1-N_2		2	1	83	6	3.185	7.78400	3		5.58	6.87	8.87	12.77	31.82	33.99	34.67	46.20	61.65	94.04	124.19	125.85	132.02		
Pt	Mz_2		1	1	78	6	1.591	7.79000	3		5.58	6.87	8.87	12.78	31.85	34.02	34.70	46.24	61.71	94.13	124.36	126.02	132.22		
Rn	$L\beta_1$	H	9	50	86	6	14.313	7.79445	5		5.58	6.87	8.88	12.79	31.87	34.04	34.72	46.27	61.75	94.20	124.49	126.15	132.37		
Kr	$K8_2$		9	3	36	6	14.312	7.79490	4		5.58	6.88	8.88	12.79	31.87	34.04	34.72	46.27	61.75	94.21	124.50	126.17	132.38		
Ru	$L\gamma_{2,3}$		2	.5	44	6	3.180	7.79540	4		5.59	6.88	8.88	12.79	31.87	34.04	34.73	46.27	61.75	94.22	124.51	126.18	132.40		
Po	$L\alpha_1$		7	100	84	6	11.129	7.79701	5		5.59	6.88	8.88	12.79	31.88	34.05	34.73	46.28	61.77	94.24	124.56	126.23	132.45		
Tl	$L\gamma_1$		9	10	81	6	14.289	7.80768	5		5.59	6.89	8.89	12.81	31.92	34.10	34.78	46.35	61.86	94.41	124.86	126.54	132.81		
Er	$L8_3$		5	6	68	6	7.938	7.80800	4		5.59	6.89	8.89	12.81	31.92	34.10	34.79	46.35	61.86	94.42	124.87	126.55	132.82		
W	$L\beta_4$		6	4	74	6	9.524	7.80972	5		5.60	6.89	8.90	12.81	31.93	34.10	34.79	46.36	61.88	94.45	124.91	126.60	132.88		

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Pu	$L\alpha_1$		9	100	94	6	14.276	7.81470	5		5.60	6.89	8.90	12.82	31.95	34.13	34.82	46.39	61.92	94.52	125.05	126.74	133.05		
Si	$L\beta_4$		8	4	83	6	12.689	7.81520	5		5.60	6.89	8.90	12.82	31.96	34.13	34.82	46.40	61.93	94.53	125.07	126.76	133.06		
Kr	$L\alpha_{1,2}$		1	100	36	6	1.586	7.81700	3		5.60	6.89	8.90	12.82	31.96	34.14	34.83	46.41	61.94	94.56	125.12	126.81	133.12		
Pd	$L\beta_{2,15}$		2	25	46	6	3.171	7.81774	5		5.60	6.90	8.91	12.82	31.97	34.14	34.83	46.41	61.95	94.57	125.14	126.83	133.15		
Tm	Ll		4	2	69	6	6.341	7.82000	4		5.60	6.90	8.91	12.83	31.98	34.15	34.84	46.43	61.97	94.61	125.20	126.90	133.22		
O	$M\alpha_1$		2	100	92	6	3.170	7.82000	3		5.60	6.90	8.91	12.83	31.98	34.15	34.84	46.43	61.97	94.61	125.20	126.90	133.22		
Hg	$L\gamma_3$		9	2	80	6	14.262	7.82235	5		5.60	6.90	8.91	12.83	31.99	34.16	34.85	46.44	61.99	94.65	125.27	126.97	133.30		
Pm	$L\beta_{2,15}$		4	20	61	6	6.338	7.82360	4		5.61	6.90	8.91	12.83	31.99	34.17	34.86	46.45	62.00	94.67	125.31	127.00	133.35		
Sr	$K\beta_1$		10	16	38	6	15.833	7.82920	5		5.61	6.91	8.92	12.84	32.01	34.19	34.88	46.48	62.05	94.75	125.46	127.17	133.54		
Sr	$K\beta_3$		10	8	38	6	15.822	7.83450	5		5.61	6.91	8.92	12.85	32.04	34.22	34.91	46.52	62.10	94.84	125.61	127.32	133.72		
Ho	$L\beta_{2,15}$		5	20	67	6	7.910	7.83550	4		5.61	6.91	8.93	12.85	32.04	34.22	34.91	46.52	62.11	94.85	125.64	127.35	133.75		
Sr	Ll		1	3	38	6	1.582	7.83620	4		5.61	6.91	8.93	12.85	32.04	34.22	34.91	46.53	62.11	94.87	125.66	127.37	133.78		
Pt	$L\beta_1$		7	50	78	6	11.069	7.83930	5		5.62	6.91	8.93	12.86	32.06	34.24	34.93	46.55	62.14	94.92	125.75	127.47	133.88		
Ac	$L\alpha_1$	H	8	100	89	6	12.650	7.83944	5		5.62	6.91	8.93	12.86	32.06	34.24	34.93	46.55	62.14	94.92	125.76	127.47	133.89		
Lu	$M\alpha$		1	100	71	6	1.581	7.84000	3		5.62	6.91	8.93	12.86	32.06	34.24	34.93	46.55	62.15	94.93	125.77	127.49	133.91		
Ta	$L\beta_3$		6	6	73	6	9.486	7.84068	5		5.62	6.92	8.93	12.86	32.06	34.24	34.94	46.56	62.15	94.94	125.79	127.51	133.93		
Kr	$K\alpha_1$		8	100	36	6	12.648	7.84080	4		5.62	6.92	8.93	12.86	32.06	34.24	34.94	46.56	62.15	94.94	125.79	127.51	133.93		
Pr	$L\gamma_1$		4	5	59	6	6.321	7.84440	4		5.62	6.92	8.94	12.87	32.08	34.26	34.95	46.58	62.18	95.00	125.90	127.62	134.06		
Hf	$L\alpha_1$		5	100	72	6	7.898	7.84790	5		5.62	6.92	8.94	12.87	32.09	34.28	34.97	46.60	62.22	95.05	126.00	127.72	134.18		
U	$M\alpha_2$		2	100	92	6	3.159	7.84800	3		5.62	6.92	8.94	12.87	32.09	34.28	34.97	46.60	62.22	95.05	126.00	127.72	134.18		
Sm	$L\beta_3$		4	6	62	6	6.317	7.84964	5		5.62	6.92	8.94	12.88	32.10	34.28	34.98	46.61	62.23	95.08	126.05	127.77	134.24		
Kr	$K\alpha_{1,2}$		8	150	36	6	12.631	7.85146	4		5.63	6.93	8.94	12.88	32.11	34.29	34.98	46.62	62.25	95.11	126.10	127.83	134.30		
Th	M_2-O_4		3	1	90	6	4.735	7.85400	3		5.63	6.93	8.95	12.88	32.12	34.30	35.00	46.64	62.27	95.15	126.17	127.90	134.39		
Pb	$L\beta_2$		8	20	82	6	12.621	7.85768	5		5.63	6.93	8.95	12.89	32.13	34.32	35.01	46.66	62.30	95.21	126.28	128.01	134.52		
Zr	$K\alpha_1$		10	100	40	6	15.772	7.85930	5		5.63	6.93	8.95	12.89	32.14	34.33	35.02	46.67	62.32	95.23	126.33	128.06	134.57		
Ce	Ln		3	1	58	6	4.731	7.86090	4		5.63	6.93	8.95	12.90	32.15	34.34	35.03	46.68	62.33	95.26	126.37	128.11	134.63		
Pb	$L\beta_1$		8	50	82	6	12.612	7.86328	5		5.63	6.94	8.96	12.90	32.16	34.35	35.04	46.70	62.35	95.30	126.44	128.18	134.71		
Bi	M_3-$O_{4,5}$		2	1	83	6	3.153	7.86400	3		5.63	6.94	8.96	12.90	32.16	34.35	35.04	46.70	62.36	95.31	126.46	128.20	134.74		
Ho	$M\gamma$		1	1	67	6	1.576	7.86500	3		5.64	6.94	8.96	12.90	32.16	34.35	35.05	46.71	62.37	95.33	126.49	128.23	134.77		
Ag	$L\beta_1$		2	42	47	6	3.150	7.86946	5		5.64	6.94	8.96	12.91	32.18	34.37	35.07	46.74	62.41	95.40	126.62	128.37	134.93		
Kr	$K\alpha_2$		8	50	36	6	12.596	7.87280	4		5.64	6.94	8.97	12.92	32.20	34.39	35.08	46.76	62.44	95.45	126.72	128.47	135.05		
Zr	$K\alpha_{1,2}$		10	150	40	6	15.744	7.87336	5		5.64	6.94	8.97	12.92	32.20	34.39	35.09	46.76	62.44	95.46	126.73	128.48	135.07		
Po	$L\gamma_1$		10	10	84	6	15.741	7.87480	5		5.64	6.95	8.97	12.92	32.21	34.40	35.09	46.77	62.45	95.48	126.77	128.53	135.12		
Sr	$K\alpha_1$		9	100	38	6	14.163	7.87734	5		5.64	6.95	8.97	12.92	32.22	34.41	35.10	46.79	62.48	95.52	126.85	128.60	135.21		
Pt	$L\alpha_1$		6	100	78	6	9.441	7.87824	5		5.64	6.95	8.97	12.92	32.22	34.41	35.11	46.79	62.48	95.54	126.87	128.63	135.24		
Po	$L\alpha_2$	H	7	10	84	6	11.014	7.87836	5		5.64	6.95	8.97	12.92	32.22	34.41	35.11	46.79	62.48	95.54	126.88	128.63	135.24		
Th	M8		2	60	90	6	3.145	7.88200	3		5.65	6.95	8.98	12.93	32.24	34.43	35.13	46.82	62.52	95.60	126.98	128.74	135.37		
Cs	$L\beta_3$		3	6	55	6	4.716	7.88550	4		5.65	6.96	8.98	12.94	32.25	34.45	35.14	46.84	62.55	95.65	127.09	128.85	135.50		
Hf	M_3-N_1		1	.5	72	6	1.572	7.88700	3		5.65	6.96	8.98	12.94	32.26	34.45	35.15	46.85	62.56	95.68	127.13	128.90	135.55		
Rh	$L\gamma_1$		2	10	45	6	3.143	7.88740	4		5.65	6.96	8.98	12.94	32.26	34.45	35.15	46.85	62.56	95.68	127.14	128.91	135.56		
Sr	$K\alpha_{1,2}$		9	150	38	6	14.140	7.88985	5		5.65	6.96	8.99	12.94	32.27	34.47	35.16	46.87	62.59	95.72	127.21	128.98	135.65		
Ac	$L\beta_1$	H	10	50	89	6	15.710	7.89030	5		5.65	6.96	8.99	12.94	32.27	34.47	35.16	46.87	62.59	95.73	127.23	129.00	135.67		
Bi	$L\gamma_3$		10	2	83	6	15.708	7.89170	5		5.65	6.96	8.99	12.95	32.28	34.47	35.17	46.88	62.60	95.75	127.27	129.04	135.72		
Tm	$L\gamma_1$		6	5	69	6	9.424	7.89180	4		5.65	6.96	8.99	12.95	32.28	34.47	35.17	46.88	62.60	95.75	127.27	129.04	135.72		
Bi	Ll		6	3	83	6	9.419	7.89660	5		5.66	6.96	9.00	12.95	32.30	34.50	35.19	46.91	62.65	95.83	127.41	129.19	135.89		
Zr	$K\alpha_2$		10	50	40	6	15.688	7.90150	5		5.66	6.97	9.00	12.96	32.32	34.52	35.22	46.94	62.69	95.91	127.55	129.34	136.07		
Hf	$L\alpha_2$		5	10	72	6	7.843	7.90230	5		5.66	6.97	9.00	12.96	32.32	34.52	35.22	46.94	62.70	95.92	127.58	129.36	136.10		
Ge	$K\beta_1$		7	14	32	6	10.980	7.90258	5		5.66	6.97	9.00	12.96	32.32	34.52	35.22	46.95	62.70	95.93	127.59	129.37	136.11		
Ge	$K\beta_3$		7	7	32	6	10.976	7.90551	5		5.66	6.97	9.01	12.97	32.33	34.54	35.23	46.96	62.72	95.98	127.67	129.46	136.21		
Tb	$L\alpha_1$		4	100	65	6	6.272	7.90600	4		5.66	6.97	9.01	12.97	32.34	34.54	35.24	46.97	62.73	95.98	127.69	129.48	136.23		
Kr	$K\beta_1$		9	16	36	6	14.110	7.90650	4		5.66	6.97	9.01	12.97	32.34	34.54	35.24	46.97	62.73	95.99	127.70	129.49	136.25		
Yb	M8		1	45	70	6	1.567	7.90900	3		5.67	6.98	9.01	12.97	32.35	34.55	35.25	46.99	62.75	96.03	127.78	129.57	136.34		
Kr	$K\beta_3$		9	8	36	6	14.102	7.91100	4		5.67	6.98	9.01	12.98	32.36	34.56	35.26	47.00	62.77	96.06	127.83	129.63	136.41		
Cd	$L\alpha_1$		2	100	48	6	3.133	7.91270	5		5.67	6.98	9.01	12.98	32.36	34.57	35.27	47.01	62.79	96.09	127.89	129.68	136.47		
Sr	$K\alpha_2$		9	50	38	6	14.095	7.91487	5		5.67	6.98	9.02	12.98	32.37	34.58	35.28	47.02	62.81	96.13	127.95	129.75	136.55		
Sb	$L\gamma_4$		3	-.1	51	6	4.696	7.91940	4		5.67	6.99	9.02	12.99	32.39	34.60	35.30	47.05	62.85	96.20	128.08	129.89	136.72		
Cf	$L\alpha_1$		10	100	98	3	15.652	7.92000			5.67	6.99	9.02	12.99	32.40	34.60	35.30	47.06	62.85	96.21	128.10	129.91	136.74		
Pu	$L\alpha_2$		9	10	94	6	14.082	7.92252	5		5.68	6.99	9.02	13.00	32.41	34.61	35.31	47.07	62.87	96.25	128.18	129.99	136.83		
Os	Ll		5	3	76	6	7.821	7.92490	5		5.68	6.99	9.03	13.00	32.42	34.62	35.32	47.09	62.90	96.29	128.25	130.06	136.92		
Th	$L\beta_4$		10	4	90	6	15.640	7.92570	5		5.68	6.99	9.03	13.00	32.42	34.63	35.33	47.09	62.90	96.30	128.27	130.09	136.95		
Ir	$L\gamma_1$		8	10	77	6	12.510	7.92680	5		5.68	6.99	9.03	13.00	32.42	34.63	35.33	47.10	62.91	96.32	128.30	130.12	136.99		
Cd	$L\alpha_2$		2	10	48	6	3.126	7.92992	5		5.68	6.99	9.03	13.01	32.44	34.65	35.35	47.12	62.94	96.37	128.40	130.22	137.10		
At	$L\beta_3$	H	9	10	85	6	14.065	7.93215	5		5.68	7.00	9.04	13.01	32.45	34.66	35.36	47.13	62.96	96.40	128.46	130.29	137.18		
Ac	$L\alpha_2$	H	8	10	89	6	12.499	7.93424	5		5.68	7.00	9.04	13.02	32.46	34.67	35.37	47.15	62.98	96.44	128.53	130.35	137.26		
Os	$L\gamma_3$		8	2	76	6	12.498	7.93488	5		5.69	7.00	9.04	13.02	32.46	34.67	35.37	47.15	62.98	96.45	128.55	130.37	137.28		

El	Line	C	N	I	Z	H	keV	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Th	$L\beta_2$		10	20	90	6	15.621	7.93540	5		5.69	7.00	9.04	13.02	32.46	34.67	35.37	47.15	62.99	96.46	128.56	130.39	137.30		
Pb	M_2-N_4		2	5	82	6	3.124	7.93600	3		5.69	7.00	9.04	13.02	32.46	34.67	35.37	47.16	62.99	96.47	128.58	130.41	137.33		
Er	$L\beta_1$		5	50	68	6	7.809	7.93650	4		5.69	7.00	9.04	13.02	32.46	34.68	35.38	47.16	63.00	96.47	128.59	130.42	137.34		
Se	$K\beta_1$		8	16	34	6	12.494	7.93744	5		5.69	7.00	9.04	13.02	32.47	34.68	35.38	47.17	63.01	96.49	128.62	130.45	137.38		
Se	$K\beta_3$		8	8	34	6	12.487	7.94144	5		5.69	7.00	9.05	13.03	32.49	34.70	35.40	47.19	63.04	96.55	128.74	130.58	137.53		
Pt	$L\alpha_2$		6	10	78	6	9.360	7.94592	5		5.69	7.01	9.05	13.04	32.50	34.72	35.42	47.22	63.08	96.63	128.88	130.72	137.69		
Ir	$L\beta_2$		7	20	77	6	10.919	7.94724	5		5.69	7.01	9.05	13.04	32.51	34.72	35.43	47.23	63.09	96.65	128.92	130.76	137.74		
Al	AK		1		13	6	1.560	7.94813	5		5.69	7.01	9.05	13.04	32.51	34.73	35.43	47.23	63.10	96.66	128.94	130.79	137.78		
Tb	$L\alpha_2$		4	10	65	6	6.237	7.95000	4		5.70	7.01	9.06	13.04	32.52	34.74	35.44	47.24	63.12	96.69	129.00	130.85	137.85		
Hf	$L\beta_2$		6	20	72	6	9.346	7.95834	5		5.70	7.02	9.07	13.06	32.56	34.77	35.48	47.30	63.19	96.83	129.25	131.11	138.16		
Al	$K\beta$		1	.7	13	6	1.557	7.96000	3	2	5.70	7.02	9.07	13.06	32.56	34.78	35.48	47.31	63.21	96.86	129.30	131.16	138.22		
Ta	$L\beta_1$		6	50	73	6	9.342	7.96188	5		5.70	7.02	9.07	13.06	32.57	34.79	35.49	47.32	63.22	96.89	129.36	131.22	138.29		
Gd	$L\gamma_1$		5	5	64	6	7.784	7.96200	4		5.70	7.02	9.07	13.06	32.57	34.79	35.49	47.32	63.22	96.89	129.36	131.23	138.30		
Ta	$L\gamma_1$		7	10	73	6	10.893	7.96558	5		5.71	7.03	9.07	13.07	32.59	34.81	35.51	47.34	63.26	96.95	129.47	131.34	138.43		
In	Ln		2	7	49	6	3.112	7.96654	5		5.71	7.03	9.08	13.07	32.59	34.81	35.51	47.35	63.26	96.96	129.50	131.37	138.47		
Hf	$L\gamma_3$		7	2	72	6	10.889	7.96887	5		5.71	7.03	9.08	13.07	32.60	34.82	35.53	47.36	63.28	97.00	129.57	131.44	138.56		
I	$L\gamma_5$		3	.1	53	6	4.665	7.97130	5		5.71	7.03	9.08	13.08	32.61	34.83	35.54	47.38	63.31	97.04	129.65	131.52	138.65		
Al	$K\beta_1$		1	.7	13	1	1.553	7.98190	3	2	5.72	7.04	9.09	13.10	32.66	34.88	35.59	47.45	63.40	97.21	129.97	131.86	139.06		
Br	AL_3	H	1		35	6	1.553	7.98400	3		5.72	7.04	9.09	13.10	32.66	34.89	35.60	47.46	63.42	97.25	130.04	131.93	139.14		
Ir	$L\beta_3$		7	6	77	6	10.866	7.98594	5		5.72	7.04	9.10	13.10	32.67	34.90	35.60	47.47	63.44	97.28	130.10	131.99	139.21		
Sm	$L\beta_1$		4	50	62	6	6.204	7.99224	5		5.73	7.05	9.10	13.11	32.70	34.93	35.63	47.51	63.49	97.38	130.29	132.19	139.46		
Pt	$L\beta_4$		7	4	78	6	10.852	7.99560	5		5.73	7.05	9.11	13.12	32.71	34.94	35.65	47.53	63.52	97.44	130.40	132.30	139.59		
La	$L\alpha_1$		3	100	57	6	4.650	7.99710	5		5.73	7.05	9.11	13.12	32.72	34.95	35.66	47.54	63.53	97.46	130.44	132.35	139.64		
Cs	$L\beta_4$		3	5	55	6	4.649	7.99980	4		5.73	7.06	9.11	13.12	32.73	34.96	35.67	47.56	63.56	97.50	130.53	132.44	139.75		
Np	$L\alpha_1$		9	100	93	6	13.942	8.00215	6		5.73	7.06	9.12	13.13	32.74	34.97	35.68	47.57	63.58	97.54	130.60	132.52	139.84		
Er	$L\beta_4$		5	5	68	6	7.744	8.00350	4		5.73	7.06	9.12	13.13	32.75	34.98	35.68	47.58	63.59	97.56	130.64	132.56	139.89		
Sm	$L\beta_4$		4	5	62	6	6.195	8.00380	5		5.73	7.06	9.12	13.13	32.75	34.98	35.69	47.58	63.59	97.57	130.65	132.57	139.91		
Tl	$L\beta_3$		8	6	81	6	12.388	8.00496	5		5.74	7.06	9.12	13.13	32.75	34.98	35.69	47.59	63.60	97.59	130.69	132.61	139.95		
Bi	$L\alpha_1$		7	100	83	6	10.837	8.00702	5		5.74	7.06	9.12	13.14	32.76	34.99	35.70	47.60	63.62	97.62	130.75	132.68	140.03		
Am	Ll		8	3	95	6	12.381	8.00960	4		5.74	7.06	9.12	13.14	32.77	35.01	35.71	47.62	63.65	97.66	130.83	132.76	140.13		
Ir	M_{ζ_1}		1	.01	77	6	1.545	8.02100	3		5.75	7.07	9.14	13.16	32.82	35.06	35.77	47.69	63.75	97.85	131.19	133.13	140.59		
La	$L\alpha_2$		3	10	57	6	4.633	8.02599	5		5.75	7.08	9.14	13.17	32.84	35.08	35.79	47.72	63.79	97.93	131.35	133.30	140.79		
Tl	M_1-N_3		2	1	81	6	3.089	8.02600	3		5.75	7.08	9.14	13.17	32.84	35.08	35.79	47.72	63.79	97.93	131.35	133.30	140.79		
Ra	$L\beta_3$		10	6	88	6	15.442	8.02730	5		5.75	7.08	9.14	13.17	32.85	35.09	35.79	47.73	63.80	97.95	131.39	133.34	140.84		
Nd	Ll		3	2	60	6	4.632	8.02800	4		5.75	7.08	9.15	13.17	32.85	35.09	35.80	47.74	63.81	97.97	131.41	133.36	140.87		
Pd	$L\beta_6$		2	1	46	6	3.087	8.03240	4		5.76	7.08	9.15	13.18	32.87	35.11	35.82	47.76	63.85	98.04	131.55	133.51	141.04		
Ra	$L\alpha_1$		8	100	88	6	12.338	8.03783	5		5.76	7.09	9.16	13.19	32.89	35.13	35.84	47.80	63.90	98.13	131.72	133.69	141.26		
Cf	$L\alpha_2$		10	10	98	3	15.418	8.04000			5.76	7.09	9.16	13.19	32.90	35.14	35.85	47.81	63.92	98.16	131.79	133.76	141.35		
Ga	$K\alpha_1$		6	100	31	6	9.250	8.04049	6		5.76	7.09	9.16	13.19	32.90	35.14	35.86	47.82	63.92	98.17	131.81	133.78	141.37		
At	$L\beta_1$	H	9	50	85	6	13.874	8.04141	5		5.76	7.09	9.16	13.19	32.91	35.15	35.86	47.82	63.93	98.19	131.84	133.81	141.41		
Rb	Ln		1	1	37	6	1.542	8.04150	4		5.76	7.09	9.16	13.19	32.91	35.15	35.86	47.82	63.93	98.19	131.84	133.81	141.41		
Pa	$M\alpha_1$		2	100	91	6	3.082	8.04400	3		5.76	7.10	9.16	13.20	32.92	35.16	35.87	47.84	63.95	98.23	131.92	133.90	141.51		
Os	$L\beta_7$		7	7	76	6	10.785	8.04530	5		5.76	7.10	9.16	13.20	32.92	35.17	35.88	47.85	63.96	98.25	131.96	133.94	141.57		
Ga	$K\alpha_{1,2}$		6	150	31	6	9.241	8.04831	5		5.77	7.10	9.17	13.20	32.93	35.18	35.89	47.87	63.99	98.30	132.06	134.04	141.69		
Cs	$L\beta_1$		3	50	55	6	4.619	8.05110	4		5.77	7.10	9.17	13.21	32.95	35.19	35.90	47.88	64.01	98.35	132.15	134.14	141.81		
Er	Ll		4	2	68	6	6.152	8.06000	3		5.77	7.11	9.18	13.22	32.98	35.23	35.95	47.94	64.09	98.49	132.43	134.44	142.17		
Pb	$L\beta_4$		8	4	82	6	12.304	8.06000	4		5.77	7.11	9.18	13.22	32.98	35.23	35.95	47.94	64.09	98.49	132.43	134.44	142.17		
Ga	$K\alpha_2$		6	50	31	6	9.223	8.06394	5		5.78	7.11	9.19	13.23	33.00	35.25	35.96	47.96	64.13	98.56	132.56	134.57	142.34		
Ir	M_{ζ_2}		1	.01	77	6	1.537	8.06500	3		5.78	7.11	9.19	13.23	33.01	35.26	35.97	47.97	64.14	98.57	132.60	134.61	142.38		
Al	$SK\beta'$		1	.1	13	1	1.537	8.06626	2	2	5.78	7.11	9.19	13.23	33.01	35.26	35.97	47.98	64.15	98.60	132.64	134.65	142.43		
Hg	$L\gamma_1$		9	10	80	6	13.828	8.06814	5		5.78	7.12	9.19	13.24	33.02	35.27	35.98	47.99	64.17	98.63	132.70	134.71	142.51		
Pd	$L\beta_3$		2	11	46	6	3.072	8.06920	4		5.78	7.12	9.19	13.24	33.02	35.27	35.99	48.00	64.18	98.64	132.73	134.75	142.56		
Pa	$M\alpha_2$		2	100	91	6	3.072	8.07000	3		5.78	7.12	9.19	13.24	33.03	35.28	35.99	48.00	64.18	98.66	132.76	134.78	142.59		
Ta	$L\beta_4$		6	4	73	6	9.211	8.07486	5		5.79	7.12	9.20	13.25	33.05	35.30	36.01	48.03	64.23	98.74	132.92	134.94	142.79		
Au	$L\gamma_3$		9	2	79	6	13.807	8.08047	5		5.79	7.13	9.21	13.26	33.07	35.33	36.04	48.07	64.28	98.83	133.10	135.13	143.03		
Tl	$L\beta_2$		8	20	81	6	12.270	8.08247	5		5.79	7.13	9.21	13.26	33.08	35.33	36.05	48.08	64.29	98.86	133.16	135.20	143.12		
Sb	$L\gamma_{2,3}$		3	2	51	6	4.599	8.08590	4		5.79	7.13	9.21	13.27	33.09	35.35	36.06	48.10	64.32	98.92	133.28	135.32	143.26		
Bi	$L\alpha_2$		7	10	83	6	10.729	8.08751	5		5.79	7.13	9.21	13.27	33.10	35.36	36.07	48.11	64.34	98.95	133.33	135.38	143.33		
Rh	$L\gamma_5$		2	.1	45	6	3.064	8.09020	4		5.80	7.14	9.22	13.27	33.11	35.37	36.08	48.13	64.36	98.99	133.42	135.47	143.45		
Lu	$L\alpha_1$		5	100	71	6	7.654	8.09755	5		5.80	7.14	9.22	13.29	33.14	35.40	36.12	48.18	64.43	99.11	133.66	135.72	143.76		
Pb	Ll		6	3	82	6	9.183	8.09940	5		5.80	7.14	9.23	13.29	33.15	35.41	36.13	48.19	64.44	99.14	133.72	135.79	143.84		
Bk	$L\alpha_1$		10	100	97	3	15.304	8.10000			5.80	7.14	9.23	13.29	33.15	35.41	36.13	48.19	64.45	99.15	133.74	135.81	143.87		
Ho	$L\beta_3$		5	6	67	6	7.650	8.10150	4		5.80	7.15	9.23	13.29	33.16	35.42	36.14	48.20	64.46	99.18	133.79	135.86	143.93		
Co	$K\beta_{1,3}$		5	20	27	6	7.648	8.10395	5	4	5.81	7.15	9.23	13.30	33.17	35.43	36.15	48.22	64.49	99.22	133.87	135.95	144.04		
Ir	$L\beta_1$		7	50	77	6	10.706	8.10466	5		5.81	7.15	9.23	13.30	33.17	35.43	36.15	48.22	64.49	99.23	133.90	135.97	144.07		

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)
								10^{-}																	
As	AL_1		1		33	6	1.529	8.10700	3		5.81	7.15	9.24	13.30	33.18	35.45	36.16	48.24	64.51	99.27	133.97	136.05	144.17		
Ir	$L\alpha_1$		6	100	77	6	9.174	8.10768	5		5.81	7.15	9.24	13.30	33.18	35.45	36.17	48.24	64.52	99.28	134.00	136.08	144.20		
Np	$L\alpha_2$		9	10	93	6	13.757	8.10940	6		5.81	7.15	9.24	13.31	33.19	35.46	36.17	48.25	64.53	99.31	134.05	136.14	144.28		
Hf	$L\beta_3$		6	6	72	6	9.162	8.11800	5		5.82	7.16	9.25	13.32	33.23	35.49	36.21	48.31	64.61	99.45	134.34	136.44	144.66		
Dy	$L8_{2,15}$		5	20	66	6	7.634	8.11845	5		5.82	7.16	9.25	13.32	33.23	35.50	36.22	48.31	64.61	99.46	134.36	136.46	144.68		
Tl	$L\beta_1$		8	50	81	6	12.211	8.12103	5		5.82	7.16	9.25	13.32	33.24	35.51	36.23	48.33	64.64	99.50	134.44	136.55	144.79		
Sr	$L\beta_1$		1	35	35	6	1.526	8.12510	4		5.82	7.17	9.26	13.33	33.26	35.53	36.25	48.35	64.67	99.57	134.58	136.69	144.97		
Bi	$L\gamma_1$		10	10	83	6	15.245	8.13110	5		5.83	7.17	9.26	13.34	33.28	35.55	36.27	48.39	64.73	99.67	134.78	136.91	145.24		
Ra	$L\alpha_2$		8	10	88	6	12.194	8.13248	5		5.83	7.17	9.26	13.34	33.29	35.56	36.28	48.40	64.74	99.70	134.83	136.96	145.31		
Te	$L\gamma_1$		3	8	52	6	4.570	8.13723	5		5.83	7.18	9.27	13.35	33.31	35.58	36.30	48.43	64.78	99.77	134.99	137.13	145.52		
Ra	$L\beta_1$		10	50	88	6	15.233	8.13750	5		5.83	7.18	9.27	13.35	33.31	35.58	36.30	48.43	64.78	99.78	135.00	137.14	145.53		
Pb	$M_3-O_{4,5}$		2	1	82	6	3.046	8.13800	3		5.83	7.18	9.27	13.35	33.31	35.59	36.31	48.43	64.79	99.79	135.02	137.15	145.56		
I	$L\beta_9$	B	3	.01	53	6	4.568	8.14056	5		5.83	7.18	9.27	13.36	33.32	35.60	36.32	48.45	64.81	99.83	135.10	137.25	145.67		
Pd	$L\beta_4$		2	5	46	6	3.045	8.14220	4		5.83	7.18	9.28	13.36	33.33	35.60	36.32	48.46	64.83	99.86	135.16	137.30	145.75		
Sn	Ll		2	7	50	6	3.044	8.14330	5		5.83	7.18	9.28	13.36	33.33	35.61	36.33	48.47	64.84	99.88	135.20	137.34	145.80		
Nd	$L\beta_{2,15}$		4	20	60	6	6.088	8.14400	4		5.84	7.18	9.28	13.36	33.34	35.61	36.33	48.47	64.84	99.89	135.22	137.37	145.83		
Oy	$M\gamma$		1	1	66	6	1.522	8.14400	3		5.84	7.18	9.28	13.36	33.34	35.61	36.33	48.47	64.84	99.89	135.22	137.37	145.83		
Pb	$L\gamma_3$		10	2	82	6	15.215	8.14700	4		5.84	7.19	9.28	13.37	33.35	35.63	36.35	48.49	64.87	99.94	135.32	137.48	145.97		
Yb	$M\alpha$		1	100	70	6	1.521	8.14900	3		5.84	7.19	9.28	13.37	33.36	35.63	36.36	48.50	64.89	99.97	135.39	137.55	146.06		
Lu	$L\alpha_2$		5	10	71	6	7.604	8.15145	5		5.84	7.19	9.29	13.37	33.37	35.65	36.37	48.52	64.91	100.01	135.48	137.64	146.17		
Re	Ll		5	3	75	6	7.602	8.15280	5		5.84	7.19	9.29	13.38	33.37	35.65	36.37	48.53	64.92	100.04	135.52	137.69	146.23		
I	$L\beta_{10}$	B	3	.01	53	6	4.556	8.16312	5		5.85	7.20	9.30	13.39	33.42	35.70	36.42	48.59	65.01	100.21	135.88	138.06	146.72		
Rb	$K\beta_2$		10	3	37	6	15.183	8.16450	5		5.85	7.20	9.30	13.40	33.42	35.70	36.43	48.60	65.03	100.23	135.93	138.12	146.78		
Pm	$L8_3$		4	6	61	6	6.070	8.16840	4		5.85	7.20	9.31	13.40	33.44	35.72	36.45	48.63	65.06	100.30	136.06	138.26	146.96		
Ra	Ll		7	3	88	6	10.620	8.17033	5		5.85	7.21	9.31	13.41	33.45	35.73	36.45	48.64	65.08	100.33	136.13	138.33	147.06		
Ir	$L\alpha_2$		6	10	77	6	9.098	8.17500	5		5.86	7.21	9.31	13.41	33.47	35.75	36.48	48.67	65.12	100.41	136.29	138.50	147.28		
Pu	Ll		8	3	94	6	12.122	8.18079	4		5.86	7.22	9.32	13.42	33.49	35.78	36.50	48.70	65.17	100.51	136.49	138.72	147.56		
Po	$L\beta_3$		9	6	84	6	13.635	8.18190	4		5.86	7.22	9.32	13.42	33.50	35.78	36.51	48.71	65.18	100.52	136.53	138.76	147.61		
Er	$L\gamma_1$		6	5	68	6	9.087	8.18460	4		5.86	7.22	9.32	13.43	33.51	35.80	36.52	48.73	65.21	100.57	136.63	138.86	147.74		
I	$L\beta_7$		3	.1	53	6	4.543	8.18640	4		5.87	7.22	9.33	13.43	33.52	35.80	36.53	48.74	65.22	100.60	136.69	138.93	147.83		
Gd	$L\alpha_1$		4	100	64	6	6.056	8.18720	4		5.87	7.22	9.33	13.43	33.52	35.81	36.53	48.74	65.23	100.61	136.72	138.96	147.87		
Os	$L\beta_2$		7	20	76	6	10.597	8.18853	5		5.87	7.22	9.33	13.44	33.53	35.81	36.54	48.75	65.24	100.64	136.77	139.01	147.93		
Ce	$L\gamma_1$		4	5	58	6	6.051	8.19480	4		5.87	7.23	9.34	13.45	33.55	35.84	36.57	48.79	65.30	100.74	136.99	139.24	148.24		
U	$L\alpha_1$		9	100	92	6	13.612	8.19575	6		5.87	7.23	9.34	13.45	33.56	35.85	36.57	48.80	65.31	100.76	137.02	139.28	148.28		
Os	$L\gamma_1$		8	10	76	6	12.093	8.20023	5		5.88	7.23	9.34	13.45	33.57	35.87	36.59	48.83	65.35	100.83	137.18	139.45	148.51		
Al	$SK\alpha_6$		1	.4	13	1	1.510	8.20754	3	3	5.88	7.24	9.35	13.47	33.61	35.90	36.63	48.87	65.41	100.96	137.44	139.72	148.87		
Re	$L\gamma_3$		8	2	75	6	12.080	8.20904	5		5.88	7.24	9.35	13.47	33.61	35.91	36.63	48.88	65.43	100.98	137.50	139.78	148.95		
Bi	M_3-O_1		2	.5	83	6	3.020	8.21000	3		5.88	7.24	9.35	13.47	33.62	35.91	36.64	48.89	65.43	101.00	137.53	139.82	148.99		
Bk	$L\alpha_2$		10	10	97	3	15.080	8.22000			5.89	7.25	9.36	13.49	33.66	35.96	36.68	48.95	65.52	101.17	137.89	140.20	149.50		
La	Ln		3	1	57	6	4.524	8.22000	3		5.89	7.25	9.36	13.49	33.66	35.96	36.68	48.95	65.52	101.17	137.89	140.20	149.50		
Pb	$L\alpha_1$		7	100	82	6	10.550	8.22507	5		5.89	7.26	9.37	13.50	33.68	35.98	36.71	48.98	65.57	101.25	138.08	140.40	149.76		
Al	$SK\alpha_5$		1	.5	13	1	1.506	8.22859	3	3	5.90	7.26	9.37	13.50	33.69	35.99	36.72	49.01	65.60	101.31	138.20	140.53	149.94		
Lu	$L\beta_{15}$		6	20	71	6	9.038	8.22899	4		5.90	7.26	9.37	13.50	33.70	36.00	36.73	49.01	65.60	101.32	138.22	140.55	149.96		
As	$K\alpha_1$		7	100	33	6	10.542	8.23116	5		5.90	7.26	9.38	13.51	33.71	36.01	36.74	49.02	65.62	101.36	138.30	140.63	150.08		
Gd	$L\alpha_2$		4	10	64	6	6.024	8.23120	4		5.90	7.26	9.38	13.51	33.71	36.01	36.74	49.02	65.62	101.36	138.30	140.63	150.08		
Tl	M_2-N_4		2	1	81	6	3.012	8.23200	3		5.90	7.26	9.38	13.51	33.71	36.01	36.74	49.03	65.63	101.37	138.33	140.66	150.12		
Ho	$L8_1$		5	50	67	6	7.524	8.23750	4		5.90	7.27	9.38	13.52	33.73	36.04	36.77	49.06	65.68	101.47	138.53	140.88	150.41		
Re	M_4-N_3		1	.01	75	6	1.505	8.23900	3		5.90	7.27	9.39	13.52	33.74	36.04	36.77	49.07	65.69	101.49	138.59	140.94	150.49		
As	$K\alpha_{1,2}$		7	150	33	6	10.530	8.24047	5		5.90	7.27	9.39	13.52	33.74	36.05	36.78	49.08	65.71	101.52	138.64	141.00	150.57		
Fr	$L\alpha_1$	H	8	100	87	6	12.029	8.24392	5		5.91	7.27	9.39	13.53	33.76	36.06	36.79	49.10	65.74	101.57	138.77	141.13	150.75		
Hf	$L8_1$		6	50	72	6	9.021	8.24460	5		5.91	7.27	9.39	13.53	33.76	36.07	36.80	49.11	65.74	101.59	138.79	141.16	150.79		
Ti	$K\alpha_1$		3	100	22	6	4.510	8.24553	5	4	5.91	7.27	9.39	13.53	33.77	36.07	36.80	49.11	65.75	101.60	138.83	141.20	150.83		
Tm	$M8$		1	45	69	6	1.503	8.24900	3		5.91	7.28	9.40	13.54	33.78	36.09	36.82	49.14	65.78	101.66	138.96	141.33	151.02		
Ti	$K\alpha_{1,2}$		3	150	22	6	4.508	8.24918	5	4	5.91	7.28	9.40	13.54	33.78	36.09	36.82	49.14	65.79	101.66	138.96	141.34	151.03		
I	$L\beta_{2,15}$		3	17	53	6	4.507	8.25159	5		5.91	7.28	9.40	13.54	33.79	36.10	36.83	49.15	65.81	101.71	139.05	141.43	151.16		
Hf	$L\gamma_1$		7	10	72	6	10.514	8.25300	5		5.91	7.28	9.40	13.54	33.80	36.11	36.84	49.16	65.82	101.73	139.10	141.49	151.24		
Ti	$K\alpha_2$		3	50	22	6	4.504	8.25648	5	4	5.92	7.28	9.41	13.55	33.81	36.12	36.85	49.18	65.85	101.79	139.23	141.63	151.43		
Os	$L\beta_3$		7	6	76	6	10.509	8.25684	5		5.92	7.28	9.41	13.55	33.81	36.12	36.85	49.19	65.85	101.80	139.25	141.64	151.45		
Ir	$L\beta_4$		7	4	77	6	10.509	8.25706	5		5.92	7.28	9.41	13.55	33.81	36.12	36.86	49.19	65.86	101.80	139.26	141.65	151.46		
U	M_1-N_3		3	.1	92	6	4.503	8.25900	3		5.92	7.28	9.41	13.55	33.82	36.13	36.86	49.20	65.87	101.83	139.33	141.73	151.56		
As	$K\alpha_2$		7	50	33	6	10.506	8.25909	5		5.92	7.29	9.41	13.55	33.82	36.13	36.86	49.20	65.87	101.83	139.33	141.73	151.57		
Rh	$L\beta_{2,15}$		2	25	45	6	3.001	8.26200	4		5.92	7.29	9.41	13.56	33.84	36.15	36.88	49.22	65.90	101.88	139.44	141.86	151.73		
Hg	$L\beta_3$		8	6	80	6	11.993	8.26864	5		5.92	7.29	9.42	13.57	33.86	36.18	36.91	49.26	65.96	102.00	139.69	142.12	152.10		
Al	$SK\alpha_4$		1	4	13	1	1.499	8.27067	3	3	5.93	7.30	9.42	13.57	33.87	36.19	36.92	49.27	65.98	102.03	139.77	142.20	152.21		
Th	$M\alpha_1$		2	100	90	6	2.996	8.27620	4		5.93	7.30	9.43	13.58	33.90	36.21	36.94	49.31	66.03	102.13	139.98	142.42	152.52		

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Fr	$L\beta_3$	H	10	10	87	6	14.973	8.27890	5		5.93	7.30	9.43	13.58	33.91	36.22	36.96	49.33	66.05	102.17	140.08	142.53	152.67		
Br	$K\beta_2$		9	2	35	6	13.467	8.28414	5		5.94	7.31	9.44	13.59	33.93	36.25	36.98	49.36	66.10	102.26	140.28	142.75	152.97		
Al	$SK\alpha_3$		1	8	13	1	1.496	8.28670	3	3	5.94	7.31	9.44	13.60	33.94	36.26	36.99	49.38	66.12	102.31	140.38	142.85	153.12		
Rb	$K\beta_1$		10	16	37	6	14.959	8.28680	5		5.94	7.31	9.44	13.60	33.94	36.26	36.99	49.38	66.12	102.31	140.38	142.86	153.13		
Eu	$L\gamma_1$		5	5	63	6	7.479	8.28700	4		5.94	7.31	9.44	13.60	33.94	36.26	36.99	49.38	66.13	102.31	140.39	142.87	153.14		
Y	$K\alpha_1$		10	100	39	6	14.956	8.28840	5		5.94	7.31	9.44	13.60	33.95	36.27	37.00	49.39	66.14	102.34	140.44	142.92	153.22		
Ni	$K\alpha_1$		5	100	28	6	7.477	8.28955	6		5.94	7.31	9.44	13.60	33.95	36.27	37.01	49.39	66.15	102.36	140.49	142.97	153.29		
Cm	$L\alpha_1$		10	100	96	3	14.953	8.29000			5.94	7.31	9.44	13.60	33.95	36.27	37.01	49.40	66.15	102.36	140.50	142.99	153.31		
Sc	$K\beta_5$		3	.02	21	6	4.486	8.29020	4	4	5.94	7.31	9.44	13.60	33.95	36.27	37.01	49.40	66.15	102.37	140.51	143.00	153.33		
Rb	$K\beta_3$		10	8	37	6	14.949	8.29210	5		5.94	7.31	9.45	13.61	33.96	36.28	37.02	49.41	66.17	102.40	140.59	143.08	153.44		
Pd	$L\beta_1$		2	42	46	6	2.990	8.29244	5		5.94	7.31	9.45	13.61	33.96	36.28	37.02	49.41	66.17	102.40	140.60	143.09	153.46		
Ni	$K\alpha_{1,2}$		5	150	28	6	7.471	8.29594	6		5.94	7.32	9.45	13.61	33.98	36.30	37.04	49.43	66.21	102.47	140.73	143.24	153.66		
Ho	$L\beta_4$		5	5	67	6	7.470	8.29750	4		5.95	7.32	9.45	13.62	33.99	36.31	37.04	49.44	66.22	102.49	140.79	143.30	153.75		
Po	$L\beta_1$		9	50	84	6	13.445	8.29800	4		5.95	7.32	9.45	13.62	33.99	36.31	37.04	49.45	66.22	102.50	140.81	143.32	153.78		
Th	$M\alpha_2$		2	100	90	6	2.986	8.30200	3		5.95	7.32	9.46	13.62	34.00	36.33	37.06	49.47	66.26	102.57	140.97	143.49	154.02		
Y	$K\alpha_{1,2}$		10	150	39	6	14.931	8.30243	5		5.95	7.32	9.46	13.62	34.01	36.33	37.07	49.48	66.26	102.58	140.99	143.51	154.05		
U	$L\alpha_2$		9	10	92	6	13.437	8.30302	6		5.95	7.32	9.46	13.62	34.01	36.33	37.07	49.48	66.27	102.59	141.01	143.53	154.08		
Al	$SK\alpha'$		1	2	13	1	1.493	8.30474	3	3	5.95	7.33	9.46	13.63	34.02	36.34	37.08	49.49	66.29	102.62	141.08	143.60	154.19		
Pb	$L\alpha_2$		7	10	82	6	10.448	8.30536	5		5.95	7.33	9.46	13.63	34.02	36.34	37.08	49.49	66.29	102.63	141.10	143.63	154.22		
Tl	Ll		6	3	81	6	8.952	8.30862	5		5.95	7.33	9.47	13.63	34.03	36.36	37.09	49.52	66.32	102.68	141.23	143.77	154.42		
Ni	$K\alpha_2$		5	50	28	6	7.460	8.30873	6		5.95	7.33	9.47	13.63	34.03	36.36	37.09	49.52	66.32	102.69	141.23	143.77	154.43		
Ag	$L\alpha_1$		2	100	47	6	2.984	8.30886	5		5.95	7.33	9.47	13.63	34.03	36.36	37.10	49.52	66.32	102.69	141.24	143.78	154.44		
Os	$M\zeta_1$		1	.01	76	6	1.492	8.31000	3		5.95	7.33	9.47	13.64	34.04	36.36	37.10	49.52	66.33	102.71	141.28	143.83	154.51		
Tl	$L\beta_4$		8	4	81	6	11.929	8.31344	5		5.96	7.33	9.47	13.64	34.05	36.38	37.12	49.55	66.36	102.77	141.42	143.97	154.72		
Br	$K\alpha_1$		8	100	35	6	11.922	8.31792	5		5.96	7.34	9.48	13.65	34.07	36.40	37.14	49.57	66.40	102.84	141.59	144.16	154.99		
Hg	$L\beta_2$		8	20	80	6	11.922	8.31799	5		5.96	7.34	9.48	13.65	34.07	36.40	37.14	49.57	66.40	102.85	141.60	144.16	155.00		
Pm	$L\beta_1$		4	50	61	6	5.960	8.31880	4		5.96	7.34	9.48	13.65	34.08	36.40	37.14	49.58	66.41	102.86	141.63	144.20	155.05		
Se	$L\beta_{3,4}$	H	1	2	34	6	1.490	8.32100	3		5.96	7.34	9.48	13.65	34.08	36.41	37.15	49.59	66.43	102.90	141.72	144.29	155.18		
Ag	$L\alpha_2$		2	10	47	6	2.978	8.32588	5		5.97	7.34	9.49	13.66	34.10	36.44	37.17	49.63	66.48	102.98	141.91	144.50	155.49		
Ba	$L\alpha_1$		3	100	56	6	4.465	8.32785	5		5.97	7.35	9.49	13.67	34.11	36.44	37.18	49.64	66.49	103.02	141.99	144.59	155.62		
Br	$K\alpha_{1,2}$		8	150	35	6	11.907	8.32880	5		5.97	7.35	9.49	13.67	34.12	36.45	37.19	49.64	66.50	103.03	142.03	144.63	155.68		
Rb	$K\alpha_1$		9	100	37	6	13.393	8.32998	6		5.97	7.35	9.49	13.67	34.12	36.45	37.19	49.65	66.51	103.05	142.07	144.68	155.75		
Y	$K\alpha_2$		10	50	39	6	14.880	8.33050	5		5.97	7.35	9.49	13.67	34.12	36.46	37.20	49.65	66.52	103.06	142.09	144.70	155.79		
Sn	$L\gamma_4$		3	.1	50	6	4.463	8.33250	4		5.97	7.35	9.49	13.67	34.13	36.47	37.20	49.67	66.54	103.10	142.18	144.79	155.91		
Fr	$L\alpha_2$	H	8	10	87	6	11.893	8.33839	5		5.97	7.36	9.50	13.68	34.16	36.49	37.23	49.70	66.59	103.20	142.41	145.04	156.30		
Au	$L\gamma_1$		9	10	79	6	13.379	8.33850	5		5.97	7.36	9.50	13.68	34.16	36.49	37.23	49.71	66.59	103.20	142.42	145.05	156.30		
Sc	$K\beta_{1,3}$		3	20	21	6	4.460	8.33880	4	4	5.97	7.36	9.50	13.68	34.16	36.49	37.23	49.71	66.59	103.21	142.43	145.06	156.32		
Al	$K\alpha_1$		1	100	13	6	1.486	8.33934	5	3	5.98	7.36	9.50	13.68	34.16	36.50	37.24	49.71	66.60	103.21	142.45	145.09	156.36		
Cr	$K\beta_{1,3}$		4	18	24	6	5.946	8.33948	5	4	5.98	7.36	9.50	13.68	34.16	36.50	37.24	49.71	66.60	103.22	142.46	145.09	156.37		
Al	$K\alpha_{1,2}$		1	150	13	6	1.486	8.34013	5	3	5.98	7.36	9.50	13.69	34.17	36.50	37.24	49.72	66.60	103.23	142.48	145.12	156.41		
Al	$K\alpha_2$		1	50	13	6	1.486	8.34173	5	3	5.98	7.36	9.50	13.69	34.17	36.51	37.25	49.73	66.62	103.26	142.55	145.19	156.52		
Rb	$K\alpha_{1,2}$		9	150	37	6	13.373	8.34239	5		5.98	7.36	9.50	13.69	34.17	36.51	37.25	49.73	66.62	103.27	142.57	145.22	156.56		
Np	Ll		8	3	93	6	11.887	8.34240	4		5.98	7.36	9.50	13.69	34.17	36.51	37.25	49.73	66.62	103.27	142.57	145.22	156.56		
Ho	Ll		4	2	67	6	5.942	8.34400	4		5.98	7.36	9.51	13.69	34.18	36.52	37.26	49.74	66.64	103.30	142.64	145.29	156.67		
Os	$L\alpha_1$		6	100	76	6	8.910	8.34726	5		5.98	7.36	9.51	13.70	34.20	36.53	37.27	49.76	66.67	103.35	142.77	145.43	156.89		
Br	$K\alpha_2$		8	50	35	6	11.876	8.35056	5		5.98	7.37	9.51	13.70	34.21	36.55	37.29	49.78	66.70	103.41	142.91	145.58	157.11		
Pt	$L\gamma_3$		9	2	78	6	13.359	8.35119	5		5.98	7.37	9.51	13.70	34.21	36.55	37.29	49.79	66.70	103.42	142.93	145.61	157.15		
Pr	Ll		3	2	59	6	4.452	8.35230	4		5.98	7.37	9.52	13.71	34.22	36.55	37.30	49.79	66.71	103.44	142.98	145.66	157.23		
Hf	$L\beta_4$		6	4	72	6	8.904	8.35320	5		5.99	7.37	9.52	13.71	34.22	36.56	37.30	49.80	66.72	103.46	143.02	145.70	157.29		
Cu	$K\beta_{1,3}$		6	20	29	6	8.904	8.35331	6		5.99	7.37	9.52	13.71	34.22	36.56	37.30	49.80	66.72	103.46	143.02	145.70	157.30		
Ra	$L\beta_2$		10	20	88	6	14.839	8.35370	5		5.99	7.37	9.52	13.71	34.22	36.56	37.30	49.80	66.73	103.46	143.04	145.72	157.32		
Cu	$K\beta_3$		6	6	29	6	8.901	8.35559	4		5.99	7.37	9.52	13.71	34.23	36.57	37.31	49.81	66.74	103.50	143.11	145.80	157.45		
Ba	$L\alpha_2$		3	10	56	6	4.450	8.35659	5		5.99	7.37	9.52	13.71	34.23	36.57	37.32	49.82	66.75	103.51	143.15	145.85	157.52		
Os	$M\zeta_2$		1	.01	76	6	1.483	8.35900	3		5.99	7.37	9.52	13.72	34.24	36.59	37.33	49.84	66.77	103.56	143.25	145.95	157.69		
Yb	$L\alpha_1$		5	100	70	6	7.414	8.35945	5		5.99	7.37	9.52	13.72	34.25	36.59	37.33	49.84	66.78	103.56	143.27	145.97	157.72		
Rb	Ll		1	3	37	6	1.482	8.36360	4		5.99	7.38	9.53	13.72	34.26	36.61	37.35	49.87	66.82	103.64	143.44	146.16	158.01		
Po	$L\beta_2$		9	20	84	6	13.338	8.36433	5		5.99	7.38	9.53	13.73	34.27	36.61	37.35	49.87	66.82	103.65	143.47	146.19	158.06		
Ru	$L\gamma_1$		2	1	44	6	2.964	8.36440	4		5.99	7.38	9.53	13.73	34.27	36.61	37.35	49.87	66.82	103.65	143.48	146.20	158.07		
Rb	$K\alpha_2$		9	50	37	6	13.333	8.36721	5		6.00	7.38	9.53	13.73	34.28	36.62	37.37	49.89	66.85	103.70	143.59	146.32	158.27		
Te	$L\gamma_5$		3	.1	52	6	4.443	8.37021	5		6.00	7.38	9.54	13.74	34.29	36.64	37.38	49.91	66.88	103.75	143.72	146.46	158.48		
Br	$K\alpha_{1,2}$		1	100	35	6	1.480	8.37460	4		6.00	7.39	9.54	13.74	34.31	36.66	37.40	49.94	66.92	103.83	143.90	146.66	158.80		
Os	$L\beta_1$		7	50	76	6	10.354	8.38089	5		6.01	7.39	9.55	13.75	34.34	36.68	37.43	49.98	66.97	103.94	144.17	146.95	159.26		
Ar	$K\alpha_1$		2	100	18	6	2.957	8.38360	5		6.01	7.40	9.55	13.76	34.35	36.70	37.44	49.99	67.00	103.99	144.28	147.07	159.47		
Ar	$K\alpha_{1,2}$		2	150	18	6	2.957	8.38556	5		6.01	7.40	9.55	13.76	34.36	36.71	37.45	50.01	67.01	104.02	144.37	147.16	159.62		
Cd	Ln		2	1	48	6	2.956	8.38630	5		6.01	7.40	9.55	13.76	34.36	36.71	37.45	50.01	67.02	104.03	144.40	147.20	159.67		

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Hg	$L\beta_1$		8	50	80	6	11.821	8.38943	5		6.01	7.40	9.56	13.77	34.37	36.72	37.47	50.03	67.05	104.09	144.53	147.34	159.91		
Ar	$K\alpha_2$		2	50	18	6	2.955	8.38948	5		6.01	7.40	9.56	13.77	34.37	36.72	37.47	50.03	67.05	104.09	144.53	147.35	159.92		
W	Ll		5	3	74	6	7.386	8.39100	4		6.01	7.40	9.56	13.77	34.38	36.73	37.48	50.04	67.06	104.12	144.60	147.42	160.03		
Fr	$L\beta_1$		H10	50	87	6	14.768	8.39400	5		6.01	7.40	9.56	13.77	34.39	36.74	37.49	50.06	67.09	104.17	144.73	147.56	160.27		
Br	$K\beta_1$		9	16	35	6	13.289	8.39511	5		6.02	7.41	9.56	13.78	34.40	36.75	37.49	50.07	67.10	104.19	144.77	147.61	160.36		
Pa	$L\alpha_1$		9	100	91	6	13.288	8.39556	5		6.02	7.41	9.56	13.78	34.40	36.75	37.50	50.07	67.11	104.19	144.79	147.63	160.39		
Pb	$L\gamma_1$		10	10	82	6	14.762	8.39730	5		6.02	7.41	9.57	13.78	34.41	36.76	37.50	50.08	67.12	104.23	144.87	147.71	160.53		
Br	$K\beta_3$		9	8	35	6	13.282	8.39943	5		6.02	7.41	9.57	13.78	34.42	36.77	37.51	50.09	67.14	104.26	144.96	147.81	160.70		
Se	AL_2		1		34	6	1.474	8.40700	3		6.02	7.42	9.58	13.80	34.45	36.80	37.55	50.14	67.21	104.40	145.29	148.17	161.32		
Ra	$L\beta_4$		10	4	88	6	14.745	8.40710	5		6.02	7.42	9.58	13.80	34.45	36.80	37.55	50.14	67.21	104.40	145.29	148.18	161.32		
Mn	$K\alpha_1$		4	100	25	6	5.898	8.40728	6	4	6.02	7.42	9.58	13.80	34.45	36.80	37.55	50.14	67.21	104.40	145.30	148.19	161.34		
Lu	$L\beta_3$		6	6	71	6	8.845	8.40840	5		6.02	7.42	9.58	13.80	34.45	36.81	37.56	50.15	67.22	104.42	145.35	148.24	161.43		
Cm	$L\alpha_2$		10	10	96	3	14.740	8.41000			6.03	7.42	9.58	13.80	34.46	36.82	37.56	50.16	67.24	104.45	145.42	148.32	161.57		
Oy	$L\beta_3$		5	6	66	6	7.369	8.41100	4		6.03	7.42	9.58	13.80	34.46	36.82	37.57	50.17	67.25	104.47	145.46	148.37	161.65		
Mn	$K\alpha_{1,2}$		4	150	25	6	5.894	8.41256	5	4	6.03	7.42	9.58	13.80	34.47	36.83	37.58	50.18	67.26	104.49	145.53	148.44	161.78		
Tl	$L\gamma_3$		10	2	81	6	14.734	8.41300	5		6.03	7.42	9.58	13.81	34.47	36.83	37.58	50.18	67.26	104.50	145.55	148.46	161.82		
Os	$L\alpha_2$		6	10	76	6	8.840	8.41404	5		6.03	7.42	9.59	13.81	34.48	36.83	37.58	50.19	67.27	104.52	145.60	148.51	161.91		
Yb	$L\alpha_2$		5	10	70	6	7.366	8.41425	5		6.03	7.42	9.59	13.81	34.48	36.84	37.58	50.19	67.27	104.52	145.61	148.52	161.93		
Tb	$L\beta_{2,1,5}$		5	20	65	6	7.365	8.41500	4		6.03	7.42	9.59	13.81	34.48	36.84	37.59	50.19	67.28	104.54	145.64	148.56	161.99		
Mn	$K\alpha_2$		4	50	25	6	5.887	8.42312	5	4	6.04	7.43	9.60	13.82	34.52	36.88	37.62	50.24	67.36	104.68	146.00	148.95	162.70		
Tl	M_3-$O_{4,5}$		2	.5	81	6	2.940	8.43200	3		6.04	7.44	9.61	13.84	34.55	36.92	37.67	50.30	67.44	104.84	146.40	149.39	163.52		
Re	$L\beta_2$		7	20	75	6	10.274	8.44619	5		6.05	7.45	9.62	13.86	34.61	36.98	37.73	50.39	67.56	105.09	147.04	150.11	164.91		
Bi	$L\beta_3$		9	6	83	6	13.208	8.44695	5		6.05	7.45	9.62	13.86	34.62	36.98	37.73	50.40	67.57	105.10	147.08	150.14	164.98		
U	M_2-N_4		3	5	92	6	4.400	8.45100	3		6.06	7.45	9.63	13.87	34.63	37.00	37.75	50.42	67.61	105.17	147.26	150.35	165.41		
Tl	$L\alpha_1$		7	100	81	6	10.267	8.45173	5		6.06	7.46	9.63	13.87	34.64	37.01	37.76	50.43	67.61	105.19	147.30	150.39	165.48		
Ga	$K\beta_1$		7	14	31	6	10.263	8.45523	5		6.06	7.46	9.63	13.88	34.65	37.02	37.77	50.45	67.65	105.25	147.46	150.57	165.86		
Rn	$L\alpha_1$		H 8	100	86	6	11.725	8.45784	5		6.06	7.46	9.64	13.88	34.66	37.03	37.79	50.47	67.67	105.29	147.58	150.70	166.15		
As	$K\beta_1$		8	15	33	6	11.724	8.45840	5		6.06	7.46	9.64	13.88	34.66	37.04	37.79	50.47	67.68	105.30	147.61	150.73	166.21		
Ga	$K\beta_3$		7	7	31	6	10.259	8.45844	5		6.06	7.46	9.64	13.88	34.67	37.04	37.79	50.47	67.68	105.30	147.61	150.73	166.22		
As	$K\beta_3$		8	7	33	6	11.718	8.46264	5		6.06	7.46	9.64	13.89	34.68	37.06	37.81	50.50	67.71	105.38	147.80	150.95	166.70		
Yb	M_3-N_1		1	.5	70	6	1.464	8.47000	3		6.07	7.47	9.65	13.90	34.71	37.09	37.84	50.54	67.78	105.51	148.15	151.34	167.58		
Pr	$L\beta_{2,1,5}$		4	20	59	6	5.849	8.47760	4		6.07	7.48	9.66	13.91	34.75	37.12	37.88	50.59	67.85	105.65	148.51	151.75	168.56		
Tm	$M\alpha$		1	100	69	6	1.462	8.48000	2		6.08	7.48	9.66	13.92	34.76	37.13	37.89	50.61	67.87	105.69	148.63	151.87	168.89		
Am	$L\alpha_1$		10	100	95	6	14.615	8.48187	6		6.08	7.48	9.66	13.92	34.76	37.14	37.90	50.62	67.89	105.72	148.72	151.98	169.15		
Rh	$L\beta_6$		2	3	45	6	2.922	8.48340	4		6.08	7.48	9.67	13.92	34.77	37.15	37.90	50.63	67.90	105.75	148.79	152.06	169.37		
Eu	$L\alpha_1$		4	100	63	6	5.845	8.48360	4		6.08	7.48	9.67	13.92	34.77	37.15	37.90	50.63	67.90	105.75	148.80	152.07	169.40		
Tb	$M\gamma$		1	1	65	6	1.461	8.48600	3		6.08	7.49	9.67	13.93	34.78	37.16	37.92	50.65	67.93	105.79	148.92	152.20	169.76		
Tm	AM_5		1		69	6	1.461	8.48700	3		6.08	7.49	9.67	13.93	34.79	37.17	37.92	50.65	67.94	105.81	148.97	152.25	169.91		
Re	$L\gamma_1$		8	10	75	6	11.683	8.48792	5		6.08	7.49	9.67	13.93	34.79	37.17	37.92	50.66	67.94	105.83	149.01	152.30	170.05		
Pb	M_3-O_1		2	.5	82	6	2.921	8.48800	3		6.08	7.49	9.67	13.93	34.79	37.17	37.93	50.66	67.94	105.83	149.02	152.31	170.07		
Yb	$L\beta_{2,1,5}$		6	20	70	6	8.757	8.49300	5		6.09	7.49	9.68	13.94	34.81	37.19	37.95	50.69	67.99	105.92	149.26	152.58	170.87		
W	$L\gamma_3$		8	2	74	6	11.672	8.49599	5		6.09	7.49	9.68	13.94	34.82	37.21	37.96	50.71	68.02	105.97	149.41	152.75	171.40		
Sn	$L\gamma_{2,3}$		3	2	50	6	4.376	8.49810	4		6.09	7.50	9.68	13.95	34.83	37.22	37.97	50.72	68.04	106.01	149.51	152.87	171.78		
Pa	$L\alpha_2$		H 9	10	91	6	13.120	8.50338	5		6.09	7.50	9.69	13.95	34.86	37.24	38.00	50.76	68.08	106.11	149.78	153.16	172.84		
Ho	$L\gamma_1$		6	5	67	6	8.746	8.50440	4		6.09	7.50	9.69	13.96	34.86	37.24	38.00	50.76	68.09	106.12	149.83	153.22	173.06		
Rh	$L\beta_3$		2	11	45	6	2.915	8.50440	4		6.09	7.50	9.69	13.96	34.86	37.24	38.00	50.76	68.09	106.12	149.83	153.22	173.06		
Nd	$L\beta_3$		4	6	60	6	5.828	8.50720	4		6.10	7.50	9.69	13.96	34.87	37.26	38.01	50.78	68.12	106.17	149.97	153.38	173.72		
I	$L\beta_6$		3	1	53	6	4.370	8.51016	5		6.10	7.51	9.70	13.97	34.88	37.27	38.03	50.80	68.15	106.23	150.12	153.55	174.49		
Te	$L\beta_9$		8	3	.01	52	6	4.366	8.51691	5		6.10	7.51	9.70	13.98	34.91	37.30	38.06	50.84	68.21	106.35	150.46	153.94	176.91		
Eu	$L\alpha_2$		4	10	63	6	5.816	8.52600	4		6.11	7.52	9.71	13.99	34.95	37.34	38.10	50.90	68.29	106.51	150.93	154.47			
Po	$L\beta_4$		9	4	84	6	13.083	8.52750	4		6.11	7.52	9.72	13.99	34.96	37.35	38.11	50.91	68.30	106.54	151.00	154.56			
Os	$L\beta_4$		7	4	76	6	10.174	8.52907	5		6.11	7.52	9.72	14.00	34.96	37.36	38.12	50.92	68.32	106.57	151.08	154.66			
Hg	Ll		6	3	80	6	8.720	8.52960	4		6.11	7.52	9.72	14.00	34.97	37.36	38.12	50.92	68.32	106.58	151.11	154.69			
Tl	$L\alpha_2$		7	10	81	6	10.171	8.53125	5		6.11	7.53	9.72	14.00	34.97	37.37	38.13	50.94	68.34	106.61	151.20	154.79			
U	Ll		8	3	92	6	11.616	8.53696	5		6.12	7.53	9.73	14.01	35.00	37.39	38.15	50.97	68.39	106.71	151.50	155.13			
Te	$L\beta_{10}$	F	3	.01	52	6	4.356	8.53728	5		6.12	7.53	9.73	14.01	35.00	37.39	38.15	50.97	68.39	106.72	151.52	155.15			
In	Ll		2	7	49	6	2.904	8.53746	5		6.12	7.53	9.73	14.01	35.00	37.39	38.15	50.98	68.39	106.72	151.53	155.16			
Lu	$L\beta_1$		6	50	71	6	8.708	8.54154	5		6.12	7.53	9.73	14.02	35.02	37.41	38.17	51.00	68.43	106.79	151.74	155.41			
Re	$L\beta_3$		7	6	75	6	10.158	8.54216	5		6.12	7.54	9.73	14.02	35.02	37.42	38.18	51.01	68.44	106.80	151.78	155.45			
Au	$L\beta_3$		8	6	79	6	11.608	8.54279	5		6.12	7.54	9.73	14.02	35.02	37.42	38.18	51.01	68.44	106.81	151.81	155.49			
Rn	$L\beta_3$		H10	10	86	6	14.509	8.54360	5		6.12	7.54	9.73	14.02	35.03	37.42	38.18	51.01	68.45	106.83	151.85	155.54			
Rn	$L\alpha_2$		H 8	10	86	6	11.596	8.55192	5		6.13	7.54	9.74	14.03	35.06	37.46	38.22	51.07	68.53	106.98	152.30	156.06			
Dy	$L\beta_1$		5	50	66	6	7.246	8.55310	5		6.13	7.54	9.74	14.04	35.07	37.47	38.23	51.08	68.54	107.00	152.36	156.13			
Sb	$L\gamma_1$		3	8	51	6	4.347	8.55477	5		6.13	7.55	9.75	14.04	35.07	37.47	38.23	51.09	68.55	107.03	152.46	156.24			
Lu	$L\gamma_1$		7	5	71	6	10.142	8.55596	5		6.13	7.55	9.75	14.04	35.08	37.48	38.24	51.09	68.56	107.05	152.52	156.32			

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Au	$L\beta_2$		8	20	79	6	11.583	8.56176	5		6.13	7.55	9.75	14.05	35.10	37.51	38.27	51.13	68.62	107.16	152.84	156.69			
La	$L\gamma_1$		4	5	57	6	5.788	8.56720	4		6.14	7.56	9.76	14.06	35.13	37.53	38.29	51.17	68.67	107.26	153.14	157.05			
Bi	$L\beta_1$		9	50	83	6	13.021	8.56780	6		6.14	7.56	9.76	14.06	35.13	37.53	38.30	51.17	68.67	107.27	153.18	157.09			
W	M_4-N_3		1	.01	74	6	1.446	8.57300	3		6.14	7.56	9.77	14.07	35.15	37.56	38.32	51.20	68.72	107.36	153.47	157.43			
Ru	$L\gamma_3$		2	.1	44	6	2.891	8.57460	4		6.14	7.56	9.77	14.07	35.16	37.56	38.33	51.21	68.73	107.39	153.56	157.54			
Rh	$L\beta_4$		2	5	45	6	2.890	8.57760	4		6.15	7.57	9.77	14.08	35.17	37.58	38.34	51.23	68.76	107.45	153.73	157.74			
Hg	$L\beta_4$		8	4	80	6	11.561	8.57776	5		6.15	7.57	9.77	14.08	35.17	37.58	38.34	51.23	68.76	107.45	153.74	157.75			
Pr	$L\beta_2$		10	20	87	6	14.448	8.58000	3		6.15	7.57	9.78	14.08	35.18	37.59	38.35	51.25	68.78	107.49	153.87	157.91			
Ba	$L\eta$		3	1	56	6	4.330	8.58810	4		6.15	7.58	9.78	14.09	35.21	37.63	38.39	51.30	68.86	107.64	154.34	158.47			
Te	$L\beta_7$		3	.1	52	6	4.329	8.59020	4		6.16	7.58	9.79	14.10	35.22	37.63	38.40	51.31	68.88	107.68	154.46	158.61			
Er	$M\beta$		1	45	68	6	1.443	8.59200	3		6.16	7.58	9.79	14.10	35.23	37.64	38.41	51.32	68.89	107.71	154.57	158.74			
Bi	$L\beta_2$		9	20	83	6	12.978	8.59662	5		6.16	7.58	9.79	14.11	35.25	37.66	38.43	51.35	68.94	107.79	154.84	159.07			
Re	$L\alpha_1$		6	100	75	6	8.651	8.59740	5		6.16	7.58	9.80	14.11	35.25	37.67	38.43	51.36	68.94	107.81	154.89	159.13			
Au	M_1-N_3		2	1	79	6	2.883	8.60000	3		6.16	7.59	9.80	14.11	35.26	37.68	38.44	51.38	68.97	107.85	155.05	159.32			
U	N_1-$P_{4,5}$		1		92	6	1.441	8.60000	2		6.16	7.59	9.80	14.11	35.26	37.68	38.44	51.38	68.97	107.85	155.05	159.32			
Er	AM_4		1		68	6	1.441	8.60100	3		6.16	7.59	9.80	14.12	35.27	37.68	38.45	51.38	68.98	107.87	155.11	159.39			
Am	$L\alpha_2$		10	10	95	6	14.409	8.60266	6		6.16	7.59	9.80	14.12	35.28	37.69	38.46	51.39	68.99	107.90	155.21	159.51			
Th	$L\alpha_1$		9	100	90	6	12.967	8.60400	5		6.17	7.59	9.80	14.12	35.28	37.70	38.46	51.40	69.00	107.93	155.29	159.61			
Dy	$L\beta_4$		5	5	66	6	7.203	8.60515	5		6.17	7.59	9.80	14.12	35.29	37.70	38.47	51.41	69.01	107.95	155.36	159.70			
Zn	$K\alpha_1$		6	100	30	6	8.637	8.61093	6		6.17	7.60	9.81	14.13	35.31	37.73	38.50	51.45	69.07	108.05	155.71	160.13			
Zn	$K\alpha_{1,2}$		6	150	30	6	8.630	8.61862	6		6.18	7.60	9.82	14.14	35.34	37.76	38.53	51.50	69.14	108.20	156.19	160.73			
Pt	$L\gamma_1$		9	10	78	6	12.940	8.62173	5		6.18	7.61	9.82	14.15	35.36	37.78	38.55	51.52	69.17	108.25	156.39	160.97			
I	$L\beta_3$		3	6	53	6	4.313	8.62287	5		6.18	7.61	9.82	14.15	35.36	37.78	38.55	51.52	69.18	108.27	156.46	161.06			
Re	$M\zeta_1$		1	.01	75	6	1.437	8.62900	3		6.18	7.61	9.83	14.16	35.39	37.81	38.58	51.56	69.23	108.39	156.86	161.56			
Ir	$L\gamma_3$		9	2	77	6	12.922	8.63379	5		6.19	7.62	9.84	14.17	35.41	37.83	38.60	51.59	69.28	108.48	157.17	161.95			
Zn	$K\alpha_2$		6	50	30	6	8.614	8.63400	6		6.19	7.62	9.84	14.17	35.41	37.83	38.60	51.59	69.28	108.48	157.18	161.97			
Tm	$L\alpha_1$	H	5	100	69	6	7.179	8.63400	4		6.19	7.62	9.84	14.17	35.41	37.83	38.60	51.59	69.28	108.48	157.19	161.97			
Dy	$L\mathit{l}$		4	2	66	6	5.742	8.63508	5		6.19	7.62	9.84	14.17	35.41	37.84	38.61	51.60	69.29	108.50	157.26	162.06			
Sm	$L\gamma_1$		5	5	62	6	7.177	8.63620	5		6.19	7.62	9.84	14.17	35.42	37.84	38.61	51.61	69.30	108.52	157.33	162.15			
Ta	$L\mathit{l}$		5	3	73	6	7.172	8.64205	5		6.19	7.62	9.85	14.18	35.44	37.87	38.64	51.65	69.35	108.63	157.72	162.66			
Lu	$L\beta_4$		6	5	71	6	8.605	8.64336	5		6.19	7.62	9.85	14.19	35.45	37.88	38.65	51.65	69.36	108.65	157.81	162.77			
Se	AL_3		1		34	6	1.434	8.64600	3		6.20	7.63	9.85	14.19	35.46	37.89	38.66	51.67	69.39	108.70	157.99	163.00			
Te	$L\beta_{2,15}$		3	17	52	6	4.301	8.64651	5		6.20	7.63	9.85	14.19	35.46	37.89	38.66	51.67	69.39	108.71	158.02	163.05			
U	M_3-N_1		2	1	92	6	2.863	8.66000	3		6.21	7.64	9.87	14.21	35.52	37.95	38.72	51.76	69.52	108.96	158.96	164.29			
Rn	$L\beta_1$	H	10	50	86	6	14.313	8.66050	5		6.21	7.64	9.87	14.21	35.52	37.95	38.73	51.76	69.52	108.97	159.00	164.34			
Kr	$K\beta_2$		10	3	36	6	14.312	8.66100	4		6.21	7.64	9.87	14.21	35.52	37.96	38.73	51.77	69.53	108.98	159.04	164.39			
Re	$L\alpha_2$		6	10	75	6	8.585	8.66376	5		6.21	7.64	9.87	14.22	35.53	37.97	38.74	51.78	69.55	109.03	159.23	164.66			
Re	$M\zeta_2$		1	.01	75	6	1.431	8.66400	3		6.21	7.64	9.87	14.22	35.54	37.97	38.74	51.79	69.55	109.03	159.25	164.68			
Nd	$L\beta_4$		4	5	60	6	5.721	8.66760	4		6.21	7.65	9.88	14.23	35.55	37.99	38.76	51.81	69.59	109.10	159.51	165.04			
Nd	$L\beta_1$		4	50	60	6	5.721	8.66760	4		6.21	7.65	9.88	14.23	35.55	37.99	38.76	51.81	69.59	109.10	159.51	165.04			
Au	$L\beta_1$		8	50	79	6	11.440	8.66824	5		6.21	7.65	9.88	14.23	35.55	37.99	38.76	51.81	69.59	109.11	159.56	165.10			
Re	$L\beta_1$		7	50	75	6	10.008	8.67006	5		6.21	7.65	9.88	14.23	35.56	38.00	38.77	51.83	69.61	109.15	159.69	165.29			
Ce	$L\mathit{l}$		3	2	58	6	4.287	8.67510	4		6.22	7.65	9.88	14.24	35.58	38.02	38.79	51.86	69.65	109.24	160.07	165.81			
Tl	$L\gamma_1$		10	10	81	6	14.289	8.67520	5		6.22	7.65	9.88	14.24	35.58	38.02	38.79	51.86	69.66	109.24	160.08	165.83			
Cs	$L\alpha_1$		3	100	55	6	4.286	8.67720	4		6.22	7.65	9.89	14.24	35.59	38.03	38.80	51.87	69.67	109.28	160.23	166.04			
At	$L\alpha_1$	H	8	100	85	6	11.425	8.67999	5		6.22	7.66	9.89	14.25	35.60	38.04	38.82	51.89	69.70	109.33	160.44	166.34			
Pu	$L\alpha_1$		10	100	94	6	14.276	8.68300	5		6.22	7.66	9.89	14.25	35.62	38.06	38.83	51.91	69.73	109.39	160.67	166.68			
Hg	$L\alpha_1$		7	100	80	6	9.987	8.68840	5		6.23	7.66	9.90	14.26	35.64	38.08	38.86	51.94	69.78	109.49	161.09	167.30			
Tm	$L\alpha_2$		5	10	69	6	7.132	8.69050	4		6.23	7.67	9.90	14.26	35.65	38.09	38.87	51.96	69.80	109.53	161.26	167.55			
Hg	$L\gamma_3$		10	2	80	6	14.262	8.69150	5		6.23	7.67	9.90	14.26	35.65	38.10	38.87	51.96	69.81	109.55	161.34	167.68			
Cs	$L\alpha_2$		3	10	55	6	4.272	8.70600	4		6.24	7.68	9.92	14.29	35.71	38.16	38.94	52.06	69.94	109.82	162.54	169.60			
Th	$L\alpha_2$		9	10	90	6	12.807	8.71092	5		6.24	7.68	9.92	14.30	35.73	38.18	38.96	52.09	69.98	109.91	162.97	170.33			
W	$L\beta_2$		7	20	74	6	9.960	8.71220	5		6.24	7.69	9.93	14.30	35.74	38.19	38.97	52.10	70.00	109.93	163.08	170.54			
Yb	$L\beta_3$		6	6	70	6	8.535	8.71398	5		6.24	7.69	9.93	14.30	35.75	38.20	38.97	52.11	70.01	109.97	163.24	170.82			
Pb	$L\beta_3$		9	6	82	6	12.791	8.72199	5		6.25	7.69	9.94	14.32	35.78	38.23	39.01	52.16	70.09	110.12	163.97	172.25			
Pa	$L\mathit{l}$		8	3	91	6	11.364	8.72639	4		6.25	7.70	9.94	14.32	35.80	38.25	39.03	52.19	70.13	110.20	164.39	173.15			
Gd	$L\beta_{2,15}$		5	20	64	6	7.102	8.72750	4		6.25	7.70	9.94	14.32	35.80	38.26	39.04	52.19	70.14	110.22	164.50	173.40			
Pa	M_2-N_4		3	5	91	6	4.260	8.73000	3		6.26	7.70	9.95	14.33	35.81	38.27	39.05	52.21	70.16	110.27	164.74	174.00			
Pd	$L\alpha_1$		2	100	46	6	2.838	8.73534	5		6.26	7.71	9.95	14.34	35.84	38.30	39.07	52.24	70.21	110.37	165.27	175.53			
Se	$L\beta_1$		1	35	34	6	1.419	8.73580	4		6.26	7.71	9.95	14.34	35.84	38.30	39.08	52.25	70.21	110.38	165.32	175.68			
Tb	$L\beta_3$		5	6	65	6	7.095	8.73600	4		6.26	7.71	9.95	14.34	35.84	38.30	39.08	52.25	70.22	110.38	165.34	175.75			
I	$L\beta_4$		3	4	53	6	4.257	8.73621	5		6.26	7.71	9.95	14.34	35.84	38.30	39.08	52.25	70.22	110.38	165.36	175.83			
Ru	$L\beta_{2,15}$		2	1	44	6	2.835	8.74360	4		6.27	7.71	9.96	14.35	35.87	38.33	39.11	52.30	70.29	110.52	166.13				
Rh	$L\beta_1$		2	42	45	6	2.834	8.74828	5		6.27	7.72	9.97	14.36	35.89	38.35	39.13	52.33	70.33	110.61	166.65				
Pd	$L\alpha_2$		2	10	46	6	2.833	8.75176	5		6.27	7.72	9.97	14.36	35.91	38.37	39.15	52.35	70.36	110.68	167.04				

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sr	$K\alpha_1$		10	100	38	6	14.163	8.75260	5		6.27	7.72	9.97	14.37	35.91	38.37	39.15	52.36	70.37	110.69	167.14				
Au	Ll		6	3	79	6	8.493	8.75784	5		6.28	7.73	9.98	14.37	35.93	38.40	39.18	52.39	70.42	110.79	167.76				
O	M_1-N_2		3	1	92	6	4.245	8.76000	2		6.28	7.73	9.98	14.38	35.94	38.41	39.19	52.40	70.44	110.83	168.03				
Mo	$L\gamma_{2,3}$		2	.5	42	6	2.830	8.76000	4		6.28	7.73	9.98	14.38	35.94	38.41	39.19	52.40	70.44	110.83	168.03				
O	N_1-P_3		1		92	6	1.415	8.76000	2		6.28	7.73	9.98	14.38	35.94	38.41	39.19	52.40	70.44	110.83	168.03				
Sr	$K\alpha_{1,2}$		10	150	38	6	14.140	8.76650	5		6.28	7.73	9.99	14.39	35.97	38.44	39.22	52.45	70.50	110.96	168.87				
Hg	$L\alpha_2$		7	10	80	6	9.896	8.76848	5		6.28	7.74	9.99	14.39	35.98	38.45	39.23	52.46	70.52	111.00	169.14				
Ge	AL_1		1		32	6	1.413	8.77300	3		6.29	7.74	10.00	14.40	36.00	38.47	39.25	52.49	70.56	111.08	169.78				
At	$L\alpha_2$	H	8	10	85	6	11.303	8.77367	5		6.29	7.74	10.00	14.40	36.00	38.47	39.25	52.49	70.56	111.09	169.88				
Ge	$K\alpha_1$		7	100	32	6	9.885	8.77837	6		6.29	7.74	10.00	14.41	36.02	38.49	39.27	52.52	70.61	111.18	170.60				
In	$L\gamma_4$		3	.1	49	6	4.236	8.77920	4		6.29	7.74	10.00	14.41	36.02	38.49	39.28	52.53	70.61	111.20	170.73				
Fe	$K\beta_{1,3}$		5	20	26	6	7.057	8.78305	5	4	6.29	7.75	10.01	14.42	36.04	38.51	39.30	52.55	70.65	111.27	171.37				
Ta	$L\beta_{2,15}$		6	20	69	6	8.467	8.78400	4		6.29	7.75	10.01	14.42	36.04	38.52	39.30	52.56	70.66	111.29	171.54				
Kr	$K\beta_1$		10	16	36	6	14.110	8.78500	4		6.29	7.75	10.01	14.42	36.05	38.52	39.31	52.56	70.67	111.31	171.72				
Ge	$K\alpha_{1,2}$		7	150	32	6	9.874	8.78760	6		6.30	7.75	10.01	14.42	36.06	38.53	39.32	52.58	70.69	111.36	172.20				
W	$L\gamma_1$		8	10	74	6	11.284	8.78840	5		6.30	7.75	10.01	14.42	36.06	38.54	39.32	52.59	70.70	111.38	172.35				
Kr	$K\beta_3$		10	8	36	6	14.102	8.79000	4		6.30	7.75	10.02	14.43	36.07	38.54	39.33	52.60	70.71	111.41	172.67				
Bi	$L\beta_4$		9	4	83	6	12.689	8.79210	5		6.30	7.76	10.02	14.43	36.08	38.55	39.34	52.61	70.73	111.45	173.11				
Sr	$K\alpha_2$		10	50	38	6	14.095	8.79430	5		6.30	7.76	10.02	14.43	36.09	38.56	39.35	52.62	70.75	111.49	173.61				
Ta	$L\gamma_3$		8	2	73	6	11.276	8.79488	5		6.30	7.76	10.02	14.44	36.09	38.57	39.35	52.63	70.76	111.50	173.74				
Sb	$L\gamma_5$		3	.1	51	6	4.228	8.79561	5		6.30	7.76	10.02	14.44	36.09	38.57	39.36	52.63	70.77	111.51	173.92				
Sm	$L\alpha_1$		4	100	62	6	5.635	8.79920	5		6.31	7.76	10.03	14.44	36.11	38.59	39.37	52.66	70.80	111.58	174.88				
Th	M_1-N_3		3	.1	90	6	4.225	8.80200	3		6.31	7.76	10.03	14.45	36.12	38.60	39.38	52.67	70.83	111.64	175.77				
Pu	$L\alpha_2$		10	10	94	6	14.082	8.80280	5		6.31	7.77	10.03	14.45	36.12	38.60	39.39	52.68	70.83	111.65	176.06				
Ge	$K\alpha_2$		7	50	32	6	9.854	8.80608	6		6.31	7.77	10.03	14.45	36.14	38.62	39.40	52.70	70.86	111.71	177.61				
Cl	$K\beta$		2	8	17	6	2.815	8.80680	4	3	6.31	7.77	10.03	14.46	36.14	38.62	39.41	52.70	70.87	111.73	178.11				
U	N_1-P_2		1		92	6	1.407	8.81000	2		6.31	7.77	10.04	14.46	36.15	38.64	39.42	52.73	70.90	111.79					
I	$L\beta_1$		3	75	53	6	4.220	8.81232	5		6.31	7.77	10.04	14.46	36.16	38.65	39.43	52.74	70.92	111.83					
At	$L\beta_3$	H	10	10	85	6	14.065	8.81350	5		6.32	7.77	10.04	14.47	36.17	38.65	39.44	52.75	70.93	111.86					
Re	$L\beta_4$		7	4	75	6	9.845	8.81419	5		6.32	7.78	10.04	14.47	36.17	38.65	39.44	52.75	70.94	111.87					
Pt	$L\beta_2$		8	20	78	6	11.249	8.81599	5		6.32	7.78	10.05	14.47	36.18	38.66	39.45	52.76	70.95	111.90					
Ac	$L\alpha_1$	H	9	100	89	6	12.650	8.81937	5		6.32	7.78	10.05	14.48	36.19	38.68	39.47	52.79	70.99	111.97					
Br	$M\alpha$		1	100	68	6	1.405	8.82000	2		6.32	7.78	10.05	14.48	36.20	38.68	39.47	52.79	70.99	111.98					
Kr	$K\alpha_1$		9	100	36	6	12.648	8.82090	4		6.32	7.78	10.05	14.48	36.20	38.69	39.47	52.80	71.00	112.00					
Pt	$L\beta_3$	D	8	6	78	6	11.233	8.82864	5		6.33	7.79	10.06	14.49	36.23	38.72	39.51	52.85	71.07	112.15					
Kr	$K\alpha_{1,2}$		9	150	36	6	12.631	8.83290	4		6.33	7.79	10.06	14.50	36.25	38.74	39.53	52.87	71.11	112.23					
Ce	$L\beta_{2,15}$		4	20	58	6	5.612	8.83480	4		6.33	7.79	10.07	14.50	36.26	38.75	39.54	52.89	71.13	112.27					
Dy	$L\gamma_1$		6	5	66	6	8.417	8.83595	5		6.33	7.79	10.07	14.50	36.26	38.75	39.54	52.89	71.14	112.29					
Ag	Ln		2	1	47	6	2.806	8.83660	4		6.33	7.80	10.07	14.50	36.27	38.76	39.55	52.90	71.15	112.30					
Se	$K\alpha_1$		8	100	34	6	11.220	8.83816	5		6.33	7.80	10.07	14.51	36.27	38.76	39.55	52.91	71.16	112.33					
W	$L\beta_3$		7	6	74	6	9.817	8.83883	5		6.33	7.80	10.07	14.51	36.28	38.77	39.56	52.91	71.17	112.35					
Pb	$L\beta_2$		9	20	82	6	12.621	8.83989	5		6.33	7.80	10.07	14.51	36.28	38.77	39.56	52.92	71.18	112.37					
Sm	$L\alpha_2$		4	10	62	6	5.607	8.84248	5		6.34	7.80	10.08	14.51	36.29	38.78	39.57	52.93	71.20	112.42					
Gd	$M\gamma$		1	1	64	6	1.402	8.84400	3		6.34	7.80	10.08	14.52	36.30	38.79	39.58	52.94	71.21	112.45					
U	M_3-$O_{4,5}$		3	1	92	6	4.205	8.84400	3		6.34	7.80	10.08	14.52	36.30	38.79	39.58	52.94	71.21	112.45					
Pb	$L\beta_1$		9	50	82	6	12.612	8.84619	5		6.34	7.80	10.08	14.52	36.31	38.80	39.59	52.96	71.23	112.49					
Er	AM_5		1		68	6	1.401	8.84700	3		6.34	7.80	10.08	14.52	36.31	38.80	39.59	52.96	71.24	112.50					
Se	$K\alpha_{1,2}$		8	150	34	6	11.207	8.84895	5		6.34	7.81	10.08	14.52	36.32	38.81	39.60	52.98	71.26	112.54					
Au	$L\beta_4$		8	4	79	6	11.203	8.85207	5		6.34	7.81	10.09	14.53	36.33	38.83	39.62	53.00	71.29	112.60					
Yb	$L\beta_1$		6	50	70	6	8.400	8.85390	5		6.34	7.81	10.09	14.53	36.34	38.84	39.63	53.01	71.31	112.64					
Kr	$K\alpha_2$		9	50	36	6	12.596	8.85690	4		6.35	7.81	10.09	14.54	36.35	38.85	39.64	53.03	71.33	112.70					
W	$L\alpha_1$		6	100	74	6	8.396	8.85834	5		6.35	7.81	10.09	14.54	36.36	38.86	39.65	53.04	71.35	112.72					
Au	M_2-N_4		2	.5	79	6	2.797	8.86400	3		6.35	7.82	10.10	14.55	36.38	38.88	39.67	53.07	71.40	112.83					
Pr	$L\beta_3$		4	6	59	6	5.591	8.86880	4		6.36	7.82	10.11	14.56	36.40	38.90	39.70	53.10	71.44	112.93					
Se	$K\alpha_2$		8	50	34	6	11.179	8.87056	5		6.36	7.83	10.11	14.56	36.41	38.91	39.70	53.12	71.46	112.96					
Yb	$L\gamma_1$		7	5	70	6	9.778	8.87383	5		6.36	7.83	10.11	14.57	36.43	38.93	39.72	53.14	71.49	113.03					
W	M_1-$O_{2,3}$		2	.01	74	6	2.792	8.88000	2		6.36	7.83	10.12	14.58	36.45	38.95	39.75	53.18	71.55	113.15					
Tb	$L\beta_1$		5	50	65	6	6.977	8.88400	4		6.37	7.84	10.12	14.58	36.47	38.97	39.77	53.20	71.59	113.22					
Np	$L\alpha_1$		10	100	93	6	13.942	8.89128	6		6.37	7.84	10.13	14.59	36.50	39.01	39.80	53.25	71.65	113.37					
Ta	M_4-N_3		1	.01	73	6	1.393	8.90000	2		6.38	7.85	10.14	14.61	36.54	39.05	39.84	53.31	71.73	113.54					
Pa	M_3-N_1		2	1	91	6	2.786	8.90000	3		6.38	7.85	10.14	14.61	36.54	39.05	39.84	53.31	71.73	113.54					
Hf	Ll		5	3	72	6	6.958	8.90725	5		6.38	7.86	10.15	14.62	36.57	39.08	39.88	53.35	71.80	113.68					
Po	$L\alpha_1$		8	100	84	6	11.129	8.91087	5		6.39	7.86	10.15	14.63	36.58	39.10	39.89	53.38	71.84	113.75					
Te	$L\beta_6$		3	1	52	6	4.173	8.91264	5		6.39	7.86	10.16	14.63	36.59	39.10	39.90	53.39	71.85	113.79					
Ir	$L\gamma_1$		9	10	77	6	12.510	8.91765	5		6.39	7.87	10.16	14.64	36.61	39.13	39.92	53.42	71.90	113.89					

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10^{-}	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Sb	$L\beta_9$	B	3	.01	51	6	4.170	8.91783	5		6.39	7.87	10.16	14.64	36.61	39.13	39.92	53.42	71.90	113.89					
Pt	M_1-N_3		2	1	78	6	2.779	8.92000	3		6.39	7.87	10.16	14.64	36.62	39.14	39.94	53.44	71.92	113.93					
Er	$L\alpha_1$		5	100	68	6	6.947	8.92125	5		6.39	7.87	10.17	14.64	36.63	39.14	39.94	53.44	71.93	113.96					
W	$L\alpha_2$		6	10	74	6	8.334	8.92458	5		6.40	7.87	10.17	14.65	36.64	39.16	39.96	53.47	71.96	114.02					
Ac	$L\alpha_2$	H	9	10	89	6	12.499	8.92602	5		6.40	7.87	10.17	14.65	36.65	39.16	39.96	53.47	71.98	114.05					
Os	$L\gamma_3$		9	2	76	6	12.498	8.92674	5		6.40	7.87	10.17	14.65	36.65	39.17	39.97	53.48	71.98	114.07					
As	$L\beta_{3,4}$		1	2	33	6	1.388	8.92900	3		6.40	7.88	10.17	14.66	36.66	39.18	39.98	53.49	72.01	114.11					
Se	$K\beta_1$		9	16	34	6	12.494	8.92962	5		6.40	7.88	10.17	14.66	36.66	39.18	39.98	53.50	72.01	114.12					
Tb	$L\beta_4$		5	5	65	6	6.939	8.93200	4		6.40	7.88	10.18	14.66	36.67	39.19	39.99	53.51	72.03	114.17					
Se	$K\beta_3$		9	8	34	6	12.487	8.93412	5		6.40	7.88	10.18	14.67	36.68	39.20	40.00	53.53	72.05	114.21					
Au	$L\alpha_1$		7	100	79	6	9.712	8.93480	5		6.40	7.88	10.18	14.67	36.68	39.20	40.00	53.53	72.06	114.22					
At	$L\beta_1$	H	10	50	85	6	13.874	8.93490	5		6.40	7.88	10.18	14.67	36.69	39.21	40.00	53.53	72.06	114.23					
Sb	$L\beta_{10}$	8	3	.01	51	6	4.161	8.93751	5		6.40	7.88	10.18	14.67	36.70	39.22	40.02	53.55	72.08	114.28					
In	$L\gamma_{2,3}$		3	2	49	6	4.160	8.94000	4		6.41	7.89	10.19	14.68	36.71	39.23	40.03	53.57	72.11	114.33					
Tb	Ll		4	2	65	6	5.546	8.94080	4		6.41	7.89	10.19	14.68	36.71	39.23	40.03	53.57	72.12	114.34					
Co	$K\alpha_1$		5	100	27	6	6.929	8.94482	6		6.41	7.89	10.19	14.68	36.73	39.25	40.05	53.60	72.15	114.42					
Yb	$L\beta_4$		6	5	70	6	8.312	8.94828	5		6.41	7.89	10.20	14.69	36.74	39.27	40.07	53.62	72.19	114.49					
Co	$K\alpha_{1,2}$		5	150	27	6	6.924	8.95129	6		6.41	7.90	10.20	14.69	36.75	39.28	40.08	53.64	72.21	114.55					
Pt	$L\beta_1$		8	50	78	6	11.069	8.95920	5		6.42	7.90	10.21	14.71	36.79	39.32	40.12	53.69	72.29	114.71					
Cd	Ll		2	2	48	6	2.767	8.96028	5		6.42	7.90	10.21	14.71	36.79	39.32	40.12	53.70	72.30	114.73					
W	$M\zeta_1$		1	.01	74	6	1.383	8.96200	3		6.42	7.91	10.21	14.71	36.80	39.33	40.13	53.71	72.31	114.77					
Co	$K\alpha_2$		5	50	27	6	6.914	8.96425	6		6.42	7.91	10.21	14.72	36.81	39.34	40.14	53.72	72.33	114.81					
Hg	$L\gamma_1$		10	10	80	6	13.828	8.96460	5		6.42	7.91	10.21	14.72	36.81	39.34	40.14	53.72	72.34	114.82					
Ho	$M\beta$		1	45	67	6	1.383	8.96500	3		6.42	7.91	10.22	14.72	36.81	39.34	40.15	53.73	72.34	114.83					
Ba	$L\gamma_1$		4	5	56	6	5.530	8.96600	4		6.42	7.91	10.22	14.72	36.82	39.35	40.15	53.73	72.35	114.85					
W	$L\beta_1$		7	50	74	6	9.671	8.97266	6		6.43	7.92	10.22	14.73	36.85	39.38	40.18	53.78	72.41	114.98					
Ru	$L\beta_3$		2	3	44	6	2.763	8.97320	4		6.43	7.92	10.22	14.73	36.85	39.38	40.18	53.78	72.42	114.99					
Ru	$L\beta_6$		2	3	44	6	2.763	8.97320	4		6.43	7.92	10.22	14.73	36.85	39.38	40.18	53.78	72.42	114.99					
Er	$L\alpha_2$		5	10	68	6	6.904	8.97750	4		6.43	7.92	10.23	14.74	36.87	39.40	40.20	53.81	72.46	115.08					
Au	$L\gamma_3$		10	2	79	6	13.807	8.97830	5		6.43	7.92	10.23	14.74	36.87	39.40	40.21	53.81	72.47	115.09					
Cs	Ln		3	1	55	6	4.141	8.97960	4		6.43	7.92	10.23	14.74	36.88	39.41	40.21	53.82	72.48	115.12					
Po	Ll		7	3	84	6	9.662	8.98030	4		6.44	7.92	10.23	14.74	36.88	39.41	40.22	53.83	72.48	115.13					
Se	$L\alpha_{1,2}$		1	100	34	6	1.379	8.99000	4		6.44	7.93	10.24	14.76	36.92	39.46	40.26	53.89	72.58	115.33					
Ta	$L\beta_2$		7	20	73	6	9.650	8.99177	5		6.44	7.93	10.25	14.76	36.93	39.47	40.27	53.90	72.59	115.36					
W	$M\zeta_2$		1	.01	74	6	1.378	8.99300	3		6.44	7.93	10.25	14.76	36.93	39.47	40.28	53.91	72.60	115.39					
Pm	$L\gamma_1$		5	5	61	6	6.891	8.99450	4		6.45	7.93	10.25	14.77	36.94	39.48	40.28	53.92	72.62	115.42					
Pt	Ll		6	3	78	6	8.267	8.99700	4		6.45	7.94	10.25	14.77	36.95	39.49	40.29	53.93	72.64	115.47					
Ni	$K\beta_{1,3}$		6	20	28	6	8.263	9.00081	6		6.45	7.94	10.26	14.78	36.97	39.51	40.31	53.96	72.68	115.55					
Sn	$L\gamma_1$		3	8	50	6	4.130	9.00345	5		6.45	7.94	10.26	14.78	36.98	39.52	40.32	53.98	72.70	115.60					
Po	$L\alpha_2$	H	8	10	84	6	11.014	9.00384	5		6.45	7.94	10.26	14.78	36.98	39.52	40.33	53.98	72.70	115.61					
Tl	$L\beta_3$		9	6	81	6	12.388	9.00558	5		6.45	7.94	10.26	14.78	36.99	39.53	40.33	53.99	72.72	115.64					
Np	$L\alpha_2$		10	10	93	6	13.757	9.01045	6		6.46	7.95	10.27	14.79	37.01	39.55	40.36	54.02	72.77	115.74					
Am	Ll		9	3	95	6	12.381	9.01080	4		6.46	7.95	10.27	14.79	37.01	39.55	40.36	54.02	72.77	115.75					
Au	$L\alpha_2$		7	10	79	6	9.626	9.01404	5		6.46	7.95	10.27	14.80	37.02	39.57	40.37	54.04	72.80	115.81					
Sb	$L\beta_7$		3	.1	51	6	4.125	9.01560	4		6.46	7.95	10.27	14.80	37.03	39.57	40.38	54.05	72.81	115.85					
La	Ll		3	2	57	6	4.124	9.01800	3		6.46	7.96	10.28	14.80	37.04	39.59	40.39	54.07	72.84	115.89					
Pr	$L\beta_4$		4	5	59	6	5.497	9.02000	4		6.46	7.96	10.28	14.81	37.05	39.59	40.40	54.08	72.86	115.93					
Te	$L\beta_3$		3	6	52	6	4.120	9.02679	5		6.47	7.96	10.29	14.82	37.08	39.63	40.43	54.13	72.92	116.07					
Ge	$K\beta_1$		8	14	32	6	10.980	9.03152	5		6.47	7.97	10.29	14.83	37.10	39.65	40.46	54.16	72.96	116.17					
Th	M_2-N_4		3	5	90	6	4.117	9.03300	3		6.47	7.97	10.29	14.83	37.10	39.65	40.46	54.17	72.98	116.20					
Ge	$K\beta_3$		8	7	32	6	10.976	9.03487	5		6.47	7.97	10.30	14.83	37.11	39.66	40.47	54.18	73.00	116.24					
Pr	$L\beta_1$		4	50	59	6	5.488	9.03520	4		6.47	7.97	10.30	14.83	37.11	39.66	40.47	54.18	73.00	116.24					
Tm	$L\beta_3$		6	6	69	6	8.229	9.03780	4		6.48	7.97	10.30	14.84	37.12	39.68	40.49	54.20	73.02	116.30					
Ra	$L\alpha_1$		9	100	88	6	12.338	9.04256	5		6.48	7.98	10.30	14.84	37.14	39.70	40.51	54.23	73.07	116.39					
Au	M_3-$O_{4,5}$		2	.5	79	6	2.741	9.04400	3		6.48	7.98	10.31	14.85	37.15	39.70	40.51	54.24	73.08	116.42					
Ru	$L\beta_4$		2	3	44	6	2.741	9.04600	4		6.48	7.98	10.31	14.85	37.16	39.71	40.52	54.25	73.10	116.46					
Xe	$L\alpha_1$	H	3	100	54	6	4.109	9.04980	4		6.48	7.98	10.31	14.86	37.17	39.73	40.54	54.28	73.14	116.54					
Eu	$L\beta_{2,15}$		5	20	63	6	6.842	9.05900	4		6.49	7.99	10.32	14.87	37.21	39.77	40.58	54.34	73.22	116.73					
Bi	$M\gamma$		2	5	83	6	2.735	9.06400	3		6.50	8.00	10.33	14.88	37.23	39.80	40.61	54.37	73.27	116.83					
Zn	$K\beta_{1,3}$		7	20	30	6	9.570	9.06675	5		6.50	8.00	10.33	14.88	37.25	39.81	40.62	54.39	73.29	116.89					
Pb	$L8_4$		9	4	82	6	12.304	9.06750	4		6.50	8.00	10.33	14.89	37.25	39.81	40.62	54.39	73.30	116.91					
Sb	$L\beta_{2,15}$		3	17	51	6	4.100	9.07005	5		6.50	8.00	10.34	14.89	37.26	39.82	40.64	54.41	73.33	116.96					
Gd	$L\beta_3$		5	6	64	6	6.830	9.07500	4		6.50	8.01	10.34	14.90	37.28	39.85	40.66	54.44	73.37	117.06					
Ir	$L\beta_2$		8	20	77	6	10.919	9.08256	5		6.51	8.01	10.35	14.91	37.31	39.88	40.69	54.49	73.44	117.22					
Er	$L\beta_{2,15}$		6	20	68	6	8.188	9.08394	5		6.51	8.01	10.35	14.91	37.32	39.89	40.70	54.50	73.46	117.24					

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Po	$L\beta_3$		10	6	84	6	13.635	9.09100	4		6.51	8.02	10.36	14.92	37.35	39.92	40.73	54.54	73.52	117.39					
Sc	$K\alpha_1$		3	100	21	6	4.090	9.09270	4	4	6.52	8.02	10.36	14.93	37.36	39.93	40.74	54.56	73.54	117.43					
Tl	$L\beta_2$		9	20	81	6	12.270	9.09278	5		6.52	8.02	10.36	14.93	37.36	39.93	40.74	54.56	73.54	117.43					
Sc	$K\alpha_{1,2}$		3	150	21	6	4.088	9.09600	4	4	6.52	8.02	10.36	14.93	37.37	39.94	40.76	54.58	73.57	117.49					
Sc	$K\alpha_2$		3	50	21	6	4.085	9.10260	4	4	6.52	8.03	10.37	14.94	37.40	39.97	40.79	54.62	73.63	117.63					
Ta	$L\gamma_1$		8	10	73	6	10.893	9.10352	5		6.52	8.03	10.37	14.94	37.40	39.98	40.79	54.63	73.64	117.65					
U	$L\alpha_1$		10	100	92	6	13.612	9.10639	6		6.53	8.03	10.38	14.95	37.42	39.99	40.81	54.64	73.67	117.71					
Hf	$L\gamma_3$		8	2	72	6	10.889	9.10728	5		6.53	8.03	10.38	14.95	37.42	39.99	40.81	54.65	73.68	117.73					
W	$L\beta_4$		7	4	74	6	9.524	9.11134	5		6.53	8.04	10.38	14.96	37.44	40.01	40.83	54.68	73.71	117.81					
Pa	M_3-$O_{4,5}$		3	1	91	6	4.080	9.11400	3		6.53	8.04	10.39	14.96	37.45	40.02	40.84	54.69	73.74	117.87					
As	AL_2		1		33	6	1.358	9.12500	3		6.54	8.05	10.40	14.98	37.49	40.07	40.89	54.77	73.84	118.10					
Ir	$L\beta_3$		8	6	77	6	10.866	9.12679	5		6.54	8.05	10.40	14.98	37.50	40.08	40.90	54.78	73.86	118.14					
Pm	$L\alpha_1$		4	100	61	6	5.432	9.12880	4		6.54	8.05	10.40	14.99	37.51	40.09	40.91	54.79	73.88	118.18					
Ta	$L\alpha_1$		6	100	73	6	8.145	9.13182	5		6.54	8.06	10.41	14.99	37.52	40.11	40.93	54.81	73.91	118.24					
Th	M_3-N_1		2	1	90	6	2.714	9.13600	3		6.55	8.06	10.41	15.00	37.54	40.13	40.94	54.84	73.95	118.33					
Tl	$L\beta_1$		9	50	81	6	12.211	9.13616	5		6.55	8.06	10.41	15.00	37.54	40.13	40.95	54.84	73.95	118.33					
V	$K\beta_{1,3}$		4	20	23	6	5.426	9.13760	5	4	6.55	8.06	10.41	15.00	37.55	40.13	40.95	54.85	73.96	118.36					
Pt	$L\beta_4$		8	4	78	6	10.852	9.13783	5		6.55	8.06	10.41	15.00	37.55	40.13	40.95	54.85	73.96	118.37					
Te	$L\beta_4$		3	4	52	6	4.069	9.13983	5		6.55	8.06	10.42	15.00	37.56	40.14	40.96	54.86	73.98	118.41					
Si	M_3-N_4		2	5	83	6	2.712	9.14200	3		6.55	8.07	10.42	15.01	37.57	40.15	40.97	54.88	74.00	118.46					
Ta	$L\beta_3$		7	6	73	6	9.486	9.14746	5		6.55	8.07	10.42	15.02	37.59	40.18	41.00	54.91	74.06	118.57					
Ra	$L\alpha_2$		9	10	88	6	12.194	9.14904	5		6.56	8.07	10.43	15.02	37.60	40.18	41.01	54.92	74.07	118.60					
Si	$L\alpha_1$		8	100	83	6	10.837	9.15088	5		6.56	8.07	10.43	15.02	37.60	40.19	41.01	54.93	74.09	118.64					
Cr	$K\alpha_1$		4	100	24	6	5.414	9.15880	5	4	6.56	8.08	10.44	15.04	37.64	40.23	41.05	54.99	74.16	118.81					
Cr	$K\alpha_{1,2}$		4	150	24	6	5.411	9.16400	5	4	6.57	8.08	10.44	15.04	37.66	40.25	41.08	55.02	74.21	118.92					
Pm	$L\alpha_2$		4	10	61	6	5.407	9.17040	4		6.57	8.09	10.45	15.06	37.69	40.28	41.11	55.06	74.27	119.06					
Cr	$K\alpha_2$		4	50	24	6	5.405	9.17442	6	4	6.57	8.09	10.45	15.06	37.71	40.30	41.12	55.09	74.31	119.14					
Lu	Ll		5	2	71	6	6.752	9.18000	4		6.58	8.10	10.46	15.07	37.73	40.33	41.15	55.12	74.36	119.26					
Si	M_4-$P_{2,3}$		2	.01	83	6	2.701	9.18000	2		6.58	8.10	10.46	15.07	37.73	40.33	41.15	55.12	74.36	119.26					
Tb	$L\gamma_1$		6	5	65	6	8.100	9.18180	4		6.58	8.10	10.46	15.07	37.74	40.33	41.16	55.13	74.38	119.30					
Tm	$L\beta_1$		6	50	69	6	8.100	9.18240	4		6.58	8.10	10.46	15.08	37.74	40.34	41.16	55.14	74.39	119.31					
Pt	$L\alpha_1$		7	100	78	6	9.441	9.19128	5		6.59	8.11	10.47	15.09	37.78	40.38	41.20	55.20	74.47	119.50					
Os	$L\beta_7$		8	7	76	6	10.785	9.19463	5		6.59	8.11	10.48	15.10	37.79	40.39	41.22	55.22	74.50	119.57					
Rh	$L\alpha_1$		2	100	45	6	2.696	9.19486	5		6.59	8.11	10.48	15.10	37.79	40.39	41.22	55.22	74.50	119.58					
Ta	$L\alpha_2$		6	10	73	6	8.086	9.19758	5		6.59	8.11	10.48	15.10	37.80	40.41	41.23	55.24	74.53	119.64					
Ho	$M\alpha$		1	100	67	6	1.347	9.20000	2		6.59	8.12	10.48	15.10	37.81	40.42	41.24	55.25	74.55	119.69					
Pt	M_2-N_4		2	.5	78	6	2.694	9.20200	3		6.59	8.12	10.49	15.11	37.82	40.43	41.25	55.27	74.57	119.73					
Pu	Ll		9	3	94	6	12.122	9.20339	4		6.60	8.12	10.49	15.11	37.83	40.43	41.26	55.28	74.59	119.76					
Br	$K\beta_2$		10	2	35	6	13.467	9.20460	5		6.60	8.12	10.49	15.11	37.83	40.44	41.27	55.28	74.60	119.79					
Tm	$L\gamma_1$		7	5	69	6	9.424	9.20710	4		6.60	8.12	10.49	15.12	37.84	40.45	41.28	55.30	74.62	119.84					
Rh	$L\alpha_2$		2	10	45	6	2.692	9.21090	5		6.60	8.13	10.50	15.12	37.86	40.47	41.30	55.32	74.66	119.92					
Eu	$M\gamma$		1	1	63	6	1.346	9.21100	3		6.60	8.13	10.50	15.12	37.86	40.47	41.30	55.33	74.66	119.92					
La	$L\beta_{2,15}$		4	20	57	6	5.383	9.21200	4		6.60	8.13	10.50	15.12	37.87	40.47	41.30	55.33	74.67	119.95					
Bi	Ll		7	3	83	6	9.419	9.21269	5		6.60	8.13	10.50	15.13	37.87	40.48	41.30	55.34	74.67	119.96					
Po	$L\beta_1$		10	50	84	6	13.445	9.22000	4		6.61	8.13	10.51	15.14	37.90	40.51	41.34	55.38	74.74	120.12					
Ca	$K\beta_5$	C	3	.01	20	6	4.032	9.22380	4	4	6.61	8.14	10.51	15.14	37.92	40.53	41.36	55.41	74.78	120.20					
Ho	$L\alpha_1$		5	100	67	6	6.719	9.22500	4		6.61	8.14	10.51	15.15	37.92	40.53	41.36	55.42	74.79	120.23					
Os	$L\gamma_1$		9	10	76	6	12.093	9.22526	5		6.61	8.14	10.51	15.15	37.92	40.53	41.36	55.42	74.79	120.23					
U	$L\alpha_2$		10	10	92	6	13.437	9.22558	6		6.61	8.14	10.51	15.15	37.92	40.54	41.36	55.42	74.80	120.24					
Te	$L\beta_1$		3	75	52	6	4.029	9.23031	5		6.61	8.14	10.52	15.15	37.94	40.56	41.39	55.45	74.84	120.34					
Gd	$L\beta_1$		5	50	64	6	6.712	9.23400	4		6.62	8.15	10.52	15.16	37.96	40.57	41.40	55.48	74.88	120.42					
Re	$L\gamma_3$		9	2	75	6	12.080	9.23517	5		6.62	8.15	10.52	15.16	37.96	40.58	41.41	55.48	74.89	120.45					
Ru	$L\beta_1$		2	45	44	6	2.683	9.24116	5		6.62	8.15	10.53	15.17	37.99	40.61	41.44	55.52	74.94	120.58					
Si	$L\alpha_2$		8	10	83	6	10.729	9.24287	5		6.62	8.15	10.53	15.18	38.00	40.62	41.45	55.53	74.96	120.61					
Cu	$K\alpha_1$		6	100	29	6	8.046	9.24337	6		6.62	8.15	10.53	15.18	38.00	40.62	41.45	55.54	74.96	120.62					
Ce	$L\beta_3$		4	6	58	6	5.364	9.24360	4		6.62	8.15	10.53	15.18	38.00	40.62	41.45	55.54	74.97	120.63					
Gd	Ll		4	2	64	6	5.361	9.24880	4		6.63	8.16	10.54	15.18	38.02	40.64	41.47	55.57	75.02	120.74					
U	M_4-N_3		2	.01	92	6	2.680	9.25000	3		6.63	8.16	10.54	15.19	38.03	40.65	41.48	55.58	75.03	120.77					
Ir	Ll	D	6	3	77	6	8.040	9.25080	4		6.63	8.16	10.54	15.19	38.03	40.65	41.48	55.58	75.04	120.79					
Cu	$K\alpha_{1,2}$		6	150	29	6	8.040	9.25103	6		6.63	8.16	10.54	15.19	38.03	40.65	41.48	55.59	75.04	120.79					
Sn	$L\gamma_5$		3	.1	50	6	4.018	9.25425	5		6.63	8.16	10.55	15.19	38.05	40.67	41.50	55.61	75.07	120.86					
Br	Ln		1	1	35	6	1.339	9.25500	3		6.63	8.16	10.55	15.20	38.05	40.67	41.50	55.61	75.08	120.88					
Rb	$K\alpha_1$		10	100	37	6	13.393	9.25553	6		6.63	8.17	10.55	15.20	38.05	40.67	41.51	55.62	75.08	120.89					
Ir	M_1-N_3	H	2	.5	77	6	2.677	9.26200	3		6.64	8.17	10.55	15.21	38.08	40.70	41.54	55.66	75.14	121.03					
Ir	$L\beta_1$		8	50	77	6	10.706	9.26247	5		6.64	8.17	10.56	15.21	38.08	40.71	41.54	55.66	75.15	121.04					

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llanr (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Au	$L\gamma_1$		10	10	79	6	13.379	9.26500	5		6.64	8.17	10.56	15.21	38.09	40.72	41.55	55.68	75.17	121.10					
Cu	$K\alpha_2$		6	50	29	6	8.026	9.26634	6		6.64	8.17	10.56	15.21	38.10	40.72	41.56	55.69	75.18	121.13					
Tm	$L\beta_4$		6	5	69	6	8.024	9.26880	4		6.64	8.18	10.56	15.22	38.11	40.73	41.57	55.70	75.21	121.18					
Ca	$K\beta_{1,3}$		3	15	20	6	4.012	9.26910	4	4	6.64	8.18	10.56	15.22	38.11	40.74	41.57	55.70	75.21	121.19					
Rb	$K\alpha_{1,2}$		10	150	37	6	13.373	9.26932	5		6.64	8.18	10.56	15.22	38.11	40.74	41.57	55.71	75.21	121.19					
Gd	$L\beta_4$		5	5	64	6	6.686	9.27000	4		6.64	8.18	10.56	15.22	38.11	40.74	41.57	55.71	75.22	121.21					
Pt	$L\alpha_2$		7	10	78	6	9.360	9.27024	5		6.64	8.18	10.56	15.22	38.11	40.74	41.57	55.71	75.22	121.21					
Fr	$L\alpha_1$	H	9	100	87	6	12.029	9.27441	5		6.65	8.18	10.57	15.23	38.13	40.76	41.59	55.74	75.26	121.30					
Pt	$L\gamma_3$		10	2	78	6	13.359	9.27910	5		6.65	8.19	10.57	15.23	38.15	40.78	41.62	55.77	75.30	121.41					
Ho	$L\alpha_2$		5	10	67	6	6.679	9.28050	4		6.65	8.19	10.58	15.24	38.16	40.79	41.62	55.78	75.32	121.44					
Hf	$L\beta_2$		7	20	72	6	9.346	9.28473	5		6.65	8.19	10.58	15.24	38.18	40.81	41.64	55.81	75.36	121.53					
Ta	$L\beta_1$		7	50	73	6	9.342	9.28886	5		6.66	8.19	10.59	15.25	38.19	40.83	41.66	55.83	75.40	121.62					
Po	$L\beta_2$		10	20	84	6	13.338	9.29370	5		6.66	8.20	10.59	15.26	38.21	40.85	41.68	55.87	75.44	121.73					
Rb	$K\alpha_2$		10	50	37	6	13.333	9.29690	5		6.66	8.20	10.59	15.26	38.23	40.86	41.70	55.89	75.47	121.80					
Hg	$L\beta_3$		9	6	80	6	11.993	9.30222	5		6.67	8.21	10.60	15.27	38.25	40.89	41.72	55.92	75.53	121.92					
Nb	$L\gamma_{2,3}$		2	.5	41	6	2.663	9.30840	4		6.57	8.21	10.61	15.28	38.28	40.92	41.75	55.96	75.58	122.05					
Pb	M_2-N_1		2	.01	82	6	2.663	9.31000	3		6.67	8.21	10.61	15.29	38.28	40.92	41.76	55.97	75.60	122.09					
Ta	Mz_1		1	.1	73	6	1.331	9.31600	3		6.68	8.22	10.62	15.30	38.31	40.95	41.79	56.01	75.66	122.22					
Pd	Ln		2	1	46	6	2.660	9.32100	4		6.68	8.22	10.62	15.30	38.33	40.97	41.81	56.04	75.70	122.34					
Br	$K\beta_1$		10	16	35	6	13.289	9.32790	5		6.68	8.23	10.63	15.32	38.36	41.01	41.84	56.09	75.77	122.49					
Pa	$L\alpha_1$		10	100	91	6	13.288	9.32840	5		6.68	8.23	10.63	15.32	38.36	41.01	41.85	56.09	75.78	122.50					
Ta	Mz_2		1	.01	73	6	1.329	9.33000	3		6.69	8.23	10.63	15.32	38.37	41.02	41.85	56.10	75.79	122.54					
Br	$K\beta_3$		10	8	35	6	13.282	9.33270	5		6.69	8.23	10.64	15.32	38.38	41.03	41.87	56.12	75.82	122.60					
Ra	Ll		8	3	88	6	10.620	9.33752	5		6.69	8.24	10.64	15.33	38.40	41.05	41.89	56.15	75.86	122.71					
U	M_3-O_1		3	.5	92	6	3.979	9.34500	3		6.70	8.24	10.65	15.34	38.43	41.08	41.93	56.20	75.93	122.87					
Sn	$L\beta_9$	B	3	.01	50	6	3.979	9.34539	5		6.70	8.24	10.65	15.34	38.44	41.09	41.93	56.20	75.94	122.88					
Sb	$L\beta_6$		3	1	51	6	3.979	9.34539	5		6.70	8.24	10.65	15.34	38.44	41.09	41.93	56.20	75.94	122.88					
Pb	$M\gamma$		2	5	82	6	2.652	9.34800	3		6.70	8.25	10.65	15.35	38.45	41.10	41.94	56.22	75.96	122.94					
Tl	$L\beta_4$		9	4	81	6	11.929	9.35262	5		6.70	8.25	10.66	15.36	38.47	41.12	41.96	56.25	76.01	123.05					
Dy	$M\beta$		1	45	66	6	1.325	9.35700	3		6.71	8.26	10.66	15.36	38.48	41.14	41.98	56.28	76.05	123.14					
Br	$K\alpha_1$		9	100	35	6	11.922	9.35766	5		6.71	8.26	10.66	15.36	38.49	41.14	41.98	56.28	76.06	123.16					
Hg	$L\beta_2$		9	20	80	6	11.922	9.35774	5		6.71	8.26	10.66	15.36	38.49	41.14	41.99	56.28	76.06	123.16					
Os	$L\beta_2$		8	20	76	6	10.597	9.35831	5		6.71	8.26	10.66	15.37	38.49	41.15	41.99	56.29	76.06	123.17					
Sn	$L\beta_{10}$	B	3	.01	50	6	3.971	9.36510	5		6.71	8.26	10.67	15.38	38.52	41.18	42.02	56.33	76.13	123.33					
As	AL_3		1		33	6	1.323	9.36700	3		6.71	8.26	10.67	15.38	38.53	41.19	42.03	56.34	76.14	123.37					
Er	$L\beta_3$		6	6	68	6	7.938	9.36960	4		6.71	8.27	10.68	15.38	38.54	41.20	42.04	56.36	76.17	123.43					
Br	$K\alpha_{1,2}$		9	150	35	6	11.907	9.36990	5		6.71	8.27	10.68	15.38	38.54	41.20	42.04	56.36	76.17	123.44					
Ga	$K\alpha_1$		7	100	31	6	9.250	9.38058	6		6.72	8.28	10.69	15.40	38.59	41.25	42.09	56.43	76.27	123.68					
Fr	$L\alpha_2$	H	9	10	87	6	11.893	9.38069	5		6.72	8.28	10.69	15.40	38.59	41.25	42.09	56.43	76.28	123.68					
Np	Ll		9	3	93	6	11.887	9.38520	4		6.73	8.28	10.70	15.41	38.61	41.27	42.11	56.46	76.32	123.79					
Bi	$L\beta_3$		10	6	83	6	13.208	9.38550	5		6.73	8.28	10.70	15.41	38.61	41.27	42.12	56.47	76.32	123.79					
Pt	M_3-$O_{4,5}$		2	.5	78	6	2.641	9.38800	3		6.73	8.28	10.70	15.41	38.62	41.28	42.13	56.48	76.35	123.85					
Nd	$L\gamma_1$		5	5	60	6	6.601	9.38950	4		6.73	8.28	10.70	15.42	38.62	41.29	42.13	56.49	76.36	123.88					
Ga	$K\alpha_{1,2}$		7	150	31	6	9.241	9.38969	5		6.73	8.28	10.70	15.42	38.62	41.29	42.14	56.49	76.36	123.89					
Cl	$SK\alpha_4$		2	4	17	1	2.640	9.39133	3	3	6.73	8.29	10.70	15.42	38.63	41.30	42.14	56.50	76.38	123.93					
Cs	$L\gamma_1$		4	5	55	6	5.279	9.39200	4		6.73	8.29	10.70	15.42	38.63	41.30	42.15	56.51	76.38	123.94					
Th	M_3-$O_{4,5}$		3	1	90	6	3.959	9.39300	3		6.73	8.29	10.70	15.42	38.64	41.30	42.15	56.52	76.39	123.96					
Br	$K\alpha_2$		9	50	35	6	11.876	9.39437	5		6.73	8.29	10.71	15.43	38.64	41.31	42.16	56.52	76.41	124.00					
Ce	$L\beta_4$		4	5	58	6	5.276	9.39880	4		6.74	8.29	10.71	15.43	38.66	41.33	42.18	56.55	76.45	124.10					
Th	N_1-P_3		1		90	6	1.319	9.40000	2		6.74	8.29	10.71	15.43	38.67	41.34	42.18	56.56	76.46	124.12					
Pb	$L\alpha_1$		8	100	82	6	10.550	9.40003	5		6.74	8.29	10.71	15.43	38.67	41.34	42.18	56.56	76.46	124.13					
Ho	$L\beta_{2,15}$		6	20	67	6	7.910	9.40260	4		6.74	8.30	10.72	15.44	38.68	41.35	42.20	56.58	76.49	124.18					
Au	M_3-O_1		2	.1	79	6	2.636	9.40600	3		6.74	8.30	10.72	15.44	38.69	41.36	42.21	56.60	76.52	124.26					
Ba	Ll		3	2	56	6	3.953	9.40650	4		6.74	8.30	10.72	15.45	38.70	41.37	42.21	56.60	76.52	124.27					
As	$K\alpha_1$		8	100	33	6	10.542	9.40704	5		6.74	8.30	10.72	15.45	38.70	41.37	42.22	56.61	76.53	124.29					
Ga	$K\alpha_2$		7	50	31	6	9.223	9.40793	5		6.74	8.30	10.72	15.45	38.70	41.37	42.22	56.61	76.54	124.31					
Sm	$L\beta_{2,15}$		5	20	62	6	6.586	9.41105	5		6.74	8.30	10.72	15.45	38.72	41.39	42.24	56.63	76.57	124.38					
Cd	$L\gamma_2$		3	5	48	6	3.951	9.41310	4		6.75	8.30	10.73	15.46	38.72	41.40	42.25	56.65	76.59	124.43					
As	$L\beta_1$		1	35	33	6	1.317	9.41410	4		6.75	8.31	10.73	15.46	38.73	41.40	42.25	56.65	76.60	124.45					
Ag	Ll		2	2	47	6	2.633	9.41520	4		6.75	8.31	10.73	15.46	38.73	41.41	42.26	56.66	76.61	124.48					
Hf	$L\alpha_1$		6	100	72	6	7.898	9.41747	5		6.75	8.31	10.73	15.46	38.74	41.42	42.27	56.68	76.63	124.53					
As	$K\alpha_{1,2}$		8	150	33	6	10.530	9.41768	5		6.75	8.31	10.73	15.46	38.74	41.42	42.27	56.68	76.63	124.53					
Ta	$L\beta_4$		7	4	73	6	9.211	9.42067	5		6.75	8.31	10.74	15.47	38.76	41.43	42.28	56.70	76.66	124.60					
Cl	$SK\alpha_3$		2	4	17	1	2.631	9.42199	3	3	6.75	8.31	10.74	15.47	38.76	41.44	42.29	56.71	76.67	124.63					
Ce	$L\beta_1$		4	50	58	6	5.261	9.42440	4		6.75	8.31	10.74	15.47	38.77	41.45	42.30	56.72	76.70	124.69					

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pb	M_3-N_4		2	5	82	6	2.629	9.43000	3		6.76	8.32	10.75	15.48	38.80	41.47	42.32	56.76	76.75	124.82					
Hf	$L\gamma_1$		8	10	72	6	10.514	9.43200	5		6.76	8.32	10.75	15.49	38.81	41.48	42.33	56.77	76.77	124.87					
Eu	$L\beta_3$		5	6	63	6	6.570	9.43350	4		6.76	8.32	10.75	15.49	38.81	41.49	42.34	56.78	76.78	124.90					
Os	$L\beta_3$		8	6	76	6	10.509	9.43639	5		6.76	8.33	10.75	15.49	38.82	41.50	42.35	56.80	76.81	124.97					
Ir	$L\beta_4$		8	4	77	6	10.509	9.43664	5		6.76	8.33	10.75	15.50	38.83	41.51	42.36	56.80	76.81	124.97					
Hg	$L\beta_1$		9	50	80	6	11.821	9.43811	5		6.76	8.33	10.76	15.50	38.83	41.51	42.36	56.81	76.83	125.01					
As	$K\alpha_2$		8	50	33	6	10.506	9.43896	5		6.76	8.33	10.76	15.50	38.84	41.52	42.37	56.82	76.84	125.03					
Th	N_1-P_2		1		90	6	1.313	9.44000	2		6.76	8.33	10.76	15.50	38.84	41.52	42.37	56.82	76.85	125.05					
I	$L\alpha_1$		3	100	53	6	3.937	9.44580	5		6.77	8.33	10.76	15.51	38.86	41.55	42.40	56.86	76.90	125.19					
Pa	$L\alpha_2$		H10	10	91	6	13.120	9.44820	5		6.77	8.34	10.77	15.51	38.87	41.56	42.41	56.88	76.92	125.24					
Pb	Ll		7	3	82	6	9.183	9.44930	5		6.77	8.34	10.77	15.52	38.88	41.56	42.42	56.88	76.94	125.27					
Mo	$L\gamma_1$		2	1	42	6	2.623	9.45160	4		6.77	8.34	10.77	15.52	38.89	41.57	42.43	56.90	76.96	125.32					
Cl	$K\alpha_1$		2	100	17	6	2.622	9.45560	4	3	6.78	8.34	10.78	15.53	38.91	41.59	42.45	56.93	77.00	125.42					
Cl	$K\alpha_{1,2}$		2	150	17	6	2.621	9.45753	4	3	6.78	8.34	10.78	15.53	38.91	41.60	42.45	56.94	77.01	125.46					
Sb	$L\beta_3$		3	6	51	6	3.932	9.45774	5		6.78	8.34	10.78	15.53	38.92	41.60	42.46	56.94	77.02	125.47					
Ir	$L\alpha_1$		7	100	77	6	9.174	9.45895	5		6.78	8.35	10.78	15.53	38.92	41.61	42.46	56.95	77.03	125.50					
Cl	$K\alpha_2$		2	50	17	6	2.620	9.46140	4	3	6.78	8.35	10.78	15.54	38.93	41.62	42.47	56.96	77.05	125.55					
Sn	$L\beta_7$		3	.1	50	6	3.927	9.46920	4		6.79	8.35	10.79	15.55	38.96	41.66	42.51	57.02	77.13	125.74					
Yb	Ll		5	2	70	6	6.544	9.47075	5		6.79	8.36	10.79	15.55	38.97	41.66	42.52	57.03	77.14	125.77					
Hf	$L\beta_3$		7	6	72	6	9.162	9.47100	5		6.79	8.36	10.79	15.55	38.97	41.66	42.52	57.03	77.14	125.78					
I	$L\alpha_2$		3	10	53	6	3.925	9.47373	5		6.79	8.36	10.80	15.56	38.98	41.68	42.53	57.05	77.17	125.84					
Po	$L\beta_4$		10	4	84	6	13.083	9.47500	4		6.79	8.36	10.80	15.56	38.99	41.68	42.54	57.05	77.18	125.87					
Nd	$L\alpha_1$		4	100	60	6	5.229	9.48160	4		6.79	8.37	10.81	15.57	39.02	41.71	42.57	57.10	77.25	126.03					
Hf	$L\alpha_2$		6	10	72	6	7.843	9.48276	5		6.80	8.37	10.81	15.57	39.02	41.72	42.57	57.10	77.26	126.06					
In	$L\gamma_1$		3	8	49	6	3.920	9.48639	5		6.80	8.37	10.81	15.58	39.04	41.73	42.59	57.13	77.29	126.14					
Pb	$L\alpha_2$		8	10	82	6	10.448	9.49184	5		6.80	8.37	10.82	15.59	39.06	41.76	42.62	57.16	77.35	126.27					
Os	Ll		6	3	76	6	7.821	9.50987	5		6.81	8.39	10.84	15.62	39.14	41.84	42.70	57.28	77.52	126.71					
Mg	AK		1		12	6	1.303	9.51220	4		6.82	8.39	10.84	15.62	39.15	41.85	42.71	57.30	77.54	126.76					
Rn	$L\alpha_1$	H	9	100	86	6	11.725	9.51507	5		6.82	8.39	10.84	15.62	39.16	41.87	42.73	57.32	77.57	126.83					
As	$K\beta_1$		9	15	33	6	11.724	9.51570	5		6.82	8.40	10.84	15.63	39.16	41.87	42.73	57.32	77.58	126.85					
Ga	AL_1	H	1		31	6	1.303	9.51700	3		6.82	8.40	10.85	15.63	39.17	41.88	42.73	57.33	77.59	126.88					
Bi	$L\beta_1$		10	50	83	6	13.021	9.51978	6		6.82	8.40	10.85	15.63	39.18	41.89	42.75	57.35	77.62	126.94					
As	$K\beta_3$		9	7	33	6	11.718	9.52047	5		6.82	8.40	10.85	15.63	39.18	41.89	42.75	57.35	77.62	126.96					
Mg	$K\beta$		1	.7	12	6	1.302	9.52100	3	2	6.82	8.40	10.85	15.63	39.19	41.89	42.75	57.36	77.63	126.97					
Nd	$L\alpha_2$		4	10	60	6	5.207	9.52280	4		6.82	8.40	10.85	15.64	39.19	41.90	42.76	57.37	77.65	127.02					
Er	$L\beta_1$		6	50	68	6	7.809	9.52380	4		6.82	8.40	10.85	15.64	39.20	41.91	42.77	57.37	77.66	127.04					
Sn	$L\beta_{2,15}$		3	17	50	6	3.904	9.52515	5		6.83	8.40	10.86	15.64	39.20	41.91	42.77	57.38	77.67	127.07					
Ir	$L\alpha_2$		7	10	77	6	9.098	9.53749	5		6.83	8.41	10.87	15.66	39.26	41.97	42.83	57.46	77.79	127.37					
Dy	$L\alpha_1$		5	100	66	6	6.494	9.54405	5		6.84	8.42	10.88	15.67	39.29	42.00	42.86	57.51	77.85	127.53					
Er	$L\gamma_1$		7	5	68	6	9.087	9.54870	4		6.84	8.42	10.88	15.68	39.31	42.02	42.88	57.54	77.90	127.65					
Re	$L\gamma_1$		9	10	75	6	11.683	9.54890	5		6.84	8.42	10.88	15.68	39.31	42.02	42.88	57.54	77.90	127.65					
Mn	$K\beta_{1,3}$		5	20	25	6	6.489	9.55105	5	4	6.84	8.43	10.88	15.68	39.32	42.03	42.89	57.55	77.92	127.70					
Bi	$L\beta_2$		10	20	83	6	12.978	9.55180	5		6.85	8.43	10.89	15.69	39.32	42.04	42.90	57.56	77.93	127.72					
Gd	$L\gamma_1$		6	5	64	6	7.784	9.55440	4		6.85	8.43	10.89	15.69	39.33	42.05	42.91	57.58	77.95	127.78					
W	$L\gamma_3$		9	2	74	6	11.672	9.55799	5		6.85	8.43	10.89	15.70	39.35	42.06	42.93	57.60	77.99	127.87					
Th	$L\alpha_1$		10	100	90	6	12.967	9.56000	5		6.85	8.43	10.90	15.70	39.35	42.07	42.94	57.61	78.01	127.92					
Ir	M_2-N_4		2	.2	77	6	2.593	9.56000	3		6.85	8.43	10.90	15.70	39.35	42.07	42.94	57.61	78.01	127.92					
Mg	$K\beta_1$		1	.7	12	1	1.295	9.56980	3	2	6.86	8.44	10.91	15.72	39.40	42.12	42.98	57.68	78.10	128.16					
Sb	$L\beta_4$		3	4	51	6	3.886	9.57042	5		6.86	8.44	10.91	15.72	39.40	42.12	42.99	57.68	78.11	128.18					
Os	$L\beta_1$		8	50	76	6	10.354	9.57816	5		6.86	8.45	10.92	15.73	39.43	42.16	43.02	57.73	78.18	128.37					
Eu	Ll		4	2	63	6	5.176	9.57920	4		6.85	8.45	10.92	15.73	39.44	42.16	43.03	57.74	78.19	128.40					
Pt	$L\gamma_1$		10	10	78	6	12.940	9.57970	5		6.87	8.45	10.92	15.73	39.44	42.16	43.03	57.74	78.20	128.41					
Os	M_1-N_3		2	.5	76	6	2.588	9.58000	2		6.87	8.45	10.92	15.73	39.44	42.17	43.03	57.75	78.20	128.42					
Ge	$L\beta_3$		1	1	32	6	1.294	9.58100	3		6.87	8.45	10.92	15.73	39.44	42.17	43.04	57.75	78.21	128.44					
Br	Ll		1	1	35	6	1.293	9.58500	3		6.87	8.46	10.92	15.74	39.46	42.19	43.05	57.78	78.25	128.54					
Dy	$M\alpha$		1	100	66	6	1.293	9.59000	2		6.87	8.46	10.93	15.75	39.48	42.21	43.08	57.81	78.30	128.66					
Ir	$L\gamma_3$		10	2	77	6	12.922	9.59310	5		6.87	8.46	10.93	15.75	39.50	42.23	43.09	57.83	78.33	128.74					
Dy	$L\alpha_2$		5	10	66	6	6.457	9.59955	5		6.88	8.47	10.94	15.76	39.52	42.26	43.12	57.87	78.39	128.90					
Sm	$M\gamma$		1	1	62	6	1.291	9.60000	3		6.88	8.47	10.94	15.77	39.53	42.26	43.13	57.88	78.39	128.91					
Lu	$L\beta_{15}$		7	20	71	6	9.038	9.60049	4		6.88	8.47	10.94	15.77	39.53	42.26	43.13	57.88	78.40	128.92					
Eu	$L\beta_1$		5	50	63	6	6.455	9.60150	4		6.88	8.47	10.94	15.77	39.53	42.26	43.13	57.89	78.41	128.95					
U	Ll		9	3	92	6	11.616	9.60408	5		6.88	8.47	10.95	15.77	39.54	42.28	43.14	57.90	78.43	129.01					
Er	$L\beta_4$		6	5	68	6	7.744	9.60420	4		6.88	8.47	10.95	15.77	39.54	42.28	43.15	57.90	78.44	129.02					
Au	$L\beta_3$		9	6	79	6	11.608	9.61064	5		6.89	8.48	10.95	15.78	39.57	42.31	43.18	57.95	78.50	129.18					
Ba	$L\beta_{2,15}$		4	20	56	6	5.156	9.61740	5		6.89	8.49	10.96	15.79	39.60	42.34	43.21	57.99	78.56	129.35					

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-8}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Hf	$L\beta_1$		7	50	72	6	9.021	9.61870	5		6.89	8.49	10.96	15.80	39.61	42.34	43.21	58.00	78.58	129.38					
Ru	$L\alpha_2$	H	9	10	86	6	11.596	9.62091	5		6.89	8.49	10.96	15.80	39.61	42.35	43.22	58.02	78.60	129.44					
Eu	$L\beta_4$		5	5	63	6	6.438	9.62750	4		6.90	8.49	10.97	15.81	39.64	42.38	43.26	58.06	78.66	129.60					
Au	$L\beta_2$		9	20	79	6	11.583	9.63198	5		6.90	8.50	10.98	15.82	39.66	42.41	43.28	58.09	78.71	129.72					
Ge	$L\beta_4$		1	1	32	6	1.286	9.64000	3		6.91	8.51	10.99	15.83	39.70	42.44	43.31	58.14	78.78	129.92					
La	$L\beta_3$		4	6	57	6	5.143	9.64200	4		6.91	8.51	10.99	15.83	39.71	42.45	43.32	58.15	78.80	129.97					
Bi	M_4-O_2		2	1	83	6	2.570	9.64600	3		6.91	8.51	10.99	15.84	39.72	42.47	43.34	58.18	78.84	130.07					
Tl	$M\gamma$		2	3	81	6	2.570	9.64600	3		6.91	8.51	10.99	15.84	39.72	42.47	43.34	58.18	78.84	130.07					
Hg	$L\beta_4$		9	4	80	6	11.561	9.64998	5		6.92	8.51	11.00	15.85	39.74	42.49	43.36	58.21	78.88	130.18					
Re	$L\beta_2$		8	20	75	6	10.274	9.65279	5		6.92	8.52	11.00	15.85	39.75	42.50	43.37	58.23	78.91	130.25					
Tl	$L\alpha_1$		8	100	81	6	10.267	9.65912	5		6.92	8.52	11.01	15.86	39.78	42.53	43.40	58.27	78.97	130.41					
Ga	$K\beta_1$		8	14	31	6	10.263	9.66312	5		6.92	8.53	11.01	15.87	39.80	42.55	43.42	58.29	79.01	130.51					
Mg	$SK\beta'$		1	.01	12	1	1.282	9.66649	2	2	6.93	8.53	11.02	15.87	39.81	42.56	43.44	58.32	79.04	130.60					
Ga	$K\beta_3$		8	7	31	6	10.259	9.66679	5		6.93	8.53	11.02	15.88	39.81	42.57	43.44	58.32	79.05	130.61					
As	$L\alpha_{1,2}$		1	100	33	6	1.282	9.67090	4		6.93	8.53	11.02	15.88	39.83	42.59	43.46	58.35	79.09	130.71					
Mo	$L\gamma_5$		2	.1	42	6	2.563	9.67380	4		6.93	8.54	11.03	15.89	39.84	42.60	43.47	58.36	79.12	130.79					
Sb	$L\beta_1$		3	75	51	6	3.843	9.67701	5		6.93	8.54	11.03	15.89	39.86	42.61	43.49	58.39	79.15	130.87					
Th	$L\alpha_2$		10	10	90	6	12.807	9.67880	5		6.94	8.54	11.03	15.90	39.86	42.62	43.50	58.40	79.16	130.92					
Fe	$K\alpha_1$		5	100	26	6	6.403	9.68021	6		6.94	8.54	11.03	15.90	39.87	42.63	43.50	58.41	79.18	130.95					
Hf	$M\zeta_1$		1	.01	72	6	1.280	9.68600	3		6.94	8.55	11.04	15.91	39.89	42.65	43.53	58.45	79.23	131.10					
Hf	$M\zeta_2$		1	.01	72	6	1.280	9.68600	3		6.94	8.55	11.04	15.91	39.89	42.65	43.53	58.45	79.23	131.10					
Fe	$K\alpha_{1,2}$		5	150	26	6	6.398	9.68677	6		6.94	8.55	11.04	15.91	39.90	42.66	43.54	58.45	79.24	131.12					
Pb	$L\beta_3$		10	6	82	6	12.791	9.69110	5		6.94	8.55	11.05	15.92	39.92	42.68	43.56	58.48	79.28	131.24					
Ru	$L\alpha_1$		2	100	44	6	2.558	9.69150	5		6.95	8.55	11.05	15.92	39.92	42.68	43.56	58.48	79.29	131.25					
Tl	Ll		7	3	81	6	8.952	9.69339	5		6.95	8.55	11.05	15.92	39.93	42.69	43.57	58.49	79.31	131.30					
Fe	$K\alpha_2$		5	50	26	6	6.390	9.69990	6		6.95	8.56	11.06	15.93	39.95	42.72	43.60	58.54	79.37	131.47					
Ru	$L\alpha_2$		2	10	44	6	2.554	9.70762	5		6.96	8.56	11.06	15.94	39.99	42.75	43.63	58.59	79.45	131.67					
Lu	$L\alpha_1$		6	100	71	6	7.654	9.71706	5		6.96	8.57	11.07	15.96	40.03	42.80	43.68	58.65	79.54	131.92					
Ho	$L\beta_3$		6	6	67	6	7.650	9.72180	4		6.97	8.58	11.08	15.97	40.05	42.82	43.70	58.68	79.59	132.04					
Co	$K\beta_{1,3}$		6	20	27	6	7.648	9.72474	5	4	6.97	8.58	11.08	15.97	40.06	42.83	43.71	58.70	79.61	132.12					
Mg	$SK\alpha_6$		1	.8	12	1	1.274	9.72761	3	3	6.97	8.58	11.09	15.98	40.07	42.85	43.73	58.72	79.64	132.20					
Tl	M_3-N_4		2	1	81	6	2.548	9.73000	3		6.97	8.58	11.09	15.98	40.08	42.86	43.74	58.74	79.67	132.26					
Pa	M_3-O_1		3	.5	91	6	3.820	9.73500	3		6.98	8.59	11.10	15.99	40.10	42.88	43.76	58.77	79.72	132.40					
Ir	M_3-$O_{4,5}$		2	.5	77	6	2.546	9.73800	3		6.98	8.59	11.10	15.99	40.12	42.90	43.78	58.79	79.74	132.48					
Os	$L\alpha_1$		7	100	76	6	8.910	9.73847	5		6.98	8.59	11.10	15.99	40.12	42.90	43.78	58.79	79.75	132.49					
Dy	$L\beta_{2,15}$		6	20	66	6	7.634	9.74214	5		6.98	8.60	11.10	16.00	40.14	42.91	43.80	58.82	79.79	132.59					
Hf	$L\beta_4$		7	4	72	6	8.904	9.74540	5		6.98	8.60	11.11	16.01	40.15	42.93	43.81	58.84	79.82	132.67					
Cu	$K\beta_{1,3}$		7	20	29	6	8.904	9.74552	6		6.98	8.60	11.11	16.01	40.15	42.93	43.81	58.84	79.82	132.68					
In	$L\gamma_5$		3	.1	49	6	3.815	9.74721	5		6.99	8.60	11.11	16.01	40.16	42.94	43.82	58.85	79.84	132.72					
Os	$L\beta_4$		8	4	75	6	10.174	9.74751	5		6.99	8.60	11.11	16.01	40.16	42.94	43.82	58.85	79.84	132.73					
Cu	$K\beta_3$		7	6	29	6	8.901	9.74819	4		6.99	8.60	11.11	16.01	40.16	42.94	43.83	58.86	79.85	132.75					
Tl	$L\alpha_2$		8	10	81	6	10.171	9.75000	5		6.99	8.60	11.11	16.01	40.17	42.95	43.83	58.87	79.86	132.80					
Au	$L\beta_1$		9	50	79	6	11.440	9.75177	5		6.99	8.60	11.11	16.02	40.18	42.96	43.84	58.88	79.88	132.84					
Pt	M_3-O_1		2	.01	78	6	2.542	9.75200	3		6.99	8.60	11.11	16.02	40.18	42.96	43.84	58.88	79.88	132.85					
Mg	$SK\alpha_5$		1	.9	12	1	1.271	9.75366	3	3	6.99	8.61	11.12	16.02	40.18	42.97	43.85	58.89	79.90	132.90					
Re	$L\beta_3$		8	6	75	6	10.158	9.76247	5		7.00	8.61	11.13	16.03	40.22	43.01	43.89	58.95	79.99	133.13					
At	$L\alpha_1$	H	9	100	85	6	11.425	9.76499	5		7.00	8.62	11.13	16.04	40.23	43.02	43.90	58.97	80.01	133.20					
Bi	$L\beta_4$		10	4	83	6	12.689	9.76900	5		7.00	8.62	11.13	16.04	40.25	43.04	43.92	59.00	80.05	133.31					
Tc	$L\beta_1$	H	2	45	43	6	2.536	9.77460	4		7.00	8.62	11.14	16.05	40.27	43.06	43.95	59.03	80.11	133.46					
Tm	Ll		5	2	69	6	6.341	9.77500	4		7.01	8.62	11.14	16.05	40.28	43.07	43.95	59.04	80.11	133.47					
Lu	$L\gamma_1$		8	5	71	6	10.142	9.77824	5		7.01	8.63	11.14	16.06	40.29	43.08	43.97	59.06	80.14	133.56					
Pm	$L\beta_{2,15}$		5	20	61	6	6.338	9.77950	4		7.01	8.63	11.15	16.06	40.30	43.09	43.97	59.07	80.15	133.60					
Lu	$L\alpha_2$		6	10	71	6	7.604	9.78173	5		7.01	8.63	11.15	16.07	40.31	43.10	43.98	59.08	80.18	133.66					
Se	Ll		6	3	75	6	7.602	9.78336	5		7.01	8.63	11.15	16.07	40.31	43.11	43.99	59.09	80.19	133.70					
I	$L\gamma_{2,3}$		4	2	53	6	5.065	9.79000	4		7.02	8.64	11.16	16.08	40.34	43.14	44.02	59.13	80.26	133.89					
Tb	$M\beta$		1	45	65	6	1.266	9.79200	3		7.02	8.64	11.16	16.08	40.35	43.14	44.03	59.15	80.28	133.94					
La	$L\beta_4$		4	5	57	6	5.061	9.79720	4		7.02	8.64	11.17	16.09	40.37	43.17	44.06	59.18	80.33	134.08					
Ac	$L\alpha_1$	H	10	100	89	6	12.650	9.79930	5		7.02	8.65	11.17	16.09	40.38	43.18	44.07	59.20	80.35	134.14					
Cs	Ll		3	2	55	6	3.794	9.80100	4		7.02	8.65	11.17	16.10	40.39	43.19	44.08	59.21	80.37	134.19					
Kr	$K\alpha_1$		10	100	36	6	12.648	9.80100	4		7.02	8.65	11.17	16.10	40.39	43.19	44.08	59.21	80.37	134.19					
In	$L\beta_9$	B	3	.01	49	6	3.794	9.80289	5		7.03	8.65	11.17	16.10	40.40	43.20	44.08	59.22	80.38	134.24					
Pr	$L\gamma_1$		5	5	59	6	6.321	9.80550	4		7.03	8.65	11.18	16.10	40.41	43.21	44.10	59.24	80.41	134.31					
Sn	$L\beta_6$		3	1	50	6	3.792	9.80703	5		7.03	8.65	11.18	16.11	40.41	43.21	44.10	59.25	80.43	134.36					
Mg	$SK\alpha_4$		1	8	12	1	1.264	9.80777	3	3	7.03	8.65	11.18	16.11	40.42	43.22	44.11	59.25	80.43	134.38					
Lu	$L\beta_3$		7	6	71	6	8.845	9.80980	5		7.03	8.66	11.18	16.11	40.43	43.23	44.12	59.27	80.45	134.43					

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Sm	$L\beta_3$		5	6	62	6	6.317	9.81205	5		7.03	8.66	11.18	16.12	40.44	43.24	44.13	59.28	80.47	134.50					
Kr	$K\alpha_{1,2}$		10	150	36	6	12.631	9.81433	4		7.03	8.66	11.19	16.12	40.45	43.25	44.14	59.30	80.50	134.56					
Os	$L\alpha_2$		7	10	76	6	8.840	9.81638	5		7.03	8.66	11.19	16.12	40.45	43.26	44.15	59.31	80.52	134.62					
Pa	Ll		9	3	91	6	11.364	9.81719	4		7.04	8.66	11.19	16.12	40.46	43.26	44.15	59.32	80.53	134.64					
Bi	$M\beta$		2	60	83	6	2.525	9.81800	3		7.04	8.66	11.19	16.13	40.46	43.27	44.16	59.32	80.53	134.66					
Th	M_4-N_3		2	.01	90	6	2.524	9.82200	3		7.04	8.67	11.19	16.13	40.48	43.28	44.17	59.35	80.57	134.77					
Pb	$L\beta_2$		10	20	82	6	12.621	9.82210	5		7.04	8.67	11.19	16.13	40.48	43.28	44.18	59.35	80.57	134.78					
In	$L\beta_{10}$	B	3	.01	49	6	3.786	9.82212	5		7.04	8.67	11.19	16.13	40.48	43.28	44.18	59.35	80.57	134.78					
Mg	$SK\alpha_3$		1	8	12	1	1.262	9.82380	3	3	7.04	8.67	11.20	16.14	40.49	43.29	44.18	59.36	80.59	134.82					
Pb	$L\beta_1$		10	50	82	6	12.612	9.82910	5		7.04	8.67	11.20	16.14	40.51	43.32	44.21	59.39	80.64	134.97					
La	$L\beta_1$		4	50	57	6	5.041	9.83564	5		7.05	8.68	11.21	16.15	40.54	43.35	44.24	59.44	80.71	135.16					
I	Ln		3	7	53	6	3.780	9.83937	5		7.05	8.68	11.21	16.16	40.55	43.36	44.26	59.46	80.74	135.26					
Kr	$K\alpha_2$		10	50	36	6	12.596	9.84100	4		7.05	8.68	11.22	16.16	40.56	43.37	44.26	59.47	80.76	135.31					
Rh	Ln		2	1	45	6	2.519	9.84340	4		7.05	8.69	11.22	16.17	40.57	43.38	44.28	59.49	80.78	135.38					
Mo	$L\beta_{2,15}$		2	1	42	6	2.518	9.84640	4		7.06	8.69	11.22	16.17	40.58	43.40	44.29	59.51	80.81	135.46					
Mg	$SK\alpha'$		1	2	12	1	1.259	9.84785	2	3	7.06	8.69	11.22	16.17	40.59	43.40	44.30	59.52	80.83	135.50					
Th	M_3-O_1		3	.5	90	6	3.776	9.84900	3		7.06	8.69	11.23	16.18	40.59	43.41	44.30	59.53	80.84	135.54					
Pr	$L\alpha_1$		4	100	59	6	5.033	9.85200	4		7.06	8.69	11.23	16.18	40.61	43.42	44.32	59.55	80.87	135.62					
Te	$L\alpha_1$		3	100	52	6	3.769	9.86760	5		7.07	8.71	11.25	16.21	40.67	43.49	44.39	59.65	81.02	136.07					
At	$L\alpha_2$	H	9	10	85	6	11.303	9.87038	5		7.07	8.71	11.25	16.21	40.69	43.51	44.40	59.67	81.05	136.15					
Tb	$L\alpha_1$		5	100	65	6	6.272	9.88250	4		7.08	8.72	11.26	16.23	40.74	43.56	44.46	59.75	81.17	136.50					
Ho	$L\beta_1$		6	50	67	6	7.524	9.88499	4		7.08	8.72	11.27	16.24	40.75	43.58	44.47	59.77	81.20	136.57					
W	$L\gamma_1$		9	10	74	6	11.284	9.88695	5		7.09	8.72	11.27	16.24	40.76	43.58	44.48	59.78	81.22	136.63					
Mg	$K\alpha_{1,2}$		1	100	12	6	1.253	9.89000	4	3	7.09	8.73	11.27	16.24	40.77	43.60	44.50	59.80	81.25	136.72					
Pr	$L\alpha_2$		4	10	59	6	5.013	9.89160	4		7.09	8.73	11.27	16.25	40.78	43.61	44.50	59.81	81.26	136.76					
U	$M\zeta_1$		2	1	92	6	2.506	9.89200	3		7.09	8.73	11.27	16.25	40.78	43.61	44.51	59.81	81.27	136.78					
Ta	$L\gamma_3$		9	2	73	6	11.276	9.89424	5		7.09	8.73	11.28	16.25	40.79	43.62	44.52	59.83	81.29	136.84					
Te	$L\alpha_2$		3	10	52	6	3.758	9.89538	5		7.09	8.73	11.28	16.25	40.79	43.62	44.52	59.84	81.30	136.87					
Pd	Ll		2	2	46	6	2.503	9.90500	4		7.10	8.74	11.29	16.27	40.84	43.67	44.57	59.90	81.40	137.16					
Zr	$L\gamma_{2,3}$		2	.5	40	6	2.502	9.90720	4		7.10	8.74	11.29	16.27	40.85	43.68	44.58	59.91	81.42	137.22					
Yb	$L\beta_{2,15}$		7	20	70	6	8.757	9.90850	5		7.10	8.74	11.29	16.28	40.85	43.68	44.58	59.92	81.43	137.26					
Ir	$L\gamma_1$		10	10	77	6	12.510	9.90850	5		7.10	8.74	11.29	16.28	40.85	43.68	44.58	59.92	81.43	137.26					
Re	$L\beta_1$		8	50	75	6	10.008	9.90864	5		7.10	8.74	11.29	16.28	40.85	43.69	44.59	59.92	81.43	137.27					
Os	M_2-N_4		2	.2	76	6	2.502	9.91000	3		7.10	8.74	11.30	16.28	40.86	43.69	44.59	59.93	81.45	137.31					
Sn	$L\beta_3$		3	6	50	6	3.750	9.91755	5		7.11	8.75	11.30	16.29	40.89	43.73	44.63	59.98	81.52	137.53					
Ac	$L\alpha_2$	H	10	10	89	6	12.499	9.91780	5		7.11	8.75	11.30	16.29	40.89	43.73	44.63	59.99	81.52	137.54					
Pt	$L8_2$		9	20	78	6	11.249	9.91799	5		7.11	8.75	11.30	16.29	40.89	43.73	44.63	59.99	81.53	137.54					
Os	$L\gamma_3$		10	2	76	6	12.498	9.91860	5		7.11	8.75	11.31	16.29	40.89	43.73	44.63	59.99	81.53	137.56					
Ag	$L\gamma_3$		3	2	47	6	3.749	9.91905	5		7.11	8.75	11.31	16.29	40.90	43.73	44.63	59.99	81.54	137.57					
Ho	$L\gamma_1$		7	5	67	6	8.746	9.92180	4		7.11	8.75	11.31	16.30	40.91	43.75	44.65	60.01	81.56	137.66					
Se	$K8_1$		10	16	34	6	12.494	9.92180	5		7.11	8.75	11.31	16.30	40.91	43.75	44.65	60.01	81.56	137.66					
Ge	AL_2		1		32	6	1.249	9.92400	3		7.11	8.76	11.31	16.30	40.92	43.76	44.66	60.03	81.59	137.72					
Se	$K\beta_3$		10	8	34	6	12.487	9.92680	5		7.11	8.76	11.31	16.31	40.93	43.77	44.67	60.05	81.61	137.81					
Sm	Ll		4	2	62	6	4.994	9.92920	4		7.12	8.76	11.32	16.31	40.94	43.78	44.68	60.06	81.64	137.88					
Hg	$L\alpha_1$		8	100	80	6	9.987	9.92960	5		7.12	8.76	11.32	16.31	40.94	43.78	44.68	60.06	81.64	137.89					
Pt	$L\beta_3$	D	9	6	78	6	11.233	9.93222	5		7.12	8.76	11.32	16.31	40.95	43.79	44.70	60.08	81.67	137.97					
Ag	$L\gamma_2$		3	3	47	6	3.743	9.93648	5		7.12	8.77	11.33	16.32	40.97	43.81	44.72	60.11	81.71	138.10					
Tb	$L\alpha_2$		5	10	65	6	6.237	9.93750	4		7.12	8.77	11.33	16.32	40.98	43.82	44.72	60.12	81.72	138.13					
Se	$K\alpha_1$		9	100	34	6	11.220	9.94293	5		7.13	8.77	11.33	16.33	41.00	43.84	44.75	60.15	81.77	138.29					
Eu	$L\gamma_1$		6	5	63	6	7.479	9.94440	4		7.13	8.77	11.33	16.33	41.01	43.85	44.75	60.16	81.79	138.33					
Ni	$K\alpha_1$		6	100	28	6	7.477	9.94746	6		7.13	8.78	11.34	16.34	41.02	43.87	44.77	60.18	81.82	138.43					
Hg	Ll		7	3	80	6	8.720	9.95120	4		7.13	8.78	11.34	16.35	41.03	43.88	44.79	60.21	81.86	138.54					
Se	$K\alpha_{1,2}$		9	150	34	6	11.207	9.95506	5		7.13	8.78	11.35	16.35	41.05	43.90	44.81	60.23	81.90	138.66					
Ni	$K\alpha_{1,2}$		6	150	28	6	7.471	9.95513	6		7.13	8.78	11.35	16.35	41.05	43.90	44.81	60.23	81.90	138.66					
W	$L8_2$		8	20	74	6	9.960	9.95679	5		7.14	8.79	11.35	16.35	41.06	43.91	44.81	60.25	81.91	138.71					
Ho	$L\beta_4$		6	5	67	6	7.470	9.95700	4		7.14	8.79	11.35	16.36	41.06	43.91	44.81	60.25	81.91	138.72					
Au	$L\beta_4$		9	4	79	6	11.203	9.95858	5		7.14	8.79	11.35	16.36	41.07	43.92	44.82	60.26	81.93	138.77					
Se	Ln		1	1	34	6	1.244	9.96200	3		7.14	8.79	11.35	16.36	41.08	43.93	44.84	60.28	81.96	138.87					
Lu	$L8_1$		7	50	71	6	8.708	9.96513	5		7.14	8.79	11.36	16.37	41.10	43.95	44.85	60.30	82.00	138.97					
Hg	$M\gamma$		2	3	80	6	2.487	9.96800	3		7.14	8.80	11.36	16.37	41.11	43.96	44.87	60.32	82.02	139.06					
Ni	$K\alpha_2$		6	50	28	6	7.460	9.97048	6		7.15	8.80	11.36	16.38	41.12	43.97	44.88	60.34	82.05	139.13					
In	$L8_7$		3	.1	49	6	3.729	9.97200	3		7.15	8.80	11.37	16.38	41.12	43.98	44.89	60.35	82.06	139.18					
Se	$K\alpha_2$		9	50	34	6	11.179	9.97938	5		7.15	8.81	11.37	16.39	41.16	44.01	44.92	60.40	82.14	139.41					
U	M_2-N_1		3	.01	92	6	3.724	9.98700	3		7.16	8.81	11.38	16.40	41.19	44.05	44.96	60.45	82.21	139.64					
Sm	$L\beta_1$		5	50	62	6	6.204	9.99030	5		7.16	8.81	11.39	16.41	41.20	44.06	44.97	60.47	82.25	139.75					

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)
Tb	$M\alpha$		1	100	65	6	1.240	10.00000	2		7.17	8.82	11.40	16.43	41.25	44.11	45.02	60.53	82.35	140.05					
Sm	$L\beta_4$		5	5	62	6	6.195	10.00475	5		7.17	8.83	11.40	16.43	41.27	44.13	45.04	60.57	82.39	140.20					
Tl	$L\beta_3$		10	6	81	6	12.388	10.00620	5		7.17	8.83	11.41	16.44	41.27	44.14	45.05	60.58	82.41	140.25					
Cd	$L\gamma_1$		3	10	48	6	3.716	10.00692	5		7.17	8.83	11.41	16.44	41.28	44.14	45.05	60.58	82.41	140.27					
Pb	M_4-O_2		2	1	82	6	2.477	10.00800	3		7.17	8.83	11.41	16.44	41.28	44.15	45.06	60.59	82.43	140.31					
Ca	$SK\alpha_4$		3	2	20	1	3.715	10.01048	3	4	7.17	8.83	11.41	16.44	41.29	44.16	45.07	60.60	82.45	140.38					
Am	Ll		10	3	95	6	12.381	10.01200	4		7.18	8.83	11.41	16.45	41.30	44.16	45.08	60.61	82.47	140.43					
V	$K\alpha_1$		4	100	23	6	4.951	10.01424	5	4	7.18	8.84	11.41	16.45	41.31	44.18	45.09	60.63	82.49	140.50					
In	$L\beta_{2,15}$		3	17	49	6	3.713	10.01514	5		7.18	8.84	11.42	16.45	41.31	44.18	45.09	60.64	82.50	140.53					
V	$K\alpha_{1,2}$		4	150	23	6	4.949	10.01933	5	4	7.18	8.84	11.42	16.46	41.33	44.20	45.11	60.66	82.54	140.67					
Ca	$SK\alpha_3$		3	2	20	1	3.711	10.02040	3	4	7.18	8.84	11.42	16.46	41.33	44.20	45.12	60.67	82.55	140.70					
Hg	$L\alpha_2$		8	10	80	6	9.896	10.02112	5		7.18	8.84	11.42	16.46	41.34	44.21	45.12	60.68	82.56	140.72					
Po	$L\alpha_1$		9	100	84	6	11.129	10.02473	5		7.18	8.85	11.43	16.47	41.35	44.22	45.14	60.70	82.59	140.84					
Mo	$L\beta_3$		2	3	42	6	2.473	10.02660	4		7.19	8.85	11.43	16.47	41.36	44.23	45.15	60.71	82.61	140.90					
V	$K\alpha_2$		4	50	23	6	4.944	10.02952	5	4	7.19	8.85	11.43	16.48	41.37	44.25	45.16	60.73	82.64	140.99					
Sn	$L\beta_4$		3	4	50	6	3.708	10.03005	5		7.19	8.85	11.43	16.48	41.37	44.25	45.16	60.74	82.65	141.01					
Re	$L\alpha_1$		7	100	75	6	8.651	10.03030	5		7.19	8.85	11.43	16.48	41.38	44.25	45.16	60.74	82.65	141.02					
Yb	$L\alpha_1$		6	100	70	6	7.414	10.03134	5		7.19	8.85	11.43	16.48	41.38	44.25	45.17	60.74	82.66	141.05					
Ge	$K\alpha_1$		8	100	32	6	9.885	10.03242	6		7.19	8.85	11.44	16.48	41.39	44.26	45.17	60.75	82.67	141.09					
Ge	$K\alpha_{1,2}$		8	150	32	6	9.874	10.04298	6		7.20	8.86	11.45	16.50	41.43	44.31	45.22	60.82	82.78	141.43					
Zn	$K\alpha_1$		7	100	30	6	8.637	10.04608	6		7.20	8.86	11.45	16.50	41.44	44.32	45.24	60.84	82.81	141.53					
S	$K\beta X$		2	7	16	6	2.468	10.04660	4	3	7.20	8.86	11.45	16.50	41.45	44.33	45.24	60.85	82.81	141.55					
Cs	$L\beta_{2,15}$		4	20	55	6	4.935	10.04720	4		7.20	8.87	11.45	16.50	41.45	44.33	45.24	60.85	82.82	141.57					
Ra	$L\alpha_1$		10	100	88	6	12.338	10.04729	5		7.20	8.87	11.45	16.50	41.45	44.33	45.24	60.85	82.82	141.57					
Zn	$K\alpha_{1,2}$		7	150	30	6	8.630	10.05506	6		7.21	8.87	11.46	16.52	41.48	44.36	45.28	60.90	82.90	141.83					
Ti	$K\beta_{1,3}$		4	20	22	6	4.931	10.05564	5	4	7.21	8.87	11.46	16.52	41.49	44.37	45.28	60.91	82.90	141.85					
S	$K\beta_1$		2	7	16	6	2.464	10.06320	4	3	7.21	8.88	11.47	16.53	41.52	44.40	45.32	60.96	82.98	142.10					
Ge	$K\alpha_2$		8	50	32	6	9.854	10.06409	6		7.21	8.88	11.47	16.53	41.52	44.41	45.32	60.96	82.99	142.13					
Ba	$L\beta_3$		4	6	56	6	4.926	10.06560	4		7.21	8.88	11.47	16.53	41.53	44.41	45.33	60.97	83.00	142.18					
W	Ll		6	3	74	6	7.386	10.06920	4		7.22	8.88	11.48	16.54	41.54	44.43	45.35	61.00	83.04	142.30					
Nb	$L\gamma_1$		2	1	41	6	2.461	10.07220	4		7.22	8.89	11.48	16.55	41.56	44.44	45.36	61.02	83.07	142.40					
Zn	$K\alpha_2$		7	50	30	6	8.614	10.07299	6		7.22	8.89	11.48	16.55	41.56	44.45	45.37	61.02	83.08	142.42					
Re	$L\beta_4$		8	4	75	6	9.845	10.07336	5		7.22	8.89	11.48	16.55	41.56	44.45	45.37	61.03	83.08	142.43					
Pb	$L\beta_4$		10	4	82	6	12.304	10.07500	4		7.22	8.89	11.48	16.55	41.57	44.46	45.38	61.04	83.10	142.49					
Er	Ll		5	2	68	6	6.152	10.07500	3		7.22	8.89	11.48	16.55	41.57	44.46	45.38	61.04	83.10	142.49					
Ca	$K\alpha_1$		3	100	20	6	3.691	10.07517	5	4	7.22	8.89	11.48	16.55	41.57	44.46	45.38	61.04	83.10	142.49					
Ca	$K\alpha_{1,2}$		3	150	20	6	3.690	10.07844	5	4	7.22	8.89	11.49	16.56	41.58	44.47	45.39	61.06	83.13	142.60					
Pt	$L\beta_1$		9	50	78	6	11.069	10.07910	5		7.22	8.89	11.49	16.56	41.59	44.48	45.39	61.06	83.14	142.63					
Lu	$L\beta_4$		7	5	71	6	8.605	10.08392	5		7.23	8.90	11.49	16.57	41.61	44.50	45.42	61.10	83.19	142.79					
Ca	$K\alpha_2$		3	50	20	6	3.687	10.08498	5	4	7.23	8.90	11.50	16.57	41.61	44.50	45.42	61.10	83.20	142.82					
U	N_1-O_3		1		92	6	1.229	10.09000	2		7.23	8.90	11.50	16.58	41.63	44.53	45.45	61.14	83.25	142.99					
Dy	$L\beta_3$		6	6	66	6	7.369	10.09320	4		7.23	8.91	11.50	16.58	41.65	44.54	45.46	61.16	83.28	143.10					
Yb	$L\alpha_2$		6	10	70	6	7.366	10.09710	5		7.24	8.91	11.51	16.59	41.66	44.56	45.48	61.18	83.32	143.24					
Mo	$L\beta_4$		2	3	42	6	2.455	10.09760	4		7.24	8.91	11.51	16.59	41.67	44.56	45.48	61.19	83.33	143.25					
Mo	$L\beta_6$		2	3	42	6	2.455	10.09760	4		7.24	8.91	11.51	16.59	41.67	44.56	45.48	61.19	83.33	143.25					
Tb	$L\beta_{2,15}$		6	20	65	6	7.365	10.09800	4		7.24	8.91	11.51	16.59	41.67	44.56	45.48	61.19	83.33	143.27					
U	Mz_2		2	.1	92	6	2.455	10.10000	3		7.24	8.91	11.51	16.59	41.68	44.57	45.49	61.20	83.35	143.34					
W	$L\beta_3$		8	6	74	6	9.817	10.10152	5		7.24	8.91	11.51	16.59	41.68	44.58	45.50	61.21	83.37	143.39					
Tl	$L\beta_2$		10	20	81	6	12.270	10.10309	5		7.24	8.91	11.52	16.60	41.69	44.59	45.51	61.22	83.38	143.44					
Re	$L\alpha_2$		7	10	75	6	8.585	10.10771	5		7.24	8.92	11.52	16.60	41.71	44.61	45.53	61.26	83.43	143.60					
Po	$L\alpha_2$	H	9	10	84	6	11.014	10.12932	5		7.26	8.94	11.55	16.64	41.80	44.71	45.63	61.40	83.65	144.35					
Yb	$L\gamma_1$		8	5	70	6	9.778	10.14152	5		7.27	8.95	11.56	16.66	41.86	44.77	45.69	61.48	83.77	144.78					
Tl	$L\beta_1$		10	50	81	6	12.211	10.15129	5		7.28	8.96	11.57	16.68	41.90	44.81	45.74	61.55	83.87	145.13					
Pb	$M\beta$		2	60	82	6	2.442	10.15200	3		7.28	8.96	11.57	16.68	41.90	44.82	45.74	61.55	83.88	145.16					
Sn	$L\beta_1$		3	75	50	6	3.662	10.15461	5		7.28	8.96	11.58	16.68	41.91	44.83	45.75	61.57	83.90	145.25					
Ge	$K\beta_1$		9	14	32	6	10.980	10.16046	5		7.28	8.97	11.58	16.69	41.94	44.85	45.78	61.61	83.96	145.47					
Ge	$K\beta_3$		9	7	32	6	10.976	10.16423	5		7.28	8.97	11.59	16.70	41.95	44.87	45.80	61.64	84.00	145.60					
Ra	$L\alpha_2$		10	10	88	6	12.194	10.16560	5		7.29	8.97	11.59	16.70	41.96	44.88	45.81	61.64	84.02	145.65					
Yb	$L\beta_3$		7	6	70	6	8.535	10.16631	5		7.29	8.97	11.59	16.70	41.96	44.88	45.81	61.65	84.02	145.68					
Ge	$L\beta_1$		1	35	32	6	1.218	10.17500	3		7.29	8.98	11.60	16.72	42.00	44.92	45.85	61.71	84.11	146.00					
Nd	$L\beta_{2,15}$		5	20	60	6	6.088	10.18000	4		7.30	8.98	11.60	16.72	42.02	44.95	45.87	61.74	84.16	146.18					
Pa	Mz_1		2	1	91	6	2.434	10.18400	3		7.30	8.99	11.61	16.73	42.04	44.96	45.89	61.77	84.20	146.33					
Ge	AL_3		1		32	6	1.217	10.18700	3		7.30	8.99	11.61	16.74	42.05	44.98	45.91	61.79	84.23	146.44					
Pm	$L\beta_3$		5	6	61	6	6.070	10.21050	4		7.32	9.01	11.64	16.77	42.15	45.09	46.02	61.95	84.47	147.33					
Au	$L\alpha_1$		8	100	79	6	9.712	10.21120	5		7.32	9.01	11.64	16.78	42.16	45.09	46.02	61.95	84.48	147.36					

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Au	L_1		7	3	79	6	8.493	10.21748	5		7.32	9.02	11.65	16.79	42.18	45.12	46.05	61.99	84.54	147.60					
Ir	$L\beta_2$		9	20	77	6	10.919	10.21788	5		7.32	9.02	11.65	16.79	42.19	45.12	46.06	62.00	84.55	147.61					
Ba	$L\beta_4$		4	5	56	6	4.851	10.22120	4		7.33	9.02	11.65	16.79	42.20	45.14	46.07	62.02	84.58	147.74					
Pu	L_1		10	3	94	6	12.122	10.22599	4		7.33	9.02	11.66	16.80	42.22	45.16	46.09	62.05	84.63	147.93					
Tc	$L\alpha_1$	H	2	100	43	6	2.424	10.22960	4		7.33	9.03	11.66	16.81	42.24	45.18	46.11	62.08	84.67	148.07					
Gd	$L\alpha_1$		5	100	64	6	6.056	10.23400	4		7.33	9.03	11.67	16.81	42.26	45.20	46.13	62.11	84.71	148.24					
Bi	$M\alpha_1$		2	100	83	6	2.422	10.23600	3		7.34	9.03	11.67	16.82	42.26	45.21	46.14	62.12	84.73	148.32					
Ta	$L\gamma_1$		9	10	73	6	10.893	10.24146	5		7.34	9.04	11.67	16.83	42.29	45.23	46.17	62.16	84.79	148.54					
Ce	$L\gamma_1$		5	5	58	6	6.051	10.24350	4		7.34	9.04	11.68	16.83	42.30	45.24	46.18	62.17	84.81	148.62					
Hf	$L\gamma_3$		9	2	72	6	10.889	10.24569	5		7.34	9.04	11.68	16.83	42.31	45.25	46.19	62.18	84.83	148.71					
Ce	$L\alpha_1$		4	100	58	6	4.839	10.24600	4		7.34	9.04	11.68	16.83	42.31	45.25	46.19	62.19	84.83	148.72					
Tm	$L\beta_{2,15}$		7	20	69	6	8.467	10.24800	4		7.34	9.04	11.68	16.84	42.32	45.26	46.20	62.20	84.85	148.80					
Os	$L\gamma_1$		10	10	76	6	12.093	10.25029	5		7.35	9.04	11.68	16.84	42.33	45.27	46.21	62.22	84.88	148.89					
Gd	$M\beta$		1	45	64	6	1.209	10.25400	3		7.35	9.05	11.69	16.85	42.34	45.29	46.23	62.24	84.92	149.04					
W	$L\beta_1$		8	50	74	6	9.671	10.25447	6		7.35	9.05	11.69	16.85	42.34	45.29	46.23	62.24	84.92	149.06					
Bi	$M\alpha_2$		2	100	83	6	2.416	10.26000	3		7.35	9.05	11.70	16.86	42.37	45.32	46.26	62.28	84.98	149.28					
Re	$L\gamma_3$		10	2	75	6	12.080	10.26130	5		7.35	9.05	11.70	16.86	42.37	45.32	46.26	62.29	84.99	149.34					
Po	L_1		8	3	84	6	9.662	10.26320	4		7.36	9.06	11.70	16.86	42.38	45.33	46.27	62.30	85.01	149.41					
Dy	$L\beta_1$		6	50	66	6	7.246	10.26372	5		7.36	9.06	11.70	16.86	42.38	45.34	46.27	62.31	85.02	149.43					
Ir	$L\beta_3$		9	6	77	6	10.866	10.26764	5		7.36	9.06	11.70	16.87	42.40	45.35	46.29	62.33	85.06	149.59					
Te	$L\gamma_{2,3}$		4	2	52	6	4.828	10.26960	4		7.36	9.06	11.71	16.87	42.41	45.36	46.30	62.35	85.08	149.68					
Ba	$L\beta_1$		4	50	56	6	4.827	10.27284	5		7.36	9.06	11.71	16.88	42.42	45.38	46.32	62.37	85.11	149.81					
Ta	$L\beta_2$		8	20	73	6	9.650	10.27631	5		7.36	9.07	11.71	16.88	42.44	45.39	46.33	62.39	85.14	149.95					
Cd	$L\gamma_5$		3	.1	48	6	3.619	10.27653	5		7.37	9.07	11.71	16.88	42.44	45.40	46.33	62.39	85.15	149.96					
Pt	$L\beta_4$		9	4	78	6	10.852	10.28006	5		7.37	9.07	11.72	16.89	42.46	45.41	46.35	62.42	85.18	150.11					
Ce	$L\alpha_2$		4	10	58	6	4.822	10.28240	4		7.37	9.07	11.72	16.89	42.47	45.42	46.36	62.43	85.21	150.21					
Gd	$L\alpha_2$		5	10	64	6	6.024	10.28900	4		7.37	9.08	11.73	16.90	42.49	45.45	46.39	62.48	85.27	150.48					
Au	$M\gamma$		2	3	79	6	2.409	10.29000	3		7.37	9.08	11.73	16.91	42.50	45.46	46.40	62.48	85.28	150.53					
Cd	$L\beta_9$	8	3	.01	48	6	3.614	10.29045	5		7.38	9.08	11.73	16.91	42.50	45.46	46.40	62.49	85.29	150.55					
Se	L_1		1	1	34	6	1.204	10.29400	3		7.38	9.08	11.73	16.91	42.52	45.48	46.42	62.51	85.33	150.70					
Bi	$L\alpha_1$		9	100	83	6	10.837	10.29474	5		7.38	9.08	11.74	16.91	42.52	45.48	46.42	62.52	85.33	150.73					
Au	$L\alpha_2$		8	10	79	6	9.626	10.30176	5		7.38	9.09	11.74	16.93	42.55	45.51	46.46	62.56	85.41	151.03					
Nb	$L\gamma_5$		2	.1	41	6	2.406	10.30340	4		7.38	9.09	11.75	16.93	42.56	45.52	46.46	62.57	85.42	151.10					
Fr	$L\alpha_1$	H	10	100	87	6	12.029	10.30490	5		7.39	9.09	11.75	16.93	42.56	45.53	46.47	62.58	85.44	151.16					
In	$L\beta_6$		3	1	49	6	3.608	10.30818	5		7.39	9.10	11.75	16.94	42.58	45.54	46.49	62.61	85.47	151.31					
Dy	$L\gamma_1$		7	5	66	6	8.417	10.30861	5		7.39	9.10	11.75	16.94	42.58	45.55	46.49	62.61	85.48	151.33					
Cd	$L\beta_{10}$	8	3	.01	48	6	3.607	10.31010	4		7.39	9.10	11.75	16.94	42.59	45.55	46.50	62.62	85.49	151.39					
Te	$L\eta$		3	7	52	6	3.605	10.31496	5		7.39	9.10	11.76	16.95	42.61	45.58	46.52	62.65	85.54	151.60					
Sb	$L\alpha_1$		3	100	51	6	3.604	10.31823	5		7.40	9.10	11.76	16.95	42.62	45.59	46.53	62.67	85.57	151.75					
Pa	M_2-N_1		3	.01	91	6	3.602	10.32300	3		7.40	9.11	11.77	16.96	42.64	45.61	46.56	62.71	85.62	151.96					
K	$K\beta_5$	C	3	.01	19	6	3.602	10.32390	4	4	7.40	9.11	11.77	16.96	42.65	45.62	46.56	62.71	85.63	152.00					
Dy	$L\beta_4$		6	5	66	6	7.203	10.32618	5		7.40	9.11	11.77	16.97	42.66	45.63	46.57	62.73	85.66	152.10					
Yb	$L\beta_1$		7	50	70	6	8.400	10.32955	5		7.40	9.11	11.78	16.97	42.67	45.64	46.59	62.75	85.69	152.25					
I	$L\gamma_1$		4	8	53	6	4.800	10.32976	5		7.40	9.12	11.78	16.97	42.67	45.64	46.59	62.75	85.69	152.26					
W	$L\alpha_1$		7	100	74	6	8.396	10.33473	5		7.41	9.12	11.78	16.98	42.69	45.67	46.61	62.79	85.74	152.48					
Hg	$L\beta_3$		10	6	80	6	11.993	10.33580	5		7.41	9.12	11.78	16.98	42.70	45.67	46.62	62.79	85.76	152.53					
Pb	M_5-O_3		2	.01	82	6	2.399	10.33600	3		7.41	9.12	11.78	16.98	42.70	45.67	46.62	62.79	85.76	152.54					
Os	$L\beta_7$		9	7	76	6	10.785	10.34396	5		7.41	9.13	11.79	17.00	42.73	45.71	46.66	62.85	85.84	152.91					
W	M_1-N_3		2	.5	74	6	2.397	10.34400	3		7.41	9.13	11.79	17.00	42.73	45.71	46.66	62.85	85.84	152.91					
Sb	$L\alpha_2$		3	10	51	6	3.595	10.34520	5		7.41	9.13	11.79	17.00	42.74	45.72	46.66	62.86	85.85	152.96					
Zn	AL_1	H	1		30	6	1.198	10.35000	2		7.42	9.13	11.80	17.01	42.76	45.74	46.69	62.89	85.90	153.18					
Mo	$L\beta_1$		2	45	42	6	2.394	10.35416	5		7.42	9.14	11.80	17.01	42.78	45.76	46.71	62.92	85.94	153.38					
Ga	$L\beta_{3,4}$		1	2	31	6	1.197	10.35900	3		7.42	9.14	11.81	17.02	42.80	45.78	46.73	62.95	85.99	153.61					
Tm	$L\alpha_1$	H	6	100	69	6	7.179	10.36080	4		7.43	9.14	11.81	17.02	42.81	45.79	46.74	62.96	86.01	153.69					
K	$K\beta_{1,3}$		3	15	19	6	3.589	10.36170	4	4	7.43	9.14	11.81	17.02	42.81	45.79	46.74	62.97	86.02	153.73					
Zn	$K\beta_{1,3}$		8	20	30	6	9.570	10.36200	5		7.43	9.14	11.81	17.03	42.81	45.79	46.74	62.97	86.03	153.75					
Sm	$L\gamma_1$		6	5	62	6	7.177	10.36344	5		7.43	9.14	11.81	17.03	42.82	45.80	46.75	62.98	86.04	153.82					
Ta	L_1		6	3	73	6	7.172	10.37046	5		7.43	9.15	11.82	17.04	42.85	45.83	46.78	63.03	86.11	154.15					
Au	M_3-N_4		2	1	79	6	2.390	10.37200	3		7.43	9.15	11.82	17.04	42.85	45.84	46.79	63.04	86.13	154.23					
Pa	$M\zeta_2$		2	.1	91	6	2.387	10.38600	3		7.44	9.16	11.84	17.07	42.91	45.91	46.86	63.13	86.27	154.91					
Tl	$L\beta_4$		10	4	81	6	11.929	10.39180	5		7.45	9.17	11.85	17.07	42.94	45.93	46.89	63.17	86.33	155.20					
Tl	M_4-O_2		2	.1	81	6	2.386	10.39200	3		7.45	9.17	11.85	17.08	42.94	45.93	46.89	63.17	86.34	155.21					
Br	$K\alpha_1$		10	100	35	6	11.922	10.39740	5		7.45	9.17	11.85	17.08	42.96	45.96	46.91	63.21	86.39	155.48					
Hg	$L\beta_2$		10	20	80	6	11.922	10.39749	5		7.45	9.17	11.85	17.08	42.96	45.96	46.91	63.21	86.39	155.49					
Bi	$L\alpha_2$		9	10	83	6	10.729	10.39823	5		7.45	9.18	11.85	17.09	42.97	45.96	46.92	63.22	86.40	155.53					

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Pm	$L\beta_1$		5	50	61	6	5.960	10.39850	4		7.45	9.18	11.85	17.09	42.97	45.97	46.92	63.22	86.40	155.54					
U	N_2-P_1		1		92	6	1.192	10.40000	2		7.45	9.18	11.86	17.09	42.98	45.97	46.92	63.23	86.42	155.62					
In	$L\beta_3$		3	6	49	6	3.572	10.40952	5		7.46	9.19	11.87	17.10	43.02	46.02	46.97	63.29	86.52	156.11					
Ru	Ln		2	1	44	6	2.382	10.41000	4		7.46	9.19	11.87	17.10	43.02	46.02	46.97	63.30	86.52	156.13					
Sr	$K\alpha_{1,2}$		10	150	35	6	11.907	10.41100	5		7.46	9.19	11.87	17.11	43.02	46.02	46.98	63.30	86.53	156.18					
W	$L\alpha_2$		7	10	74	6	8.334	10.41201	5		7.46	9.19	11.87	17.11	43.03	46.03	46.98	63.31	86.54	156.24					
W	$L\beta_4$		8	4	74	6	9.524	10.41296	5		7.46	9.19	11.87	17.11	43.03	46.03	46.99	63.32	86.55	156.28					
Ir	$L\beta_1$		9	50	77	6	10.706	10.42028	5		7.47	9.20	11.88	17.12	43.06	46.07	47.02	63.37	86.63	156.67					
Fr	$L\alpha_2$		810	10	87	6	11.893	10.42299	5		7.47	9.20	11.88	17.13	43.08	46.08	47.03	63.38	86.66	156.82					
Cr	$K\beta_{1,3}$		5	18	24	6	5.946	10.42435	5	4	7.47	9.20	11.88	17.13	43.08	46.09	47.04	63.39	86.67	156.89					
Np	Ll		10	3	93	6	11.887	10.42800	4		7.47	9.20	11.89	17.13	43.10	46.10	47.06	63.42	86.71	157.09					
Tm	$L\alpha_2$		6	10	69	6	7.132	10.42859	4		7.47	9.20	11.89	17.14	43.10	46.11	47.06	63.42	86.71	157.12					
Ho	Ll		5	2	67	6	5.942	10.43000	4		7.48	9.20	11.89	17.14	43.11	46.11	47.07	63.43	86.73	157.20					
Rh	Ll		2	3	45	6	2.376	10.43380	4		7.48	9.21	11.89	17.14	43.12	46.13	47.09	63.46	86.77	157.40					
Ge	$L\alpha_{1,2}$		1	100	32	6	1.188	10.43610	4		7.48	9.21	11.90	17.15	43.13	46.14	47.10	63.47	86.79	157.53					
U	$M\gamma$		3	5	92	6	3.563	10.43700	3		7.48	9.21	11.90	17.15	43.14	46.15	47.10	63.48	86.80	157.58					
Sr	$K\alpha_2$		10	50	35	6	11.876	10.43819	5		7.48	9.21	11.90	17.15	43.14	46.15	47.11	63.49	86.81	157.65					
Yb	$L\beta_4$		7	5	70	6	8.312	10.43966	5		7.48	9.21	11.90	17.15	43.15	46.16	47.11	63.50	86.83	157.73					
Ta	$L\beta_3$		8	6	73	6	9.486	10.45424	5		7.49	9.23	11.92	17.18	43.21	46.23	47.18	63.60	86.98	158.56					
Gd	$M\alpha$		1	100	64	6	1.185	10.46000	2		7.50	9.23	11.92	17.19	43.24	46.25	47.21	63.64	87.04	158.89					
Pd	$L\gamma_{2,3}$		3	5	46	6	3.553	10.46760	4		7.50	9.24	11.93	17.20	43.27	46.29	47.25	63.69	87.12	159.34					
Gd	$L\beta_{2,15}$		6	20	64	6	7.102	10.47300	4		7.51	9.24	11.94	17.21	43.29	46.31	47.27	63.72	87.18	159.67					
Nb	$L\beta_{2,15}$		2	1	41	6	2.367	10.47580	4		7.51	9.24	11.94	17.21	43.30	46.33	47.29	63.74	87.21	159.84					
Yb	$M\zeta$		1	.01	70	6	1.183	10.48000	2		7.51	9.25	11.95	17.22	43.32	46.35	47.31	63.77	87.25	160.10					
Tb	$L\beta_3$		6	6	65	6	7.095	10.48319	4		7.51	9.25	11.95	17.23	43.34	46.36	47.32	63.79	87.28	160.30					
Hg	$L\beta_1$		10	50	80	6	11.821	10.48679	5		7.52	9.25	11.96	17.23	43.35	46.38	47.34	63.82	87.32	160.53					
Th	$M\zeta_1$		2	1	90	6	2.363	10.49000	3		7.52	9.26	11.96	17.24	43.37	46.39	47.36	63.84	87.35	160.74					
Pt	Ll		7	3	78	6	8.267	10.49650	4		7.52	9.26	11.97	17.25	43.39	46.42	47.39	63.88	87.42	161.16					
Tl	$M\beta$		2	55	81	6	2.362	10.49800	3		7.52	9.26	11.97	17.25	43.40	46.43	47.39	63.89	87.44	161.26					
Ni	$K\beta_{1,3}$		7	20	28	6	8.263	10.50094	6		7.53	9.27	11.97	17.26	43.41	46.44	47.41	63.91	87.47	161.45					
Pt	$L\alpha_1$		8	100	78	6	9.441	10.50432	5		7.53	9.27	11.98	17.26	43.43	46.46	47.42	63.94	87.50	161.68					
Ra	Ll		9	3	88	6	10.620	10.50471	5		7.53	9.27	11.98	17.26	43.43	46.46	47.43	63.94	87.51	161.71					
Nd	$M\gamma$		1	1	60	6	1.180	10.50500	3		7.53	9.27	11.98	17.26	43.43	46.46	47.43	63.94	87.51	161.73					
Mn	$K\alpha_1$		5	100	25	6	5.898	10.50910	6	4	7.53	9.27	11.98	17.27	43.45	46.48	47.45	63.97	87.55	162.01					
Cs	$L\beta_3$		4	6	55	6	4.716	10.51400	4		7.54	9.28	11.99	17.28	43.47	46.51	47.47	64.00	87.60	162.35					
Mn	$K\alpha_{1,2}$		5	150	25	6	5.894	10.51570	5	4	7.54	9.28	11.99	17.28	43.48	46.51	47.48	64.01	87.62	162.47					
In	$L\beta_4$		3	4	49	6	3.535	10.52091	5		7.54	9.28	11.99	17.29	43.50	46.54	47.50	64.05	87.68	162.84					
Tm	$L\gamma_1$		8	5	69	6	9.424	10.52240	4		7.54	9.29	12.00	17.29	43.51	46.54	47.51	64.06	87.69	162.95					
Os	$L\beta_2$		9	20	76	6	10.597	10.52810	5		7.55	9.29	12.00	17.30	43.53	46.57	47.54	64.10	87.75	163.37					
Si	Ll		8	3	83	6	9.419	10.52879	5		7.55	9.29	12.00	17.30	43.53	46.57	47.54	64.10	87.76	163.42					
Mn	$K\alpha_2$		5	50	25	6	5.887	10.52890	5	4	7.55	9.29	12.00	17.30	43.53	46.58	47.54	64.10	87.76	163.43					
Fe	$K\beta_{1,3}$		6	20	26	6	7.057	10.53966	5	4	7.55	9.30	12.02	17.32	43.58	46.63	47.59	64.18	87.87	164.25					
Cd	$L\beta_{2,15}$		3	25	48	6	3.528	10.54224	5		7.56	9.30	12.02	17.32	43.59	46.64	47.61	64.20	87.90	164.45					
Tm	$L\beta_3$		7	6	69	6	8.229	10.54410	4		7.56	9.30	12.02	17.33	43.60	46.65	47.61	64.21	87.92	164.60					
U	M_3-N_4		3	5	92	6	3.521	10.56300	3		7.57	9.32	12.04	17.36	43.68	46.74	47.71	64.34	88.12	166.21					
Y	$L\gamma_{2,3}$		2	.5	39	6	2.346	10.56600	4		7.57	9.32	12.05	17.36	43.70	46.75	47.72	64.36	88.15	166.48					
Ag	$L\gamma_1$		3	10	47	6	3.519	10.56780	5		7.57	9.33	12.05	17.37	43.70	46.76	47.73	64.37	88.17	166.64					
Pb	$M\alpha_1$		2	100	82	6	2.345	10.57200	3		7.58	9.33	12.05	17.37	43.72	46.78	47.75	64.40	88.21	167.04					
Rn	$L\alpha_1$		H10	100	86	6	11.725	10.57230	5		7.58	9.33	12.05	17.37	43.72	46.78	47.75	64.40	88.21	167.07					
As	$K\beta_1$		10	15	33	6	11.724	10.57300	5		7.58	9.33	12.05	17.37	43.73	46.78	47.75	64.41	88.22	167.13					
Pb	$L\alpha_1$		9	100	82	6	10.550	10.57509	5		7.58	9.33	12.06	17.38	43.74	46.79	47.76	64.42	88.24	167.34					
As	$K\beta_3$		10	7	33	6	11.718	10.57830	5		7.58	9.33	12.06	17.38	43.75	46.81	47.78	64.44	88.28	167.65					
As	$K\alpha_1$		9	100	33	6	10.542	10.58292	5		7.58	9.34	12.07	17.39	43.77	46.83	47.80	64.47	88.33	168.12					
Pt	$L\alpha_2$		8	10	78	6	9.360	10.59456	5		7.59	9.35	12.08	17.41	43.82	46.88	47.86	64.55	88.45	169.41					
As	$K\alpha_{1,2}$		9	150	33	6	10.530	10.59489	5		7.59	9.35	12.08	17.41	43.82	46.88	47.86	64.55	88.45	169.44					
Pr	$L\beta_{2,15}$		5	20	59	6	5.849	10.59700	4		7.60	9.35	12.08	17.41	43.83	46.89	47.87	64.57	88.47	169.69					
Er	$L\beta_{2,15}$		7	20	68	6	8.188	10.59793	5		7.60	9.35	12.08	17.42	43.84	46.90	47.87	64.58	88.48	169.81					
Pb	$M\alpha_2$		2	100	82	6	2.339	10.59800	3		7.60	9.35	12.08	17.42	43.84	46.90	47.87	64.58	88.48	169.82					
Eu	$L\alpha_1$		5	100	63	6	5.845	10.60450	4		7.60	9.36	12.09	17.43	43.86	46.93	47.90	64.62	88.55	170.64					
Re	$L\gamma_1$		10	10	75	6	11.683	10.60989	5		7.60	9.36	12.10	17.44	43.89	46.96	47.93	64.66	88.61	171.38					
Hf	$L\gamma_1$		9	10	72	6	10.514	10.61100	5		7.61	9.36	12.10	17.44	43.89	46.96	47.94	64.66	88.62	171.54					
Th	M_2-N_1		3	.01	90	6	3.505	10.61100	3		7.61	9.36	12.10	17.44	43.89	46.96	47.94	64.66	88.62	171.54					
Hf	$L\beta_2$		8	20	72	6	9.346	10.61111	5		7.61	9.36	12.10	17.44	43.89	46.96	47.94	64.67	88.62	171.55					
Ta	$L\beta_1$		8	50	73	6	9.342	10.61584	5		7.61	9.37	12.10	17.45	43.91	46.98	47.96	64.70	88.67	172.28					
Os	$L\beta_3$		9	6	76	6	10.509	10.61594	5		7.61	9.37	12.10	17.45	43.91	46.98	47.96	64.70	88.67	172.29					

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ir	$L\beta_4$		9	4	77	6	10.509	10.61622	5		7.61	9.37	12.10	17.45	43.91	46.98	47.96	64.70	88.68	172.34					
As	$K\alpha_2$		9	50	33	6	10.506	10.61883	5		7.61	9.37	12.11	17.45	43.93	47.00	47.97	64.72	88.70	172.77					
W	$L\gamma_3$		10	2	74	6	11.672	10.61999	5		7.61	9.37	12.11	17.45	43.93	47.00	47.98	64.73	88.72	172.97					
Nb	$L\beta_3$		2	3	41	6	2.334	10.62040	4		7.61	9.37	12.11	17.45	43.93	47.00	47.98	64.73	88.72	173.04					
Nd	$L\beta_3$		5	6	60	6	5.828	10.63400	4		7.62	9.38	12.12	17.48	43.99	47.07	48.05	64.82	88.86	176.15					
Pt	$M\gamma$		2	3	78	6	2.331	10.63800	3		7.62	9.39	12.13	17.48	44.01	47.09	48.07	64.85	88.91	177.78					
Ta	$L\alpha_1$		7	100	73	6	8.145	10.65379	5		7.64	9.40	12.15	17.51	44.08	47.16	48.14	64.96	89.07						
Eu	$L\alpha_2$		5	10	63	6	5.816	10.65750	4		7.64	9.40	12.15	17.51	44.09	47.18	48.16	64.98	89.11						
Tb	$L\beta_1$		6	50	65	6	6.977	10.66080	4		7.64	9.41	12.15	17.52	44.11	47.19	48.18	65.01	89.15						
La	$L\alpha_1$		4	100	57	6	4.650	10.66280	5		7.64	9.41	12.16	17.52	44.12	47.20	48.18	65.02	89.17						
In	$L\beta_1$		3	75	49	6	3.487	10.66593	5		7.64	9.41	12.16	17.53	44.13	47.22	48.20	65.04	89.20						
Cs	$L\beta_4$		4	5	55	6	4.649	10.66640	4		7.64	9.41	12.16	17.53	44.13	47.22	48.20	65.04	89.21						
S	$SK\alpha_4$		2	45	16	1	2.324	10.66830	3	3	7.65	9.41	12.16	17.53	44.14	47.23	48.21	65.06	89.23						
O	$L1$		10	3	92	6	11.616	10.67120	5		7.65	9.42	12.17	17.54	44.15	47.24	48.23	65.08	89.26						
I	$L1$		3	7	53	6	3.484	10.67262	5		7.65	9.42	12.17	17.54	44.16	47.25	48.23	65.09	89.27						
Pb	$L\alpha_2$		9	10	82	6	10.448	10.67832	5		7.65	9.42	12.17	17.55	44.19	47.28	48.26	65.13	89.33						
Au	$L\beta_3$		10	6	79	6	11.608	10.67849	5		7.65	9.42	12.17	17.55	44.19	47.28	48.26	65.13	89.34						
Th	$M\zeta_2$		2	.1	90	6	2.321	10.68000	3		7.65	9.42	12.18	17.55	44.19	47.28	48.27	65.14	89.35						
S	$SK\alpha_3$		2	45	16	1	2.321	10.68153	3	3	7.66	9.43	12.18	17.55	44.20	47.29	48.27	65.15	89.37						
Hf	$L1$		6	3	72	6	6.958	10.68870	5		7.66	9.43	12.19	17.57	44.23	47.32	48.31	65.20	89.44						
Rn	$L\alpha_2$	H	10	10	86	6	11.596	10.68990	5		7.66	9.43	12.19	17.57	44.24	47.33	48.31	65.20	89.46						
Nb	$L\beta_4$		2	3	41	6	2.319	10.69100	4		7.66	9.43	12.19	17.57	44.24	47.34	48.32	65.21	89.47						
La	$L\alpha_2$		4	10	57	6	4.633	10.70132	5		7.67	9.44	12.20	17.59	44.29	47.38	48.37	65.28	89.58						
Au	$L\beta_2$		10	20	79	6	11.583	10.70220	5		7.67	9.44	12.20	17.59	44.29	47.39	48.37	65.29	89.59						
Nd	$L1$		4	2	60	6	4.632	10.70400	4		7.67	9.45	12.20	17.59	44.30	47.40	48.38	65.30	89.61						
Er	$L\alpha_1$		6	100	68	6	6.947	10.70550	5		7.67	9.45	12.21	17.59	44.30	47.40	48.39	65.31	89.62						
S	$SK\alpha'$		2	.3	16	1	2.316	10.70658	3	3	7.67	9.45	12.21	17.60	44.31	47.41	48.40	65.32	89.63						
La	$L\gamma_1$		5	5	57	6	5.788	10.70900	4		7.68	9.45	12.21	17.60	44.32	47.42	48.41	65.34	89.66						
Eu	AM_4		1		63	6	1.157	10.71100	3		7.68	9.45	12.21	17.60	44.33	47.43	48.42	65.35	89.68						
Tb	$L\gamma_1$		7	5	65	6	8.100	10.71209	4		7.68	9.45	12.21	17.61	44.33	47.43	48.42	65.36	89.69						
Tm	$L\beta_1$		7	50	69	6	8.100	10.71280	4		7.68	9.45	12.21	17.61	44.34	47.44	48.43	65.36	89.70						
Pt	M_3-N_4		2	1	78	6	2.314	10.71400	3		7.68	9.45	12.22	17.61	44.34	47.44	48.43	65.37	89.71						
W	M_2-N_4		2	.1	74	6	2.314	10.71400	3		7.68	9.45	12.22	17.61	44.34	47.44	48.43	65.37	89.71						
Tb	$L\beta_4$		6	5	65	6	6.939	10.71840	4		7.68	9.46	12.22	17.62	44.36	47.46	48.45	65.40	89.76						
Ga	$K\alpha_1$		8	100	31	6	9.250	10.72066	6		7.68	9.46	12.22	17.62	44.37	47.48	48.46	65.42	89.78						
Hg	$L8_4$		10	4	80	6	11.561	10.72220	5		7.68	9.46	12.22	17.62	44.38	47.48	48.47	65.43	89.80						
Nb	$L\beta_6$		2	3	41	6	2.312	10.72260	4		7.69	9.46	12.22	17.62	44.38	47.48	48.47	65.43	89.80						
U	M_4-O_2		3	1	92	6	3.466	10.72800	3		7.69	9.47	12.23	17.63	44.40	47.51	48.50	65.47	89.86						
Ta	$L\alpha_2$		7	10	73	6	8.086	10.73051	5		7.69	9.47	12.23	17.64	44.41	47.52	48.51	65.48	89.89						
Pa	$M\gamma$		3	5	91	6	3.465	10.73100	3		7.69	9.47	12.23	17.64	44.41	47.52	48.51	65.49	89.89						
Ga	$K\alpha_{1,2}$		8	150	31	6	9.241	10.73108	5		7.69	9.47	12.23	17.64	44.41	47.52	48.51	65.49	89.89						
Co	$K\alpha_1$		6	100	27	6	6.929	10.73379	6		7.69	9.47	12.24	17.64	44.43	47.54	48.53	65.51	89.92						
As	Ln		1	1	33	6	1.155	10.73400	3		7.69	9.47	12.24	17.64	44.43	47.54	48.53	65.51	89.93						
Cs	$L\beta_1$		4	50	55	6	4.619	10.73480	4		7.69	9.47	12.24	17.64	44.43	47.54	48.53	65.51	89.93						
Co	$K\alpha_{1,2}$		6	150	27	6	6.924	10.74155	6		7.70	9.48	12.25	17.65	44.46	47.57	48.56	65.56	90.01						
S	$K\alpha_1$		2	100	16	6	2.307	10.74432	5	3	7.70	9.48	12.25	17.66	44.47	47.59	48.58	65.58	90.04						
S	$K\alpha_{1,2}$		2	150	16	6	2.307	10.74619	5	3	7.70	9.48	12.25	17.66	44.48	47.60	48.59	65.59	90.06						
S	$K\alpha_2$		2	50	16	6	2.306	10.74992	5	3	7.70	9.49	12.26	17.67	44.50	47.61	48.60	65.62	90.10						
Eu	$M\beta$		1	45	63	6	1.153	10.75000	3		7.70	9.49	12.26	17.67	44.50	47.61	48.60	65.62	90.10						
Ga	$K\alpha_2$		8	50	31	6	9.223	10.75191	5		7.71	9.49	12.26	17.67	44.51	47.62	48.61	65.63	90.12						
Co	$K\alpha_2$		6	50	27	6	6.914	10.75710	6		7.71	9.49	12.26	17.68	44.53	47.65	48.64	65.67	90.17						
Ta	$L\beta_4$		8	4	73	6	9.211	10.76648	5		7.72	9.50	12.28	17.70	44.57	47.69	48.68	65.73	90.27						
Zr	$L\gamma_1$		2	1	40	6	2.302	10.76860	4		7.72	9.50	12.28	17.70	44.58	47.70	48.69	65.75	90.30						
Er	$L\alpha_2$		6	10	68	6	6.904	10.77300	4		7.72	9.51	12.28	17.71	44.60	47.72	48.71	65.78	90.34						
Os	$L8_1$		9	50	76	6	10.354	10.77542	5		7.72	9.51	12.29	17.71	44.61	47.73	48.73	65.79	90.37						
Sb	$L\gamma_{2,3}$		4	2	51	6	4.599	10.78120	4		7.73	9.51	12.29	17.72	44.63	47.76	48.75	65.83	90.43						
Cu	$K\alpha_1$		7	100	29	6	8.046	10.78393	6		7.73	9.52	12.30	17.72	44.65	47.77	48.77	65.85	90.46						
Ir	$L1$	D	7	3	77	6	8.040	10.79260	4		7.74	9.52	12.31	17.74	44.68	47.81	48.81	65.91	90.55						
Cu	$K\alpha_{1,2}$		7	150	29	6	8.040	10.79286	6		7.74	9.52	12.31	17.74	44.68	47.81	48.81	65.91	90.56						
Pm	$L\gamma_1$		6	5	61	6	6.891	10.79340	4		7.74	9.53	12.31	17.74	44.69	47.82	48.81	65.92	90.56						
Dy	$L1$		5	2	66	6	5.742	10.79385	5		7.74	9.53	12.31	17.74	44.69	47.82	48.82	65.92	90.57						
Pb	$L1$		8	3	82	6	9.183	10.79919	5		7.74	9.53	12.31	17.75	44.71	47.84	48.84	65.96	90.62						
Sn	$L\alpha_1$		3	100	50	6	3.443	10.79982	5		7.74	9.53	12.31	17.75	44.71	47.85	48.84	65.96	90.63						
Ta	M_1-N_3		2	.5	73	6	2.296	10.80000	2		7.74	9.53	12.31	17.75	44.72	47.85	48.84	65.96	90.63						
Ir	$L\alpha_1$		8	100	77	6	9.174	10.81023	5		7.75	9.54	12.33	17.77	44.76	47.90	48.89	66.03	90.74						

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Cu	$K\alpha_2$		7	50	29	6	8.026	10.81073	6		7.75	9.54	12.33	17.77	44.76	47.90	48.90	66.04	90.75						
Mo	$L\alpha_1$		2	100	42	6	2.293	10.81310	5		7.75	9.54	12.33	17.77	44.77	47.91	48.91	66.05	90.77						
Tm	$L\beta_4$		7	5	69	6	8.024	10.81360	4		7.75	9.54	12.33	17.77	44.77	47.91	48.91	66.05	90.78						
Ag	$L\beta_9$	B	3	.01	47	6	3.439	10.81491	5		7.75	9.54	12.33	17.78	44.78	47.92	48.92	66.06	90.79						
Sb	Ln		3	7	51	6	3.436	10.82295	5		7.76	9.55	12.34	17.79	44.82	47.96	48.96	66.12	90.88						
Hf	$L\beta_3$		8	6	72	6	9.162	10.82400	5		7.76	9.55	12.34	17.79	44.82	47.96	48.96	66.13	90.89						
Sn	$L\alpha_2$		3	10	50	6	3.435	10.82673	5		7.76	9.55	12.34	17.80	44.83	47.97	48.97	66.15	90.92						
Ga	AL_2	H	1		31	6	1.145	10.82800	3		7.76	9.56	12.35	17.80	44.84	47.98	48.98	66.15	90.93						
Mo	$L\alpha_2$		2	10	42	6	2.289	10.82874	5		7.76	9.56	12.35	17.80	44.84	47.98	48.98	66.16	90.94						
Nd	$L\beta_4$		5	5	60	6	5.721	10.83450	4		7.77	9.56	12.35	17.81	44.87	48.01	49.01	66.20	91.00						
Nd	$L\beta_1$		5	50	60	6	5.721	10.83450	4		7.77	9.56	12.35	17.81	44.87	48.01	49.01	66.20	91.00						
Ag	$L\beta_{10}$	8	3	.01	47	6	3.432	10.83474	5		7.77	9.56	12.35	17.81	44.87	48.01	49.01	66.20	91.01						
Au	$L\beta_1$		10	50	79	6	11.440	10.83529	5		7.77	9.56	12.35	17.81	44.87	48.01	49.01	66.20	91.01						
Pa	M_3-N_4		3	5	91	6	3.430	10.84200	3		7.77	9.57	12.36	17.82	44.90	48.05	49.05	66.25	91.08						
Cd	$L\beta_6$		3	1	48	6	3.429	10.84401	5		7.77	9.57	12.36	17.82	44.91	48.06	49.06	66.26	91.10						
Ag	$L\gamma_5$		3	.1	47	6	3.428	10.84914	5		7.78	9.57	12.37	17.83	44.93	48.08	49.08	66.30	91.16						
Te	$L\gamma_1$		4	8	52	6	4.570	10.84964	5		7.78	9.57	12.37	17.83	44.93	48.08	49.08	66.30	91.17						
At	$L\alpha_1$	H	10	100	85	6	11.425	10.84999	5		7.78	9.58	12.37	17.83	44.93	48.08	49.09	66.31	91.17						
Re	$L\beta_2$		9	20	75	6	10.274	10.85939	5		7.78	9.58	12.38	17.85	44.97	48.13	49.13	66.37	91.27						
Hg	$M\beta$		2	50	80	6	2.282	10.86360	4		7.79	9.59	12.39	17.86	44.99	48.15	49.15	66.40	91.32						
Tl	$L\alpha_1$		9	100	81	6	10.267	10.86651	5		7.79	9.59	12.39	17.86	45.01	48.16	49.17	66.42	91.35						
Eu	$L\beta_{2,15}$		6	20	63	6	6.842	10.87079	4		7.79	9.59	12.39	17.87	45.02	48.18	49.19	66.45	91.39						
Ga	$K\beta_1$		9	14	31	6	10.263	10.87101	5		7.79	9.59	12.39	17.87	45.03	48.18	49.19	66.45	91.40						
Ga	$K\beta_3$		9	7	31	6	10.259	10.87514	5		7.79	9.60	12.40	17.88	45.04	48.20	49.21	66.48	91.44						
Gd	$L\beta_3$		6	6	64	6	6.830	10.89000	4		7.81	9.61	12.42	17.90	45.11	48.27	49.28	66.58	91.60						
Ir	$L\alpha_2$		8	10	77	6	9.098	10.89999	5		7.81	9.62	12.43	17.92	45.15	48.32	49.33	66.65	91.71						
Pa	Ll		10	3	91	6	11.364	10.90799	4		7.82	9.63	12.44	17.93	45.19	48.36	49.37	66.71	91.80						
Er	$L\gamma_1$		8	5	68	6	9.087	10.91280	4		7.82	9.63	12.44	17.94	45.21	48.38	49.39	66.74	91.85						
Tl	$M\alpha_1$		2	100	81	6	2.270	10.92000	3		7.83	9.64	12.45	17.95	45.24	48.41	49.42	66.79	91.93						
Er	$L\beta_3$		7	6	68	6	7.938	10.93120	4		7.83	9.65	12.46	17.97	45.29	48.47	49.48	66.87	92.05						
Cd	$L\beta_3$		3	11	48	6	3.401	10.93485	5		7.84	9.65	12.47	17.97	45.30	48.48	49.50	66.89	92.09						
Tl	$M\alpha_2$		2	100	81	6	2.265	10.94400	3		7.84	9.66	12.48	17.99	45.34	48.53	49.54	66.96	92.19						
Eu	$M\alpha$		1	100	63	6	1.131	10.96000	2		7.86	9.67	12.50	18.02	45.41	48.60	49.62	67.07	92.36						
Os	$L\beta_4$		9	4	76	6	10.174	10.96595	5		7.86	9.68	12.50	18.03	45.44	48.63	49.65	67.11	92.43						
At	$L\alpha_2$	H	10	10	85	6	11.303	10.96709	5		7.86	9.68	12.50	18.03	45.45	48.64	49.65	67.12	92.44						
Tl	$L\alpha_2$		9	10	81	6	10.171	10.96875	5		7.86	9.68	12.51	18.03	45.45	48.64	49.66	67.13	92.46						
Ho	$L\beta_{2,15}$		7	20	67	6	7.910	10.96970	4		7.86	9.68	12.51	18.03	45.46	48.65	49.66	67.13	92.47						
Lu	$L\beta_{15}$		8	20	71	6	9.038	10.97199	4		7.86	9.68	12.51	18.04	45.47	48.66	49.67	67.15	92.49						
Re	$L\beta_3$		9	6	75	6	10.158	10.98278	5		7.87	9.69	12.52	18.05	45.51	48.71	49.73	67.22	92.61						
Nb	$L\beta_1$		2	45	41	6	2.257	10.98460	4		7.87	9.69	12.52	18.06	45.52	48.72	49.74	67.24	92.63						
W	$L\gamma_1$		10	10	74	6	11.284	10.98550	5		7.87	9.69	12.53	18.06	45.53	48.72	49.74	67.24	92.64						
Hf	$L\alpha_1$		7	100	72	6	7.898	10.98705	5		7.88	9.70	12.53	18.06	45.53	48.73	49.75	67.25	92.66						
Hf	$L\beta_1$		8	50	72	6	9.021	10.99280	5		7.88	9.70	12.53	18.07	45.56	48.76	49.78	67.29	92.72						
Ta	$L\gamma_3$		10	2	73	6	11.276	10.99360	5		7.88	9.70	12.54	18.07	45.56	48.76	49.78	67.30	92.73						
Ti	$K\alpha_1$		4	100	22	6	4.510	10.99404	5	4	7.88	9.70	12.54	18.07	45.56	48.76	49.78	67.30	92.73						
Zr	$L\gamma_5$		2	.1	40	6	2.255	10.99540	4		7.88	9.70	12.54	18.07	45.57	48.77	49.79	67.31	92.75						
Pr	$M\gamma$		1	1	59	6	1.127	10.99800	3		7.88	9.71	12.54	18.08	45.58	48.78	49.80	67.33	92.78						
Ti	$K\alpha_{1,2}$		4	150	22	6	4.508	10.99890	5	4	7.88	9.71	12.54	18.08	45.58	48.79	49.80	67.34	92.79						
Sm	$L\alpha_1$		5	100	62	6	5.635	10.99900	5		7.88	9.71	12.54	18.08	45.59	48.79	49.81	67.34	92.79						
Ir	$M\gamma$		2	1	77	6	2.254	11.00000	3		7.88	9.71	12.54	18.08	45.59	48.79	49.81	67.34	92.80						
Lu	$L\gamma_1$		9	5	71	6	10.142	11.00052	5		7.88	9.71	12.54	18.08	45.59	48.79	49.81	67.35	92.80						
I	$L\beta_{2,15}$		4	17	53	6	4.507	11.00212	5		7.89	9.71	12.54	18.09	45.60	48.80	49.82	67.36	92.82						
Ru	Ll		2	3	44	6	2.252	11.00700	4		7.89	9.71	12.55	18.09	45.62	48.82	49.84	67.39	92.87						
Ti	$K\alpha_2$		4	50	22	6	4.504	11.00864	5	4	7.89	9.72	12.55	18.10	45.63	48.83	49.85	67.40	92.89						
Eu	AM_5		1		63	6	1.126	11.01300	3		7.89	9.72	12.56	18.10	45.65	48.85	49.87	67.43	92.94						
Lu	Ll		6	2	71	6	6.752	11.01600	4		7.90	9.72	12.56	18.11	45.66	48.87	49.89	67.45	92.97						
Pt	$L\beta_2$		10	20	78	6	11.249	11.01999	5		7.90	9.73	12.57	18.12	45.68	48.89	49.91	67.48	93.02						
Ga	$L\beta_1$		1	35	31	6	1.125	11.02300	3		7.90	9.73	12.57	18.12	45.69	48.90	49.92	67.50	93.05						
Pt	$L\beta_3$	D	10	6	78	6	11.233	11.03580	5		7.91	9.74	12.58	18.14	45.75	48.96	49.98	67.59	93.19						
Th	$M\gamma$		3	5	90	6	3.369	11.03700	3		7.91	9.74	12.58	18.14	45.75	48.97	49.99	67.60	93.20						
Ce	$L\beta_{2,15}$		5	20	58	6	5.612	11.04350	4		7.92	9.75	12.59	18.15	45.78	49.00	50.02	67.65	93.28						
Cd	$L\beta_4$		3	5	48	6	3.367	11.04609	5		7.92	9.75	12.60	18.16	45.79	49.01	50.03	67.66	93.30						
Se	$K\alpha_1$		10	100	34	6	11.220	11.04770	5		7.92	9.75	12.60	18.16	45.80	49.02	50.04	67.68	93.32						
Sm	$L\alpha_2$		5	10	62	6	5.607	11.05310	5		7.92	9.75	12.60	18.17	45.82	49.04	50.07	67.71	93.38						
Rh	$L\gamma_{2,3}$		3	5	45	6	3.363	11.05650	4		7.92	9.76	12.61	18.18	45.84	49.06	50.08	67.74	93.42						

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Se	$K\alpha_{1,2}$		10	150	34	6	11.207	11.06118	5		7.93	9.76	12.61	18.18	45.86	49.08	50.11	67.77	93.47						
Hf	$L\alpha_2$		7	10	72	6	7.843	11.06322	5		7.93	9.76	12.61	18.19	45.87	49.09	50.12	67.78	93.49						
Au	$L\beta_4$		10	4	79	6	11.203	11.06509	5		7.93	9.77	12.62	18.19	45.87	49.10	50.13	67.80	93.51						
Ho	$L\alpha_1$		6	100	67	6	6.719	11.07000	4		7.93	9.77	12.62	18.20	45.90	49.12	50.15	67.83	93.57						
Th	N_2-P_1		1		90	6	1.120	11.07000	2		7.93	9.77	12.62	18.20	45.90	49.12	50.15	67.83	93.57						
As	Ll		1	1	33	6	1.120	11.07200	3		7.94	9.77	12.62	18.20	45.91	49.13	50.16	67.84	93.59						
Pa	M_4-O_2		3	1	91	6	3.358	11.07300	3		7.94	9.77	12.63	18.20	45.91	49.14	50.16	67.85	93.60						
Bi	M_3-N_1		2	1	83	6	2.239	11.07400	3		7.94	9.77	12.63	18.20	45.91	49.14	50.17	67.86	93.61						
Tl	Ll		8	3	81	6	8.952	11.07816	5		7.94	9.78	12.63	18.21	45.93	49.16	50.19	67.89	93.66						
Ir	M_3-N_4		2	.1	77	6	2.238	11.08000	3		7.94	9.78	12.63	18.21	45.94	49.17	50.20	67.90	93.68						
Gd	$L\beta_1$		6	50	64	6	6.712	11.08080	4		7.94	9.78	12.63	18.22	45.94	49.17	50.20	67.91	93.69						
Pr	$L\beta_3$		5	6	59	6	5.591	11.08600	4		7.95	9.78	12.64	18.22	45.97	49.20	50.23	67.94	93.74						
Se	$K\alpha_2$		10	50	34	6	11.179	11.08820	5		7.95	9.79	12.64	18.23	45.98	49.21	50.24	67.96	93.77						
Os	Ll		7	3	76	6	7.821	11.09485	5		7.95	9.79	12.65	18.24	46.01	49.24	50.27	68.00	93.84						
Ga	AL_3		1		31	6	1.117	11.10000	3		7.96	9.80	12.66	18.25	46.03	49.26	50.29	68.04	93.90						
Ba	$L\alpha_1$		4	100	56	6	4.465	11.10380	5		7.96	9.80	12.66	18.25	46.04	49.28	50.31	68.07	93.94						
Ag	$L\beta_{2,15}$		3	25	47	6	3.347	11.11005	5		7.96	9.81	12.67	18.26	46.07	49.31	50.34	68.11	94.01						
Er	$L\beta_1$		7	50	68	6	7.809	11.11110	4		7.96	9.81	12.67	18.27	46.08	49.32	50.35	68.12	94.02						
Sc	$K\beta_{1,3}$		4	20	21	6	4.460	11.11840	4	4	7.97	9.81	12.68	18.28	46.11	49.35	50.38	68.17	94.10						
Gd	$L\beta_4$		6	5	64	6	6.686	11.12399	4		7.97	9.82	12.68	18.29	46.13	49.38	50.41	68.21	94.16						
Os	$L\alpha_1$		8	100	76	6	8.910	11.12968	5		7.98	9.82	12.69	18.30	46.16	49.40	50.44	68.25	94.23						
Pr	Ll		4	2	59	6	4.452	11.13640	4		7.98	9.83	12.70	18.31	46.19	49.44	50.47	68.29	94.30						
Ho	$L\alpha_2$		6	10	67	6	6.679	11.13659	4		7.98	9.83	12.70	18.31	46.19	49.44	50.47	68.29	94.30						
Bf	$L\beta_4$		8	4	72	6	8.904	11.13760	5		7.98	9.83	12.70	18.31	46.19	49.44	50.48	68.30	94.31						
Cu	$K\beta_{1,3}$		8	20	29	6	8.904	11.13774	6		7.98	9.83	12.70	18.31	46.19	49.44	50.48	68.30	94.32						
Po	$L\alpha_1$		10	100	84	6	11.129	11.13859	5		7.98	9.83	12.70	18.31	46.20	49.45	50.48	68.31	94.33						
Ta	M_2-N_4		2	.2	73	6	2.225	11.14000	3		7.98	9.83	12.70	18.31	46.20	49.45	50.49	68.32	94.34						
Cu	$K\beta_3$		8	6	29	6	8.901	11.14079	4		7.99	9.83	12.70	18.32	46.21	49.46	50.49	68.32	94.35						
Ba	$L\alpha_2$		4	10	56	6	4.450	11.14212	5		7.99	9.83	12.71	18.32	46.21	49.46	50.50	68.33	94.36						
Gd	$L\gamma_1$		7	5	64	6	7.784	11.14680	4		7.99	9.84	12.71	18.33	46.23	49.49	50.52	68.37	94.42						
Re	$L\beta_1$		9	50	75	6	10.008	11.14722	5		7.99	9.84	12.71	18.33	46.24	49.49	50.52	68.37	94.42						
U	$M\beta$		3	60	92	6	3.336	11.14800	3		7.99	9.84	12.71	18.33	46.24	49.49	50.53	68.37	94.43						
K	$SK\alpha_4$		3	3	19	1	3.335	11.14948	3	4	7.99	9.84	12.71	18.33	46.24	49.50	50.53	68.38	94.45						
Te	Ll		3	7	52	6	3.335	11.15088	5		7.99	9.84	12.72	18.33	46.25	49.51	50.54	68.39	94.46						
Th	M_3-N_4		3	5	90	6	3.334	11.15400	3		7.99	9.84	12.72	18.34	46.26	49.52	50.56	68.42	94.50						
K	$SK\alpha_3$		3	3	19	1	3.332	11.16180	3	4	8.00	9.85	12.73	18.35	46.30	49.56	50.59	68.47	94.58						
Hg	$L\alpha_1$		9	100	80	6	9.987	11.17080	5		8.01	9.86	12.74	18.37	46.34	49.60	50.64	68.53	94.68						
Zr	$L\beta_{2,15}$		2	1	40	6	2.219	11.17260	4		8.01	9.86	12.74	18.37	46.35	49.61	50.65	68.55	94.70						
Pd	$L\gamma_1$		3	10	46	6	3.328	11.17380	4		8.01	9.86	12.74	18.37	46.35	49.61	50.65	68.55	94.72						
Tb	Ll		5	2	65	6	5.546	11.17600	4		8.01	9.86	12.74	18.37	46.36	49.62	50.66	68.57	94.74						
Pt	$L\beta_1$		10	50	78	6	11.069	11.19900	5		8.03	9.88	12.77	18.41	46.46	49.73	50.77	68.73	95.00						
Zn	$L\beta_{3,4}$		1	1	30	6	1.107	11.20000	3		8.03	9.88	12.77	18.41	46.47	49.74	50.78	68.74	95.01						
W	$L\beta_2$		9	20	74	6	9.960	11.20139	5		8.03	9.89	12.77	18.42	46.47	49.74	50.79	68.75	95.02						
Er	$L\beta_4$		7	5	68	6	7.744	11.20490	4		8.03	9.89	12.78	18.42	46.49	49.76	50.80	68.77	95.06						
Ba	$L\gamma_1$		5	5	56	6	5.530	11.20750	4		8.03	9.89	12.78	18.43	46.50	49.77	50.82	68.79	95.09						
Lu	$L\beta_3$		8	6	71	6	8.845	11.21120	5		8.04	9.89	12.78	18.43	46.52	49.79	50.83	68.82	95.13						
Cd	$L\beta_1$		3	42	48	6	3.316	11.21469	5		8.04	9.90	12.79	18.44	46.53	49.81	50.85	68.84	95.17						
Os	$L\alpha_2$		8	10	76	6	8.840	11.21872	5		8.04	9.90	12.79	18.44	46.55	49.83	50.87	68.87	95.22						
Bi	M_1-N_3		3	.1	83	6	3.314	11.22000	3		8.04	9.90	12.79	18.45	46.55	49.83	50.88	68.88	95.23						
K	$K\alpha_1$		3	100	19	6	3.313	11.22420	4	4	8.05	9.91	12.80	18.45	46.57	49.85	50.90	68.91	95.28						
K	$K\alpha_{1,2}$		3	150	19	6	3.312	11.22730	4	4	8.05	9.91	12.80	18.46	46.59	49.87	50.91	68.93	95.31						
K	$K\alpha_2$		3	50	19	6	3.310	11.23350	4	4	8.05	9.91	12.81	18.47	46.61	49.90	50.94	68.97	95.38						
Au	$M\beta$		2	50	79	6	2.204	11.24800	3		8.06	9.93	12.83	18.49	46.68	49.97	51.01	69.07	95.55						
Po	$L\alpha_2$	81	0	10	84	6	11.014	11.25480	5		8.07	9.93	12.83	18.50	46.71	50.00	51.05	69.12	95.62						
W	M_3-O_1		2	.01	74	6	2.203	11.25600	3		8.07	9.93	12.84	18.51	46.71	50.00	51.05	69.13	95.64						
Zr	$L\beta_3$		2	3	40	6	2.201	11.26600	4		8.08	9.94	12.85	18.52	46.76	50.05	51.10	69.20	95.75						
Nd	$L\gamma_1$		6	5	60	6	6.601	11.26740	4		8.08	9.94	12.85	18.53	46.76	50.06	51.11	69.21	95.76						
U	M_2-N_4		4	5	92	6	4.400	11.26800	3		8.08	9.94	12.85	18.53	46.77	50.06	51.11	69.21	95.77						
Sm	$M8$		1	45	62	6	1.100	11.27000	2		8.08	9.95	12.85	18.53	46.77	50.07	51.12	69.23	95.79						
Hg	$L\alpha_2$		9	10	80	6	9.896	11.27376	5		8.08	9.95	12.86	18.54	46.79	50.09	51.14	69.25	95.84						
Pr	$L8_4$		5	5	59	6	5.497	11.27500	4		8.08	9.95	12.86	18.54	46.80	50.09	51.14	69.26	95.85						
Th	M_5-P_3		3	.01	90	6	3.297	11.28000	3		8.09	9.96	12.86	18.55	46.82	50.12	51.17	69.30	95.91						
Ge	$K\alpha_1$		9	100	32	6	9.885	11.28648	6		8.09	9.96	12.87	18.56	46.85	50.15	51.20	69.34	95.98						
Sm	AM_4		1		62	6	1.098	11.28800	3		8.09	9.96	12.87	18.56	46.85	50.16	51.21	69.35	96.00						
Sr	$L\gamma_{2,3}$		2	.1	38	6	2.196	11.28900	4		8.09	9.96	12.87	18.56	46.86	50.16	51.21	69.36	96.01						

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Ge	$K\beta_1$	10	14	32		6	10.980	11.28940	5		8.09	9.96	12.87	18.56	46.86	50.16	51.21	69.36	96.01						
Ga	$L\alpha_{1,2}$	1	100	31		6	1.098	11.29200	3		8.09	9.97	12.88	18.57	46.87	50.17	51.23	69.38	96.04						
Sm	$L\beta_{2,15}$	6	20	62		6	6.586	11.29326	5		8.09	9.97	12.88	18.57	46.88	50.18	51.23	69.39	96.06						
Ge	$K\beta_3$	10	7	32		6	10.976	11.29359	5		8.10	9.97	12.88	18.57	46.88	50.18	51.23	69.39	96.06						
Pr	$L\beta_1$	5	50	59		6	5.488	11.29400	4		8.10	9.97	12.88	18.57	46.88	50.18	51.24	69.40	96.06						
Hg	$M\alpha$	2	100	80		6	2.195	11.29520	4		8.10	9.97	12.88	18.57	46.89	50.19	51.24	69.40	96.08						
Ge	$K\alpha_{1,2}$	9	150	32		6	9.874	11.29835	6		8.10	9.97	12.88	18.58	46.90	50.21	51.26	69.43	96.11						
In	$L\alpha_1$	3	100	49		6	3.286	11.31576	5		8.11	9.99	12.90	18.61	46.98	50.29	51.34	69.55	96.31						
Eu	$L\beta_3$	6	6	63		6	6.570	11.32020	4		8.11	9.99	12.91	18.61	47.00	50.31	51.36	69.58	96.36						
Ge	$K\alpha_2$	9	50	32		6	9.854	11.32210	6		8.12	9.99	12.91	18.62	47.00	50.32	51.37	69.59	96.38						
Yb	$L\beta_{2,15}$	8	20	70		6	8.757	11.32400	5		8.12	9.99	12.91	18.62	47.01	50.33	51.38	69.61	96.40						
Sn	$L\gamma_{2,3}$	4	2	50		6	4.376	11.33080	4		8.12	10.00	12.92	18.63	47.04	50.36	51.42	69.66	96.48						
Re	$L\beta_4$	9	4	75		6	9.845	11.33253	5		8.12	10.00	12.92	18.63	47.05	50.37	51.42	69.67	96.50						
Zr	$L\beta_4$	2	3	40		6	2.187	11.33620	4		8.13	10.01	12.93	18.64	47.07	50.39	51.44	69.69	96.54						
Lu	$L\alpha_1$	7	100	71		6	7.654	11.33657	5		8.13	10.01	12.93	18.64	47.07	50.39	51.44	69.70	96.54						
Ho	$L\gamma_1$	8	5	67		6	8.746	11.33920	4		8.13	10.01	12.93	18.64	47.08	50.40	51.46	69.71	96.57						
Ta	M_3-$O_{4,5}$	2	.01	73		6	2.186	11.34000	2		8.13	10.01	12.93	18.65	47.08	50.40	51.46	69.72	96.58						
Ho	$L\beta_3$	7	6	67		6	7.650	11.34210	4		8.13	10.01	12.93	18.65	47.09	50.41	51.47	69.73	96.61						
In	$L\alpha_2$	3	10	49		6	3.279	11.34219	5		8.13	10.01	12.93	18.65	47.09	50.41	51.47	69.74	96.61						
Co	$K\beta_{1,3}$	7	20	27		6	7.648	11.34553	5	4	8.13	10.01	12.94	18.66	47.11	50.43	51.49	69.76	96.65						
Ir	$L\beta_2$	10	20	77		6	10.919	11.35320	5		8.14	10.02	12.95	18.67	47.14	50.47	51.52	69.81	96.73						
Os	$M\gamma$	2	1	76		6	2.182	11.36400	3		8.15	10.03	12.96	18.69	47.19	50.52	51.58	69.89	96.86						
W	$L\beta_3$	9	6	74		6	9.817	11.36421	5		8.15	10.03	12.96	18.69	47.19	50.52	51.58	69.89	96.86						
Yb	Ll	6	2	70		6	6.544	11.36490	5		8.15	10.03	12.96	18.69	47.19	50.52	51.58	69.90	96.87						
Dy	$L\beta_{2,15}$	7	20	66		6	7.634	11.36583	5		8.15	10.03	12.96	18.69	47.20	50.53	51.59	69.90	96.88						
Sn	Ln	3	7	50		6	3.272	11.36628	5		8.15	10.03	12.96	18.69	47.20	50.53	51.59	69.91	96.88						
Er	Mz	1	.01	68		6	1.090	11.37000	2		8.15	10.04	12.97	18.70	47.21	50.55	51.61	69.93	96.92						
Hg	Ll	8	3	80		6	8.720	11.37280	4		8.15	10.04	12.97	18.70	47.23	50.56	51.62	69.95	96.96						
Pd	$L\beta_9$	8	3	.01	46	6	3.269	11.37600	4		8.15	10.04	12.97	18.71	47.24	50.57	51.64	69.97	96.99						
Ta	$L\gamma_1$	10	10	73		6	10.893	11.37939	5		8.16	10.04	12.98	18.71	47.26	50.59	51.65	70.00	97.03						
Hf	$L\gamma_3$	10	2	72		6	10.889	11.38410	5		8.16	10.05	12.98	18.72	47.28	50.61	51.68	70.03	97.09						
Lu	$L\beta_1$	8	50	71		6	8.708	11.38872	5		8.16	10.05	12.99	18.73	47.30	50.63	51.70	70.06	97.14						
Pd	$L\beta_{10}$	8	3	.01	46	6	3.263	11.39640	4		8.17	10.06	13.00	18.74	47.33	50.67	51.74	70.12	97.23						
Sb	$L\gamma_1$	4	8	51		6	4.347	11.40636	5		8.18	10.07	13.01	18.76	47.37	50.72	51.78	70.19	97.34						
Pb	M_3-N_1	2	1	82		6	2.173	11.40800	3		8.18	10.07	13.01	18.76	47.38	50.73	51.79	70.20	97.36						
Ir	$L\beta_3$	10	6	77		6	10.866	11.40849	5		8.18	10.07	13.01	18.76	47.38	50.73	51.79	70.20	97.36						
Yb	$L\gamma_1$	9	5	70		6	9.778	11.40921	5		8.18	10.07	13.01	18.76	47.39	50.73	51.80	70.21	97.37						
Pm	$L\alpha_1$	5	100	61		6	5.432	11.41100	4		8.18	10.07	13.01	18.76	47.40	50.74	51.81	70.22	97.39						
Lu	$L\alpha_2$	7	10	71		6	7.604	11.41202	5		8.18	10.07	13.01	18.77	47.40	50.75	51.81	70.23	97.40						
Re	Ll	7	3	75		6	7.602	11.41392	5		8.18	10.07	13.02	18.77	47.41	50.75	51.82	70.24	97.43						
Zr	$L\beta_6$	2	3	40		6	2.171	11.42020	4		8.19	10.08	13.02	18.78	47.44	50.78	51.85	70.29	97.50						
V	$K\beta_{1,3}$	5	20	23		6	5.426	11.42200	5	4	8.19	10.08	13.03	18.78	47.44	50.79	51.86	70.30	97.52						
Pt	$L\beta_4$	10	4	78		6	10.852	11.42229	5		8.19	10.08	13.03	18.78	47.44	50.79	51.86	70.30	97.52						
Ag	$L\beta_6$	3	1	47		6	3.255	11.42322	5		8.19	10.08	13.03	18.78	47.45	50.80	51.87	70.31	97.53						
Th	M_4-O_2	3	1	90		6	3.255	11.42400	3		8.19	10.08	13.03	18.79	47.45	50.80	51.87	70.31	97.54						
Si	$L\alpha_1$	10	100	83		6	10.837	11.43860	5		8.20	10.10	13.04	18.81	47.52	50.87	51.94	70.42	97.71						
Os	M_3-N_4	2	.1	76		6	2.166	11.44800	3		8.21	10.10	13.06	18.83	47.56	50.92	51.99	70.48	97.82						
Cr	$K\alpha_1$	5	100	24		6	5.414	11.44850	5	4	8.21	10.10	13.06	18.83	47.56	50.92	51.99	70.49	97.82						
Nb	$L\alpha_1$	2	100	41		6	2.166	11.44860	4		8.21	10.10	13.06	18.83	47.56	50.92	51.99	70.49	97.82						
Dy	$L\alpha_1$	6	100	66		6	6.494	11.45286	5		8.21	10.11	13.06	18.83	47.58	50.94	52.01	70.52	97.87						
Cr	$K\alpha_{1,2}$	5	150	24		6	5.411	11.45500	5	4	8.21	10.11	13.06	18.84	47.59	50.95	52.02	70.53	97.90						
Mn	$K\beta_{1,3}$	6	20	25		6	6.489	11.46126	5	4	8.22	10.12	13.07	18.85	47.62	50.98	52.05	70.58	97.97						
Pm	$L\alpha_2$	5	10	61		6	5.407	11.46300	4		8.22	10.12	13.07	18.85	47.62	50.99	52.06	70.59	97.99						
Re	$L\alpha_1$	8	100	75		6	8.651	11.46320	5		8.22	10.12	13.07	18.85	47.63	50.99	52.06	70.59	97.99						
Nb	$L\alpha_2$	2	10	41		6	2.163	11.46380	4		8.22	10.12	13.07	18.85	47.63	50.99	52.06	70.59	98.00						
Pd	$L\gamma_5$	3	.1	46		6	3.243	11.46660	4		8.22	10.12	13.08	18.86	47.64	51.01	52.08	70.61	98.03						
Cr	$K\alpha_2$	5	50	24		6	5.405	11.46803	6	4	8.22	10.12	13.08	18.86	47.65	51.01	52.08	70.62	98.05						
Sm	$M\alpha$	1	100	62		6	1.081	11.47000	2		8.22	10.12	13.08	18.86	47.66	51.02	52.09	70.64	98.07						
Pa	$M\beta$	3	60	91		6	3.239	11.48100	3		8.23	10.13	13.09	18.88	47.70	51.07	52.15	70.72	98.20						
Zn	$K\alpha_1$	8	100	30		6	8.637	11.48124	6		8.23	10.13	13.09	18.88	47.70	51.08	52.15	70.72	98.20						
Au	$L\alpha_1$	9	100	79		6	9.712	11.48760	5		8.23	10.14	13.10	18.89	47.73	51.11	52.18	70.76	98.27						
Zn	$K\alpha_{1,2}$	8	150	30		6	8.630	11.49149	6		8.24	10.14	13.11	18.90	47.75	51.12	52.20	70.79	98.32						
Os	$L\beta_7$	10	7	76		6	10.785	11.49329	5		8.24	10.14	13.11	18.90	47.76	51.13	52.21	70.80	98.34						
I	$L\beta_3$	4	6	53		6	4.313	11.49716	5		8.24	10.15	13.11	18.91	47.78	51.15	52.23	70.83	98.38						
Ag	$L\beta_3$	3	11	47		6	3.234	11.49939	5		8.24	10.15	13.11	18.91	47.79	51.16	52.24	70.85	98.41						

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Bi	M_2-N_4		3	5	83	6	3.233	11.50200	3		8.24	10.15	13.12	18.91	47.80	51.17	52.25	70.86	98.44						
Zn	$K\alpha_2$		8	50	30	6	8.614	11.51199	6		8.25	10.16	13.13	18.93	47.84	51.22	52.30	70.94	98.55						
La	$L\beta_{2,15}$		5	20	57	6	5.383	11.51500	4		8.25	10.16	13.13	18.94	47.85	51.24	52.31	70.96	98.59						
Dy	$L\alpha_2$		6	10	66	6	6.457	11.51946	5		8.26	10.17	13.14	18.94	47.87	51.26	52.34	70.99	98.64						
Eu	$L\beta_1$		6	50	63	6	6.455	11.52180	4		8.26	10.17	13.14	18.95	47.88	51.27	52.35	71.00	98.67						
Lu	$L\beta_4$		8	5	71	6	8.605	11.52448	5		8.26	10.17	13.14	18.95	47.90	51.28	52.36	71.02	98.70						
Te	$L\beta_{2,15}$		4	17	52	6	4.301	11.52868	5		8.26	10.18	13.15	18.96	47.91	51.30	52.38	71.05	98.75						
Ce	$M\gamma$		1	1	58	6	1.075	11.53000	2		8.26	10.18	13.15	18.96	47.92	51.31	52.39	71.06	98.76						
Ho	$L\beta_1$		7	50	67	6	7.524	11.53249	4		8.27	10.18	13.15	18.97	47.93	51.32	52.40	71.08	98.79						
Au	M_5-O_3		2	.01	79	6	2.149	11.53400	3		8.27	10.18	13.15	18.97	47.94	51.33	52.41	71.09	98.81						
W	$L\beta_1$		9	50	74	6	9.671	11.53628	6		8.27	10.18	13.16	18.97	47.95	51.34	52.42	71.11	98.83						
Po	Ll		9	3	84	6	9.662	11.54610	4		8.28	10.19	13.17	18.99	47.99	51.39	52.47	71.18	98.95						
Re	$L\alpha_2$		8	10	75	6	8.585	11.55167	5		8.28	10.20	13.17	19.00	48.02	51.41	52.49	71.22	99.01						
Sm	AM_5		1		62	6	1.073	11.55200	3		8.28	10.20	13.17	19.00	48.02	51.41	52.50	71.22	99.02						
Eu	$L\beta_4$		6	5	63	6	6.438	11.55300	4		8.28	10.20	13.18	19.00	48.02	51.42	52.50	71.23	99.03						
Bi	$L\alpha_2$		10	10	83	6	10.729	11.55359	5		8.28	10.20	13.18	19.00	48.02	51.42	52.50	71.23	99.04						
Ce	$L\beta_3$		5	6	58	6	5.364	11.55450	4		8.28	10.20	13.18	19.00	48.03	51.43	52.51	71.24	99.05						
Th	N_2-O_4		1		90	6	1.072	11.56000	2		8.29	10.20	13.18	19.01	48.05	51.45	52.53	71.28	99.11						
Ta	$L\beta_2$		9	20	73	6	9.650	11.56085	5		8.29	10.20	13.18	19.01	48.06	51.46	52.54	71.28	99.12						
Gd	Ll		5	2	64	6	5.361	11.56100	4		8.29	10.20	13.18	19.01	48.06	51.46	52.54	71.28	99.12						
Ce	Ll		4	2	58	6	4.287	11.56680	4		8.29	10.21	13.19	19.02	48.08	51.48	52.57	71.32	99.19						
Na	AK		1		11	6	1.071	11.56900	3		8.29	10.21	13.19	19.03	48.09	51.49	52.58	71.34	99.21						
Cs	$L\alpha_1$		4	100	55	6	4.286	11.56960	4		8.29	10.21	13.19	19.03	48.10	51.50	52.58	71.34	99.22						
Na	$K\beta$	A	1	.5	11	6	1.071	11.57500	3	2	8.30	10.22	13.20	19.04	48.12	51.52	52.61	71.38	99.28						
Ir	$L\beta_1$		10	50	77	6	10.706	11.57809	5		8.30	10.22	13.20	19.04	48.13	51.54	52.62	71.40	99.32						
Au	$L\alpha_2$		9	10	79	6	9.626	11.58948	5		8.31	10.23	13.22	19.06	48.18	51.59	52.68	71.49	99.45						
P	$K\beta$		2	3	15	6	2.139	11.59200	3	3	8.31	10.23	13.22	19.06	48.19	51.60	52.69	71.50	99.48						
Eu	$L\gamma_1$		7	5	63	6	7.479	11.60179	4		8.32	10.24	13.23	19.08	48.24	51.65	52.74	71.57	99.60						
Ni	$K\alpha_1$		7	100	28	6	7.477	11.60537	6		8.32	10.24	13.24	19.09	48.25	51.67	52.76	71.60	99.64						
P	$K\beta_1$		2	3	15	0	2.136	11.60760	3	3	8.32	10.25	13.24	19.09	48.26	51.68	52.77	71.61	99.66						
Cs	$L\alpha_2$		4	10	55	6	4.272	11.60800	4		8.32	10.25	13.24	19.09	48.26	51.68	52.77	71.62	99.67						
Ge	Ln		1	1	32	6	1.068	11.60900	3		8.32	10.25	13.24	19.09	48.27	51.69	52.77	71.62	99.68						
Ag	$L\beta_4$		3	5	47	6	3.203	11.61069	5		8.32	10.25	13.24	19.10	48.28	51.69	52.78	71.64	99.70						
Ni	$K\alpha_{1,2}$		7	150	28	6	7.471	11.61432	6		8.33	10.25	13.25	19.10	48.29	51.71	52.80	71.66	99.74						
Pb	M_1-N_3		3	.1	82	6	3.201	11.61600	3		8.33	10.25	13.25	19.10	48.30	51.72	52.81	71.67	99.76						
Fe	$K\alpha_1$		6	100	26	6	6.403	11.61625	6		8.33	10.25	13.25	19.10	48.30	51.72	52.81	71.68	99.77						
Ho	$L\beta_4$		7	5	67	6	7.470	11.61649	4		8.33	10.25	13.25	19.10	48.30	51.72	52.81	71.68	99.77						
Na	$K\beta_1$		1	.5	11	1	1.067	11.61742	3	2	8.33	10.25	13.25	19.11	48.31	51.73	52.82	71.68	99.78						
Yb	$L\beta_3$		8	6	70	6	8.535	11.61864	5		8.33	10.26	13.25	19.11	48.31	51.73	52.82	71.69	99.79						
Os	M_2-N_1		2	.01	76	6	2.134	11.62000	2		8.33	10.26	13.25	19.11	48.32	51.74	52.83	71.70	99.81						
Fe	$K\alpha_{1,2}$		6	150	26	6	6.398	11.62412	6		8.33	10.26	13.26	19.12	48.34	51.76	52.85	71.73	99.86						
Ni	$K\alpha_2$		7	50	28	6	7.460	11.63223	6		8.34	10.27	13.27	19.13	48.37	51.80	52.89	71.79	99.95						
Fe	$K\alpha_2$		6	50	26	6	6.390	11.63988	6		8.34	10.27	13.28	19.14	48.41	51.83	52.93	71.84	100.04						
Pa	M_2-N_4		4	5	91	6	4.260	11.64000	3		8.34	10.27	13.28	19.14	48.41	51.83	52.93	71.85	100.04						
I	$L\beta_4$		4	4	53	6	4.257	11.64828	5		8.35	10.28	13.28	19.16	48.44	51.87	52.97	71.90	100.14						
Pt	$M\beta$		2	50	78	6	2.127	11.65600	3		8.36	10.29	13.29	19.17	48.48	51.91	53.00	71.96	100.23						
Zn	$K\beta_{1,3}$		9	20	30	6	9.570	11.65725	5		8.36	10.29	13.30	19.17	48.48	51.92	53.01	71.97	100.25						
Ar	$K\beta_{1,3}$		3	15	18	6	3.190	11.65800	4		8.36	10.29	13.30	19.17	48.49	51.92	53.01	71.97	100.26						
Ta	M_3-O_1		2	.01	73	6	2.126	11.66000	2		8.36	10.29	13.30	19.18	48.50	51.93	53.02	71.99	100.28						
Sb	Ll		3	7	51	6	3.188	11.66478	5		8.36	10.30	13.30	19.18	48.52	51.95	53.05	72.02	100.34						
Ra	Ll		10	3	88	6	10.620	11.67190	5		8.37	10.30	13.31	19.20	48.55	51.99	53.08	72.07	100.42						
Zr	$L\beta_1$		2	45	40	6	2.124	11.67200	4		8.37	10.30	13.31	19.20	48.55	51.99	53.08	72.07	100.42						
P	$SK\beta'$		2	.1	15	0	2.123	11.67533	2	2	8.37	10.31	13.32	19.20	48.56	52.00	53.10	72.10	100.46						
Bi	M_1-N_2		3	1	83	6	3.185	11.67600	3		8.37	10.31	13.32	19.20	48.57	52.01	53.10	72.10	100.47						
Au	Ll		8	3	79	6	8.493	11.67712	5		8.37	10.31	13.32	19.21	48.57	52.01	53.11	72.11	100.48						
Au	$M\alpha_1$		2	100	79	6	2.123	11.68000	3		8.37	10.31	13.32	19.21	48.58	52.03	53.12	72.13	100.52						
Na	$SK\alpha_6$		1	1	11	0	1.061	11.68600	3	3	8.38	10.31	13.33	19.22	48.61	52.05	53.15	72.17	100.59						
Ru	$L\gamma_{2,3}$		3	.5	44	6	3.180	11.69310	4		8.38	10.32	13.34	19.23	48.64	52.09	53.19	72.22	100.67						
Mo	Ln		2	1	42	6	2.120	11.69500	4		8.38	10.32	13.34	19.24	48.65	52.10	53.20	72.24	100.69						
Os	$L\beta_2$		10	20	76	6	10.597	11.69789	5		8.39	10.33	13.34	19.24	48.66	52.11	53.21	72.26	100.73						
Yb	$L\alpha_1$		7	100	70	6	7.414	11.70323	5		8.39	10.33	13.35	19.25	48.69	52.14	53.24	72.30	100.79						
Au	$M\alpha_2$		2	100	79	6	2.118	11.70800	3		8.39	10.33	13.35	19.26	48.71	52.16	53.26	72.33	100.85						
Tm	$L\beta_{2,15}$		8	20	69	6	8.467	11.71200	4		8.40	10.34	13.36	19.26	48.73	52.18	53.28	72.36	100.89						
W	$L\beta_4$		9	4	74	6	9.524	11.71458	5		8.40	10.34	13.36	19.27	48.74	52.19	53.29	72.38	100.92						
Na	$SK\alpha_5$		1	2	11	0	1.058	11.71700	3	3	8.40	10.34	13.36	19.27	48.75	52.20	53.30	72.40	100.95						

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pd	$L\beta_{2,15}$		3	25	46	6	3.171	11.72661	5		8.41	10.35	13.37	19.29	48.79	52.25	53.35	72.46	101.07						
Tm	Ll		6	2	69	6	6.341	11.73000	4		8.41	10.35	13.38	19.29	48.81	52.26	53.37	72.49	101.11						
U	$M\alpha_1$		3	100	92	6	3.170	11.73000	3		8.41	10.35	13.38	19.29	48.81	52.26	53.37	72.49	101.11						
Pm	$L\beta_{2,15}$		6	20	61	6	6.338	11.73540	4		8.41	10.36	13.38	19.30	48.83	52.29	53.39	72.53	101.17						
Cs	$L\gamma_1$		5	5	55	6	5.279	11.74000	4		8.42	10.36	13.39	19.31	48.85	52.31	53.42	72.56	101.23						
W	Ll		7	3	74	6	7.386	11.74740	4		8.42	10.37	13.40	19.32	48.88	52.35	53.45	72.61	101.31						
Ce	$L\beta_4$		5	5	58	6	5.276	11.74850	4		8.42	10.37	13.40	19.32	48.89	52.35	53.46	72.62	101.33						
I	$L\beta_1$		4	75	53	6	4.220	11.74976	5		8.42	10.37	13.40	19.33	48.89	52.36	53.46	72.63	101.34						
Pb	$L\alpha_1$		10	100	82	6	10.550	11.75010	5		8.42	10.37	13.40	19.33	48.89	52.36	53.47	72.63	101.35						
Y	$L\gamma_5$		2	.1	39	6	2.110	11.75080	4		8.42	10.37	13.40	19.33	48.90	52.36	53.47	72.64	101.35						
As	$K\alpha_1$		10	100	33	6	10.542	11.75879	5		8.43	10.38	13.41	19.34	48.93	52.40	53.51	72.70	101.45						
Ta	$L\beta_3$		9	6	73	6	9.486	11.76102	5		8.43	10.38	13.41	19.34	48.94	52.41	53.52	72.71	101.48						
Pr	$L\gamma_1$		6	5	59	6	6.321	11.76660	4		8.43	10.39	13.42	19.35	48.97	52.44	53.55	72.75	101.54						
Tl	M_3-N_1		2	1	81	6	2.107	11.76800	3		8.44	10.39	13.42	19.36	48.97	52.45	53.55	72.76	101.56						
Re	$M\gamma$		2	1	75	6	2.106	11.77000	3		8.44	10.39	13.42	19.36	48.98	52.46	53.56	72.78	101.58						
U	$M\alpha_2$		3	100	92	6	3.159	11.77200	3		8.44	10.39	13.43	19.36	48.99	52.47	53.57	72.79	101.61						
As	$K\alpha_{1,2}$		10	150	33	6	10.530	11.77210	5		8.44	10.39	13.43	19.36	48.99	52.47	53.57	72.79	101.61						
Sm	$L\beta_3$		6	6	62	6	6.317	11.77446	5		8.44	10.39	13.43	19.37	49.00	52.48	53.59	72.81	101.64						
Dy	$L\beta_3$		7	6	66	6	7.369	11.77540	4		8.44	10.39	13.43	19.37	49.01	52.48	53.59	72.81	101.65						
Yb	$L\alpha_2$		7	10	70	6	7.366	11.77995	5		8.44	10.40	13.44	19.38	49.03	52.50	53.61	72.85	101.70						
Ce	$L\beta_1$		5	50	58	6	5.261	11.78050	4		8.44	10.40	13.44	19.38	49.03	52.51	53.62	72.85	101.71						
Tb	$L\beta_{2,15}$		7	20	65	6	7.365	11.78100	4		8.45	10.40	13.44	19.38	49.03	52.51	53.62	72.85	101.71						
Dy	$L\gamma_1$		8	5	66	6	8.417	11.78127	5		8.45	10.40	13.44	19.38	49.03	52.51	53.62	72.86	101.72						
Na	$SK\alpha_4$		1	10	11	0	1.052	11.78600	3	3	8.45	10.40	13.44	19.39	49.05	52.53	53.64	72.89	101.77						
Hf	$L\gamma_1$		10	10	72	6	10.514	11.79000	5		8.45	10.41	13.45	19.39	49.07	52.55	53.66	72.92	101.82						
Os	$L\beta_3$		10	6	76	6	10.509	11.79549	5		8.46	10.41	13.45	19.40	49.10	52.58	53.69	72.96	101.89						
Ir	$L\beta_4$		10	4	77	6	10.509	11.79580	5		8.46	10.41	13.45	19.40	49.10	52.58	53.69	72.96	101.89						
Bi	M_3-$O_{4,5}$		3	1	83	6	3.153	11.79600	3		8.46	10.41	13.45	19.40	49.10	52.58	53.69	72.96	101.89						
As	$K\alpha_2$		10	50	33	6	10.506	11.79870	5		8.46	10.41	13.46	19.41	49.11	52.59	53.70	72.98	101.93						
Ag	$L\beta_1$		3	42	47	6	3.150	11.80419	5		8.46	10.42	13.46	19.42	49.13	52.62	53.73	73.02	101.99						
Na	$SK\alpha_3$		1	10	11	0	1.050	11.80500	3	3	8.46	10.42	13.46	19.42	49.14	52.62	53.74	73.03	102.00						
Yb	$L\beta_1$		8	50	70	6	8.400	11.80520	5		8.46	10.42	13.46	19.42	49.14	52.63	53.74	73.03	102.00						
W	$L\alpha_1$		8	100	74	6	8.396	11.81112	5		8.47	10.43	13.47	19.43	49.16	52.65	53.77	73.07	102.08						
Pt	$L\alpha_1$		9	100	78	6	9.441	11.81736	5		8.47	10.43	13.48	19.44	49.19	52.68	53.80	73.12	102.15						
Th	$M\beta$		3	60	90	6	3.145	11.82300	3		8.48	10.44	13.49	19.45	49.22	52.71	53.82	73.16	102.22						
Rh	$L\gamma_1$		3	10	45	6	3.143	11.83110	4		8.48	10.44	13.49	19.46	49.25	52.75	53.86	73.21	102.32						
Na	$SK\alpha'$		1	3	11	0	1.047	11.83700	3	3	8.49	10.45	13.50	19.47	49.28	52.78	53.89	73.26	102.39						
Tm	$L\gamma_1$		9	5	69	6	9.424	11.83770	4		8.49	10.45	13.50	19.47	49.28	52.78	53.90	73.26	102.39						
Bi	Ll		9	3	83	6	9.419	11.84489	5		8.49	10.46	13.51	19.48	49.31	52.82	53.93	73.31	102.48						
Nd	$L\alpha_1$		5	100	60	6	5.229	11.85200	4		8.50	10.46	13.52	19.50	49.35	52.85	53.97	73.36	102.57						
Tb	$L\alpha_1$		6	100	65	6	6.272	11.85900	4		8.50	10.47	13.53	19.51	49.38	52.88	54.00	73.42	102.65						
Ho	$M\zeta$		1	.01	67	6	1.045	11.86000	2		8.50	10.47	13.53	19.51	49.38	52.89	54.01	73.42	102.66						
Re	M_3-N_4		2	.01	75	6	2.090	11.86200	3		8.50	10.47	13.53	19.51	49.39	52.90	54.02	73.44	102.69						
Zn	AL_2		1		30	6	1.045	11.86200	3		8.50	10.47	13.53	19.51	49.39	52.90	54.02	73.44	102.69						
Pb	$L\alpha_2$		10	10	82	6	10.448	11.86480	5		8.51	10.47	13.53	19.52	49.40	52.91	54.03	73.46	102.72						
Cd	$L\alpha_1$		3	100	48	6	3.133	11.86905	5		8.51	10.48	13.54	19.52	49.42	52.93	54.05	73.49	102.77						
Cd	$L\alpha_2$		3	10	48	6	3.126	11.89488	5		8.53	10.50	13.57	19.57	49.54	53.06	54.18	73.67	103.09						
W	$L\alpha_2$		8	10	74	6	8.334	11.89944	5		8.53	10.50	13.57	19.57	49.56	53.08	54.20	73.71	103.14						
Nd	$L\alpha_2$		5	10	60	6	5.207	11.90350	4		8.53	10.51	13.58	19.58	49.58	53.10	54.22	73.74	103.19						
Pb	M_2-N_4		3	5	82	6	3.124	11.90400	3		8.53	10.51	13.58	19.58	49.58	53.10	54.22	73.74	103.20						
Na	$K\alpha_{1,2}$		1	100	11	6	1.041	11.91010	4	3	8.54	10.51	13.58	19.59	49.60	53.13	54.25	73.78	103.27						
Pt	$L\alpha_2$		9	10	78	6	9.360	11.91888	5		8.54	10.52	13.59	19.61	49.64	53.17	54.30	73.85	103.38						
In	$L\gamma_{2,3}$		4	2	49	6	4.160	11.92000	4		8.54	10.52	13.60	19.61	49.65	53.18	54.30	73.86	103.39						
Tb	$L\alpha_2$		6	10	65	6	6.237	11.92500	4		8.55	10.53	13.60	19.62	49.67	53.20	54.33	73.89	103.45						
Yb	$L\beta_4$		8	5	70	6	8.312	11.93104	5		8.55	10.53	13.61	19.63	49.70	53.23	54.36	73.94	103.53						
Hf	$L\beta_2$		9	20	72	6	9.346	11.93750	5		8.56	10.54	13.62	19.64	49.73	53.26	54.39	73.98	103.60						
Ta	$L\beta_1$		9	50	73	6	9.342	11.94282	5		8.56	10.54	13.62	19.65	49.75	53.29	54.41	74.02	103.67						
In	Ln		3	7	49	6	3.112	11.94981	5		8.57	10.55	13.63	19.66	49.78	53.32	54.45	74.07	103.75						
Ge	Ll		1	1	32	6	1.036	11.96500	3		8.58	10.56	13.65	19.68	49.85	53.39	54.52	74.18	103.94						
Y	$L\beta_3$		2	3	39	6	2.072	11.96640	4		8.58	10.56	13.65	19.69	49.85	53.40	54.53	74.19	103.96						
Os	$L\beta_1$		10	50	76	6	10.354	11.97269	5		8.58	10.57	13.66	19.70	49.88	53.43	54.56	74.24	104.03						
Eu	Ll		5	2	63	6	5.176	11.97400	4		8.58	10.57	13.66	19.70	49.89	53.44	54.57	74.25	104.05						
Pt	M_5-O_3		2	.01	78	6	2.070	11.97400	3		8.58	10.57	13.66	19.70	49.89	53.44	54.57	74.25	104.05						
Dy	$L\beta_1$		7	50	66	6	7.246	11.97434	5		8.58	10.57	13.66	19.70	49.89	53.44	54.57	74.25	104.05						
Zn	$L\beta_1$		1	26	30	6	1.034	11.98300	3		8.59	10.58	13.67	19.71	49.93	53.48	54.61	74.31	104.16						

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Sm	$L8_1$		6	50	62	6	6.204	11.98836	5		8.59	10.58	13.67	19.72	49.95	53.51	54.64	74.35	104.23						
Pt	Ll		8	3	78	6	8.267	11.99599	4		8.60	10.59	13.68	19.74	49.99	53.54	54.68	74.41	104.32						
Ni	$K\beta_{1,3}$		8	20	28	6	8.263	12.00108	6		8.60	10.59	13.69	19.74	50.01	53.57	54.70	74.44	104.38						
Sn	$L\gamma_1$		4	8	50	6	4.130	12.00460	5		8.61	10.60	13.69	19.75	50.03	53.58	54.72	74.47	104.43						
Sm	$L\beta_4$		6	5	62	6	6.195	12.00570	5		8.61	10.60	13.69	19.75	50.03	53.59	54.73	74.48	104.44						
Ba	$L\beta_{2,15}$		5	20	56	6	5.156	12.02175	5		8.62	10.61	13.71	19.78	50.10	53.67	54.80	74.59	104.64						
La	Ll		4	2	57	6	4.124	12.02400	3		8.62	10.61	13.72	19.78	50.11	53.68	54.82	74.61	104.67						
Te	$L\beta_3$		4	6	52	6	4.120	12.03572	5		8.63	10.62	13.73	19.80	50.16	53.73	54.87	74.69	104.81						
Y	$L\beta_4$		2	3	39	6	2.060	12.03720	4		8.63	10.63	13.73	19.80	50.17	53.74	54.88	74.70	104.83						
Tl	M_1-N_3		3	1	81	6	3.089	12.03900	3		8.63	10.63	13.73	19.81	50.18	53.75	54.89	74.72	104.85						
Th	M_2-N_4		4	5	90	6	4.117	12.04400	3		8.63	10.63	13.74	19.81	50.20	53.77	54.91	74.75	104.91						
Dy	$L\beta_4$		7	5	66	6	7.203	12.04720	5		8.64	10.63	13.74	19.82	50.21	53.79	54.93	74.78	104.95						
Pd	$L\beta_6$		3	1	46	6	3.087	12.04860	4		8.64	10.64	13.74	19.82	50.22	53.80	54.94	74.79	104.97						
Tm	$L\beta_3$		8	6	69	6	8.229	12.05040	4		8.64	10.64	13.75	19.83	50.23	53.81	54.95	74.80	104.99						
La	$L\beta_3$		5	6	57	6	5.143	12.05250	4		8.64	10.64	13.75	19.83	50.24	53.82	54.96	74.82	105.02						
Ga	$K\alpha_1$		9	100	31	6	9.250	12.06074	6		8.65	10.65	13.76	19.84	50.28	53.86	55.00	74.88	105.12						
Re	$L\beta_2$		10	20	75	6	10.274	12.06599	5		8.65	10.65	13.76	19.85	50.30	53.88	55.02	74.91	105.19						
Pa	$M\alpha_1$		3	100	91	6	3.082	12.06600	3		8.65	10.65	13.76	19.85	50.30	53.88	55.02	74.91	105.19						
Xe	$L\alpha_1$	H	4	100	54	6	4.109	12.06640	4		8.65	10.65	13.76	19.85	50.30	53.88	55.03	74.92	105.19						
Ga	$K\alpha_{1,2}$		9	150	31	6	9.241	12.07246	5		8.65	10.66	13.77	19.86	50.33	53.91	55.06	74.96	105.27						
Tl	$L\alpha_1$		10	100	81	6	10.267	12.07390	5		8.66	10.66	13.77	19.86	50.33	53.92	55.06	74.97	105.28						
Ir	$M\beta$		2	45	77	6	2.053	12.07600	3		8.66	10.66	13.78	19.87	50.34	53.93	55.07	74.99	105.31						
Ga	$K\beta_1$		10	14	31	6	10.263	12.07890	5		8.66	10.66	13.78	19.87	50.36	53.94	55.09	75.01	105.35						
La	$M\gamma$		1	1	57	6	1.026	12.08000	2		8.66	10.66	13.78	19.87	50.36	53.95	55.09	75.02	105.36						
Ga	$K\beta_3$		10	7	31	6	10.259	12.08349	5		8.66	10.67	13.78	19.88	50.38	53.97	55.11	75.04	105.40						
Tm	$L\alpha_1$	H	7	100	69	6	7.179	12.08760	4		8.67	10.67	13.79	19.89	50.39	53.99	55.13	75.07	105.45						
Er	Ll		6	2	68	6	6.152	12.09000	3		8.67	10.67	13.79	19.89	50.41	54.00	55.14	75.09	105.48						
Sm	$L\gamma_1$		7	5	62	6	7.177	12.09068	5		8.67	10.67	13.79	19.89	50.41	54.00	55.15	75.09	105.49						
Rb	$L\gamma_{2,3}$		2	.1	37	6	2.050	12.09160	4		8.67	10.67	13.79	19.89	50.41	54.00	55.15	75.10	105.50						
Sb	$L\beta_{2,15}$		4	17	51	6	4.100	12.09340	5		8.67	10.68	13.79	19.90	50.42	54.01	55.16	75.11	105.53						
Pt	$M\alpha_1$		2	100	78	6	2.050	12.09400	3		8.67	10.68	13.80	19.90	50.42	54.02	55.16	75.12	105.53						
Ga	$K\alpha_2$		9	50	31	6	9.223	12.09590	5		8.67	10.68	13.80	19.90	50.43	54.03	55.17	75.13	105.56						
Ta	Ll		7	3	73	6	7.172	12.09887	5		8.67	10.68	13.80	19.91	50.45	54.04	55.19	75.15	105.59						
Pd	$L\beta_3$		3	11	46	6	3.072	12.10380	4		8.68	10.68	13.81	19.91	50.47	54.06	55.21	75.19	105.66						
Pa	$M\alpha_2$		3	100	91	6	3.072	12.10500	3		8.68	10.69	13.81	19.92	50.47	54.07	55.22	75.20	105.67						
Er	$L8_{2,15}$		8	20	68	6	8.188	12.11192	5		8.68	10.69	13.82	19.93	50.50	54.10	55.25	75.25	105.76						
Ta	$L\beta_4$		9	4	73	6	9.211	12.11229	5		8.68	10.69	13.82	19.93	50.51	54.10	55.25	75.25	105.76						
Pt	$M\alpha_2$		2	100	78	6	2.046	12.11600	3		8.69	10.70	13.82	19.93	50.52	54.12	55.27	75.28	105.81						
Cu	$L8_{3,4}$		1	1	29	6	1.023	12.12200	3		8.69	10.70	13.83	19.94	50.55	54.15	55.30	75.32	105.88						
Sc	$K\alpha_1$		4	100	21	6	4.090	12.12360	4	4	8.69	10.70	13.83	19.95	50.56	54.16	55.31	75.33	105.90						
P	$SK\alpha_6$		2	.01	15	1	2.044	12.12645	3	3	8.69	10.70	13.83	19.95	50.57	54.17	55.32	75.35	105.94						
Sc	$K\alpha_{1,2}$		4	150	21	6	4.088	12.12800	4	4	8.69	10.71	13.83	19.95	50.58	54.18	55.33	75.37	105.96						
Zn	AL_3		1		30	6	1.022	12.13100	3		8.70	10.71	13.84	19.96	50.59	54.19	55.34	75.39	106.00						
Rh	$L\gamma_5$		3	.1	45	6	3.064	12.13530	4		8.70	10.71	13.84	19.97	50.61	54.22	55.37	75.42	106.05						
Sc	$K\alpha_2$		4	50	21	6	4.085	12.13680	4	4	8.70	10.71	13.84	19.97	50.61	54.22	55.37	75.43	106.07						
Zr	$L\alpha_1$		2	100	40	6	2.042	12.14100	4		8.70	10.72	13.85	19.98	50.63	54.24	55.39	75.46	106.12						
Pb	Ll		9	3	82	6	9.183	12.14909	5		8.71	10.72	13.86	19.99	50.67	54.28	55.43	75.52	106.22						
P	$SK\alpha_5$		2	.01	15	1	2.040	12.15049	3	3	8.71	10.73	13.86	19.99	50.68	54.29	55.44	75.53	106.24						
Zr	$L\alpha_2$		2	10	40	6	2.040	12.15560	4		8.71	10.73	13.87	20.00	50.70	54.31	55.47	75.57	106.31						
Ir	$L\alpha_1$		9	100	77	6	9.174	12.16151	5		8.72	10.74	13.87	20.01	50.72	54.34	55.50	75.61	106.38						
Tm	$L\alpha_2$		7	10	69	6	7.132	12.16669	4		8.72	10.74	13.88	20.02	50.75	54.37	55.52	75.65	106.45						
Ta	$L\alpha_1$		8	100	73	6	8.145	12.17576	5		8.73	10.75	13.89	20.03	50.79	54.41	55.57	75.71	106.56						
Hf	$L\beta_3$		9	6	72	6	9.162	12.17700	5		8.73	10.75	13.89	20.04	50.79	54.42	55.57	75.72	106.58						
Hg	M_3-N_1		2	1	80	6	2.035	12.18000	2		8.73	10.75	13.89	20.04	50.81	54.43	55.59	75.75	106.61						
W	$M\gamma$		2	1	74	6	2.035	12.18400	3		8.73	10.76	13.90	20.05	50.83	54.45	55.61	75.78	106.66						
Os	$L\beta_4$		10	4	76	6	10.174	12.18439	5		8.73	10.76	13.90	20.05	50.83	54.45	55.61	75.78	106.67						
Te	$L\beta_4$		4	4	52	6	4.069	12.18644	5		8.74	10.76	13.90	20.05	50.84	54.46	55.62	75.79	106.69						
Tl	$L\alpha_2$		10	10	81	6	10.171	12.18750	5		8.74	10.76	13.90	20.05	50.84	54.47	55.62	75.80	106.71						
Y	$L8_6$		2	3	39	6	2.034	12.18840	4		8.74	10.76	13.90	20.05	50.85	54.47	55.63	75.81	106.72						
Re	$L8_3$		10	6	75	6	10.158	12.20309	5		8.75	10.77	13.92	20.08	50.91	54.54	55.70	75.91	106.91						
Pb	M_3-$O_{4,5}$		3	1	82	6	3.046	12.20700	3		8.75	10.78	13.93	20.09	50.93	54.56	55.72	75.94	106.95						
Pd	$L\beta_4$		3	5	46	6	3.045	12.21330	4		8.76	10.78	13.93	20.10	50.96	54.59	55.75	75.99	107.03						
Sn	Ll		3	7	50	6	3.044	12.21495	5		8.76	10.78	13.93	20.10	50.96	54.60	55.76	76.00	107.06						
Nd	$L\beta_{2,15}$		6	20	60	6	6.088	12.21600	4		8.76	10.78	13.94	20.10	50.97	54.61	55.77	76.01	107.07						
P	$SK\alpha_4$		2	5	15	1	2.029	12.21763	3	3	8.76	10.79	13.94	20.10	50.98	54.61	55.77	76.02	107.09						

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Gd	$L\beta_{2,15}$		7	20	64	6	7.102	12.21850	4		8.76	10.79	13.94	20.10	50.98	54.62	55.78	76.03	107.10						
Lu	$L\gamma_1$		10	5	71	6	10.142	12.22280	5		8.76	10.79	13.94	20.11	51.00	54.64	55.80	76.06	107.16						
Tb	$L\beta_3$		7	6	65	6	7.095	12.23039	4		8.77	10.80	13.95	20.12	51.03	54.68	55.84	76.11	107.25						
P	$SK\alpha_3$		2	5	15	1	2.027	12.23326	3	3	8.77	10.80	13.96	20.13	51.05	54.69	55.85	76.14	107.29						
I	$L\gamma_{2,3}$		5	2	53	6	5.065	12.23750	4		8.77	10.80	13.96	20.14	51.06	54.71	55.87	76.17	107.34						
Tb	$L\gamma_1$		8	5	65	6	8.100	12.24239	4		8.78	10.81	13.97	20.14	51.09	54.73	55.90	76.20	107.40						
Tm	$L\beta_1$		8	50	69	6	8.100	12.24319	4		8.78	10.81	13.97	20.15	51.09	54.74	55.90	76.21	107.41						
La	$L\beta_4$		5	5	57	6	5.061	12.24650	4		8.78	10.81	13.97	20.15	51.10	54.75	55.92	76.23	107.46						
Pm	$L\beta_3$		6	6	61	6	6.070	12.25260	4		8.78	10.82	13.98	20.16	51.13	54.78	55.95	76.28	107.53						
Zn	$L\alpha_{1,2}$		1	100	30	6	1.012	12.25400	3		8.78	10.82	13.98	20.16	51.14	54.79	55.95	76.29	107.55						
P	$SK\alpha'$		2	.5	15	1	2.022	12.26192	3	3	8.79	10.82	13.99	20.18	51.17	54.83	55.99	76.35	107.65						
Ir	$L\alpha_2$		9	10	77	6	9.098	12.26249	5		8.79	10.83	13.99	20.18	51.18	54.83	56.00	76.35	107.66						
Ta	$L\alpha_2$		8	10	73	6	8.086	12.26344	5		8.79	10.83	13.99	20.18	51.18	54.84	56.00	76.36	107.67						
W	M_3-N_4		2	.1	74	6	2.021	12.26800	3		8.79	10.83	14.00	20.19	51.20	54.86	56.02	76.39	107.73						
Er	$L\gamma_1$		9	5	68	6	9.087	12.27690	4		8.80	10.84	14.01	20.20	51.24	54.90	56.07	76.46	107.85						
Gd	$L\alpha_1$		6	100	64	6	6.056	12.28080	4		8.80	10.84	14.01	20.21	51.26	54.92	56.09	76.49	107.90						
Ce	$L\gamma_1$		6	5	58	6	6.051	12.29220	4		8.81	10.85	14.02	20.23	51.31	54.98	56.14	76.57	108.04						
La	$L\beta_1$		5	50	57	6	5.041	12.29455	5		8.81	10.85	14.03	20.23	51.32	54.99	56.16	76.59	108.07						
Fe	$K\beta_{1,3}$		7	20	26	6	7.057	12.29627	5	4	8.82	10.86	14.03	20.23	51.33	55.00	56.17	76.60	108.09						
Mo	Ll		2	3	42	6	2.015	12.30160	4		8.82	10.86	14.03	20.24	51.35	55.02	56.19	76.64	108.16						
Te	$L\beta_1$		4	75	52	6	4.029	12.30708	5		8.82	10.86	14.04	20.25	51.38	55.05	56.22	76.68	108.23						
P	$K\alpha_1$	H	2	100	15	6	2.013	12.31400	3	3	8.83	10.87	14.05	20.26	51.41	55.08	56.25	76.73	108.32						
Pr	$L\alpha_1$		5	100	59	6	5.033	12.31500	4		8.83	10.87	14.05	20.27	51.41	55.09	56.26	76.74	108.33						
Si	M_3-O_1		3	.5	83	6	3.020	12.31500	3		8.83	10.87	14.05	20.27	51.41	55.09	56.26	76.74	108.33						
P	$K\alpha_{1,2}$	H	2	150	15	6	2.013	12.31600	3	3	8.83	10.87	14.05	20.27	51.42	55.09	56.26	76.74	108.35						
P	$K\alpha_2$	H	2	50	15	6	2.012	12.32000	3	3	8.83	10.88	14.05	20.27	51.43	55.11	56.28	76.77	108.40						
Bi	M_4-N_3		2	.01	83	6	2.012	12.32400	3		8.84	10.88	14.06	20.28	51.45	55.13	56.30	76.80	108.45						
Cu	$K\alpha_1$		8	100	29	6	8.046	12.32449	6		8.84	10.88	14.06	20.28	51.45	55.13	56.31	76.81	108.46						
Ir	Ll	D	8	3	77	6	8.040	12.33440	4		8.84	10.89	14.07	20.30	51.50	55.18	56.35	76.88	108.59						
Cu	$K\alpha_{1,2}$		8	150	29	6	8.040	12.33470	6		8.84	10.89	14.07	20.30	51.50	55.18	56.36	76.88	108.59						
Lu	$L\beta_{15}$		9	20	71	6	9.038	12.34349	4		8.85	10.90	14.08	20.31	51.54	55.22	56.40	76.95	108.70						
Gd	$L\alpha_2$		6	10	64	6	6.024	12.34680	4		8.85	10.90	14.09	20.32	51.55	55.24	56.42	76.97	108.75						
Tl	M_2-N_4		3	1	81	6	3.012	12.34800	3		8.85	10.90	14.09	20.32	51.56	55.25	56.42	76.98	108.76						
Cu	$K\alpha_2$		8	50	29	6	8.026	12.35512	6		8.86	10.91	14.10	20.33	51.59	55.28	56.46	77.03	108.85						
Tm	$L\beta_4$		8	5	69	6	8.024	12.35840	4		8.86	10.91	14.10	20.34	51.61	55.30	56.47	77.06	108.90						
Ca	$K\beta_{1,3}$		4	15	20	6	4.012	12.35880	4	4	8.86	10.91	14.10	20.34	51.61	55.30	56.48	77.06	108.90						
Pr	$L\alpha_2$		5	10	59	6	5.013	12.36450	4		8.86	10.92	14.11	20.35	51.63	55.33	56.50	77.10	108.98						
Hf	$L\beta_1$		9	50	72	6	9.021	12.36690	5		8.87	10.92	14.11	20.35	51.64	55.34	56.52	77.12	109.01						
Re	$L\beta_1$		10	50	75	6	10.008	12.38580	5		8.88	10.93	14.13	20.38	51.73	55.43	56.61	77.26	109.25						
Rh	$L\beta_{2,15}$		3	25	45	6	3.001	12.39300	4		8.88	10.94	14.14	20.40	51.76	55.46	56.65	77.31	109.35						
Sm	Ll		5	2	62	6	4.994	12.41150	4		8.90	10.96	14.16	20.43	51.84	55.55	56.74	77.45	109.59						
Hg	$L\alpha_1$		10	100	80	6	9.987	12.41199	5		8.90	10.96	14.16	20.43	51.85	55.56	56.74	77.45	109.59						
Th	$M\alpha_1$		3	100	90	6	2.996	12.41430	4		8.90	10.96	14.16	20.43	51.86	55.57	56.75	77.47	109.62						
Nb	Ln		2	1	41	6	1.996	12.42180	4		8.91	10.97	14.17	20.44	51.89	55.60	56.79	77.53	109.72						
Y	$L\beta_1$		2	45	39	6	1.995	12.42400	4		8.91	10.97	14.17	20.45	51.90	55.62	56.80	77.54	109.75						
Dy	Mz		1	.01	66	6	0.997	12.43000	2		8.91	10.97	14.18	20.46	51.93	55.64	56.83	77.59	109.83						
Tb	$L8_1$		7	50	65	6	6.977	12.43759	4		8.92	10.98	14.19	20.47	51.96	55.68	56.87	77.64	109.93						
Pd	$L\beta_1$		3	42	46	6	2.990	12.43866	5		8.92	10.98	14.19	20.47	51.97	55.69	56.87	77.65	109.94						
Nd	$M\beta$		1	55	60	6	0.996	12.44000	2		8.92	10.98	14.19	20.47	51.97	55.69	56.88	77.66	109.96						
W	$L\beta_2$		10	20	74	6	9.960	12.44599	5		8.92	10.99	14.20	20.48	52.00	55.72	56.91	77.71	110.04						
Th	$M\alpha_2$		3	100	90	6	2.986	12.45300	3		8.93	10.99	14.21	20.49	52.03	55.76	56.95	77.76	110.13						
Nd	AM_4		1		60	6	0.995	12.45900	3		8.93	11.00	14.21	20.50	52.06	55.79	56.98	77.80	110.21						
Tl	Ll		9	3	81	6	8.952	12.46292	5		8.93	11.00	14.22	20.51	52.07	55.80	57.00	77.83	110.26						
Ag	$L\alpha_1$		3	100	47	6	2.984	12.46329	5		8.94	11.00	14.22	20.51	52.08	55.81	57.00	77.83	110.27						
Hf	Ll		7	3	72	6	6.958	12.47015	5		8.94	11.01	14.23	20.52	52.11	55.84	57.03	77.88	110.36						
Pm	$L\beta_1$		6	50	61	6	5.960	12.47820	4		8.95	11.02	14.24	20.54	52.14	55.88	57.07	77.94	110.47						
Ag	$L\alpha_2$		3	10	47	6	2.978	12.48882	5		8.95	11.03	14.25	20.55	52.19	55.93	57.12	78.02	110.61						
Er	$L\alpha_1$		7	100	68	6	6.947	12.48975	5		8.95	11.03	14.25	20.56	52.20	55.94	57.13	78.03	110.62						
Er	$L\beta_3$		8	6	68	6	7.938	12.49280	4		8.96	11.03	14.25	20.56	52.21	55.95	57.14	78.05	110.66						
Tb	$L8_4$		7	5	65	6	6.939	12.50480	4		8.97	11.04	14.27	20.58	52.26	56.01	57.20	78.14	110.82						
Cr	$K\beta_{1,3}$		6	18	24	6	5.946	12.50922	5	4	8.97	11.04	14.27	20.59	52.28	56.03	57.23	78.17	110.88						
Ho	Ll		6	2	67	6	5.942	12.51600	4		8.97	11.05	14.28	20.60	52.31	56.06	57.26	78.23	110.97						
V	$K\alpha_1$		5	100	23	6	4.951	12.51780	5	4	8.97	11.05	14.28	20.60	52.32	56.07	57.27	78.24	110.99						
Au	M_3-N_1		2	1	79	6	1.981	12.51800	3		8.97	11.05	14.28	20.60	52.32	56.07	57.27	78.24	110.99						
Os	$L\alpha_1$		9	100	76	6	8.910	12.52089	5		8.98	11.05	14.29	20.61	52.34	56.09	57.28	78.26	111.03						

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Co	$K\alpha_1$		7	100	27	6	6.929	12.52275	6		8.98	11.06	14.29	20.61	52.34	56.10	57.29	78.28	111.06						
Ir	$M\alpha_1$		2	100	77	6	1.980	12.52400	3		8.98	11.06	14.29	20.61	52.35	56.10	57.30	78.28	111.07						
V	$K\alpha_{1,2}$		5	150	23	6	4.949	12.52416	5	4	8.98	11.06	14.29	20.61	52.35	56.10	57.30	78.29	111.08						
Hg	$L\alpha_2$		10	10	80	6	9.896	12.52640	5		8.98	11.06	14.29	20.62	52.36	56.11	57.31	78.30	111.11						
Hf	$L\beta_4$		9	4	72	6	8.904	12.52980	5		8.98	11.06	14.30	20.62	52.38	56.13	57.33	78.33	111.15						
Cu	$K\beta_{1,3}$		9	20	29	6	8.904	12.52996	6		8.98	11.06	14.30	20.62	52.38	56.13	57.33	78.33	111.15						
Co	$K\alpha_{1,2}$		7	150	27	6	6.924	12.53181	6		8.98	11.06	14.30	20.63	52.38	56.14	57.34	78.34	111.18						
Cu	$K\beta_3$		9	6	29	6	8.901	12.53339	4		8.99	11.07	14.30	20.63	52.39	56.15	57.35	78.35	111.20						
Os	$M\beta$		2	45	76	6	1.978	12.53400	3		8.99	11.07	14.30	20.63	52.39	56.15	57.35	78.36	111.21						
Ho	$L\beta_{2,15}$		8	20	67	6	7.910	12.53680	4		8.99	11.07	14.30	20.63	52.41	56.16	57.36	78.38	111.24						
V	$K\alpha_2$		5	50	23	6	4.944	12.53690	5	4	8.99	11.07	14.30	20.63	52.41	56.17	57.36	78.38	111.25						
Ge	$K\alpha_1$		10	100	32	6	9.885	12.54053	6		8.99	11.07	14.31	20.64	52.42	56.18	57.38	78.41	111.29						
Ba	Ll		4	2	56	6	3.953	12.54200	4		8.99	11.07	14.31	20.64	52.43	56.19	57.39	78.42	111.31						
Ru	$L\gamma_1$		3	1	44	6	2.964	12.54660	4		9.00	11.08	14.31	20.65	52.45	56.21	57.41	78.45	111.38						
Co	$K\alpha_2$		7	50	27	6	6.914	12.54995	6		9.00	11.08	14.32	20.66	52.47	56.23	57.43	78.48	111.42						
Ir	$M\alpha_2$		2	100	77	6	1.975	12.55000	3		9.00	11.08	14.32	20.66	52.47	56.23	57.43	78.48	111.42						
Cd	$L\gamma_2$		4	5	48	6	3.951	12.55080	4		9.00	11.08	14.32	20.66	52.47	56.23	57.43	78.48	111.43						
Ge	$K\alpha_{1,2}$		10	150	32	6	9.874	12.55372	6		9.00	11.08	14.32	20.66	52.48	56.25	57.45	78.51	111.47						
Hf	$L\alpha_1$		8	100	72	6	7.898	12.55663	5		9.00	11.09	14.33	20.67	52.50	56.26	57.46	78.53	111.51						
Cs	$L\beta_{2,15}$		5	20	55	6	4.935	12.55900	4		9.00	11.09	14.33	20.67	52.51	56.27	57.48	78.55	111.54						
W	M_2-N_1		2	.01	74	6	1.974	12.56000	2		9.00	11.09	14.33	20.67	52.51	56.28	57.48	78.55	111.56						
Er	$L\alpha_2$		7	10	68	6	6.904	12.56850	4		9.01	11.10	14.34	20.69	52.55	56.32	57.52	78.62	111.67						
Ti	$K\beta_{1,3}$		5	20	22	6	4.931	12.56955	5	4	9.01	11.10	14.34	20.69	52.55	56.32	57.53	78.62	111.68						
Ar	$K\alpha_1$		3	100	18	6	2.957	12.57540	5		9.02	11.10	14.35	20.70	52.58	56.35	57.56	78.67	111.76						
Ar	$K\alpha_{1,2}$		3	150	18	6	2.957	12.57834	5		9.02	11.10	14.35	20.70	52.59	56.37	57.57	78.69	111.80						
Cd	Ln		3	1	48	6	2.956	12.57945	5		9.02	11.11	14.35	20.71	52.60	56.37	57.58	78.70	111.82						
Ge	$K\alpha_2$		10	50	32	6	9.854	12.58011	6		9.02	11.11	14.35	20.71	52.60	56.38	57.58	78.70	111.83						
Ba	$L\beta_3$		5	6	56	6	4.926	12.58200	4		9.02	11.11	14.36	20.71	52.61	56.39	57.59	78.72	111.85						
Ar	$K\alpha_2$		3	50	18	6	2.955	12.58422	5		9.02	11.11	14.36	20.71	52.62	56.40	57.60	78.73	111.88						
Re	$L\beta_4$		10	4	75	6	9.845	12.59170	5		9.03	11.12	14.37	20.73	52.65	56.43	57.64	78.79	111.98						
Sr	$L\gamma_5$		2	.1	38	6	1.969	12.59220	4		9.03	11.12	14.37	20.73	52.66	56.44	57.64	78.79	111.99						
Pm	$L\gamma_1$		7	5	61	6	6.891	12.59230	4		9.03	11.12	14.37	20.73	52.66	56.44	57.64	78.79	111.99						
I	$L\alpha_1$		4	100	53	6	3.937	12.59440	5		9.03	11.12	14.37	20.73	52.67	56.45	57.65	78.81	112.02						
Ga	Ln		1	1	31	6	0.984	12.59700	3		9.03	11.12	14.37	20.73	52.68	56.46	57.67	78.83	112.05						
Sb	$L\beta_3$		4	6	51	6	3.932	12.61032	5		9.04	11.13	14.39	20.76	52.74	56.52	57.73	78.93	112.23						
Mn	$K\alpha_1$		6	100	25	6	5.898	12.61092	6	4	9.04	11.13	14.39	20.76	52.74	56.53	57.74	78.93	112.24						
Lu	$L\beta_3$		9	6	71	6	8.845	12.61260	5		9.04	11.14	14.39	20.76	52.75	56.53	57.74	78.95	112.26						
Mn	$K\alpha_{1,2}$		6	150	25	6	5.894	12.61884	5	4	9.05	11.14	14.40	20.77	52.78	56.57	57.78	78.99	112.35						
Os	$L\alpha_2$		9	10	76	6	8.840	12.62106	5		9.05	11.14	14.40	20.77	52.79	56.58	57.79	79.01	112.38						
Ta	$M\gamma$		2	1	73	6	1.964	12.62400	3		9.05	11.15	14.40	20.78	52.80	56.59	57.80	79.03	112.42						
W	$L\beta_3$		10	6	74	6	9.817	12.62690	5		9.05	11.15	14.41	20.78	52.81	56.60	57.82	79.05	112.46						
I	$L\alpha_2$		4	10	53	6	3.925	12.63164	5		9.06	11.15	14.41	20.79	52.83	56.63	57.84	79.09	112.52						
Mn	$K\alpha_2$		6	50	25	6	5.887	12.63468	5	4	9.06	11.15	14.42	20.80	52.85	56.64	57.85	79.11	112.56						
Hf	$L\alpha_2$		8	10	72	6	7.843	12.64368	5		9.06	11.16	14.43	20.81	52.89	56.69	57.90	79.18	112.69						
Tl	M_3-$O_{4,5}$		3	.5	81	6	2.940	12.64800	3		9.07	11.17	14.43	20.82	52.91	56.71	57.92	79.21	112.74						
In	$L\gamma_1$		4	8	49	6	3.920	12.64852	5		9.07	11.17	14.43	20.82	52.91	56.71	57.92	79.22	112.75						
Yb	$L\gamma_1$		10	5	70	6	9.778	12.67690	5		9.09	11.19	14.46	20.87	53.04	56.85	58.07	79.43	113.14						
Os	Ll		8	3	76	6	7.821	12.67983	5		9.09	11.19	14.47	20.87	53.05	56.86	58.08	79.45	113.18						
Nd	$M\alpha$		1	100	60	6	0.978	12.68000	2		9.09	11.19	14.47	20.87	53.05	56.86	58.08	79.45	113.18						
Eu	$L\beta_{2,15}$		7	20	63	6	6.842	12.68259	4		9.09	11.20	14.47	20.88	53.06	56.88	58.09	79.47	113.22						
Er	$L\beta_1$		8	50	68	6	7.809	12.69839	4		9.10	11.21	14.49	20.90	53.14	56.95	58.17	79.59	113.43						
Sn	$L\beta_{2,15}$		4	17	50	6	3.904	12.70020	5		9.11	11.21	14.49	20.91	53.14	56.96	58.18	79.60	113.46						
Gd	$L\beta_3$		7	6	64	6	6.830	12.70500	4		9.11	11.22	14.50	20.91	53.16	56.99	58.21	79.64	113.53						
Ta	M_3-N_4		2	.01	73	6	1.951	12.70600	3		9.11	11.22	14.50	20.92	53.17	56.99	58.21	79.65	113.54						
Pr	$L\beta_{2,15}$		6	20	59	6	5.849	12.71639	4		9.12	11.23	14.51	20.93	53.22	57.04	58.26	79.73	113.68						
Rh	$L\beta_6$		3	3	45	6	2.922	12.72510	4		9.12	11.23	14.52	20.95	53.26	57.09	58.31	79.79	113.80						
Eu	$L\alpha_1$		6	100	63	6	5.845	12.72540	4		9.12	11.24	14.52	20.95	53.26	57.09	58.31	79.79	113.81						
Pb	M_3-O_1		3	.5	82	6	2.921	12.73200	3		9.13	11.24	14.53	20.96	53.29	57.12	58.34	79.84	113.90						
Sr	$L\beta_3$		2	3	38	6	1.947	12.73440	4		9.13	11.24	14.53	20.96	53.30	57.13	58.35	79.86	113.93						
Nd	AM_5		1		60	6	0.973	12.73700	3		9.13	11.25	14.53	20.97	53.31	57.14	58.37	79.88	113.97						
Gd	$L\gamma_1$		8	5	64	6	7.784	12.73920	4		9.13	11.25	14.54	20.97	53.32	57.15	58.38	79.90	114.00						
Yb	$L\beta_{2,15}$		9	20	70	6	8.757	12.73950	5		9.13	11.25	14.54	20.97	53.32	57.16	58.38	79.90	114.00						
Ba	$M\gamma$		1	100	56	6	0.972	12.75000	2		9.14	11.26	14.55	20.99	53.37	57.21	58.43	79.98	114.15						
Ho	$L\gamma_1$		9	5	67	6	8.746	12.75659	4		9.15	11.26	14.56	21.00	53.40	57.24	58.47	80.03	114.24						
Rh	$L\beta_3$		3	11	45	6	2.915	12.75660	4		9.15	11.26	14.56	21.00	53.40	57.24	58.47	80.03	114.24						

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sb	$L\beta_4$		4	4	51	6	3.886	12.76056	5		9.15	11.27	14.56	21.01	53.42	57.26	58.49	80.06	114.29						
Nd	$L\beta_3$		6	6	60	6	5.828	12.76080	4		9.15	11.27	14.56	21.01	53.42	57.26	58.49	80.06	114.30						
Au	$L\alpha_1$		10	100	79	6	9.712	12.76400	5		9.15	11.27	14.56	21.01	53.43	57.28	58.50	80.08	114.34						
Pb	M_4-N_3		2	.01	82	6	1.942	12.76800	3		9.15	11.27	14.57	21.02	53.45	57.30	58.52	80.11	114.40						
Ba	$L\beta_4$		5	5	56	6	4.851	12.77650	4		9.16	11.28	14.58	21.03	53.49	57.34	58.57	80.18	114.52						
Eu	$L\alpha_2$		6	10	63	6	5.816	12.78900	4		9.17	11.29	14.59	21.05	53.54	57.40	58.63	80.27	114.69						
Hg	Ll		9	3	80	6	8.720	12.79439	4		9.17	11.30	14.60	21.06	53.57	57.42	58.66	80.31	114.77						
Sr	$L\beta_4$		2	3	38	6	1.936	12.80520	4		9.18	11.31	14.61	21.08	53.62	57.48	58.71	80.39	114.92						
Er	$L\beta_4$		8	5	68	6	7.744	12.80560	4		9.18	11.31	14.61	21.08	53.62	57.48	58.71	80.40	114.92						
In	Ll		3	7	49	6	2.904	12.80619	5		9.18	11.31	14.61	21.08	53.62	57.48	58.72	80.40	114.93						
Ce	$L\alpha_1$		5	100	58	6	4.839	12.80750	4		9.18	11.31	14.61	21.08	53.63	57.49	58.72	80.41	114.95						
Lu	$L\beta_1$		9	50	71	6	8.708	12.81231	5		9.19	11.31	14.62	21.09	53.65	57.51	58.75	80.45	115.02						
W	$L\beta_1$		10	50	74	6	9.671	12.81809	6		9.19	11.32	14.63	21.10	53.68	57.54	58.78	80.49	115.10						
Po	Ll		10	3	84	6	9.662	12.82900	4		9.20	11.33	14.64	21.12	53.73	57.59	58.83	80.58	115.25						
Te	$L\gamma_{2,3}$		5	2	52	6	4.828	12.83700	4		9.20	11.33	14.65	21.13	53.76	57.63	58.87	80.64	115.36						
Ba	$L\beta_1$		5	50	56	6	4.827	12.84105	5		9.21	11.34	14.65	21.14	53.78	57.65	58.89	80.67	115.42						
Ta	$L\beta_2$		10	20	73	6	9.650	12.84539	5		9.21	11.34	14.66	21.15	53.80	57.68	58.91	80.70	115.48						
La	$L\gamma_1$		6	5	57	6	5.788	12.85080	4		9.21	11.35	14.66	21.16	53.82	57.70	58.94	80.74	115.56						
Lu	Ll		7	2	71	6	6.752	12.85200	4		9.21	11.35	14.66	21.16	53.83	57.71	58.95	80.75	115.58						
Ce	$L\alpha_2$		5	10	58	6	4.822	12.85300	4		9.22	11.35	14.67	21.16	53.83	57.71	58.95	80.76	115.59						
Ru	$L\gamma_5$		3	.1	44	6	2.891	12.86190	4		9.22	11.36	14.68	21.18	53.87	57.76	59.00	80.82	115.72						
Rh	$L\beta_4$		3	5	45	6	2.890	12.86640	4		9.22	11.36	14.68	21.18	53.89	57.78	59.02	80.86	115.78						
Au	$L\alpha_2$		10	10	79	6	9.626	12.87720	5		9.23	11.37	14.69	21.20	53.94	57.83	59.07	80.94	115.93						
Re	$L\alpha_1$		9	100	75	6	8.651	12.89610	5		9.25	11.39	14.72	21.23	54.03	57.92	59.17	81.08	116.20						
Y	$L\alpha_1$		2	100	39	6	1.922	12.89760	4		9.25	11.39	14.72	21.23	54.04	57.93	59.18	81.10	116.22						
Au	M_1-N_3		3	1	79	6	2.883	12.90000	3		9.25	11.39	14.72	21.24	54.05	57.94	59.19	81.11	116.26						
U	N_3-O_5		1		92	6	0.961	12.90000	2		9.25	11.39	14.72	21.24	54.05	57.94	59.19	81.11	116.26						
Sb	$L\beta_1$		4	75	51	6	3.843	12.90268	5		9.25	11.39	14.72	21.24	54.06	57.96	59.20	81.13	116.30						
Pt	M_3-N_1		2	1	78	6	1.920	12.91000	3		9.26	11.40	14.73	21.26	54.09	57.99	59.24	81.19	116.40						
Y	$L\alpha_2$		2	10	39	6	1.920	12.91160	4		9.26	11.40	14.73	21.26	54.10	58.00	59.25	81.20	116.42						
I	$L\gamma_1$		5	8	53	6	4.800	12.91220	5		9.26	11.40	14.73	21.26	54.10	58.00	59.25	81.21	116.43						
Ho	$L\alpha_1$		7	100	67	6	6.719	12.91500	4		9.26	11.40	14.74	21.26	54.11	58.02	59.26	81.23	116.47						
Zn	$K\alpha_1$		9	100	30	6	8.637	12.91639	6		9.26	11.40	14.74	21.27	54.12	58.02	59.27	81.24	116.49						
Gd	$L\beta_1$		7	50	64	6	6.712	12.92760	4		9.27	11.41	14.75	21.28	54.17	58.08	59.33	81.32	116.65						
Zn	$K\alpha_{1,2}$		9	150	30	6	8.630	12.92793	6		9.27	11.41	14.75	21.29	54.17	58.08	59.33	81.33	116.66						
Zn	$K\alpha_2$		9	50	30	6	8.614	12.95099	6		9.29	11.43	14.78	21.32	54.28	58.19	59.45	81.50	116.99						
Zn	$K\beta_{1,3}$		10	20	30	6	9.570	12.95250	5		9.29	11.44	14.78	21.33	54.28	58.20	59.45	81.51	117.01						
Dy	Ll		6	2	66	6	5.742	12.95262	5		9.29	11.44	14.78	21.33	54.29	58.20	59.45	81.51	117.01						
Ga	Ll		1	1	31	6	0.957	12.95300	3		9.29	11.44	14.78	21.33	54.29	58.20	59.46	81.52	117.02						
Os	$M\alpha$	D	2	100	76	6	1.914	12.95600	3		9.29	11.44	14.78	21.33	54.30	58.22	59.47	81.54	117.06						
Lu	$L\alpha_1$		8	100	71	6	7.654	12.95608	5		9.29	11.44	14.78	21.33	54.30	58.22	59.47	81.54	117.06						
Ho	$L\beta_3$		8	6	67	6	7.650	12.96239	4		9.29	11.45	14.79	21.34	54.33	58.25	59.50	81.59	117.16						
Lu	$L\beta_4$		9	5	71	6	8.605	12.96503	5		9.30	11.45	14.79	21.35	54.34	58.26	59.52	81.61	117.19						
Co	$K\beta_{1,3}$		8	20	27	6	7.648	12.96632	5	4	9.30	11.45	14.80	21.35	54.35	58.27	59.52	81.62	117.21						
Gd	$L\beta_4$		7	5	64	6	6.686	12.97799	4		9.31	11.46	14.81	21.37	54.40	58.33	59.58	81.71	117.38						
Tb	Mz		1	.01	65	6	0.955	12.98000	2		9.31	11.46	14.81	21.37	54.41	58.34	59.59	81.72	117.41						
Dy	$L\beta_{2,15}$		8	20	66	6	7.634	12.98952	5		9.31	11.47	14.82	21.39	54.45	58.38	59.64	81.80	117.55						
U	M_3-N_1		3	1	92	6	2.863	12.99000	3		9.31	11.47	14.82	21.39	54.45	58.39	59.64	81.80	117.56						
Ho	$L\alpha_2$		7	10	67	6	6.679	12.99269	4		9.32	11.47	14.83	21.39	54.47	58.40	59.66	81.82	117.60						
Re	$L\alpha_2$		9	10	75	6	8.585	12.99563	5		9.32	11.47	14.83	21.40	54.48	58.41	59.67	81.84	117.64						
Nd	$L\beta_1$		6	50	60	6	5.721	13.00140	4		9.32	11.48	14.84	21.41	54.51	58.44	59.70	81.89	117.72						
Nd	$L\beta_4$		6	5	60	6	5.721	13.00140	4		9.32	11.48	14.84	21.41	54.51	58.44	59.70	81.89	117.72						
Re	$M\beta$		2	45	75	6	1.906	13.00800	3		9.33	11.49	14.84	21.42	54.54	58.48	59.73	81.94	117.82						
Cu	AL_2		1		29	6	0.953	13.01400	3		9.33	11.49	14.85	21.43	54.56	58.51	59.76	81.98	117.91						
W	$L\beta_4$		10	4	74	6	9.524	13.01620	5		9.33	11.49	14.85	21.43	54.57	58.52	59.78	82.00	117.94						
Nb	Ll		2	3	41	6	1.902	13.03520	4		9.35	11.51	14.88	21.46	54.66	58.61	59.87	82.15	118.22						
Sr	$L\beta_6$		2	3	38	6	1.901	13.03820	4		9.35	11.51	14.88	21.47	54.67	58.62	59.89	82.17	118.26						
Bi	Mz_1		2	1	83	6	1.901	13.04200	3		9.35	11.52	14.88	21.48	54.69	58.64	59.91	82.20	118.32						
Lu	$L\alpha_2$		8	10	71	6	7.604	13.04231	5		9.35	11.52	14.88	21.48	54.69	58.64	59.91	82.20	118.32						
Re	Ll		8	3	75	6	7.602	13.04448	5		9.35	11.52	14.89	21.48	54.70	58.66	59.92	82.22	118.35						
Cu	$L\beta_1$		1	20	29	6	0.950	13.05300	3		9.36	11.53	14.90	21.49	54.74	58.70	59.96	82.28	118.48						
Pr	$M\beta$		1	45	59	6	0.949	13.06000	2		9.36	11.53	14.90	21.51	54.77	58.73	60.00	82.34	118.58						
Ta	$L8_3$		10	6	73	6	9.486	13.06780	5		9.37	11.54	14.91	21.52	54.81	58.77	60.04	82.40	118.70						
Cs	Ll		4	2	55	6	3.794	13.06800	4		9.37	11.54	14.91	21.52	54.81	58.77	60.04	82.40	118.70						
Yb	$L\beta_3$		9	6	70	6	8.535	13.07097	5		9.37	11.54	14.92	21.52	54.82	58.79	60.05	82.42	118.75						

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Hf	$M\gamma$	2		1	72	6	1.894	13.08800	3		9.38	11.56	14.94	21.55	54.90	58.87	60.14	82.55	119.00						
Pd	$L\alpha_1$	3	100		46	6	2.838	13.10301	5		9.39	11.57	14.95	21.58	54.97	58.94	60.22	82.67	119.22						
Ru	$L\beta_{2,15}$	3		1	44	6	2.835	13.11540	4		9.40	11.58	14.97	21.60	55.02	59.01	60.28	82.76	119.41						
I	Ln	4		7	53	6	3.780	13.11916	5		9.41	11.58	14.97	21.60	55.04	59.02	60.30	82.79	119.46						
Pr	AM_4	1			59	6	0.945	13.12200	3		9.41	11.59	14.97	21.61	55.05	59.04	60.31	82.81	119.51						
Rh	$L\beta_1$	3		42	45	6	2.834	13.12242	5		9.41	11.59	14.98	21.61	55.06	59.04	60.31	82.82	119.51						
Pd	$L\alpha_2$	3		10	46	6	2.833	13.12764	5		9.41	11.59	14.98	21.62	55.08	59.07	60.34	82.86	119.59						
Pt	$L\alpha_1$	10	100		78	6	9.441	13.13040	5		9.41	11.59	14.98	21.62	55.09	59.08	60.35	82.88	119.63						
Au	Ll	9		3	79	6	8.493	13.13676	5		9.42	11.60	14.99	21.63	55.12	59.11	60.39	82.93	119.73						
Mo	$L\gamma_{2,3}$	3		.5	42	6	2.830	13.14000	4		9.42	11.60	15.00	21.64	55.14	59.13	60.40	82.95	119.78						
Cs	$L\beta_3$	5		6	55	6	4.716	13.14250	4		9.42	11.60	15.00	21.64	55.15	59.14	60.42	82.97	119.81						
Nd	$L\gamma_1$	7		5	60	6	6.601	13.14529	4		9.43	11.61	15.00	21.65	55.16	59.15	60.43	82.99	119.85						
Tm	$L\gamma_1$	10		5	69	6	9.424	13.15300	4		9.43	11.61	15.01	21.66	55.20	59.19	60.47	83.05	119.97						
Te	$L\alpha_1$	4	100		52	6	3.769	13.15680	5		9.43	11.62	15.01	21.67	55.21	59.21	60.49	83.08	120.03						
Bi	Ll	10		3	83	6	9.419	13.16099	5		9.44	11.62	15.02	21.67	55.23	59.23	60.51	83.11	120.09						
Bi	$M\zeta_2$	2		.1	83	6	1.882	13.17000	3		9.44	11.63	15.03	21.69	55.27	59.28	60.56	83.18	120.23						
Sm	$L\beta_{2,15}$	7		20	62	6	6.586	13.17547	5		9.45	11.63	15.04	21.70	55.30	59.30	60.58	83.22	120.31						
Tm	$L\beta_{2,15}$	9		20	69	6	8.467	13.17600	4		9.45	11.63	15.04	21.70	55.30	59.31	60.59	83.23	120.32						
Ho	$L\beta_1$	8		50	67	6	7.524	13.17999	4		9.45	11.64	15.04	21.71	55.32	59.33	60.61	83.26	120.38						
Ni	$L\beta_{3,4}$	1		.8	28	6	0.941	13.18000	2		9.45	11.64	15.04	21.71	55.32	59.33	60.61	83.26	120.38						
Te	$L\alpha_2$	4		10	52	6	3.758	13.19384	5		9.46	11.65	15.06	21.73	55.38	59.39	60.68	83.37	120.59						
Sm	$L\alpha_1$	6	100		62	6	5.635	13.19880	5		9.46	11.65	15.06	21.74	55.40	59.42	60.70	83.40	120.67						
Eu	$L\beta_3$	7		6	63	6	6.570	13.20690	4		9.47	11.66	15.07	21.75	55.44	59.46	60.74	83.47	120.79						
Cl	$K\beta$	3		8	17	6	2.815	13.21020	4	3	9.47	11.66	15.08	21.76	55.46	59.48	60.76	83.49	120.84						
Zr	Ln	2		1	40	6	1.876	13.21380	4		9.47	11.67	15.08	21.76	55.47	59.49	60.78	83.52	120.89						
Sn	$L\beta_3$	4		6	50	6	3.750	13.22340	5		9.48	11.68	15.09	21.78	55.52	59.54	60.83	83.60	121.04						
Ag	$L\gamma_3$	4		2	47	6	3.749	13.22540	5		9.48	11.68	15.09	21.78	55.53	59.55	60.84	83.61	121.07						
Pt	$L\alpha_2$	10		10	78	6	9.360	13.24320	5		9.50	11.69	15.11	21.81	55.61	59.64	60.93	83.75	121.35						
Sr	$L\beta_1$	2		45	38	6	1.871	13.24780	4		9.50	11.70	15.12	21.82	55.63	59.66	60.95	83.78	121.42						
Ag	$L\gamma_2$	4		3	47	6	3.743	13.24864	5		9.50	11.70	15.12	21.82	55.63	59.67	60.96	83.79	121.43						
Ce	$L8_{2,15}$	6		20	58	6	5.612	13.25220	4		9.50	11.70	15.12	21.83	55.65	59.68	60.97	83.82	121.48						
Dy	$L\gamma_1$	9		5	66	6	8.417	13.25393	5		9.50	11.70	15.13	21.83	55.66	59.69	60.98	83.83	121.51						
Ag	Ln	3		1	47	6	2.806	13.25490	4		9.50	11.70	15.13	21.83	55.66	59.70	60.99	83.84	121.53						
Yb	Ll	7		2	70	6	6.544	13.25905	5		9.51	11.71	15.13	21.84	55.68	59.72	61.01	83.87	121.59						
Eu	$L\gamma_1$	8		5	63	6	7.479	13.25919	4		9.51	11.71	15.13	21.84	55.68	59.72	61.01	83.87	121.59						
Ni	$K\alpha_1$	8	100		28	6	7.477	13.26328	6		9.51	11.71	15.14	21.84	55.70	59.74	61.03	83.90	121.66						
Sm	$L\alpha_2$	6		10	62	6	5.607	13.26372	5		9.51	11.71	15.14	21.85	55.70	59.74	61.03	83.91	121.66						
Hf	$L\beta_2$	10		20	72	6	9.346	13.26389	5		9.51	11.71	15.14	21.85	55.70	59.74	61.03	83.91	121.67						
Ta	$L\beta_1$	10		50	73	6	9.342	13.26980	5		9.51	11.72	15.14	21.86	55.73	59.77	61.06	83.96	121.76						
Ni	$K\alpha_{1,2}$	8	150		28	6	7.471	13.27351	6		9.52	11.72	15.15	21.86	55.75	59.79	61.08	83.98	121.81						
Ho	$L\beta_4$	8		5	67	6	7.470	13.27599	4		9.52	11.72	15.15	21.87	55.76	59.80	61.09	84.00	121.85						
Yb	$L\beta_1$	9		50	70	6	8.400	13.28085	5		9.52	11.73	15.16	21.87	55.78	59.83	61.12	84.04	121.93						
W	$L\alpha_1$	9	100		74	6	8.396	13.28751	5		9.53	11.73	15.16	21.88	55.81	59.86	61.15	84.09	122.03						
Cu	AL_3	1			29	6	0.933	13.28800	3		9.53	11.73	15.17	21.89	55.81	59.86	61.16	84.10	122.04						
Ni	$K\alpha_2$	8		50	28	6	7.460	13.29398	6		9.53	11.74	15.17	21.90	55.84	59.89	61.19	84.14	122.13						
Au	M_2-N_4	3		.5	79	6	2.797	13.29600	3		9.53	11.74	15.17	21.90	55.85	59.90	61.20	84.16	122.16						
Bi	N_1-$P_{2,3}$	1			83	6	0.932	13.30000	2		9.54	11.74	15.18	21.91	55.87	59.92	61.22	84.19	122.23						
Pr	$L\beta_3$	6		6	59	6	5.591	13.30320	4		9.54	11.75	15.18	21.91	55.88	59.94	61.23	84.22	122.28						
W	M_1-$O_{2,3}$	3	.01		74	6	2.792	13.32000	2		9.55	11.76	15.20	21.94	55.96	60.02	61.32	84.35	122.54						
La	$L\alpha_1$	5	100		57	6	4.650	13.32850	5		9.56	11.77	15.21	21.95	56.00	60.06	61.36	84.41	122.67						
Cs	$L8_4$	5		5	55	6	4.649	13.33300	4		9.56	11.77	15.22	21.96	56.02	60.08	61.39	84.45	122.74						
Cu	$L\alpha_{1,2}$	1	100		29	6	0.930	13.33600	3		9.56	11.78	15.22	21.97	56.03	60.10	61.40	84.47	122.79						
Ir	M_3-N_1	2		.5	77	6	1.859	13.33800	3		9.56	11.78	15.22	21.97	56.04	60.11	61.41	84.49	122.82						
Cd	$L\gamma_1$	4		10	48	6	3.716	13.34256	5		9.57	11.78	15.23	21.98	56.06	60.13	61.43	84.52	122.89						
Pr	$M\alpha$	1	100		59	6	0.929	13.34300	3		9.57	11.78	15.23	21.98	56.06	60.13	61.44	84.53	122.90						
Ca	$SK\alpha_4$	4		2	20	1	3.715	13.34730	3	4	9.57	11.79	15.23	21.98	56.08	60.16	61.46	84.56	122.97						
Pa	M_3-N_1	3		1	91	6	2.786	13.35000	3		9.57	11.79	15.24	21.99	56.09	60.17	61.47	84.58	123.01						
In	$L\beta_{2,15}$	4		17	49	6	3.713	13.35352	5		9.57	11.79	15.24	21.99	56.11	60.19	61.49	84.61	123.07						
Ca	$SK\alpha_3$	4		2	20	1	3.711	13.36053	3	4	9.58	11.80	15.25	22.01	56.14	60.22	61.53	84.66	123.18						
Dy	$L\alpha_1$	7	100		66	6	6.494	13.36167	5		9.58	11.80	15.25	22.01	56.15	60.23	61.53	84.67	123.20						
Mn	$K\beta_{1,3}$	7		20	25	6	6.489	13.37147	5	4	9.59	11.81	15.26	22.02	56.19	60.28	61.58	84.75	123.35						
Sn	$L\beta_4$	4		4	50	6	3.708	13.37340	5		9.59	11.81	15.26	22.03	56.20	60.29	61.59	84.76	123.38						
Yb	$L\alpha_1$	8	100		70	6	7.414	13.37511	5		9.59	11.81	15.27	22.03	56.21	60.29	61.60	84.78	123.41						
La	$L\alpha_2$	5		10	57	6	4.633	13.37665	5		9.59	11.81	15.27	22.03	56.22	60.30	61.61	84.79	123.44						
Pt	M_1-N_3	3		1	78	6	2.779	13.38000	3		9.59	11.82	15.27	22.04	56.23	60.32	61.63	84.81	123.49						

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EODT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Nd	Ll		5	2	60	6	4.632	13.38000	4		9.59	11.82	15.27	22.04	56.23	60.32	61.63	84.81	123.49						
W	$L\alpha_2$		9	10	74	6	8.334	13.38687	5		9.60	11.82	15.28	22.05	56.26	60.35	61.66	84.87	123.60						
Pr	$M\zeta_5$		1		59	6	0.925	13.39400	3		9.60	11.83	15.29	22.06	56.30	60.39	61.70	84.92	123.71						
Ga	$K\alpha_1$		10	100	31	6	9.250	13.40082	6		9.61	11.83	15.29	22.07	56.33	60.42	61.73	84.98	123.82						
Tb	Ll		6	2	65	6	5.546	13.41120	4		9.62	11.84	15.31	22.09	56.38	60.47	61.78	85.06	123.99						
Ga	$K\alpha_{1,2}$		10	150	31	6	9.241	13.41385	5		9.62	11.85	15.31	22.10	56.39	60.49	61.80	85.08	124.03						
Cs	$L\beta_1$		5	50	55	6	4.619	13.41850	4		9.62	11.85	15.32	22.10	56.41	60.51	61.82	85.12	124.10						
Yb	$L\beta_4$		9	5	70	6	8.312	13.42242	5		9.62	11.85	15.32	22.11	56.43	60.53	61.84	85.15	124.17						
W	Ll		8	3	74	6	7.386	13.42560	4		9.63	11.86	15.32	22.12	56.44	60.55	61.86	85.17	124.22						
Ca	$K\alpha_1$		4	100	20	6	3.691	13.43356	5	4	9.63	11.86	15.33	22.13	56.48	60.59	61.90	85.23	124.35						
Ca	$K\alpha_{1,2}$		4	150	20	6	3.690	13.43792	5	4	9.64	11.87	15.34	22.14	56.50	60.61	61.92	85.27	124.42						
Oy	$L\alpha_2$		7	10	66	6	6.457	13.43937	5		9.64	11.87	15.34	22.14	56.50	60.61	61.93	85.28	124.44						
Ga	$K\alpha_2$		10	50	31	6	9.223	13.43989	5		9.64	11.87	15.34	22.14	56.51	60.62	61.93	85.28	124.45						
Cd	Ll		3	2	48	6	2.767	13.44042	5		9.64	11.87	15.34	22.14	56.51	60.62	61.93	85.29	124.46						
Eu	$L\beta_1$		7	50	63	6	6.455	13.44210	4		9.64	11.87	15.34	22.14	56.52	60.63	61.94	85.30	124.49						
Ca	$K\alpha_2$		4	50	20	6	3.687	13.44664	5	4	9.64	11.87	15.35	22.15	56.54	60.65	61.97	85.34	124.56						
Ba	$L\gamma_1$		6	5	56	6	5.530	13.44900	4		9.64	11.88	15.35	22.15	56.55	60.66	61.98	85.36	124.60						
Oy	$L\beta_3$		8	6	66	6	7.369	13.45760	4		9.65	11.88	15.36	22.17	56.59	60.70	62.02	85.42	124.74						
Re	$M\alpha$		2	100	75	6	1.842	13.45800	3		9.65	11.88	15.36	22.17	56.59	60.71	62.02	85.43	124.74						
Ta	$L\beta_4$		10	4	73	6	9.211	13.45810	5		9.65	11.88	15.36	22.17	56.59	60.71	62.02	85.43	124.75						
Ru	$L\beta_3$		3	3	44	6	2.763	13.45980	4		9.65	11.89	15.36	22.17	56.60	60.72	62.03	85.44	124.77						
Ru	$L\beta_6$		3	3	44	6	2.763	13.45980	4		9.65	11.89	15.36	22.17	56.60	60.72	62.03	85.44	124.77						
Yb	$L\alpha_2$		8	10	70	6	7.366	13.46280	5		9.65	11.89	15.37	22.18	56.61	60.73	62.05	85.46	124.82						
Tb	$L\beta_{2,15}$		8	20	65	6	7.365	13.46400	4		9.65	11.89	15.37	22.18	56.62	60.74	62.05	85.47	124.84						
Sb	$L\gamma_{2,3}$		5	2	51	6	4.599	13.47650	4		9.66	11.90	15.38	22.20	56.67	60.80	62.12	85.57	125.05						
Eu	$L\beta_4$		7	5	63	6	6.438	13.47850	4		9.66	11.90	15.38	22.20	56.68	60.81	62.13	85.59	125.08						
Pb	$M\zeta_1$		2	1	82	6	1.839	13.48000	3		9.67	11.90	15.39	22.21	56.69	60.82	62.14	85.60	125.10						
Pt	Ll		9	3	78	6	8.267	13.49549	4		9.68	11.92	15.40	22.23	56.76	60.89	62.22	85.72	125.36						
Pb	Ll		10	3	82	6	9.183	13.49899	5		9.68	11.92	15.41	22.24	56.78	60.91	62.23	85.75	125.41						
Ni	$K\beta_{1,3}$		9	20	28	6	8.263	13.50121	6		9.68	11.92	15.41	22.24	56.79	60.92	62.25	85.77	125.45						
Si	K8		2	2	14	6	1.836	13.50600	3	2	9.68	11.93	15.42	22.25	56.81	60.95	62.27	85.80	125.53						
Rb	$L\gamma_5$	A	2	.1	37	6	1.835	13.51060	4		9.69	11.93	15.42	22.26	56.83	60.97	62.29	85.84	125.61						
Ir	$L\alpha_1$		10	100	77	6	9.174	13.51279	5		9.69	11.93	15.42	22.26	56.84	60.98	62.30	85.86	125.64						
W	$M\beta$		2	45	74	6	1.835	13.51400	3		9.69	11.93	15.42	22.26	56.85	60.99	62.31	85.87	125.66						
Pr	$L\beta_4$		6	5	59	6	5.497	13.52999	4		9.70	11.95	15.44	22.29	56.92	61.07	62.39	85.99	125.93						
Hf	$L\beta_3$		10	6	72	6	9.162	13.53000	5		9.70	11.95	15.44	22.29	56.92	61.07	62.39	85.99	125.93						
Lu	$M\gamma$		2	1	71	6	1.832	13.53600	3		9.71	11.95	15.45	22.30	56.95	61.10	62.42	86.04	126.03						
Sn	$L\beta_1$		4	75	50	6	3.662	13.53948	5		9.71	11.96	15.45	22.31	56.96	61.11	62.44	86.07	126.08						
Fe	$K\alpha_1$		7	100	26	6	6.403	13.55229	6		9.72	11.97	15.47	22.33	57.02	61.18	62.51	86.17	126.30						
Pr	$L\beta_1$		6	50	59	6	5.488	13.55280	4		9.72	11.97	15.47	22.33	57.02	61.18	62.51	86.17	126.31						
Si	$K\beta_1$		2	2	14	1	1.829	13.55600	3	2	9.72	11.97	15.47	22.33	57.04	61.20	62.53	86.20	126.36						
Tm	$L\beta_3$		9	6	69	6	8.229	13.55670	4		9.72	11.97	15.47	22.33	57.04	61.20	62.53	86.20	126.37						
Fe	$K\alpha_{1,2}$		7	150	26	6	6.398	13.56147	6		9.72	11.98	15.48	22.34	57.06	61.22	62.55	86.24	126.45						
Te	$L\gamma_1$		5	8	52	6	4.570	13.56205	5		9.72	11.98	15.48	22.34	57.07	61.23	62.56	86.25	126.46						
Au	M_3-$O_{4,5}$		3	.5	79	6	2.741	13.56600	3		9.73	11.98	15.48	22.35	57.09	61.25	62.58	86.28	126.53						
Ru	$L\beta_4$		3	3	44	6	2.741	13.56900	4		9.73	11.98	15.49	22.35	57.10	61.26	62.59	86.30	126.58						
Gd	$M\zeta$		1	.01	64	6	0.913	13.57000	2		9.73	11.98	15.49	22.36	57.10	61.27	62.60	86.31	126.59						
Rb	$L\beta_3$		2	3	37	6	1.826	13.57520	4		9.73	11.99	15.50	22.36	57.13	61.29	62.62	86.35	126.68						
Fe	$K\alpha_2$		7	50	26	6	6.390	13.57986	6		9.74	11.99	15.50	22.37	57.15	61.32	62.65	86.39	126.76						
Bi	$M\gamma$		3	5	83	6	2.735	13.59600	3		9.75	12.01	15.52	22.40	57.22	61.40	62.73	86.52	127.03						
Pb	$M\zeta_2$		2	.1	82	6	1.822	13.60400	3		9.75	12.01	15.53	22.41	57.26	61.44	62.77	86.58	127.17						
W	M_4-O_2		2	.01	74	6	1.821	13.61200	3		9.76	12.02	15.54	22.43	57.30	61.48	62.81	86.64	127.30						
Ir	$L\alpha_2$		10	10	77	6	9.098	13.62499	5		9.77	12.03	15.55	22.45	57.36	61.54	62.88	86.75	127.53						
Er	$L\beta_{2,15}$		9	20	68	6	8.188	13.62591	5		9.77	12.03	15.55	22.45	57.36	61.55	62.89	86.75	127.54						
Si	$SK\beta'$		2	.1	14	1	1.819	13.63148	2	2	9.77	12.04	15.56	22.46	57.39	61.57	62.91	86.80	127.64						
Er	$L\gamma_1$		10	5	68	6	9.087	13.64100	4		9.78	12.05	15.57	22.47	57.43	61.62	62.96	86.87	127.80						
Rb	$L\beta_4$		2	3	37	6	1.817	13.64140	4		9.78	12.05	15.57	22.48	57.43	61.62	62.97	86.88	127.81						
Zn	Ln		1	2	30	6	0.906	13.68000	2		9.81	12.08	15.62	22.54	57.61	61.82	63.16	87.18	128.47						
Oy	$L\beta_1$		8	50	66	6	7.246	13.68496	5		9.81	12.09	15.62	22.55	57.63	61.84	63.19	87.22	128.56						
Tm	Ll		7	2	69	6	6.341	13.68500	4		9.81	12.09	15.62	22.55	57.63	61.84	63.19	87.22	128.56						
Pm	$L\beta_{2,15}$		7	20	61	6	6.338	13.69129	4		9.82	12.09	15.63	22.56	57.66	61.87	63.22	87.27	128.67						
Pm	$L\alpha_1$		6	100	61	6	5.432	13.69320	4		9.82	12.09	15.63	22.56	57.67	61.88	63.23	87.29	128.70						
Ta	$L\alpha_1$		9	100	73	6	8.145	13.69773	5		9.82	12.10	15.64	22.57	57.69	61.91	63.26	87.33	128.78						
Th	M_3-N_1		3	1	90	6	2.714	13.70400	3		9.83	12.10	15.64	22.58	57.72	61.94	63.29	87.38	128.89						
V	$K\beta_{1,3}$		6	20	23	6	5.426	13.70640	5	4	9.83	12.10	15.65	22.58	57.73	61.95	63.30	87.39	128.93						

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Bi	M_3-N_4		3	5	83	6	2.712	13.71300	3		9.83	12.11	15.65	22.59	57.76	61.98	63.33	87.45	129.05						
Lu	$L\beta_{15}$		10	20	71	6	9.038	13.71499	4		9.83	12.11	15.66	22.60	57.77	61.99	63.34	87.46	129.08						
Sr	$L\alpha_1$		2	100	38	6	1.806	13.72560	4		9.84	12.12	15.67	22.62	57.82	62.05	63.40	87.55	129.27						
Pr	$L\gamma_1$		7	5	59	6	6.321	13.72770	4		9.84	12.12	15.67	22.62	57.83	62.06	63.41	87.56	129.31						
Sm	$L\beta_3$		7	6	62	6	6.317	13.73687	5		9.85	12.13	15.68	22.63	57.87	62.10	63.46	87.64	129.47						
Cr	$K\alpha_1$		6	100	24	6	5.414	13.73820	5	4	9.85	12.13	15.68	22.64	57.88	62.11	63.46	87.65	129.49						
Sr	$L\alpha_2$		2	10	38	6	1.804	13.73940	4		9.85	12.13	15.68	22.64	57.88	62.12	63.47	87.66	129.51						
Hg	$M\delta$		2	.01	80	6	1.804	13.74000	2		9.85	12.13	15.68	22.64	57.89	62.12	63.47	87.66	129.52						
Hf	$L\beta_1$		10	50	72	6	9.021	13.74100	5		9.85	12.13	15.69	22.64	57.89	62.12	63.48	87.67	129.54						
Ti	$K\alpha_1$		5	100	22	6	4.510	13.74255	5	4	9.85	12.14	15.69	22.64	57.90	62.13	63.49	87.68	129.57						
Cr	$K\alpha_{1,2}$		6	150	24	6	5.411	13.74600	5	4	9.85	12.14	15.69	22.65	57.91	62.15	63.50	87.71	129.63						
Ti	$K\alpha_{1,2}$		5	150	22	6	4.508	13.74863	5	4	9.86	12.14	15.69	22.65	57.93	62.16	63.52	87.73	129.68						
Ce	$M\beta$		1	45	58	6	0.902	13.75000	2		9.86	12.14	15.70	22.66	57.93	62.17	63.52	87.74	129.70						
I	$L\beta_{2,15}$		5	17	53	6	4.507	13.75265	5		9.86	12.15	15.70	22.66	57.94	62.18	63.54	87.76	129.75						
Te	$L\eta$		4	7	52	6	3.605	13.75328	5		9.86	12.15	15.70	22.66	57.95	62.18	63.54	87.77	129.76						
Pm	$L\alpha_2$		6	10	61	6	5.407	13.75560	4		9.86	12.15	15.70	22.67	57.96	62.20	63.55	87.79	129.80						
Sb	$L\alpha_1$		4	100	51	6	3.604	13.75764	5		9.87	12.15	15.70	22.67	57.97	62.21	63.56	87.80	129.84						
Ti	$K\alpha_2$		5	50	22	6	4.504	13.76080	5	4	9.87	12.15	15.71	22.67	57.98	62.22	63.58	87.83	129.89						
Cr	$K\alpha_2$		6	50	24	6	5.405	13.76163	6	4	9.87	12.15	15.71	22.68	57.99	62.23	63.58	87.84	129.91						
Dy	$L\beta_4$		8	5	66	6	7.203	13.76823	5		9.87	12.16	15.72	22.69	58.02	62.26	63.62	87.89	130.03						
Bi	M_4-$P_{2,3}$		3	.01	83	6	2.701	13.77000	2		9.87	12.16	15.72	22.69	58.02	62.27	63.63	87.90	130.06						
Tb	$L\gamma_1$		9	5	65	6	8.100	13.77269	4		9.88	12.16	15.72	22.69	58.04	62.28	63.64	87.93	130.11						
Tm	$L\beta_1$		9	50	69	6	8.100	13.77359	4		9.88	12.16	15.72	22.70	58.04	62.29	63.65	87.93	130.12						
Os	M_3-N_1		2	.5	76	6	1.799	13.78000	2		9.88	12.17	15.73	22.71	58.07	62.32	63.68	87.98	130.24						
Rh	$L\alpha_1$		3	100	45	6	2.696	13.79229	5		9.89	12.18	15.74	22.73	58.13	62.38	63.74	88.08	130.46						
Sb	$L\alpha_2$		4	10	51	6	3.595	13.79360	5		9.89	12.18	15.75	22.73	58.13	62.39	63.75	88.09	130.48						
Ta	$L\alpha_2$		9	10	73	6	8.086	13.79636	5		9.89	12.18	15.75	22.73	58.15	62.40	63.76	88.12	130.53						
Th	N_3-O_5		1		90	6	0.898	13.80000	1		9.90	12.19	15.75	22.74	58.16	62.42	63.78	88.14	130.60						
Pt	M_2-N_4		3	.5	78	6	2.694	13.80300	3		9.90	12.19	15.76	22.74	58.18	62.43	63.80	88.17	130.65						
Tm	$L\alpha_1$	H	8	100	69	6	7.179	13.81440	4		9.91	12.20	15.77	22.76	58.23	62.49	63.86	88.26	130.86						
K	$K\beta_{1,3}$		4	15	19	6	3.589	13.81560	4	4	9.91	12.20	15.77	22.77	58.23	62.50	63.86	88.27	130.88						
Rh	$L\alpha_2$		3	10	45	6	2.692	13.81635	5		9.91	12.20	15.77	22.77	58.24	62.50	63.87	88.28	130.89						
Sm	$L\gamma_1$		8	5	62	6	7.177	13.81792	5		9.91	12.20	15.77	22.77	58.25	62.51	63.88	88.29	130.92						
La	$L\beta_{2,15}$		6	20	57	6	5.383	13.81800	4		9.91	12.20	15.77	22.77	58.25	62.51	63.88	88.29	130.92						
Ta	$L\mathrm{l}$		8	3	73	6	7.172	13.82728	5		9.92	12.21	15.78	22.79	58.29	62.56	63.92	88.36	131.09						
Tb	$L\alpha_1$		7	100	65	6	6.272	13.83550	4		9.92	12.22	15.79	22.80	58.33	62.60	63.97	88.43	131.24						
Zr	$L\mathrm{l}$		2	3	40	6	1.792	13.83700	4		9.92	12.22	15.80	22.80	58.33	62.61	63.97	88.44	131.27						
Tl	$L\mathrm{l}$		10	3	81	6	8.952	13.84769	5		9.93	12.23	15.81	22.82	58.38	62.66	64.03	88.53	131.46						
Ru	$L\beta_1$		3	45	44	6	2.683	13.86174	5		9.94	12.24	15.82	22.84	58.45	62.73	64.10	88.64	131.72						
Cu	$K\alpha_1$		9	100	29	6	8.046	13.86506	6		9.94	12.24	15.83	22.85	58.46	62.75	64.12	88.67	131.78						
Ce	$L\beta_3$		6	6	58	6	5.364	13.86540	4		9.94	12.25	15.83	22.85	58.47	62.75	64.12	88.67	131.79						
Gd	$L\mathrm{l}$		6	2	64	6	5.361	13.87320	4		9.95	12.25	15.84	22.86	58.50	62.79	64.16	88.73	131.93						
U	M_4-N_3		3	.01	92	6	2.680	13.87500	3		9.95	12.25	15.84	22.87	58.51	62.80	64.17	88.75	131.97						
Ir	$L\mathrm{l}$	D	9	3	77	6	8.040	13.87620	4		9.95	12.25	15.84	22.87	58.52	62.80	64.18	88.76	131.99						
Cu	$K\alpha_{1,2}$		9	150	29	6	8.040	13.87654	6		9.95	12.26	15.84	22.87	58.52	62.81	64.18	88.76	132.00						
In	$L\beta_3$		4	6	49	6	3.572	13.87936	5		9.95	12.26	15.84	22.87	58.53	62.82	64.19	88.78	132.05						
Ba	$L\alpha_1$		5	100	56	6	4.465	13.87975	5		9.95	12.26	15.84	22.87	58.53	62.82	64.20	88.79	132.06						
Ir	M_1-N_3	H	3	.5	77	6	2.677	13.89300	3		9.96	12.27	15.86	22.90	58.59	62.89	64.26	88.89	132.30						
Sc	$K\beta_{1,3}$		5	20	21	6	4.460	13.89800	4	4	9.97	12.27	15.87	22.90	58.62	62.91	64.29	88.93	132.40						
Cu	$K\alpha_2$		9	50	29	6	8.026	13.89951	6		9.97	12.28	15.87	22.91	58.62	62.92	64.30	88.95	132.42						
Tm	$L\beta_4$		9	5	69	6	8.024	13.90320	4		9.97	12.28	15.87	22.91	58.64	62.94	64.32	88.98	132.49						
Tm	$L\alpha_2$		8	10	69	6	7.132	13.90479	4		9.97	12.28	15.87	22.91	58.65	62.95	64.33	88.99	132.52						
Os	$L\alpha_1$		10	100	76	6	8.910	13.91210	5		9.98	12.29	15.88	22.93	58.68	62.98	64.36	89.05	132.66						
Tb	$L\alpha_2$		7	10	65	6	6.237	13.91249	4		9.98	12.29	15.88	22.93	58.68	62.99	64.36	89.05	132.67						
O	$M\gamma$		4	5	92	6	3.563	13.91600	3		9.98	12.29	15.89	22.93	58.70	63.00	64.38	89.08	132.73						
Pr	$L\mathrm{l}$		5	2	59	6	4.452	13.92050	4		9.98	12.29	15.89	22.94	58.72	63.03	64.41	89.12	132.82						
Hf	$L\beta_4$		10	4	72	6	8.904	13.92200	5		9.98	12.30	15.89	22.94	58.73	63.03	64.41	89.13	132.85						
Cu	$K\beta_{1,3}$		10	20	29	6	8.904	13.92218	6		9.98	12.30	15.89	22.94	58.73	63.04	64.42	89.13	132.85						
Cu	$K\beta_3$		10	6	29	6	8.901	13.92599	4		9.99	12.30	15.90	22.95	58.75	63.05	64.43	89.16	132.92						
Ba	$L\alpha_2$		5	10	56	6	4.450	13.92765	5		9.99	12.30	15.90	22.95	58.75	63.06	64.44	89.18	132.95						
Tl	$M\zeta_1$		2	2	81	6	1.777	13.94800	3		10.00	12.32	15.92	22.99	58.85	63.17	64.55	89.34	133.34						
Pd	$L\gamma_{2,3}$		4	5	46	6	3.553	13.95680	4		10.01	12.33	15.93	23.00	58.89	63.21	64.59	89.41	133.51						
Nb	$L\gamma_{2,3}$		3	.5	41	6	2.663	13.96260	4		10.01	12.33	15.94	23.01	58.92	63.24	64.62	89.46	133.62						
Gd	$L\beta_{2,15}$		8	20	64	6	7.102	13.96400	4		10.01	12.33	15.94	23.01	58.92	63.25	64.63	89.47	133.64						
Pb	M_2-N_1		3	.01	82	6	2.663	13.96500	3		10.01	12.33	15.94	23.02	58.93	63.25	64.64	89.48	133.66						

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ 10⁻	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
W	$M\alpha_1$	2	100	74	6	1.775	13.96600	3		10.02	12.33	15.94	23.02	58.93	63.26	64.64	89.49	133.68							
Rb	$L\beta_6$	2	3	37	6	1.775	13.96840	4		10.02	12.34	15.95	23.02	58.94	63.27	64.65	89.51	133.73							
Tb	$L\beta_3$	8	6	65	6	7.095	13.97759	4		10.02	12.34	15.96	23.04	58.98	63.32	64.70	89.58	133.91							
Pd	Ln	3	1	46	6	2.660	13.98150	4		10.03	12.35	15.96	23.04	59.00	63.34	64.72	89.61	133.98							
W	$M\alpha_2$	2	100	74	6	1.773	13.98400	3		10.03	12.35	15.96	23.05	59.01	63.35	64.74	89.63	134.03							
Sm	$L\beta_1$	7	50	62	6	6.204	13.98641	5		10.03	12.35	15.97	23.05	59.03	63.36	64.75	89.65	134.08							
Sm	$L\beta_4$	7	5	62	6	6.195	14.00665	5		10.04	12.37	15.99	23.09	59.12	63.46	64.85	89.82	134.47							
W	M_5-O_3	2	.01	74	6	1.770	14.01000	3		10.05	12.37	15.99	23.09	59.14	63.48	64.87	89.85	134.53							
Lu	$L\beta_3$	10	6	71	6	8.845	14.01400	5		10.05	12.38	16.00	23.10	59.15	63.50	64.89	89.88	134.61							
Zn	Ll	1	4	30	6	0.884	14.02000	2		10.05	12.38	16.01	23.11	59.18	63.53	64.92	89.93	134.73							
Pb	$M\gamma$	3	5	82	6	2.652	14.02200	3		10.06	12.38	16.01	23.11	59.19	63.54	64.93	89.94	134.77							
Os	$L\alpha_2$	10	10	76	6	8.840	14.02340	5		10.06	12.39	16.01	23.11	59.20	63.55	64.94	89.95	134.80							
In	$L\beta_4$	4	4	49	6	3.535	14.02788	5		10.06	12.39	16.02	23.12	59.22	63.57	64.96	89.99	134.88							
Si	$SK\alpha_6$	2	.1	14	1	1.766	14.03990	3	3	10.07	12.40	16.03	23.14	59.27	63.63	65.03	90.09	135.12							
Ce	$M\alpha$	1	100	58	6	0.883	14.04000	2		10.07	12.40	16.03	23.14	59.27	63.63	65.03	90.09	135.12							
Ta	$M\beta$	2	45	73	6	1.765	14.04600	3		10.07	12.41	16.04	23.15	59.30	63.66	65.06	90.14	135.24							
Yb	$M\gamma$	2	1	70	6	1.765	14.04800	3		10.07	12.41	16.04	23.15	59.31	63.67	65.07	90.16	135.28							
Fe	$K\beta_{1,3}$	8	20	26	6	7.057	14.05288	5	4	10.08	12.41	16.04	23.16	59.33	63.70	65.09	90.20	135.38							
Er	$L\beta_3$	9	6	68	6	7.938	14.05440	4		10.08	12.41	16.05	23.16	59.34	63.70	65.10	90.21	135.41							
Cd	$L\beta_{2,15}$	4	25	48	6	3.528	14.05632	5		10.08	12.41	16.05	23.17	59.35	63.71	65.11	90.22	135.45							
Si	$SK\alpha_5$	2	.2	14	1	1.763	14.05914	3	3	10.08	12.42	16.05	23.17	59.36	63.73	65.13	90.25	135.50							
Tl	$M\zeta_2$	2	1	81	6	1.763	14.06400	3		10.09	12.42	16.06	23.18	59.39	63.75	65.15	90.29	135.60							
Y	Ln	2	1	39	6	1.761	14.08120	4		10.10	12.44	16.08	23.21	59.47	63.84	65.24	90.43	135.95							
Pt	M_3-$O_{4,5}$	3	.5	78	6	2.641	14.08200	3		10.10	12.44	16.08	23.21	59.47	63.84	65.25	90.43	135.96							
O	M_3-N_4	4	5	92	6	3.521	14.08400	3		10.10	12.44	16.08	23.21	59.48	63.85	65.26	90.45	136.00							
U	M_2-N_4	5	5	92	6	4.400	14.08500	3		10.10	12.44	16.08	23.22	59.48	63.86	65.26	90.46	136.02							
Cl	$SK\alpha_4$	3	4	17	1	2.640	14.08700	3	3	10.10	12.44	16.08	23.22	59.49	63.87	65.27	90.47	136.06							
Cs	$L\gamma_1$	6	5	55	6	5.279	14.08800	4		10.10	12.44	16.08	23.22	59.50	63.87	65.28	90.48	136.08							
Ag	$L\gamma_1$	4	10	47	6	3.519	14.09040	5		10.10	12.44	16.09	23.22	59.51	63.89	65.29	90.50	136.13							
Ce	$L\beta_4$	6	5	58	6	5.276	14.09820	4		10.11	12.45	16.10	23.24	59.54	63.93	65.33	90.57	136.29							
Ho	$L\beta_{2,15}$	9	20	67	6	7.910	14.10390	4		10.11	12.46	16.10	23.25	59.57	63.95	65.36	90.61	136.40							
Er	Ll	7	2	68	6	6.152	14.10500	3		10.12	12.46	16.10	23.25	59.58	63.96	65.37	90.62	136.43							
Au	M_3-O_1	3	.1	79	6	2.636	14.10900	3		10.12	12.46	16.11	23.26	59.59	63.98	65.39	90.66	136.51							
Ag	Ll	3	2	47	6	2.633	14.12280	4		10.13	12.47	16.12	23.28	59.66	64.05	65.46	90.77	136.79							
Hf	$L\alpha_1$	9	100	72	6	7.898	14.12621	5		10.13	12.48	16.13	23.28	59.68	64.07	65.48	90.80	136.86							
Cl	$SK\alpha_3$	3	4	17	1	2.631	14.13299	3	3	10.14	12.48	16.14	23.30	59.71	64.10	65.51	90.85	137.00							
Si	$SK\alpha_4$	2	3	14	1	1.754	14.13309	3	3	10.14	12.48	16.14	23.30	59.71	64.10	65.51	90.85	137.00							
Ce	$L\beta_1$	6	50	58	6	5.261	14.13659	4		10.14	12.49	16.14	23.30	59.72	64.12	65.53	90.88	137.07							
Pb	M_3-N_4	3	5	82	6	2.629	14.14500	3		10.14	12.49	16.15	23.32	59.76	64.16	65.57	90.95	137.25							
Rb	$L\beta_1$	2	45	37	6	1.752	14.15180	4		10.15	12.50	16.16	23.33	59.79	64.20	65.61	91.01	137.39							
Si	$SK\alpha_3$	2	6	14	1	1.752	14.15353	3	3	10.15	12.50	16.16	23.33	59.80	64.21	65.62	91.02	137.42							
Yb	$L\beta_{2,15}$	10	20	70	6	8.757	14.15500	5		10.15	12.50	16.16	23.33	59.81	64.21	65.63	91.03	137.45							
Sn	$L\gamma_{2,3}$	5	2	50	6	4.376	14.16350	4		10.16	12.51	16.17	23.35	59.85	64.26	65.67	91.10	137.63							
Ho	$L\gamma_1$	10	5	67	6	8.746	14.17399	4		10.16	12.52	16.18	23.36	59.90	64.31	65.73	91.19	137.85							
Mo	$L\gamma_1$	3	1	42	6	2.623	14.17740	4		10.17	12.52	16.19	23.37	59.91	64.33	65.74	91.22	137.92							
Ta	M_4-$O_{2,3}$	2	.01	73	6	1.748	14.18000	2		10.17	12.52	16.19	23.37	59.93	64.34	65.76	91.24	137.98							
Cl	$K\alpha_1$	3	100	17	6	2.622	14.18340	4	3	10.17	12.53	16.19	23.38	59.94	64.36	65.77	91.27	138.05							
Cl	$K\alpha_{1,2}$	3	150	17	6	2.621	14.18630	4	3	10.17	12.53	16.20	23.39	59.95	64.37	65.79	91.29	138.11							
Si	$SK\alpha'$	2	.5	14	1	1.747	14.18860	3	3	10.18	12.53	16.20	23.39	59.97	64.39	65.80	91.31	138.16							
Cl	$K\alpha_2$	3	50	17	6	2.620	14.19210	4	3	10.18	12.53	16.20	23.39	59.98	64.40	65.82	91.34	138.23							
Au	M_4-N_3	2	.01	79	6	1.746	14.20200	3		10.18	12.54	16.22	23.41	60.03	64.45	65.87	91.42	138.44							
Tb	$L\beta_1$	8	50	65	6	6.977	14.21439	4		10.19	12.55	16.23	23.43	60.09	64.52	65.94	91.52	138.71							
Hg	Ll	10	3	80	6	8.720	14.21599	4		10.19	12.56	16.23	23.43	60.09	64.52	65.95	91.54	138.74							
Eu	$M\zeta$	1	.01	63	6	0.872	14.22000	2		10.20	12.56	16.24	23.44	60.11	64.54	65.97	91.57	138.83							
In	$L\beta_1$	4	75	49	6	3.487	14.22124	5		10.20	12.56	16.24	23.44	60.12	64.55	65.97	91.58	138.85							
Nd	$L\alpha_1$	6	100	60	6	5.229	14.22240	4		10.20	12.56	16.24	23.45	60.12	64.56	65.98	91.59	138.88							
Hf	$L\alpha_2$	9	10	72	6	7.843	14.22414	5		10.20	12.56	16.24	23.45	60.13	64.57	65.99	91.61	138.92							
I	Ll	4	7	53	6	3.484	14.23016	5		10.21	12.57	16.25	23.46	60.16	64.60	66.02	91.66	139.05							
Lu	$L\beta_1$	10	50	71	6	8.708	14.23590	5		10.21	12.57	16.25	23.47	60.19	64.63	66.05	91.70	139.17							
Ni	AL_2	1		28	6	0.870	14.24200	3		10.21	12.58	16.26	23.48	60.21	64.66	66.08	91.75	139.30							
Si	$K\alpha_1$	2	100	14	6	1.740	14.25084	5	3	10.22	12.59	16.27	23.49	60.26	64.70	66.13	91.83	139.49							
Hf	Ll	8	3	72	6	6.958	14.25159	5		10.22	12.59	16.27	23.49	60.26	64.71	66.13	91.83	139.51							
Nd	$L\beta_{2,15}$	7	20	60	6	6.088	14.25200	4		10.22	12.59	16.27	23.50	60.26	64.71	66.13	91.84	139.52							
Si	$K\alpha_{1,2}$	2	150	14	6	1.739	14.25249	5	3	10.22	12.59	16.27	23.50	60.26	64.71	66.14	91.84	139.53							
Si	$K\alpha_2$	2	50	14	6	1.739	14.25582	5	3	10.22	12.59	16.28	23.50	60.28	64.73	66.15	91.87	139.60							

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sb	$L\gamma_1$		5	8	51	6	4.347	14.25795	5		10.23	12.59	16.28	23.51	60.29	64.74	66.16	91.89	139.65						
Os	Ll		9	3	76	6	7.821	14.26481	5		10.23	12.60	16.29	23.52	60.32	64.77	66.20	91.94	139.80						
Ni	$L\beta_1$		1	21	28	6	0.869	14.27100	3		10.23	12.60	16.29	23.53	60.35	64.80	66.23	91.99	139.94						
Er	$L\alpha_1$		8	100	68	6	6.947	14.27399	5		10.24	12.61	16.30	23.53	60.36	64.82	66.25	92.02	140.00						
Nd	$L\alpha_2$		6	10	60	6	5.207	14.28419	4		10.24	12.62	16.31	23.55	60.41	64.87	66.30	92.10	140.23						
Er	$L\beta_1$		9	50	68	6	7.809	14.28569	4		10.25	12.62	16.31	23.55	60.42	64.88	66.31	92.12	140.26						
Tb	$L\beta_4$		8	5	65	6	6.939	14.29120	4		10.25	12.62	16.32	23.56	60.44	64.91	66.34	92.16	140.38						
Pm	$L\beta_3$		7	6	61	6	6.070	14.29470	4		10.25	12.63	16.32	23.57	60.46	64.93	66.36	92.19	140.46						
Ne	AK		1		10	6	0.867	14.30180	4		10.26	12.63	16.33	23.58	60.49	64.96	66.39	92.25	140.62						
Pa	$M\gamma$		4	5	91	6	3.465	14.30800	3		10.26	12.64	16.34	23.59	60.52	64.99	66.43	92.30	140.76						
Co	$L\beta_{3,4}$		1	.5	27	6	0.866	14.31000	2		10.26	12.64	16.34	23.59	60.53	65.00	66.44	92.32	140.80						
Co	$K\alpha_1$		8	100	27	6	6.929	14.31171	6		10.26	12.64	16.34	23.59	60.54	65.01	66.45	92.33	140.84						
Co	$K\alpha_{1,2}$		8	150	27	6	6.924	14.32207	6		10.27	12.65	16.35	23.61	60.59	65.06	66.50	92.42	141.08						
Gd	$L\alpha_1$		7	100	64	6	6.056	14.32760	4		10.28	12.66	16.36	23.62	60.61	65.09	66.53	92.47	141.20						
Re	$L\alpha_1$		10	100	75	6	8.651	14.32899	5		10.28	12.66	16.36	23.62	60.62	65.10	66.54	92.48	141.23						
Gd	$L\gamma_1$		9	5	64	6	7.784	14.33160	4		10.28	12.66	16.36	23.63	60.63	65.11	66.55	92.50	141.29						
Ir	M_2-N_4		3	.2	77	6	2.593	14.34000	3		10.28	12.67	16.37	23.64	60.67	65.16	66.59	92.57	141.48						
Ce	$L\gamma_1$		7	5	58	6	6.051	14.34090	4		10.28	12.67	16.37	23.64	60.68	65.16	66.60	92.58	141.50						
Co	$K\alpha_2$		8	50	27	6	6.914	14.34280	6		10.29	12.67	16.38	23.65	60.69	65.17	66.61	92.59	141.55						
Zn	$K\alpha_1$		10	100	30	6	8.637	14.35155	6		10.29	12.68	16.39	23.66	60.73	65.22	66.66	92.67	141.75						
Er	$L\alpha_2$		8	10	68	6	6.904	14.36400	4		10.30	12.69	16.40	23.68	60.78	65.28	66.72	92.77	142.04						
Zn	$K\alpha_{1,2}$		10	150	30	6	8.630	14.36437	6		10.30	12.69	16.40	23.68	60.79	65.28	66.72	92.77	142.05						
Eu	Ll		6	2	63	6	5.176	14.36880	4		10.30	12.69	16.41	23.69	60.81	65.30	66.75	92.81	142.15						
Os	M_1-N_3		3	.5	76	6	2.588	14.37000	2		10.31	12.69	16.41	23.69	60.81	65.31	66.75	92.82	142.18						
I	$L\beta_3$		5	6	53	6	4.313	14.37145	5		10.31	12.69	16.41	23.69	60.82	65.32	66.76	92.83	142.21						
Zn	$K\alpha_2$		10	50	30	6	8.614	14.38999	6		10.32	12.71	16.43	23.73	60.91	65.41	66.86	92.99	142.64						
Ce	M_5-$O_{2,3}$		1	.01	58	6	0.861	14.39000	2		10.32	12.71	16.43	23.73	60.91	65.41	66.86	92.99	142.64						
Pm	$L\gamma_1$		8	5	61	6	6.891	14.39120	4		10.32	12.71	16.43	23.73	60.91	65.42	66.86	93.00	142.67						
Sn	$L\alpha_1$		4	100	50	6	3.443	14.39976	5		10.33	12.72	16.44	23.74	60.95	65.46	66.91	93.07	142.87						
Gd	$L\alpha_2$		7	10	64	6	6.024	14.40460	4		10.33	12.72	16.45	23.75	60.97	65.49	66.93	93.11	142.99						
Lu	$L\beta_4$		10	5	71	6	8.605	14.40559	5		10.33	12.72	16.45	23.75	60.98	65.49	66.94	93.12	143.01						
Er	$L\beta_4$		9	5	68	6	7.744	14.40629	4		10.33	12.72	16.45	23.75	60.98	65.50	66.94	93.12	143.03						
Te	$L\beta_{2,15}$		5	17	52	6	4.301	14.41085	5		10.34	12.73	16.46	23.76	61.00	65.52	66.97	93.16	143.14						
Ba	$L\beta_{2,15}$		6	20	56	6	5.156	14.42610	5		10.35	12.74	16.47	23.79	61.08	65.60	67.05	93.29	143.50						
Sb	Ln		4	7	51	6	3.436	14.43060	5		10.35	12.75	16.48	23.79	61.10	65.62	67.07	93.33	143.61						
Sn	$L\alpha_2$		4	10	50	6	3.435	14.43564	5		10.35	12.75	16.48	23.80	61.12	65.65	67.10	93.37	143.73						
Re	$L\alpha_2$		10	10	75	6	8.585	14.43959	5		10.36	12.75	16.49	23.81	61.14	65.67	67.12	93.41	143.83						
Pa	M_3-N_4		4	5	91	6	3.430	14.45600	3		10.37	12.77	16.51	23.84	61.22	65.75	67.20	93.54	144.23						
Ce	Ll		5	2	58	6	4.287	14.45850	4		10.37	12.77	16.51	23.84	61.23	65.76	67.22	93.56	144.29						
Cs	$L\alpha_1$		5	100	55	6	4.286	14.46200	4		10.37	12.77	16.51	23.85	61.24	65.78	67.24	93.59	144.38						
La	$L\beta_3$		6	6	57	6	5.143	14.46300	4		10.37	12.78	16.52	23.85	61.25	65.79	67.24	93.60	144.40						
Bi	M_4-O_2		3	1	83	6	2.570	14.46900	3		10.38	12.78	16.52	23.86	61.28	65.82	67.27	93.65	144.55						
Tl	$M\gamma$		3	3	81	6	2.570	14.46900	3		10.38	12.78	16.52	23.86	61.28	65.82	67.27	93.65	144.55						
Eu	$L8_{2,15}$		8	20	63	6	6.842	14.49439	4		10.40	12.80	16.55	23.90	61.40	65.95	67.41	93.87	145.19						
Kr	L_2-N_3	B	2	.01	36	6	1.710	14.50000	3		10.40	12.81	16.56	23.91	61.42	65.98	67.44	93.91	145.33						
Ta	$M\alpha$		2	100	73	6	1.709	14.50400	3		10.40	12.81	16.56	23.92	61.44	66.00	67.46	93.95	145.43						
Cs	$L\alpha_2$		5	10	55	6	4.272	14.51000	4		10.41	12.82	16.57	23.93	61.47	66.03	67.49	94.00	145.58						
La	$M\beta$	A	1	45	57	6	0.854	14.51000	2		10.41	12.82	16.57	23.93	61.47	66.03	67.49	94.00	145.58						
Mo	$L\gamma_5$		3	.1	42	6	2.563	14.51070	4		10.41	12.82	16.57	23.93	61.47	66.03	67.49	94.01	145.60						
Gd	$L8_3$		8	6	64	6	6.830	14.52000	4		10.41	12.83	16.58	23.94	61.52	66.08	67.54	94.08	145.84						
Yb	$L\beta_3$		10	6	70	6	8.535	14.52330	5		10.42	12.83	16.58	23.95	61.53	66.09	67.56	94.11	145.92						
Ni	AL_3		1		28	6	0.853	14.52500	3		10.42	12.83	16.59	23.95	61.54	66.10	67.57	94.13	145.97						
Kr	$L\beta_3$		2	1	36	6	1.706	14.52800	3		10.42	12.83	16.59	23.96	61.55	66.12	67.58	94.15	146.04						
Ru	$L\alpha_1$		3	100	44	6	2.558	14.53725	5		10.43	12.84	16.60	23.97	61.60	66.17	67.63	94.23	146.28						
Pa	M_2-N_4		5	5	91	6	4.260	14.55000	3		10.44	12.85	16.62	23.99	61.66	66.23	67.70	94.34	146.62						
Pm	$L\beta_1$		7	50	61	6	5.960	14.55790	4		10.44	12.86	16.62	24.01	61.69	66.27	67.74	94.41	146.83						
Kr	$L\gamma_5$		2	.1	36	6	1.703	14.55800	3		10.44	12.86	16.62	24.01	61.69	66.27	67.74	94.41	146.83						
I	$L\beta_4$		5	4	53	6	4.257	14.56035	5		10.44	12.86	16.63	24.01	61.71	66.29	67.76	94.43	146.89						
Ni	$L\alpha_{1,2}$		1	100	28	6	0.851	14.56100	3		10.44	12.86	16.63	24.01	61.71	66.29	67.76	94.43	146.91						
Ru	$L\alpha_2$		3	10	44	6	2.554	14.56143	5		10.44	12.86	16.63	24.01	61.71	66.29	67.76	94.44	146.92						
Lu	$L\alpha_1$		9	100	71	6	7.654	14.57559	5		10.45	12.88	16.64	24.04	61.78	66.36	67.84	94.56	147.30						
Cd	$L\beta_3$		4	11	48	6	3.401	14.57980	5		10.46	12.88	16.65	24.04	61.80	66.39	67.86	94.59	147.41						
Ho	$L\beta_3$		9	6	67	6	7.650	14.58269	4		10.46	12.88	16.65	24.05	61.81	66.40	67.87	94.62	147.49						
Co	$K8_{1,3}$		9	20	27	6	7.648	14.58711	5	4	10.46	12.89	16.66	24.06	61.83	66.42	67.90	94.65	147.61						
Cr	$K8_{1,3}$		7	18	24	6	5.946	14.59409	5	4	10.47	12.89	16.67	24.07	61.86	66.46	67.93	94.71	147.80						

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Tl	M_3-N_4		3	1	81	6	2.548	14.59500	3		10.47	12.89	16.67	24.07	61.87	66.46	67.94	94.72	147.82						
Au	Ll		10	3	79	6	8.493	14.59640	5		10.47	12.89	16.67	24.07	61.88	66.47	67.95	94.73	147.86						
Ta	M_5-O_3		2	.01	73	6	1.698	14.60000	2		10.47	12.90	16.67	24.08	61.89	66.49	67.96	94.76	147.96						
Ho	Ll		7	2	67	6	5.942	14.60200	4		10.47	12.90	16.68	24.08	61.90	66.50	67.98	94.78	148.01						
Hf	Mβ		2	45	72	6	1.697	14.60600	3		10.48	12.90	16.68	24.09	61.92	66.52	68.00	94.82	148.12						
Ir	M_3-$O_{4,5}$		3	.5	77	6	2.546	14.60700	3		10.48	12.90	16.68	24.09	61.92	66.53	68.00	94.82	148.15						
Kr	$L\beta_4$		2	1	36	6	1.697	14.60800	3		10.48	12.90	16.68	24.09	61.93	66.53	68.01	94.83	148.18						
Ne	$K\alpha_{1,2}$		1	100	10	6	0.848	14.61000	3		10.48	12.91	16.68	24.09	61.94	66.54	68.02	94.85	148.23						
Dy	$L\beta_{2,15}$		9	20	66	6	7.634	14.61321	5		10.48	12.91	16.69	24.10	61.95	66.56	68.03	94.88	148.32						
Pt	M_3-O_1		3	.01	78	6	2.542	14.62800	3		10.49	12.92	16.71	24.12	62.02	66.63	68.11	95.00	148.73						
Rb	$L\alpha_1$		2	100	37	6	1.694	14.63660	4		10.50	12.93	16.71	24.14	62.06	66.68	68.16	95.08	148.97						
Tm	$L\beta_{2,15}$		10	20	69	6	8.467	14.64000	4		10.50	12.93	16.72	24.14	62.08	66.69	68.18	95.11	149.07						
Rb	$L\alpha_2$		2	10	37	6	1.692	14.65020	4		10.51	12.94	16.73	24.16	62.13	66.75	68.23	95.19	149.36						
Tc	$L\beta_1$	H	3	45	43	6	2.536	14.66190	4		10.52	12.95	16.74	24.18	62.18	66.81	68.29	95.29	149.70						
Lu	$L\alpha_2$		9	10	71	6	7.604	14.67260	5		10.52	12.96	16.76	24.20	62.23	66.86	68.35	95.39	150.01						
Re	Ll		9	3	75	6	7.602	14.67504	5		10.53	12.96	16.76	24.20	62.25	66.88	68.36	95.41	150.08						
I	$L\gamma_{2,3}$		6	2	53	6	5.065	14.68500	4		10.53	12.97	16.77	24.22	62.29	66.93	68.42	95.49	150.37						
I	$L\beta_1$		5	75	53	6	4.220	14.68720	5		10.53	12.97	16.77	24.22	62.30	66.94	68.43	95.51	150.43						
Lu	Ll		8	2	71	6	6.752	14.68800	4		10.53	12.97	16.77	24.22	62.31	66.94	68.43	95.52	150.46						
La	$L\beta_4$		6	5	57	6	5.061	14.69580	4		10.54	12.98	16.78	24.24	62.34	66.98	68.47	95.58	150.69						
Y	Ll		2	3	39	6	1.685	14.71260	4		10.55	13.00	16.80	24.27	62.42	67.07	68.56	95.73	151.19						
Mn	$K\alpha_1$		7	100	25	6	5.898	14.71274	6	4	10.55	13.00	16.80	24.27	62.42	67.07	68.56	95.73	151.20						
Th	Mγ		4	5	90	6	3.369	14.71600	3		10.55	13.00	16.81	24.27	62.44	67.09	68.58	95.76	151.30						
W	M_3-N_1		2	.5	74	6	1.684	14.72000	3		10.56	13.00	16.81	24.28	62.46	67.11	68.60	95.79	151.42						
Mn	$K\alpha_{1,2}$		7	150	25	6	5.894	14.72198	5	4	10.56	13.00	16.81	24.28	62.47	67.12	68.61	95.81	151.48						
Dy	$L\gamma_1$		10	5	66	6	8.417	14.72659	5		10.56	13.01	16.82	24.29	62.49	67.14	68.64	95.85	151.62						
Bi	Mβ		3	60	83	6	2.525	14.72700	3		10.56	13.01	16.82	24.29	62.49	67.14	68.64	95.85	151.63						
Cd	$L\beta_4$		4	5	48	6	3.367	14.72812	5		10.56	13.01	16.82	24.29	62.50	67.15	68.64	95.86	151.67						
Th	M_4-N_3		3	.01	90	6	2.524	14.73300	3		10.57	13.01	16.83	24.30	62.52	67.17	68.67	95.91	151.82						
Mn	$K\alpha_2$		7	50	25	6	5.887	14.74046	5	4	10.57	13.02	16.83	24.31	62.55	67.21	68.71	95.97	152.05						
Rh	$L\gamma_{2,3}$		4	5	45	6	3.363	14.74200	4		10.57	13.02	16.84	24.32	62.56	67.22	68.72	95.98	152.10						
Pt	M_4-N_3		2	.01	78	6	1.682	14.74200	3		10.57	13.02	16.84	24.32	62.56	67.22	68.72	95.98	152.10						
La	$L\beta_1$		6	50	57	6	5.041	14.75346	5		10.58	13.03	16.85	24.33	62.62	67.28	68.78	96.08	152.46						
Yb	$L\beta_1$		10	50	70	6	8.400	14.75650	5		10.58	13.04	16.85	24.34	62.63	67.30	68.79	96.11	152.56						
Ho	$L\alpha_1$		8	100	67	6	6.719	14.75999	4		10.59	13.04	16.86	24.35	62.65	67.31	68.81	96.14	152.67						
W	$L\alpha_1$		10	100	74	6	8.396	14.76390	5		10.59	13.04	16.86	24.35	62.66	67.33	68.83	96.17	152.79						
Rh	Ln		3	1	45	6	2.519	14.76510	4		10.59	13.04	16.86	24.35	62.67	67.34	68.84	96.18	152.83						
Mo	$L\beta_{2,15}$		3	1	42	6	2.518	14.76960	4		10.59	13.05	16.87	24.36	62.69	67.36	68.86	96.22	152.98						
Gd	$L\beta_1$		8	50	64	6	6.712	14.77440	4		10.60	13.05	16.87	24.37	62.71	67.39	68.89	96.26	153.13						
Pr	$L\alpha_1$		6	100	59	6	5.033	14.77800	4		10.60	13.05	16.88	24.38	62.73	67.41	68.91	96.29	153.25						
Ag	$L\beta_{2,15}$		4	25	47	6	3.347	14.81340	5		10.62	13.09	16.92	24.43	62.90	67.59	69.10	96.60	154.43						
Ho	$L\beta_1$		9	50	67	6	7.524	14.82749	4		10.63	13.10	16.93	24.46	62.97	67.66	69.17	96.72	154.92						
Gd	$L\beta_4$		8	5	64	6	6.686	14.83199	4		10.64	13.10	16.94	24.47	62.99	67.69	69.20	96.76	155.07						
Pr	$L\beta_{2,15}$		7	20	59	6	5.849	14.83579	4		10.64	13.11	16.94	24.47	63.00	67.71	69.22	96.80	155.21						
Pr	$L\alpha_2$		6	10	59	6	5.013	14.83740	4		10.64	13.11	16.95	24.47	63.01	67.71	69.23	96.81	155.26						
O	$M\zeta_1$		3	1	92	6	2.506	14.83800	3		10.64	13.11	16.95	24.48	63.02	67.72	69.23	96.81	155.28						
Eu	$L\alpha_1$		7	100	63	6	5.845	14.84629	4		10.65	13.12	16.96	24.49	63.05	67.76	69.27	96.89	155.58						
Ho	$L\alpha_2$		8	10	67	6	6.679	14.84879	4		10.65	13.12	16.96	24.49	63.07	67.77	69.29	96.91	155.67						
Pd	Ll		3	2	46	6	2.503	14.85750	4		10.66	13.13	16.97	24.51	63.11	67.82	69.33	96.98	155.98						
Zr	$L\gamma_{2,3}$		3	.5	40	6	2.502	14.86080	4		10.66	13.13	16.97	24.51	63.12	67.84	69.35	97.01	156.10						
O	Mβ		4	60	92	6	3.336	14.86400	3		10.66	13.13	16.98	24.52	63.14	67.85	69.37	97.04	156.22						
Os	M_2-N_4		3	.2	76	6	2.502	14.86500	3		10.66	13.13	16.98	24.52	63.14	67.86	69.37	97.05	156.25						
K	$SK\alpha_4$		4	3	19	1	3.335	14.86597	3	4	10.66	13.13	16.98	24.52	63.15	67.86	69.38	97.06	156.29						
Te	Ll		4	7	52	6	3.335	14.86784	5		10.66	13.13	16.98	24.53	63.16	67.87	69.39	97.07	156.36						
Th	M_3-N_4		4	5	90	6	3.334	14.87200	3		10.67	13.14	16.99	24.53	63.18	67.89	69.41	97.11	156.51						
W	$L\alpha_2$		10	10	74	6	8.334	14.87430	5		10.67	13.14	16.99	24.54	63.19	67.91	69.42	97.13	156.60						
La	Mα	A	1	100	57	6	0.833	14.88000	2		10.67	13.15	16.99	24.55	63.21	67.94	69.45	97.18	156.81						
K	$SK\alpha_3$		4	3	19	1	3.332	14.88240	3	4	10.67	13.15	17.00	24.55	63.23	67.95	69.47	97.20	156.90						
Nd	$L\beta_3$		7	6	60	6	5.828	14.88760	4		10.68	13.15	17.00	24.56	63.25	67.98	69.49	97.25	157.10						
Sm	Ll		6	2	62	6	4.994	14.89380	4		10.68	13.16	17.01	24.57	63.28	68.01	69.53	97.30	157.33						
Pd	$L\gamma_1$		4	10	46	6	3.328	14.89840	4		10.69	13.16	17.02	24.58	63.30	68.03	69.55	97.34	157.51						
In	$L\gamma_{2,3}$		5	2	49	6	4.160	14.90000	4		10.69	13.16	17.02	24.58	63.31	68.04	69.56	97.36	157.57						
Cu	Ln		1	1	29	6	0.832	14.90000	2		10.69	13.16	17.02	24.58	63.31	68.04	69.56	97.36	157.57						
Sm	Mζ		1	.01	62	6	0.831	14.91000	2		10.69	13.17	17.03	24.60	63.36	68.09	69.61	97.44	157.96						
Yb	$L\beta_4$		10	5	70	6	8.312	14.91380	5		10.70	13.18	17.03	24.60	63.37	68.11	69.63	97.48	158.11						

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Eu	$L\gamma_1$		9	5	63	6	7.479	14.91659	4		10.70	13.18	17.04	24.61	63.39	68.13	69.65	97.50	158.23						
Eu	$L\alpha_2$		7	10	63	6	5.816	14.92050	4		10.70	13.18	17.04	24.61	63.41	68.15	69.67	97.54	158.38						
Ni	$K\alpha_1$		9	100	28	6	7.477	14.92118	6		10.70	13.18	17.04	24.62	63.41	68.15	69.67	97.54	158.41						
Au	$M\zeta_1$		2	2	79	6	1.660	14.93200	3		10.71	13.19	17.05	24.63	63.46	68.21	69.73	97.64	158.85						
Ni	$K\alpha_{1,2}$		9	150	28	6	7.471	14.93269	6		10.71	13.19	17.06	24.63	63.46	68.21	69.73	97.64	158.88						
Ho	$L\beta_4$		9	5	67	6	7.470	14.93549	4		10.71	13.19	17.06	24.64	63.48	68.22	69.75	97.67	158.99						
Hg	$M\gamma$		3	3	80	6	2.487	14.95200	3		10.72	13.21	17.08	24.67	63.56	68.31	69.84	97.81	159.69						
Cd	$L\beta_1$		4	42	48	6	3.316	14.95292	5		10.72	13.21	17.08	24.67	63.56	68.31	69.84	97.82	159.73						
Ni	$K\alpha_2$		9	50	28	6	7.460	14.95572	6		10.73	13.21	17.08	24.67	63.57	68.33	69.86	97.84	159.85						
K	$K\alpha_1$		4	100	19	6	3.313	14.96560	4	4	10.73	13.22	17.09	24.69	63.62	68.38	69.91	97.93	160.28						
K	$K\alpha_{1,2}$		4	150	19	6	3.312	14.96973	4	4	10.74	13.22	17.10	24.70	63.64	68.40	69.93	97.97	160.46						
K	$K\alpha_2$		4	50	19	6	3.310	14.97800	4	4	10.74	13.23	17.11	24.71	63.68	68.44	69.98	98.04	160.83						
La	$L\gamma_1$		7	5	57	6	5.788	14.99260	4		10.75	13.25	17.12	24.73	63.75	68.52	70.05	98.17	161.51						
Pt	Ll		10	3	78	6	8.267	14.99499	4		10.76	13.25	17.13	24.74	63.76	68.53	70.07	98.19	161.62						
Ni	$K\beta_{1,3}$		10	20	28	6	8.263	15.00134	6		10.76	13.25	17.13	24.75	63.79	68.57	70.10	98.25	161.92						
Sn	$L\gamma_1$		5	8	50	6	4.130	15.00575	5		10.76	13.26	17.14	24.76	63.81	68.59	70.13	98.28	162.13						
Pb	M_4-O_2		3	1	82	6	2.477	15.01200	3		10.77	13.26	17.15	24.77	63.84	68.62	70.16	98.34	162.44						
Kr	$L\beta_6$		2	.1	36	6	1.651	15.02000	3		10.77	13.27	17.16	24.78	63.88	68.66	70.20	98.41	162.84						
V	$K\alpha_1$		6	100	23	6	4.951	15.02135	5	4	10.77	13.27	17.16	24.78	63.89	68.67	70.21	98.42	162.91						
Nd	$L\gamma_1$		8	5	60	6	6.601	15.02319	4		10.78	13.27	17.16	24.79	63.89	68.68	70.22	98.44	163.00						
V	$K\alpha_{1,2}$		6	150	23	6	4.949	15.02899	5	4	10.78	13.28	17.17	24.80	63.92	68.71	70.25	98.49	163.30						
La	Ll		5	2	57	6	4.124	15.03000	3		10.78	13.28	17.17	24.80	63.93	68.72	70.26	98.50	163.35						
Sr	Ln		2	1	38	6	1.649	15.03420	4		10.78	13.28	17.17	24.80	63.95	68.74	70.28	98.54	163.57						
Mo	$L\beta_3$		3	3	42	6	2.473	15.03990	4		10.79	13.29	17.18	24.81	63.97	68.77	70.31	98.59	163.88						
V	$K\alpha_2$		6	50	23	6	4.944	15.04428	5	4	10.79	13.29	17.18	24.82	63.99	68.79	70.33	98.63	164.11						
Te	$L\beta_3$		5	6	52	6	4.120	15.04465	5		10.79	13.29	17.18	24.82	64.00	68.79	70.33	98.63	164.13						
Au	$M\zeta_2$		2	1	79	6	1.648	15.04600	3		10.79	13.29	17.19	24.82	64.00	68.80	70.34	98.64	164.21						
Yb	$L\alpha_1$		9	100	70	6	7.414	15.04700	5		10.79	13.29	17.19	24.83	64.01	68.80	70.35	98.65	164.26						
Th	M_2-N_4		5	5	90	6	4.117	15.05500	3		10.80	13.30	17.20	24.84	64.05	68.85	70.39	98.72	164.71						
Sm	$L8_{2,15}$		8	20	62	6	6.586	15.05768	5		10.80	13.30	17.20	24.84	64.06	68.86	70.40	98.74	164.86						
Tm	$L\beta_3$		10	6	69	6	8.229	15.06300	4		10.80	13.31	17.21	24.85	64.08	68.89	70.43	98.79	165.17						
S	$K\beta x$		3	7	16	6	2.468	15.06990	4	3	10.81	13.31	17.21	24.86	64.12	68.92	70.47	98.85	165.58						
Cs	$L\beta_{2,15}$		6	20	55	6	4.935	15.07080	4		10.81	13.31	17.21	24.87	64.12	68.93	70.47	98.86	165.63						
Hf	$M\alpha$		2	100	72	6	1.644	15.07800	3		10.81	13.32	17.22	24.88	64.15	68.97	70.51	98.92	166.08						
Xe	$L\alpha_1$	H	5	100	54	6	4.109	15.08300	4		10.82	13.33	17.23	24.89	64.18	68.99	70.54	98.97	166.39						
Ti	$K\beta_{1,3}$		6	20	22	6	4.931	15.08346	5	4	10.82	13.33	17.23	24.89	64.18	68.99	70.54	98.97	166.42						
In	$L\alpha_1$		4	100	49	6	3.286	15.08768	5		10.82	13.33	17.23	24.89	64.20	69.02	70.56	99.01	166.69						
Er	$M\gamma$		2	1	68	6	1.643	15.09200	3		10.82	13.33	17.24	24.90	64.22	69.04	70.59	99.05	166.98						
Eu	$L\beta_3$		8	6	63	6	6.570	15.09360	4		10.83	13.33	17.24	24.90	64.23	69.05	70.60	99.06	167.08						
S	$K\beta_1$		3	7	16	6	2.464	15.09480	4	3	10.83	13.34	17.24	24.91	64.23	69.05	70.60	99.07	167.16						
Ba	$L\beta_3$		6	6	56	6	4.926	15.09840	4		10.83	13.34	17.25	24.91	64.25	69.07	70.62	99.11	167.41						
W	Ll		9	3	74	6	7.386	15.10380	4		10.83	13.34	17.25	24.92	64.28	69.10	70.65	99.15	167.79						
Nb	$L\gamma_1$		3	1	41	6	2.461	15.10830	4		10.84	13.35	17.26	24.93	64.30	69.12	70.68	99.19	168.11						
Dy	Ll		7	2	66	6	5.742	15.11139	5		10.84	13.35	17.26	24.93	64.31	69.14	70.69	99.22	168.34						
Sb	$L\beta_{2,15}$		5	17	51	6	4.100	15.11675	5		10.84	13.36	17.27	24.94	64.34	69.17	70.72	99.27	168.74						
In	$L\alpha_2$		4	10	49	6	3.279	15.12292	5		10.85	13.36	17.27	24.95	64.37	69.20	70.75	99.32	169.23						
Dy	$L\beta_3$		9	6	66	6	7.369	15.13980	4		10.86	13.38	17.29	24.98	64.45	69.29	70.85	99.48	170.68						
Er	$L8_{2,15}$		10	20	68	6	8.188	15.13989	5		10.86	13.38	17.29	24.98	64.45	69.29	70.85	99.48	170.69						
Yb	$L\alpha_2$		9	10	70	6	7.366	15.14565	5		10.86	13.38	17.30	24.99	64.48	69.32	70.88	99.53	171.24						
Mo	$L\beta_4$		3	3	42	6	2.455	15.14640	4		10.86	13.38	17.30	24.99	64.48	69.32	70.88	99.53	171.32						
Mo	$L8_6$		3	3	42	6	2.455	15.14640	4		10.86	13.38	17.30	24.99	64.48	69.32	70.88	99.53	171.32						
Tb	$L\beta_{2,15}$		9	20	65	6	7.365	15.14700	4		10.86	13.38	17.30	24.99	64.48	69.33	70.88	99.54	171.38						
U	$M\zeta_2$		3	.1	92	6	2.455	15.15000	3		10.87	13.38	17.31	25.00	64.50	69.34	70.90	99.57	171.68						
Kr	$L8_1$		2	35	36	6	1.636	15.15200	3		10.87	13.39	17.31	25.00	64.51	69.35	70.91	99.58	171.89						
Yb	Ll		8	2	70	6	6.544	15.15320	5		10.87	13.39	17.31	25.00	64.51	69.36	70.92	99.60	172.02						
Sc	$K\alpha_1$		5	100	21	6	4.090	15.15450	4	4	10.87	13.39	17.31	25.01	64.52	69.37	70.92	99.61	172.16						
Sn	Ln		4	7	50	6	3.272	15.15504	5		10.87	13.39	17.31	25.01	64.52	69.37	70.93	99.61	172.22						
Sc	$K\alpha_{1,2}$		5	150	21	6	4.088	15.16000	4	4	10.87	13.39	17.32	25.02	64.55	69.39	70.95	99.66	172.80						
Nd	$L\beta_1$		7	50	60	6	5.721	15.16830	4		10.88	13.40	17.33	25.03	64.59	69.44	71.00	99.73	173.87						
Nd	$L8_4$		7	5	60	6	5.721	15.16830	4		10.88	13.40	17.33	25.03	64.59	69.44	71.00	99.73	173.87						
Sc	$K\alpha_2$		5	50	21	6	4.085	15.17100	4	4	10.88	13.40	17.33	25.03	64.60	69.45	71.01	99.75	174.27						
Er	M_3-N_4		2	.1	68	6	1.631	15.20000	2		10.90	13.43	17.36	25.08	64.74	69.60	71.17	100.02							
Lu	$M\beta$		2	45	71	6	1.631	15.20200	3		10.90	13.43	17.37	25.09	64.75	69.61	71.18	100.03							
Ta	$L\alpha_1$		10	100	73	6	8.145	15.21970	5		10.92	13.45	17.39	25.12	64.83	69.71	71.28	100.19							
Ta	M_3-N_1		2	.5	73	6	1.628	15.22400	3		10.92	13.45	17.39	25.12	64.85	69.73	71.30	100.23							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EODT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pb	$M\beta$		3	60	82	6	2.442	15.22800	3		10.92	13.45	17.40	25.13	64.87	69.75	71.32	100.27							
Te	$L\beta_4$		5	4	52	6	4.069	15.23305	5		10.93	13.46	17.40	25.14	64.90	69.78	71.35	100.31							
Dy	$L\alpha_1$		8	100	66	6	6.494	15.27048	5		10.95	13.49	17.44	25.20	65.07	69.97	71.55	100.65							
Pa	$M\zeta_1$		3	1	91	6	2.434	15.27600	3		10.96	13.50	17.45	25.21	65.10	70.00	71.58	100.70							
Mn	$K\beta_{1,3}$		8	20	25	6	6.489	15.28168	5	4	10.96	13.50	17.46	25.22	65.13	70.03	71.61	100.75							
Cu	Ll		1	5	29	6	0.811	15.28600	3		10.96	13.51	17.46	25.23	65.15	70.06	71.63	100.79							
Ir	M_4-N_3		2	.01	77	6	1.621	15.29000	3		10.97	13.51	17.47	25.23	65.17	70.08	71.66	100.83							
Tb	$L\gamma_1$		10	5	65	6	8.100	15.30299	4		10.98	13.52	17.48	25.26	65.23	70.14	71.73	100.95							
Tm	$L\beta_1$		10	50	69	6	8.100	15.30399	4		10.98	13.52	17.48	25.26	65.23	70.15	71.73	100.95							
Pa	$M\beta$		4	60	91	6	3.239	15.30800	3		10.98	13.52	17.49	25.26	65.25	70.17	71.75	100.99							
Ta	$L\alpha_2$		10	10	73	6	8.086	15.32929	5		11.00	13.54	17.51	25.30	65.36	70.28	71.87	101.18							
Ba	$L8_4$		6	5	56	6	4.851	15.33180	4		11.00	13.55	17.51	25.30	65.37	70.30	71.88	101.21							
Ag	$L\beta_3$		4	11	47	6	3.234	15.33252	5		11.00	13.55	17.52	25.30	65.37	70.30	71.89	101.21							
Si	M_2-N_4		4	5	83	6	3.233	15.33600	3		11.00	13.55	17.52	25.31	65.39	70.32	71.90	101.25							
Tc	$L\alpha_1$	H	3	100	43	6	2.424	15.34440	4		11.01	13.56	17.53	25.32	65.43	70.36	71.95	101.32							
Bi	$M\alpha_1$		3	100	83	6	2.422	15.35400	3		11.01	13.57	17.54	25.34	65.47	70.41	72.00	101.41							
Dy	$L\alpha_2$		8	10	66	6	6.457	15.35928	5		11.02	13.57	17.55	25.35	65.50	70.44	72.03	101.46							
Eu	$L\beta_1$		8	50	63	6	6.455	15.36240	4		11.02	13.57	17.55	25.35	65.51	70.46	72.05	101.49							
Ce	$L\alpha_1$		6	100	58	6	4.839	15.36900	4		11.02	13.58	17.56	25.37	65.55	70.49	72.08	101.55							
Te	$L\beta_1$		5	75	52	6	4.029	15.38385	5		11.03	13.59	17.57	25.39	65.62	70.57	72.16	101.68							
Si	$M\alpha_2$		3	100	83	6	2.416	15.39000	3		11.04	13.60	17.58	25.40	65.65	70.60	72.20	101.74							
Dy	$L\beta_2$		9	50	66	6	7.246	15.39558	5		11.04	13.60	17.59	25.41	65.67	70.63	72.23	101.79							
Sm	$L\alpha_1$		7	100	62	6	5.635	15.39860	5		11.05	13.61	17.59	25.42	65.69	70.65	72.24	101.82							
Eu	$L\beta_4$		8	5	63	6	6.438	15.40400	4		11.05	13.61	17.60	25.42	65.71	70.68	72.27	101.87							
Te	$L\gamma_{2,3}$		6	2	52	6	4.828	15.40440	4		11.05	13.61	17.60	25.43	65.72	70.68	72.28	101.87							
Cu	$K\alpha_1$		10	100	29	6	8.046	15.40562	6		11.05	13.61	17.60	25.43	65.72	70.69	72.28	101.88							
Ba	$L\beta_1$		6	50	56	6	4.827	15.40926	5		11.05	13.61	17.60	25.43	65.74	70.70	72.30	101.91							
Ir	Ll	0	10	3	77	6	8.040	15.41800	4		11.06	13.62	17.61	25.45	65.78	70.75	72.35	101.99							
Cu	$K\alpha_{1,2}$		10	150	29	6	8.040	15.41838	6		11.06	13.62	17.61	25.45	65.78	70.75	72.35	102.00							
Ce	$L\alpha_2$		6	10	58	6	4.822	15.42360	4		11.06	13.63	17.62	25.46	65.81	70.78	72.38	102.05							
Au	$M\gamma$		3	3	79	6	2.409	15.43500	3		11.07	13.64	17.63	25.48	65.86	70.84	72.44	102.15							
Cu	$K\alpha_2$		10	50	29	6	8.026	15.44390	6		11.08	13.65	17.64	25.49	65.91	70.89	72.49	102.23							
Tm	$L\beta_4$		10	5	69	6	8.024	15.44800	4		11.08	13.65	17.65	25.50	65.93	70.91	72.51	102.27							
Ca	$K\beta_{1,3}$		5	15	20	6	4.012	15.44850	4	4	11.08	13.65	17.65	25.50	65.93	70.91	72.52	102.28							
Nb	$L\gamma_5$		3	.1	41	6	2.406	15.45510	4		11.09	13.66	17.66	25.51	65.96	70.95	72.55	102.34							
Ce	$L\beta_{2,15}$		7	20	58	6	5.612	15.46089	4		11.09	13.66	17.66	25.52	65.99	70.98	72.58	102.39							
Sm	$L\alpha_2$		7	10	62	6	5.607	15.47434	5		11.10	13.67	17.68	25.54	66.05	71.05	72.66	102.51							
Pt	$M\zeta_1$		2	2	78	6	1.602	15.47600	3		11.10	13.67	17.68	25.55	66.06	71.06	72.67	102.53							
Ag	$L\beta_4$		4	5	47	6	3.203	15.48092	5		11.10	13.68	17.69	25.55	66.08	71.08	72.69	102.57							
Fe	$K\alpha_1$		8	100	26	6	6.403	15.48833	6		11.11	13.69	17.70	25.57	66.12	71.12	72.73	102.64							
Oy	$L\beta_4$		9	5	66	6	7.203	15.48926	5		11.11	13.69	17.70	25.57	66.12	71.13	72.74	102.65							
I	$L\gamma_1$		6	8	53	6	4.800	15.49464	5		11.11	13.69	17.70	25.58	66.15	71.16	72.77	102.70							
Fe	$K\alpha_{1,2}$		8	150	26	6	6.398	15.49883	6		11.12	13.69	17.71	25.58	66.17	71.18	72.79	102.74							
Pb	M_5-O_3		3	.01	82	6	2.399	15.50400	3		11.12	13.70	17.71	25.59	66.20	71.20	72.82	102.79							
W	M_1-N_3		3	.5	74	6	2.397	15.51600	3		11.13	13.71	17.73	25.61	66.25	71.27	72.88	102.90							
Fe	$K\alpha_2$		8	50	26	6	6.390	15.51984	6		11.13	13.71	17.73	25.62	66.27	71.29	72.90	102.93							
Pr	$L\beta_3$		7	6	59	6	5.591	15.52040	4		11.13	13.71	17.73	25.62	66.27	71.29	72.91	102.94							
Mo	$L\beta_1$		3	45	42	6	2.394	15.53124	5		11.14	13.72	17.74	25.64	66.33	71.35	72.97	103.04							
Br	$L\beta_{3,4}$	H	2	2	35	6	1.596	15.53400	3		11.14	13.73	17.75	25.64	66.34	71.36	72.98	103.07							
Tm	$L\alpha_1$	H	9	100	69	6	7.179	15.54120	4		11.15	13.73	17.76	25.66	66.37	71.40	73.02	103.13							
Ar	$K\beta_{1,3}$		4	15	18	6	3.190	15.54400	4		11.15	13.73	17.76	25.66	66.39	71.42	73.04	103.16							
Sm	$L\gamma_1$		9	5	62	6	7.177	15.54516	5		11.15	13.74	17.76	25.66	66.39	71.42	73.04	103.17							
Sb	Ll		4	7	51	6	3.188	15.55304	5		11.16	13.74	17.77	25.67	66.43	71.46	73.09	103.24							
Ta	Ll		9	3	73	6	7.172	15.55569	5		11.16	13.74	17.77	25.68	66.44	71.48	73.10	103.27							
Au	M_3-N_4		3	1	79	6	2.390	15.55800	3		11.16	13.75	17.78	25.68	66.46	71.49	73.11	103.29							
Sa	AM_4		1		56	6	0.797	15.56000	2		11.16	13.75	17.78	25.69	66.47	71.50	73.12	103.31							
Pa	$M\zeta_2$		3	.1	91	6	2.387	15.57900	3		11.18	13.77	17.80	25.72	66.56	71.60	73.23	103.48							
Pt	$M\zeta_2$		2	1	78	6	1.591	15.58000	3		11.18	13.77	17.80	25.72	66.56	71.61	73.23	103.49							
Tl	M_4-O_2		3	.1	81	6	2.386	15.58800	3		11.18	13.77	17.81	25.73	66.60	71.65	73.28	103.57							
Ru	Ln		3	1	44	6	2.382	15.61500	4		11.20	13.80	17.84	25.78	66.73	71.79	73.42	103.82							
Er	$L\beta_3$		10	6	68	6	7.938	15.61600	4		11.20	13.80	17.84	25.78	66.74	71.80	73.43	103.83							
Co	AL_2		1		27	6	0.794	15.61800	3		11.20	13.80	17.84	25.78	66.75	71.81	73.44	103.85							
Kr	$L\alpha_{1,2}$		2	100	36	6	1.586	15.63400	3		11.21	13.81	17.86	25.81	66.82	71.89	73.53	104.00							
Pd	$L\beta_{2,15}$		4	25	46	6	3.171	15.63548	5		11.22	13.82	17.86	25.81	66.83	71.90	73.54	104.01							
Tm	Ll		8	2	69	6	6.341	15.64000	4		11.22	13.82	17.87	25.82	66.85	71.93	73.56	104.06							

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
U	$M\alpha_1$	4	100	92	6	3.170	15.64000	3			11.22	13.82	17.87	25.82	66.85	71.93	73.56	104.06							
Tm	$L\alpha_2$	9	10	69	6	7.132	15.64289	4			11.22	13.82	17.87	25.83	66.87	71.94	73.58	104.08							
Tb	Ll	7	2	65	6	5.546	15.64640	4			11.22	13.83	17.88	25.83	66.88	71.96	73.60	104.12							
Pm	$L\beta_{2,15}$	8	20	61	6	6.338	15.64719	4			11.22	13.83	17.88	25.83	66.89	71.96	73.60	104.12							
Fe	$L\beta_{3,4}$	1	.5	26	6	0.792	15.65000	2			11.23	13.83	17.88	25.84	66.90	71.98	73.62	104.15							
Rh	Ll	3		3	45	6	2.376	15.65070	4		11.23	13.83	17.88	25.84	66.90	71.98	73.62	104.16							
Co	$L\beta_1$	1	18	27	6	0.791	15.66600	3			11.24	13.84	17.90	25.86	66.98	72.06	73.70	104.30							
Ho	$L\beta_{2,15}$	10	20	67	6	7.910	15.67100	4			11.24	13.85	17.91	25.87	67.00	72.09	73.73	104.35							
Sr	Ll	2		3	38	6	1.582	15.67240	4		11.24	13.85	17.91	25.88	67.01	72.10	73.74	104.36							
Ba	Ll	5		2	56	6	3.953	15.67750	4		11.25	13.85	17.91	25.88	67.03	72.13	73.77	104.41							
Lu	$M\alpha$	2	100	71	6	1.581	15.68000	3			11.25	13.86	17.92	25.89	67.05	72.14	73.78	104.43							
Cd	$L\gamma_2$	5		5	48	6	3.951	15.68850	4		11.25	13.86	17.93	25.90	67.09	72.18	73.83	104.51							
Pr	$L\gamma_1$	8		5	59	6	6.321	15.68880	4		11.25	13.86	17.93	25.90	67.09	72.19	73.83	104.51							
Ba	$L\gamma_1$	7		5	56	6	5.530	15.69050	4		11.26	13.86	17.93	25.91	67.10	72.19	73.84	104.53							
Hf	$L\alpha_1$	10	100	72	6	7.898	15.69579	5			11.26	13.87	17.93	25.91	67.12	72.22	73.87	104.58							
U	$M\alpha_2$	4	100	92	6	3.159	15.69600	3			11.26	13.87	17.93	25.92	67.12	72.22	73.87	104.58							
Sm	$L\beta_3$	8		6	62	6	6.317	15.69928	5		11.26	13.87	17.94	25.92	67.14	72.24	73.89	104.61							
Gd	$L\beta_{2,15}$	9	20	64	6	7.102	15.70950	4			11.27	13.88	17.95	25.94	67.19	72.30	73.94	104.71							
Nb	$L\beta_{2,15}$	3		1	41	6	2.367	15.71370	4		11.27	13.89	17.95	25.94	67.21	72.32	73.97	104.75							
Ba	M_4-O_3	1		10	56	6	0.789	15.72000	2		11.28	13.89	17.96	25.96	67.24	72.35	74.00	104.81							
Tb	$L\beta_3$	9		6	65	6	7.095	15.72479	4		11.28	13.90	17.97	25.96	67.26	72.38	74.03	104.85							
Ho	$M\gamma$	2		1	67	6	1.576	15.73000	3		11.28	13.90	17.97	25.97	67.29	72.41	74.05	104.90							
Th	$M\zeta_1$	3		1	90	6	2.363	15.73500	3		11.29	13.90	17.98	25.98	67.31	72.43	74.08	104.95							
Ag	$L\beta_1$	4	42	47	6	3.150	15.73892	5			11.29	13.91	17.98	25.99	67.33	72.45	74.10	104.99							
I	$L\alpha_1$	5	100	53	6	3.937	15.74300	5			11.29	13.91	17.99	25.99	67.35	72.47	74.13	105.03							
Tl	$M\beta$	3	55	81	6	2.362	15.74700	3			11.30	13.91	17.99	26.00	67.37	72.50	74.15	105.07							
Sb	$L\beta_3$	5		6	51	6	3.932	15.76290	5		11.31	13.93	18.01	26.03	67.45	72.58	74.24	105.22							
Th	$M\beta$	4	60	90	6	3.145	15.76400	3			11.31	13.93	18.01	26.03	67.45	72.59	74.24	105.23							
Cs	$L\beta_3$	6		6	55	6	4.716	15.77100	4		11.31	13.94	18.02	26.04	67.49	72.62	74.28	105.29							
Hf	M_3-N_1	2		.5	72	6	1.572	15.77400	3		11.32	13.94	18.02	26.05	67.50	72.64	74.30	105.32							
Rh	$L\gamma_1$	4		10	45	6	3.143	15.77480	4		11.32	13.94	18.03	26.05	67.51	72.64	74.30	105.33							
Pr	$L\beta_4$	7		5	59	6	5.497	15.78499	4		11.32	13.95	18.04	26.06	67.55	72.70	74.36	105.43							
I	$L\alpha_2$	5	10	53	6	3.925	15.78955	5			11.33	13.95	18.04	26.07	67.58	72.72	74.38	105.47							
Hf	$L\alpha_2$	10	10	72	6	7.843	15.80460	5			11.34	13.97	18.06	26.10	67.65	72.80	74.47	105.61							
Fe	$K\beta_{1,3}$	9	20	26	6	7.057	15.80949	5	4		11.34	13.97	18.07	26.11	67.67	72.83	74.49	105.66							
In	$L\gamma_1$	5		8	49	6	3.920	15.81065	5		11.34	13.97	18.07	26.11	67.68	72.84	74.50	105.67							
Pr	$L\beta_1$	7	50	59	6	5.488	15.81160	4			11.34	13.97	18.07	26.11	67.68	72.84	74.50	105.68							
Tb	$L\alpha_1$	8	100	65	6	6.272	15.81200	4			11.34	13.97	18.07	26.11	67.69	72.84	74.51	105.68							
Yb	$M\beta$	2	45	70	6	1.567	15.81800	3			11.35	13.98	18.07	26.12	67.71	72.88	74.54	105.74							
Cd	$L\alpha_1$	4	100	48	6	3.133	15.82540	5			11.35	13.98	18.08	26.13	67.75	72.91	74.58	105.81							
Y	$L\gamma_{2,3}$	3	.5	39	6	2.346	15.84900	4			11.37	14.01	18.11	26.17	67.87	73.04	74.71	106.04							
Os	Ll	10		3	76	6	7.821	15.84979	5		11.37	14.01	18.11	26.17	67.87	73.05	74.71	106.05							
Pb	$M\alpha_1$	3	100	82	6	2.345	15.85800	3			11.38	14.01	18.12	26.19	67.91	73.09	74.76	106.13							
Cd	$L\alpha_2$	4	10	48	6	3.126	15.85984	5			11.38	14.01	18.12	26.19	67.92	73.10	74.77	106.14							
Pb	M_2-N_4	4		5	82	6	3.124	15.87200	3		11.39	14.03	18.14	26.21	67.98	73.16	74.84	106.26							
Er	$L\beta_1$	10	50	68	6	7.809	15.87299	4			11.39	14.03	18.14	26.21	67.98	73.17	74.84	106.27							
Sn	$L\beta_{2,15}$	5	17	50	6	3.904	15.87525	5			11.39	14.03	18.14	26.22	67.99	73.18	74.86	106.29							
Ba	AM_5	1			56	6	0.780	15.89000	2		11.40	14.04	18.16	26.24	68.07	73.26	74.94	106.43							
Pb	$M\alpha_2$	3	100	82	6	2.339	15.89700	3			11.40	14.05	18.17	26.25	68.10	73.30	74.98	106.50							
Tb	$L\alpha_2$	8	10	65	6	6.237	15.89999	4			11.41	14.05	18.17	26.26	68.11	73.31	74.99	106.53							
Ba	M_4-O_2	1	10	56	6	0.779	15.91000	2			11.41	14.06	18.18	26.27	68.16	73.37	75.05	106.63							
Co	AL_3	1			27	6	0.779	15.91500	3		11.42	14.06	18.19	26.28	68.19	73.39	75.07	106.68							
Al	K8	2	.7	13	6	1.557	15.92000	3	2		11.42	14.07	18.19	26.29	68.21	73.42	75.10	106.72							
Gd	$L\gamma_1$	10		5	64	6	7.784	15.92400	4		11.42	14.07	18.20	26.30	68.23	73.44	75.12	106.76							
Te	$M\gamma$	1	100	52	6	0.778	15.93000	2			11.43	14.08	18.20	26.31	68.26	73.48	75.16	106.82							
Nb	$L\beta_3$	3		3	41	6	2.334	15.93060	4		11.43	14.08	18.20	26.31	68.26	73.48	75.16	106.83							
In	Ln	4		7	49	6	3.112	15.93308	5		11.43	14.08	18.21	26.31	68.28	73.49	75.18	106.85							
Sb	$L\beta_4$	5		4	51	6	3.886	15.95070	5		11.44	14.10	18.23	26.34	68.36	73.59	75.27	107.02							
Pt	$M\gamma$	3		3	78	6	2.331	15.95700	3		11.45	14.10	18.24	26.35	68.39	73.62	75.31	107.08							
Al	$K\beta_1$	2	.7	13	1	1.553	15.96380	3	2		11.45	14.11	18.24	26.37	68.43	73.66	75.35	107.15							
Co	$L\alpha_{1,2}$	1	100	27	6	0.776	15.97200	3			11.46	14.11	18.25	26.38	68.47	73.70	75.39	107.23							
Pm	$L\alpha_1$	7	100	61	6	5.432	15.97540	4			11.46	14.12	18.26	26.38	68.48	73.72	75.41	107.26							
Sb	M_2-N_4	1	50	51	6	0.776	15.98000	2			11.46	14.12	18.26	26.39	68.50	73.74	75.44	107.31							
Sm	$L\beta_1$	8	50	62	6	6.204	15.98447	5			11.47	14.13	18.27	26.40	68.53	73.77	75.46	107.35							
V	$K\beta_{1,3}$	7	20	23	6	5.426	15.99080	5	4		11.47	14.13	18.27	26.41	68.56	73.80	75.49	107.41							

El	Line	C	N	I	Z	R	Kev	Lambda 10^{-}	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Tb	$L\beta_1$		9	50	65	6	6.977	15.99119	4		11.47	14.13	18.27	26.41	68.56	73.80	75.50	107.42							
La	$L\alpha_1$		6	100	57	6	4.650	15.99420	5		11.47	14.13	18.28	26.42	68.57	73.82	75.51	107.44							
Cs	$L\beta_4$		6	5	55	6	4.649	15.99960	4		11.48	14.14	18.28	26.43	68.60	73.85	75.54	107.50							
S	$SK\alpha_4$		3	45	16	1	2.324	16.00246	3	3	11.48	14.14	18.29	26.43	68.61	73.87	75.56	107.53							
Er	$L\beta_4$		10	5	68	6	7.744	16.00699	4		11.48	14.15	18.29	26.44	68.64	73.89	75.58	107.57							
Sm	$L\beta_4$		8	5	62	6	6.195	16.00760	5		11.48	14.15	18.29	26.44	68.64	73.89	75.59	107.58							
Th	$M\zeta_2$		3	.1	90	6	2.321	16.01999	3		11.49	14.16	18.31	26.46	68.70	73.96	75.66	107.70							
S	$SK\alpha_3$		3	45	16	1	2.321	16.02229	3	3	11.49	14.16	18.31	26.46	68.71	73.97	75.67	107.72							
Cr	$K\alpha_1$		7	100	24	6	5.414	16.02789	5	4	11.50	14.16	18.32	26.47	68.74	74.00	75.70	107.77							
Hf	Ll		9	3	72	6	6.958	16.03304	5		11.50	14.17	18.32	26.48	68.76	74.03	75.73	107.82							
Nb	$L\beta_4$		3	3	41	6	2.319	16.03650	4		11.50	14.17	18.33	26.49	68.78	74.05	75.75	107.86							
Cr	$K\alpha_{1,2}$		7	150	24	6	5.411	16.03700	5	4	11.50	14.17	18.33	26.49	68.78	74.05	75.75	107.86							
Ir	$M\zeta_1$		2	.01	77	6	1.545	16.04199	3		11.51	14.18	18.33	26.50	68.81	74.08	75.78	107.91							
Pm	$L\alpha_2$		7	10	61	6	5.407	16.04819	4		11.51	14.18	18.34	26.51	68.84	74.11	75.81	107.97							
La	$L\alpha_2$		6	10	57	6	4.633	16.05197	5		11.52	14.19	18.34	26.51	68.86	74.13	75.83	108.01							
Cr	$K\alpha_2$		7	50	24	6	5.405	16.05524	6	4	11.52	14.19	18.35	26.52	68.87	74.15	75.85	108.04							
Nd	Ll		6	2	60	6	4.632	16.05598	4		11.52	14.19	18.35	26.52	68.88	74.15	75.86	108.05							
Er	$L\alpha_1$		9	100	68	6	6.947	16.05824	5		11.52	14.19	18.35	26.52	68.89	74.17	75.87	108.07							
S	$SK\alpha'$		3	.3	16	1	2.316	16.05986	3	3	11.52	14.19	18.35	26.53	68.89	74.17	75.88	108.09							
W	M_2-N_4		3	.1	74	6	2.314	16.07098	3		11.53	14.20	18.37	26.55	68.95	74.23	75.94	108.20							
Pt	M_3-N_4		3	1	78	6	2.314	16.07098	3		11.53	14.20	18.37	26.55	68.95	74.23	75.94	108.20							
Tb	$L\beta_4$		9	5	65	6	6.939	16.07759	4		11.53	14.21	18.37	26.56	68.98	74.27	75.98	108.26							
Rb	Ln		2	1	37	6	1.542	16.08299	4		11.54	14.21	18.38	26.57	69.01	74.30	76.01	108.32							
Nb	$L\beta_6$		3	3	41	6	2.312	16.08389	4		11.54	14.21	18.38	26.57	69.01	74.30	76.01	108.32							
Pa	$M\alpha_1$		4	100	91	6	3.082	16.08800	3		11.54	14.22	18.39	26.57	69.03	74.33	76.04	108.37							
Co	$K\alpha_1$		9	100	27	6	6.929	16.10068	6		11.55	14.23	18.40	26.60	69.09	74.39	76.11	108.49							
Cs	$L\beta_1$		6	50	55	6	4.619	16.10219	4		11.55	14.23	18.40	26.60	69.10	74.40	76.11	108.51							
Co	$K\alpha_{1,2}$		9	150	27	6	6.924	16.11232	6		11.56	14.24	18.41	26.61	69.15	74.46	76.17	108.61							
S	$K\alpha_1$		3	100	16	6	2.307	16.11647	5	3	11.56	14.24	18.42	26.62	69.17	74.48	76.19	108.65							
S	$K\alpha_{1,2}$		3	150	16	6	2.307	16.11928	5	3	11.56	14.25	18.42	26.63	69.19	74.50	76.21	108.67							
Er	Ll		8	2	68	6	6.152	16.12000	3		11.56	14.25	18.42	26.63	69.19	74.50	76.21	108.68							
La	$L\beta_{2,15}$		7	20	57	6	5.383	16.12099	4		11.57	14.25	18.42	26.63	69.19	74.50	76.22	108.69							
S	$K\alpha_2$		3	50	16	6	2.306	16.12488	5	3	11.57	14.25	18.43	26.64	69.21	74.53	76.24	108.73							
Sb	$L\beta_1$		5	75	51	6	3.843	16.12834	5		11.57	14.25	18.43	26.64	69.23	74.54	76.26	108.76							
Ir	$M\zeta_2$		2	.01	77	6	1.537	16.12999	3		11.57	14.25	18.43	26.64	69.24	74.55	76.27	108.78							
Al	$SK\beta'$		2	.1	13	1	1.537	16.13251	2	2	11.57	14.26	18.44	26.65	69.25	74.57	76.28	108.81							
Co	$K\alpha_2$		9	50	27	6	6.914	16.13564	6		11.58	14.26	18.44	26.65	69.27	74.58	76.30	108.84							
Pd	$L\beta_3$		4	11	46	6	3.072	16.13840	4		11.58	14.26	18.44	26.66	69.28	74.60	76.32	108.86							
Pa	$M\alpha_2$		4	100	91	6	3.072	16.14000	3		11.58	14.26	18.45	26.66	69.29	74.61	76.33	108.88							
Zr	$L\gamma_1$		3	1	40	6	2.302	16.15289	4		11.59	14.28	18.46	26.68	69.35	74.68	76.40	109.01							
Er	$L\alpha_2$		9	10	68	6	6.904	16.15948	4		11.59	14.28	18.47	26.69	69.38	74.71	76.43	109.07							
Sb	$L\gamma_{2,3}$		6	2	51	6	4.599	16.17178	4		11.60	14.29	18.48	26.71	69.44	74.78	76.50	109.20							
Ce	$L\beta_3$		7	6	58	6	5.364	16.17628	4		11.61	14.30	18.49	26.72	69.47	74.80	76.53	109.24							
Gd	Ll		7	2	64	6	5.361	16.18539	4		11.61	14.30	18.50	26.74	69.51	74.85	76.58	109.33							
Pm	$L\gamma_1$		9	5	61	6	6.891	16.19009	4		11.62	14.31	18.50	26.75	69.53	74.88	76.60	109.38							
Lu	$L\alpha_1$		10	100	71	6	7.654	16.19508	5		11.62	14.31	18.51	26.75	69.56	74.91	76.63	109.43							
Ta	M_1-N_3		3	.5	73	6	2.296	16.20000	2		11.62	14.32	18.52	26.76	69.58	74.93	76.66	109.48							
Ba	M_5-O_3		1	.01	56	6	0.765	16.20000	2		11.62	14.32	18.52	26.76	69.58	74.93	76.66	109.48							
Ho	$L\beta_3$		10	6	67	6	7.650	16.20299	4		11.62	14.32	18.52	26.77	69.60	74.95	76.68	109.51							
Co	$K\beta_{1,3}$		10	20	27	6	7.648	16.20789	5	4	11.63	14.32	18.52	26.78	69.62	74.97	76.70	109.56							
Mo	$L\alpha_1$		3	100	42	6	2.293	16.21964	5		11.64	14.33	18.54	26.80	69.68	75.04	76.77	109.68							
Dy	$L\beta_{2,15}$		10	20	66	6	7.634	16.23689	5		11.65	14.35	18.56	26.82	69.76	75.13	76.87	109.85							
Mo	$L\alpha_2$		3	10	42	6	2.289	16.24310	5		11.65	14.36	18.56	26.83	69.79	75.17	76.90	109.91							
Sr	$L\beta_1$		2	35	35	6	1.526	16.25020	4		11.66	14.36	18.57	26.85	69.83	75.20	76.94	109.98							
Ni	Ln		1	3	28	6	0.762	16.26999	2		11.67	14.38	18.60	26.88	69.93	75.31	77.05	110.18							
Te	$L\gamma_1$		6	8	52	6	4.570	16.27446	5		11.68	14.38	18.60	26.89	69.95	75.34	77.08	110.23							
Pd	$L\beta_4$		4	5	46	6	3.045	16.28439	4		11.68	14.39	18.61	26.90	70.00	75.39	77.13	110.33							
Sn	Ll		4	7	50	6	3.044	16.28659	5		11.68	14.39	18.62	26.91	70.01	75.40	77.15	110.35							
Nd	$L\beta_{2,15}$		8	20	60	6	6.088	16.28799	4		11.69	14.40	18.62	26.91	70.01	75.41	77.15	110.36							
Oy	$M\gamma$		2	1	66	6	1.522	16.28799	3		11.69	14.40	18.62	26.91	70.01	75.41	77.15	110.36							
Hg	$M\beta$		3	50	80	6	2.282	16.29539	4		11.69	14.40	18.63	26.92	70.05	75.45	77.19	110.44							
Yb	$M\alpha$		2	100	70	6	1.521	16.29799	3		11.69	14.40	18.63	26.93	70.06	75.46	77.21	110.46							
Lu	$L\alpha_2$		10	10	71	6	7.604	16.30289	5		11.70	14.41	18.63	26.94	70.09	75.49	77.24	110.51							
Re	Ll		10	3	75	6	7.602	16.30559	5		11.70	14.41	18.64	26.94	70.10	75.51	77.25	110.54							
Eu	$L\beta_{2,15}$		9	20	63	6	6.842	16.30618	4		11.70	14.41	18.64	26.94	70.10	75.51	77.26	110.55							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Gd	$L\beta_3$		9	6	64	6	6.830	16.33499	4		11.72	14.44	18.67	26.99	70.25	75.67	77.42	110.84							
Cs	Ll		5	2	55	6	3.794	16.33499	4		11.72	14.44	18.67	26.99	70.25	75.67	77.42	110.84							
Pm	$L\beta_3$		8	6	61	6	6.070	16.33679	4		11.72	14.44	18.67	26.99	70.26	75.68	77.43	110.86							
Gd	$L\alpha_1$		8	100	64	6	6.056	16.37439	4		11.75	14.47	18.72	27.06	70.44	75.88	77.64	111.24							
Tl	$M\alpha_1$		3	100	81	6	2.270	16.37999	3		11.75	14.48	18.72	27.07	70.47	75.91	77.67	111.30							
Ce	$L\gamma_1$		8	5	58	6	6.051	16.38959	4		11.76	14.49	18.73	27.08	70.52	75.96	77.72	111.40							
I	Ln		5	7	53	6	3.780	16.39894	5		11.77	14.49	18.74	27.10	70.56	76.01	77.78	111.49							
Al	$SK\alpha_6$		2	.4	13	1	1.510	16.41508	3	3	11.78	14.51	18.76	27.12	70.64	76.10	77.87	111.66							
Tl	$M\alpha_2$		3	100	81	6	2.265	16.41599	3		11.78	14.51	18.76	27.13	70.65	76.11	77.87	111.67							
Cs	$L\gamma_1$		7	5	55	6	5.279	16.43599	4		11.79	14.53	18.79	27.16	70.75	76.22	77.99	111.88							
Te	$L\alpha_1$		5	100	52	6	3.769	16.44600	5		11.80	14.54	18.80	27.18	70.80	76.27	78.04	111.98							
Ce	$L\beta_4$		7	5	58	6	5.276	16.44789	4		11.80	14.54	18.80	27.18	70.80	76.28	78.05	112.00							
Al	$SK\alpha_5$		2	.5	13	1	1.506	16.45717	3	3	11.81	14.55	18.81	27.20	70.85	76.33	78.11	112.09							
Nd	Mz		1	.01	60	6	0.753	16.45999	2		11.81	14.55	18.82	27.20	70.86	76.35	78.12	112.12							
Gd	$L\alpha_2$		8	10	64	6	6.024	16.46239	4		11.81	14.55	18.82	27.20	70.88	76.36	78.14	112.15							
Ho	$L\beta_1$		10	50	67	6	7.524	16.47499	4		11.82	14.56	18.83	27.23	70.94	76.43	78.21	112.28							
Nb	$L\beta_1$		3	45	41	6	2.257	16.47688	4		11.82	14.56	18.83	27.23	70.95	76.44	78.22	112.30							
Re	M_4-N_3		2	.01	75	6	1.505	16.47800	3		11.82	14.56	18.84	27.23	70.95	76.45	78.22	112.31							
Ti	$K\alpha_1$		6	100	22	6	4.510	16.49104	5	4	11.83	14.58	18.85	27.25	71.02	76.52	78.30	112.44							
Te	$L\alpha_2$		5	10	52	6	3.758	16.49229	5		11.83	14.58	18.85	27.25	71.02	76.53	78.30	112.46							
Ce	$L\beta_1$		7	50	58	6	5.261	16.49269	4		11.83	14.58	18.85	27.26	71.03	76.53	78.31	112.46							
Zr	$L\gamma_5$		3	.1	40	6	2.255	16.49309	4		11.83	14.58	18.85	27.26	71.03	76.53	78.31	112.47							
Tm	$M\beta$		2	45	69	6	1.503	16.49799	3		11.84	14.58	18.86	27.26	71.05	76.56	78.34	112.52							
Ti	$K\alpha_{1,2}$		6	150	22	6	4.508	16.49835	5	4	11.84	14.58	18.86	27.26	71.05	76.56	78.34	112.52							
Ir	$M\gamma$		3	1	77	6	2.254	16.50000	3		11.84	14.58	18.86	27.27	71.06	76.57	78.35	112.54							
I	$L\beta_{2,15}$		6	17	53	6	4.507	16.50317	5		11.84	14.59	18.86	27.27	71.08	76.58	78.37	112.57							
Ru	Ll		3	3	44	6	2.252	16.51050	4		11.85	14.59	18.87	27.29	71.12	76.62	78.41	112.65							
Ti	$K\alpha_2$		6	50	22	6	4.504	16.51295	5	4	11.85	14.60	18.88	27.29	71.13	76.64	78.42	112.67							
Rh	$L\beta_{2,15}$		4	25	45	6	3.001	16.52399	4		11.86	14.60	18.89	27.31	71.18	76.70	78.48	112.79							
Lu	Ll		9	2	71	6	6.752	16.52399	4		11.86	14.60	18.89	27.31	71.18	76.70	78.48	112.79							
Sn	$L\beta_3$		5	6	50	6	3.750	16.52924	5		11.86	14.61	18.89	27.32	71.21	76.73	78.51	112.84							
Ag	$L\gamma_3$		5	2	47	6	3.749	16.53174	5		11.86	14.61	18.90	27.32	71.22	76.74	78.53	112.87							
Al	$SK\alpha_4$		2	4	13	1	1.499	16.54134	3	3	11.87	14.62	18.91	27.34	71.27	76.79	78.58	112.97							
Th	$M\alpha_1$		4	100	90	6	2.996	16.55240	4		11.88	14.63	18.92	27.36	71.32	76.85	78.64	113.08							
Ag	$L\gamma_2$		5	3	47	6	3.743	16.56079	5		11.88	14.64	18.93	27.37	71.36	76.90	78.69	113.17							
Al	$SK\alpha_3$		2	8	13	1	1.496	16.57339	3	3	11.89	14.65	18.95	27.39	71.43	76.97	78.76	113.31							
Eu	$L\gamma_1$		10	5	63	6	7.479	16.57399	4		11.89	14.65	18.95	27.39	71.43	76.97	78.77	113.31							
Ni	$K\alpha_1$		10	100	28	6	7.477	16.57909	6		11.90	14.65	18.95	27.40	71.46	77.00	78.80	113.37							
Pd	$L\beta_1$		4	42	46	6	2.990	16.58487	5		11.90	14.66	18.96	27.41	71.48	77.03	78.83	113.43							
Ni	$K\alpha_{1,2}$		10	150	28	6	7.471	16.59187	6		11.90	14.67	18.97	27.42	71.52	77.07	78.87	113.50							
Nd	$L\alpha_1$		7	100	60	6	5.229	16.59279	4		11.91	14.67	18.97	27.42	71.52	77.08	78.87	113.51							
Ho	$L8_4$		10	5	67	6	7.470	16.59499	4		11.91	14.67	18.97	27.43	71.53	77.09	78.89	113.53							
Th	$M\alpha_2$		4	100	90	6	2.986	16.60399	3		11.91	14.68	18.98	27.44	71.58	77.14	78.94	113.63							
Ho	$L\alpha_1$		9	100	67	6	6.719	16.60498	4		11.91	14.68	18.98	27.44	71.58	77.14	78.94	113.64							
Al	$SK\alpha'$		2	2	13	1	1.493	16.60948	3	3	11.92	14.68	18.99	27.45	71.61	77.17	78.97	113.69							
Bi	M_3-N_1		3	1	83	6	2.239	16.61099	3		11.92	14.68	18.99	27.45	71.61	77.18	78.98	113.70							
Ni	$K\alpha_2$		10	50	28	6	7.460	16.61746	6		11.92	14.69	19.00	27.47	71.65	77.21	79.01	113.77							
Ag	$L\alpha_1$		4	100	47	6	2.984	16.61771	5		11.92	14.69	19.00	27.47	71.65	77.21	79.02	113.77							
Os	Mz_1		2	.01	76	6	1.492	16.62000	3		11.92	14.69	19.00	27.47	71.66	77.23	79.03	113.80							
Ir	M_3-N_4		3	.1	77	6	2.238	16.62000	3		11.92	14.69	19.00	27.47	71.66	77.23	79.03	113.80							
Gd	$L\beta_1$		9	50	64	6	6.712	16.62119	4		11.93	14.69	19.00	27.47	71.67	77.23	79.04	113.81							
Pm	$L\beta_1$		8	50	61	6	5.960	16.63759	4		11.94	14.71	19.02	27.50	71.75	77.32	79.13	113.98							
Se	$L\beta_{3,4}$	H	2	2	34	6	1.490	16.64200	3		11.94	14.71	19.03	27.51	71.77	77.35	79.15	114.03							
Ag	$L\alpha_2$		4	10	47	6	2.978	16.65175	5		11.95	14.72	19.04	27.52	71.82	77.40	79.21	114.13							
Ba	$L\alpha_1$		6	100	56	6	4.465	16.65569	5		11.95	14.72	19.04	27.53	71.84	77.42	79.23	114.17							
Nd	$L\alpha_2$		7	10	60	6	5.207	16.66489	4		11.96	14.73	19.05	27.55	71.88	77.47	79.28	114.27							
Sc	$K\beta_{1,3}$		6	20	21	6	4.460	16.67758	4	4	11.97	14.74	19.07	27.57	71.95	77.54	79.36	114.41							
Cd	$L\gamma_1$		5	10	48	6	3.716	16.67819	5		11.97	14.74	19.07	27.57	71.95	77.55	79.36	114.41							
Al	$K\alpha_1$		2	100	13	6	1.486	16.67867	5	3	11.97	14.74	19.07	27.57	71.95	77.55	79.36	114.42							
Cr	$K\beta_{1,3}$		8	18	24	6	5.946	16.67896	5	4	11.97	14.74	19.07	27.57	71.95	77.55	79.36	114.42							
Al	$K\alpha_{1,2}$		2	150	13	6	1.486	16.68027	5	3	11.97	14.74	19.07	27.57	71.96	77.56	79.37	114.44							
Al	$K\alpha_2$		2	50	13	6	1.486	16.68346	5	3	11.97	14.75	19.07	27.58	71.98	77.58	79.39	114.47							
Ca	$SK\alpha_4$		5	2	20	1	3.715	16.68411	3	4	11.97	14.75	19.07	27.58	71.98	77.58	79.39	114.48							
Gd	$L\beta_4$		9	5	64	6	6.686	16.68599	4		11.97	14.75	19.08	27.58	71.99	77.59	79.40	114.50							
Ho	Ll		8	2	67	6	5.942	16.68799	4		11.97	14.75	19.08	27.58	72.00	77.60	79.42	114.52							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
In	$L\beta_{2,15}$	5	17	49	6		3.713	16.69189	5		11.98	14.75	19.08	27.59	72.02	77.62	79.44	114.56							
Ni	Ll	1	8	28	6		0.743	16.69299	3		11.98	14.76	19.08	27.59	72.02	77.63	79.44	114.57							
Cr	AL_1	1		24	6		0.742	16.70000	1		11.98	14.76	19.09	27.60	72.06	77.67	79.48	114.65							
Ca	$SK\alpha_3$	5	2	20	1		3.711	16.70065	3	4	11.98	14.76	19.09	27.61	72.06	77.67	79.49	114.65							
Pr	Ll	6	2	59	6		4.452	16.70459	4		11.99	14.77	19.10	27.61	72.08	77.69	79.51	114.70							
Ho	$L\alpha_2$	9	10	67	6		6.679	16.70488	4		11.99	14.77	19.10	27.61	72.08	77.69	79.51	114.70							
Ta	M_2-N_4	3	.2	73	6		2.225	16.70999	3		11.99	14.77	19.10	27.62	72.11	77.72	79.54	114.75							
Ba	$L\alpha_2$	6	10	56	6		4.450	16.71317	5		11.99	14.77	19.11	27.63	72.12	77.74	79.56	114.79							
Sm	$L\beta_4$	5	4	50	6		3.708	16.71674	5		11.99	14.78	19.11	27.63	72.14	77.76	79.58	114.83							
Os	Mz_2	2	.01	76	6		1.483	16.71799	3		12.00	14.78	19.11	27.63	72.15	77.77	79.59	114.84							
Yb	$L\alpha_1$	10	100	70	6		7.414	16.71889	5		12.00	14.78	19.11	27.64	72.15	77.77	79.59	114.85							
Rb	Ll	2	3	37	6		1.482	16.72719	4		12.00	14.79	19.12	27.65	72.19	77.82	79.64	114.94							
Br	$L\alpha_{1,2}$	2	100	35	6		1.480	16.74919	4		12.02	14.81	19.15	27.69	72.30	77.94	79.77	115.18							
Zr	$L\beta_{2,15}$	3	1	40	6		2.219	16.75890	4		12.02	14.81	19.16	27.70	72.35	77.99	79.82	115.28							
Eu	Ll	7	2	63	6		5.176	16.76358	4		12.03	14.82	19.17	27.71	72.38	78.02	79.85	115.33							
Ar	$K\alpha_1$	4	100	18	6		2.957	16.76720	5		12.03	14.82	19.17	27.72	72.39	78.04	79.87	115.37							
Ar	$K\alpha_{1,2}$	4	150	18	6		2.957	16.77112	5		12.03	14.82	19.17	27.72	72.41	78.06	79.89	115.41							
Ar	$K\alpha_2$	4	50	18	6		2.955	16.77895	5		12.04	14.83	19.18	27.74	72.45	78.10	79.94	115.50							
W	Ll	10	3	74	6		7.386	16.78200	4		12.04	14.83	19.19	27.74	72.47	78.12	79.95	115.53							
Ca	$K\alpha_1$	5	100	20	6		3.691	16.79195	5	4	12.05	14.84	19.20	27.76	72.52	78.18	80.01	115.64							
Ca	$K\alpha_{1,2}$	5	150	20	6		3.690	16.79739	5	4	12.05	14.85	19.20	27.77	72.54	78.21	80.04	115.70							
Ca	$K\alpha_2$	5	50	20	6		3.687	16.80829	5	4	12.06	14.86	19.22	27.79	72.60	78.27	80.10	115.82							
Mn	$K\alpha_1$	8	100	25	6		5.898	16.81456	6	4	12.06	14.86	19.22	27.80	72.63	78.30	80.14	115.88							
Dy	$L\beta_3$	10	6	66	6		7.369	16.82199	4		12.07	14.87	19.23	27.81	72.67	78.34	80.18	115.96							
Mn	$K\alpha_{1,2}$	8	150	25	6		5.894	16.82512	5	4	12.07	14.87	19.24	27.82	72.68	78.36	80.20	116.00							
Yb	$L\alpha_2$	10	10	70	6		7.366	16.82849	5		12.07	14.88	19.24	27.82	72.70	78.38	80.22	116.04							
Tb	$L\beta_{2,15}$	10	20	65	6		7.365	16.82999	4		12.08	14.88	19.24	27.82	72.71	78.39	80.23	116.05							
Ba	$L\beta_{2,15}$	7	20	56	6		5.156	16.83044	5		12.08	14.88	19.24	27.82	72.71	78.39	80.23	116.06							
Mn	$K\alpha_2$	8	50	25	6		5.887	16.84624	5	4	12.09	14.89	19.26	27.85	72.79	78.48	80.32	116.23							
Au	$M\beta$	3	50	79	6		2.204	16.87199	3		12.11	14.91	19.29	27.89	72.92	78.62	80.47	116.51							
La	$L\beta_3$	7	6	57	6		5.143	16.87349	4		12.11	14.92	19.29	27.90	72.93	78.63	80.48	116.53							
W	M_3-O_1	3	.01	74	6		2.203	16.88399	3		12.11	14.92	19.30	27.91	72.98	78.69	80.54	116.64							
Zr	$L\beta_3$	3	3	40	6		2.201	16.89899	4		12.13	14.94	19.32	27.94	73.05	78.77	80.62	116.81							
Nd	$L\gamma_1$	9	5	60	6		6.601	16.90109	4		12.13	14.94	19.32	27.94	73.06	78.78	80.64	116.83							
U	M_2-N_4	6	5	92	6		4.400	16.90199	3		12.13	14.94	19.33	27.95	73.07	78.79	80.64	116.84							
Sb	$M\gamma$	1	100	51	6		0.733	16.92000	2		12.14	14.96	19.35	27.98	73.16	78.89	80.75	117.04							
Sn	$L\beta_1$	5	75	50	6		3.662	16.92435	5		12.14	14.96	19.35	27.98	73.18	78.91	80.77	117.09							
Sn	M_2-N_4	1	50	50	6		0.732	16.92999	2		12.15	14.97	19.36	27.99	73.21	78.94	80.80	117.15							
Sr	$L\gamma_{2,3}$	3	.1	38	6		2.196	16.93349	4		12.15	14.97	19.36	28.00	73.23	78.96	80.82	117.19							
Sm	$L\beta_{2,15}$	9	20	62	6		6.586	16.93988	5		12.16	14.97	19.37	28.01	73.26	79.00	80.86	117.26							
Yb	M_3-N_1	2	.5	70	6		1.464	16.93999	3		12.16	14.97	19.37	28.01	73.26	79.00	80.86	117.26							
Hg	$M\alpha$	3	100	80	6		2.195	16.94279	4		12.16	14.98	19.37	28.01	73.27	79.02	80.88	117.29							
Pr	$L\beta_{2,15}$	8	20	59	6		5.849	16.95518	4		12.17	14.99	19.39	28.03	73.34	79.08	80.95	117.43							
Tm	$M\alpha$	2	100	69	6		1.462	16.95999	2		12.17	14.99	19.39	28.04	73.36	79.11	80.98	117.48							
Rh	$L\beta_6$	4	3	45	6		2.922	16.96680	4		12.17	15.00	19.40	28.05	73.40	79.15	81.01	117.56							
Eu	$L\alpha_1$	8	100	63	6		5.845	16.96719	4		12.17	15.00	19.40	28.06	73.40	79.15	81.02	117.56							
Tb	$M\gamma$	2	1	65	6		1.461	16.97198	3		12.18	15.00	19.41	28.06	73.42	79.18	81.04	117.62							
Eu	$L\beta_3$	9	6	63	6		6.570	16.98029	4		12.18	15.01	19.42	28.08	73.46	79.22	81.09	117.71							
Sn	$L\gamma_{2,3}$	6	2	50	6		4.376	16.99619	4		12.20	15.02	19.43	28.10	73.54	79.31	81.18	117.89							
Zr	$L\beta_4$	3	3	40	6		2.187	17.00429	4		12.20	15.03	19.44	28.12	73.58	79.36	81.23	117.98							
Rh	$L\beta_3$	4	11	45	6		2.915	17.00879	4		12.20	15.04	19.45	28.13	73.61	79.38	81.26	118.03							
Ta	M_3-$O_{4,5}$	3	.01	73	6		2.186	17.00999	2		12.21	15.04	19.45	28.13	73.61	79.39	81.26	118.04							
Nd	$L\beta_3$	8	6	60	6		5.828	17.01439	4		12.21	15.04	19.45	28.13	73.63	79.42	81.29	118.09							
Os	$M\gamma$	3	1	76	6		2.182	17.04599	3		12.23	15.07	19.49	28.19	73.79	79.59	81.47	118.45							
Yb	Ll	9	2	70	6		6.544	17.04735	5		12.23	15.07	19.49	28.19	73.80	79.60	81.48	118.46							
Eu	$L\alpha_2$	8	10	63	6		5.816	17.05199	4		12.24	15.07	19.50	28.20	73.82	79.63	81.51	118.52							
In	Ll	4	7	49	6		2.904	17.07491	5		12.25	15.09	19.52	28.24	73.94	79.75	81.64	118.77							
Dy	$L\beta_1$	10	50	66	6		7.246	17.10619	5		12.27	15.12	19.56	28.29	74.10	79.93	81.82	119.13							
Sb	$L\gamma_1$	6	8	51	6		4.347	17.10953	5		12.28	15.13	19.56	28.30	74.12	79.95	81.84	119.17							
Pb	M_3-N_1	3	1	82	6		2.173	17.11198	3		12.28	15.13	19.57	28.30	74.13	79.96	81.86	119.20							
Zr	$L\beta_6$	3	3	40	6		2.171	17.13029	4		12.29	15.14	19.59	28.33	74.22	80.07	81.96	119.41							
I	$L\gamma_{2,3}$	7	2	53	6		5.065	17.13249	4		12.29	15.15	19.59	28.33	74.23	80.08	81.97	119.43							
La	$L\gamma_1$	8	5	57	6		5.788	17.13440	4		12.30	15.15	19.59	28.34	74.24	80.09	81.99	119.45							
La	$L\beta_4$	7	5	57	6		5.061	17.14510	4		12.30	15.16	19.61	28.36	74.30	80.15	82.05	119.58							
W	M_4-N_3	2	.01	74	6		1.446	17.14600	3		12.30	15.16	19.61	28.36	74.30	80.15	82.05	119.59							

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Rh	$L\beta_4$		4	5	45	6	2.890	17.15520	4		12.31	15.17	19.62	28.37	74.35	80.21	82.11	119.69							
Os	M_3-N_4		3	.1	76	6	2.166	17.17200	3		12.32	15.18	19.64	28.40	74.43	80.30	82.20	119.89							
Nb	$L\alpha_1$		3	100	41	6	2.166	17.17290	4		12.32	15.18	19.64	28.40	74.44	80.30	82.21	119.90							
Dy	$L\alpha_1$		9	100	66	6	6.494	17.17928	5		12.33	15.19	19.65	28.41	74.47	80.34	82.25	119.97							
Er	$M\beta$		2	45	68	6	1.443	17.18399	3		12.33	15.19	19.65	28.42	74.49	80.37	82.27	120.02							
Mn	$L\beta_{3,4}$		1	.1	25	6	0.721	17.18999	2		12.34	15.20	19.66	28.43	74.52	80.40	82.31	120.09							
Te	Ln		5	7	52	6	3.605	17.19159	5		12.34	15.20	19.66	28.43	74.53	80.41	82.32	120.11							
Mn	$K\beta_{1,3}$		9	20	25	6	6.489	17.19188	5	4	12.34	15.20	19.66	28.43	74.53	80.41	82.32	120.11							
Nb	$L\alpha_2$		3	10	41	6	2.163	17.19569	4		12.34	15.20	19.66	28.44	74.55	80.43	82.34	120.16							
Sb	$L\alpha_1$		5	100	51	6	3.604	17.19704	5		12.34	15.20	19.67	28.44	74.56	80.44	82.35	120.17							
U	N_1-$P_{4,5}$		2		92	6	1.441	17.20000	2		12.34	15.21	19.67	28.45	74.57	80.46	82.37	120.21							
Fe	AL_2		1		26	6	0.721	17.20200	3		12.34	15.21	19.67	28.45	74.58	80.47	82.38	120.23							
Dy	$L\beta_4$		10	5	66	6	7.203	17.21028	5		12.35	15.22	19.68	28.47	74.63	80.52	82.43	120.33							
La	$L\beta_1$		7	50	57	6	5.041	17.21236	5		12.35	15.22	19.68	28.47	74.64	80.53	82.44	120.35							
Pr	$L\alpha_1$		7	100	59	6	5.033	17.24098	4		12.37	15.24	19.72	28.52	74.78	80.69	82.61	120.69							
Sb	$L\alpha_2$		5	10	51	6	3.595	17.24199	5		12.37	15.24	19.72	28.52	74.79	80.69	82.61	120.70							
I	$L\beta_3$		6	6	53	6	4.313	17.24573	5		12.38	15.25	19.72	28.53	74.81	80.72	82.63	120.74							
Re	$M\zeta_1$		2	.01	75	6	1.437	17.25800	3		12.38	15.26	19.74	28.55	74.87	80.78	82.71	120.88							
Fe	$L\beta_1$		1	20	26	6	0.718	17.25999	2		12.39	15.26	19.74	28.55	74.88	80.80	82.72	120.91							
Tm	$L\alpha_1$		H10	100	69	6	7.179	17.26799	4		12.39	15.27	19.75	28.56	74.92	80.84	82.76	121.00							
K	$K\beta_{1,3}$		5	15	19	6	3.589	17.26949	4	4	12.39	15.27	19.75	28.57	74.93	80.85	82.77	121.02							
Dy	Ll		8	2	66	6	5.742	17.27016	5		12.39	15.27	19.75	28.57	74.93	80.85	82.78	121.03							
Sm	$L\gamma_1$		10	5	62	6	7.177	17.27238	5		12.39	15.27	19.75	28.57	74.94	80.87	82.79	121.05							
Dy	$L\alpha_2$		9	10	66	6	6.457	17.27917	5		12.40	15.28	19.76	28.58	74.98	80.90	82.83	121.13							
Eu	$L\beta_1$		9	50	63	6	6.455	17.28268	4		12.40	15.28	19.76	28.59	74.99	80.92	82.85	121.17							
Ta	Ll		10	3	73	6	7.172	17.28409	5		12.40	15.28	19.77	28.59	75.00	80.93	82.86	121.19							
Te	$L\beta_{2,15}$		6	17	52	6	4.301	17.29301	5		12.41	15.29	19.78	28.61	75.05	80.98	82.91	121.30							
Au	M_5-O_3		3	.01	79	6	2.149	17.30099	3		12.42	15.30	19.79	28.62	75.09	81.03	82.96	121.39							
Pr	$L\alpha_2$		7	10	59	6	5.013	17.31029	4		12.42	15.30	19.80	28.63	75.13	81.08	83.01	121.50							
Re	$M\zeta_2$		2	.01	75	6	1.431	17.32799	3		12.43	15.32	19.82	28.66	75.22	81.18	83.12	121.71							
Eu	$L\beta_4$		9	5	63	6	6.438	17.32950	4		12.44	15.32	19.82	28.67	75.23	81.19	83.12	121.73							
Nd	$L\beta_4$		8	5	60	6	5.721	17.33519	4		12.44	15.33	19.83	28.68	75.26	81.22	83.16	121.79							
Nd	$L\beta_1$		8	50	60	6	5.721	17.33519	4		12.44	15.33	19.83	28.68	75.26	81.22	83.16	121.79							
In	$L\beta_3$		5	6	49	6	3.572	17.34918	5		12.45	15.34	19.84	28.70	75.33	81.30	83.24	121.96							
Ce	Ll		6	2	58	6	4.287	17.35019	4		12.45	15.34	19.84	28.70	75.34	81.31	83.25	121.97							
Cs	$L\alpha_1$		6	100	55	6	4.286	17.35439	4		12.45	15.34	19.85	28.71	75.36	81.33	83.27	122.02							
Sm	Ll		7	2	62	6	4.994	17.37610	4		12.47	15.36	19.87	28.75	75.47	81.45	83.40	122.28							
Pr	Mz		1	.01	59	6	0.713	17.37999	2		12.47	15.37	19.88	28.75	75.49	81.48	83.42	122.33							
Tm	$L\alpha_2$		10	10	69	6	7.132	17.38098	4		12.47	15.37	19.88	28.75	75.49	81.48	83.43	122.34							
P	$K\beta$		3	3	15	6	2.139	17.38799	3	3	12.48	15.37	19.89	28.77	75.53	81.52	83.47	122.42							
O	$M\gamma$		5	5	92	6	3.563	17.39499	3		12.48	15.38	19.89	28.78	75.57	81.56	83.51	122.51							
P	$K\beta_1$		3	3	15	0	2.136	17.41139	3	3	12.49	15.39	19.91	28.81	75.65	81.65	83.61	122.71							
Cs	$L\alpha_2$		6	10	55	6	4.272	17.41199	4		12.50	15.39	19.91	28.81	75.65	81.66	83.61	122.71							
Fe	$K\alpha_1$		9	100	26	6	6.403	17.42436	6		12.50	15.41	19.93	28.83	75.72	81.73	83.68	122.86							
Os	M_2-N_1		3	.01	76	6	2.134	17.42999	2		12.51	15.41	19.93	28.84	75.74	81.76	83.71	122.93							
Fe	$K\alpha_{1,2}$		9	150	26	6	6.398	17.43617	6		12.51	15.42	19.94	28.85	75.78	81.80	83.75	123.01							
Pd	$L\gamma_{2,3}$		5	5	46	6	3.553	17.44598	4		12.52	15.42	19.95	28.86	75.83	81.85	83.81	123.12							
Gd	$L\beta_{2,15}$		10	20	64	6	7.102	17.45499	4		12.53	15.43	19.96	28.88	75.87	81.90	83.86	123.23							
Fe	$K\alpha_2$		9	50	26	6	6.390	17.45981	6		12.53	15.44	19.97	28.89	75.90	81.93	83.89	123.29							
Pa	M_2-N_4		6	5	91	6	4.260	17.45999	3		12.53	15.44	19.97	28.89	75.90	81.93	83.89	123.29							
Pd	$L\alpha_1$		4	100	46	6	2.838	17.47067	5		12.54	15.45	19.98	28.91	75.95	81.99	83.95	123.42							
Se	$L\beta_1$		2	35	34	6	1.419	17.47159	4		12.54	15.45	19.98	28.91	75.96	82.00	83.96	123.44							
Tb	$L\beta_3$		10	6	65	6	7.095	17.47198	4		12.54	15.45	19.98	28.91	75.96	82.00	83.96	123.44							
I	$L\beta_4$		6	4	53	6	4.257	17.47241	5		12.54	15.45	19.98	28.91	75.96	82.00	83.96	123.45							
Pt	$M\beta$		3	50	78	6	2.127	17.48399	3		12.55	15.46	20.00	28.93	76.02	82.07	84.03	123.59							
Ta	M_3-O_1		3	.01	73	6	2.126	17.48999	2		12.55	15.46	20.00	28.94	76.05	82.10	84.07	123.66							
Rh	$L\beta_1$		4	42	45	6	2.834	17.49655	5		12.56	15.47	20.01	28.95	76.09	82.14	84.11	123.74							
Pd	$L\alpha_2$		4	10	46	6	2.833	17.50351	5		12.56	15.48	20.02	28.96	76.12	82.18	84.15	123.83							
Zr	$L\beta_1$		3	45	40	6	2.124	17.50800	4		12.56	15.48	20.02	28.97	76.14	82.20	84.18	123.88							
P	$SK\beta'$		3	.1	15	0	2.123	17.51300	2	2	12.57	15.48	20.03	28.98	76.17	82.23	84.20	123.94							
Au	$M\alpha_1$		3	100	79	6	2.123	17.51999	3		12.57	15.49	20.04	28.99	76.21	82.27	84.25	124.03							
U	N_1-P_3		2		92	6	1.415	17.51999	2		12.57	15.49	20.04	28.99	76.21	82.27	84.25	124.03							
V	$K\alpha_1$		7	100	23	6	4.951	17.52490	5	4	12.58	15.49	20.04	29.00	76.23	82.30	84.28	124.09							
Fe	AL_3		1		26	6	0.707	17.52499	3		12.58	15.49	20.04	29.00	76.23	82.30	84.28	124.09							
V	$K\alpha_{1,2}$		7	150	23	6	4.949	17.53381	5	4	12.58	15.50	20.05	29.01	76.28	82.35	84.33	124.20							

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
In	$L\beta_4$	5		4	49	6	3.535	17.53484	5		12.58	15.50	20.06	29.01	76.28	82.36	84.33	124.21							
Mo	Ln	3		1	42	6	2.120	17.54250	4		12.59	15.51	20.06	29.03	76.32	82.40	84.38	124.31							
V	$K\alpha_2$	7		50	23	6	4.944	17.55165	5	4	12.60	15.52	20.08	29.04	76.37	82.45	84.43	124.42							
Au	$M\alpha_2$	3		100	79	6	2.118	17.56200	3		12.60	15.53	20.09	29.06	76.42	82.51	84.49	124.55							
Fe	$K\beta_{1,3}$	10		20	26	6	7.057	17.56609	5	4	12.61	15.53	20.09	29.07	76.44	82.54	84.52	124.60							
Cd	$L\beta_{2,15}$	5		25	48	6	3.528	17.57039	5		12.61	15.54	20.10	29.07	76.46	82.56	84.54	124.65							
Cs	$L\beta_{2,15}$	7		20	55	6	4.935	17.58260	4		12.62	15.55	20.11	29.09	76.53	82.63	84.62	124.80							
Fe	$L\alpha_{1,2}$	1		100	26	6	0.705	17.59000	2		12.62	15.55	20.12	29.11	76.57	82.67	84.66	124.90							
Tm	Ll	9		2	69	6	6.341	17.59499	4		12.63	15.56	20.13	29.12	76.59	82.70	84.69	124.96							
Ti	$K\beta_{1,3}$	7		20	22	6	4.931	17.59735	5	4	12.63	15.56	20.13	29.12	76.60	82.72	84.70	124.99							
Sm	$L\alpha_1$	8		100	62	6	5.635	17.59839	5		12.63	15.56	20.13	29.12	76.61	82.72	84.71	125.00							
Te	M_2-N_1	1		1	52	6	0.704	17.59999	1		12.63	15.56	20.13	29.12	76.62	82.73	84.72	125.02							
Pm	$L\beta_{2,15}$	9		20	61	6	6.338	17.60309	4		12.63	15.56	20.13	29.13	76.63	82.75	84.74	125.06							
U	M_3-N_4	5		5	92	6	3.521	17.60500	3		12.63	15.57	20.14	29.13	76.64	82.76	84.75	125.08							
Ag	$L\gamma_1$	5		10	47	6	3.519	17.61299	5		12.64	15.57	20.15	29.15	76.68	82.81	84.80	125.18							
Cl	$K\beta$	4		8	17	6	2.815	17.61359	4	3	12.64	15.57	20.15	29.15	76.69	82.81	84.80	125.19							
Ba	$L\beta_3$	7		6	56	6	4.926	17.61479	4		12.64	15.57	20.15	29.15	76.69	82.82	84.81	125.21							
U	N_1-P_2	2			92	6	1.407	17.62000	2		12.65	15.58	20.15	29.16	76.72	82.85	84.84	125.27							
I	$L\beta_1$	6		75	53	6	4.220	17.62463	5		12.65	15.58	20.16	29.17	76.74	82.87	84.87	125.33							
Y	$L\gamma_5$	3		.1	39	6	2.110	17.62619	4		12.65	15.59	20.16	29.17	76.75	82.88	84.88	125.35							
Er	$M\alpha$	2		100	68	6	1.405	17.64000	2		12.66	15.60	20.18	29.19	76.82	82.96	84.96	125.52							
Pr	$L\gamma_1$	9		5	59	6	6.321	17.64989	4		12.67	15.61	20.19	29.21	76.87	83.02	85.02	125.65							
Tl	M_3-N_1	3		1	81	6	2.107	17.65199	3		12.67	15.61	20.19	29.21	76.88	83.03	85.03	125.68							
Re	$M\gamma$	3		1	75	6	2.106	17.65498	3		12.67	15.61	20.19	29.22	76.90	83.05	85.05	125.71							
Sm	$L\beta_3$	9		6	62	6	6.317	17.66168	5		12.68	15.62	20.20	29.23	76.93	83.09	85.09	125.80							
Ce	$L\beta_{2,15}$	8		20	58	6	5.612	17.66959	4		12.68	15.62	20.21	29.24	76.98	83.13	85.13	125.90							
Sm	$L\alpha_2$	8		10	62	6	5.607	17.68495	5		12.69	15.64	20.23	29.27	77.05	83.22	85.23	126.09							
Gd	$M\gamma$	2		1	64	6	1.402	17.68799	3		12.69	15.64	20.23	29.27	77.07	83.24	85.24	126.13							
Pr	$L\beta_3$	8		6	59	6	5.591	17.73759	4		12.73	15.68	20.29	29.36	77.33	83.52	85.54	126.77							
Tb	$L\beta_1$	10		50	65	6	6.977	17.76799	4		12.75	15.71	20.33	29.41	77.48	83.70	85.72	127.16							
In	$L\beta_1$	5		75	49	6	3.487	17.77654	5		12.76	15.72	20.34	29.42	77.53	83.75	85.77	127.27							
I	Ll	5		7	53	6	3.484	17.78769	5		12.77	15.73	20.35	29.44	77.59	83.81	85.84	127.42							
Tb	$L\alpha_1$	9		100	65	6	6.272	17.78848	4		12.77	15.73	20.35	29.44	77.59	83.82	85.84	127.43							
Re	M_3-N_4	3		.01	75	6	2.090	17.79300	3		12.77	15.73	20.35	29.45	77.61	83.84	85.87	127.49							
Ta	M_4-N_3	2		.01	73	6	1.393	17.79999	2		12.77	15.74	20.36	29.46	77.65	83.88	85.91	127.58							
Hf	Ll	10		3	72	6	6.958	17.81448	5		12.79	15.75	20.38	29.49	77.72	83.97	86.00	127.77							
Er	$L\alpha_1$	10		100	68	6	6.947	17.84248	5		12.81	15.78	20.41	29.53	77.87	84.13	86.17	128.14							
As	$L\beta_{3,4}$	2		2	33	6	1.388	17.85799	3		12.82	15.79	20.43	29.56	77.95	84.22	86.26	128.34							
Tb	$L\beta_4$	10		5	65	6	6.939	17.86400	4		12.82	15.80	20.44	29.57	77.98	84.25	86.30	128.42							
Co	Ln	1		2	27	6	0.694	17.87000	2		12.83	15.80	20.44	29.58	78.01	84.29	86.33	128.50							
In	$L\gamma_{2,3}$	6		2	49	6	4.160	17.87999	4		12.83	15.81	20.46	29.60	78.06	84.35	86.39	128.63							
Tb	Ll	8		2	65	6	5.546	17.88159	4		12.83	15.81	20.46	29.60	78.07	84.36	86.40	128.66							
Pa	$M\gamma$	5		5	91	6	3.465	17.88499	3		12.84	15.82	20.46	29.61	78.09	84.38	86.42	128.70							
Ba	$L\beta_4$	7		5	56	6	4.851	17.88708	4		12.84	15.82	20.46	29.61	78.10	84.39	86.44	128.73							
Tb	$L\alpha_2$	9		10	65	6	6.237	17.88748	4		12.84	15.82	20.46	29.61	78.10	84.39	86.44	128.73							
Co	$K\alpha_1$	10		100	27	6	6.929	17.88963	6		12.84	15.82	20.47	29.61	78.11	84.40	86.45	128.76							
Cr	AL_2	1			24	6	0.693	17.89999	1		12.85	15.83	20.48	29.63	78.17	84.46	86.51	128.90							
Co	$K\alpha_{1,2}$	10		150	27	6	6.924	17.90257	6		12.85	15.83	20.48	29.64	78.18	84.48	86.53	128.94							
Cd	Ll	4		2	48	6	2.767	17.92055	5		12.86	15.85	20.50	29.67	78.27	84.58	86.64	129.18							
W	$M\zeta_1$	2		.01	74	6	1.383	17.92400	3		12.86	15.85	20.51	29.67	78.29	84.60	86.66	129.22							
Co	$K\alpha_2$	10		50	27	6	6.914	17.92848	6		12.87	15.85	20.51	29.68	78.32	84.63	86.69	129.29							
Ho	$M\beta$	2		45	67	6	1.383	17.92999	3		12.87	15.86	20.51	29.68	78.32	84.64	86.69	129.31							
Ce	$L\alpha_1$	7		100	58	6	4.839	17.93050	4		12.87	15.86	20.51	29.68	78.33	84.64	86.70	129.31							
Ba	$L\gamma_1$	8		5	56	6	5.530	17.93199	4		12.87	15.86	20.52	29.69	78.33	84.65	86.71	129.33							
Sn	$M\gamma$	1		100	50	6	0.691	17.93999	2		12.88	15.86	20.52	29.70	78.38	84.70	86.76	129.44							
Ru	$L\beta_3$	4		3	44	6	2.763	17.94640	4		12.88	15.87	20.53	29.71	78.41	84.73	86.79	129.53							
Ru	$L\beta_6$	4		3	44	6	2.763	17.94640	4		12.88	15.87	20.53	29.71	78.41	84.73	86.79	129.53							
Y	$L\beta_3$	3		3	39	6	2.072	17.94958	4		12.88	15.87	20.54	29.72	78.43	84.75	86.81	129.57							
Er	$L\alpha_2$	10		10	68	6	6.904	17.95499	4		12.89	15.88	20.54	29.72	78.45	84.78	86.85	129.64							
Pt	M_5-O_3	3		.01	78	6	2.070	17.96100	3		12.89	15.88	20.55	29.74	78.49	84.82	86.88	129.73							
Te	$L\gamma_{2,3}$	7		2	52	6	4.828	17.97179	4		12.90	15.89	20.56	29.75	78.54	84.88	86.95	129.87							
Ba	$L\beta_1$	7		50	56	6	4.827	17.97746	5		12.90	15.90	20.57	29.76	78.57	84.91	86.98	129.95							
Se	$L\alpha_{1,2}$	2		100	34	6	1.379	17.98000	4		12.90	15.90	20.57	29.77	78.58	84.93	87.00	129.98							
Sm	$L\beta_1$	9		50	62	6	6.204	17.98253	5		12.91	15.90	20.57	29.77	78.60	84.94	87.01	130.02							
W	$M\zeta_2$	2		.01	74	6	1.378	17.98599	3		12.91	15.91	20.58	29.78	78.62	84.96	87.03	130.07							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pm	$L\gamma_1$	10		5	61	6	6.891	17.98898	4		12.91	15.91	20.58	29.78	78.63	84.98	87.05	130.11							
Ce	$L\alpha_2$	7		10	58	6	4.822	17.99419	4		12.91	15.91	20.59	29.79	78.66	85.01	87.08	130.18							
Sn	$L\alpha_1$	5		100	50	6	3.443	17.99969	5		12.92	15.92	20.59	29.80	78.69	85.04	87.12	130.25							
Sn	$L\gamma_1$	6		8	50	6	4.130	18.00688	5		12.92	15.92	20.60	29.81	78.72	85.09	87.16	130.35							
Sm	$L\beta_4$	9		5	62	6	6.195	18.00854	5		12.93	15.93	20.60	29.82	78.73	85.09	87.17	130.38							
La	Ll	6		2	57	6	4.124	18.03600	3		12.94	15.95	20.64	29.86	78.88	85.26	87.34	130.76							
Sb	Ln	5		7	51	6	3.436	18.03824	5		12.95	15.95	20.64	29.87	78.89	85.27	87.35	130.79							
Pr	$L\beta_4$	8		5	59	6	5.497	18.03999	4		12.95	15.95	20.64	29.87	78.90	85.28	87.36	130.81							
Sn	$L\alpha_2$	5		10	50	6	3.435	18.04454	5		12.95	15.96	20.65	29.88	78.92	85.31	87.39	130.87							
F	AK	1			9	1	0.687	18.04999	2		12.95	15.96	20.65	29.89	78.95	85.34	87.42	130.95							
Te	$L\beta_3$	6		6	52	6	4.120	18.05357	5		12.96	15.97	20.66	29.89	78.97	85.36	87.44	131.00							
Y	$L\beta_4$	3		3	39	6	2.060	18.05579	4		12.96	15.97	20.66	29.90	78.98	85.37	87.46	131.03							
Th	M_2-N_4	6		5	90	6	4.117	18.06599	3		12.97	15.98	20.67	29.91	79.03	85.43	87.52	131.17							
Pa	M_3-N_4	5		5	91	6	3.430	18.06999	3		12.97	15.98	20.67	29.92	79.05	85.45	87.54	131.23							
Pr	$L\beta_1$	8		50	59	6	5.488	18.07039	4		12.97	15.98	20.68	29.92	79.06	85.46	87.54	131.23							
I	$L\gamma_1$	7		8	53	6	4.800	18.07707	5		12.97	15.99	20.68	29.93	79.09	85.50	87.59	131.33							
Ru	$L\beta_4$	4		3	44	6	2.741	18.09200	4		12.99	16.00	20.70	29.96	79.17	85.58	87.68	131.54							
Xe	$L\alpha_1$	8	6	100	54	6	4.109	18.09959	4		12.99	16.01	20.71	29.97	79.21	85.63	87.72	131.64							
Ir	Mβ	3		45	77	6	2.053	18.11398	3		13.00	16.02	20.73	29.99	79.29	85.71	87.81	131.85							
Eu	$L\beta_{2,15}$	10		20	63	6	6.842	18.11798	4		13.00	16.02	20.73	30.00	79.31	85.74	87.83	131.90							
Bi	Mγ	4		5	83	6	2.735	18.12799	3		13.01	16.03	20.74	30.02	79.36	85.79	87.90	132.05							
Er	Ll	9		2	68	6	6.152	18.13499	3		13.02	16.04	20.75	30.03	79.40	85.84	87.94	132.15							
Rb	$L\gamma_{2,3}$	3		.1	37	6	2.050	18.13739	4		13.02	16.04	20.75	30.03	79.41	85.85	87.95	132.18							
Sb	$L\beta_{2,15}$	6		17	51	6	4.100	18.14009	5		13.02	16.04	20.76	30.04	79.42	85.87	87.97	132.22							
Pt	$M\alpha_1$	3		100	78	6	2.050	18.14099	3		13.02	16.04	20.76	30.04	79.43	85.87	87.97	132.23							
Gd	$L\beta_3$	10		6	64	6	6.830	18.14999	4		13.03	16.05	20.77	30.06	79.47	85.92	88.03	132.36							
Pt	$M\alpha_2$	3		100	78	6	2.046	18.17400	3		13.04	16.07	20.80	30.10	79.60	86.06	88.18	132.70							
Sc	$K\alpha_1$	6		100	21	6	4.090	18.18539	4	4	13.05	16.08	20.81	30.12	79.66	86.13	88.25	132.87							
P	$SK\alpha_6$	3		.01	15	1	2.044	18.18967	3	3	13.06	16.09	20.81	30.12	79.68	86.16	88.27	132.93							
Sc	$K\alpha_{1,2}$	6		150	21	6	4.088	18.19199	4	4	13.06	16.09	20.82	30.13	79.69	86.17	88.29	132.96							
F	SKα''	1		30	9	1	0.681	18.20000	2	3	13.06	16.10	20.83	30.14	79.74	86.22	88.33	133.08							
Sc	$K\alpha_2$	6		50	21	6	4.085	18.20518	4	4	13.07	16.10	20.83	30.15	79.76	86.25	88.37	133.16							
Zr	$L\alpha_1$	3		100	40	6	2.042	18.21149	4		13.07	16.11	20.84	30.16	79.80	86.29	88.41	133.25							
F	SKα'	1		35	9	1	0.680	18.21999	2	3	13.08	16.11	20.85	30.17	79.84	86.34	88.46	133.37							
Cd	$L\beta_3$	5		11	48	6	3.401	18.22475	5		13.08	16.12	20.85	30.18	79.87	86.36	88.49	133.44							
P	$SK\alpha_5$	3		.01	15	1	2.040	18.22574	3	3	13.08	16.12	20.85	30.18	79.87	86.37	88.49	133.46							
Zr	$L\alpha_2$	3		10	40	6	2.040	18.23340	4		13.09	16.13	20.86	30.20	79.91	86.42	88.54	133.57							
Pm	$L\alpha_1$	8		100	61	6	5.432	18.25760	4		13.10	16.15	20.89	30.24	80.04	86.56	88.69	133.92							
Hg	M_3-N_1	3		1	80	6	2.035	18.26999	2		13.11	16.16	20.91	30.26	80.11	86.63	88.76	134.11							
V	$K\beta_{1,3}$	8		20	23	6	5.426	18.27519	5	4	13.12	16.16	20.91	30.27	80.13	86.66	88.80	134.18							
W	Mγ	3		1	74	6	2.035	18.27599	3		13.12	16.16	20.91	30.27	80.14	86.67	88.80	134.20							
Te	$L\beta_4$	6		4	52	6	4.069	18.27965	5		13.12	16.17	20.92	30.28	80.16	86.69	88.82	134.25							
Y	$L\beta_6$	3		3	39	6	2.034	18.28259	4		13.12	16.17	20.92	30.28	80.17	86.71	88.84	134.29							
Bi	M_3-N_4	4		5	83	6	2.712	18.28400	3		13.12	16.17	20.92	30.28	80.18	86.71	88.85	134.31							
Co	Ll	1		9	27	6	0.678	18.29199	3		13.13	16.18	20.93	30.30	80.22	86.76	88.90	134.43							
Cr	$K\alpha_1$	8		100	24	6	5.414	18.31760	5	4	13.15	16.20	20.96	30.34	80.36	86.91	89.06	134.82							
F	Kα	1		100	9	6	0.677	18.31999	2	2	13.15	16.20	20.96	30.34	80.37	86.93	89.07	134.85							
Nd	$L\beta_{2,15}$	9		20	60	6	6.088	18.32399	4		13.15	16.21	20.97	30.35	80.39	86.95	89.10	134.91							
P	$SK\alpha_4$	3		5	15	1	2.029	18.32643	3	3	13.15	16.21	20.97	30.35	80.40	86.97	89.11	134.95							
Cr	$K\alpha_{1,2}$	8		150	24	6	5.411	18.32800	5	4	13.16	16.21	20.97	30.36	80.41	86.97	89.12	134.97							
Pm	$L\alpha_2$	8		10	61	6	5.407	18.34079	4		13.16	16.22	20.99	30.38	80.48	87.05	89.20	135.17							
Cr	$K\alpha_2$	8		50	24	6	5.405	18.34885	6	4	13.17	16.23	21.00	30.39	80.52	87.10	89.25	135.29							
P	$SK\alpha_3$	3		5	15	1	2.027	18.34988	3	3	13.17	16.23	21.00	30.39	80.53	87.10	89.26	135.30							
Ce	Mz	1		.01	58	6	0.676	18.34999	2		13.17	16.23	21.00	30.39	80.53	87.11	89.26	135.31							
Lu	Ll	10		2	71	6	6.752	18.35999	4		13.18	16.24	21.01	30.41	80.58	87.16	89.32	135.46							
Pm	$L\beta_3$	9		6	61	6	6.070	18.37889	4		13.19	16.25	21.03	30.44	80.68	87.28	89.43	135.75							
Rh	$L\alpha_1$	4		100	45	6	2.696	18.38971	5		13.20	16.26	21.04	30.46	80.74	87.34	89.50	135.91							
P	SKα'	3		.5	15	1	2.022	18.39287	3	3	13.20	16.27	21.05	30.47	80.75	87.36	89.52	135.96							
Th	Mγ	5		5	90	6	3.369	18.39499	3		13.20	16.27	21.05	30.47	80.77	87.37	89.53	135.99							
Cs	$L\beta_3$	7		6	55	6	4.716	18.39949	4		13.21	16.27	21.06	30.48	80.79	87.40	89.56	136.06							
Ho	Mα	2		100	67	6	1.347	18.39999	2		13.21	16.27	21.06	30.48	80.79	87.40	89.56	136.07							
W	M_3-N_4	3		.1	74	6	2.021	18.40199	3		13.21	16.28	21.06	30.48	80.80	87.41	89.58	136.10							
Cd	$L\beta_4$	5		5	48	6	3.367	18.41014	5		13.21	16.28	21.07	30.50	80.85	87.46	89.63	136.23							
Gd	$L\alpha_1$	9		100	64	6	6.056	18.42119	4		13.22	16.29	21.08	30.52	80.90	87.53	89.70	136.40							
Rh	$L\alpha_2$	4		10	45	6	2.692	18.42180	5		13.22	16.29	21.08	30.52	80.91	87.53	89.70	136.41							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Eu	$M\gamma$		2	1	63	6	1.346	18.42200	3		13.22	16.29	21.08	30.52	80.91	87.53	89.70	136.41							
La	$L\beta_{2,15}$		8	20	57	6	5.383	18.42400	4		13.22	16.30	21.08	30.52	80.92	87.55	89.71	136.44							
Rh	$L\gamma_{2,3}$		5	5	45	6	3.363	18.42749	4		13.23	16.30	21.09	30.53	80.94	87.57	89.73	136.50							
Ce	$L\gamma_1$		9	5	58	6	6.051	18.43829	4		13.23	16.31	21.10	30.54	81.00	87.63	89.80	136.67							
Ho	$L\alpha_1$		10	100	67	6	6.719	18.44998	4		13.24	16.32	21.11	30.56	81.06	87.70	89.87	136.85							
Mo	Ll		3	3	42	6	2.015	18.45239	4		13.25	16.32	21.12	30.57	81.07	87.71	89.89	136.89							
Te	$L\beta_1$		6	75	52	6	4.029	18.46062	5		13.25	16.33	21.13	30.58	81.11	87.76	89.94	137.02							
Gd	$L\beta_1$		10	50	64	6	6.712	18.46799	4		13.26	16.33	21.14	30.59	81.15	87.81	89.99	137.13							
P	$K\alpha_1$	H	3	100	15	6	2.013	18.47099	3	3	13.26	16.34	21.14	30.60	81.17	87.83	90.00	137.18							
P	$K\alpha_{1,2}$	H	3	150	15	6	2.013	18.47398	3	3	13.26	16.34	21.14	30.60	81.19	87.84	90.02	137.23							
P	$K\alpha_2$	H	3	50	15	6	2.012	18.48000	3	3	13.26	16.35	21.15	30.62	81.22	87.88	90.06	137.32							
Ru	$L\beta_1$		4	45	44	6	2.683	18.48232	5		13.27	16.35	21.15	30.62	81.23	87.89	90.07	137.36							
Bi	M_4-N_3		3	.01	83	6	2.012	18.48599	3		13.27	16.35	21.16	30.63	81.25	87.92	90.10	137.42							
Ce	$L\beta_3$		8	6	58	6	5.364	18.48720	4		13.27	16.35	21.16	30.63	81.26	87.92	90.10	137.44							
Gd	Ll		8	2	64	6	5.361	18.49759	4		13.28	16.36	21.17	30.64	81.31	87.98	90.17	137.60							
Br	Ln		2	1	35	6	1.339	18.50999	3		13.29	16.37	21.18	30.67	81.38	88.06	90.25	137.80							
Ag	$L\beta_{2,15}$		5	25	47	6	3.347	18.51674	5		13.29	16.38	21.19	30.68	81.41	88.10	90.29	137.91							
Gd	$L\alpha_2$		9	10	64	6	6.024	18.52019	4		13.29	16.38	21.20	30.68	81.43	88.12	90.31	137.97							
Ca	$K\beta_{1,3}$		6	15	20	6	4.012	18.53819	4	4	13.31	16.40	21.22	30.71	81.53	88.23	90.42	138.26							
Gd	$L\beta_4$		10	5	64	6	6.686	18.53998	4		13.31	16.40	21.22	30.72	81.54	88.24	90.43	138.29							
Ho	$L\alpha_2$		10	10	67	6	6.679	18.56099	4		13.32	16.42	21.24	30.75	81.65	88.36	90.56	138.63							
U	$M\beta$		5	60	92	6	3.336	18.57999	3		13.34	16.43	21.26	30.78	81.75	88.48	90.68	138.94							
K	$SK\alpha_4$		5	3	19	1	3.335	18.58246	3	4	13.34	16.44	21.27	30.79	81.76	88.49	90.70	138.98							
Te	Ll		5	7	52	6	3.335	18.58479	5		13.34	16.44	21.27	30.79	81.78	88.51	90.71	139.02							
Th	M_3-N_4		5	5	90	6	3.334	18.59000	3		13.34	16.44	21.28	30.80	81.80	88.54	90.74	139.11							
K	$SK\alpha_3$		5	3	19	1	3.332	18.60298	3	4	13.35	16.45	21.29	30.82	81.87	88.62	90.83	139.32							
Pd	$L\gamma_1$		5	10	46	6	3.328	18.62299	4		13.37	16.47	21.31	30.86	81.98	88.74	90.95	139.66							
Ta	Mz_1		2	.1	73	6	1.331	18.63199	3		13.37	16.48	21.33	30.87	82.03	88.79	91.01	139.81							
Nb	Ln		3	1	41	6	1.996	18.63269	4		13.38	16.48	21.33	30.87	82.03	88.80	91.01	139.82							
Y	$L\beta_1$		3	45	39	6	1.995	18.63599	4		13.38	16.48	21.33	30.88	82.05	88.82	91.03	139.87							
La	$L\alpha_1$		7	100	57	6	4.650	18.65990	5		13.39	16.51	21.36	30.92	82.18	88.96	91.18	140.28							
Ta	Mz_2		2	.01	73	6	1.329	18.65999	3		13.39	16.51	21.36	30.92	82.18	88.96	91.18	140.28							
Cs	$L\beta_4$		7	5	55	6	4.649	18.66618	4		13.40	16.51	21.36	30.93	82.21	89.00	91.22	140.38							
Cd	$L8_1$		5	42	48	6	3.316	18.69115	5		13.42	16.53	21.39	30.97	82.34	89.15	91.38	140.81							
Pb	$M\gamma$		4	5	82	6	2.652	18.69600	3		13.42	16.54	21.40	30.98	82.37	89.18	91.41	140.90							
K	$K\alpha_1$		5	100	19	6	3.313	18.70699	4	4	13.43	16.55	21.41	31.00	82.43	89.24	91.48	141.09							
K	$K\alpha_{1,2}$		5	150	19	6	3.312	18.71216	4	4	13.43	16.55	21.42	31.01	82.46	89.28	91.51	141.18							
Dy	$M\beta$		2	45	66	6	1.325	18.71399	3		13.43	16.55	21.42	31.01	82.47	89.29	91.52	141.21							
Pm	$L\beta_1$		9	50	61	6	5.960	18.71729	4		13.44	16.56	21.42	31.02	82.48	89.31	91.54	141.27							
K	$K\alpha_2$		5	50	19	6	3.310	18.72249	4	4	13.44	16.56	21.43	31.03	82.51	89.34	91.58	141.36							
La	$L\alpha_2$		7	10	57	6	4.633	18.72729	5		13.44	16.57	21.44	31.04	82.54	89.37	91.61	141.44							
Nd	Ll		7	2	60	6	4.632	18.73199	4		13.45	16.57	21.44	31.04	82.56	89.40	91.64	141.52							
Cr	$K\beta_{1,3}$		9	18	24	6	5.946	18.76382	5	4	13.47	16.60	21.48	31.10	82.73	89.59	91.84	142.08							
Ho	Ll		9	2	67	6	5.942	18.77399	4		13.48	16.61	21.49	31.11	82.79	89.65	91.90	142.27							
Au	M_3-N_1		3	1	79	6	1.981	18.77699	3		13.48	16.61	21.49	31.12	82.81	89.67	91.92	142.32							
Nd	$L\gamma_1$		10	5	60	6	6.601	18.77899	4		13.48	16.61	21.50	31.12	82.82	89.68	91.93	142.35							
Cl	$SK\alpha_4$		4	4	17	1	2.640	18.78265	3	3	13.48	16.61	21.50	31.13	82.84	89.70	91.95	142.42							
Cs	$L\gamma_1$		8	5	55	6	5.279	18.78400	4		13.48	16.62	21.50	31.13	82.84	89.71	91.96	142.44							
Cs	$L\beta_1$		7	50	55	6	4.619	18.78589	4		13.49	16.62	21.50	31.13	82.85	89.72	91.97	142.48							
Ir	$M\alpha_1$		3	100	77	6	1.980	18.78600	3		13.49	16.62	21.50	31.13	82.85	89.72	91.98	142.48							
Ce	$L8_4$		8	5	58	6	5.276	18.79759	4		13.49	16.63	21.52	31.15	82.92	89.79	92.05	142.69							
Sb	M_2-N_1		1	1	51	6	0.659	18.79999	1		13.50	16.63	21.52	31.16	82.93	89.81	92.06	142.73							
Th	N_1-P_3		2		90	6	1.319	18.79999	2		13.50	16.63	21.52	31.16	82.93	89.81	92.06	142.73							
Ag	M_1-$N_{2,3}$		1	1	47	6	0.659	18.79999	1		13.50	16.63	21.52	31.16	82.93	89.81	92.06	142.73							
Os	$M\beta$		3	45	76	6	1.978	18.80099	3		13.50	16.63	21.52	31.16	82.93	89.81	92.07	142.75							
Ba	Ll		6	2	56	6	3.953	18.81299	4		13.51	16.64	21.53	31.18	83.00	89.89	92.15	142.97							
Sm	$L\beta_{2,15}$		10	20	62	6	6.586	18.82210	5		13.51	16.65	21.55	31.20	83.05	89.94	92.20	143.13							
Ir	$M\alpha_2$		3	100	77	6	1.975	18.82500	3		13.51	16.65	21.55	31.20	83.06	89.96	92.22	143.19							
Cd	$L\gamma_2$		6	5	48	6	3.951	18.82619	4		13.51	16.65	21.55	31.20	83.07	89.97	92.23	143.21							
As	$L\beta_1$		2	35	33	6	1.317	18.82819	4		13.52	16.66	21.55	31.21	83.08	89.98	92.24	143.25							
Ag	Ll		4	2	47	6	2.633	18.83040	4		13.52	16.66	21.55	31.21	83.09	89.99	92.26	143.29							
W	M_2-N_1		3	.01	74	6	1.974	18.84000	2		13.52	16.67	21.57	31.23	83.15	90.05	92.32	143.46							
Cl	$SK\alpha_3$		4	4	17	1	2.631	18.84398	3	3	13.53	16.67	21.57	31.23	83.17	90.08	92.34	143.54							
Ce	$L\beta_1$		8	50	58	6	5.261	18.84879	4		13.53	16.67	21.58	31.24	83.19	90.10	92.37	143.62							
In	$L\alpha_1$		5	100	49	6	3.286	18.85959	5		13.54	16.68	21.59	31.26	83.25	90.17	92.44	143.83							

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	AOP (200)	Graph (002)
Pb	M_3-N_4		4	5	82	6	2.629	18.85999	3		13.54	16.68	21.59	31.26	83.25	90.17	92.44	143.83							
En	$L\beta_3$		10	6	63	6	6.570	18.86699	4		13.54	16.69	21.60	31.27	83.29	90.22	92.49	143.96							
Sb	$L\gamma_{2,3}$		7	2	51	6	4.599	18.86708	4		13.54	16.69	21.60	31.27	83.29	90.22	92.49	143.97							
Th	N_1-P_2		2		90	6	1.313	18.87999	2		13.55	16.70	21.61	31.29	83.36	90.29	92.57	144.21							
Sr	$L\gamma_5$		3	.1	38	6	1.969	18.88829	4		13.56	16.71	21.62	31.31	83.41	90.35	92.62	144.36							
I	$L\alpha_1$		6	100	53	6	3.937	18.89159	5		13.56	16.71	21.63	31.31	83.42	90.37	92.64	144.43							
In	$L\alpha_2$		5	10	49	6	3.279	18.90364	5		13.57	16.72	21.64	31.33	83.49	90.44	92.72	144.65							
Cl	$K\alpha_1$		4	100	17	6	2.622	18.91119	4	3	13.58	16.73	21.65	31.35	83.53	90.49	92.77	144.80							
Cl	$K\alpha_{1,2}$		4	150	17	6	2.621	18.91505	4	3	13.58	16.73	21.65	31.35	83.55	90.51	92.79	144.87							
Sb	$L\beta_3$		6	6	51	6	3.932	18.91547	5		13.58	16.73	21.65	31.35	83.55	90.51	92.80	144.88							
Mn	$K\alpha_1$		9	100	25	6	5.898	18.91637	6	4	13.58	16.73	21.65	31.36	83.56	90.52	92.80	144.90							
Cl	$K\alpha_2$		4	50	17	6	2.620	18.92279	4	3	13.58	16.74	21.66	31.37	83.59	90.56	92.84	145.02							
Mn	$K\alpha_{1,2}$		9	150	25	6	5.894	18.92825	5	4	13.59	16.74	21.67	31.38	83.62	90.59	92.88	145.13							
Ta	$M\gamma$		3	1	73	6	1.964	18.93599	3		13.59	16.75	21.68	31.39	83.66	90.64	92.93	145.27							
Yb	Ll		10	2	70	6	6.544	18.94150	5		13.60	16.76	21.68	31.40	83.69	90.67	92.96	145.38							
Sn	Ln		5	7	50	6	3.272	18.94379	5		13.60	16.76	21.69	31.40	83.71	90.68	92.98	145.43							
I	$L\alpha_2$		6	10	53	6	3.925	18.94745	5		13.60	16.76	21.69	31.41	83.73	90.71	93.00	145.50							
Mn	$K\alpha_2$		9	50	25	6	5.887	18.95201	5	4	13.61	16.77	21.70	31.42	83.75	90.73	93.03	145.59							
Cr	$L\beta_{3,4}$		1	.1	24	6	0.654	18.95999	2		13.61	16.77	21.71	31.43	83.79	90.78	93.08	145.74							
Nd	$L\alpha_1$		8	100	60	6	5.229	18.96320	4		13.61	16.78	21.71	31.44	83.81	90.80	93.10	145.81							
In	$L\gamma_1$		6	8	49	6	3.920	18.97276	5		13.62	16.78	21.72	31.45	83.86	90.86	93.16	145.99							
Te	$L\gamma_1$		7	8	52	6	4.570	18.98686	5		13.63	16.80	21.74	31.48	83.94	90.95	93.25	146.27							
Mg	$K\beta$		2	.7	12	6	1.302	19.04199	3	2	13.67	16.85	21.80	31.57	84.24	91.29	93.60	147.39							
Nd	$L\alpha_2$		8	10	60	6	5.207	19.04559	4		13.67	16.85	21.80	31.58	84.26	91.31	93.63	147.46							
Sn	$L\beta_{2,15}$		6	17	50	6	3.904	19.05029	5		13.68	16.85	21.81	31.58	84.28	91.34	93.66	147.56							
Ta	M_3-N_4		3	.01	73	6	1.951	19.05899	3		13.68	16.86	21.82	31.60	84.33	91.39	93.71	147.74							
Pr	$L\beta_{2,15}$		9	20	59	6	5.849	19.07458	4		13.69	16.87	21.84	31.63	84.42	91.49	93.81	148.07							
Eu	$L\alpha_1$		9	100	63	6	5.845	19.08809	4		13.70	16.89	21.85	31.65	84.49	91.57	93.90	148.35							
Dy	$L\alpha_1$		10	100	66	6	6.494	19.08809	5		13.70	16.89	21.85	31.65	84.49	91.57	93.90	148.35							
Te	M_3-N_1		1	10	52	6	0.649	19.09999	1		13.71	16.90	21.87	31.67	84.56	91.64	93.98	148.60							
Sr	$L\beta_3$		3	3	38	6	1.947	19.10159	4		13.71	16.90	21.87	31.67	84.56	91.65	93.99	148.64							
Mn	$K\beta_{1,3}$		10	20	25	6	6.489	19.10210	5	4	13.71	16.90	21.87	31.67	84.57	91.66	93.99	148.65							
Mn	$L\beta_1$		1	30	25	6	0.649	19.10999	2		13.72	16.91	21.88	31.69	84.61	91.71	94.04	148.82							
Pa	$M\beta$		5	60	91	6	3.239	19.13499	3		13.74	16.93	21.91	31.73	84.75	91.86	94.20	149.36							
Mg	$K\beta_1$		2	.7	12	1	1.295	19.13959	3	2	13.74	16.93	21.91	31.74	84.77	91.89	94.23	149.46							
Sb	$L\beta_4$		6	4	51	6	3.886	19.14084	5		13.74	16.93	21.91	31.74	84.78	91.90	94.24	149.49							
Nd	$L\beta_3$		9	6	60	6	5.828	19.14119	4		13.74	16.93	21.92	31.74	84.78	91.90	94.24	149.50							
Pb	M_4-N_3		3	.01	82	6	1.942	19.15199	3		13.75	16.94	21.93	31.76	84.84	91.97	94.31	149.73							
Eu	Ll		8	2	63	6	5.176	19.15839	4		13.75	16.95	21.94	31.77	84.87	92.01	94.35	149.88							
Ge	$L\beta_3$		2	1	32	6	1.294	19.16199	3		13.76	16.95	21.94	31.77	84.89	92.03	94.38	149.96							
Ag	$L\beta_3$		5	11	47	6	3.234	19.16565	5		13.76	16.96	21.94	31.78	84.91	92.05	94.40	150.04							
Br	Ll		2	1	35	6	1.293	19.17000	3		13.76	16.96	21.95	31.79	84.94	92.08	94.43	150.14							
Bi	M_2-N_4		5	5	83	6	3.233	19.17000	3		13.76	16.96	21.95	31.79	84.94	92.08	94.43	150.14							
Dy	$M\alpha$		2	100	66	6	1.293	19.17999	2		13.77	16.97	21.96	31.80	84.99	92.14	94.49	150.36							
Eu	$L\alpha_2$		9	10	63	6	5.816	19.18349	4		13.77	16.97	21.96	31.81	85.01	92.16	94.51	150.44							
Dy	$L\alpha_2$		10	10	66	6	6.457	19.19908	5		13.78	16.99	21.98	31.84	85.10	92.26	94.62	150.79							
Sm	$M\gamma$		2	1	62	6	1.291	19.20000	3		13.78	16.99	21.98	31.84	85.10	92.26	94.62	150.81							
Eu	$L\beta_1$		10	50	63	6	6.455	19.20299	4		13.79	16.99	21.99	31.84	85.12	92.28	94.64	150.88							
Sr	$L\beta_4$		3	3	38	6	1.936	19.20779	4		13.79	16.99	21.99	31.85	85.14	92.31	94.67	150.99							
Ba	$L\beta_{2,15}$		8	20	56	6	5.156	19.23479	5		13.81	17.02	22.02	31.90	85.29	92.48	94.85	151.62							
Ti	$K\alpha_1$		7	100	22	6	4.510	19.23956	5	4	13.81	17.02	22.03	31.91	85.32	92.51	94.88	151.74							
Ti	$K\alpha_{1,2}$		7	150	22	6	4.508	19.24808	5	4	13.82	17.03	22.04	31.92	85.37	92.56	94.93	151.94							
I	$L\beta_{2,15}$		7	17	53	6	4.507	19.25369	5		13.82	17.03	22.05	31.93	85.40	92.60	94.97	152.07							
Eu	$L\beta_4$		10	5	63	6	6.438	19.25499	4		13.82	17.04	22.05	31.93	85.40	92.61	94.98	152.10							
Ti	$K\alpha_2$		7	50	22	6	4.504	19.26511	5	4	13.83	17.04	22.06	31.95	85.46	92.67	95.04	152.35							
La	$L\gamma_1$		9	5	57	6	5.788	19.27620	4		13.84	17.05	22.07	31.97	85.52	92.74	95.12	152.62							
Ge	$L\beta_4$		2	1	32	6	1.286	19.28000	3		13.84	17.06	22.08	31.98	85.54	92.76	95.14	152.71							
La	$L\beta_3$		8	6	57	6	5.143	19.28400	4		13.84	17.06	22.08	31.98	85.56	92.79	95.17	152.81							
Tl	$M\gamma$		4	3	81	6	2.570	19.29199	3		13.85	17.07	22.09	32.00	85.61	92.84	95.22	153.00							
Mg	$SK\beta'$		2	.01	12	1	1.282	19.33296	2	2	13.88	17.10	22.14	32.07	85.83	93.09	95.49	154.04							
As	$L\alpha_{1,2}$		2	100	33	6	1.282	19.34180	4		13.89	17.11	22.15	32.08	85.88	93.15	95.54	154.27							
Y	$L\alpha_1$		3	100	39	6	1.922	19.34639	4		13.89	17.12	22.15	32.09	85.91	93.18	95.57	154.39							
Ag	$L\beta_4$		5	5	47	6	3.203	19.35114	5		13.89	17.12	22.16	32.10	85.93	93.21	95.60	154.51							
Sb	$L\beta_1$		6	75	51	6	3.843	19.35402	5		13.90	17.12	22.16	32.10	85.95	93.22	95.62	154.58							
Fe	$K\alpha_1$		10	100	26	6	6.403	19.36041	6		13.90	17.13	22.17	32.11	85.98	93.26	95.66	154.75							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pt	M_3-N_1		3	1	78	6	1.920	19.36499	3		13.90	17.13	22.17	32.12	86.01	93.29	95.69	154.87							
Y	$L\alpha_2$		3	10	39	6	1.920	19.36739	4		13.90	17.14	22.18	32.12	86.02	93.31	95.71	154.94							
Hf	$M\zeta_1$		2	.01	72	6	1.280	19.37199	3		13.91	17.14	22.18	32.13	86.05	93.34	95.74	155.06							
Hf	$M\zeta_2$		2	.01	72	6	1.280	19.37199	3		13.91	17.14	22.18	32.13	86.05	93.34	95.74	155.06							
Fe	$K\alpha_{1,2}$		10	150	26	6	6.398	19.37352	6		13.91	17.14	22.18	32.13	86.06	93.35	95.75	155.10							
Ru	$L\alpha_1$		4	100	44	6	2.558	19.38300	5		13.92	17.15	22.20	32.15	86.11	93.41	95.81	155.36							
Fe	$K\alpha_2$		10	50	26	6	6.390	19.39980	6		13.93	17.16	22.21	32.18	86.20	93.51	95.92	155.82							
Cd	M_2-N_4		1	50	48	6	0.639	19.39999	2		13.93	17.16	22.22	32.18	86.20	93.51	95.92	155.82							
Ru	$L\alpha_2$		4	10	44	6	2.554	19.41524	5		13.94	17.18	22.23	32.21	86.29	93.61	96.02	156.25							
Dy	Ll		9	2	66	6	5.742	19.42892	5		13.95	17.19	22.25	32.23	86.36	93.69	96.11	156.63							
Ar	$K\beta_{1,3}$		5	15	18	6	3.190	19.42999	4		13.95	17.19	22.25	32.23	86.37	93.70	96.12	156.66							
Ba	$L\alpha_1$		7	100	56	6	4.465	19.43164	5		13.95	17.19	22.25	32.23	86.38	93.71	96.13	156.71							
Os	$M\alpha$	D	3	100	76	6	1.914	19.43399	3		13.95	17.19	22.25	32.24	86.39	93.73	96.15	156.78							
La	$M\zeta$		1	.01	57	6	0.638	19.43999	2		13.96	17.20	22.26	32.25	86.42	93.76	96.19	156.95							
Sb	Ll		5	7	51	6	3.188	19.44130	5		13.96	17.20	22.26	32.25	86.43	93.77	96.19	156.99							
Mn	$L\alpha_{1,2}$		1	100	25	6	0.637	19.45000	2		13.96	17.21	22.27	32.26	86.48	93.83	96.25	157.24							
Mg	$SK\alpha_6$		2	.8	12	1	1.274	19.45522	3	3	13.97	17.21	22.28	32.27	86.51	93.86	96.29	157.39							
Sc	$K\beta_{1,3}$		7	20	21	6	4.460	19.45718	4	4	13.97	17.22	22.28	32.28	86.52	93.87	96.30	157.45							
Pr	Ll		7	2	59	6	4.452	19.48869	4		13.99	17.24	22.32	32.33	86.69	94.07	96.51	158.40							
Ba	$L\alpha_2$		7	10	56	6	4.450	19.49870	5		14.00	17.25	22.33	32.35	86.75	94.13	96.57	158.71							
Nd	$L\beta_1$		9	50	60	6	5.721	19.50209	4		14.00	17.26	22.33	32.35	86.77	94.16	96.59	158.82							
Nd	$L\beta_4$		9	5	60	6	5.721	19.50209	4		14.00	17.26	22.33	32.35	86.77	94.16	96.59	158.82							
Mg	$SK\alpha_5$		2	.9	12	1	1.271	19.50731	3	3	14.01	17.26	22.34	32.36	86.80	94.19	96.63	158.99							
Re	$M\beta$		3	45	75	6	1.906	19.51199	3		14.01	17.26	22.35	32.37	86.82	94.22	96.66	159.13							
Pd	$L\beta_{2,15}$		5	25	46	6	3.171	19.54434	5		14.03	17.29	22.38	32.43	87.00	94.42	96.87	160.19							
Tc	$L\beta_1$	H	4	45	43	6	2.536	19.54919	4		14.04	17.30	22.39	32.43	87.03	94.45	96.91	160.36							
Tm	Ll		10	2	69	6	6.341	19.54999	4		14.04	17.30	22.39	32.44	87.03	94.46	96.91	160.38							
U	$M\alpha_1$		5	100	92	6	3.170	19.54999	3		14.04	17.30	22.39	32.44	87.03	94.46	96.91	160.38							
Nb	Ll		3	3	41	6	1.902	19.55280	4		14.04	17.30	22.39	32.44	87.05	94.48	96.93	160.48							
Sr	$L\beta_6$		3	3	38	6	1.901	19.55730	4		14.04	17.30	22.40	32.45	87.08	94.51	96.96	160.63							
Pm	$L\beta_{2,15}$		10	20	61	6	6.338	19.55899	4		14.04	17.31	22.40	32.45	87.08	94.52	96.97	160.69							
Bi	$M\zeta_1$		3	1	83	6	1.901	19.56299	3		14.05	17.31	22.40	32.46	87.11	94.54	97.00	160.83							
I	$L\gamma_{2,3}$		8	2	53	6	5.065	19.57999	4		14.06	17.33	22.42	32.49	87.20	94.65	97.11	161.43							
Tb	$M\beta$		2	45	65	6	1.266	19.58400	3		14.06	17.33	22.43	32.49	87.22	94.67	97.14	161.57							
La	$L\beta_4$		8	5	57	6	5.061	19.59439	4		14.07	17.34	22.44	32.51	87.28	94.74	97.21	161.95							
Cs	Ll		6	2	55	6	3.794	19.60199	4		14.07	17.34	22.45	32.52	87.32	94.79	97.26	162.23							
Pr	$L\gamma_1$		10	5	59	6	6.321	19.61099	4		14.08	17.35	22.46	32.54	87.37	94.85	97.32	162.57							
Mg	$SK\alpha_4$		2	8	12	1	1.264	19.61554	3	3	14.08	17.36	22.47	32.55	87.40	94.88	97.35	162.75							
U	$M\alpha_2$		5	100	92	6	3.159	19.62000	3		14.09	17.36	22.47	32.55	87.42	94.90	97.38	162.92							
Sm	$L\beta_3$		10	6	62	6	6.317	19.62410	5		14.09	17.36	22.48	32.56	87.45	94.93	97.40	163.08							
Hf	$M\gamma$		3	1	72	6	1.894	19.63199	3		14.10	17.37	22.48	32.57	87.49	94.98	97.45	163.39							
Bi	$M\beta$		4	60	83	6	2.525	19.63599	3		14.10	17.38	22.49	32.58	87.51	95.01	97.48	163.55							
Mg	$SK\alpha_3$		2	8	12	1	1.262	19.64760	3	3	14.11	17.39	22.50	32.60	87.58	95.08	97.56	164.03							
I	$AM_{4,5}$		1		53	6	0.631	19.65999	2		14.12	17.40	22.52	32.62	87.65	95.16	97.64	164.55							
La	$L\beta_1$		8	50	57	6	5.041	19.67128	5		14.12	17.41	22.53	32.64	87.71	95.23	97.72	165.05							
Ag	$L\beta_1$		5	42	47	6	3.150	19.67365	5		14.13	17.41	22.53	32.65	87.72	95.25	97.73	165.15							
I	Ln		6	7	53	6	3.780	19.67873	5		14.13	17.41	22.54	32.65	87.75	95.28	97.77	165.38							
Mg	$SK\alpha'$		2	2	12	1	1.259	19.69569	2	3	14.14	17.43	22.56	32.68	87.85	95.39	97.88	166.17							
Pr	$L\alpha_1$		8	100	59	6	5.033	19.70399	4		14.15	17.44	22.57	32.70	87.89	95.44	97.93	166.57							
Th	$M\beta$		5	60	90	6	3.145	19.70499	3		14.15	17.44	22.57	32.70	87.90	95.45	97.94	166.62							
Rh	$L\gamma_1$		5	10	45	6	3.143	19.71849	4		14.16	17.45	22.58	32.72	87.98	95.53	98.03	167.31							
U	M_2-N_4		7	5	92	6	4.400	19.71899	3		14.16	17.45	22.59	32.72	87.98	95.54	98.04	167.34							
Te	$L\alpha_1$		6	100	52	6	3.769	19.73520	5		14.17	17.46	22.60	32.75	88.07	95.64	98.14	168.22							
Fe	Ln		1	2	26	6	0.628	19.75000	2		14.18	17.48	22.62	32.78	88.15	95.73	98.24	169.08							
Bi	$M\zeta_2$		3	.1	83	6	1.882	19.75499	3		14.18	17.48	22.63	32.78	88.18	95.77	98.28	169.39							
Tb	$L\alpha_1$		10	100	65	6	6.272	19.76498	4		14.19	17.49	22.64	32.80	88.24	95.83	98.34	170.03							
Mg	$K\alpha_{1,2}$		2	100	12	6	1.253	19.78000	4	3	14.20	17.50	22.66	32.83	88.32	95.93	98.44	171.09							
Cd	$L\alpha_1$		5	100	48	6	3.133	19.78174	5		14.20	17.51	22.66	32.83	88.33	95.94	98.46	171.22							
Pr	$L\alpha_2$		8	10	59	6	5.013	19.78319	4		14.21	17.51	22.66	32.83	88.34	95.95	98.47	171.33							
Te	$L\alpha_2$		6	10	52	6	3.758	19.79074	5		14.21	17.51	22.67	32.85	88.38	96.00	98.52	171.92							
Sm	$L\alpha_1$		9	100	62	6	5.635	19.79819	5		14.22	17.52	22.68	32.86	88.42	96.04	98.57	172.56							
Pd	Ll		4	2	46	6	2.503	19.81000	4		14.22	17.53	22.69	32.88	88.49	96.12	98.65	173.70							
Zr	Ln		3	1	40	6	1.876	19.82069	4		14.23	17.54	22.70	32.90	88.55	96.19	98.72	174.94							
Cd	$L\alpha_2$		5	10	48	6	3.126	19.82478	5		14.24	17.54	22.71	32.90	88.57	96.21	98.75	175.51							
Sn	$L\gamma_{2,3}$		7	2	50	6	4.376	19.82889	4		14.24	17.55	22.71	32.91	88.60	96.24	98.77	176.16							

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sn	$L\beta_3$		6	6	50	6	3.750	19.83508	5		14.24	17.55	22.72	32.92	88.63	96.28	98.81	177.45							
Ag	$L\gamma_3$		6	2	47	6	3.749	19.83809	5		14.24	17.56	22.72	32.93	88.65	96.30	98.83	178.41							
Pb	M_2-N_4		5	5	82	6	3.124	19.84000	3		14.25	17.56	22.73	32.93	88.66	96.31	98.85	179.94							
Sm	Ll		8	2	62	6	4.994	19.85840	4		14.26	17.57	22.75	32.96	88.76	96.43	98.97								
Sr	$L\beta_1$		3	45	38	6	1.871	19.87169	4		14.27	17.59	22.76	32.98	88.84	96.52	99.06								
Ag	$L\gamma_2$		6	3	47	6	3.743	19.87296	5		14.27	17.59	22.76	32.99	88.85	96.53	99.07								
Tb	$L\alpha_2$		10	10	65	6	6.237	19.87498	4		14.27	17.59	22.77	32.99	88.86	96.54	99.08								
Ce	$L\beta_{2,15}$		9	20	58	6	5.612	19.87828	4		14.27	17.59	22.77	33.00	88.88	96.56	99.11								
Sm	$L\alpha_2$		9	10	62	6	5.607	19.89557	5		14.29	17.61	22.79	33.02	88.97	96.67	99.22								
In	Ln		5	7	49	6	3.112	19.91634	5		14.30	17.63	22.81	33.06	89.09	96.81	99.36								
Se	Ln		2	1	34	6	1.244	19.92400	3		14.31	17.63	22.82	33.07	89.13	96.86	99.42								
Hg	$M\gamma$		4	3	80	6	2.487	19.93599	3		14.32	17.64	22.84	33.09	89.20	96.93	99.50								
Pr	$L\beta_3$		9	6	59	6	5.591	19.95479	4		14.33	17.66	22.86	33.13	89.31	97.06	99.63								
Sb	$L\gamma_1$		7	8	51	6	4.347	19.96112	5		14.33	17.67	22.87	33.14	89.35	97.10	99.67								
Sm	$L\beta_1$		10	50	62	6	6.204	19.98059	5		14.35	17.68	22.89	33.17	89.46	97.22	99.80								
Tb	$M\alpha$		2	100	65	6	1.240	20.00000	2		14.36	17.70	22.91	33.20	89.57	97.35	99.93								
Sn	M_2-N_1		1	1	50	6	0.620	20.00000	1		14.36	17.70	22.91	33.20	89.57	97.35	99.93								
Ir	M_3-N_1		3	.5	77	6	1.859	20.00699	3		14.37	17.71	22.92	33.22	89.61	97.40	99.98								
Sm	$L\beta_4$		10	5	62	6	6.195	20.00949	5		14.37	17.71	22.92	33.22	89.62	97.41	100.00								
Cd	$L\gamma_1$		6	10	48	6	3.716	20.01384	5		14.37	17.71	22.93	33.23	89.64	97.44	100.03								
Ca	$SK\alpha_4$		6	2	20	1	3.715	20.02095	3	4	14.38	17.72	22.94	33.24	89.69	97.49	100.08								
V	$K\alpha_1$		8	100	23	6	4.951	20.02847	5	4	14.38	17.73	22.94	33.25	89.73	97.54	100.13								
In	$L\beta_{2,15}$		6	17	49	6	3.713	20.03027	5		14.38	17.73	22.95	33.25	89.74	97.55	100.14								
V	$K\alpha_{1,2}$		8	150	23	6	4.949	20.03865	5	4	14.39	17.73	22.96	33.27	89.79	97.60	100.20								
Ca	$SK\alpha_3$		6	2	20	1	3.711	20.04079	3	4	14.39	17.74	22.96	33.27	89.80	97.62	100.21								
Mo	$L\beta_3$		4	3	42	6	2.473	20.05319	4		14.40	17.75	22.97	33.29	89.87	97.70	100.30								
V	$K\alpha_2$		8	50	23	6	4.944	20.05904	5	4	14.40	17.75	22.98	33.30	89.90	97.74	100.34								
Sn	$L\beta_4$		6	4	50	6	3.708	20.06009	5		14.40	17.75	22.98	33.31	89.91	97.74	100.34								
S	$K\beta x$		4	7	16	6	2.468	20.09319	4	3	14.43	17.78	23.02	33.36	90.10	97.96	100.57								
Cs	$L\beta_{2,15}$		8	20	55	6	4.935	20.09439	4		14.43	17.78	23.02	33.36	90.10	97.97	100.58								
Pd	M_1-$N_{2,3}$		1	1	46	6	0.617	20.09999	1		14.43	17.79	23.03	33.37	90.14	98.00	100.62								
Pa	$M\alpha_1$		5	100	91	6	3.082	20.10999	3		14.44	17.80	23.04	33.39	90.19	98.07	100.69								
Ti	$K\beta_{1,3}$		8	20	22	6	4.931	20.11127	5	4	14.44	17.80	23.04	33.39	90.20	98.08	100.69								
Tb	Ll		9	2	65	6	5.546	20.11679	4		14.45	17.80	23.05	33.40	90.23	98.11	100.73								
I	$L\beta_3$		7	6	53	6	4.313	20.12003	5		14.45	17.81	23.05	33.41	90.25	98.14	100.76								
S	$K\beta_1$		4	7	16	6	2.464	20.12639	4	3	14.45	17.81	23.06	33.42	90.29	98.18	100.80								
Ba	$L\beta_3$		8	6	56	6	4.926	20.13120	4		14.46	17.82	23.06	33.43	90.31	98.21	100.83								
Er	Ll		10	2	68	6	6.152	20.14999	3		14.47	17.83	23.09	33.46	90.42	98.33	100.96								
Fe	Ll		1	8	26	6	0.615	20.14999	2		14.47	17.83	23.09	33.46	90.42	98.33	100.96								
Ca	$K\alpha_1$		6	100	20	6	3.691	20.15033	5	4	14.47	17.83	23.09	33.46	90.42	98.33	100.96								
Ca	$K\alpha_{1,2}$		6	150	20	6	3.690	20.15688	5	4	14.47	17.84	23.09	33.47	90.46	98.38	101.01								
Ca	$K\alpha_2$		6	50	20	6	3.687	20.16995	5	4	14.48	17.85	23.11	33.49	90.54	98.46	101.10								
Pd	$L\beta_3$		5	11	46	6	3.072	20.17299	4		14.49	17.85	23.11	33.50	90.55	98.48	101.12								
Ba	$L\gamma_1$		9	5	56	6	5.530	20.17349	4		14.49	17.85	23.11	33.50	90.56	98.49	101.12								
Pa	$M\alpha_2$		5	100	91	6	3.072	20.17499	3		14.49	17.86	23.11	33.50	90.57	98.50	101.13								
Te	$L\beta_{2,15}$		7	17	52	6	4.301	20.17519	5		14.49	17.86	23.11	33.50	90.57	98.50	101.14								
U	N_1-O_3		2		92	6	1.229	20.17999	2		14.49	17.86	23.12	33.51	90.59	98.53	101.17								
Re	$M\alpha$		3	100	75	6	1.842	20.18700	3		14.50	17.87	23.13	33.52	90.63	98.58	101.22								
Mo	$L\beta_4$		4	3	42	6	2.455	20.19519	4		14.50	17.87	23.14	33.54	90.68	98.63	101.27								
Mo	$L\beta_6$		4	3	42	6	2.455	20.19519	4		14.50	17.87	23.14	33.54	90.68	98.63	101.27								
Sb	M_3-N_1		1	10	51	6	0.614	20.20000	1		14.51	17.88	23.14	33.54	90.71	98.66	101.31								
Pb	$M\zeta_1$		3	1	82	6	1.839	20.21999	3		14.52	17.90	23.17	33.58	90.82	98.79	101.45								
Ce	Ll		7	2	58	6	4.287	20.24190	4		14.54	17.92	23.19	33.62	90.95	98.94	101.60								
Cs	$L\alpha_1$		7	100	55	6	4.286	20.24680	4		14.54	17.92	23.20	33.62	90.98	98.97	101.63								
Si	K8		3	2	14	6	1.836	20.25899	3	2	14.55	17.93	23.21	33.65	91.05	99.05	101.72								
Rb	$L\gamma_5$	A	3	.1	37	6	1.835	20.26588	4		14.55	17.94	23.22	33.66	91.09	99.10	101.76								
W	$M\beta$		3	45	74	6	1.835	20.27100	3		14.56	17.94	23.23	33.67	91.12	99.13	101.80								
Pr	$L8_4$		9	5	59	6	5.497	20.29498	4		14.57	17.96	23.25	33.71	91.26	99.29	101.97								
Lu	$M\gamma$		3	1	71	6	1.832	20.30399	3		14.58	17.97	23.26	33.72	91.31	99.35	102.03								
Pb	$M\beta$		4	60	82	6	2.442	20.30399	3		14.58	17.97	23.26	33.72	91.31	99.35	102.03								
Sn	$L\beta_1$		6	75	50	6	3.662	20.30920	5		14.58	17.98	23.27	33.73	91.34	99.39	102.07								
Cs	$L\alpha_2$		7	10	55	6	4.272	20.31400	4		14.59	17.98	23.28	33.74	91.37	99.42	102.10								
Pr	$L\beta_1$		9	50	59	6	5.488	20.32919	4		14.60	17.99	23.29	33.77	91.45	99.52	102.21								
Si	$K\beta_1$		3	2	14	1	1.829	20.33400	3	2	14.60	18.00	23.30	33.77	91.48	99.55	102.24								
Ge	$L\beta_1$		2	35	32	6	1.218	20.34999	3		14.61	18.01	23.32	33.80	91.57	99.66	102.35								

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lael (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pd	$L\beta_4$		5	5	46	6	3.045	20.35548	4		14.62	18.02	23.32	33.81	91.61	99.69	102.39								
Sn	Ll		5	7	50	6	3.044	20.35825	5		14.62	18.02	23.33	33.82	91.62	99.71	102.41								
Nd	$L\beta_{2,15}$		10	20	60	6	6.088	20.35999	4		14.62	18.02	23.33	33.82	91.63	99.72	102.42								
Rb	$L\beta_3$		3	3	37	6	1.826	20.36279	4		14.62	18.02	23.33	33.82	91.65	99.74	102.44								
Pa	M_2-N_4		7	5	91	6	4.260	20.37000	3		14.63	18.03	23.34	33.84	91.69	99.79	102.49								
I	$L\beta_4$		7	4	53	6	4.257	20.38448	5		14.64	18.04	23.36	33.86	91.77	99.89	102.59								
Pb	Mz_2		3	.1	82	6	1.822	20.40599	3		14.65	18.06	23.38	33.90	91.90	100.03	102.74								
W	M_4-O_2		3	.01	74	6	1.821	20.41800	3		14.66	18.07	23.40	33.92	91.97	100.11	102.83								
Pm	$L\beta_3$		10	6	61	6	6.070	20.42099	4		14.67	18.08	23.40	33.92	91.99	100.13	102.85								
Ba	$L\beta_4$		8	5	56	6	4.851	20.44240	4		14.68	18.09	23.43	33.96	92.11	100.28	103.00								
Si	$SK\beta'$		3	.1	14	1	1.819	20.44720	2	2	14.68	18.10	23.43	33.97	92.14	100.31	103.03								
Tc	$L\alpha_1$	H	4	100	43	6	2.424	20.45920	4		14.69	18.11	23.44	33.99	92.21	100.39	103.12								
Rb	$L\beta_4$		3	3	37	6	1.817	20.46210	4		14.70	18.11	23.45	33.99	92.22	100.41	103.14								
Gd	$L\alpha_1$		10	100	64	6	6.056	20.46799	4		14.70	18.12	23.45	34.00	92.26	100.45	103.18								
Cd	$M\gamma$		1	100	48	6	0.606	20.46999	2		14.70	18.12	23.46	34.01	92.27	100.46	103.19								
Bi	$M\alpha_1$		4	100	83	6	2.422	20.47198	3		14.70	18.12	23.46	34.01	92.28	100.47	103.21								
Ce	$L\gamma_1$		10	5	58	6	6.051	20.48698	4		14.71	18.13	23.48	34.04	92.37	100.58	103.31								
Ce	$L\alpha_1$		8	100	58	6	4.839	20.49199	4		14.72	18.14	23.48	34.04	92.40	100.61	103.35								
Gd	$M\beta$		2	45	64	6	1.209	20.50800	3		14.73	18.15	23.50	34.07	92.49	100.72	103.46								
Bi	$M\alpha_2$		4	100	83	6	2.416	20.51999	3		14.74	18.16	23.52	34.09	92.56	100.80	103.55								
Te	$L\gamma_{2,3}$		8	2	52	6	4.828	20.53920	4		14.75	18.18	23.54	34.13	92.67	100.93	103.68								
Pm	$L\alpha_1$		9	100	61	6	5.432	20.53979	4		14.75	18.18	23.54	34.13	92.68	100.93	103.69								
Ba	$L\beta_1$		8	50	56	6	4.827	20.54567	5		14.76	18.19	23.55	34.14	92.71	100.97	103.73								
V	$K\beta_{1,3}$		9	20	23	6	5.426	20.55959	5	4	14.77	18.20	23.56	34.16	92.79	101.07	103.83								
I	$L\beta_1$		7	75	53	6	4.220	20.56207	5		14.77	18.20	23.56	34.16	92.81	101.08	103.85								
Ce	$L\alpha_2$		8	10	58	6	4.822	20.56479	4		14.77	18.20	23.57	34.17	92.82	101.10	103.87								
Gd	$L\alpha_2$		10	10	64	6	6.024	20.57799	4		14.78	18.22	23.58	34.19	92.90	101.19	103.96								
Au	$M\gamma$		4	3	79	6	2.409	20.57999	3		14.78	18.22	23.59	34.20	92.91	101.20	103.97								
Se	Ll		2	1	34	6	1.204	20.58800	3		14.79	18.22	23.59	34.21	92.96	101.26	104.03								
Sr	$L\alpha_1$		3	100	38	6	1.806	20.58839	4		14.79	18.22	23.59	34.21	92.96	101.26	104.03								
Cr	$K\alpha_1$		9	100	24	6	5.414	20.60728	5	4	14.80	18.24	23.62	34.24	93.07	101.39	104.17								
Sr	$L\alpha_2$		3	10	38	6	1.804	20.60909	4		14.80	18.24	23.62	34.24	93.08	101.40	104.18								
Hg	$M\delta$		3	.01	80	6	1.804	20.60999	2		14.80	18.24	23.62	34.25	93.09	101.41	104.19								
Cr	$K\alpha_{1,2}$		9	150	24	6	5.411	20.61900	5	4	14.81	18.25	23.63	34.26	93.14	101.47	104.25								
Te	Ln		6	7	52	6	3.605	20.62991	5		14.82	18.26	23.64	34.28	93.21	101.54	104.33								
Pm	$L\alpha_2$		9	10	61	6	5.407	20.63339	4		14.82	18.27	23.65	34.29	93.23	101.57	104.36								
Sb	$L\alpha_1$		6	100	51	6	3.604	20.63644	5		14.82	18.27	23.65	34.29	93.24	101.59	104.38								
Ba	$M\zeta$		1	1	56	6	0.601	20.64000	2		14.82	18.27	23.65	34.30	93.27	101.61	104.40								
Cr	$K\alpha_2$		9	50	24	6	5.405	20.64244	6	4	14.83	18.27	23.66	34.30	93.28	101.63	104.42								
Rh	$L\beta_{2,15}$		5	25	45	6	3.001	20.65498	4		14.83	18.28	23.67	34.32	93.35	101.71	104.51								
I	$L\gamma_1$		8	8	53	6	4.800	20.65952	5		14.84	18.29	23.68	34.33	93.38	101.74	104.54								
Ag	M_2-N_4		1	50	47	6	0.600	20.65999	2		14.84	18.29	23.68	34.33	93.38	101.75	104.55								
Os	M_3-N_1		3	.5	76	6	1.799	20.67000	2		14.85	18.30	23.69	34.35	93.44	101.82	104.62								
Sb	$L\alpha_2$		6	10	51	6	3.595	20.69038	5		14.86	18.32	23.71	34.38	93.56	101.96	104.76								
Th	$M\alpha_1$		5	100	90	6	2.996	20.69049	4		14.86	18.32	23.71	34.38	93.56	101.96	104.76								
Cr	AL_3		1		24	6	0.599	20.70000	1		14.87	18.32	23.72	34.40	93.62	102.02	104.83								
Mo	$L8_1$		4	45	42	6	2.394	20.70831	5		14.87	18.33	23.73	34.42	93.67	102.08	104.89								
Ga	$L\beta_{3,4}$		2	2	31	6	1.197	20.71799	3		14.88	18.34	23.75	34.43	93.72	102.14	104.96								
K	$K8_{1,3}$		6	15	19	6	3.589	20.72339	4	4	14.88	18.35	23.75	34.44	93.76	102.18	105.00								
La	$L\beta_{2,15}$		9	20	57	6	5.383	20.72699	4		14.89	18.35	23.76	34.45	93.78	102.21	105.03								
Pd	$L\beta_1$		5	42	46	6	2.990	20.73109	5		14.89	18.35	23.76	34.45	93.80	102.23	105.06								
Th	$M\alpha_2$		5	100	90	6	2.986	20.75499	3		14.91	18.37	23.79	34.50	93.94	102.40	105.23								
Zr	Ll		3	3	40	6	1.792	20.75549	4		14.91	18.37	23.79	34.50	93.95	102.40	105.23								
Ag	$L\alpha_1$		5	100	47	6	2.984	20.77214	5		14.92	18.39	23.81	34.52	94.04	102.52	105.35								
Pm	$L\beta_1$		10	50	61	6	5.960	20.79698	4		14.94	18.41	23.84	34.57	94.19	102.69	105.53								
Ce	$L\beta_3$		9	6	58	6	5.364	20.79810	4		14.94	18.41	23.84	34.57	94.20	102.69	105.54								
U	N_2-P_1		2		92	6	1.192	20.79999	2		14.94	18.41	23.84	34.57	94.21	102.71	105.56								
Gd	Ll		9	2	64	6	5.361	20.80978	4		14.95	18.42	23.85	34.59	94.27	102.77	105.63								
Ag	$L\alpha_2$		5	10	47	6	2.978	20.81468	5		14.95	18.43	23.86	34.60	94.30	102.81	105.66								
In	$L\beta_3$		6	6	49	6	3.572	20.81903	5		14.95	18.43	23.86	34.60	94.32	102.84	105.69								
Cr	$K\beta_{1,3}$		10	18	24	6	5.946	20.84869	5	4	14.97	18.46	23.90	34.66	94.50	103.04	105.91								
In	$L\gamma_{2,3}$		7	2	49	6	4.160	20.85999	4		14.98	18.47	23.91	34.68	94.57	103.12	105.99								
Ho	Ll		10	2	67	6	5.942	20.85999	4		14.98	18.47	23.91	34.68	94.57	103.12	105.99								
Rh	Ll		4	3	45	6	2.376	20.86760	4		14.99	18.47	23.92	34.69	94.61	103.17	106.05								
Ge	$L\alpha_{1,2}$		2	100	32	6	1.188	20.87219	4		14.99	18.48	23.92	34.70	94.64	103.21	106.08								

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
O	$M\gamma$		6	5	92	6	3.563	20.87399	3		14.99	18.48	23.93	34.70	94.65	103.22	106.09								
Gd	$M\alpha$		2	100	64	6	1.185	20.92000	2		15.03	18.52	23.98	34.78	94.92	103.54	106.43								
Tl	$M\zeta_1$		3	2	81	6	1.777	20.92200	3		15.03	18.52	23.98	34.78	94.94	103.55	106.44								
Pd	$L\gamma_{2,3}$		6	5	46	6	3.553	20.93520	4		15.04	18.53	24.00	34.80	95.01	103.64	106.54								
W	$M\alpha_1$		3	100	74	6	1.775	20.94899	3		15.05	18.55	24.01	34.83	95.10	103.74	106.64								
Rb	$L\beta_6$		3	3	37	6	1.775	20.95259	4		15.05	18.55	24.02	34.83	95.12	103.76	106.67								
Ar	$K\alpha_1$		5	100	18	6	2.957	20.95898	5		15.05	18.56	24.03	34.84	95.16	103.81	106.72								
Yb	$M\zeta$		2	.01	70	6	1.183	20.95999	2		15.05	18.56	24.03	34.85	95.16	103.82	106.72								
Ar	$K\alpha_{1,2}$		5	150	18	6	2.957	20.96390	5		15.06	18.56	24.03	34.85	95.19	103.84	106.75								
Ar	$K\alpha_2$		5	50	18	6	2.955	20.97369	5		15.06	18.57	24.04	34.87	95.24	103.91	106.82								
W	$M\alpha_2$		3	100	74	6	1.773	20.97600	3		15.07	18.57	24.05	34.87	95.26	103.93	106.84								
Tl	$M\beta$		4	55	81	6	2.362	20.99599	3		15.08	18.59	24.07	34.91	95.38	104.07	106.99								
Sn	$L\gamma_1$		7	8	50	6	4.130	21.00804	5		15.09	18.60	24.08	34.93	95.45	104.15	107.08								
Nd	$M\gamma$		2	1	60	6	1.180	21.00999	3		15.09	18.60	24.09	34.93	95.46	104.17	107.09								
W	M_5-O_3		3	.01	74	6	1.770	21.01498	3		15.09	18.61	24.09	34.94	95.49	104.20	107.13								
Mn	$K\alpha_1$		10	100	25	6	5.898	21.01819	6	4	15.10	18.61	24.09	34.95	95.51	104.22	107.15								
Cs	$L\beta_3$		8	6	55	6	4.716	21.02800	4		15.10	18.62	24.11	34.96	95.57	104.29	107.23								
Mn	$K\alpha_{1,2}$		10	150	25	6	5.894	21.03139	5	4	15.11	18.62	24.11	34.97	95.59	104.32	107.25								
In	$L\beta_4$		6	4	49	6	3.535	21.04181	5		15.11	18.63	24.12	34.99	95.65	104.39	107.33								
La	$L\ell$		7	2	57	6	4.124	21.04199	3		15.11	18.63	24.12	34.99	95.65	104.39	107.33								
Mn	$K\alpha_2$		10	50	25	6	5.887	21.05779	5	4	15.13	18.64	24.14	35.01	95.75	104.50	107.45								
Si	$SK\alpha_6$		3	.1	14	1	1.766	21.05984	3	3	15.13	18.65	24.14	35.02	95.76	104.52	107.46								
Te	$L\beta_3$		7	6	52	6	4.120	21.06250	5		15.13	18.65	24.15	35.02	95.78	104.53	107.48								
Ta	$M\beta$		3	45	73	6	1.765	21.06898	3		15.13	18.65	24.15	35.03	95.82	104.58	107.53								
Yb	$M\gamma$		3	1	70	6	1.765	21.07199	3		15.14	18.66	24.16	35.04	95.84	104.60	107.55								
Th	M_2-N_4		7	5	90	6	4.117	21.07700	3		15.14	18.66	24.16	35.05	95.87	104.64	107.59								
Cd	$L\beta_{2,15}$		6	25	48	6	3.528	21.08447	5		15.14	18.67	24.17	35.06	95.91	104.69	107.64								
Si	$SK\alpha_5$		3	.2	14	1	1.763	21.08870	3	3	15.15	18.67	24.18	35.07	95.94	104.72	107.68								
Tl	$M\zeta_2$		3	1	81	6	1.763	21.09599	3		15.15	18.68	24.19	35.08	95.98	104.77	107.73								
Xe	$L\alpha_1$	H	7	100	54	6	4.109	21.11620	4		15.17	18.70	24.21	35.11	96.10	104.91	107.88								
Y	$L\eta$		3	1	39	6	1.761	21.12180	4		15.17	18.70	24.22	35.12	96.14	104.95	107.92								
U	M_3-N_4		6	5	92	6	3.521	21.12599	3		15.17	18.70	24.22	35.13	96.16	104.98	107.95								
Cs	$L\gamma_1$		9	5	55	6	5.279	21.13199	4		15.18	18.71	24.23	35.14	96.20	105.02	108.00								
Ag	$L\gamma_1$		6	10	47	6	3.519	21.13559	5		15.18	18.71	24.23	35.15	96.22	105.05	108.02								
Pb	$M\alpha_1$		4	100	82	6	2.345	21.14400	3		15.19	18.72	24.24	35.16	96.27	105.11	108.09								
Ce	$L\beta_4$		9	5	58	6	5.276	21.14729	4		15.19	18.72	24.25	35.17	96.29	105.13	108.11								
Sb	$L\beta_{2,15}$		7	17	51	6	4.100	21.16344	5		15.20	18.74	24.26	35.20	96.39	105.25	108.23								
V	$L\beta_{3,4}$	H	1	.1	23	6	0.585	21.18999	2		15.22	18.76	24.29	35.24	96.55	105.44	108.43								
Pr	$L\beta_{2,15}$		10	20	59	6	5.849	21.19398	4		15.22	18.77	24.30	35.25	96.57	105.46	108.46								
Pb	$M\alpha_2$		4	100	82	6	2.339	21.19600	3		15.23	18.77	24.30	35.25	96.58	105.48	108.48								
Si	$SK\alpha_4$		3	3	14	1	1.754	21.19963	3	3	15.23	18.77	24.31	35.26	96.61	105.50	108.50								
Ce	$L\beta_1$		9	50	58	6	5.261	21.20488	4		15.23	18.78	24.31	35.27	96.64	105.54	108.54								
Rh	$L\beta_6$		5	3	45	6	2.922	21.20850	4		15.23	18.78	24.32	35.27	96.66	105.57	108.57								
Eu	$L\alpha_1$		10	100	63	6	5.845	21.20898	4		15.23	18.78	24.32	35.27	96.66	105.57	108.57								
Sc	$K\alpha_1$		7	100	21	6	4.090	21.21629	4	4	15.24	18.79	24.33	35.29	96.71	105.62	108.63								
Sc	$K\alpha_{1,2}$		7	150	21	6	4.088	21.22398	4	4	15.25	18.79	24.33	35.30	96.75	105.68	108.69								
Rb	$L\beta_1$		3	45	37	6	1.752	21.22769	4		15.25	18.80	24.34	35.31	96.78	105.70	108.71								
Si	$SK\alpha_3$		3	6	14	1	1.752	21.23029	3	3	15.25	18.80	24.34	35.31	96.79	105.72	108.73								
Sc	$K\alpha_2$		7	50	21	6	4.085	21.23940	4	4	15.26	18.81	24.35	35.33	96.85	105.79	108.80								
Nb	$L\beta_3$		4	3	41	6	2.334	21.24080	4		15.26	18.81	24.35	35.33	96.86	105.80	108.81								
Rh	$L\beta_3$		5	11	45	6	2.915	21.26099	4		15.27	18.83	24.38	35.36	96.98	105.94	108.97								
Nd	$L\beta_3$		10	6	60	6	5.828	21.26799	4		15.28	18.83	24.39	35.38	97.02	105.99	109.02								
Cr	$L\beta_1$		1	20	24	6	0.583	21.26999	2		15.28	18.83	24.39	35.38	97.03	106.01	109.03								
Ta	M_4-$O_{2,3}$		3	.01	73	6	1.748	21.26999	2		15.28	18.83	24.39	35.38	97.03	106.01	109.03								
Pt	$M\gamma$		4	3	78	6	2.331	21.27599	3		15.28	18.84	24.39	35.39	97.07	106.05	109.08								
Si	$SK\alpha'$		3	.5	14	1	1.747	21.28290	3	3	15.29	18.85	24.40	35.40	97.11	106.10	109.13								
Au	M_4-N_3		3	.01	79	6	1.746	21.30299	3		15.30	18.86	24.43	35.44	97.24	106.24	109.28								
Eu	$L\alpha_2$		10	10	63	6	5.816	21.31499	4		15.31	18.87	24.44	35.46	97.31	106.33	109.37								
La	$L\alpha_1$		8	100	57	6	4.650	21.32559	5		15.32	18.88	24.45	35.47	97.37	106.40	109.46								
Te	$L\beta_4$		7	4	52	6	4.069	21.32626	5		15.32	18.88	24.45	35.48	97.38	106.41	109.46								
In	$L\beta_1$		6	75	49	6	3.487	21.33185	5		15.32	18.89	24.46	35.49	97.41	106.45	109.50								
Cs	$L\beta_4$		8	5	55	6	4.649	21.33279	4		15.32	18.89	24.46	35.49	97.42	106.46	109.51								
Nd	$L\alpha_1$		9	100	60	6	5.229	21.33359	4		15.32	18.89	24.46	35.49	97.42	106.46	109.52								
S	$SK\alpha_4$		4	45	16	1	2.324	21.33661	3	3	15.33	18.89	24.47	35.49	97.44	106.48	109.54								
Te	M_4-$O_{2,3}$		1	10	52	6	0.581	21.34000	2		15.33	18.90	24.47	35.50	97.46	106.51	109.56								

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
In	Ll		5	7	49	6	2.904	21.34364	5		15.33	18.90	24.47	35.51	97.48	106.53	109.59								
I	Ll		6	7	53	6	3.484	21.34523	5		15.33	18.90	24.48	35.51	97.49	106.54	109.60								
S	SKα_3		4	45	16	1	2.321	21.36305	3	3	15.35	18.92	24.50	35.54	97.60	106.67	109.74								
Si	Kα_1		3	100	14	6	1.740	21.37625	5	3	15.36	18.93	24.51	35.56	97.68	106.77	109.84								
Si	K$\alpha_{1,2}$		3	150	14	6	1.739	21.37872	5	3	15.36	18.93	24.51	35.57	97.70	106.79	109.86								
Nb	Lβ_4		4	3	41	6	2.319	21.38199	4		15.36	18.93	24.52	35.57	97.72	106.81	109.88								
Si	Kα_2		3	50	14	6	1.739	21.38373	5	3	15.36	18.94	24.52	35.57	97.73	106.82	109.90								
La	Lα_2		8	10	57	6	4.633	21.40263	5		15.37	18.95	24.54	35.61	97.85	106.96	110.04								
Nd	Ll		8	2	60	6	4.632	21.40799	4		15.38	18.96	24.55	35.62	97.88	107.00	110.08								
La	Lγ_1		10	5	57	6	5.788	21.41800	4		15.39	18.97	24.56	35.63	97.94	107.07	110.16								
Nd	Lα_2		9	10	60	6	5.207	21.42628	4		15.39	18.97	24.57	35.65	97.99	107.13	110.22								
Rh	Lβ_4		5	5	45	6	2.890	21.44398	4		15.40	18.99	24.59	35.68	98.10	107.26	110.36								
Nb	Lβ_6		4	3	41	6	2.312	21.44519	4		15.41	18.99	24.59	35.68	98.11	107.27	110.37								
Pa	Mγ		6	5	91	6	3.465	21.46199	3		15.42	19.01	24.61	35.71	98.21	107.39	110.50								
As	Ln		2	1	33	6	1.155	21.46799	3		15.42	19.01	24.62	35.72	98.25	107.43	110.54								
Cs	Lβ_1		8	50	55	6	4.619	21.46959	4		15.42	19.01	24.62	35.72	98.26	107.44	110.56								
S	Kα_1		4	100	16	6	2.307	21.48863	5	3	15.44	19.03	24.64	35.75	98.38	107.58	110.70								
S	K$\alpha_{1,2}$		4	150	16	6	2.307	21.49237	5	3	15.44	19.03	24.65	35.76	98.40	107.61	110.73								
S	Kα_2		4	50	16	6	2.306	21.49983	5	3	15.44	19.04	24.66	35.77	98.44	107.66	110.79								
Eu	Mβ		2	45	63	6	1.153	21.50000	3		15.44	19.04	24.66	35.77	98.45	107.67	110.79								
Sn	M_3-N_1		1	10	50	6	0.577	21.50000	1		15.44	19.04	24.66	35.77	98.45	107.67	110.79								
Te	Lβ_1		7	75	52	6	4.029	21.53738	5		15.47	19.07	24.70	35.84	98.68	107.94	111.08								
Eu	Ll		9	2	63	6	5.176	21.55319	4		15.48	19.09	24.72	35.87	98.78	108.05	111.20								
Sb	L$\gamma_{2,3}$		8	2	51	6	4.599	21.56239	4		15.49	19.09	24.73	35.88	98.83	108.12	111.27								
Dy	Ll		10	2	66	6	5.742	21.58769	5		15.51	19.12	24.76	35.93	98.99	108.31	111.47								
Sn	Lα_1		6	100	50	6	3.443	21.59962	5		15.52	19.13	24.77	35.95	99.06	108.40	111.56								
Mo	Lα_1		4	100	42	6	2.293	21.62619	5		15.54	19.15	24.80	35.99	99.23	108.59	111.77								
Ca	K$\beta_{1,3}$		7	15	20	6	4.012	21.62788	4	4	15.54	19.15	24.80	35.99	99.24	108.60	111.79								
Ba	L$\beta_{2,15}$		9	20	56	6	5.156	21.63913	5		15.55	19.16	24.82	36.01	99.31	108.69	111.87								
Cr	L$\alpha_{1,2}$		1	100	24	6	0.573	21.64000	2		15.55	19.16	24.82	36.02	99.31	108.69	111.88								
Sb	Ln		6	7	51	6	3.436	21.64589	5		15.55	19.17	24.83	36.03	99.35	108.74	111.93								
Sn	Lα_2		6	10	50	6	3.435	21.65346	5		15.56	19.18	24.83	36.04	99.40	108.79	111.99								
Mo	Lα_2		4	10	42	6	2.289	21.65747	5		15.56	19.18	24.84	36.05	99.42	108.82	112.02								
Nd	Lβ_1		10	50	60	6	5.721	21.66899	4		15.57	19.19	24.85	36.07	99.50	108.91	112.11								
Nd	Lβ_4		10	5	60	6	5.721	21.66899	4		15.57	19.19	24.85	36.07	99.50	108.91	112.11								
Pa	M_3-N_4		6	5	91	6	3.430	21.68399	3		15.58	19.20	24.87	36.09	99.59	109.02	112.23								
La	Lβ_3		9	6	57	6	5.143	21.69449	4		15.59	19.21	24.88	36.11	99.66	109.10	112.31								
Te	Lγ_1		8	8	52	6	4.570	21.69928	5		15.59	19.22	24.89	36.12	99.69	109.13	112.35								
Hg	Mβ		4	50	80	6	2.282	21.72719	4		15.61	19.24	24.92	36.17	99.86	109.34	112.57								
Kr	L_2-N_3	B	3	.01	36	6	1.710	21.75000	3		15.63	19.26	24.95	36.20	100.00	109.51	112.75								
Ta	Mα		3	100	73	6	1.709	21.75600	3		15.63	19.27	24.95	36.21	100.04	109.55	112.79								
Te	M_5-O_3		1	1	52	6	0.569	21.78000	2		15.65	19.29	24.98	36.26	100.19	109.73	112.98								
Kr	Lβ_3		3	1	36	6	1.706	21.79199	3		15.66	19.30	25.00	36.28	100.27	109.82	113.08								
Ag	Mγ		1	100	47	6	0.568	21.81999	2		15.68	19.33	25.03	36.33	100.44	110.03	113.30								
Kr	Lγ_5		3	.1	36	6	1.703	21.83699	3		15.69	19.34	25.05	36.35	100.55	110.16	113.44								
Pd	Lα_1		5	100	46	6	2.838	21.83833	5		15.69	19.34	25.05	36.36	100.56	110.17	113.45								
Tl	Mα_1		4	100	81	6	2.270	21.84000	3		15.69	19.34	25.05	36.36	100.57	110.18	113.46								
Mn	Ln		1	1	25	6	0.567	21.84999	2		15.70	19.35	25.06	36.38	100.63	110.26	113.54								
Cd	Lβ_3		6	11	48	6	3.401	21.86969	5		15.71	19.37	25.09	36.41	100.76	110.41	113.70								
Rh	Lβ_1		5	42	45	6	2.834	21.87070	5		15.71	19.37	25.09	36.41	100.76	110.41	113.71								
Pd	Lα_2		5	10	46	6	2.833	21.87939	5		15.72	19.38	25.10	36.43	100.82	110.48	113.78								
Tl	Mα_2		4	100	81	6	2.265	21.88799	3		15.73	19.39	25.11	36.44	100.87	110.54	113.85								
Ta	M_5-O_3		3	.01	73	6	1.698	21.89999	2		15.73	19.40	25.12	36.46	100.95	110.64	113.94								
Hf	Mβ		3	45	72	6	1.697	21.90900	3		15.74	19.40	25.13	36.48	101.01	110.70	114.02								
Kr	Lβ_4		3	1	36	6	1.697	21.91199	3		15.74	19.41	25.14	36.48	101.03	110.73	114.04								
Eu	Mα		2	100	63	6	1.131	21.92000	2		15.75	19.41	25.15	36.50	101.08	110.79	114.11								
Ba	Ll		7	2	56	6	3.953	21.94849	4		15.77	19.44	25.18	36.55	101.26	111.00	114.34								
Rb	Lα_1		3	100	37	6	1.694	21.95490	4		15.77	19.45	25.19	36.56	101.30	111.05	114.39								
Cd	Lγ_2		7	5	48	6	3.951	21.96388	4		15.78	19.45	25.20	36.57	101.36	111.12	114.46								
Nb	Lβ_1		4	45	41	6	2.257	21.96919	4		15.78	19.46	25.20	36.58	101.39	111.16	114.50								
Rb	Lα_2		3	10	37	6	1.692	21.97530	4		15.79	19.46	25.21	36.59	101.43	111.21	114.55								
Ti	Kα_1		8	100	22	6	4.510	21.98807	5	4	15.80	19.48	25.22	36.61	101.51	111.30	114.66								
Pr	Mγ		2	1	59	6	1.127	21.99599	3		15.80	19.48	25.23	36.63	101.56	111.36	114.72								
Ti	K$\alpha_{1,2}$		8	150	22	6	4.508	21.99780	5	4	15.80	19.48	25.24	36.63	101.57	111.38	114.74								
Sm	Lα_1		10	100	62	6	5.635	21.99799	5		15.80	19.48	25.24	36.63	101.57	111.38	114.74								

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
I	$L\beta_{2,15}$	8	17	53	6		4.507	22.00423	5		15.81	19.49	25.24	36.64	101.64	111.43	114.79								
Ru	Ll	4	3	44	6		2.252	22.01399	4		15.82	19.50	25.25	36.66	101.68	111.50	114.87								
Cl	$K\beta$	5	8	17	6		2.815	22.01698	4	3	15.82	19.50	25.26	36.66	101.69	111.52	114.89								
Ti	$K\alpha_2$	8	50	22	6		4.504	22.01727	5	4	15.82	19.50	25.26	36.67	101.70	111.53	114.89								
I	$L\gamma_{2,3}$	9	2	53	6		5.065	22.02748	4		15.83	19.51	25.27	36.68	101.76	111.61	114.98								
I	$L\alpha_1$	7	100	53	6		3.937	22.04019	5		15.84	19.52	25.29	36.70	101.84	111.70	115.08								
La	$L\beta_4$	9	5	57	6		5.061	22.04369	4		15.84	19.53	25.29	36.71	101.87	111.73	115.11								
Ga	$L\beta_1$	2	35	31	6		1.125	22.04599	3		15.84	19.53	25.29	36.71	101.88	111.75	115.13								
Sb	$L\beta_3$	7	6	51	6		3.932	22.06805	5		15.86	19.55	25.32	36.75	102.02	111.92	115.31								
Y	Ll	3	3	39	6		1.685	22.06889	4		15.86	19.55	25.32	36.75	102.03	111.92	115.32								
Th	$M\gamma$	6	5	90	6		3.369	22.07399	3		15.86	19.55	25.32	36.76	102.06	111.96	115.36								
W	M_3-N_1	3	.5	74	6		1.684	22.07999	3		15.86	19.56	25.33	36.77	102.10	112.01	115.41								
Ce	$L\beta_{2,15}$	10	20	58	6		5.612	22.08699	4		15.87	19.56	25.34	36.79	102.14	112.06	115.47								
Cd	$L\beta_4$	6	5	48	6		3.367	22.09218	5		15.87	19.57	25.35	36.79	102.18	112.10	115.51								
Pd	M_2-N_4	1	50	46	6		0.561	22.09999	1		15.88	19.58	25.36	36.81	102.23	112.16	115.57								
I	$L\alpha_2$	7	10	53	6		3.925	22.10536	5		15.88	19.58	25.36	36.82	102.26	112.20	115.62								
Sm	$L\alpha_2$	10	10	62	6		5.607	22.10619	5		15.88	19.58	25.36	36.82	102.27	112.21	115.62								
Rh	$L\gamma_{2,3}$	6	5	45	6		3.363	22.11299	4		15.89	19.59	25.37	36.83	102.31	112.26	115.68								
Pt	M_4-N_3	3	.01	78	6		1.682	22.11299	3		15.89	19.59	25.37	36.83	102.31	112.26	115.68								
La	$L\beta_1$	9	50	57	6		5.041	22.13019	5		15.90	19.60	25.39	36.86	102.42	112.40	115.82								
In	$L\gamma_1$	7	9	49	6		3.920	22.13490	5		15.90	19.61	25.40	36.87	102.45	112.43	115.86								
Th	N_2-P_1	2		90	6		1.120	22.14000	2		15.91	19.61	25.40	36.88	102.48	112.47	115.90								
As	Ll	2	1	33	6		1.120	22.14400	3		15.91	19.61	25.41	36.88	102.51	112.50	115.93								
Pr	$L\alpha_1$	9	100	59	6		5.033	22.16699	4		15.93	19.64	25.43	36.92	102.66	112.68	116.13								
Pr	$L\beta_3$	10	6	59	6		5.591	22.17198	4		15.93	19.64	25.44	36.93	102.69	112.72	116.17								
Ba	$L\alpha_1$	8	100	56	6		4.465	22.20760	5		15.96	19.67	25.48	36.99	102.92	113.00	116.46								
Ag	$L\beta_{2,15}$	6	25	47	6		3.347	22.22009	5		15.97	19.68	25.50	37.02	103.00	113.09	116.57								
Sn	$L\beta_{2,15}$	7	17	50	6		3.904	22.22534	5		15.97	19.69	25.50	37.02	103.04	113.14	116.61								
Sc	$K\beta_{1,3}$	8	20	21	6		4.460	22.23679	4	4	15.98	19.70	25.51	37.04	103.11	113.22	116.71								
Pr	$L\alpha_2$	9	10	59	6		5.013	22.25609	4		15.99	19.72	25.54	37.08	103.24	113.38	116.87								
Pr	Ll	8	2	59	6		4.452	22.27280	4		16.00	19.73	25.56	37.11	103.34	113.51	117.01								
Ba	$L\alpha_2$	8	10	56	6		4.450	22.28423	5		16.01	19.74	25.57	37.13	103.42	113.60	117.10								
Mn	Ll	1	2	25	6		0.556	22.28999	2		16.02	19.75	25.58	37.14	103.46	113.64	117.15								
U	$M\beta$	6	60	92	6		3.336	22.29599	3		16.02	19.75	25.58	37.15	103.50	113.69	117.20								
K	$SK\alpha_4$	6	3	19	1		3.335	22.29895	3	4	16.02	19.75	25.59	37.15	103.51	113.71	117.23								
Te	Ll	6	7	52	6		3.335	22.30176	5		16.02	19.76	25.59	37.16	103.53	113.73	117.25								
Th	M_3-N_4	6	5	90	6		3.334	22.30798	3		16.03	19.76	25.60	37.17	103.57	113.78	117.30								
K	$SK\alpha_3$	6	3	19	1		3.332	22.32359	3	4	16.04	19.78	25.62	37.19	103.68	113.91	117.44								
Sb	$L\beta_4$	7	4	51	6		3.886	22.33098	5		16.05	19.78	25.62	37.21	103.72	113.96	117.50								
Sm	Ll	9	2	62	6		4.994	22.34070	4		16.05	19.79	25.64	37.22	103.79	114.04	117.58								
Pd	$L\gamma_1$	6	10	46	6		3.328	22.34760	4		16.06	19.80	25.64	37.24	103.83	114.10	117.64								
Tb	Ll	10	2	65	6		5.546	22.35199	4		16.06	19.80	25.65	37.24	103.86	114.13	117.68								
Au	Mz_1	3	2	79	6		1.660	22.39799	3		16.09	19.84	25.70	37.32	104.16	114.50	118.07								
Zn	$L\beta_{3,4}$	2	1	30	6		1.107	22.39999	3		16.10	19.84	25.71	37.33	104.18	114.51	118.08								
Cd	Ll	5	2	48	6		2.767	22.40070	5		16.10	19.84	25.71	37.33	104.18	114.52	118.09								
Ba	$L\gamma_1$	10	5	56	6		5.530	22.41499	4		16.11	19.86	25.72	37.35	104.27	114.63	118.21								
Cd	$L\beta_1$	6	42	48	6		3.316	22.42937	5		16.12	19.87	25.74	37.38	104.37	114.75	118.34								
Ru	$L\beta_6$	5	3	44	6		2.763	22.43300	4		16.12	19.87	25.74	37.38	104.39	114.77	118.37								
Ru	$L\beta_3$	5	3	44	6		2.763	22.43300	4		16.12	19.87	25.74	37.38	104.39	114.77	118.37								
K	$K\alpha_1$	6	100	19	6		3.313	22.44839	4	4	16.13	19.89	25.76	37.41	104.49	114.90	118.50								
K	$K\alpha_{1,2}$	6	150	19	6		3.312	22.45459	4	4	16.14	19.89	25.77	37.42	104.54	114.95	118.55								
K	$K\alpha_2$	6	50	19	6		3.310	22.46700	4	4	16.14	19.90	25.78	37.44	104.62	115.05	118.66								
Au	$M\beta$	4	50	79	6		2.204	22.49599	3		16.17	19.93	25.82	37.49	104.81	115.28	118.91								
Kr	$L\beta_6$	3	.1	36	6		1.651	22.52998	3		16.19	19.96	25.86	37.55	105.03	115.55	119.20								
Zr	$L\beta_3$	4	3	40	6		2.201	22.53200	4		16.19	19.96	25.86	37.55	105.05	115.57	119.22								
V	$K\alpha_1$	9	100	23	6		4.951	22.53203	5	4	16.19	19.96	25.86	37.55	105.05	115.57	119.22								
U	M_2-N_4	8	5	92	6		4.400	22.53600	3		16.19	19.97	25.86	37.56	105.07	115.60	119.25								
Sm	$M\beta$	2	45	62	6		1.100	22.53999	2		16.20	19.97	25.87	37.57	105.10	115.63	119.29								
V	$K\alpha_{1,2}$	9	150	23	6		4.949	22.54349	5	4	16.20	19.97	25.87	37.57	105.12	115.66	119.32								
Pr	$L\beta_4$	10	5	59	6		5.497	22.54999	4		16.20	19.98	25.88	37.59	105.17	115.71	119.38								
Sr	Ln	3	1	38	6		1.649	22.55128	4		16.21	19.98	25.88	37.59	105.18	115.73	119.39								
V	$K\alpha_2$	9	50	23	6		4.944	22.56641	5	4	16.22	19.99	25.90	37.61	105.28	115.85	119.52								
Au	Mz_2	3	1	79	6		1.648	22.56898	3		16.22	20.00	25.90	37.62	105.29	115.87	119.54								
Sb	$L\beta_1$	7	75	51	6		3.843	22.57968	5		16.23	20.00	25.91	37.64	105.36	115.96	119.63								
Ga	$L\alpha_{1,2}$	2	100	31	6		1.098	22.58400	3		16.23	20.01	25.92	37.64	105.39	115.99	119.67								

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pr	$L\beta_1$		10	50	59	6	5.488	22.58798	4		16.23	20.01	25.92	37.65	105.42	116.02	119.71								
Hg	$M\alpha$		4	100	80	6	2.195	22.59039	4		16.23	20.01	25.93	37.65	105.44	116.04	119.73								
Cs	$L\beta_{2,15}$		9	20	55	6	4.935	22.60619	4		16.24	20.03	25.95	37.68	105.54	116.17	119.87								
Ru	$L\beta_4$		5	3	44	6	2.741	22.61499	4		16.25	20.04	25.96	37.70	105.60	116.24	119.94								
Hf	$M\alpha$		3	100	72	6	1.644	22.61699	3		16.25	20.04	25.96	37.70	105.61	116.26	119.96								
Ti	$K\beta_{1,3}$		9	20	22	6	4.931	22.62518	5	4	16.26	20.05	25.97	37.72	105.67	116.33	120.03								
In	$L\alpha_1$		6	100	49	6	3.286	22.63152	5		16.26	20.05	25.98	37.73	105.71	116.38	120.09								
Er	$M\gamma$		3	1	68	6	1.643	22.63799	3		16.27	20.06	25.98	37.74	105.75	116.43	120.15								
Ba	$L\beta_3$		9	6	56	6	4.926	22.64758	4		16.27	20.07	25.99	37.75	105.82	116.51	120.23								
Si	$M\gamma$		5	5	83	6	2.735	22.65999	3		16.28	20.08	26.01	37.78	105.90	116.61	120.34								
Sn	$L\gamma_{2,3}$		8	2	50	6	4.376	22.66159	4		16.28	20.08	26.01	37.78	105.91	116.62	120.35								
Zr	$L8_4$		4	3	40	6	2.187	22.67239	4		16.29	20.09	26.02	37.80	105.98	116.71	120.45								
In	$L\alpha_2$		6	10	49	6	3.279	22.68437	5		16.30	20.10	26.04	37.82	106.06	116.81	120.55								
Kr	$L\beta_1$		3	35	36	6	1.636	22.72800	3		16.33	20.14	26.09	37.89	106.36	117.17	120.94								
Sn	Ln		6	7	50	6	3.272	22.73254	5		16.34	20.14	26.09	37.90	106.39	117.21	120.98								
Er	Mz		2	.01	68	6	1.090	22.73999	2		16.34	20.15	26.10	37.91	106.44	117.27	121.05								
Er	M_3-N_4		3	.1	68	6	1.631	22.79999	2		16.39	20.20	26.17	38.02	106.84	117.77	121.59								
Lu	$M\beta$		3	45	71	6	1.631	22.80299	3		16.39	20.20	26.18	38.02	106.86	117.79	121.61								
Sb	$L\gamma_1$		8	8	51	6	4.347	22.81271	5		16.39	20.21	26.19	38.04	106.93	117.87	121.70								
Pm	$L\alpha_1$		10	100	61	6	5.432	22.82199	4		16.40	20.22	26.20	38.06	106.99	117.95	121.78								
Ta	M_3-N_1		3	.5	73	6	1.628	22.83600	3		16.41	20.23	26.21	38.08	107.09	118.07	121.91								
Zr	$L\beta_6$		4	3	40	6	2.171	22.84039	4		16.41	20.24	26.22	38.09	107.12	118.10	121.95								
V	$K8_{1,3}$		10	20	23	6	5.426	22.84399	5	4	16.42	20.24	26.22	38.09	107.14	118.13	121.98								
Si	M_3-N_4		5	5	83	6	2.712	22.85500	3		16.42	20.25	26.24	38.11	107.22	118.23	122.08								
Cs	Ll		7	2	55	6	3.794	22.86899	4		16.43	20.26	26.25	38.14	107.31	118.34	122.21								
Cr	$K\alpha_1$		10	100	24	6	5.414	22.89699	5	4	16.46	20.29	26.29	38.19	107.50	118.58	122.46								
Nb	$L\alpha_1$		4	100	41	6	2.166	22.89719	4		16.46	20.29	26.29	38.19	107.50	118.58	122.47								
Cd	M_2-N_1		1	1	48	6	0.541	22.89999	1		16.46	20.29	26.29	38.19	107.52	118.60	122.49								
Cr	$K\alpha_{1,2}$		10	150	24	6	5.411	22.91000	5	4	16.46	20.30	26.30	38.21	107.59	118.69	122.58								
Pm	$L\alpha_2$		10	10	61	6	5.407	22.92599	4		16.48	20.31	26.32	38.24	107.70	118.82	122.73								
Nb	$L\alpha_2$		4	10	41	6	2.163	22.92760	4		16.48	20.32	26.32	38.24	107.71	118.84	122.74								
Ir	M_4-N_3		3	.01	77	6	1.621	22.93500	3		16.48	20.32	26.33	38.25	107.76	118.90	122.81								
Cr	$K\alpha_2$		10	50	24	6	5.405	22.93605	6	4	16.48	20.32	26.33	38.25	107.77	118.91	122.82								
Sm	$M\alpha$		2	100	62	6	1.081	22.93999	2		16.49	20.33	26.34	38.26	107.80	118.94	122.86								
I	Ln		7	7	53	6	3.780	22.95853	5		16.50	20.34	26.36	38.29	107.92	119.10	123.03								
Pa	$M\beta$		6	60	91	6	3.239	22.96199	3		16.50	20.35	26.36	38.30	107.95	119.13	123.06								
Rh	$L\alpha_1$		5	100	45	6	2.696	22.98714	5		16.52	20.37	26.39	38.34	108.12	119.34	123.29								
I	$L\beta_3$		8	6	53	6	4.313	22.99431	5		16.53	20.38	26.40	38.35	108.17	119.40	123.36								
Ba	$L\beta_4$		9	5	56	6	4.851	22.99770	4		16.53	20.38	26.40	38.36	108.19	119.43	123.39								
Ag	$L\beta_3$		6	11	47	6	3.234	22.99878	5		16.53	20.38	26.40	38.36	108.20	119.44	123.40								
Bi	M_2-N_4		6	5	83	6	3.233	23.00400	3		16.53	20.38	26.41	38.37	108.24	119.49	123.45								
Te	$L\alpha_1$		7	100	52	6	3.769	23.02440	5		16.55	20.40	26.43	38.41	108.38	119.66	123.64								
Rh	$L\alpha_2$		5	10	45	6	2.692	23.02724	5		16.55	20.41	26.44	38.41	108.40	119.68	123.66								
La	$L\beta_{2,15}$		10	20	57	6	5.383	23.02998	4		16.55	20.41	26.44	38.42	108.42	119.71	123.69								
Ce	$L\alpha_1$		9	100	58	6	4.839	23.05348	4		16.57	20.43	26.47	38.46	108.58	119.91	123.91								
Te	$L\beta_{2,15}$		8	17	52	6	4.301	23.05736	5		16.57	20.43	26.47	38.46	108.60	119.94	123.94								
Ce	$M\gamma$		2	1	58	6	1.075	23.06000	2		16.57	20.43	26.48	38.47	108.62	119.97	123.97								
Te	$L\alpha_2$		7	10	52	6	3.758	23.08920	5		16.59	20.46	26.51	38.52	108.83	120.22	124.24								
Ru	$L8_1$		5	45	44	6	2.683	23.10289	5		16.60	20.47	26.53	38.54	108.92	120.34	124.37								
Te	$L\gamma_{2,3}$		9	2	52	6	4.828	23.10660	4		16.61	20.48	26.53	38.55	108.95	120.37	124.40								
Ce	$L\beta_3$		10	6	58	6	5.364	23.10899	4		16.61	20.48	26.53	38.55	108.96	120.39	124.43								
Ba	$L\beta_1$		9	50	56	6	4.827	23.11388	5		16.61	20.48	26.54	38.56	109.00	120.43	124.47								
Th	N_2-O_4		2		90	6	1.072	23.12000	2		16.62	20.49	26.55	38.57	109.04	120.48	124.53								
Gd	Ll		10	2	64	6	5.361	23.12199	4		16.62	20.49	26.55	38.58	109.05	120.50	124.55								
Ce	Ll		8	2	58	6	4.287	23.13359	4		16.63	20.50	26.56	38.60	109.13	120.60	124.66								
Ce	$L\alpha_2$		9	10	58	6	4.822	23.13539	4		16.63	20.50	26.56	38.60	109.15	120.62	124.68								
Cs	$L\alpha_1$		8	100	55	6	4.286	23.13919	4		16.63	20.51	26.57	38.61	109.17	120.65	124.71								
Sn	$L\beta_3$		7	6	50	6	3.750	23.14093	5		16.63	20.51	26.57	38.61	109.18	120.67	124.73								
Ag	$L\gamma_3$		7	2	47	6	3.749	23.14444	5		16.63	20.51	26.57	38.61	109.21	120.70	124.76								
Na	$K\beta$	A	2	.5	11	6	1.071	23.14999	3	2	16.64	20.52	26.58	38.62	109.25	120.74	124.81								
P	$K\beta$		4	3	15	6	2.139	23.18399	3	3	16.66	20.55	26.62	38.68	109.49	121.04	125.14								
Ag	$L\gamma_2$		7	3	47	6	3.743	23.18510	5		16.66	20.55	26.62	38.69	109.49	121.05	125.15								
Pt	Mz_1		3	2	78	6	1.602	23.21399	3		16.68	20.57	26.66	38.74	109.70	121.30	125.42								
P	$K\beta_1$		4	3	15	0	2.136	23.21519	3	3	16.69	20.57	26.66	38.74	109.70	121.31	125.43								
Cs	$L\alpha_2$		8	10	55	6	4.272	23.21599	4		16.69	20.57	26.66	38.74	109.71	121.32	125.44								

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ge	Ln		2	1	32	6	1.068	23.21799	3		16.69	20.58	26.66	38.74	109.72	121.34	125.46								
Ag	$L\beta_4$		6	5	47	6	3.203	23.22137	5		16.69	20.58	26.66	38.75	109.75	121.37	125.49								
Na	$K\beta_1$		2	.5	11	1	1.067	23.23483	3	2	16.70	20.59	26.68	38.77	109.84	121.49	125.62								
I	$L\gamma_1$		9	8	53	6	4.800	23.24194	5		16.70	20.60	26.69	38.78	109.89	121.55	125.69								
Pa	M_2-N_4		8	5	91	6	4.260	23.28000	3		16.73	20.63	26.73	38.85	110.16	121.89	126.06								
I	$L\beta_4$		8	4	53	6	4.257	23.29655	5		16.74	20.65	26.75	38.88	110.28	122.03	126.22								
Pd	$M\gamma$	H	1	100	46	6	0.532	23.29999	1		16.75	20.65	26.76	38.88	110.30	122.06	126.25								
Br	$L\beta_{3,4}$	H	3	2	35	6	1.596	23.30099	3		16.75	20.65	26.76	38.89	110.31	122.07	126.26								
Pt	$M\beta$		4	50	78	6	2.127	23.31200	3		16.76	20.66	26.77	38.91	110.39	122.17	126.37								
Ar	$K\beta_{1,3}$		6	15	18	6	3.190	23.31599	4		16.76	20.66	26.78	38.91	110.41	122.21	126.41								
O	AK		1		8	6	0.532	23.31999	2		16.76	20.67	26.78	38.92	110.44	122.24	126.45								
Sb	Ll		6	7	51	6	3.188	23.32956	5		16.77	20.68	26.79	38.94	110.51	122.33	126.54								
Zr	$L\beta_1$		4	45	40	6	2.124	23.34399	4		16.78	20.69	26.81	38.96	110.61	122.46	126.68								
Cd	$L\gamma_1$		7	10	48	6	3.716	23.34947	5		16.78	20.69	26.81	38.97	110.65	122.50	126.73								
Ca	$SK\alpha_4$		7	2	20	1	3.715	23.35777	3	4	16.79	20.70	26.82	38.98	110.71	122.58	126.82								
Au	$M\alpha_1$		4	100	79	6	2.123	23.35999	3		16.79	20.70	26.83	38.99	110.73	122.60	126.84								
In	$L\beta_{2,15}$		7	17	49	6	3.713	23.36865	5		16.80	20.71	26.84	39.00	110.79	122.68	126.92								
Pt	$M\zeta_2$		3	1	78	6	1.591	23.37000	3		16.80	20.71	26.84	39.01	110.80	122.69	126.94								
Pb	$M\gamma$		5	5	82	6	2.652	23.37000	3		16.80	20.71	26.84	39.01	110.80	122.69	126.94								
Na	$SK\alpha_6$		2	1	11	0	1.061	23.37199	3	3	16.80	20.71	26.84	39.01	110.81	122.71	126.95								
Ca	$SK\alpha_3$		7	2	20	1	3.711	23.38092	3	4	16.81	20.72	26.85	39.03	110.87	122.79	127.04								
Sn	$L\beta_4$		7	4	50	6	3.708	23.40344	5		16.82	20.74	26.88	39.06	111.03	122.99	127.26								
Au	$M\alpha_2$		4	100	79	6	2.118	23.41599	3		16.83	20.75	26.89	39.09	111.12	123.10	127.39								
Na	$SK\alpha_5$		2	2	11	0	1.058	23.43399	3	3	16.84	20.77	26.91	39.12	111.25	123.27	127.57								
Kr	$L\alpha_{1,2}$		3	100	36	6	1.586	23.45099	3		16.86	20.79	26.93	39.15	111.37	123.42	127.74								
Pd	$L\beta_{2,15}$		6	25	46	6	3.171	23.45322	5		16.86	20.79	26.94	39.15	111.39	123.44	127.76								
U	$M\alpha_1$		6	100	92	6	3.170	23.45999	3		16.86	20.79	26.94	39.16	111.44	123.50	127.83								
Cl	$SK\alpha_4$		5	4	17	1	2.640	23.47832	3	3	16.88	20.81	26.97	39.19	111.57	123.67	128.01								
Cs	$L\gamma_1$		10	5	55	6	5.279	23.48000	4		16.88	20.81	26.97	39.20	111.58	123.68	128.03								
Ce	$L\beta_4$		10	5	58	6	5.276	23.49699	4		16.89	20.83	26.99	39.23	111.70	123.84	128.20								
I	$L\beta_1$		8	75	53	6	4.220	23.49951	5		16.89	20.83	26.99	39.23	111.72	123.86	128.22								
Sr	Ll		3	3	38	6	1.582	23.50859	4		16.90	20.84	27.00	39.25	111.79	123.94	128.31								
Ca	$K\alpha_1$		7	100	20	6	3.691	23.50873	5	4	16.90	20.84	27.00	39.25	111.79	123.95	128.31								
Ca	$K\alpha_{1,2}$		7	150	20	6	3.690	23.51636	5	4	16.90	20.84	27.01	39.26	111.84	124.02	128.39								
Lu	$M\alpha$		3	100	71	6	1.581	23.51999	3		16.91	20.85	27.01	39.27	111.87	124.05	128.43								
Ca	$K\alpha_2$		7	50	20	6	3.687	23.53160	5	4	16.91	20.86	27.03	39.29	111.95	124.16	128.55								
Ag	Ll		5	2	47	6	2.633	23.53799	4		16.92	20.86	27.04	39.30	112.00	124.21	128.61								
U	$M\alpha_2$		6	100	92	6	3.159	23.54399	3		16.92	20.87	27.04	39.31	112.04	124.27	128.67								
Cl	$SK\alpha_3$		5	4	17	1	2.631	23.55498	3	3	16.93	20.88	27.06	39.33	112.12	124.37	128.78								
Ce	$L\beta_1$		10	50	58	6	5.261	23.56099	4		16.94	20.88	27.06	39.34	112.17	124.43	128.84								
Na	$SK\alpha_4$		2	10	11	0	1.052	23.57199	3	3	16.94	20.89	27.07	39.36	112.25	124.53	128.95								
Pb	M_3-N_4		5	5	82	6	2.629	23.57498	3		16.95	20.90	27.08	39.36	112.27	124.56	128.99								
Ho	$M\gamma$		3	1	67	6	1.576	23.59499	3		16.96	20.91	27.10	39.40	112.41	124.74	129.19								
Ag	$L8_1$		6	42	47	6	3.150	23.60837	5		16.97	20.93	27.12	39.42	112.51	124.87	129.33								
Na	$SK\alpha_3$		2	10	11	0	1.050	23.60999	3	3	16.97	20.93	27.12	39.42	112.52	124.88	129.34								
O	$K\alpha$		1	100	8	6	0.525	23.62000	2	1	16.98	20.94	27.13	39.44	112.59	124.97	129.45								
Cl	$K\alpha_1$		5	100	17	6	2.622	23.63899	4	3	16.99	20.95	27.15	39.47	112.73	125.15	129.64								
Cl	$K\alpha_{1,2}$		5	150	17	6	2.621	23.64381	4	3	17.00	20.96	27.16	39.48	112.77	125.20	129.69								
Th	$M\beta$		6	60	90	6	3.145	23.64600	3		17.00	20.96	27.16	39.49	112.78	125.22	129.71								
Cl	$K\alpha_2$		5	50	17	6	2.620	23.65349	4	3	17.00	20.97	27.17	39.50	112.84	125.29	129.79								
Cs	$L\beta_3$		9	6	55	6	4.716	23.65649	4		17.01	20.97	27.17	39.50	112.86	125.31	129.82								
Hf	M_3-N_1		3	.5	72	6	1.572	23.66100	3		17.01	20.97	27.18	39.51	112.89	125.36	129.87								
Rh	$L\gamma_1$		6	10	45	6	3.143	23.66219	4		17.01	20.97	27.18	39.51	112.90	125.37	129.88								
Na	$SK\alpha'$		2	3	11	0	1.047	23.67400	3	3	17.02	20.99	27.19	39.53	112.99	125.48	130.00								
Sn	$L\beta_1$		7	75	50	6	3.662	23.69408	5		17.03	21.00	27.22	39.57	113.13	125.67	130.21								
Nd	$L\alpha_1$		10	100	60	6	5.229	23.70399	4		17.04	21.01	27.23	39.59	113.21	125.76	130.32								
Ho	$M\zeta$		2	.01	67	6	1.045	23.71999	2		17.05	21.03	27.25	39.61	113.32	125.91	130.48								
Yb	$M\beta$		3	45	70	6	1.567	23.72699	3		17.06	21.03	27.26	39.63	113.38	125.98	130.56								
Cd	$L\alpha_1$		6	100	48	6	3.133	23.73808	5		17.06	21.04	27.27	39.65	113.46	126.08	130.67								
Cd	$L\alpha_2$		6	10	48	6	3.126	23.78975	5		17.10	21.09	27.33	39.74	113.84	126.58	131.22								
Nd	$L\alpha_2$		10	10	60	6	5.207	23.80699	4		17.11	21.10	27.35	39.77	113.97	126.74	131.40								
Pb	M_2-N_4		6	5	82	6	3.124	23.80798	3		17.11	21.11	27.35	39.77	113.97	126.75	131.41								
Na	$K\alpha_{1,2}$		2	100	11	6	1.041	23.82019	4	3	17.12	21.12	27.37	39.79	114.06	126.87	131.54								
In	$L\gamma_{2,3}$		8	2	49	6	4.160	23.84000	4		17.14	21.13	27.39	39.82	114.21	127.06	131.76								
Al	$K\beta$		3	.7	13	6	1.557	23.87999	3	2	17.17	21.17	27.44	39.89	114.51	127.45	132.19								

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
V	$L\beta_1$		1	10	23	6	0.519	23.87999	2		17.17	21.17	27.44	39.89	114.51	127.45	132.19								
In	Ln		6	7	49	6	3.112	23.89961	5		17.18	21.19	27.46	39.93	114.66	127.64	132.40								
Ge	Ll		2	1	32	6	1.036	23.92999	3		17.20	21.21	27.49	39.98	114.88	127.93	132.73								
Y	$L\beta_3$		4	3	39	6	2.072	23.93279	4		17.21	21.22	27.50	39.98	114.90	127.96	132.76								
Al	$K\beta_1$		3	.7	13	1	1.553	23.94569	3	2	17.21	21.23	27.51	40.01	115.00	128.09	132.90								
Eu	Ll		10	2	63	6	5.176	23.94798	4		17.22	21.23	27.52	40.01	115.02	128.11	132.93								
Zn	$L\beta_1$		2	26	30	6	1.034	23.96599	3		17.23	21.25	27.54	40.04	115.15	128.29	133.13								
La	$L\alpha_1$		9	100	57	6	4.650	23.99129	5		17.25	21.27	27.57	40.09	115.34	128.54	133.41								
Cs	$L\beta_4$		9	5	55	6	4.649	23.99939	4		17.25	21.28	27.58	40.10	115.41	128.62	133.50								
Sn	$L\gamma_1$		8	8	50	6	4.130	24.00919	5		17.26	21.29	27.59	40.12	115.48	128.72	133.61								
Ba	$L\beta_{2,15}$		10	20	56	6	5.156	24.04349	5		17.29	21.32	27.63	40.18	115.74	129.06	133.99								
La	Ll		8	2	57	6	4.124	24.04799	3		17.29	21.32	27.63	40.19	115.77	129.10	134.04								
Ir	$M\zeta_1$		3	.01	77	6	1.545	24.06299	3		17.30	21.33	27.65	40.21	115.89	129.25	134.21								
Te	Ln		7	7	52	6	3.605	24.06822	5		17.30	21.34	27.66	40.22	115.93	129.31	134.27								
Te	$L\beta_3$		8	6	52	6	4.120	24.07143	5		17.31	21.34	27.66	40.23	115.95	129.34	134.30								
Y	$L\beta_4$		4	3	39	6	2.060	24.07439	4		17.31	21.34	27.66	40.23	115.97	129.37	134.34								
Sb	$L\alpha_1$		7	100	51	6	3.604	24.07585	5		17.31	21.35	27.67	40.23	115.99	129.38	134.35								
La	$L\alpha_2$		9	10	57	6	4.633	24.07796	5		17.31	21.35	27.67	40.24	116.00	129.40	134.38								
Nd	Ll		9	2	60	6	4.632	24.08398	4		17.31	21.35	27.67	40.25	116.05	129.47	134.45								
Th	M_2-N_4		8	5	90	6	4.117	24.08800	3		17.32	21.36	27.68	40.26	116.08	129.51	134.49								
La	$L\beta_3$		10	6	57	6	5.143	24.10500	4		17.33	21.37	27.70	40.29	116.21	129.68	134.68								
Tl	$M\gamma$		5	3	81	6	2.570	24.11499	3		17.34	21.38	27.71	40.30	116.28	129.78	134.80								
Rb	Ln		3	1	37	6	1.542	24.12450	4		17.34	21.39	27.72	40.32	116.36	129.88	134.91								
Pa	$M\alpha_1$		6	100	91	6	3.082	24.13199	3		17.35	21.40	27.73	40.33	116.41	129.95	134.99								
Xe	$L\alpha_1$	H	8	100	54	6	4.109	24.13280	4		17.35	21.40	27.73	40.33	116.42	129.96	135.00								
Sb	$L\alpha_2$		7	10	51	6	3.595	24.13879	5		17.35	21.40	27.74	40.34	116.47	130.02	135.07								
Ir	$M\beta$		4	45	77	6	2.053	24.15199	3		17.36	21.41	27.75	40.37	116.57	130.16	135.22								
Cs	$L\beta_1$		9	50	55	6	4.619	24.15329	4		17.36	21.41	27.76	40.37	116.58	130.17	135.24								
La	$M\gamma$		2	1	57	6	1.026	24.15999	2		17.37	21.42	27.76	40.38	116.63	130.24	135.31								
K	$K\beta_{1,3}$		7	15	19	6	3.589	24.17729	4	4	17.38	21.44	27.78	40.41	116.76	130.41	135.51								
Sb	$L\beta_{2,15}$		8	17	51	6	4.100	24.18680	5		17.39	21.44	27.80	40.43	116.84	130.51	135.62								
Pt	$M\alpha_1$		4	100	78	6	2.050	24.18799	3		17.39	21.45	27.80	40.43	116.84	130.52	135.64								
Ir	$M\zeta_2$		3	.01	77	6	1.537	24.19499	3		17.40	21.45	27.80	40.44	116.90	130.60	135.72								
Al	$SK\beta'$		3	.1	13	1	1.537	24.19878	2	2	17.40	21.46	27.81	40.45	116.93	130.63	135.76								
Pd	$L\beta_3$		6	11	46	6	3.072	24.20760	4		17.40	21.46	27.82	40.46	117.00	130.73	135.87								
Pa	$M\alpha_2$		6	100	91	6	3.072	24.20999	3		17.41	21.47	27.82	40.47	117.01	130.75	135.90								
Ru	$L\alpha_1$		5	100	44	6	2.558	24.22874	5		17.42	21.48	27.84	40.50	117.16	130.94	136.11								
Pt	$M\alpha_2$		4	100	78	6	2.046	24.23199	3		17.42	21.49	27.85	40.51	117.18	130.98	136.15								
Cu	$L\beta_{3,4}$		2	1	29	6	1.023	24.24399	3		17.43	21.50	27.86	40.53	117.28	131.10	136.29								
Sc	$K\alpha_1$		8	100	21	6	4.090	24.24719	4	4	17.43	21.50	27.87	40.53	117.30	131.14	136.33								
V	$L\alpha_{1,2}$		1	100	23	6	0.511	24.25000	2		17.43	21.50	27.87	40.54	117.32	131.17	136.36								
Sc	$K\alpha_{1,2}$		8	150	21	6	4.088	24.25600	4	4	17.44	21.51	27.88	40.55	117.37	131.23	136.44								
Sb	$L\gamma_{2,3}$		9	2	51	6	4.599	24.25769	4		17.44	21.51	27.88	40.55	117.38	131.25	136.46								
Ru	$L\alpha_2$		5	10	44	6	2.554	24.26904	5		17.45	21.52	27.89	40.57	117.47	131.36	136.59								
Sc	$K\alpha_2$		8	50	21	6	4.085	24.27359	4	4	17.45	21.52	27.90	40.58	117.51	131.41	136.64								
Sn	$AM_{4,5}$		1		50	6	0.511	24.28000	2		17.46	21.53	27.90	40.59	117.56	131.48	136.72								
Zr	$L\alpha_1$		4	100	40	6	2.042	24.28200	4		17.46	21.53	27.91	40.59	117.57	131.50	136.74								
In	$L\beta_3$		7	6	49	6	3.572	24.28886	5		17.46	21.54	27.91	40.61	117.63	131.57	136.83								
Cr	Ln		1	1	24	6	0.510	24.29999	2		17.47	21.55	27.93	40.63	117.71	131.69	136.96								
Zr	$L\alpha_2$		4	10	40	6	2.040	24.31119	4		17.48	21.56	27.94	40.64	117.80	131.81	137.09								
U	$M\gamma$		7	5	92	6	3.563	24.35298	3		17.51	21.59	27.99	40.72	118.13	132.25	137.60								
Te	$L\beta_4$		8	4	52	6	4.069	24.37288	5		17.52	21.61	28.01	40.75	118.28	132.46	137.84								
Br	$L\beta_1$		3	35	35	6	1.526	24.37529	4		17.53	21.61	28.02	40.76	118.30	132.49	137.87								
Y	$L\beta_6$		4	3	39	6	2.034	24.37679	4		17.53	21.62	28.02	40.76	118.31	132.50	137.89								
Ag	M_5-N_1		1	1	47	6	0.508	24.39999	1		17.54	21.64	28.05	40.80	118.50	132.75	138.17								
Te	$L\gamma_1$		9	8	52	6	4.570	24.41168	5		17.55	21.65	28.06	40.82	118.59	132.88	138.31								
Pd	$L\gamma_{2,3}$		7	5	46	6	3.553	24.42439	4		17.56	21.66	28.07	40.84	118.69	133.01	138.47								
Pd	$L\beta_4$		6	5	46	6	3.045	24.42659	4		17.56	21.66	28.08	40.85	118.71	133.04	138.50								
Sn	Ll		6	7	50	6	3.044	24.42989	5		17.57	21.66	28.08	40.85	118.73	133.07	138.54								
Dy	$M\gamma$		3	1	66	6	1.522	24.43199	3		17.57	21.66	28.08	40.86	118.75	133.10	138.57								
P	$SK\alpha_4$		4	5	15	1	2.029	24.43524	3	3	17.57	21.67	28.09	40.86	118.78	133.13	138.61								
Tc	$L\beta_1$	H	5	45	43	6	2.536	24.43649	4		17.57	21.67	28.09	40.86	118.79	133.14	138.62								
Yb	$M\alpha$		3	100	70	6	1.521	24.44699	3		17.58	21.68	28.10	40.88	118.87	133.26	138.75								
P	$SK\alpha_3$		4	5	15	1	2.027	24.46651	3	3	17.59	21.70	28.12	40.92	119.02	133.47	139.00								
I	$L\gamma_{2,3}$		10	2	53	6	5.065	24.47499	4		17.60	21.70	28.13	40.93	119.09	133.56	139.10								

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
La	$L\beta_4$		10	5	57	6	5.061	24.49300	4		17.61	21.72	28.15	40.96	119.24	133.76	139.33								
Cd	M_3-N_1		1	10	48	6	0.506	24.50000	1		17.62	21.73	28.16	40.97	119.29	133.84	139.42								
Zn	$L\alpha_{1,2}$		2	100	30	6	1.012	24.50800	3		17.62	21.73	28.17	40.99	119.36	133.92	139.52								
Bi	$M\beta$		5	60	83	6	2.525	24.54498	3		17.65	21.77	28.22	41.05	119.65	134.33	139.99								
In	$L\beta_4$		7	4	49	6	3.535	24.54878	5		17.65	21.77	28.22	41.06	119.68	134.37	140.04								
La	$L\beta_1$		10	50	57	6	5.041	24.58910	5		17.68	21.81	28.27	41.13	120.01	134.82	140.56								
Cd	$L\beta_{2,15}$		7	25	48	6	3.528	24.59854	5		17.69	21.81	28.28	41.15	120.08	134.93	140.68								
Mo	Ll		4	3	42	6	2.015	24.60320	4		17.69	21.82	28.28	41.16	120.12	134.98	140.74								
Te	$L\beta_1$		8	75	52	6	4.029	24.61415	5		17.70	21.83	28.30	41.17	120.21	135.11	140.89								
Al	$SK\alpha_6$		3	.4	13	1	1.510	24.62262	3	3	17.71	21.84	28.31	41.19	120.28	135.20	141.00								
P	$K\alpha_1$	H	4	100	15	6	2.013	24.62799	3	3	17.71	21.84	28.31	41.20	120.32	135.26	141.07								
Pr	$L\alpha_1$		10	100	59	6	5.033	24.62999	4		17.71	21.84	28.31	41.20	120.34	135.28	141.10								
P	$K\alpha_{1,2}$	H	4	150	15	6	2.013	24.63199	3	3	17.71	21.84	28.32	41.21	120.35	135.31	141.12								
P	$K\alpha_2$	H	4	50	15	6	2.012	24.64000	3	3	17.72	21.85	28.33	41.22	120.42	135.40	141.23								
U	M_3-N_4		7	5	92	6	3.521	24.64699	3		17.72	21.86	28.33	41.23	120.48	135.48	141.32								
Ag	$L\gamma_1$		7	10	47	6	3.519	24.65819	5		17.73	21.87	28.35	41.25	120.57	135.60	141.47								
Al	$SK\alpha_5$		3	.5	13	1	1.506	24.68576	3	3	17.75	21.89	28.38	41.30	120.79	135.92	141.84								
Re	M_4-N_3		3	.01	75	6	1.505	24.71700	3		17.77	21.92	28.42	41.35	121.05	136.28	142.26								
Ca	$K\beta_{1,3}$		8	15	20	6	4.012	24.71759	4	4	17.77	21.92	28.42	41.36	121.05	136.29	142.27								
Pr	$L\alpha_2$		10	10	59	6	5.013	24.72899	4		17.78	21.93	28.43	41.38	121.15	136.42	142.42								
Ti	$K\alpha_1$		9	100	22	6	4.510	24.73657	5	4	17.79	21.94	28.44	41.39	121.21	136.51	142.52								
Tm	$M\beta$		3	45	69	6	1.503	24.74699	3		17.80	21.95	28.45	41.41	121.29	136.63	142.67								
Ti	$K\alpha_{1,2}$		9	150	22	6	4.508	24.74753	5	4	17.80	21.95	28.45	41.41	121.30	136.63	142.67								
I	$L\beta_{2,15}$		9	17	53	6	4.507	24.75476	5		17.80	21.95	28.46	41.42	121.36	136.72	142.77								
Pd	Ll		5	2	46	6	2.503	24.76250	4		17.81	21.96	28.47	41.43	121.42	136.81	142.88								
Ti	$K\alpha_2$		9	50	22	6	4.504	24.76942	5	4	17.81	21.97	28.48	41.45	121.48	136.89	142.98								
Cr	Ll		1	1	24	6	0.500	24.78000	2		17.82	21.98	28.49	41.46	121.57	137.01	143.12								
Rh	$L\beta_{2,15}$		6	25	45	6	3.001	24.78600	4		17.82	21.98	28.50	41.47	121.62	137.08	143.21								
Al	$SK\alpha_4$		3	4	13	1	1.499	24.81201	3	3	17.84	22.01	28.53	41.52	121.83	137.39	143.57								
Sm	Ll		10	2	62	6	4.994	24.82300	4		17.85	22.02	28.54	41.54	121.92	137.52	143.72								
Th	$M\alpha_1$		6	100	90	6	2.996	24.82860	4		17.85	22.02	28.55	41.55	121.97	137.59	143.80								
Y	$L\beta_1$		4	45	39	6	1.995	24.84799	4		17.87	22.04	28.57	41.58	122.13	137.82	144.08								
Dy	$M\zeta$		2	.01	66	6	0.997	24.85999	2		17.88	22.05	28.58	41.60	122.23	137.96	144.25								
Al	$SK\alpha_3$		3	8	13	1	1.496	24.86011	3	3	17.88	22.05	28.59	41.60	122.23	137.96	144.25								
Pd	$L\beta_1$		6	42	46	6	2.990	24.87730	5		17.89	22.06	28.61	41.63	122.38	138.17	144.50								
Nd	$M\beta$		2	55	60	6	0.996	24.87999	2		17.89	22.07	28.61	41.64	122.40	138.20	144.54								
In	$L\beta_1$		7	75	49	6	3.487	24.88716	5		17.90	22.07	28.62	41.65	122.46	138.29	144.64								
I	Ll		7	7	53	6	3.484	24.90277	5		17.91	22.09	28.64	41.68	122.59	138.48	144.87								
Th	$M\alpha_2$		6	100	90	6	2.986	24.90599	3		17.91	22.09	28.64	41.68	122.62	138.52	144.91								
Al	$SK\alpha'$		3	2	13	1	1.493	24.91422	3	3	17.92	22.10	28.65	41.70	122.69	138.62	145.03								
Hg	$M\gamma$		5	3	80	6	2.487	24.91998	3		17.92	22.10	28.66	41.71	122.74	138.69	145.12								
Ag	$L\alpha_1$		6	100	47	6	2.984	24.92657	5		17.93	22.11	28.66	41.72	122.79	138.77	145.21								
Os	$M\zeta_1$		3	.01	76	6	1.492	24.92999	3		17.93	22.11	28.67	41.73	122.82	138.81	145.26								
Se	$L\beta_{3,4}$	H	3	2	34	6	1.490	24.96300	3		17.95	22.14	28.71	41.78	123.10	139.22	145.75								
Ag	$L\alpha_2$		6	10	47	6	2.978	24.97763	5		17.96	22.15	28.72	41.81	123.22	139.40	145.97								
Ba	$L\alpha_1$		9	100	56	6	4.465	24.98354	5		17.97	22.16	28.73	41.82	123.27	139.47	146.06								
Rh	$M\gamma$		1	100	45	6	0.496	25.00999	2		17.99	22.18	28.76	41.87	123.50	139.80	146.46								
Sc	$K\beta_{1,3}$		9	20	21	6	4.460	25.01639	4	4	17.99	22.19	28.77	41.88	123.55	139.88	146.56								
Al	$K\alpha_1$		3	100	13	6	1.486	25.01801	5	3	17.99	22.19	28.77	41.88	123.57	139.90	146.58								
Al	$K\alpha_{1,2}$		3	150	13	6	1.486	25.02040	5	3	17.99	22.19	28.77	41.89	123.59	139.93	146.62								
Al	$K\alpha_2$		3	50	13	6	1.486	25.02518	5	3	18.00	22.20	28.78	41.89	123.63	139.99	146.69								
V	$K\alpha_1$		10	100	23	6	4.951	25.03558	5	4	18.00	22.21	28.79	41.91	123.72	140.12	146.85								
Pa	$M\gamma$		7	5	91	6	3.465	25.03899	3		18.01	22.21	28.80	41.92	123.75	140.17	146.90								
Ir	$M\alpha_1$		4	100	77	6	1.980	25.04799	3		18.01	22.22	28.81	41.93	123.82	140.28	147.04								
V	$K\alpha_{1,2}$		10	150	23	6	4.949	25.04831	5	4	18.01	22.22	28.81	41.93	123.83	140.28	147.05								
Pr	Ll		9	2	59	6	4.452	25.05688	4		18.02	22.23	28.82	41.95	123.90	140.39	147.18								
Mo	$L\beta_3$		5	3	42	6	2.473	25.06650	4		18.03	22.23	28.83	41.97	123.98	140.51	147.33								
Os	$M\beta$		4	45	76	6	1.978	25.06799	3		18.03	22.24	28.83	41.97	123.99	140.53	147.35								
Ba	$L\alpha_2$		9	10	56	6	4.450	25.06975	5		18.03	22.24	28.83	41.97	124.01	140.56	147.38								
V	$K\alpha_2$		10	50	23	6	4.944	25.07379	5	4	18.03	22.24	28.84	41.98	124.04	140.61	147.44								
Os	$M\zeta_2$		3	.01	76	6	1.483	25.07700	3		18.03	22.24	28.84	41.98	124.07	140.65	147.49								
Ba	Ll		8	2	56	6	3.953	25.08400	4		18.04	22.25	28.85	42.00	124.13	140.74	147.60								
Rb	Ll		3	3	37	6	1.482	25.09079	4		18.04	22.26	28.86	42.01	124.19	140.82	147.71								
Ir	$M\alpha_2$		4	100	77	6	1.975	25.09999	3		18.05	22.26	28.87	42.02	124.27	140.94	147.86								
Cd	$L\gamma_2$		8	5	48	6	3.951	25.10159	4		18.05	22.27	28.87	42.03	124.28	140.96	147.88								

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
S	$K\beta x$	5	7	16	6		2.468	25.11649	4	3	18.06	22.28	28.89	42.05	124.41	141.16	148.12								
Cs	$L\beta_{2,15}$	10	20	55	6		4.935	25.11800	4		18.06	22.28	28.89	42.06	124.43	141.18	148.14								
Br	$L\alpha_{1,2}$	3	100	35	6		1.480	25.12379	4		18.07	22.29	28.89	42.07	124.48	141.25	148.23								
Ti	$K\beta_{1,3}$	10	20	22	6		4.931	25.13908	5	4	18.08	22.30	28.91	42.09	124.61	141.45	148.48								
Ar	$K\alpha_1$	6	100	18	6		2.957	25.15079	5		18.09	22.31	28.93	42.11	124.71	141.60	148.67								
Ar	$K\alpha_{1,2}$	6	150	18	6		2.957	25.15668	5		18.09	22.32	28.93	42.12	124.76	141.68	148.77								
S	$K\beta_1$	5	7	16	6		2.464	25.15799	4	3	18.09	22.32	28.94	42.13	124.77	141.70	148.79								
Ba	$L\beta_3$	10	6	56	6		4.926	25.16399	4		18.10	22.32	28.94	42.14	124.83	141.78	148.89								
Ar	$K\alpha_2$	6	50	18	6		2.955	25.16843	5		18.10	22.33	28.95	42.15	124.86	141.83	148.96								
I	$L\alpha_1$	8	100	53	6		3.937	25.18880	5		18.12	22.34	28.97	42.18	125.04	142.10	149.29								
Ga	Ln	2	1	31	6		0.984	25.19398	3		18.12	22.35	28.98	42.19	125.09	142.17	149.38								
Sn	$L\alpha_1$	7	100	50	6		3.443	25.19957	5		18.12	22.35	28.98	42.20	125.14	142.25	149.47								
Sb	$L\beta_3$	8	6	51	6		3.932	25.22063	5		18.14	22.37	29.01	42.24	125.32	142.53	149.83								
Mo	$L\beta_6$	5	3	42	6		2.455	25.24399	4		18.16	22.39	29.04	42.28	125.53	142.84	150.22								
Mo	$L\beta_4$	5	3	42	6		2.455	25.24399	4		18.16	22.39	29.04	42.28	125.53	142.84	150.22								
Sb	Ln	7	7	51	6		3.436	25.25354	5		18.16	22.40	29.05	42.29	125.61	142.97	150.39								
Sn	$L\alpha_2$	7	10	50	6		3.435	25.26236	5		18.17	22.41	29.06	42.31	125.69	143.09	150.54								
I	$L\alpha_2$	8	10	53	6		3.925	25.26328	5		18.17	22.41	29.06	42.31	125.70	143.10	150.55								
In	$L\gamma_1$	8	8	49	6		3.920	25.29703	5		18.19	22.44	29.10	42.37	126.00	143.56	151.14								
Pa	M_3-N_4	7	5	91	6		3.430	25.29799	3		18.19	22.44	29.10	42.37	126.00	143.58	151.16								
Sn	$M_4-O_{2,3}$	1	10	50	6		0.490	25.29999	1		18.20	22.44	29.10	42.38	126.02	143.60	151.19								
U	M_2-N_4	9	5	92	6		4.400	25.35298	3		18.23	22.49	29.16	42.47	126.50	144.34	152.14								
Nd	$M\alpha$	2	100	60	6		0.978	25.35999	2		18.24	22.50	29.17	42.48	126.56	144.44	152.27								
Pb	$M\beta$	5	60	82	6		2.442	25.37999	3		18.25	22.52	29.20	42.52	126.74	144.72	152.64								
Sn	$L\beta_{2,15}$	8	17	50	6		3.904	25.40039	5		18.27	22.53	29.22	42.55	126.92	145.01	153.02								
Yb	M_3-N_1	3	.5	70	6		1.464	25.40999	3		18.28	22.54	29.23	42.57	127.01	145.15	153.20								
Tm	$M\alpha$	3	100	69	6		1.462	25.43999	2		18.30	22.57	29.27	42.62	127.28	145.59	153.78								
Rh	$L\beta_6$	6	3	45	6		2.922	25.45020	4		18.31	22.58	29.28	42.64	127.37	145.73	153.97								
Tb	$M\gamma$	3	1	65	6		1.461	25.45799	3		18.31	22.59	29.29	42.65	127.45	145.85	154.13								
Sr	$L\beta_3$	4	3	38	6		1.947	25.46880	4		18.32	22.60	29.30	42.67	127.54	146.01	154.34								
Sn	$L\gamma_{2,3}$	9	2	50	6		4.376	25.49429	4		18.34	22.62	29.33	42.72	127.78	146.38	154.85								
Ba	$M\gamma$	2	100	56	6		0.972	25.50000	2		18.34	22.62	29.34	42.73	127.83	146.47	154.96								
Ru	M_2-N_4	1	1	44	6		0.486	25.50000	2		18.34	22.62	29.34	42.73	127.83	146.47	154.96								
Rh	$L\beta_3$	6	11	45	6		2.915	25.51318	4		18.35	22.64	29.35	42.75	127.95	146.67	155.23								
Cd	$L\beta_3$	7	11	48	6		3.401	25.51465	5		18.35	22.64	29.35	42.75	127.96	146.69	155.26								
Sb	$L\beta_4$	8	4	51	6		3.886	25.52112	5		18.36	22.64	29.36	42.76	128.02	146.79	155.39								
Ba	$L\beta_4$	10	5	56	6		4.851	25.55299	4		18.38	22.67	29.40	42.82	128.32	147.27	156.06								
Tc	$L\alpha_1$	H	5	100	43	6	2.424	25.57399	4		18.39	22.69	29.42	42.86	128.51	147.59	156.51								
Bi	$M\alpha_1$	5	100	83	6		2.422	25.58998	3		18.41	22.71	29.44	42.89	128.66	147.84	156.85								
Sr	$L\beta_4$	4	3	38	6		1.936	25.61040	4		18.42	22.72	29.47	42.92	128.85	148.16	157.31								
In	Ll	6	7	49	6		2.904	25.61237	5		18.42	22.73	29.47	42.92	128.87	148.19	157.35								
Ce	$L\alpha_1$	10	100	58	6		4.839	25.61499	4		18.42	22.73	29.47	42.93	128.90	148.23	157.41								
Bi	$M\alpha_2$	5	100	83	6		2.416	25.64999	3		18.45	22.76	29.51	42.99	129.22	148.78	158.21								
Sb	$L\gamma_1$	9	8	51	6		4.347	25.66429	5		18.46	22.77	29.53	43.02	129.36	149.01	158.54								
Te	$L\gamma_{2,3}$	10	2	52	6		4.828	25.67400	4		18.47	22.78	29.54	43.03	129.45	149.17	158.77								
Ba	$L8_1$	10	50	56	6		4.827	25.68208	5		18.47	22.79	29.55	43.05	129.53	149.30	158.96								
Sn	M_5-O_3	1	1	50	6		0.482	25.70000	1		18.49	22.80	29.57	43.08	129.70	149.59	159.40								
Ce	$L\alpha_2$	10	10	58	6		4.822	25.70599	4		18.49	22.81	29.58	43.09	129.75	149.69	159.55								
W	M_4-N_3	3	.01	74	6		1.446	25.71899	3		18.50	22.82	29.59	43.11	129.88	149.91	159.87								
Au	$M\gamma$	5	3	79	6		2.409	25.72499	3		18.50	22.83	29.60	43.12	129.93	150.01	160.02								
Rh	$L\beta_4$	6	5	45	6		2.890	25.73279	4		18.51	22.83	29.61	43.14	130.01	150.14	160.22								
Th	$M\gamma$	7	5	90	6		3.369	25.75299	3		18.52	22.85	29.63	43.17	130.20	150.48	160.74								
Cd	$L8_4$	7	5	48	6		3.367	25.77420	5		18.54	22.87	29.66	43.21	130.41	150.84	161.31								
Er	$M\beta$	3	45	68	6		1.443	25.77599	3		18.54	22.87	29.66	43.21	130.42	150.87	161.35								
Y	$L\alpha_1$	4	100	39	6		1.922	25.79520	4		18.56	22.89	29.68	43.25	130.61	151.20	161.88								
Rh	$L\gamma_{2,3}$	7	5	45	6		3.363	25.79849	4		18.56	22.89	29.69	43.25	130.64	151.26	161.97								
U	N_3-O_5	2			92	6	0.961	25.79999	2		18.56	22.89	29.69	43.26	130.65	151.28	162.02								
U	$N_1-P_{4,5}$	3			92	6	1.441	25.79999	2		18.56	22.89	29.69	43.26	130.65	151.28	162.02								
Sb	$L\beta_1$	8	75	51	6		3.843	25.80536	5		18.56	22.90	29.70	43.26	130.71	151.37	162.17								
Y	$L\alpha_2$	4	10	39	6		1.920	25.82320	4		18.58	22.91	29.72	43.30	130.88	151.69	162.68								
I	$L\gamma_1$	10	8	53	6		4.800	25.82439	5		18.58	22.92	29.72	43.30	130.89	151.71	162.71								
I	$L\beta_3$	9	6	53	6		4.313	25.86859	5		18.61	22.96	29.77	43.38	131.32	152.50	164.06								
Mo	$L8_1$	5	45	42	6		2.394	25.88539	5		18.62	22.97	29.79	43.41	131.49	152.80	164.60								
Re	$M\zeta_1$	3	.01	75	6		1.437	25.88699	3		18.62	22.97	29.79	43.41	131.50	152.83	164.65								
Ga	Ll	2	1	31	6		0.957	25.90599	3		18.64	22.99	29.82	43.44	131.69	153.18	165.29								

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Os	$M\alpha$	D	4	100	76	6	1.914	25.91199	3		18.64	22.99	29.82	43.45	131.75	153.29	165.49								
Ag	$L\beta_{2,15}$		7	25	47	6	3.347	25.92343	5		18.65	23.01	29.84	43.47	131.86	153.51	165.90								
Te	$L\beta_{2,15}$		9	17	52	6	4.301	25.93951	5		18.66	23.02	29.85	43.50	132.02	153.81	166.48								
Tb	$M\zeta$		2	.01	65	6	0.955	25.95999	2		18.68	23.04	29.88	43.54	132.22	154.20	167.27								
Re	$M\zeta_2$		3	.01	75	6	1.431	25.99199	3		18.70	23.07	29.92	43.59	132.54	154.83	168.61								
Ag	M_3-N_1		1	10	47	6	0.477	26.00000	1		18.70	23.07	29.93	43.61	132.63	154.99	168.97								
U	$M\beta$		7	60	92	6	3.336	26.01199	3		18.71	23.08	29.94	43.63	132.75	155.23	169.53								
K	$SK\alpha_4$		7	3	19	1	3.335	26.01544	3	4	18.72	23.09	29.94	43.63	132.78	155.29	169.69								
Re	$M\beta$		4	45	75	6	1.906	26.01599	3		18.72	23.09	29.94	43.64	132.79	155.31	169.72								
Te	Ll		7	7	52	6	3.335	26.01871	5		18.72	23.09	29.95	43.64	132.81	155.36	169.86								
Ce	Ll		9	2	58	6	4.287	26.02528	4		18.72	23.10	29.96	43.65	132.88	155.49	170.19								
Th	M_3-N_4		7	5	90	6	3.334	26.02599	3		18.72	23.10	29.96	43.65	132.89	155.51	170.22								
Cs	$L\alpha_1$		9	100	55	6	4.286	26.03159	4		18.73	23.10	29.96	43.66	132.94	155.62	170.52								
K	$SK\alpha_3$		7	3	19	1	3.332	26.04419	3	4	18.74	23.11	29.98	43.69	133.07	155.88	171.21								
Nb	Ll		4	3	41	6	1.902	26.07039	4		18.76	23.14	30.01	43.73	133.34	156.43	172.87								
Pd	$L\gamma_1$		7	10	46	6	3.328	26.07219	4		18.76	23.14	30.01	43.73	133.36	156.46	172.99								
Sr	$L\beta_6$		4	3	38	6	1.901	26.07639	4		18.76	23.14	30.02	43.74	133.40	156.55	173.30								
Rh	Ll		5	3	45	6	2.376	26.08449	4		18.77	23.15	30.03	43.76	133.48	156.72	173.94								
Cu	$L\beta_1$		2	20	29	6	0.950	26.10599	3		18.78	23.17	30.05	43.79	133.70	157.19	176.11								
Cs	$L\alpha_2$		9	10	55	6	4.272	26.11798	4		18.79	23.18	30.06	43.82	133.82	157.45	178.26								
Pr	$M\beta$		2	45	59	6	0.949	26.12000	2		18.79	23.18	30.07	43.82	133.85	157.49	179.00								
Cs	Ll		8	2	55	6	3.794	26.13599	4		18.80	23.20	30.09	43.85	134.01	157.85									
Cd	$L\beta_1$		7	42	48	6	3.316	26.16760	5		18.83	23.22	30.12	43.90	134.34	158.57									
K	$K\alpha_1$		7	100	19	6	3.313	26.18979	4	4	18.84	23.24	30.15	43.94	134.57	159.09									
Pa	M_2-N_4		9	5	91	6	4.260	26.18999	3		18.84	23.24	30.15	43.94	134.57	159.09									
K	$K\alpha_{1,2}$		7	150	19	6	3.312	26.19702	4	4	18.85	23.25	30.16	43.96	134.65	159.26									
Pd	M_2-N_1		1	1	46	6	0.473	26.20000	1		18.85	23.25	30.16	43.96	134.68	159.33									
Pd	$L\alpha_1$		6	100	46	6	2.838	26.20601	5		18.85	23.26	30.17	43.97	134.74	159.48									
Se	$L\beta_1$		3	35	34	6	1.419	26.20740	4		18.85	23.26	30.17	43.97	134.75	159.51									
I	$L\beta_4$		9	4	53	6	4.257	26.20862	5		18.86	23.26	30.17	43.98	134.77	159.54									
K	$K\alpha_2$		7	50	19	6	3.310	26.21149	4	4	18.86	23.26	30.17	43.98	134.80	159.61									
I	Ln		8	7	53	6	3.780	26.23831	5		18.88	23.29	30.21	44.03	135.08	160.27									
Rh	$L\beta_1$		6	42	45	6	2.834	26.24483	5		18.88	23.29	30.21	44.04	135.15	160.44									
Tl	$M\beta$		5	55	81	6	2.362	26.24500	3		18.88	23.29	30.21	44.04	135.15	160.44									
Pd	$L\alpha_2$		6	10	46	6	2.833	26.25526	5		18.89	23.30	30.23	44.06	135.26	160.70									
U	N_1-P_3		3		92	6	1.415	26.27998	2		18.91	23.33	30.26	44.10	135.52	161.35									
Cs	$L\beta_3$		10	6	55	6	4.716	26.28499	4		18.91	23.33	30.26	44.11	135.58	161.48									
Te	$L\alpha_1$		8	100	52	6	3.769	26.31360	5		18.93	23.36	30.30	44.16	135.88	162.26									
Ni	$L\beta_{3,4}$		2	.8	28	6	0.941	26.35999	2		18.97	23.40	30.35	44.24	136.38	163.61									
Te	$L\alpha_2$		8	10	52	6	3.758	26.38766	5		18.99	23.42	30.38	44.29	136.68	164.47									
In	$L\alpha_1$		7	100	49	6	3.286	26.40343	5		19.00	23.44	30.40	44.32	136.86	164.98									
Cl	$K\beta$		6	8	17	6	2.815	26.42039	4	3	19.01	23.45	30.42	44.35	137.04	165.55									
U	N_1-P_2		3		92	6	1.407	26.42999	2		19.02	23.46	30.43	44.37	137.15	165.88									
Pb	$M\alpha_1$		5	100	82	6	2.345	26.42999	3		19.02	23.46	30.43	44.37	137.15	165.88									
I	$L\beta_1$		9	75	53	6	4.220	26.43695	5		19.02	23.47	30.44	44.38	137.23	166.12									
Sn	$L\beta_3$		8	6	50	6	3.750	26.44679	5		19.03	23.48	30.45	44.40	137.34	166.48									
Ag	$L\gamma_3$		8	2	47	6	3.749	26.45079	5		19.03	23.48	30.46	44.40	137.38	166.62									
Er	$M\alpha$		3	100	68	6	1.405	26.45999	2		19.04	23.49	30.47	44.42	137.48	166.97									
In	$L\alpha_2$		7	10	49	6	3.279	26.46510	5		19.04	23.49	30.47	44.43	137.54	167.16									
Pb	$M\alpha_2$		5	100	82	6	2.339	26.49500	3		19.06	23.52	30.51	44.48	137.87	168.37									
Sr	$L\beta_1$		4	45	38	6	1.871	26.49559	4		19.06	23.52	30.51	44.48	137.88	168.40									
Ag	$L\gamma_2$		8	3	47	6	3.743	26.49727	5		19.07	23.52	30.51	44.49	137.90	168.47									
Sn	Ln		7	7	50	6	3.272	26.52130	5		19.08	23.54	30.54	44.53	138.17	169.55									
Gd	$M\gamma$		3	1	64	6	1.402	26.53200	3		19.09	23.55	30.55	44.55	138.29	170.07									
Nb	$L\beta_3$		5	3	41	6	2.334	26.55099	4		19.10	23.57	30.58	44.58	138.51	171.06									
Pt	$M\gamma$		5	3	78	6	2.331	26.59499	3		19.14	23.61	30.63	44.66	139.01	173.96									
Bi	N_1-$P_{2,3}$		2		83	6	0.932	26.59999	2		19.14	23.61	30.63	44.67	139.07	174.38									
La	$L\alpha_1$		10	100	57	6	4.650	26.65700	5		19.18	23.67	30.70	44.77	139.73										
Cs	$L\beta_4$		10	5	55	6	4.649	26.66599	4		19.19	23.67	30.71	44.78	139.84										
S	$SK\alpha_4$		5	45	16	1	2.324	26.67076	3	3	19.19	23.68	30.72	44.79	139.89										
Cu	$L\alpha_{1,2}$		2	100	29	6	0.930	26.67200	3		19.19	23.68	30.72	44.79	139.91										
Cd	$L\gamma_1$		8	10	48	6	3.716	26.68512	5		19.20	23.69	30.73	44.82	140.06										
Pr	$M\alpha$		2	100	59	6	0.929	26.68599	3		19.20	23.69	30.73	44.82	140.07										
Ca	$SK\alpha_4$		8	2	20	1	3.715	26.69460	3	4	19.21	23.70	30.74	44.83	140.18										
Ta	M_4-N_3		3	.01	73	6	1.393	26.70000	2		19.21	23.70	30.75	44.84	140.24										

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
S	$SK\alpha_3$		5	45	16	1	2.321	26.70383	3	3	19.22	23.71	30.76	44.85	140.29										
In	$L\beta_{2,15}$		8	17	49	6	3.713	26.70703	5		19.22	23.71	30.76	44.86	140.32										
Te	Mz		1	1	52	6	0.464	26.71999	2		19.23	23.72	30.77	44.88	140.48										
Ca	$SK\alpha_3$		8	2	20	1	3.711	26.72105	3	4	19.23	23.72	30.78	44.88	140.49										
Nb	$L\beta_4$		5	3	41	6	2.319	26.72749	4		19.23	23.73	30.78	44.89	140.57										
Sn	$L\beta_4$		8	4	50	6	3.708	26.74680	5		19.25	23.75	30.81	44.93	140.80										
La	$L\alpha_2$		10	10	57	6	4.633	26.75328	5		19.25	23.75	30.81	44.94	140.88										
Nd	Ll		10	2	60	6	4.632	26.75999	4		19.26	23.76	30.82	44.95	140.96										
As	$L\beta_{3,4}$		3	2	33	6	1.388	26.78699	3		19.28	23.78	30.85	45.00	141.29										
Pa	$M\beta$		7	60	91	6	3.239	26.78899	3		19.28	23.78	30.86	45.00	141.31										
Nb	$L\beta_6$		5	3	41	6	2.312	26.80649	4		19.29	23.80	30.88	45.03	141.52										
In	$L\gamma_{2,3}$		9	2	49	6	4.160	26.81999	4		19.30	23.81	30.89	45.06	141.69										
Ag	$L\beta_3$		7	11	47	6	3.234	26.83191	5		19.31	23.82	30.91	45.08	141.84										
Cs	$L\beta_1$		10	50	55	6	4.619	26.83699	4		19.31	23.83	30.91	45.09	141.90										
Bi	M_2-N_4		7	5	83	6	3.233	26.83800	3		19.31	23.83	30.91	45.09	141.91										
S	$K\alpha_1$		5	100	16	6	2.307	26.86079	5	3	19.33	23.85	30.94	45.13	142.19										
S	$K\alpha_{1,2}$		5	150	16	6	2.307	26.86546	5	3	19.33	23.85	30.95	45.14	142.25										
Ca	$K\alpha_1$		8	100	20	6	3.691	26.86711	5	4	19.33	23.85	30.95	45.14	142.27										
S	$K\alpha_2$		5	50	16	6	2.306	26.87479	5	3	19.34	23.86	30.96	45.15	142.37										
Ca	$K\alpha_{1,2}$		8	150	20	6	3.690	26.87584	5	4	19.34	23.86	30.96	45.16	142.38										
Cd	Ll		6	2	48	6	2.767	26.88083	5		19.34	23.87	30.96	45.16	142.44										
W	Mz_1		3	.01	74	6	1.383	26.88599	3		19.35	23.87	30.97	45.17	142.51										
Ca	$K\alpha_2$		8	50	20	6	3.687	26.89326	5	4	19.35	23.88	30.98	45.19	142.60										
Ho	$M\beta$		3	45	67	6	1.383	26.89499	3		19.35	23.88	30.98	45.19	142.62										
Ru	$M\gamma$		1	100	44	6	0.461	26.89999	1		19.36	23.88	30.99	45.20	142.69										
Re	$M\alpha$		4	100	75	6	1.842	26.91599	3		19.37	23.90	31.01	45.23	142.89										
Ru	$L\beta_6$		6	3	44	6	2.763	26.91959	4		19.37	23.90	31.01	45.23	142.93										
Ru	$L\beta_3$		6	3	44	6	2.763	26.91959	4		19.37	23.90	31.01	45.23	142.93										
Sb	$L\gamma_{2,3}$		10	2	51	6	4.599	26.95299	4		19.40	23.93	31.05	45.29	143.36										
Se	$L\alpha_{1,2}$		3	100	34	6	1.379	26.96999	4		19.41	23.95	31.07	45.32	143.58										
W	Mz_2		3	.01	74	6	1.378	26.97899	3		19.42	23.96	31.08	45.34	143.70										
Sn	$L\gamma_1$		9	8	50	6	4.130	27.01033	5		19.44	23.98	31.12	45.39	144.10										
Si	K8		4	2	14	6	1.836	27.01199	3	2	19.44	23.99	31.12	45.40	144.13										
W	$M\beta$		4	45	74	6	1.835	27.02800	3		19.45	24.00	31.14	45.43	144.34										
Mo	$L\alpha_1$		5	100	42	6	2.293	27.03275	5		19.45	24.00	31.14	45.43	144.40										
Ti	$L\beta_1$		1	10	22	6	0.458	27.04999	2		19.47	24.02	31.16	45.46	144.63										
La	Ll		9	2	57	6	4.124	27.05399	3		19.47	24.02	31.17	45.47	144.68										
Mo	$L\alpha_2$		5	10	42	6	2.289	27.07184	5		19.48	24.04	31.19	45.50	144.92										
Sn	$L\beta_1$		8	75	50	6	3.662	27.07895	5		19.49	24.05	31.20	45.52	145.01										
Te	$L\beta_3$		9	6	52	6	4.120	27.08035	5		19.49	24.05	31.20	45.52	145.03										
Ag	$L\beta_4$		7	5	47	6	3.203	27.09160	5		19.50	24.06	31.21	45.54	145.18										
Th	M_2-N_4		9	5	90	6	4.117	27.09898	3		19.50	24.06	31.22	45.55	145.28										
Si	$K\beta_1$		4	2	14	1	1.829	27.11200	3	2	19.51	24.08	31.24	45.57	145.46										
Te	$L\gamma_1$		10	8	52	6	4.570	27.12410	5		19.52	24.09	31.25	45.60	145.63										
Ru	$L8_4$		6	3	44	6	2.741	27.13799	4		19.53	24.10	31.27	45.62	145.82										
Gd	Mz		2	.01	64	6	0.913	27.14000	2		19.53	24.10	31.27	45.62	145.84										
Xe	$L\alpha_1$	H	9	100	54	6	4.109	27.14938	4		19.54	24.11	31.28	45.64	145.97										
Rb	$L\beta_3$		4	3	37	6	1.826	27.15039	4		19.54	24.11	31.28	45.64	145.99										
Hg	M8		5	50	80	6	2.282	27.15900	4		19.55	24.12	31.29	45.66	146.11										
Bi	$M\gamma$		6	5	83	6	2.735	27.19199	3		19.57	24.15	31.33	45.72	146.56										
Ar	$K8_{1,3}$		7	15	18	6	3.190	27.20200	4		19.58	24.16	31.34	45.73	146.71										
Sb	$L\beta_{2,15}$		9	17	51	6	4.100	27.21014	5		19.58	24.16	31.35	45.75	146.82										
Sb	Ll		7	7	51	6	3.188	27.21782	5		19.59	24.17	31.36	45.76	146.93										
Sc	$K\alpha_1$		9	100	21	6	4.090	27.27809	4	4	19.63	24.22	31.43	45.87	147.80										
Rb	$L\beta_4$		4	3	37	6	1.817	27.28279	4		19.64	24.23	31.44	45.88	147.86										
Sc	$K\alpha_{1,2}$		9	150	21	6	4.088	27.28799	4	4	19.64	24.23	31.45	45.89	147.94										
Ti	$AL_{2,3}$		1		22	6	0.454	27.28999	2		19.64	24.24	31.45	45.89	147.97										
Tl	$M\alpha_1$		5	100	81	6	2.270	27.29999	3		19.65	24.24	31.46	45.91	148.12										
Sc	$K\alpha_2$		9	50	21	6	4.085	27.30779	4	4	19.65	24.25	31.47	45.92	148.23										
V	Ln		1	1	23	6	0.453	27.34000	2		19.68	24.28	31.51	45.98	148.71										
Zn	Ln		2	2	30	6	0.906	27.35999	2		19.69	24.30	31.53	46.02	149.01										
Tl	$M\alpha_2$		5	100	81	6	2.265	27.35999	3		19.69	24.30	31.53	46.02	149.01										
Pd	$L\beta_{2,15}$		7	25	46	6	3.171	27.36208	5		19.69	24.30	31.53	46.02	149.04										
U	$M\alpha_1$		7	100	92	6	3.170	27.37000	3		19.70	24.31	31.54	46.03	149.16										
Te	$L\beta_4$		9	4	52	6	4.069	27.41948	5		19.74	24.35	31.60	46.12	149.92										

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Ti	$L\alpha_{1,2}$		1	100	22	6	0.452	27.42000	2		19.74	24.35	31.60	46.12	149.93										
Bi	M_3-N_4		6	5	83	6	2.712	27.42599	3		19.74	24.36	31.61	46.13	150.02										
Sr	$L\alpha_1$		4	100	38	6	1.806	27.45119	4		19.76	24.38	31.64	46.18	150.42										
Nb	$L\beta_1$		5	45	41	6	2.257	27.46149	4		19.77	24.39	31.65	46.20	150.58										
U	$M\alpha_2$		7	100	92	6	3.159	27.46799	3		19.77	24.40	31.66	46.21	150.68										
Sr	$L\alpha_2$		4	10	38	6	1.804	27.47879	4		19.78	24.41	31.67	46.23	150.86										
Ti	$K\alpha_1$		10	100	22	6	4.510	27.48509	5	4	19.78	24.41	31.68	46.24	150.96										
Ti	$K\alpha_{1,2}$		10	150	22	6	4.508	27.49725	5	4	19.79	24.42	31.69	46.26	151.16										
Ce	$M\beta$		2	45	58	6	0.902	27.50000	2		19.79	24.43	31.70	46.26	151.20										
I	$L\beta_{2,15}$		10	17	53	6	4.507	27.50528	5		19.80	24.43	31.70	46.27	151.29										
Te	Ln		8	7	52	6	3.605	27.50655	5		19.80	24.43	31.70	46.28	151.31										
Sb	$L\alpha_1$		8	100	51	6	3.604	27.51527	5		19.80	24.44	31.71	46.29	151.45										
Ru	Ll		5	3	44	6	2.252	27.51749	4		19.81	24.44	31.72	46.30	151.49										
Ti	$K\alpha_2$		10	50	22	6	4.504	27.52159	5	4	19.81	24.44	31.72	46.30	151.55										
Ag	$L\beta_1$		7	42	47	6	3.150	27.54311	5		19.83	24.46	31.75	46.34	151.91										
Rh	$L\alpha_1$		6	100	45	6	2.696	27.58456	5		19.86	24.50	31.80	46.42	152.61										
Th	$M\beta$		7	60	90	6	3.145	27.58699	3		19.86	24.50	31.80	46.42	152.65										
Sb	$L\alpha_2$		8	10	51	6	3.595	27.58719	5		19.86	24.50	31.80	46.42	152.65										
Ho	$M\alpha$		3	100	67	6	1.347	27.59999	2		19.87	24.52	31.81	46.44	152.87										
Th	N_3-O_5		2		90	6	0.898	27.59999	1		19.87	24.52	31.81	46.44	152.87										
Rh	$L\gamma_1$		7	10	45	6	3.143	27.60590	4		19.87	24.52	31.82	46.45	152.97										
K	$K8_{1,3}$		8	15	19	6	3.589	27.63120	4	4	19.89	24.54	31.85	46.50	153.41										
Rh	$L\alpha_2$		6	10	45	6	2.692	27.63269	5		19.89	24.54	31.85	46.50	153.44										
Eu	$M\gamma$		3	1	63	6	1.346	27.63300	3		19.89	24.55	31.85	46.50	153.44										
Zr	Ll		4	3	40	6	1.792	27.67400	4		19.92	24.58	31.90	46.57	154.17										
Te	$L\beta_1$		9	75	52	6	4.029	27.69092	5		19.93	24.60	31.92	46.60	154.48										
Cd	$L\alpha_1$		7	100	48	6	3.133	27.69444	5		19.94	24.60	31.93	46.61	154.55										
Ru	$L\beta_1$		6	45	44	6	2.683	27.72346	5		19.96	24.63	31.96	46.66	155.08										
Cd	$L\alpha_2$		7	10	48	6	3.126	27.75470	5		19.98	24.65	32.00	46.72	155.67										
In	$L8_3$		8	6	49	6	3.572	27.75871	5		19.98	24.66	32.00	46.73	155.75										
Ba	$L\alpha_1$		10	100	56	6	4.465	27.75949	5		19.98	24.66	32.00	46.73	155.77										
Br	Ln		3	1	35	6	1.339	27.76498	3		19.99	24.66	32.01	46.74	155.87										
V	Ll		1	1	23	6	0.446	27.76999	2		19.99	24.67	32.02	46.75	155.97										
Pb	M_2-N_4		7	5	82	6	3.124	27.77599	3		19.99	24.67	32.02	46.76	156.09										
Sc	$K\beta_{1,3}$		10	20	21	6	4.460	27.79599	4	4	20.01	24.69	32.05	46.79	156.48										
Ca	$K\beta_{1,3}$		9	15	20	6	4.012	27.80730	4	4	20.02	24.70	32.06	46.81	156.70										
U	$M\gamma$		8	5	92	6	3.563	27.83199	3		20.04	24.72	32.09	46.86	157.20										
Pr	Ll		10	2	59	6	4.452	27.84099	4		20.04	24.73	32.10	46.87	157.39										
Ba	$L\alpha_2$		10	10	56	6	4.450	27.85529	5		20.05	24.75	32.12	46.90	157.68										
In	Ln		7	7	49	6	3.112	27.88287	5		20.07	24.77	32.15	46.95	158.27										
Tl	Mz_1		4	2	81	6	1.777	27.89600	3		20.08	24.78	32.16	46.97	158.55										
Pd	M_3-N_1		1	10	46	6	0.444	27.89999	1		20.08	24.79	32.17	46.98	158.64										
Pd	$L\gamma_{2,3}$		8	5	46	6	3.553	27.91359	4		20.09	24.80	32.19	47.00	158.93										
W	$M\alpha_1$		4	100	74	6	1.775	27.93199	3		20.11	24.81	32.21	47.03	159.34										
Rb	$L\beta_6$		4	3	37	6	1.775	27.93680	4		20.11	24.82	32.21	47.04	159.45										
Ta	Mz_1		3	.1	73	6	1.331	27.94800	3		20.12	24.83	32.23	47.06	159.71										
W	$M\alpha_2$		4	100	74	6	1.773	27.96799	3		20.13	24.85	32.25	47.10	160.17										
Ta	Mz_2		3	.01	73	6	1.329	27.98999	3		20.15	24.87	32.28	47.14	160.69										
Zn	Ll		2	4	30	6	0.884	28.03999	2		20.19	24.91	32.34	47.23	161.94										
Pb	$M\gamma$		6	5	82	6	2.652	28.04399	3		20.19	24.92	32.34	47.23	162.04										
In	$L\beta_4$		8	4	49	6	3.535	28.05576	5		20.20	24.93	32.35	47.26	162.35										
Dy	$M\beta$		3	45	66	6	1.325	28.07098	3		20.21	24.94	32.37	47.28	162.75										
Ce	$M\alpha$		2	100	58	6	0.883	28.07999	2		20.22	24.95	32.38	47.30	163.00										
Ta	$M\beta$		4	45	73	6	1.765	28.09200	3		20.22	24.96	32.40	47.32	163.33										
Rh	M_2-N_1		1	1	45	6	0.441	28.09999	1		20.23	24.97	32.41	47.34	163.55										
Cd	$L\beta_{2,15}$		8	25	48	6	3.528	28.11263	5		20.24	24.98	32.42	47.36	163.91										
Au	$M\beta$		5	50	79	6	2.204	28.12000	3		20.24	24.98	32.43	47.37	164.13										
Cd	$AM_{4,5}$		1		48	6	0.441	28.12999	2		20.25	24.99	32.44	47.39	164.42										
Pa	$M\alpha_1$		7	100	91	6	3.082	28.15399	3		20.27	25.02	32.47	47.43	165.15										
Zr	$L\beta_3$		5	3	40	6	2.201	28.16499	4		20.28	25.03	32.48	47.45	165.50										
U	M_3-N_4		8	5	92	6	3.521	28.16800	3		20.28	25.03	32.49	47.46	165.60										
U	M_2-N_4		10	5	92	6	4.400	28.16998	3		20.28	25.03	32.49	47.46	165.66										
Cl	$SK\alpha_4$		6	4	17	1	2.640	28.17398	3	3	20.28	25.03	32.49	47.47	165.79										
Ag	$L\gamma_1$		8	10	47	6	3.519	28.18079	5		20.29	25.04	32.50	47.48	166.01										
Th	N_1-P_3		3		90	6	1.319	28.20000	2		20.30	25.06	32.53	47.51	166.67										

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	AOP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ba	Ll		9	2	56	6	3.953	28.21950	4		20.32	25.07	32.55	47.55	167.36										
Hg	Mα		5	100	80	6	2.195	28.23799	4		20.33	25.09	32.57	47.58	168.06										
Cd	$Lγ_2$		9	5	48	6	3.951	28.23929	4		20.33	25.09	32.57	47.58	168.11										
Pd	$Lβ_3$		7	11	46	6	3.072	28.24219	4		20.33	25.09	32.58	47.59	168.22										
As	$Lβ_1$		3	35	33	6	1.317	28.24229	4		20.33	25.09	32.58	47.59	168.23										
Pa	$Mα_2$		7	100	91	6	3.072	28.24500	3		20.34	25.10	32.58	47.59	168.33										
Ag	Ll		6	2	47	6	2.633	28.24559	4		20.34	25.10	32.58	47.60	168.36										
Cl	$SKα_3$		6	4	17	1	2.631	28.26598	3	3	20.35	25.12	32.60	47.63	169.20										
Si	$SKα_4$		4	3	14	1	1.754	28.26617	3	3	20.35	25.12	32.60	47.63	169.21										
Pb	M_3-N_4		6	5	82	6	2.629	28.28999	3		20.37	25.14	32.63	47.67	170.28										
Rb	$Lβ_1$		4	45	37	6	1.752	28.30359	4		20.38	25.15	32.65	47.70	170.95										
Si	$SKα_3$		4	6	14	1	1.752	28.30705	3	3	20.38	25.15	32.65	47.71	171.13										
Th	N_1-P_2		3		90	6	1.313	28.31999	2		20.39	25.17	32.67	47.73	171.84										
Sn	$Lγ_{2,3}$		10	2	50	6	4.376	28.32700	4		20.40	25.17	32.68	47.74	172.24										
I	$Lα_1$		9	100	53	6	3.937	28.33739	5		20.40	25.18	32.69	47.76	172.89										
Zr	$Lβ_4$		5	3	40	6	2.187	28.34048	4		20.41	25.18	32.69	47.77	173.10										
Cl	$Kα_1$		6	100	17	6	2.622	28.36679	4	3	20.42	25.21	32.72	47.81	175.17										
Cl	$Kα_{1,2}$		6	150	17	6	2.621	28.37259	4	3	20.43	25.21	32.73	47.82	175.76										
Sb	$Lβ_3$		9	6	51	6	3.932	28.37320	5		20.43	25.21	32.73	47.82	175.83										
Cl	$Kα_2$		6	50	17	6	2.620	28.38419	4	3	20.44	25.22	32.74	47.84	177.31										
I	$Lα_2$		9	10	53	6	3.925	28.42117	5		20.46	25.26	32.79	47.91											
Eu	Mz		2	.01	63	6	0.872	28.43999	2		20.48	25.27	32.81	47.94											
In	$Lβ_1$		8	75	49	6	3.487	28.44247	5		20.48	25.28	32.81	47.95											
In	$Lγ_1$		9	8	49	6	3.920	28.45915	5		20.49	25.29	32.83	47.98											
I	Ll		8	7	53	6	3.484	28.46031	5		20.49	25.29	32.83	47.98											
Pd	$Lβ_4$		7	5	46	6	3.045	28.49768	4		20.52	25.33	32.88	48.05											
Sn	Ll		7	7	50	6	3.044	28.50154	5		20.52	25.33	32.88	48.05											
Si	$Kα_1$		4	100	14	6	1.740	28.50168	5	3	20.52	25.33	32.88	48.05											
Si	$Kα_{1,2}$		4	150	14	6	1.739	28.50497	5	3	20.52	25.33	32.89	48.06											
Si	$Kα_2$		4	50	14	6	1.739	28.51163	5	3	20.53	25.34	32.89	48.07											
Sb	$Lγ_1$		10	8	51	6	4.347	28.51588	5		20.53	25.34	32.90	48.08											
Ni	$Lβ_1$		2	21	28	6	0.869	28.54199	3		20.55	25.37	32.93	48.13											
Zr	$Lβ_6$		5	3	40	6	2.171	28.55049	4		20.56	25.37	32.94	48.14											
Mg	Kβ		3	.7	12	6	1.302	28.56299	3	2	20.57	25.38	32.96	48.16											
Sn	$Lβ_{2,15}$		9	17	50	6	3.904	28.57544	5		20.58	25.40	32.97	48.19											
Pa	Mγ		8	5	91	6	3.465	28.61600	3		20.61	25.43	33.02	48.26											
Co	$Lβ_{3,4}$		2	.5	27	6	0.866	28.62000	2		20.61	25.44	33.02	48.27											
Nb	$Lα_1$		5	100	41	6	2.166	28.62149	4		20.61	25.44	33.03	48.27											
Nb	$Lα_2$		5	10	41	6	2.163	28.65948	4		20.64	25.47	33.07	48.34											
Mg	$Kβ_1$		3	.7	12	1	1.295	28.70940	3	2	20.67	25.52	33.13	48.43											
Sb	$Lβ_4$		9	4	51	6	3.886	28.71126	5		20.67	25.52	33.13	48.43											
I	$Lβ_3$		10	6	53	6	4.313	28.74289	5		20.70	25.55	33.17	48.49											
Ge	$Lβ_3$		3	1	32	6	1.294	28.74300	3		20.70	25.55	33.17	48.49											
Br	Ll		3	1	35	6	1.293	28.75499	3		20.71	25.56	33.18	48.51											
Dy	Mα		3	100	66	6	1.293	28.76999	2		20.72	25.57	33.20	48.54											
Ce	M_5-$O_{2,3}$		2	.01	58	6	0.861	28.78000	2		20.72	25.58	33.21	48.55											
Sn	$Lα_1$		8	100	50	6	3.443	28.79951	5		20.74	25.60	33.24	48.59											
Sm	Mγ		3	1	62	6	1.291	28.79999	3		20.74	25.60	33.24	48.59											
Te	$Lβ_{2,15}$		10	17	52	6	4.301	28.82169	5		20.76	25.62	33.26	48.63											
Sb	Ln		8	7	51	6	3.436	28.86119	5		20.78	25.65	33.31	48.70											
Sn	$Lα_2$		8	10	50	6	3.435	28.87128	5		20.79	25.66	33.32	48.72											
Sb	Mz		1	1	51	6	0.429	28.87999	2		20.80	25.67	33.33	48.73											
Pa	M_3-N_4		8	5	91	6	3.430	28.91199	3		20.82	25.70	33.37	48.79											
Ce	Ll		10	2	58	6	4.287	28.91699	4		20.82	25.70	33.38	48.80											
Rh	$Lβ_{2,15}$		7	25	45	6	3.001	28.91699	4		20.82	25.70	33.38	48.80											
Ge	$Lβ_4$		3	1	32	6	1.286	28.92000	3		20.83	25.71	33.38	48.80											
Cs	$Lα_1$		10	100	55	6	4.286	28.92400	4		20.83	25.71	33.38	48.81											
Tl	Mγ		6	3	81	6	2.570	28.93799	3		20.84	25.72	33.40	48.84											
Th	$Mα_1$		7	100	90	6	2.996	28.96669	4		20.86	25.75	33.44	48.89											
P	Kβ		5	3	15	6	2.139	28.98000	3	3	20.87	25.76	33.45	48.91											
Mg	$SKβ'$		3	.01	12	1	1.282	28.99945	2	2	20.88	25.78	33.47	48.95											
Ta	Mα		4	100	73	6	1.709	29.00800	3		20.89	25.79	33.48	48.96											
As	$Lα_{1,2}$		3	100	33	6	1.282	29.01270	4		20.89	25.79	33.49	48.97											
P	$Kβ_1$		5	3	15	0	2.136	29.01900	3	3	20.90	25.80	33.50	48.98											
La	Mβ	A	2	45	57	6	0.854	29.01999	2		20.90	25.80	33.50	48.98											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ 10⁻	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Cs	$L\alpha_2$		10	10	55	6	4.272	29.01999	4		20.90	25.80	33.50	48.98											
Pd	$L\beta_1$		7	42	46	6	2.990	29.02353	5		20.90	25.80	33.50	48.99											
Sb	$L\beta_1$		9	75	51	6	3.843	29.03102	5		20.91	25.81	33.51	49.00											
Th	$M\alpha_2$		7	100	90	6	2.986	29.05699	3		20.93	25.83	33.54	49.05											
Hf	$M\zeta_2$		3	.01	72	6	1.280	29.05800	3		20.93	25.83	33.54	49.05											
Hf	$M\zeta_1$		3	.01	72	6	1.280	29.05800	3		20.93	25.83	33.54	49.05											
Ru	$L\alpha_1$		6	100	44	6	2.558	29.07449	5		20.94	25.85	33.56	49.08											
Ag	$L\alpha_1$		7	100	47	6	2.984	29.08099	5		20.94	25.85	33.57	49.09											
Pa	M_2-N_4		10	5	91	6	4.260	29.09999	3		20.96	25.87	33.59	49.13											
I	$L\beta_4$		10	4	53	6	4.257	29.12068	5		20.97	25.89	33.62	49.17											
Ni	$L\alpha_{1,2}$		2	100	28	6	0.851	29.12199	3		20.97	25.89	33.62	49.17											
Ru	$L\alpha_2$		6	10	44	6	2.554	29.12285	5		20.97	25.89	33.62	49.17											
Pt	$M\beta$		5	50	78	6	2.127	29.13998	3		20.99	25.91	33.64	49.20											
Ag	$L\alpha_2$		7	10	47	6	2.978	29.14056	5		20.99	25.91	33.64	49.20											
Cd	$L\beta_3$		8	11	48	6	3.401	29.15959	5		21.00	25.92	33.66	49.24											
Zr	$L\beta_1$		5	45	40	6	2.124	29.17999	4		21.02	25.94	33.69	49.27											
Mg	$SK\alpha_6$		3	.8	12	1	1.274	29.18282	3	3	21.02	25.94	33.69	49.28											
Au	$M\alpha_1$		5	100	79	6	2.123	29.19998	3		21.03	25.96	33.71	49.31											
Hf	$M\beta$		4	45	72	6	1.697	29.21199	3		21.04	25.97	33.73	49.33											
Ne	$K\alpha_{1,2}$		2	100	10	6	0.848	29.21999	3		21.05	25.98	33.74	49.34											
Mg	$SK\alpha_5$		3	.9	12	1	1.271	29.26097	3	3	21.08	26.02	33.78	49.42											
Au	$M\alpha_2$		5	100	79	6	2.118	29.26999	3		21.08	26.02	33.80	49.43											
Rb	$L\alpha_1$		4	100	37	6	1.694	29.27319	4		21.08	26.03	33.80	49.44											
Rb	$L\alpha_2$		4	10	37	6	1.692	29.30040	4		21.10	26.05	33.83	49.49											
Tc	$L\beta_1$	H	6	45	43	6	2.536	29.32379	4		21.12	26.07	33.86	49.53											
Ar	$K\alpha_1$		7	100	18	6	2.957	29.34259	5		21.13	26.09	33.88	49.57											
Ar	$K\alpha_{1,2}$		7	150	18	6	2.957	29.34946	5		21.14	26.10	33.89	49.58											
Ar	$K\alpha_2$		7	50	18	6	2.955	29.36317	5		21.15	26.11	33.91	49.60											
I	$L\beta_1$		10	75	53	6	4.220	29.37439	5		21.16	26.12	33.92	49.62											
Tb	$M\beta$		3	45	65	6	1.266	29.37599	3		21.16	26.12	33.92	49.63											
Cs	Ll		9	2	55	6	3.794	29.40298	4		21.18	26.14	33.95	49.67											
Mg	$SK\alpha_4$		3	8	12	1	1.264	29.42331	3	3	21.19	26.16	33.98	49.71											
Y	Ll		4	3	39	6	1.685	29.42519	4		21.19	26.16	33.98	49.71											
Th	$M\gamma$		8	5	90	6	3.369	29.43199	3		21.20	26.17	33.99	49.73											
Bi	$M\beta$		6	60	83	6	2.525	29.45399	3		21.22	26.19	34.01	49.77											
Cd	$L\beta_4$		8	5	48	6	3.367	29.45624	5		21.22	26.19	34.02	49.77											
Mg	$SK\alpha_3$		3	8	12	1	1.262	29.47141	3	3	21.23	26.21	34.04	49.80											
Rh	$L\gamma_{2,3}$		8	5	45	6	3.363	29.48399	4		21.24	26.22	34.05	49.82											
I	Ln		9	7	53	6	3.780	29.51810	5		21.26	26.25	34.09	49.88											
Mg	$SK\alpha'$		3	2	12	1	1.259	29.54355	2	3	21.28	26.27	34.12	49.93											
Te	$L\alpha_1$		9	100	52	6	3.769	29.60280	5		21.32	26.33	34.19	50.04											
Ag	$L\beta_{2,15}$		8	25	47	6	3.347	29.62679	5		21.34	26.35	34.22	50.08											
Mg	$K\alpha_{1,2}$		3	100	12	6	1.253	29.67000	4	3	21.37	26.39	34.27	50.16											
Te	$L\alpha_2$		9	10	52	6	3.758	29.68613	5		21.39	26.40	34.29	50.19											
Rh	$L8_6$		7	3	45	6	2.922	29.69189	4		21.39	26.41	34.30	50.20											
Pd	Ll		6	2	46	6	2.503	29.71500	4		21.41	26.43	34.33	50.24											
U	$M\beta$		8	60	92	6	3.336	29.72800	3		21.42	26.44	34.34	50.26											
K	$SK\alpha_4$		8	3	19	1	3.335	29.73193	3	4	21.42	26.44	34.35	50.27											
Te	Ll		8	7	52	6	3.335	29.73567	5		21.42	26.45	34.35	50.28											
Th	M_3-N_4		8	5	90	6	3.334	29.74399	3		21.43	26.45	34.36	50.29											
Sn	$L\beta_3$		9	6	50	6	3.750	29.75264	5		21.43	26.46	34.37	50.31											
Ag	$L\gamma_3$		9	2	47	6	3.749	29.75714	5		21.44	26.46	34.38	50.31											
La	$M\alpha$	A	2	100	57	6	0.833	29.75999	2		21.44	26.47	34.38	50.32											
K	$SK\alpha_3$		8	3	19	1	3.332	29.76479	3	4	21.44	26.47	34.38	50.33											
Rh	$L\beta_3$		7	11	45	6	2.915	29.76538	4		21.44	26.47	34.39	50.33											
Pd	$L\gamma_1$		8	10	46	6	3.328	29.79680	4		21.47	26.50	34.42	50.39											
In	$L\gamma_{2,3}$		10	2	49	6	4.160	29.79999	4		21.47	26.50	34.43	50.39											
Cu	Ln		2	1	29	6	0.832	29.79999	2		21.47	26.50	34.43	50.39											
Rh	M_3-N_1		1	10	45	6	0.416	29.79999	1		21.47	26.50	34.43	50.39											
Ag	$L\gamma_2$		9	3	47	6	3.743	29.80943	5		21.47	26.51	34.44	50.41											
Sm	$M\zeta$		2	.01	62	6	0.831	29.81999	2		21.48	26.52	34.45	50.43											
Au	$M\zeta_1$		4	2	79	6	1.660	29.86400	3		21.51	26.56	34.50	50.51											
In	Ll		7	7	49	6	2.904	29.88110	5		21.53	26.58	34.52	50.54											
Se	Ln		3	1	34	6	1.244	29.88599	3		21.53	26.58	34.53	50.55											
Hg	$M\gamma$		6	3	80	6	2.487	29.90399	3		21.54	26.60	34.55	50.58											

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Cd	$L\beta_1$		8	42	48	6	3.316	29.90584	5		21.55	26.60	34.55	50.58											
Y	$L\beta_3$		5	3	39	6	2.072	29.91599	4		21.55	26.61	34.56	50.60											
K	$K\alpha_1$		8	100	19	6	3.313	29.93120	4	4	21.56	26.62	34.58	50.63											
K	$K\alpha_{1,2}$		8	150	19	6	3.312	29.93945	4	4	21.57	26.63	34.59	50.64											
K	$K\alpha_2$		8	50	19	6	3.310	29.95599	4	4	21.58	26.64	34.61	50.67											
Tb	$M\alpha$		3	100	65	6	1.240	30.00000	2		21.61	26.68	34.66	50.75											
Sn	$L\gamma_1$		10	8	50	6	4.130	30.01149	5		21.62	26.70	34.68	50.77											
Cd	$L\gamma_1$		9	10	48	6	3.716	30.02075	5		21.63	26.70	34.69	50.79											
Rh	$L\beta_4$		7	5	45	6	2.890	30.02159	4		21.63	26.70	34.69	50.79											
Ca	$SK\alpha_4$		9	2	20	1	3.715	30.03142	3	4	21.64	26.71	34.70	50.81											
In	$L\beta_{2,15}$		9	17	49	6	3.713	30.04541	5		21.65	26.73	34.72	50.84											
La	$L\ell$		10	2	57	6	4.124	30.05998	3		21.66	26.74	34.74	50.86											
Ca	$SK\alpha_3$		9	2	20	1	3.711	30.06119	3	4	21.66	26.74	34.74	50.86											
Mo	$L\beta_3$		6	3	42	6	2.473	30.07979	4		21.67	26.76	34.76	50.90											
Te	$L\beta_3$		10	6	52	6	4.120	30.08928	5		21.68	26.77	34.77	50.92											
Sn	$L\beta_4$		9	4	50	6	3.708	30.09013	5		21.68	26.77	34.77	50.92											
Y	$L\beta_4$		5	3	39	6	2.060	30.09299	4		21.68	26.77	34.78	50.92											
Th	M_2-N_4		10	5	90	6	4.117	30.10999	3		21.69	26.78	34.80	50.95											
S	$K\beta x$		6	7	16	6	2.468	30.13979	4	3	21.72	26.81	34.83	51.01											
Bf	$M\alpha$		4	100	72	6	1.644	30.15599	3		21.73	26.83	34.85	51.04											
Xe	$L\alpha_1$	H	10	100	54	6	4.109	30.16599	4		21.73	26.84	34.86	51.05											
In	$L\alpha_1$		8	100	49	6	3.286	30.17535	5		21.74	26.84	34.87	51.07											
S	$K\beta_1$		6	7	16	6	2.464	30.18959	4	3	21.75	26.86	34.89	51.10											
Ir	$M\beta$		5	45	77	6	2.053	30.18999	3		21.75	26.86	34.89	51.10											
Ca	$K\alpha_1$		9	100	20	6	3.691	30.22549	5	4	21.78	26.89	34.93	51.16											
Sb	$L\beta_{2,15}$		10	17	51	6	4.100	30.23349	5		21.78	26.90	34.94	51.18											
Pt	$M\alpha_1$		5	100	78	6	2.050	30.23499	3		21.79	26.90	34.95	51.18											
Ca	$K\alpha_{1,2}$		9	150	20	6	3.690	30.23531	5	4	21.79	26.90	34.95	51.18											
In	$L\alpha_2$		8	10	49	6	3.279	30.24583	5		21.79	26.91	34.96	51.20											
Ca	$K\alpha_2$		9	50	20	6	3.687	30.25493	5	4	21.80	26.92	34.97	51.22											
U	N_1-O_3		3		92	6	1.229	30.26999	2		21.81	26.93	34.99	51.24											
Pt	$M\alpha_2$		5	100	78	6	2.046	30.28999	3		21.83	26.95	35.01	51.28											
Mo	$L\beta_4$		6	3	42	6	2.455	30.29279	4		21.83	26.95	35.01	51.28											
Mo	$L\beta_6$		6	3	42	6	2.455	30.29279	4		21.83	26.95	35.01	51.28											
Kr	$L\beta_1$		4	35	36	6	1.636	30.30399	3		21.84	26.96	35.03	51.31											
Sc	$K\alpha_1$		10	100	21	6	4.090	30.30899	4	4	21.84	26.96	35.03	51.31											
Sn	$L\eta$		8	7	50	6	3.272	30.31007	5		21.84	26.97	35.03	51.32											
Sc	$K\alpha_{1,2}$		10	150	21	6	4.088	30.31999	4	4	21.85	26.97	35.05	51.33											
Sc	$K\alpha_2$		10	50	21	6	4.085	30.34200	4	4	21.86	26.99	35.07	51.37											
Zr	$L\alpha_1$		5	100	40	6	2.042	30.35249	4		21.87	27.00	35.09	51.39											
Zr	$L\alpha_2$		5	10	40	6	2.040	30.38899	4		21.90	27.04	35.13	51.46											
Cd	M_4-$O_{2,3}$	A	1	10	48	6	0.408	30.39999	1		21.91	27.05	35.14	51.48											
Lu	$M\beta$		4	45	71	6	1.631	30.40399	3		21.91	27.05	35.15	51.49											
Pb	$M\beta$		6	60	82	6	2.442	30.45599	3		21.95	27.10	35.21	51.58											
Sn	$L8_1$		9	75	50	6	3.662	30.46382	5		21.95	27.11	35.22	51.60											
Te	$L\beta_4$		10	4	52	6	4.069	30.46609	5		21.95	27.11	35.22	51.60											
Y	$L\beta_6$		5	3	39	6	2.034	30.47099	4		21.96	27.11	35.23	51.61											
Ge	$L\beta_1$		3	35	32	6	1.218	30.52499	3		22.00	27.16	35.29	51.71											
P	$SK\alpha_4$		5	5	15	1	2.029	30.54405	3	3	22.01	27.18	35.31	51.74											
Cu	$L\ell$		2	5	29	6	0.811	30.57199	3		22.03	27.20	35.35	51.79											
Pd	$L\alpha_1$		7	100	46	6	2.838	30.57367	5		22.03	27.20	35.35	51.80											
P	$SK\alpha_3$		5	5	15	1	2.027	30.58315	3	3	22.04	27.21	35.36	51.81											
Pa	$M\beta$		8	60	91	6	3.239	30.61600	3		22.06	27.24	35.40	51.87											
Rh	$L\beta_1$		7	42	45	6	2.834	30.61897	5		22.07	27.25	35.40	51.88											
Pd	$L\alpha_2$		7	10	46	6	2.833	30.63115	5		22.07	27.26	35.42	51.90											
Ag	$L\beta_3$		8	11	47	6	3.234	30.66504	5		22.10	27.29	35.46	51.96											
Bi	M_2-N_4		8	5	83	6	3.233	30.67200	3		22.10	27.29	35.47	51.97											
Tc	$L\alpha_1$	H	6	100	43	6	2.424	30.68880	4		22.12	27.31	35.49	52.01											
Bi	$M\alpha_1$		6	100	83	6	2.422	30.70799	3		22.13	27.33	35.51	52.04											
Mo	$L\ell$		5	3	42	6	2.015	30.75400	4		22.16	27.37	35.56	52.12											
Gd	$M\beta$		3	45	64	6	1.209	30.76199	3		22.17	27.38	35.57	52.14											
Te	$L8_1$		10	75	52	6	4.029	30.76768	5		22.17	27.38	35.58	52.15											
Bi	$M\alpha_2$		6	100	83	6	2.416	30.77998	3		22.18	27.39	35.60	52.17											
P	$K\alpha_1$	H	5	100	15	6	2.013	30.78499	3	3	22.19	27.40	35.60	52.18											
P	$K\alpha_{1,2}$	H	5	150	15	6	2.013	30.78998	3	3	22.19	27.40	35.61	52.19											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
P	$K\alpha_2$	H	5	50	15	6	2.012	30.79999	3	3	22.20	27.41	35.62	52.21											
Cd	M_5-O_3	A	1	1	48	6	0.402	30.79999	1		22.20	27.41	35.62	52.21											
Ag	AM_4		1		47	6	0.402	30.81999	2		22.21	27.43	35.64	52.24											
Cl	$K\beta$		7	8	17	6	2.815	30.82379	4	3	22.21	27.43	35.65	52.25											
Au	$M\gamma$		6	3	79	6	2.409	30.87000	3		22.25	27.47	35.70	52.34											
Se	Ll		3	1	34	6	1.204	30.88199	3		22.26	27.48	35.72	52.36											
Ti	Ln		1	1	22	6	0.401	30.89000	2		22.26	27.49	35.73	52.37											
Ca	$K\beta_{1,3}$		10	15	20	6	4.012	30.89699	4	4	22.27	27.50	35.74	52.38											
Te	Ln		9	7	52	6	3.605	30.94487	5		22.30	27.54	35.79	52.47											
Pt	$M\zeta_1$		4	2	78	6	1.602	30.95200	3		22.31	27.55	35.80	52.49											
Sb	$L\alpha_1$		9	100	51	6	3.604	30.95468	5		22.31	27.55	35.80	52.49											
Ag	$L\beta_4$		8	5	47	6	3.203	30.96184	5		22.32	27.56	35.81	52.50											
N	AK		1		7	6	0.400	30.98999	2		22.34	27.58	35.85	52.55											
Sc	$L\beta_1$		1	10	21	6	0.400	31.01999	2		22.36	27.61	35.88	52.61											
Sb	$L\alpha_2$		9	10	51	6	3.595	31.03558	5		22.37	27.62	35.90	52.64											
Y	$L\beta_1$		5	45	39	6	1.995	31.06000	4		22.39	27.65	35.93	52.68											
Mo	$L\beta_1$		6	45	42	6	2.394	31.06247	5		22.39	27.65	35.93	52.69											
Br	$L\beta_{3,4}$	H	4	2	35	6	1.596	31.06799	3		22.39	27.65	35.94	52.70											
Ga	$L\beta_{3,4}$		3	2	31	6	1.197	31.07700	3		22.40	27.66	35.95	52.71											
K	$K\beta_{1,3}$		9	15	19	6	3.589	31.08508	4	4	22.41	27.67	35.96	52.73											
Ar	$K\beta_{1,3}$		8	15	18	6	3.190	31.08800	4		22.41	27.67	35.96	52.73											
Sb	Ll		8	7	51	6	3.188	31.10608	5		22.42	27.69	35.99	52.77											
Ag	AM_5		1		47	6	0.398	31.14000	2		22.45	27.72	36.03	52.83											
U	N_2-P_1		3		92	6	1.192	31.20000	2		22.49	27.77	36.10	52.94											
In	$L\beta_3$		9	6	49	6	3.572	31.22855	5		22.51	27.80	36.13	52.99											
Sn	$M\zeta$		1	1	50	6	0.397	31.23999	2		22.52	27.81	36.15	53.01											
Kr	$L\alpha_{1,2}$		4	100	36	6	1.586	31.26799	3		22.54	27.83	36.18	53.06											
Pd	$L\beta_{2,15}$		8	25	46	6	3.171	31.27095	5		22.54	27.84	36.18	53.07											
U	$M\alpha_1$		8	100	92	6	3.170	31.28000	3		22.55	27.85	36.19	53.08											
Fe	$L\beta_{3,4}$		2	.5	26	6	0.792	31.29999	2		22.56	27.86	36.22	53.12											
Rh	Ll		6	3	45	6	2.376	31.30139	4		22.56	27.87	36.22	53.12											
Ge	$L\alpha_{1,2}$		3	100	32	6	1.188	31.30829	4		22.57	27.87	36.23	53.14											
Ir	$M\alpha_1$		5	100	77	6	1.980	31.30998	3		22.57	27.87	36.23	53.14											
U	$M\gamma$		9	5	92	6	3.563	31.31099	3		22.57	27.87	36.23	53.14											
Co	$L\beta_1$		2	18	27	6	0.791	31.33199	3		22.59	27.89	36.26	53.18											
Os	$M\beta$		5	45	76	6	1.978	31.33499	3		22.59	27.90	36.26	53.19											
Sr	Ll		4	3	38	6	1.582	31.34479	4		22.60	27.90	36.27	53.20											
Sc	$L\alpha_{1,2}$		1	100	21	6	0.395	31.34999	2		22.60	27.91	36.28	53.21											
Ba	Ll		10	2	56	6	3.953	31.35500	4		22.60	27.91	36.28	53.22											
Ti	Ll		1	1	22	6	0.395	31.35999	2		22.61	27.92	36.29	53.23											
Lu	$M\alpha$		4	100	71	6	1.581	31.35999	3		22.61	27.92	36.29	53.23											
Cd	Ll		7	2	48	6	2.767	31.36098	5		22.61	27.92	36.29	53.23											
Ir	$M\alpha_2$		5	100	77	6	1.975	31.37498	3		22.62	27.93	36.31	53.26											
Cd	$L\gamma_2$		10	5	48	6	3.951	31.37698	4		22.62	27.93	36.31	53.26											
Gd	$M\alpha$		3	100	64	6	1.185	31.37999	2		22.62	27.94	36.31	53.27											
U	$M\alpha_2$		8	100	92	6	3.159	31.39200	3		22.63	27.95	36.33	53.29											
Pd	$L\gamma_{2,3}$		9	5	46	6	3.553	31.40279	4		22.64	27.96	36.34	53.31											
Ru	$L\beta_6$		7	3	44	6	2.763	31.40619	4		22.64	27.96	36.35	53.32											
Ru	$L\beta_3$		7	3	44	6	2.763	31.40619	4		22.64	27.96	36.35	53.32											
Ba	M_4-O_3		2	10	56	6	0.789	31.43999	2		22.66	27.99	36.39	53.38											
Yb	$M\zeta$		3	.01	70	6	1.183	31.43999	2		22.66	27.99	36.39	53.38											
Ag	$L\beta_1$		8	42	47	6	3.150	31.47783	5		22.69	28.03	36.43	53.45											
I	$L\alpha_1$		10	100	53	6	3.937	31.48599	5		22.70	28.03	36.44	53.46											
Tl	$M\beta$		6	55	81	6	2.362	31.49399	3		22.70	28.04	36.45	53.48											
Nd	$M\gamma$		3	1	60	6	1.180	31.51498	3		22.72	28.06	36.48	53.51											
Sb	$L\beta_3$		10	6	51	6	3.932	31.52579	5		22.73	28.07	36.49	53.53											
Th	$M\beta$		8	60	90	6	3.145	31.52800	3		22.73	28.07	36.49	53.54											
Rh	$L\gamma_1$		8	10	45	6	3.143	31.54959	4		22.74	28.09	36.52	53.58											
In	$L\beta_4$		9	4	49	6	3.535	31.56271	5		22.75	28.10	36.53	53.60											
I	$L\alpha_2$		10	10	53	6	3.925	31.57909	5		22.77	28.12	36.55	53.63											
N	$K\alpha$		1	100	7	6	0.392	31.59999	2	1	22.78	28.14	36.58	53.67											
In	$L\gamma_1$		10	8	49	6	3.920	31.62129	5		22.80	28.16	36.60	53.71											
Cd	$L\beta_{2,15}$		9	25	48	6	3.528	31.62671	5		22.80	28.16	36.61	53.72											
Yb	$M\beta$		4	45	70	6	1.567	31.63599	3		22.81	28.17	36.62	53.74											
Cd	$L\alpha_1$		8	100	48	6	3.133	31.65079	5		22.82	28.18	36.64	53.76											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llanr (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EOOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ru	$L\beta_4$		7	3	44	6	2.741	31.66100	4		22.83	28.19	36.65	53.78											
U	M_3-N_4		9	5	92	6	3.521	31.68900	3		22.85	28.22	36.68	53.83											
Ag	$L\gamma_1$		9	10	47	6	3.519	31.70338	5		22.86	28.23	36.70	53.86											
Pb	$M\alpha_1$		6	100	82	6	2.345	31.71599	3		22.87	28.24	36.72	53.88											
Cd	$L\alpha_2$		8	10	48	6	3.126	31.71967	5		22.87	28.25	36.72	53.89											
Bi	$M\gamma$		7	5	83	6	2.735	31.72398	3		22.87	28.25	36.73	53.90											
Pb	M_2-N_4		8	5	82	6	3.124	31.74399	3		22.89	28.27	36.75	53.94											
Sn	$L\beta_{2,15}$		10	17	50	6	3.904	31.75049	5		22.89	28.27	36.76	53.95											
Pb	$M\alpha_2$		6	100	82	6	2.339	31.79399	3		22.92	28.31	36.81	54.03											
U	N_4-N_6		1		92	6	0.390	31.79999	1		22.93	28.32	36.82	54.04											
Ba	M_4-O_2		2	10	56	6	0.779	31.81999	2		22.94	28.34	36.84	54.07											
Sr	$L\beta_3$		5	3	38	6	1.947	31.83600	4		22.95	28.35	36.86	54.10											
Te	$M\gamma$		2	100	52	6	0.778	31.85999	2		22.97	28.37	36.89	54.15											
Nb	$L\beta_3$		6	3	41	6	2.334	31.86119	4		22.97	28.37	36.89	54.15											
In	Ln		8	7	49	6	3.112	31.86615	5		22.98	28.38	36.90	54.16											
Sb	$L\beta_4$		10	4	51	6	3.886	31.90140	5		23.00	28.41	36.94	54.22											
Pt	$M\gamma$		6	3	78	6	2.331	31.91399	3		23.01	28.42	36.95	54.25											
Co	$L\alpha_{1,2}$		2	100	27	6	0.776	31.94398	3		23.03	28.45	36.99	54.30											
Sb	M_2-N_4		2	50	51	6	0.776	31.95999	2		23.04	28.46	37.01	54.33											
Bi	M_3-N_4		7	5	83	6	2.712	31.99699	3		23.07	28.50	37.05	54.40											
In	$L\beta_1$		9	75	49	6	3.487	31.99777	5		23.07	28.50	37.05	54.40											
S	$SK\alpha_4$		6	45	16	1	2.324	32.00491	3	3	23.08	28.50	37.06	54.41											
Sr	$L\beta_4$		5	3	38	6	1.936	32.01299	4		23.08	28.51	37.07	54.43											
I	Ll		9	7	53	6	3.484	32.01785	5		23.09	28.52	37.08	54.44											
S	$SK\alpha_3$		6	45	16	1	2.321	32.04459	3	3	23.11	28.54	37.11	54.49											
Nb	$L\beta_4$		6	3	41	6	2.319	32.07300	4		23.13	28.57	37.14	54.54											
Nb	$L\beta_6$		6	3	41	6	2.312	32.16779	4		23.20	28.65	37.26	54.71											
Pa	$M\alpha_1$		8	100	91	6	3.082	32.17599	3		23.20	28.66	37.27	54.73											
Rh	$L\alpha_1$		7	100	45	6	2.696	32.18199	5		23.21	28.67	37.28	54.74											
Pa	$M\gamma$		9	5	91	6	3.465	32.19299	3		23.22	28.68	37.29	54.76											
As	Ln		3	1	33	6	1.155	32.20200	3		23.22	28.68	37.30	54.78											
S	$K\alpha_1$		6	100	16	6	2.307	32.23296	5	3	23.24	28.71	37.34	54.83											
Rh	$L\alpha_2$		7	10	45	6	2.692	32.23814	5		23.25	28.72	37.34	54.84											
S	$K\alpha_{1,2}$		6	150	16	6	2.307	32.23856	5	3	23.25	28.72	37.34	54.85											
Y	$L\alpha_1$		5	100	39	6	1.922	32.24399	4		23.25	28.72	37.35	54.86											
S	$K\alpha_2$		6	50	16	6	2.306	32.24976	5	3	23.26	28.73	37.36	54.87											
Eu	$M\beta$		3	45	63	6	1.153	32.25000	3		23.26	28.73	37.36	54.87											
Sb	$L\beta_1$		10	75	51	6	3.843	32.25670	5		23.26	28.73	37.37	54.88											
Pd	$L\beta_3$		8	11	46	6	3.072	32.27679	4		23.28	28.75	37.39	54.92											
Y	$L\alpha_2$		5	10	39	6	1.920	32.27899	4		23.28	28.75	37.39	54.92											
Pa	$M\alpha_2$		8	100	91	6	3.072	32.28000	3		23.28	28.75	37.39	54.92											
Ru	M_2-N_1		1	1	44	6	0.384	32.29999	1		23.29	28.77	37.42	54.96											
Ru	$L\beta_1$		7	45	44	6	2.683	32.34406	5		23.33	28.81	37.47	55.04											
Os	$M\alpha$	D	5	100	76	6	1.914	32.38998	3		23.36	28.85	37.53	55.12											
Sn	$L\alpha_1$		9	100	50	6	3.443	32.39944	5		23.37	28.86	37.54	55.14											
Ba	M_5-O_3		2	.01	56	6	0.765	32.39999	2		23.37	28.86	37.54	55.14											
Mo	$L\alpha_1$		6	100	42	6	2.293	32.43929	5		23.40	28.90	37.58	55.22											
Sb	Ln		9	7	51	6	3.436	32.46884	5		23.42	28.93	37.62	55.27											
Sn	$L\alpha_2$		9	10	50	6	3.435	32.48018	5		23.43	28.94	37.63	55.29											
Mo	$L\alpha_2$		6	10	42	6	2.289	32.48621	5		23.43	28.94	37.64	55.30											
Br	$L\beta_1$		4	35	35	6	1.526	32.50040	4		23.44	28.96	37.66	55.33											
Re	$M\beta$		5	45	75	6	1.906	32.51999	3		23.45	28.97	37.68	55.36											
Pa	M_3-N_4		9	5	91	6	3.430	32.52599	3		23.46	28.98	37.69	55.38											
Ni	Ln		2	3	28	6	0.762	32.53998	2		23.47	28.99	37.71	55.40											
Pd	$L\beta_4$		8	5	46	6	3.045	32.56879	4		23.49	29.02	37.74	55.46											
Sn	Ll		8	7	50	6	3.044	32.57320	5		23.49	29.02	37.75	55.46											
Nb	Ll		5	3	41	6	1.902	32.58798	4		23.50	29.04	37.76	55.49											
Hg	$M\beta$		6	50	80	6	2.282	32.59079	4		23.51	29.04	37.77	55.50											
Sr	$L\beta_6$		5	3	38	6	1.901	32.59549	4		23.51	29.04	37.77	55.50											
Yb	$M\alpha$		4	100	70	6	1.521	32.59599	3		23.51	29.04	37.77	55.51											
Cs	Ll		10	2	55	6	3.794	32.66998	4		23.56	29.11	37.86	55.64											
Pb	$M\gamma$		7	5	82	6	2.652	32.71799	3		23.60	29.15	37.92	55.73											
Tl	$M\alpha_1$		6	100	81	6	2.270	32.75999	3		23.63	29.19	37.97	55.81											
I	Ln		10	7	53	6	3.780	32.79790	5		23.66	29.23	38.02	55.88											
Cd	$L\beta_3$		9	11	48	6	3.401	32.80453	5		23.66	29.23	38.02	55.89											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Micm (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Tl	$M\alpha_2$		6	100	81	6	2.265	32.83199	3		23.68	29.26	38.06	55.94											
Cl	$SK\alpha_4$		7	4	17	1	2.640	32.86964	3	3	23.71	29.29	38.10	56.01											
Eu	$M\alpha$		3	100	63	6	1.131	32.87999	2		23.72	29.30	38.11	56.03											
Te	$L\alpha_1$		10	100	52	6	3.769	32.89200	5		23.73	29.31	38.13	56.05											
Nd	$M\zeta$		2	.01	60	6	0.753	32.91998	2		23.75	29.34	38.16	56.11											
Ag	$L\ell$		7	2	47	6	2.633	32.95319	4		23.77	29.37	38.20	56.17											
Nb	$L\beta_1$		6	45	41	6	2.257	32.95378	4		23.77	29.37	38.20	56.17											
Cl	$SK\alpha_3$		7	4	17	1	2.631	32.97697	3	3	23.79	29.39	38.23	56.21											
Te	$L\alpha_2$		10	10	52	6	3.758	32.98459	5		23.79	29.40	38.24	56.23											
Pr	$M\gamma$		3	1	59	6	1.127	32.99399	3		23.80	29.40	38.25	56.24											
Tm	$M\beta$		4	45	69	6	1.503	32.99599	3		23.80	29.41	38.25	56.25											
Pb	M_3-N_4		7	5	82	6	2.629	33.00499	3		23.81	29.41	38.27	56.26											
Ru	$L\ell$		6	3	44	6	2.252	33.02100	4		23.82	29.43	38.28	56.29											
Rh	$L\beta_{2,15}$		8	25	45	6	3.001	33.04799	4		23.84	29.45	38.32	56.34											
Sn	$L\beta_3$		10	6	50	6	3.750	33.05849	5		23.85	29.46	38.33	56.36											
Ag	$L\gamma_3$		10	2	47	6	3.749	33.06349	5		23.85	29.47	38.34	56.37											
Ga	$L\beta_1$		3	35	31	6	1.125	33.06898	3		23.86	29.47	38.34	56.38											
Al	$SK\alpha_4$		4	4	13	1	1.499	33.08269	3	3	23.87	29.49	38.36	56.41											
Cl	$K\alpha_1$		7	100	17	6	2.622	33.09459	4	3	23.87	29.50	38.37	56.43											
Nb	M_2-N_4		1	50	41	6	0.375	33.09999	1		23.88	29.50	38.38	56.44											
Cl	$K\alpha_{1,2}$		7	150	17	6	2.621	33.10135	4	3	23.88	29.50	38.38	56.44											
Th	$M\alpha_1$		8	100	90	6	2.996	33.10480	4		23.88	29.51	38.39	56.45											
Th	$M\gamma$		9	5	90	6	3.369	33.11099	3		23.89	29.51	38.39	56.46											
Cl	$K\alpha_2$		7	50	17	6	2.620	33.11488	4	3	23.89	29.52	38.40	56.47											
Sr	$L\beta_1$		5	45	38	6	1.871	33.11949	4		23.89	29.52	38.40	56.48											
Ag	$L\gamma_2$		10	3	47	6	3.743	33.12158	5		23.89	29.52	38.41	56.48											
Cd	$L\beta_4$		9	5	48	6	3.367	33.13826	5		23.91	29.54	38.43	56.51											
Al	$SK\alpha_3$		4	8	13	1	1.496	33.14680	3	3	23.91	29.54	38.44	56.53											
Rh	$L\gamma_{2,3}$		9	5	45	6	3.363	33.16948	4		23.93	29.56	38.46	56.57											
Pd	$L\beta_1$		8	42	46	6	2.990	33.16975	5		23.93	29.57	38.46	56.57											
Th	$M\alpha_2$		8	100	90	6	2.986	33.20799	3		23.96	29.60	38.51	56.64											
Th	N_2-P_1		3		90	6	1.120	33.20999	2		23.96	29.60	38.51	56.64											
As	$L\ell$		3	1	33	6	1.120	33.21599	3		23.96	29.61	38.52	56.66											
Al	$SK\alpha'$		4	2	13	1	1.493	33.21896	3	3	23.97	29.61	38.52	56.66											
Ag	$L\alpha_1$		8	100	47	6	2.984	33.23543	5		23.98	29.63	38.54	56.69											
Se	$L\beta_{3,4}$	H	4	2	34	6	1.490	33.28400	3		24.01	29.67	38.60	56.78											
Ag	$L\alpha_2$		8	10	47	6	2.978	33.30351	5		24.03	29.69	38.62	56.82											
Ag	$L\beta_{2,15}$		9	25	47	6	3.347	33.33014	5		24.05	29.71	38.66	56.87											
Cd	$L\gamma_1$		10	10	48	6	3.716	33.35640	5		24.07	29.74	38.69	56.92											
Al	$K\alpha_1$		4	100	13	6	1.486	33.35735	5	3	24.07	29.74	38.69	56.92											
Al	$K\alpha_{1,2}$		4	150	13	6	1.486	33.36053	5	3	24.07	29.74	38.69	56.92											
Al	$K\alpha_2$		4	50	13	6	1.486	33.36691	5	3	24.07	29.74	38.70	56.94											
Ca	$SK\alpha_4$		10	2	20	1	3.715	33.36824	3	4	24.07	29.75	38.70	56.94											
In	$L\beta_{2,15}$		10	17	49	6	3.713	33.38379	5		24.09	29.76	38.72	56.97											
Ni	$L\ell$		2	8	28	6	0.743	33.38599	3		24.09	29.76	38.72	56.97											
Ca	$SK\alpha_3$		10	2	20	1	3.711	33.40132	3	4	24.10	29.78	38.74	57.00											
Sn	$L\beta_4$		10	4	50	6	3.708	33.43349	5		24.12	29.81	38.78	57.06											
U	$M\beta$		9	60	92	6	3.336	33.44398	3		24.13	29.82	38.79	57.08											
K	$SK\alpha_4$		9	3	19	1	3.335	33.44843	3	4	24.13	29.82	38.80	57.09											
Te	$L\ell$		9	7	52	6	3.335	33.45264	5		24.14	29.82	38.80	57.10											
Rb	$L\ell$		4	3	37	6	1.482	33.45439	4		24.14	29.82	38.81	57.10											
Th	M_3-N_4		9	5	90	6	3.334	33.46199	3		24.14	29.83	38.82	57.11											
K	$SK\alpha_3$		9	3	19	1	3.332	33.48538	3	4	24.16	29.85	38.84	57.16											
Br	$L\alpha_{1,2}$		4	100	35	6	1.480	33.49840	4		24.17	29.86	38.86	57.18											
Ag	$M_{4,5}O_{2,3}$	A	1	1	47	6	0.370	33.50000	1		24.17	29.87	38.86	57.18											
Pd	$L\gamma_1$		9	10	46	6	3.328	33.52139	4		24.19	29.89	38.89	57.22											
Ar	$K\alpha_1$		8	100	18	6	2.957	33.53439	5		24.20	29.90	38.90	57.25											
Ar	$K\alpha_{1,2}$		8	150	18	6	2.957	33.54224	5		24.20	29.90	38.91	57.26											
Ar	$K\alpha_2$		8	50	18	6	2.955	33.55791	5		24.21	29.92	38.93	57.29											
Th	N_4-N_5		1		90	6	0.369	33.56999	2		24.22	29.93	38.95	57.31											
Ca	$K\alpha_1$		10	100	20	6	3.691	33.58389	5	4	24.23	29.94	38.96	57.34											
Ca	$K\alpha_{1,2}$		10	150	20	6	3.690	33.59479	5	4	24.24	29.95	38.98	57.36											
Zn	$L\beta_{3,4}$		3	1	30	6	1.107	33.59999	3		24.24	29.96	38.98	57.37											
Ca	$K\alpha_2$		10	50	20	6	3.687	33.61658	5	4	24.26	29.97	39.00	57.40											
Cd	$L\beta_1$		9	42	48	6	3.316	33.64406	5		24.28	30.00	39.04	57.45											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Re	$M\alpha$		5	100	75	6	1.842	33.64499	3		24.28	30.00	39.04	57.45											
K	$K\alpha_1$		9	100	19	6	3.313	33.67259	4	4	24.30	30.02	39.07	57.51											
K	$K\alpha_{1,2}$		9	150	19	6	3.312	33.68188	4	4	24.30	30.03	39.08	57.52											
K	$K\alpha_2$		9	50	19	6	3.310	33.70049	4	4	24.32	30.05	39.10	57.56											
Au	$M\beta$		6	50	79	6	2.204	33.74399	3		24.35	30.09	39.16	57.64											
Tl	$M\gamma$		7	3	81	6	2.570	33.76099	3		24.36	30.10	39.18	57.67											
Si	$K\beta$		5	2	14	6	1.836	33.76498	3	2	24.37	30.11	39.18	57.68											
W	$M\beta$		5	45	74	6	1.835	33.78499	3		24.38	30.13	39.21	57.72											
Zr	$L\beta_3$		6	3	40	6	2.201	33.79799	4		24.39	30.14	39.22	57.74											
Sm	$M\beta$		3	45	62	6	1.100	33.81000	2		24.40	30.15	39.24	57.76											
Sb	$M\gamma$		2	100	51	6	0.733	33.84000	2		24.42	30.18	39.27	57.82											
Sn	$L\beta_1$		10	75	50	6	3.662	33.84869	5		24.43	30.18	39.28	57.84											
Sn	M_2-N_4		2	50	50	6	0.732	33.85999	2		24.44	30.19	39.30	57.86											
Ga	$L\alpha_{1,2}$		3	100	31	6	1.098	33.87599	3		24.45	30.21	39.32	57.89											
Hg	$M\alpha$		6	100	80	6	2.195	33.88559	4		24.45	30.22	39.33	57.90											
Si	$K\beta_1$		5	2	14	1	1.829	33.89000	3	2	24.46	30.22	39.33	57.91											
Tm	$M\alpha$		4	100	69	6	1.462	33.92000	2		24.48	30.25	39.37	57.97											
Ru	$L\alpha_1$		7	100	44	6	2.558	33.92024	5		24.48	30.25	39.37	57.97											
Rh	$L\beta_6$		8	3	45	6	2.922	33.93359	4		24.49	30.26	39.39	57.99											
Rb	$L\beta_3$		5	3	37	6	1.826	33.93799	4		24.49	30.27	39.39	58.00											
In	$L\alpha_1$		9	100	49	6	3.286	33.94727	5		24.50	30.27	39.40	58.02											
Ru	$L\alpha_2$		7	10	44	6	2.554	33.97665	5		24.52	30.30	39.44	58.07											
Zr	$L\beta_4$		6	3	40	6	2.187	34.00859	4		24.54	30.33	39.48	58.13											
Rh	$L\beta_3$		8	11	45	6	2.915	34.01759	4		24.55	30.34	39.49	58.15											
In	$L\alpha_2$		9	10	49	6	3.279	34.02655	5		24.56	30.35	39.50	58.17											
Sn	Ln		9	7	50	6	3.272	34.09883	5		24.61	30.41	39.59	58.30											
Rb	$L\beta_4$		5	3	37	6	1.817	34.10349	4		24.61	30.42	39.59	58.31											
Er	Mz		3	.01	68	6	1.090	34.10999	2		24.62	30.42	39.60	58.32											
In	Ll		8	7	49	6	2.904	34.14983	5		24.65	30.46	39.65	58.40											
Tc	$L\beta_1$	H	7	45	43	6	2.536	34.21109	4		24.69	30.52	39.72	58.51											
Zr	$L\beta_6$		6	3	40	6	2.171	34.26059	4		24.73	30.56	39.78	58.61											
Rh	$L\beta_4$		8	5	45	6	2.890	34.31039	4		24.77	30.61	39.84	58.70											
Sr	$L\alpha_1$		5	100	38	6	1.806	34.31400	4		24.77	30.61	39.85	58.71											
Nb	$L\alpha_1$		6	100	41	6	2.166	34.34579	4		24.79	30.64	39.88	58.77											
Sr	$L\alpha_2$		5	10	38	6	1.804	34.34850	4		24.79	30.64	39.89	58.77											
Bi	$M\beta$		7	60	83	6	2.525	34.36299	3		24.80	30.65	39.91	58.80											
Er	$M\beta$		4	45	68	6	1.443	34.36800	3		24.81	30.66	39.91	58.81											
Mn	$L\beta_{3,4}$		2	.1	25	6	0.721	34.37997	2		24.82	30.67	39.93	58.83											
Te	Ln		10	7	52	6	3.605	34.38318	5		24.82	30.67	39.93	58.84											
Nb	$L\alpha_2$		6	10	41	6	2.163	34.39139	4		24.82	30.68	39.94	58.85											
Sb	$L\alpha_1$		10	100	51	6	3.604	34.39409	5		24.83	30.68	39.94	58.86											
Sm	$M\alpha$		3	100	62	6	1.081	34.40999	2		24.84	30.70	39.96	58.89											
Pa	$M\beta$		9	60	91	6	3.239	34.44299	3		24.86	30.73	40.00	58.95											
Sb	$L\alpha_2$		10	10	51	6	3.595	34.48399	5		24.89	30.76	40.05	59.03											
Ag	$L\beta_3$		9	11	47	6	3.234	34.49817	5		24.90	30.78	40.07	59.05											
Bi	M_2-N_4		9	5	83	6	3.233	34.50600	3		24.91	30.79	40.08	59.07											
Fe	$L\beta_1$		2	20	26	6	0.718	34.51999	2		24.92	30.80	40.10	59.09											
K	$K\beta_{1,3}$		10	15	19	6	3.589	34.53899	4	4	24.93	30.82	40.12	59.13											
Ce	$M\gamma$		3	1	58	6	1.075	34.59000	2		24.97	30.86	40.18	59.23											
Zr	Ll		5	3	40	6	1.792	34.59250	4		24.97	30.86	40.18	59.23											
Pd	Ll		7	2	46	6	2.503	34.66750	4		25.03	30.93	40.27	59.37											
Th	N_2-O_4		3		90	6	1.072	34.67999	2		25.04	30.94	40.29	59.40											
In	$L\beta_3$		10	6	49	6	3.572	34.69838	5		25.05	30.96	40.31	59.43											
Na	K8	A	3	.5	11	6	1.071	34.72499	3	2	25.07	30.99	40.34	59.48											
Pr	Mz		2	.01	59	6	0.713	34.75998	2		25.10	31.02	40.39	59.55											
P	$K\beta$		6	3	15	6	2.139	34.77599	3	3	25.11	31.03	40.41	59.58											
U	$M\gamma$		10	5	92	6	3.563	34.78998	3		25.12	31.04	40.42	59.60											
U	N_5-$N_{6,7}$		1		92	6	0.356	34.79999	1		25.12	31.05	40.43	59.62											
P	$K\beta_1$		6	3	15	0	2.136	34.82278	3	3	25.14	31.07	40.46	59.67											
Ge	Ln		3	1	32	6	1.068	34.82700	3		25.14	31.08	40.47	59.67											
Ag	$L\beta_4$		9	5	47	6	3.203	34.83206	5		25.15	31.08	40.47	59.68											
Na	$K\beta_1$		3	.5	11	1	1.067	34.85225	3	2	25.16	31.10	40.50	59.72											
Tl	Mz_1		5	2	81	6	1.777	34.87000	3		25.18	31.12	40.52	59.75											
Hg	$M\gamma$		7	3	80	6	2.487	34.88799	3		25.19	31.13	40.54	59.79											
Pd	$L\gamma_{2,3}$		10	5	46	6	3.553	34.89198	4		25.19	31.14	40.55	59.80											

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Nb	$M\gamma$		1	100	41	6	0.355	34.89999	1		25.20	31.15	40.56	59.81											
W	$M\alpha_1$		5	100	74	6	1.775	34.91499	3		25.21	31.16	40.57	59.84											
Rb	$L\beta_6$		5	3	37	6	1.775	34.92099	4		25.21	31.16	40.58	59.85											
Pd	$L\alpha_1$		8	100	46	6	2.838	34.94135	5		25.23	31.18	40.61	59.89											
Se	$L\beta_1$		4	35	34	6	1.419	34.94319	4		25.23	31.18	40.61	59.89											
W	$M\alpha_2$		5	100	74	6	1.773	34.95999	3		25.24	31.20	40.63	59.92											
Pt	$M\beta$		6	50	78	6	2.127	34.96799	3		25.25	31.21	40.64	59.94											
Ar	$K\beta_{1,3}$		9	15	18	6	3.190	34.97398	4		25.25	31.21	40.65	59.95											
Rh	$L\beta_1$		8	42	45	6	2.834	34.99312	5		25.27	31.23	40.67	59.99											
Sb	Ll		9	7	51	6	3.188	34.99434	5		25.27	31.23	40.67	59.99											
Pd	$L\alpha_2$		8	10	46	6	2.833	35.00703	5		25.28	31.24	40.69	60.01											
Zr	$L\beta_1$		6	45	40	6	2.124	35.01599	4		25.28	31.25	40.70	60.03											
Au	$M\alpha_1$		6	100	79	6	2.123	35.03999	3		25.30	31.27	40.73	60.08											
Na	$SK\alpha_6$		3	1	11	0	1.061	35.05800	3	3	25.31	31.29	40.75	60.11											
In	$L\beta_4$		10	4	49	6	3.535	35.06969	5		25.32	31.30	40.76	60.13											
Mo	$L\beta_3$		7	3	42	6	2.473	35.09309	4		25.34	31.32	40.79	60.18											
Ta	$M\beta$		5	45	73	6	1.765	35.11499	3		25.36	31.34	40.82	60.22											
An	$M\alpha_2$		6	100	79	6	2.118	35.12399	3		25.36	31.35	40.83	60.23											
Ca	AL_2		1		20	6	0.353	35.12999	2		25.37	31.36	40.83	60.25											
Sc	Ln		1	1	21	6	0.353	35.12999	2		25.37	31.36	40.83	60.25											
Cd	$L\beta_{2,15}$		10	25	48	6	3.528	35.14078	5		25.37	31.37	40.85	60.27											
Na	$SK\alpha_5$		3	2	11	0	1.058	35.15099	3	3	25.38	31.38	40.86	60.29											
S	$K\beta x$		7	7	16	6	2.468	35.16309	4	3	25.39	31.39	40.88	60.31											
Pd	$L\beta_{2,15}$		9	25	46	6	3.171	35.17982	5		25.40	31.40	40.90	60.34											
Fe	$L\alpha_{1,2}$		2	100	26	6	0.705	35.17999	2		25.40	31.40	40.90	60.34											
U	$M\alpha_1$		9	100	92	6	3.170	35.18999	3		25.41	31.41	40.91	60.36											
Te	$M_2\text{-}N_1$		2	1	52	6	0.704	35.19998	1		25.42	31.42	40.92	60.38											
U	$M_3\text{-}N_4$		10	5	92	6	3.521	35.20999	3		25.43	31.43	40.93	60.40											
S	$K\beta_1$		7	7	16	6	2.464	35.22119	4	3	25.43	31.44	40.95	60.42											
Ag	$L\gamma_1$		10	10	47	6	3.519	35.22598	5		25.44	31.44	40.95	60.43											
Cl	$K\beta$		8	8	17	6	2.815	35.22719	4	3	25.44	31.44	40.95	60.43											
Er	$M\alpha$		4	100	68	6	1.405	35.28000	2		25.48	31.49	41.02	60.53											
Mo	$M_2\text{-}N_1$		1	1	42	6	0.351	35.29999	1		25.49	31.51	41.04	60.57											
U	$M\alpha_2$		9	100	92	6	3.159	35.31599	3		25.50	31.53	41.06	60.60											
Si	$SK\alpha_4$		5	3	14	1	1.754	35.33272	3	3	25.52	31.54	41.08	60.63											
Mo	$L\beta_6$		7	3	42	6	2.455	35.34158	4		25.52	31.55	41.09	60.65											
Mo	$L\beta_4$		7	3	42	6	2.455	35.34158	4		25.52	31.55	41.09	60.65											
Na	$SK\alpha_4$		3	10	11	0	1.052	35.35799	3	3	25.53	31.56	41.11	60.68											
Rb	$L\beta_1$		5	45	37	6	1.752	35.37949	4		25.55	31.58	41.14	60.72											
Si	$SK\alpha_3$		5	6	14	1	1.752	35.38382	3	3	25.55	31.59	41.14	60.73											
Ag	$L\beta_1$		9	42	47	6	3.150	35.41255	5		25.57	31.61	41.18	60.78											
Na	$SK\alpha_3$		3	10	11	0	1.050	35.41499	3	3	25.58	31.62	41.18	60.79											
Th	$M\beta$		9	60	90	6	3.145	35.46899	3		25.62	31.67	41.25	60.89											
Ca	AL_3		1		20	6	0.349	35.48999	2		25.63	31.69	41.27	60.93											
Rh	$L\gamma_1$		9	10	45	6	3.143	35.49329	4		25.63	31.69	41.28	60.93											
Na	$SK\alpha'$		3	3	11	0	1.047	35.51099	3	3	25.65	31.70	41.30	60.97											
Pb	$M\beta$		7	60	82	6	2.442	35.53198	3		25.66	31.72	41.32	61.01											
In	$L\beta_1$		10	75	49	6	3.487	35.55309	5		25.68	31.74	41.35	61.05											
I	Ll		10	7	53	6	3.484	35.57539	5		25.69	31.76	41.38	61.09											
Ho	$M\zeta$		3	.01	67	6	1.045	35.57999	2		25.70	31.77	41.38	61.10											
Sc	Ll		1	1	21	6	0.348	35.59000	2		25.70	31.78	41.39	61.12											
Cd	$L\alpha_1$		9	100	48	6	3.133	35.60713	5		25.72	31.79	41.41	61.15											
Si	$K\alpha_1$		5	100	14	6	1.740	35.62709	5	3	25.73	31.81	41.44	61.19											
Ca	$AL_{2,3}$		1		20	6	0.348	35.62999	2		25.73	31.81	41.44	61.19											
Si	$K\alpha_{1,2}$		5	150	14	6	1.739	35.63121	5	3	25.73	31.82	41.44	61.20											
Si	$K\alpha_2$		5	50	14	6	1.739	35.63954	5	3	25.74	31.82	41.45	61.21											
Cd	$L\alpha_2$		9	10	48	6	3.126	35.68463	5		25.77	31.86	41.51	61.30											
Pb	$M_2\text{-}N_4$		9	5	82	6	3.124	35.71199	3		25.79	31.89	41.54	61.35											
As	$L\beta_{3,4}$		4	2	33	6	1.388	35.71599	3		25.80	31.89	41.55	61.36											
Na	$K\alpha_{1,2}$		3	100	11	6	1.041	35.73029	4	3	25.81	31.91	41.56	61.39											
Co	Ln		2	2	27	6	0.694	35.73999	2		25.81	31.91	41.58	61.40											
Pa	$M\gamma$		10	5	91	6	3.465	35.76999	3		25.84	31.94	41.61	61.46											
Tc	$L\alpha_1$	H	7	100	43	6	2.424	35.80359	4		25.86	31.97	41.65	61.52											
Bi	$M\alpha_1$		7	100	83	6	2.422	35.82599	3		25.88	31.99	41.68	61.57											
Cd	Ll		8	2	48	6	2.767	35.84111	5		25.89	32.01	41.70	61.60											

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lsel (Film)	Llign (Film)	Lstear (Film)	Llanr (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gyps (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
In	Ln		9	7	49	6	3.112	35.84943	5		25.90	32.02	41.71	61.61											
Ho	Mβ		4	45	67	6	1.383	35.85999	3		25.90	32.02	41.72	61.63											
Sn	Mγ		2	100	50	6	0.691	35.87997	2		25.92	32.04	41.75	61.67											
Rn	$Lβ_3$		8	3	44	6	2.763	35.89279	4		25.93	32.05	41.76	61.69											
Ru	$Lβ_6$		8	3	44	6	2.763	35.89279	4		25.93	32.05	41.76	61.69											
Ge	Ll		3	1	32	6	1.036	35.89499	3		25.93	32.06	41.77	61.70											
Y	$Lβ_3$		6	3	39	6	2.072	35.89919	4		25.93	32.06	41.77	61.71											
Bi	$Mα_2$		7	100	83	6	2.416	35.90999	3		25.94	32.07	41.78	61.73											
Ca	$Lβ_1$	A	1	10	20	6	0.345	35.93999	2		25.96	32.10	41.82	61.78											
Zn	$Lβ_1$		3	26	30	6	1.034	35.94899	3		25.97	32.11	41.83	61.80											
Se	$Lα_{1,2}$		4	100	34	6	1.379	35.95999	4		25.98	32.12	41.84	61.82											
Sn	$Lα_1$		10	100	50	6	3.443	35.99939	5		26.01	32.15	41.89	61.90											
Au	Mγ		7	3	79	6	2.409	36.01498	3		26.02	32.17	41.91	61.93											
Sb	Ln		10	7	51	6	3.436	36.07649	5		26.06	32.22	41.99	62.05											
Sn	$Lα_2$		10	10	50	6	3.435	36.08910	5		26.07	32.24	42.00	62.07											
Y	$Lβ_4$		6	3	39	6	2.060	36.11159	4		26.09	32.26	42.03	62.11											
Pa	M_3-N_4		10	5	91	6	3.430	36.13998	3		26.11	32.28	42.06	62.17											
Ru	$Lβ_4$		8	3	44	6	2.741	36.18399	4		26.14	32.32	42.12	62.25											
Ba	$Mα_1$		9	100	91	6	3.082	36.19798	3		26.15	32.33	42.13	62.28											
Ir	Mβ		6	45	77	6	2.053	36.22798	3		26.17	32.36	42.17	62.34											
Mo	$Lβ_1$		7	45	42	6	2.394	36.23955	5		26.18	32.37	42.19	62.36											
La	Mγ		3	1	57	6	1.026	36.23999	2		26.18	32.37	42.19	62.36											
Bi	Mγ		8	5	83	6	2.735	36.25600	3		26.19	32.39	42.21	62.39											
Ta	Mα		5	100	73	6	1.709	36.25999	3		26.20	32.39	42.21	62.40											
Pt	$Mα_1$		6	100	78	6	2.050	36.28200	3		26.21	32.41	42.24	62.44											
Pd	$Lβ_3$		9	11	46	6	3.072	36.31139	4		26.23	32.44	42.27	62.49											
Pa	$Mα_2$		9	100	91	6	3.072	36.31499	3		26.24	32.44	42.28	62.50											
Th	N_5-$N_{6,7}$		1		90	6	0.341	36.31999	2		26.24	32.45	42.28	62.51											
Ca	$Lα_{1,2}$	A	1	100	20	6	0.341	36.32999	2		26.25	32.46	42.30	62.53											
Pt	$Mα_2$		6	100	78	6	2.046	36.34799	3		26.26	32.47	42.32	62.56											
Cu	$Lβ_{3,4}$		3	1	29	6	1.023	36.36600	3		26.27	32.49	42.34	62.60											
F	SKα''		2	30	9	1	0.681	36.39999	2	3	26.30	32.52	42.38	62.66											
Zr	$Lα_1$		6	100	40	6	2.042	36.42299	4		26.32	32.54	42.41	62.71											
F	SKα'		2	35	9	1	0.680	36.43997	2	3	26.33	32.56	42.43	62.74											
Cd	$Lβ_3$		10	11	48	6	3.401	36.44949	5		26.34	32.57	42.44	62.76											
Zr	$Lα_2$		6	10	40	6	2.040	36.46680	4		26.35	32.58	42.46	62.79											
Hf	Mβ		5	45	72	6	1.697	36.51498	3		26.38	32.63	42.52	62.89											
Rh	Ll		7	3	45	6	2.376	36.51830	4		26.39	32.63	42.53	62.89											
Y	$Lβ_6$		6	3	39	6	2.034	36.56519	4		26.42	32.67	42.58	62.98											
Bi	M_3-N_4		8	5	83	6	2.712	36.56799	3		26.42	32.67	42.59	62.99											
Co	Ll		2	9	27	6	0.678	36.58398	3		26.44	32.69	42.61	63.02											
Rb	$Lα_1$		5	100	37	6	1.694	36.59149	4		26.44	32.70	42.61	63.03											
Rb	$Lα_2$		5	10	37	6	1.692	36.62549	4		26.47	32.73	42.66	63.10											
Pd	$Lβ_4$		9	5	46	6	3.045	36.63989	4		26.48	32.74	42.67	63.12											
P	Kα		2	100	9	6	0.677	36.63998	2	2	26.48	32.74	42.67	63.13											
Sn	Ll		9	7	50	6	3.044	36.64484	5		26.48	32.75	42.68	63.13											
P	$SKα_4$		6	5	15	1	2.029	36.65288	3	3	26.49	32.75	42.69	63.15											
P	$SKα_3$		6	5	15	1	2.027	36.69977	3	3	26.52	32.80	42.75	63.24											
Ce	Mz		2	.01	58	6	0.676	36.69998	2		26.52	32.80	42.75	63.24											
Tl	Mβ		7	55	81	6	2.362	36.74300	3		26.55	32.84	42.80	63.32											
Zn	$Lα_{1,2}$		3	100	30	6	1.012	36.76199	3		26.57	32.85	42.82	63.36											
Rh	$Lα_1$		8	100	45	6	2.696	36.77943	5		26.58	32.87	42.84	63.39											
Y	Ll		5	3	39	6	1.685	36.78149	4		26.58	32.87	42.85	63.40											
Th	Mγ		10	5	90	6	3.369	36.78999	3		26.59	32.88	42.86	63.41											
Ho	Mα		4	100	67	6	1.347	36.79999	2		26.59	32.89	42.87	63.43											
Cd	Mz		1	1	48	6	0.337	36.79999	1		26.59	32.89	42.87	63.43											
Cd	$Lβ_4$		10	5	48	6	3.367	36.82030	5		26.61	32.91	42.89	63.47											
Rh	$Lα_2$		8	10	45	6	2.692	36.84360	5		26.63	32.93	42.92	63.52											
Rh	$Lγ_{2,3}$		10	5	45	6	3.363	36.85498	4		26.63	32.94	42.94	63.54											
Mo	Ll		6	3	42	6	2.015	36.90479	4		26.67	32.98	43.00	63.63											
P	$Kα_1$	H	6	100	15	6	2.013	36.94199	3	3	26.70	33.02	43.04	63.71											
P	$Kα_{1,2}$	H	6	150	15	6	2.013	36.94798	3	3	26.70	33.02	43.05	63.72											
P	$Kα_2$	H	6	50	15	6	2.012	36.95999	3	3	26.71	33.03	43.07	63.74											
Ru	$Lβ_1$		8	45	44	6	2.683	36.96463	5		26.72	33.04	43.07	63.75											
Pb	$Mα_1$		7	100	82	6	2.345	37.00198	3		26.74	33.07	43.12	63.82											

El	Line	C	W	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ag	$L\beta_{2,15}$	10	25	47	6		3.347	37.03348	5		26.77	33.10	43.16	63.88											
Pb	$M\alpha_2$	7	100	82	6		2.339	37.09299	3		26.81	33.16	43.23	64.00											
U	$M\beta$	10	60	92	6		3.336	37.15999	3		26.86	33.22	43.31	64.13											
K	$SK\alpha_4$	10	3	19	1		3.335	37.16492	3	4	26.86	33.22	43.32	64.14											
Te	Ll	10	7	52	6		3.335	37.16959	5		26.87	33.23	43.32	64.15											
Nb	$L\beta_3$	7	3	41	6		2.334	37.17139	4		26.87	33.23	43.32	64.15											
Rh	$L\beta_{2,15}$	9	25	45	6		3.001	37.17899	4		26.87	33.24	43.33	64.16											
Th	M_3-N_4	10	5	90	6		3.334	37.17999	3		26.87	33.24	43.33	64.17											
K	$SK\alpha_3$	10	3	19	1		3.332	37.20598	3	4	26.89	33.26	43.37	64.22											
Pt	$M\gamma$	7	3	78	6		2.331	37.23299	3		26.91	33.29	43.40	64.27											
Th	$M\alpha_1$	9	100	90	6		2.996	37.24289	4		26.92	33.30	43.41	64.29											
Pd	$L\gamma_1$	10	10	46	6		3.328	37.24599	4		26.92	33.30	43.42	64.29											
Y	$L\beta_1$	6	45	39	6		1.995	37.27199	4		26.94	33.32	43.45	64.34											
Dy	$M\zeta$	3	.01	66	6		0.997	37.28999	2		26.95	33.34	43.47	64.38											
Pd	$L\beta_1$	9	42	46	6		2.990	37.31596	5		26.97	33.36	43.50	64.43											
Nd	$M\beta$	3	55	60	6		0.996	37.31999	2		26.98	33.37	43.51	64.44											
Au	$M\zeta_1$	5	2	79	6		1.660	37.32999	3		26.98	33.38	43.52	64.46											
S	$SK\alpha_4$	7	45	16	1		2.324	37.33907	3	3	26.99	33.38	43.53	64.47											
Th	$M\alpha_2$	9	100	90	6		2.986	37.35898	3		27.01	33.40	43.55	64.51											
Cd	$L\beta_1$	10	42	48	6		3.316	37.38229	5		27.02	33.42	43.58	64.56											
S	$SK\alpha_3$	7	45	16	1		2.321	37.38536	3	3	27.03	33.43	43.59	64.56											
Ag	$L\alpha_1$	9	100	47	6		2.984	37.38986	5		27.03	33.43	43.59	64.57											
Pb	$M\gamma$	8	5	82	6		2.652	37.39200	3		27.03	33.43	43.59	64.58											
Pd	$M_{4,5}O_{2,3}$	A	1	10	46	6	0.331	37.39999	1		27.04	33.44	43.60	64.59											
K	$K\alpha_1$	10	100	19	6		3.313	37.41399	4	4	27.05	33.45	43.62	64.62											
Nb	$L\beta_4$	7	3	41	6		2.319	37.41849	4		27.05	33.46	43.63	64.63											
K	$K\alpha_{1,2}$	10	150	19	6		3.312	37.42432	4	4	27.05	33.46	43.63	64.64											
Dy	$M\beta$	4	45	66	6		1.325	37.42799	3		27.06	33.47	43.64	64.65											
K	$K\alpha_2$	10	50	19	6		3.310	37.44499	4	4	27.07	33.48	43.66	64.68											
Ag	$L\alpha_2$	9	10	47	6		2.978	37.46645	5		27.08	33.50	43.69	64.72											
Mo	M_3-N_1	1	100	42	6		0.331	37.50000	1		27.11	33.53	43.73	64.78											
Nb	$L\beta_6$	7	3	41	6		2.312	37.52908	4		27.13	33.56	43.76	64.84											
Cl	$SK\alpha_4$	8	4	17	1		2.640	37.56532	3	3	27.16	33.59	43.81	64.91											
Ir	$M\alpha_1$	6	100	77	6		1.980	37.57199	3		27.16	33.60	43.81	64.92											
Sb	M_2-N_1	2	1	51	6		0.659	37.59998	1		27.18	33.62	43.85	64.98											
Ag	M_1-$N_{2,3}$	2	1	47	6		0.659	37.59998	1		27.18	33.62	43.85	64.98											
Os	$M\beta$	6	45	76	6		1.978	37.60199	3		27.18	33.63	43.85	64.98											
S	$K\alpha_1$	7	100	16	6		2.307	37.60512	5	3	27.19	33.63	43.86	64.99											
S	$K\alpha_{1,2}$	7	150	16	6		2.307	37.61165	5	3	27.19	33.63	43.86	65.00											
S	$K\alpha_2$	7	50	16	6		2.306	37.62471	5	3	27.20	33.65	43.88	65.03											
Ir	$M\alpha_2$	6	100	77	6		1.975	37.64999	3		27.22	33.67	43.91	65.08											
As	$L\beta_1$	4	35	33	6		1.317	37.65639	4		27.22	33.68	43.92	65.09											
Ag	Ll	8	2	47	6		2.633	37.66080	4		27.23	33.68	43.92	65.10											
Cl	$SK\alpha_3$	8	4	17	1		2.631	37.68797	3	3	27.25	33.70	43.96	65.15											
Hf	$M\alpha$	5	100	72	6		1.644	37.69499	3		27.25	33.71	43.97	65.16											
In	$L\alpha_1$	10	100	49	6		3.286	37.71919	5		27.27	33.73	44.00	65.21											
Pb	M_3-N_4	8	5	82	6		2.629	37.71999	3		27.27	33.73	44.00	65.21											
Ar	$K\alpha_1$	9	100	18	6		2.957	37.72618	5		27.28	33.74	44.00	65.22											
Ar	$K\alpha_{1,2}$	9	150	18	6		2.957	37.73502	5		27.28	33.75	44.01	65.24											
Ar	$K\alpha_2$	9	50	18	6		2.955	37.75264	5		27.30	33.76	44.04	65.28											
Ga	Ln	3	1	31	6		0.984	37.79099	3		27.32	33.80	44.08	65.35											
In	$L\alpha_2$	10	10	49	6		3.279	37.80728	5		27.34	33.81	44.10	65.38											
Cl	$K\alpha_1$	8	100	17	6		2.622	37.82239	4	3	27.35	33.83	44.12	65.41											
Cl	$K\alpha_{1,2}$	8	150	17	6		2.621	37.83012	4	3	27.35	33.84	44.13	65.43											
Cl	$K\alpha_2$	8	50	17	6		2.620	37.84560	4	3	27.36	33.85	44.15	65.46											
Mo	$L\alpha_1$	7	100	42	6		2.293	37.84584	5		27.36	33.85	44.15	65.46											
Kr	$L\beta_1$	5	35	36	6		1.636	37.87999	3		27.39	33.88	44.19	65.52											
Sn	Ln	10	7	50	6		3.272	37.88759	5		27.40	33.89	44.20	65.54											
Mo	$L\alpha_2$	7	10	42	6		2.289	37.90057	5		27.40	33.90	44.22	65.56											
Cr	$L\beta_{3,4}$	2	.1	24	6		0.654	37.91998	2		27.42	33.92	44.24	65.60											
Lu	$M\beta$	5	45	71	6		1.631	38.00499	3		27.48	34.00	44.35	65.77											
Hg	$M\beta$	7	50	80	6		2.282	38.02260	4		27.49	34.01	44.37	65.80											
Nd	$M\alpha$	3	100	60	6		0.978	38.03999	2		27.51	34.03	44.39	65.83											
Rh	$L\beta_6$	9	3	45	6		2.922	38.17529	4		27.61	34.15	44.56	66.10											
Te	M_3-N_1	2	10	52	6		0.649	38.19998	1		27.63	34.18	44.59	66.15											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sr	$L\beta_3$		6	3	38	6	1.947	38.20319	4		27.63	34.18	44.59	66.15											
Mn	$L\beta_1$		2	30	25	6	0.649	38.21997	2		27.64	34.20	44.61	66.19											
Tl	$M\alpha_1$		7	100	81	6	2.270	38.21999	3		27.64	34.20	44.61	66.19											
Ba	$M\gamma$		3	100	56	6	0.972	38.25000	2		27.66	34.22	44.65	66.24											
Rh	$L\beta_3$		9	11	45	6	2.915	38.26979	4		27.68	34.24	44.67	66.28											
Pa	$M\beta$		10	60	91	6	3.239	38.26999	3		27.68	34.24	44.67	66.28											
Tl	$M\alpha_2$		7	100	81	6	2.265	38.30399	3		27.70	34.27	44.71	66.35											
Ag	$L\beta_3$		10	11	47	6	3.234	38.33130	5		27.72	34.30	44.75	66.40											
Bi	M_2-N_4		10	5	83	6	3.233	38.34000	3		27.73	34.31	44.76	66.42											
Dy	$M\alpha$		4	100	66	6	1.293	38.35999	2		27.74	34.32	44.78	66.46											
Nb	M_2-N_1		1	1	41	6	0.323	38.39999	1		27.77	34.36	44.83	66.54											
Sr	$L\beta_4$		6	3	38	6	1.936	38.41559	4		27.78	34.38	44.85	66.57											
In	Ll		9	7	49	6	2.904	38.41855	5		27.79	34.38	44.86	66.57											
Nb	$L\beta_1$		7	45	41	6	2.257	38.44609	4		27.81	34.40	44.89	66.63											
Ru	Ll		7	3	44	6	2.252	38.52449	4		27.86	34.48	44.99	66.78											
Tl	$M\gamma$		8	3	81	6	2.570	38.58400	3		27.91	34.53	45.06	66.90											
Rh	$L\beta_4$		9	5	45	6	2.890	38.59918	4		27.92	34.55	45.08	66.93											
As	$L\alpha_{1,2}$		4	100	33	6	1.282	38.68359	4		27.98	34.62	45.18	67.09											
Pt	$M\zeta_1$		5	2	78	6	1.602	38.68999	3		27.99	34.63	45.19	67.11											
Y	$L\alpha_1$		6	100	39	6	1.922	38.69279	4		27.99	34.63	45.19	67.11											
U	N_3-O_5		3		92	6	0.961	38.70000	2		27.99	34.64	45.20	67.13											
Ag	$L\beta_4$		10	5	47	6	3.203	38.70229	5		28.00	34.64	45.20	67.13											
Y	$L\alpha_2$		6	10	39	6	1.920	38.73479	4		28.02	34.67	45.24	67.19											
Ru	$L\alpha_1$		8	100	44	6	2.558	38.76599	5		28.04	34.70	45.28	67.26											
Cd	M_2-N_4		2	50	48	6	0.639	38.79999	2		28.07	34.73	45.33	67.32											
Ru	$L\alpha_2$		8	10	44	6	2.554	38.83047	5		28.09	34.76	45.36	67.38											
Br	$L\beta_{3,4}$	H	5	2	35	6	1.596	38.83499	3		28.09	34.76	45.37	67.39											
Ga	Ll		3	1	31	6	0.957	38.85899	3		28.11	34.78	45.40	67.44											
Ar	$K\beta_{1,3}$		10	15	18	6	3.190	38.85999	4		28.11	34.79	45.40	67.44											
Os	$M\alpha$	D	6	100	76	6	1.914	38.86800	3		28.12	34.79	45.41	67.46											
La	$M\zeta$		2	.01	57	6	0.638	38.87997	2		28.13	34.80	45.42	67.48											
Sb	Ll		10	7	51	6	3.188	38.88260	5		28.13	34.81	45.43	67.49											
Mn	$L\alpha_{1,2}$		2	100	25	6	0.637	38.89999	2		28.14	34.82	45.45	67.52											
Tb	$M\zeta$		3	.01	65	6	0.955	38.93999	2		28.17	34.86	45.50	67.60											
Re	$M\beta$		6	45	75	6	1.906	39.02399	3		28.23	34.94	45.60	67.76											
Kr	$L\alpha_{1,2}$		5	100	36	6	1.586	39.08499	3		28.28	34.99	45.68	67.88											
Pd	$L\beta_{2,15}$		10	25	46	6	3.171	39.08868	5		28.28	35.00	45.68	67.89											
Tc	$L\beta_1$	H	8	45	43	6	2.536	39.09839	4		28.29	35.01	45.69	67.91											
U	$M\alpha_1$		10	100	92	6	3.170	39.09999	3		28.29	35.01	45.70	67.91											
Nb	Ll		6	3	41	6	1.902	39.10559	4		28.29	35.01	45.70	67.93											
Sr	$L\beta_6$		6	3	38	6	1.901	39.11459	4		28.30	35.02	45.71	67.94											
Cu	$L\beta_1$		3	20	29	6	0.950	39.15900	3		28.33	35.06	45.77	68.03											
Tb	$M\beta$		4	45	65	6	1.266	39.16800	3		28.34	35.07	45.78	68.05											
Pr	$M\beta$		3	45	59	6	0.949	39.17999	2		28.35	35.08	45.79	68.07											
Sr	Ll		5	3	38	6	1.582	39.18098	4		28.35	35.08	45.80	68.07											
Lu	$M\alpha$		5	100	71	6	1.581	39.19998	3		28.36	35.10	45.82	68.11											
Mg	$SK\alpha_4$		4	8	12	1	1.264	39.23108	3	3	28.39	35.13	45.86	68.17											
U	$M\alpha_2$		10	100	92	6	3.159	39.23999	3		28.39	35.14	45.87	68.19											
Bi	$M\beta$		8	60	83	6	2.525	39.27199	3		28.42	35.17	45.91	68.25											
Mg	$SK\alpha_3$		4	8	12	1	1.262	39.29521	3	3	28.43	35.19	45.94	68.30											
Pd	$L\alpha_1$		9	100	46	6	2.838	39.30902	5		28.44	35.20	45.95	68.33											
Ag	$L\beta_1$		10	42	47	6	3.150	39.34729	5		28.47	35.24	46.00	68.40											
Rh	$L\beta_1$		9	42	45	6	2.834	39.36725	5		28.49	35.25	46.03	68.44											
Au	$M\beta$		7	50	79	6	2.204	39.36800	3		28.49	35.26	46.03	68.44											
Pd	$L\alpha_2$		9	10	46	6	2.833	39.38290	5		28.50	35.27	46.04	68.47											
Mg	$SK\alpha'$		4	2	12	1	1.259	39.39140	2	3	28.51	35.28	46.06	68.49											
Th	$M\beta$		10	60	90	6	3.145	39.40999	3		28.52	35.29	46.08	68.53											
Zr	$L\beta_3$		7	3	40	6	2.201	39.43098	4		28.53	35.31	46.10	68.57											
Rh	$L\gamma_1$		10	10	45	6	3.143	39.43700	4		28.54	35.32	46.11	68.58											
Fe	Ln		2	2	26	6	0.628	39.50000	2		28.59	35.38	46.19	68.71											
Hg	$M\alpha$		7	100	80	6	2.195	39.53319	4		28.61	35.41	46.23	68.77											
Ni	$L\beta_{3,4}$		3	.8	28	6	0.941	39.53999	2		28.61	35.41	46.24	68.78											
Yb	$M\beta$		5	45	70	6	1.567	39.54498	3		28.62	35.42	46.25	68.79											
Mg	$K\alpha_{1,2}$		4	100	12	6	1.253	39.56000	4	3	28.63	35.43	46.26	68.82											
Cd	$L\alpha_1$		10	100	48	6	3.133	39.56349	5		28.63	35.44	46.27	68.83											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pd	$L l$		8	2	46	6	2.503	39.62000	4		28.67	35.49	46.34	68.94											
Cl	$K\beta$		9	8	17	6	2.815	39.63058	4	3	28.68	35.50	46.35	68.96											
Cd	$L\alpha_2$		10	10	48	6	3.126	39.64958	5		28.70	35.52	46.37	69.00											
Zr	$L\beta_4$		7	3	40	6	2.187	39.67668	4		28.72	35.54	46.41	69.06											
Pb	M_2-N_4		10	5	82	6	3.124	39.67999	3		28.72	35.54	46.41	69.06											
Sr	$L\beta_1$		6	45	38	6	1.871	39.74339	4		28.77	35.60	46.49	69.19											
Ag	$M z$		1	1	47	6	0.312	39.76999	2		28.78	35.63	46.52	69.24											
In	$L n$		10	7	49	6	3.112	39.83269	5		28.83	35.69	46.60	69.37											
Hg	$M\gamma$		8	3	80	6	2.487	39.87199	3		28.86	35.72	46.65	69.44											
Bi	N_1-$P_{2,3}$		3		83	6	0.932	39.89999	2		28.88	35.75	46.68	69.50											
Zr	$L\beta_6$		7	3	40	6	2.171	39.97069	4		28.93	35.81	46.77	69.64											
Tb	$M\alpha$		4	100	65	6	1.240	40.00000	2		28.96	35.84	46.81	69.70											
Sn	M_2-N_1		2	1	50	6	0.620	40.00000	1		28.96	35.84	46.81	69.70											
Cu	$L\alpha_{1,2}$		3	100	29	6	0.930	40.00800	3		28.96	35.85	46.82	69.72											
Pr	$M\alpha$		3	100	59	6	0.929	40.02899	3		28.98	35.87	46.84	69.76											
Nb	$L\alpha_1$		7	100	41	6	2.166	40.07008	4		29.01	35.91	46.90	69.84											
Mo	$L\beta_3$		8	3	42	6	2.473	40.10640	4		29.03	35.94	46.94	69.91											
Nb	$L\alpha_2$		7	10	41	6	2.163	40.12329	4		29.05	35.95	46.96	69.95											
S	$K\beta x$		8	7	16	6	2.468	40.18639	4	3	29.09	36.01	47.04	70.07											
Pd	M_1-$N_{2,3}$		2	1	46	6	0.617	40.19998	1		29.10	36.03	47.06	70.10											
Pa	$M\alpha_1$		10	100	91	6	3.082	40.21999	3		29.12	36.04	47.08	70.14											
S	$K\beta_1$		8	7	16	6	2.464	40.25279	4	3	29.14	36.07	47.12	70.20											
Fe	$L l$		2	8	26	6	0.615	40.29999	2		29.18	36.12	47.18	70.30											
Cd	$L l$		9	2	48	6	2.767	40.32124	5		29.19	36.14	47.21	70.34											
Pd	$L\beta_3$		10	11	46	6	3.072	40.34599	4		29.21	36.16	47.24	70.39											
Pa	$M\alpha_2$		10	100	91	6	3.072	40.34999	3		29.21	36.16	47.24	70.40											
Re	$M\alpha$		6	100	75	6	1.842	40.37399	3		29.23	36.19	47.27	70.45											
Ru	$L\beta_3$		9	3	44	6	2.763	40.37939	4		29.24	36.19	47.28	70.46											
Ru	$L\beta_6$		9	3	44	6	2.763	40.37939	4		29.24	36.19	47.28	70.46											
Mo	$L\beta_6$		8	3	42	6	2.455	40.39040	4		29.24	36.20	47.29	70.48											
Mo	$L\beta_4$		8	3	42	6	2.455	40.39040	4		29.24	36.20	47.29	70.48											
Sb	M_3-N_1		2	10	51	6	0.614	40.39999	1		29.25	36.21	47.31	70.50											
Ca	$L n$		1	1	20	6	0.306	40.45999	2		29.30	36.27	47.38	70.62											
Si	$K\beta$		6	2	14	6	1.836	40.51799	3	2	29.34	36.32	47.45	70.74											
W	$M\beta$		6	45	74	6	1.835	40.54199	3		29.36	36.34	47.48	70.78											
P	$K\beta$		7	3	15	6	2.139	40.57199	3	3	29.38	36.37	47.52	70.84											
Pb	$M\beta$		8	60	82	6	2.442	40.60799	3		29.40	36.40	47.56	70.92											
Br	$L\beta_1$		5	35	35	6	1.526	40.62549	4		29.42	36.42	47.59	70.95											
P	$K\beta_1$		7	3	15	0	2.136	40.62659	3	3	29.42	36.42	47.59	70.95											
Si	$K\beta_1$		6	2	14	1	1.829	40.66800	3	2	29.45	36.46	47.64	71.04											
Ge	$L\beta_1$		4	35	32	6	1.218	40.70000	3		29.47	36.49	47.68	71.10											
Nb	M_3-N_1		1	10	41	6	0.305	40.70000	1		29.47	36.49	47.68	71.10											
Ru	$L\beta_4$		9	3	44	6	2.741	40.70699	4		29.48	36.50	47.69	71.12											
Gd	$M z$		3	.01	64	6	0.913	40.70999	2		29.48	36.50	47.69	71.12											
Pd	$L\beta_4$		10	5	46	6	3.045	40.71098	4		29.48	36.50	47.69	71.12											
Sn	$L l$		10	7	50	6	3.044	40.71649	5		29.49	36.50	47.70	71.14											
Rb	$L\beta_3$		6	3	37	6	1.826	40.72559	4		29.49	36.51	47.71	71.15											
Yb	$M\alpha$		5	100	70	6	1.521	40.74500	3		29.51	36.53	47.73	71.19											
Bi	$M\gamma$		9	5	83	6	2.735	40.78799	3		29.54	36.57	47.79	71.28											
Pt	$M\beta$		7	50	78	6	2.127	40.79599	3		29.54	36.58	47.80	71.30											
Zr	$L\beta_1$		7	45	40	6	2.124	40.85199	4		29.59	36.63	47.87	71.41											
Au	$M\alpha_1$		7	100	79	6	2.123	40.87999	3		29.61	36.66	47.90	71.46											
Rh	$M_{4,5}O_{2,3}$	A	1	10	45	6	0.303	40.89999	1		29.62	36.68	47.93	71.51											
Tc	$L\alpha_1$	H	8	100	43	6	2.424	40.91840	4		29.63	36.69	47.95	71.54											
Rb	$L\beta_4$		6	3	37	6	1.817	40.92419	4		29.64	36.70	47.96	71.55											
Cd	$M\gamma$		2	100	48	6	0.606	40.93997	2		29.65	36.71	47.98	71.59											
Bi	$M\alpha_1$		8	100	83	6	2.422	40.94398	3		29.65	36.72	47.98	71.59											
Ca	$L l$		1	1	20	6	0.303	40.95999	2		29.67	36.73	48.00	71.63											
Au	$M\alpha_2$		7	100	79	6	2.118	40.97798	3		29.68	36.75	48.02	71.66											
Gd	$M\beta$		4	45	64	6	1.209	41.01599	3		29.71	36.78	48.07	71.74											
Bi	$M\alpha_2$		8	100	83	6	2.416	41.03999	3		29.72	36.81	48.10	71.79											
Zn	$L n$		3	2	30	6	0.906	41.03999	2		29.72	36.81	48.10	71.79											
Bi	M_3-N_4		9	5	83	6	2.712	41.13899	3		29.80	36.90	48.23	71.99											
Au	$M\gamma$		8	3	79	6	2.409	41.15999	3		29.81	36.92	48.25	72.03											
Sr	$L\alpha_1$		6	100	38	6	1.806	41.17679	4		29.83	36.93	48.27	72.06											

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Sr	$L\alpha_2$		6	10	38	6	1.804	41.21819	4		29.86	36.97	48.32	72.15											
Tm	$M\beta$		5	45	69	6	1.503	41.24500	3		29.88	37.00	48.36	72.20											
Ce	$M\beta$		3	45	58	6	0.902	41.25000	2		29.88	37.00	48.36	72.21											
Ba	$M\zeta$		2	1	56	6	0.601	41.28000	2		29.90	37.03	48.40	72.27											
Rh	$L\beta_{2,15}$		10	25	45	6	3.001	41.30998	4		29.93	37.06	48.44	72.33											
Ag	M_2-N_4		2	50	47	6	0.600	41.31998	2		29.93	37.07	48.45	72.35											
Al	$SK\alpha_4$		5	4	13	1	1.499	41.35336	3	3	29.96	37.10	48.49	72.42											
Rh	$L\alpha_1$		9	100	45	6	2.696	41.37686	5		29.97	37.12	48.52	72.47											
Th	$M\alpha_1$		10	100	90	6	2.996	41.38100	4		29.98	37.12	48.53	72.48											
Th	N_3-O_5		3		90	6	0.898	41.39999	1		29.99	37.14	48.55	72.52											
Mo	$L\beta_1$		8	45	42	6	2.394	41.41663	5		30.00	37.16	48.57	72.55											
Al	$SK\alpha_3$		5	8	13	1	1.496	41.43352	3	3	30.02	37.17	48.59	72.59											
Ga	$L\beta_{3,4}$		4	2	31	6	1.197	41.43599	3		30.02	37.17	48.60	72.59											
Rh	$L\alpha_2$		9	10	45	6	2.692	41.44904	5		30.03	37.19	48.61	72.62											
Pd	$L\beta_1$		10	42	46	6	2.990	41.46219	5		30.04	37.20	48.63	72.64											
Th	$M\alpha_2$		10	100	90	6	2.986	41.50998	3		30.07	37.24	48.69	72.74											
Zr	Ll		6	3	40	6	1.792	41.51099	4		30.07	37.24	48.69	72.74											
Al	$SK\alpha'$		5	2	13	1	1.493	41.52370	3	3	30.08	37.25	48.71	72.77											
Ag	$L\alpha_1$		10	100	47	6	2.984	41.54428	5		30.10	37.27	48.73	72.81											
Ru	$L\beta_1$		9	45	44	6	2.683	41.58521	5		30.13	37.31	48.78	72.89											
Se	$L\beta_{3,4}$	H	5	2	34	6	1.490	41.60500	3		30.14	37.33	48.81	72.93											
Ag	$L\alpha_2$		10	10	47	6	2.978	41.62938	5		30.16	37.35	48.84	72.98											
Al	$K\alpha_1$		5	100	13	6	1.486	41.69669	5	3	30.21	37.42	48.92	73.12											
Al	$K\alpha_{1,2}$		5	150	13	6	1.486	41.70067	5	3	30.21	37.42	48.93	73.13											
Al	$K\alpha_2$		5	50	13	6	1.486	41.70863	5	3	30.22	37.43	48.94	73.14											
Rh	Ll		8	3	45	6	2.376	41.73520	4		30.24	37.45	48.97	73.20											
Ge	$L\alpha_{1,2}$		4	100	32	6	1.188	41.74438	4		30.25	37.46	48.98	73.22											
Rb	Ll		5	3	37	6	1.482	41.81799	4		30.30	37.53	49.07	73.37											
Gd	$M\alpha$		4	100	64	6	1.185	41.84000	2		30.32	37.55	49.10	73.41											
Tl	$M\zeta_1$		6	2	81	6	1.777	41.84399	3		30.32	37.55	49.11	73.42											
Br	$L\alpha_{1,2}$		5	100	35	6	1.480	41.87299	4		30.34	37.58	49.14	73.48											
Y	$L\beta_3$		7	3	39	6	2.072	41.88239	4		30.35	37.59	49.15	73.50											
W	$M\alpha_1$		6	100	74	6	1.775	41.89799	3		30.36	37.60	49.17	73.53											
Rb	$L\beta_6$		6	3	37	6	1.775	41.90520	4		30.37	37.61	49.18	73.55											
Ar	$K\alpha_1$		10	100	18	6	2.957	41.91798	5		30.38	37.62	49.20	73.57											
Ar	$K\alpha_{1,2}$		10	150	18	6	2.957	41.92780	5		30.38	37.63	49.21	73.59											
Ar	$K\alpha_2$		10	50	18	6	2.955	41.94739	5		30.40	37.65	49.23	73.63											
W	$M\alpha_2$		6	100	74	6	1.773	41.95200	3		30.40	37.65	49.24	73.64											
Tl	$M\beta$		8	55	81	6	2.362	41.99199	3		30.43	37.69	49.29	73.72											
Zn	Ll		3	4	30	6	0.884	42.06000	2		30.48	37.75	49.38	73.86											
Pb	$M\gamma$		9	5	82	6	2.652	42.06599	3		30.49	37.76	49.38	73.87											
U	N_6-O_5		1		92	6	0.294	42.09999	1		30.51	37.79	49.43	73.94											
K	$AL_{2,3}$		1		19	6	0.294	42.09999	1		30.51	37.79	49.43	73.94											
Ce	$M\alpha$		3	100	58	6	0.883	42.12000	2		30.53	37.81	49.45	73.99											
Y	$L\beta_4$		7	3	39	6	2.060	42.13019	4		30.53	37.82	49.46	74.01											
Ta	$M\beta$		6	45	73	6	1.765	42.13799	3		30.54	37.83	49.47	74.02											
Cl	$SK\alpha_4$		9	4	17	1	2.640	42.26099	3	3	30.63	37.94	49.63	74.27											
Ir	$M\beta$		7	45	77	6	2.053	42.26599	3		30.63	37.95	49.63	74.29											
Pb	$M\alpha_1$		8	100	82	6	2.345	42.28799	3		30.65	37.97	49.66	74.33											
Pb	N_4-N_5		1		82	6	0.293	42.29999	1		30.66	37.98	49.68	74.35											
Pt	$M\alpha_1$		7	100	78	6	2.050	42.32899	3		30.68	38.00	49.71	74.41											
Ag	Ll		9	2	47	6	2.633	42.36839	4		30.71	38.04	49.76	74.50											
V	$L\beta_{3,4}$	H	2	.1	23	6	0.585	42.37997	2		30.72	38.05	49.78	74.52											
Pb	$M\alpha_2$		8	100	82	6	2.339	42.39200	3		30.73	38.06	49.79	74.54											
Cl	$SK\alpha_3$		9	4	17	1	2.631	42.39896	3	3	30.73	38.07	49.80	74.56											
Si	$SK\alpha_4$		6	3	14	1	1.754	42.39926	3	3	30.73	38.07	49.80	74.56											
Tm	$M\alpha$		5	100	69	6	1.462	42.39999	2		30.73	38.07	49.80	74.56											
Pt	$M\alpha_2$		7	100	78	6	2.046	42.40599	3		30.74	38.08	49.81	74.57											
Rh	$L\beta_6$		10	3	45	6	2.922	42.41699	4		30.75	38.09	49.82	74.60											
Pb	M_3-N_4		9	5	82	6	2.629	42.43498	3		30.76	38.10	49.85	74.63											
Rb	$L\beta_1$		6	45	37	6	1.752	42.45538	4		30.78	38.12	49.87	74.67											
Si	$SK\alpha_3$		6	6	14	1	1.752	42.46059	3	3	30.78	38.13	49.88	74.69											
Nb	$L\beta_3$		8	3	41	6	2.334	42.48160	4		30.79	38.15	49.90	74.73											
Zr	$L\alpha_1$		7	100	40	6	2.042	42.49348	4		30.80	38.16	49.92	74.75											
Rh	$L\beta_3$		10	11	45	6	2.915	42.52199	4		30.82	38.18	49.96	74.81											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Cr	$L\beta_1$		2	20	24	6	0.583	42.53998	2		30.84	38.20	49.98	74.85											
Zr	$L\alpha_2$		7	10	40	6	2.040	42.54459	4		30.84	38.21	49.98	74.86											
Cl	$K\alpha_1$		9	100	17	6	2.622	42.55019	4	3	30.85	38.21	49.99	74.87											
Pt	$M\gamma$		8	3	78	6	2.331	42.55199	3		30.85	38.21	49.99	74.87											
Cl	$K\alpha_{1,2}$		9	150	17	6	2.621	42.55888	4	3	30.85	38.22	50.00	74.89											
Cl	$K\alpha_2$		9	50	17	6	2.620	42.57629	4	3	30.86	38.24	50.02	74.92											
Y	$L\beta_6$		7	3	39	6	2.034	42.65939	4		30.93	38.31	50.13	75.10											
Eu	$M\zeta$		3	.01	63	6	0.872	42.65999	2		30.93	38.31	50.13	75.10											
S	$SK\alpha_4$		8	45	16	1	2.324	42.67322	3	3	30.94	38.33	50.15	75.12											
Te	$M_4-O_{2,3}$		2	10	52	6	0.581	42.67999	2		30.94	38.33	50.15	75.14											
In	Ll		10	7	49	6	2.904	42.68729	5		30.95	38.34	50.16	75.15											
S	$SK\alpha_3$		8	45	16	1	2.321	42.72612	3	3	30.98	38.38	50.21	75.23											
Si	$K\alpha_1$		6	100	14	6	1.740	42.75252	5	3	31.00	38.40	50.24	75.29											
Si	$K\alpha_{1,2}$		6	150	14	6	1.739	42.75746	5	3	31.00	38.40	50.25	75.30											
P	$SK\alpha_4$		7	5	15	1	2.029	42.76169	3	3	31.00	38.41	50.26	75.31											
Nb	$L\beta_4$		8	3	41	6	2.319	42.76399	4		31.00	38.41	50.26	75.31											
Si	$K\alpha_2$		6	50	14	6	1.739	42.76746	5	3	31.01	38.41	50.26	75.32											
Ni	$L\beta_1$		3	21	28	6	0.869	42.81299	3		31.04	38.46	50.32	75.41											
P	$SK\alpha_3$		7	5	15	1	2.027	42.81641	3	3	31.04	38.46	50.33	75.42											
Rh	$L\beta_4$		10	5	45	6	2.890	42.88799	4		31.10	38.53	50.42	75.57											
Nb	$L\beta_6$		8	3	41	6	2.312	42.89040	4		31.10	38.53	50.42	75.57											
Co	$L\beta_{3,4}$		3	.5	27	6	0.866	42.92999	2		31.13	38.57	50.47	75.65											
Er	$M\beta$		5	45	68	6	1.443	42.95999	3		31.15	38.59	50.51	75.72											
S	$K\alpha_1$		8	100	16	6	2.307	42.97728	5	3	31.16	38.61	50.53	75.75											
S	$K\alpha_{1,2}$		8	150	16	6	2.307	42.98474	5	3	31.17	38.62	50.54	75.77											
S	$K\alpha_2$		8	50	16	6	2.306	42.99968	5	3	31.18	38.63	50.56	75.80											
Eu	$M\beta$		4	45	63	6	1.153	43.00000	3		31.18	38.63	50.56	75.80											
Sn	M_3-N_1		2	10	50	6	0.577	43.00000	1		31.18	38.63	50.56	75.80											
Mo	Ll		7	3	42	6	2.015	43.05559	4		31.22	38.68	50.63	75.92											
P	$K\alpha_1$	H	7	100	15	6	2.013	43.09898	3	3	31.25	38.72	50.68	76.01											
P	$K\alpha_{1,2}$	H	7	150	15	6	2.013	43.10597	3	3	31.26	38.73	50.69	76.02											
P	$K\alpha_2$	H	7	50	15	6	2.012	43.12000	3	3	31.27	38.74	50.71	76.05											
Ce	$M_5-O_{2,3}$		3	.01	58	6	0.861	43.17000	2		31.31	38.79	50.77	76.15											
Mo	$L\alpha_1$		8	100	42	6	2.293	43.25240	5		31.37	38.87	50.87	76.32											
Cr	$L\alpha_{1,2}$		2	100	24	6	0.573	43.28000	2		31.39	38.89	50.91	76.38											
U	N_6-O_4		1		92	6	0.286	43.29999	1		31.40	38.91	50.93	76.42											
Mo	$L\alpha_2$		8	10	42	6	2.289	43.31496	5		31.41	38.93	50.95	76.45											
Tl	$M\gamma$		9	3	81	6	2.570	43.40700	3		31.48	39.01	51.07	76.65											
Hg	$M\beta$		8	50	80	6	2.282	43.45439	4		31.52	39.06	51.13	76.75											
Y	$L\beta_1$		7	45	39	6	1.995	43.48399	4		31.54	39.08	51.17	76.81											
Ta	$M\alpha$		6	100	73	6	1.709	43.51199	3		31.56	39.11	51.20	76.87											
La	$M\beta$	A	3	45	57	6	0.854	43.52998	2		31.57	39.13	51.22	76.90											
Te	M_5-O_3		2	1	52	6	0.569	43.56000	2		31.60	39.15	51.26	76.97											
Pd	$M\zeta$		1	1	46	6	0.284	43.59999	1		31.63	39.19	51.31	77.05											
Ru	$L\alpha_1$		9	100	44	6	2.558	43.61174	5		31.63	39.20	51.33	77.07											
Ag	$M\gamma$		2	100	47	6	0.568	43.63998	2		31.66	39.23	51.36	77.13											
Pd	$L\alpha_1$		10	100	46	6	2.838	43.67668	5		31.68	39.26	51.41	77.21											
Se	$L\beta_1$		5	35	34	6	1.419	43.67899	4		31.68	39.27	51.41	77.22											
C	AK		1		6	6	0.284	43.67999	2		31.69	39.27	51.41	77.22											
Tl	$M\alpha_1$		8	100	81	6	2.270	43.67999	3		31.69	39.27	51.41	77.22											
Ni	$L\alpha_{1,2}$		3	100	28	6	0.851	43.68300	3		31.69	39.27	51.42	77.22											
Ru	$L\alpha_2$		9	10	44	6	2.554	43.68428	5		31.69	39.27	51.42	77.23											
Mn	Ln		2	1	25	6	0.567	43.69998	2		31.70	39.29	51.44	77.26											
Rh	$L\beta_1$		10	42	45	6	2.834	43.74139	5		31.73	39.32	51.49	77.35											
Pd	$L\alpha_2$		10	10	46	6	2.833	43.75879	5		31.74	39.34	51.51	77.38											
Tl	$M\alpha_2$		8	100	81	6	2.265	43.77599	3		31.76	39.36	51.53	77.42											
Hf	$M\beta$		6	45	72	6	1.697	43.81799	3		31.79	39.40	51.59	77.51											
Ne	$K\alpha_{1,2}$		3	100	10	6	0.848	43.82999	3		31.80	39.41	51.60	77.53											
Ir	$M\alpha_1$		7	100	77	6	1.980	43.83398	3		31.80	39.41	51.61	77.54											
Eu	$M\alpha$		4	100	63	6	1.131	43.84000	2		31.80	39.42	51.62	77.55											
Os	$M\beta$		7	45	76	6	1.978	43.86899	3		31.83	39.44	51.65	77.61											
Rb	$L\alpha_1$		6	100	37	6	1.694	43.90979	4		31.86	39.48	51.70	77.70											
Ir	$M\alpha_2$		7	100	77	6	1.975	43.92499	3		31.87	39.50	51.72	77.73											
Nb	$L\beta_1$		8	45	41	6	2.257	43.93839	4		31.88	39.51	51.74	77.76											
Rb	$L\alpha_2$		6	10	37	6	1.692	43.95059	4		31.89	39.52	51.76	77.79											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDOT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Tc	$L\beta_1$	H	9	45	43	6	2.536	43.98569	4		31.91	39.55	51.80	77.86											
Ru	Ll		8	3	44	6	2.252	44.02800	4		31.94	39.59	51.85	77.95											
Cl	Kβ		10	8	17	6	2.815	44.03398	4	3	31.95	39.60	51.86	77.96											
Ga	$L\beta_1$		4	35	31	6	1.125	44.09200	3		31.99	39.65	51.93	78.08											
Er	Mα		5	100	68	6	1.405	44.09999	2		32.00	39.66	51.94	78.10											
Y	Ll		6	3	39	6	1.685	44.13779	4		32.03	39.70	51.99	78.18											
Bi	Mβ		9	60	83	6	2.525	44.18098	3		32.06	39.74	52.05	78.27											
Pd	M_2-N_4		2	50	46	6	0.561	44.19998	1		32.07	39.75	52.07	78.31											
Sr	$L\beta_3$		7	3	38	6	1.947	44.57039	4		32.35	40.10	52.54	79.10											
Pd	Ll		9	2	46	6	2.503	44.57249	4		32.35	40.10	52.54	79.10											
Mn	Ll		2	2	25	6	0.556	44.57999	2		32.36	40.11	52.55	79.12											
La	Mα	A	3	100	57	6	0.833	44.63998	2		32.40	40.17	52.63	79.24											
As	$L\beta_{3,4}$		5	2	33	6	1.388	44.64499	3		32.40	40.17	52.64	79.25											
Cu	Ln		3	1	29	6	0.832	44.70000	2		32.45	40.22	52.71	79.37											
C	Kα		1	100	6	6	0.277	44.70000	1	1	32.45	40.22	52.71	79.37											
Sm	Mz		3	.01	62	6	0.831	44.73000	2		32.47	40.25	52.74	79.43											
Au	M_{z_1}		6	2	79	6	1.660	44.79599	3		32.52	40.31	52.83	79.58											
Ru	$M_{4,5}O_{2,3}$	A	1	1	44	6	0.277	44.79999	1		32.52	40.32	52.83	79.58											
Cd	Ll		10	2	48	6	2.767	44.80139	5		32.52	40.32	52.83	79.59											
Sr	$L\beta_4$		7	3	38	6	1.936	44.81819	4		32.53	40.33	52.86	79.62											
Ho	Mβ		5	45	67	6	1.383	44.82498	3		32.54	40.34	52.86	79.64											
Hg	Mγ		9	3	80	6	2.487	44.85599	3		32.56	40.37	52.90	79.70											
Ru	$L\beta_3$		10	3	44	6	2.763	44.86600	4		32.57	40.38	52.92	79.72											
Ru	$L\beta_6$		10	3	44	6	2.763	44.86600	4		32.57	40.38	52.92	79.72											
Se	$L\alpha_{1,2}$		5	100	34	6	1.379	44.95000	4		32.63	40.46	53.02	79.90											
Au	Mβ		8	50	79	6	2.204	44.99199	3		32.66	40.50	53.08	79.99											
Pb	N_5-$N_{6,7}$		1		82	6	0.275	45.00000	1		32.67	40.50	53.09	80.01											
Zr	$L\beta_3$		8	3	40	6	2.201	45.06400	4		32.72	40.56	53.17	80.15											
Sm	Mβ		4	45	62	6	1.100	45.07999	2		32.73	40.58	53.19	80.18											
Mo	$L\beta_3$		9	3	42	6	2.473	45.11969	4		32.76	40.62	53.24	80.27											
Y	$L\alpha_1$		7	100	39	6	1.922	45.14159	4		32.78	40.64	53.27	80.31											
Ga	$L\alpha_{1,2}$		4	100	31	6	1.098	45.16800	3		32.80	40.66	53.30	80.37											
Hg	Mα		8	100	80	6	2.195	45.18079	4		32.80	40.67	53.32	80.40											
Y	$L\alpha_2$		7	10	39	6	1.920	45.19058	4		32.81	40.68	53.33	80.42											
Hg	N_4-N_6	H	1		80	6	0.274	45.20000	1		32.82	40.69	53.34	80.44											
Sb	M_2-M_4		1	1	51	6	0.274	45.20000	1		32.82	40.69	53.34	80.44											
S	Kβx		9	7	16	6	2.468	45.20969	4	3	32.83	40.70	53.35	80.46											
Ru	$L\beta_4$		10	3	44	6	2.741	45.23000	4		32.84	40.72	53.38	80.50											
Hf	Mα		6	100	72	6	1.644	45.23399	3		32.84	40.72	53.38	80.51											
S	$K\beta_1$		9	7	16	6	2.464	45.28439	4	3	32.88	40.77	53.45	80.62											
Bi	Mγ		10	5	83	6	2.735	45.31999	3		32.91	40.81	53.49	80.70											
Zr	$L\beta_4$		8	3	40	6	2.187	45.34479	4		32.93	40.83	53.53	80.75											
Os	Mα	D	7	100	76	6	1.914	45.34599	3		32.93	40.83	53.53	80.75											
Mo	$L\beta_4$		9	3	42	6	2.455	45.43919	4		33.00	40.92	53.65	80.95											
Mo	$L\beta_6$		9	3	42	6	2.455	45.43919	4		33.00	40.92	53.65	80.95											
Kr	$L\beta_1$		6	35	36	6	1.636	45.45599	3		33.01	40.93	53.67	80.99											
Re	Mβ		7	45	75	6	1.906	45.52798	3		33.06	41.00	53.76	81.14											
Lu	Mβ		6	45	71	6	1.631	45.60599	3		33.12	41.07	53.86	81.31											
Nb	Ll		7	3	41	6	1.902	45.62318	4		33.14	41.09	53.88	81.35											
Sr	$L\beta_6$		7	3	38	6	1.901	45.63368	4		33.14	41.10	53.89	81.37											
Zr	$L\beta_6$		8	3	40	6	2.171	45.68079	4		33.18	41.14	53.95	81.47											
Pb	M8		9	60	82	6	2.442	45.68399	3		33.18	41.15	53.96	81.48											
Bi	M_3-N_4		10	5	83	6	2.712	45.70999	3		33.20	41.17	53.99	81.54											
Nb	$L\alpha_1$		8	100	41	6	2.166	45.79439	4		33.26	41.25	54.10	81.72											
Cd	M_2-N_1		2	1	48	6	0.541	45.79999	1		33.27	41.26	54.11	81.73											
Nb	$L\alpha_2$		8	10	41	6	2.163	45.85519	4		33.31	41.31	54.18	81.85											
Cu	Ll		3	5	29	6	0.811	45.85799	3		33.31	41.31	54.18	81.86											
Sm	Mα		4	100	62	6	1.081	45.87999	2		33.33	41.33	54.21	81.90											
Rh	$L\alpha_1$		10	100	45	6	2.696	45.97429	5		33.40	41.42	54.33	82.11											
Ho	Mα		5	100	67	6	1.347	45.99998	2		33.42	41.45	54.36	82.16											
Tc	$L\alpha_1$	H	9	100	43	6	2.424	46.03319	4		33.44	41.48	54.40	82.24											
Rh	$L\alpha_2$		10	10	45	6	2.692	46.05449	5		33.46	41.50	54.43	82.28											
Bi	$M\alpha_1$		9	100	83	6	2.422	46.06198	3		33.46	41.50	54.44	82.30											
Bi	$M\alpha_2$		9	100	83	6	2.416	46.16998	3		33.54	41.61	54.58	82.53											
Ru	$L\beta_1$		10	45	44	6	2.683	46.20580	5		33.57	41.64	54.63	82.61											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Au	$M\gamma$		9	3	79	6	2.409	46.30499	3		33.64	41.73	54.75	82.83											
Sr	$L\beta_1$		7	45	38	6	1.871	46.36729	4		33.69	41.79	54.83	82.96											
P	$K\beta$		8	3	15	6	2.139	46.36800	3	3	33.69	41.79	54.83	82.97											
Pt	$M\zeta_1$		6	2	78	6	1.602	46.42799	3		33.74	41.85	54.91	83.10											
P	$K\beta_1$		8	3	15	0	2.136	46.43039	3	3	33.74	41.85	54.91	83.10											
Y	M_2-N_1		1		39	6	0.267	46.48000	2		33.78	41.90	54.98	83.21											
Tl	$N_5-N_{6,7}$		1		81	6	0.267	46.50000	1		33.79	41.92	55.00	83.26											
Mo	$L\beta_1$		9	45	42	6	2.394	46.59370	5		33.86	42.01	55.12	83.46											
Pd	$M\gamma$	H	2	100	46	6	0.532	46.59998	1		33.87	42.01	55.13	83.47											
Br	$L\beta_{3,4}$	H	6	2	35	6	1.596	46.60199	3		33.87	42.01	55.13	83.48											
Pt	$M\beta$		8	50	78	6	2.127	46.62399	3		33.88	42.03	55.16	83.53											
Zr	$L\beta_1$		8	45	40	6	2.124	46.68799	4		33.93	42.09	55.24	83.67											
Au	$M\alpha_1$		8	100	79	6	2.123	46.71999	3		33.96	42.12	55.28	83.74											
Pb	$M\gamma$		10	5	82	6	2.652	46.73999	3		33.97	42.14	55.31	83.78											
Dy	$M\beta$		5	45	66	6	1.325	46.78499	3		34.00	42.19	55.37	83.88											
Au	N_4-N_6		1		79	6	0.265	46.79999	1		34.02	42.20	55.39	83.91											
Au	$M\alpha_2$		8	100	79	6	2.118	46.83199	3		34.04	42.23	55.43	83.98											
Na	$SK\alpha_5$		4	2	11	0	1.058	46.86800	3	3	34.07	42.26	55.48	84.06											
Kr	$L\alpha_{1,2}$		6	100	36	6	1.586	46.90199	3		34.09	42.30	55.52	84.14											
Fe	$L\beta_{3,4}$		3	.5	26	6	0.792	46.95000	2		34.13	42.34	55.58	84.24											
Rh	Ll		9	3	45	6	2.376	46.95209	4		34.13	42.34	55.58	84.25											
Cl	$SK\alpha_4$		10	4	17	1	2.640	46.95665	3	3	34.13	42.35	55.59	84.26											
Co	$L\beta_1$		3	18	27	6	0.791	46.99799	3		34.16	42.39	55.64	84.35											
Sr	Ll		6	3	38	6	1.582	47.01720	4		34.18	42.41	55.67	84.39											
Lu	$M\alpha$		6	100	71	6	1.581	47.03999	3		34.20	42.43	55.70	84.44											
As	$L\beta_1$		5	35	33	6	1.317	47.07050	4		34.22	42.46	55.74	84.51											
Ag	Ll		10	2	47	6	2.633	47.07599	4		34.22	42.46	55.74	84.52											
Re	$M\alpha$		7	100	75	6	1.842	47.10298	3		34.24	42.49	55.78	84.58											
Cl	$SK\alpha_3$		10	4	17	1	2.631	47.10995	3	3	34.25	42.49	55.79	84.60											
Na	$SK\alpha_4$		4	10	11	0	1.052	47.14400	3	3	34.27	42.53	55.83	84.67											
Pb	M_3-N_4		10	5	82	6	2.629	47.14998	3		34.28	42.53	55.84	84.69											
Ba	M_4-O_3		3	10	56	6	0.789	47.15999	2		34.29	42.54	55.85	84.71											
Na	$SK\alpha_3$		4	10	11	0	1.050	47.21999	3	3	34.33	42.60	55.93	84.84											
O	$K\alpha$		2	100	8	6	0.525	47.23999	2	1	34.35	42.62	55.95	84.89											
K	Ln		1	100	19	6	0.262	47.23999	2		34.35	42.62	55.95	84.89											
Tl	$M\beta$		9	55	81	6	2.362	47.24098	3		34.35	42.62	55.96	84.89											
Si	$K\beta$		7	2	14	6	1.836	47.27098	3	2	34.37	42.65	55.99	84.95											
Cl	$K\alpha_1$		10	100	17	6	2.622	47.27798	4	3	34.37	42.65	56.00	84.97											
Cl	$K\alpha_{1,2}$		10	150	17	6	2.621	47.28764	4	3	34.38	42.66	56.02	84.99											
W	$M\beta$		7	45	74	6	1.835	47.29900	3		34.39	42.67	56.03	85.02											
Sn	M_2-M_4		1	1	50	6	0.262	47.29999	1		34.39	42.67	56.03	85.02											
Cl	$K\alpha_2$		10	50	17	6	2.620	47.30699	4	3	34.40	42.68	56.04	85.03											
Na	$SK\alpha'$		4	3	11	0	1.047	47.34799	3	3	34.43	42.72	56.09	85.13											
Si	$K\beta_1$		7	2	14	1	1.829	47.44600	3	2	34.50	42.81	56.22	85.34											
Yb	$M\beta$		6	45	70	6	1.567	47.45399	3		34.51	42.82	56.23	85.36											
Rb	$L\beta_3$		7	3	37	6	1.826	47.51318	4		34.55	42.88	56.31	85.49											
Pb	$M\alpha_1$		9	100	82	6	2.345	47.57399	3		34.60	42.93	56.38	85.63											
Na	$K\alpha_{1,2}$		4	100	11	6	1.041	47.64040	4	3	34.65	43.00	56.47	85.78											
Rh	$M\zeta$		1	1	45	6	0.260	47.67000	2		34.67	43.02	56.51	85.84											
Pb	$M\alpha_2$		9	100	82	6	2.339	47.69099	3		34.68	43.04	56.54	85.89											
Ba	M_4-O_2		3	10	56	6	0.779	47.73000	2		34.71	43.08	56.59	85.98											
K	Ll		1	100	19	6	0.260	47.73999	2		34.72	43.09	56.60	86.00											
Rb	$L\beta_4$		7	3	37	6	1.817	47.74489	4		34.72	43.09	56.61	86.01											
V	$L\beta_1$		2	10	23	6	0.519	47.75998	2		34.74	43.11	56.63	86.05											
Te	$M\gamma$		3	100	52	6	0.778	47.78999	2		34.76	43.14	56.66	86.11											
Nb	$L\beta_3$		9	3	41	6	2.334	47.79179	4		34.76	43.14	56.67	86.12											
Y	$L\beta_3$		8	3	39	6	2.072	47.86559	4		34.81	43.21	56.76	86.28											
Pt	$M\gamma$		9	3	78	6	2.331	47.87099	3		34.82	43.21	56.77	86.29											
Hg	$N_5-N_{6,7}$	H	1		80	6	0.259	47.89999	1		34.84	43.24	56.81	86.36											
Co	$L\alpha_{1,2}$		3	100	27	6	0.776	47.91599	3		34.85	43.26	56.83	86.39											
Zn	$L\beta_1$		4	26	30	6	1.034	47.93199	3		34.86	43.27	56.85	86.43											
Sb	M_2-N_4		3	50	51	6	0.776	47.93999	2		34.87	43.28	56.86	86.45											
Dy	$M\alpha$		5	100	66	6	1.293	47.94998	2		34.88	43.29	56.87	86.47											
S	$SK\alpha_4$		9	45	16	1	2.324	48.00737	3	3	34.92	43.34	56.94	86.60											
Sr	$L\alpha_1$		7	100	38	6	1.806	48.03960	4		34.94	43.37	56.99	86.67											

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
S	$SK\alpha_3$		9	45	16	1	2.321	48.06688	3	3	34.97	43.40	57.02	86.73											
Sr	$L\alpha_2$		7	10	38	6	1.804	48.08789	4		34.98	43.42	57.05	86.78											
Pt	N_4-N_5		1		78	6	0.258	48.09999	1		34.99	43.43	57.06	86.81											
Nb	$L\beta_4$		9	3	41	6	2.319	48.10950	4		35.00	43.44	57.08	86.83											
Y	$L\beta_4$		8	3	39	6	2.060	48.14879	4		35.03	43.48	57.13	86.92											
Th	N_6-O_5		1		90	6	0.257	48.20000	1		35.07	43.53	57.19	87.03											
Tl	$M\gamma$		10	3	81	6	2.570	48.23000	3		35.09	43.55	57.23	87.10											
Nb	$L\beta_6$		9	3	41	6	2.312	48.25169	4		35.10	43.58	57.26	87.15											
Ir	$M\beta$		8	45	77	6	2.053	48.30399	3		35.14	43.62	57.33	87.27											
S	$K\alpha_1$		9	100	16	6	2.307	48.34943	5	3	35.18	43.67	57.39	87.37											
As	$L\alpha_{1,2}$		5	100	33	6	1.282	48.35449	4		35.18	43.67	57.39	87.38											
S	$K\alpha_{1,2}$		9	150	16	6	2.307	48.35783	5	3	35.18	43.68	57.40	87.39											
S	$K\alpha_2$		9	50	16	6	2.306	48.37463	5	3	35.20	43.69	57.42	87.43											
Pt	$M\alpha_1$		8	100	78	6	2.050	48.37599	3		35.20	43.69	57.42	87.43											
Zr	Ll		7	3	40	6	1.792	48.42949	4		35.24	43.74	57.49	87.55											
Ru	$L\alpha_1$		10	100	44	6	2.558	48.45749	5		35.26	43.77	57.53	87.62											
Pt	$M\alpha_2$		8	100	78	6	2.046	48.46399	3		35.26	43.78	57.54	87.63											
V	$L\alpha_{1,2}$		2	100	23	6	0.511	48.50000	2		35.29	43.81	57.58	87.71											
Y	M_3-N_1		1		39	6	0.256	48.50000	1		35.29	43.81	57.58	87.71											
Ru	$L\alpha_2$		10	10	44	6	2.554	48.53809	5		35.32	43.85	57.63	87.80											
Zr	$L\alpha_1$		8	100	40	6	2.042	48.56400	4		35.34	43.87	57.67	87.86											
Cr	Ln		2	1	24	6	0.510	48.59998	2		35.37	43.91	57.71	87.94											
Ba	M_5-O_3		3	.01	56	6	0.765	48.59999	2		35.37	43.91	57.71	87.94											
Zr	$L\alpha_2$		8	10	40	6	2.040	48.62239	4		35.38	43.93	57.74	87.99											
Mo	$L\alpha_1$		9	100	42	6	2.293	48.65894	5		35.41	43.96	57.79	88.07											
Mo	$L\alpha_2$		9	10	42	6	2.289	48.72932	5		35.46	44.03	57.88	88.24											
Br	$L\beta_1$		6	35	35	6	1.526	48.75060	4		35.48	44.05	57.91	88.28											
Y	$L\beta_6$		8	3	39	6	2.034	48.75359	4		35.48	44.05	57.91	88.29											
Ag	M_5-N_1		2	1	47	6	0.508	48.79999	1		35.52	44.10	57.97	88.40											
Ni	Ln		3	3	28	6	0.762	48.80997	2		35.52	44.11	57.99	88.42											
Tl	$M\zeta_1$		7	2	81	6	1.777	48.81799	3		35.53	44.11	58.00	88.44											
P	$SK\alpha_4$		8	5	15	1	2.029	48.87050	3	3	35.57	44.16	58.07	88.56											
Tc	$L\beta_1$	H	10	45	43	6	2.536	48.87299	4		35.57	44.17	58.07	88.56											
W	$M\alpha_1$		7	100	74	6	1.775	48.88100	3		35.58	44.17	58.08	88.58											
Hg	$M\beta$		9	50	80	6	2.282	48.88618	4		35.58	44.18	58.09	88.59											
Rb	$L\beta_6$		7	3	37	6	1.775	48.88939	4		35.58	44.18	58.09	88.60											
Yb	$M\alpha$		6	100	70	6	1.521	48.89398	3		35.59	44.19	58.10	88.61											
P	$SK\alpha_3$		8	5	15	1	2.027	48.93303	3	3	35.62	44.22	58.15	88.70											
W	$M\alpha_2$		7	100	74	6	1.773	48.94398	3		35.62	44.23	58.16	88.73											
Tb	$M\beta$		5	45	65	6	1.266	48.95999	3		35.64	44.25	58.18	88.76											
Cd	M_3-N_1		2	10	48	6	0.506	49.00000	1		35.67	44.29	58.23	88.85											
Zn	$L\alpha_{1,2}$		4	100	30	6	1.012	49.01599	3		35.68	44.30	58.25	88.89											
Mg	$SK\alpha_4$		5	8	12	1	1.264	49.03885	3	3	35.70	44.32	58.28	88.94											
Bi	$M\beta$		10	60	83	6	2.525	49.08998	3		35.73	44.37	58.35	89.06											
Mg	$SK\alpha_3$		5	8	12	1	1.262	49.11902	3	3	35.76	44.40	58.39	89.13											
Tl	$M\alpha_1$		9	100	81	6	2.270	49.13998	3		35.77	44.42	58.42	89.18											
Ta	$M\beta$		7	45	73	6	1.765	49.16100	3		35.79	44.44	58.44	89.22											
Mo	Ll		8	3	42	6	2.015	49.20639	4		35.82	44.48	58.50	89.33											
Mg	$SK\alpha'$		5	2	12	1	1.259	49.23926	2	3	35.85	44.51	58.55	89.40											
Tl	$M\alpha_2$		9	100	81	6	2.265	49.24799	3		35.85	44.52	58.56	89.42											
P	$K\alpha_1$	H	8	100	15	6	2.013	49.25600	3	3	35.86	44.53	58.57	89.44											
P	$K\alpha_{1,2}$	H	8	150	15	6	2.013	49.26398	3	3	35.87	44.54	58.58	89.46											
P	$K\alpha_2$	H	8	50	15	6	2.012	49.28000	3	3	35.88	44.55	58.60	89.50											
Nd	$M\zeta$		3	.01	60	6	0.753	49.37997	2		35.95	44.65	58.73	89.73											
Au	N_5-$N_{6,7}$		1		79	6	0.251	49.39999	1		35.97	44.67	58.76	89.77											
Nb	$L\beta_1$		9	45	41	6	2.257	49.43068	4		35.99	44.70	58.80	89.85											
Mg	$K\alpha_{1,2}$		5	100	12	6	1.253	49.45000	4	3	36.01	44.72	58.82	89.89											
Si	$SK\alpha_4$		7	3	14	1	1.754	49.46581	3	3	36.02	44.73	58.84	89.93											
Tm	$M\beta$		6	45	69	6	1.503	49.49399	3		36.04	44.76	58.88	89.99											
Th	N_6-O_4		1		90	6	0.250	49.50000	1		36.04	44.76	58.89	90.01											
Pd	Ll		10	2	46	6	2.503	49.52499	4		36.06	44.79	58.92	90.06											
Rb	$L\beta_1$		7	45	37	6	1.752	49.53128	4		36.07	44.79	58.93	90.08											
Ru	Ll		9	3	44	6	2.252	49.53149	4		36.07	44.79	58.93	90.08											
Si	$SK\alpha_3$		7	6	14	1	1.752	49.53735	3	3	36.07	44.80	58.94	90.09											
Cr	Ll		2	1	24	6	0.500	49.56000	2		36.09	44.82	58.96	90.14											

El	Line	C	N	I	Z	R	KeV	Lambda 10^{-}	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Al	$SK\alpha_4$		6	4	13	1	1.499	49.62402	3	3	36.14	44.88	59.05	90.29											
Y	$L\beta_1$		8	45	39	6	1.995	49.69600	4		36.19	44.95	59.14	90.46											
Al	$SK\alpha_3$		6	8	13	1	1.496	49.72021	3	3	36.21	44.97	59.17	90.52											
Nd	$M\beta$		4	55	60	6	0.996	49.75999	2		36.24	45.01	59.23	90.61											
Al	$SK\alpha'$		6	2	13	1	1.493	49.82845	3	3	36.29	45.08	59.32	90.77											
Hg	$M\gamma$		10	3	80	6	2.487	49.83998	3		36.30	45.09	59.33	90.80											
Si	$K\alpha_1$		7	100	14	6	1.740	49.87793	5	3	36.33	45.12	59.38	90.88											
Si	$K\alpha_{1,2}$		7	150	14	6	1.739	49.88370	5	3	36.33	45.13	59.39	90.90											
Si	$K\alpha_2$		7	50	14	6	1.739	49.89536	5	3	36.34	45.14	59.40	90.92											
Se	$L\beta_{3,4}$	H	6	2	34	6	1.490	49.92599	3		36.36	45.17	59.44	91.00											
Th	N_7-O_5		1		90	6	0.248	50.00000	1		36.42	45.24	59.54	91.17											
Tb	$M\alpha$		5	100	65	6	1.240	50.00000	2		36.42	45.24	59.54	91.17											
Rh	$M\gamma$		2	100	45	6	0.496	50.01999	2		36.43	45.26	59.57	91.22											
Al	$K\alpha_1$		6	100	13	6	1.486	50.03603	5	3	36.45	45.27	59.59	91.25											
Al	$K\alpha_{1,2}$		6	150	13	6	1.486	50.04080	5	3	36.45	45.28	59.59	91.26											
Al	$K\alpha_2$		6	50	13	6	1.486	50.05037	5	3	36.46	45.29	59.61	91.29											
Ni	Ll		3	8	28	6	0.743	50.07898	3		36.48	45.32	59.64	91.35											
Ir	$M\alpha_1$		8	100	77	6	1.980	50.09599	3		36.49	45.33	59.67	91.39											
Mo	$L\beta_3$		10	3	42	6	2.473	50.13300	4		36.52	45.37	59.72	91.48											
Os	$M\beta$		8	45	76	6	1.978	50.13599	3		36.52	45.37	59.72	91.49											
Rb	Ll		6	3	37	6	1.482	50.18159	4		36.56	45.41	59.78	91.60											
Ir	$M\alpha_2$		8	100	77	6	1.975	50.20000	3		36.57	45.43	59.80	91.64											
Ir	N_4-N_6		1		77	6	0.247	50.20000	1		36.57	45.43	59.80	91.64											
S	$K\beta x$		10	7	16	6	2.468	50.23299	4	3	36.60	45.46	59.85	91.72											
Br	$L\alpha_{1,2}$		6	100	35	6	1.480	50.24759	4		36.61	45.48	59.87	91.75											
Te	M_3-M_5		1	1	52	6	0.246	50.29999	1		36.65	45.53	59.93	91.87											
S	$K\beta_1$		10	7	16	6	2.464	50.31599	4	3	36.66	45.54	59.96	91.91											
Mo	$L\beta_4$		10	3	42	6	2.455	50.48799	4		36.79	45.71	60.18	92.32											
Mo	$L\beta_6$		10	3	42	6	2.455	50.48799	4		36.79	45.71	60.18	92.32											
Sn	M_4-$O_{2,3}$		2	10	50	6	0.490	50.59998	1		36.87	45.81	60.33	92.58											
Au	$M\beta$		9	50	79	6	2.204	50.61598	3		36.88	45.83	60.35	92.62											
Zr	$L\beta_3$		9	3	40	6	2.201	50.69699	4		36.95	45.91	60.46	92.81											
Nd	$M\alpha$		4	100	60	6	0.978	50.71999	2		36.96	45.93	60.49	92.87											
Pb	$M\beta$		10	60	82	6	2.442	50.75998	3		36.99	45.97	60.54	92.96											
Sb	$M\gamma$		3	100	51	6	0.733	50.75999	2		36.99	45.97	60.54	92.96											
Ta	$M\alpha$		7	100	73	6	1.709	50.76399	3		37.00	45.97	60.54	92.97											
Sn	M_2-N_4		3	50	50	6	0.732	50.78998	2		37.02	46.00	60.58	93.03											
Hg	$M\alpha$		9	100	80	6	2.195	50.82838	4		37.05	46.03	60.63	93.12											
Ge	$L\beta_1$		5	35	32	6	1.218	50.87498	3		37.08	46.08	60.69	93.24											
Tm	$M\alpha$		6	100	69	6	1.462	50.87999	2		37.08	46.08	60.70	93.25											
Pt	N_5-$N_{6,7}$		1		78	6	0.244	50.89999	1		37.10	46.10	60.72	93.29											
Sr	$L\beta_3$		8	3	38	6	1.947	50.93759	4		37.13	46.14	60.77	93.38											
Ba	$M\gamma$		4	100	56	6	0.972	51.00000	2		37.17	46.20	60.86	93.53											
Ru	M_2-N_4		2	1	44	6	0.486	51.00000	2		37.17	46.20	60.86	93.53											
Zr	$L\beta_4$		9	3	40	6	2.187	51.01289	4		37.18	46.21	60.87	93.56											
Hf	$M\beta$		7	45	72	6	1.697	51.12099	3		37.27	46.31	61.02	93.82											
Tc	$L\alpha_1$	H	10	100	43	6	2.424	51.14799	4		37.29	46.34	61.05	93.89											
Bi	$M\alpha_1$		10	100	83	6	2.422	51.17998	3		37.31	46.37	61.09	93.96											
Sr	$L\beta_4$		8	3	38	6	1.936	51.22079	4		37.34	46.41	61.15	94.06											
Rb	$L\alpha_1$		7	100	37	6	1.694	51.22809	4		37.35	46.42	61.16	94.08											
Gd	$M\beta$		5	45	64	6	1.209	51.26999	3		37.38	46.46	61.21	94.18											
Rb	$L\alpha_2$		7	10	37	6	1.692	51.27570	4		37.38	46.46	61.22	94.19											
Bi	$M\alpha_2$		10	100	83	6	2.416	51.29999	3		37.40	46.48	61.25	94.25											
Sr	M_2-N_1		1		38	6	0.242	51.29999	1		37.40	46.48	61.25	94.25											
Zr	$L\beta_6$		9	3	40	6	2.171	51.39088	4		37.47	46.57	61.37	94.47											
Sn	M_5-O_3		2	1	50	6	0.482	51.39999	1		37.48	46.58	61.38	94.49											
Au	$M\gamma$		10	3	79	6	2.409	51.44998	3		37.51	46.63	61.45	94.61											
Y	Ll		7	3	39	6	1.685	51.49409	4		37.55	46.67	61.51	94.72											
Nb	$L\alpha_1$		9	100	41	6	2.166	51.51869	4		37.57	46.69	61.54	94.78											
Er	$M\beta$		6	45	68	6	1.443	51.55199	3		37.59	46.73	61.59	94.86											
Mn	$L\beta_{3,4}$		3	.1	25	6	0.721	51.56996	2		37.61	46.74	61.61	94.90											
Nb	$L\alpha_2$		9	10	41	6	2.163	51.58708	4		37.62	46.76	61.63	94.95											
Y	$L\alpha_1$		8	100	39	6	1.922	51.59039	4		37.62	46.76	61.64	94.95											
Y	$L\alpha_2$		8	10	39	6	1.920	51.64639	4		37.66	46.82	61.71	95.09											
Mo	$L\beta_1$		10	45	42	6	2.394	51.77078	5		37.76	46.94	61.88	95.39											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Fe	$L\beta_1$		3	20	26	6	0.718	51.77998	2		37.76	46.94	61.89	95.41											
Ga	$L\beta_{3,4}$		5	2	31	6	1.197	51.79498	3		37.78	46.96	61.91	95.45											
Os	$M\alpha$	D	8	100	76	6	1.914	51.82399	3		37.80	46.99	61.95	95.52											
Os	N_4-N_6		1		76	6	0.239	51.89999	1		37.86	47.06	62.05	95.71											
Cd	M_2-M_4		1	1	48	6	0.238	52.00000	1		37.93	47.16	62.18	95.95											
Ag	M_3-N_1		2	10	47	6	0.477	52.00000	1		37.93	47.16	62.18	95.95											
Re	$M\beta$		8	45	75	6	1.906	52.03200	3		37.96	47.19	62.22	96.03											
Pr	$M\zeta$		3	.01	59	6	0.713	52.13997	2		38.04	47.29	62.37	96.29											
Nb	Ll		8	3	41	6	1.902	52.14079	4		38.04	47.29	62.37	96.30											
Sr	$L\beta_6$		8	3	38	6	1.901	52.15279	4		38.05	47.30	62.38	96.33											
P	$K\beta$		9	3	15	6	2.139	52.16399	3	3	38.06	47.31	62.40	96.35											
Rh	Ll		10	3	45	6	2.376	52.16899	4		38.06	47.32	62.40	96.36											
Ge	$L\alpha_{1,2}$		5	100	32	6	1.188	52.18048	4		38.07	47.33	62.42	96.39											
Sb	M_3-M_5		1	1	51	6	0.237	52.20000	1		38.08	47.35	62.45	96.44											
Cu	$L\beta_1$		4	20	29	6	0.950	52.21199	3		38.09	47.36	62.46	96.47											
P	$K\beta_1$		9	3	15	0	2.136	52.23419	3	3	38.11	47.38	62.49	96.53											
Pr	M8		4	45	59	6	0.949	52.23999	2		38.11	47.39	62.50	96.54											
Au	$M\zeta_1$		7	2	79	6	1.660	52.26199	3		38.13	47.41	62.53	96.59											
Gd	$M\alpha$		5	100	64	6	1.185	52.29999	2		38.16	47.45	62.58	96.69											
Ru	$M\zeta$		1	1	44	6	0.237	52.34000	2		38.19	47.48	62.63	96.79											
Pd	M_2-N_1		2	1	46	6	0.473	52.39999	1		38.23	47.54	62.71	96.93											
Se	$L\beta_1$		6	35	34	6	1.419	52.41479	4		38.25	47.56	62.73	96.97											
Pt	$M\beta$		9	50	78	6	2.127	52.45198	3		38.27	47.59	62.78	97.06											
Tl	$M\beta$		10	55	81	6	2.362	52.48999	3		38.30	47.63	62.83	97.16											
Zr	$L\beta_1$		9	45	40	6	2.124	52.52399	4		38.33	47.66	62.88	97.24											
Au	$M\alpha_1$		9	100	79	6	2.123	52.55998	3		38.36	47.70	62.93	97.33											
Au	$M\alpha_2$		9	100	79	6	2.118	52.68599	3		38.45	47.82	63.09	97.64											
Fe	$L\alpha_{1,2}$		3	100	26	6	0.705	52.76999	2		38.51	47.90	63.21	97.85											
Hf	$M\alpha$		7	100	72	6	1.644	52.77299	3		38.52	47.90	63.21	97.86											
Te	M_2-N_1		3	1	52	6	0.704	52.79997	1		38.54	47.93	63.25	97.93											
Ir	N_5-$N_{6,7}$		1		77	6	0.235	52.79999	1		38.54	47.93	63.25	97.93											
Pb	$M\alpha_1$		10	100	82	6	2.345	52.85999	3		38.58	47.98	63.33	98.08											
Er	$M\alpha$		6	100	68	6	1.405	52.92000	2		38.63	48.04	63.41	98.23											
Pb	$M\alpha_2$		10	100	82	6	2.339	52.98999	3		38.68	48.11	63.50	98.40											
Sr	$L\beta_1$		8	45	38	6	1.871	52.99120	4		38.68	48.11	63.50	98.40											
Kr	$L\beta_1$		7	35	36	6	1.636	53.03198	3		38.71	48.15	63.56	98.51											
Nb	$L\beta_3$		10	3	41	6	2.334	53.10199	4		38.77	48.22	63.65	98.68											
Pt	$M\gamma$		10	3	78	6	2.331	53.18999	3		38.83	48.30	63.77	98.90											
Lu	$M\beta$		7	45	71	6	1.631	53.20699	3		38.85	48.32	63.79	98.95											
S	$SK\alpha_4$		10	45	16	1	2.324	53.34152	3	3	38.95	48.45	63.97	99.29											
Cu	$L\alpha_{1,2}$		4	100	29	6	0.930	53.34399	3		38.95	48.45	63.97	99.29											
Pr	$M\alpha$		4	100	59	6	0.929	53.37199	3		38.97	48.48	64.01	99.36											
S	$SK\alpha_3$		10	45	16	1	2.321	53.40765	3	3	39.00	48.51	64.06	99.45											
Te	$M\zeta$		2	1	52	6	0.464	53.43997	2		39.02	48.54	64.10	99.53											
Nb	$L\beta_4$		10	3	41	6	2.319	53.45499	4		39.03	48.56	64.12	99.57											
As	$L\beta_{3,4}$		6	2	33	6	1.388	53.57399	3		39.13	48.67	64.28	99.88											
Sr	M_3-N_1		1		38	6	0.231	53.59999	1		39.15	48.70	64.32	99.94											
Co	Ln		3	2	27	6	0.694	53.60999	2		39.15	48.71	64.33	99.97											
Nb	$L\beta_6$		10	3	41	6	2.312	53.61299	4		39.15	48.71	64.34	99.97											
S	$K\alpha_1$		10	100	16	6	2.307	53.72159	5	3	39.24	48.82	64.48	100.25											
S	$K\alpha_{1,2}$		10	150	16	6	2.307	53.73093	5	3	39.24	48.83	64.49	100.28											
S	$K\alpha_2$		10	50	16	6	2.306	53.74959	5	3	39.26	48.84	64.52	100.32											
Eu	$M\beta$		5	45	63	6	1.153	53.75000	3		39.26	48.84	64.52	100.32											
Ho	$M\beta$		6	45	67	6	1.383	53.78999	3		39.29	48.88	64.57	100.43											
Ru	$M\gamma$		2	100	44	6	0.461	53.79999	1		39.30	48.89	64.59	100.45											
Sn	$M\gamma$		3	100	50	6	0.691	53.81996	2		39.31	48.91	64.61	100.50											
Re	$M\alpha$		8	100	75	6	1.842	53.83199	3		39.32	48.92	64.63	100.53											
Y	$L\beta_3$		9	3	39	6	2.072	53.84879	4		39.33	48.94	64.65	100.58											
Se	$L\alpha_{1,2}$		6	100	34	6	1.379	53.93999	4		39.40	49.03	64.78	100.81											
W	N_2-N_4		1		74	6	0.230	54.00000	1		39.45	49.09	64.86	100.96											
Ag	M_2-M_4		1	1	47	6	0.230	54.00000	1		39.45	49.09	64.86	100.96											
Si	$K\beta$		8	2	14	6	1.836	54.02399	3	2	39.47	49.11	64.89	101.03											
W	$M\beta$		8	45	74	6	1.835	54.05600	3		39.49	49.14	64.93	101.11											
Mo	$L\alpha_1$		10	100	42	6	2.293	54.06549	5		39.50	49.15	64.95	101.13											
Ti	$L\beta_1$		2	10	22	6	0.458	54.09998	2		39.53	49.18	64.99	101.22											

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Lligm (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Mo	$L\alpha_2$		10	10	42	6	2.289	54.14369	5		39.56	49.23	65.05	101.34											
Pt	$M\zeta_1$		7	2	78	6	1.602	54.16599	3		39.58	49.25	65.08	101.39											
Y	$L\beta_4$		9	3	39	6	2.060	54.16739	4		39.58	49.25	65.08	101.40											
Sn	M_3-M_5		1	1	50	6	0.229	54.20000	1		39.60	49.28	65.13	101.48											
Si	$K\beta_1$		8	2	14	1	1.829	54.22400	3	2	39.62	49.30	65.16	101.54											
Rb	$L\beta_3$		8	3	37	6	1.826	54.30080	4		39.68	49.38	65.26	101.74											
Hg	$M\beta$		10	50	80	6	2.282	54.31799	4		39.69	49.40	65.29	101.79											
Ir	$M\beta$		9	45	77	6	2.053	54.34198	3		39.71	49.42	65.32	101.85											
Br	$L\beta_{3,4}$	H	7	2	35	6	1.596	54.36899	3		39.73	49.44	65.36	101.92											
Pt	$M\alpha_1$		9	100	78	6	2.050	54.42299	3		39.77	49.50	65.43	102.06											
Pt	$M\alpha_2$		9	100	78	6	2.046	54.52199	3		39.85	49.59	65.56	102.32											
Rb	$L\beta_4$		8	3	37	6	1.817	54.56560	4		39.88	49.64	65.62	102.43											
Tl	$M\alpha_1$		10	100	81	6	2.270	54.59999	3		39.91	49.67	65.67	102.52											
F	$SK\alpha''$		3	30	9	1	0.681	54.59999	2	3	39.91	49.67	65.67	102.52											
Zr	$L\alpha_1$		9	100	40	6	2.042	54.63449	4		39.93	49.70	65.71	102.61											
F	$SK\alpha'$		3	35	9	1	0.680	54.65996	2	3	39.95	49.73	65.75	102.68											
V	Ln		2	1	23	6	0.453	54.67999	2		39.97	49.75	65.78	102.73											
Os	N_5-$N_{6,7}$		1		76	6	0.227	54.70000	1		39.98	49.77	65.80	102.78											
Zr	$L\alpha_2$		9	10	40	6	2.040	54.70020	4		39.98	49.77	65.80	102.78											
Kr	$L\alpha_{1,2}$		7	100	36	6	1.586	54.71899	3		40.00	49.78	65.83	102.83											
Zn	Ln		4	2	30	6	0.906	54.71999	2		40.00	49.79	65.83	102.84											
Tl	$M\alpha_2$		10	100	81	6	2.265	54.71999	3		40.00	49.79	65.83	102.84											
Eu	$M\alpha$		5	100	63	6	1.131	54.79999	2		40.06	49.86	65.94	103.05											
Mo	$M_{4,5}O_{2,3}$	A	1	50	42	6	0.226	54.79999	1		40.06	49.86	65.94	103.05											
Ti	$L\alpha_{1,2}$		2	100	22	6	0.452	54.84000	2		40.09	49.90	65.99	103.15											
Y	$L\beta_6$		9	3	39	6	2.034	54.84778	4		40.09	49.91	66.00	103.17											
Sr	Ll		7	3	38	6	1.582	54.85339	4		40.10	49.92	66.01	103.19											
Co	Ll		3	9	27	6	0.678	54.87598	3		40.12	49.94	66.04	103.25											
Lu	$M\alpha$		7	100	71	6	1.581	54.87999	3		40.12	49.94	66.05	103.26											
Sr	$L\alpha_1$		8	100	38	6	1.806	54.90239	4		40.14	49.96	66.08	103.32											
Nb	$L\beta_1$		10	45	41	6	2.257	54.92299	4		40.15	49.98	66.11	103.37											
Sr	$L\alpha_2$		8	10	38	6	1.804	54.95760	4		40.18	50.02	66.15	103.46											
F	$K\alpha$		3	100	9	6	0.677	54.95998	2	2	40.18	50.02	66.16	103.47											
P	$SK\alpha_4$		9	5	15	1	2.029	54.97931	3	3	40.20	50.04	66.18	103.52											
Ce	$M\beta$		4	45	58	6	0.902	55.00000	2		40.21	50.06	66.21	103.57											
Ru	Ll		10	3	44	6	2.252	55.03499	4		40.24	50.09	66.26	103.67											
P	$SK\alpha_3$		9	5	15	1	2.027	55.04965	3	3	40.25	50.11	66.28	103.71											
Ce	$M\zeta$		3	.01	58	6	0.676	55.04997	2		40.25	50.11	66.28	103.71											
Ga	$L\beta_1$		5	35	31	6	1.125	55.11499	3		40.30	50.17	66.37	103.88											
Ho	$M\alpha$		6	100	67	6	1.347	55.20000	2		40.36	50.25	66.48	104.10											
Zr	Ll		8	3	40	6	1.792	55.34799	4		40.48	50.40	66.68	104.50											
Mo	Ll		9	3	42	6	2.015	55.35719	4		40.48	50.41	66.70	104.52											
Yb	$M\beta$		7	45	70	6	1.567	55.36299	3		40.49	50.41	66.70	104.54											
P	$K\alpha_1$	H	9	100	15	6	2.013	55.41299	3	3	40.53	50.46	66.77	104.67											
P	$K\alpha_{1,2}$	H	9	150	15	6	2.013	55.42198	3	3	40.53	50.47	66.78	104.70											
P	$K\alpha_2$	H	9	50	15	6	2.012	55.43999	3	3	40.55	50.49	66.81	104.75											
V	Ll		2	1	23	6	0.446	55.53998	2		40.62	50.58	66.95	105.01											
Tl	$M\zeta_1$		8	2	81	6	1.777	55.79199	3		40.82	50.83	67.29	105.69											
W	N_4-N_6		1		74	6	0.222	55.79999	1		40.82	50.84	67.30	105.72											
Pd	N_3-N_1		2	10	46	6	0.444	55.79999	1		40.82	50.84	67.30	105.72											
W	$M\alpha_1$		8	100	74	6	1.775	55.86400	3		40.87	50.90	67.39	105.89											
Rb	$L\beta_6$		8	3	37	6	1.775	55.87360	4		40.88	50.91	67.40	105.92											
Ar	Ln	H	1	100	18	6	0.222	55.89999	1		40.90	50.94	67.44	105.99											
Y	$L\beta_1$		9	45	39	6	1.995	55.90799	4		40.90	50.94	67.45	106.01											
W	$M\alpha_2$		8	100	74	6	1.773	55.93599	3		40.93	50.97	67.49	106.09											
Zn	Ll		4	4	30	6	0.884	56.07999	2		41.04	51.11	67.68	106.48											
Dy	$M\beta$		6	45	66	6	1.325	56.14198	3		41.08	51.17	67.77	106.65											
Ce	$M\alpha$		4	100	58	6	0.883	56.15999	2		41.10	51.19	67.79	106.70											
Ta	$M\beta$		8	45	73	6	1.765	56.18399	3		41.12	51.21	67.83	106.76											
Rh	M_2-N_1		2	1	45	6	0.441	56.19998	1		41.13	51.23	67.85	106.81											
Au	$M\beta$		10	50	79	6	2.204	56.23999	3		41.16	51.27	67.90	106.92											
Ar	Ll	H	1	100	18	6	0.220	56.29999	1		41.20	51.33	67.99	107.08											
Zr	$L\beta_3$		10	3	40	6	2.201	56.32999	4		41.23	51.36	68.03	107.17											
Sm	$M\beta$		5	45	62	6	1.100	56.34999	2		41.24	51.37	68.05	107.22											
Ir	$M\alpha_1$		9	100	77	6	1.980	56.35799	3		41.25	51.38	68.06	107.24											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-8}																	
Sb	M_2-N_1		3	1	51	6	0.659	56.39996	1		41.28	51.42	68.12	107.36											
Ag	M_1-$N_{2,3}$		3	1	47	6	0.659	56.39996	1		41.28	51.42	68.12	107.36											
Os	M8		9	45	76	6	1.978	56.40298	3		41.28	51.43	68.13	107.37											
Ga	$L\alpha_{1,2}$		5	100	31	6	1.098	56.45999	3		41.33	51.48	68.21	107.52											
Ir	$M\alpha_2$		9	100	77	6	1.975	56.47499	3		41.34	51.50	68.23	107.57											
Bg	$M\alpha$		10	100	80	6	2.195	56.47598	4		41.34	51.50	68.23	107.57											
As	$L\beta_1$		6	35	33	6	1.317	56.48459	4		41.35	51.51	68.24	107.59											
Pd	M_2-M_4		1	1	46	6	0.219	56.50000	1		41.36	51.52	68.26	107.64											
Si	$SK\alpha_4$		8	3	14	1	1.754	56.53235	3	3	41.38	51.55	68.30	107.73											
Rb	$L\beta_1$		8	45	37	6	1.752	56.60719	4		41.44	51.63	68.41	107.93											
Si	$SK\alpha_3$		8	6	14	1	1.752	56.61412	3	3	41.44	51.63	68.42	107.95											
Zr	$L8_4$		10	3	40	6	2.187	56.68098	4		41.50	51.70	68.51	108.14											
Br	$L\beta_1$		7	35	35	6	1.526	56.87569	4		41.64	51.89	68.78	108.68											
Cr	$L8_{3,4}$		3	.1	24	6	0.654	56.87997	2		41.65	51.89	68.78	108.70											
Rb	M_2-N_1		1		37	6	0.217	57.00000	1		41.74	52.01	68.95	109.03											
Si	$K\alpha_1$		8	100	14	6	1.740	57.00336	5	3	41.74	52.01	68.95	109.04											
Si	$K\alpha_{1,2}$		8	150	14	6	1.739	57.00995	5	3	41.75	52.02	68.96	109.06											
Si	$K\alpha_2$		8	50	14	6	1.739	57.02327	5	3	41.76	52.03	68.98	109.10											
Yb	$M\alpha$		7	100	70	6	1.521	57.04298	3		41.77	52.05	69.01	109.15											
Ni	$L\beta_1$		4	21	28	6	0.869	57.08400	3		41.80	52.09	69.06	109.27											
Zr	$L\beta_6$		10	3	40	6	2.171	57.10098	4		41.82	52.11	69.09	109.32											
Nb	$L\alpha_1$		10	100	41	6	2.166	57.24298	4		41.93	52.25	69.28	109.72											
Te	M_3-N_1		3	10	52	6	0.649	57.29997	1		41.97	52.31	69.36	109.88											
Sr	$L\beta_3$		9	3	38	6	1.947	57.30479	4		41.97	52.31	69.37	109.90											
Nb	$L\alpha_2$		10	10	41	6	2.163	57.31898	4		41.98	52.32	69.39	109.94											
Mn	$L\beta_1$		3	30	25	6	0.649	57.32996	2		41.99	52.34	69.40	109.97											
Sm	$M\alpha$		5	100	62	6	1.081	57.34999	2		42.01	52.36	69.43	110.03											
Dy	$M\alpha$		6	100	66	6	1.293	57.53999	2		42.15	52.54	69.70	110.57											
Sr	$L8_4$		9	3	38	6	1.936	57.62338	4		42.22	52.62	69.81	110.81											
Tm	$M\beta$		7	45	69	6	1.503	57.74300	3		42.31	52.74	69.98	111.16											
Sb	$M\zeta$		2	1	51	6	0.429	57.75998	2		42.32	52.76	70.00	111.21											
Al	$SK\alpha_4$		7	4	13	1	1.499	57.89470	3	3	42.43	52.89	70.19	111.60											
P	K8		10	3	15	6	2.139	57.95999	3	3	42.48	52.95	70.28	111.79											
Al	$SK\alpha_3$		7	8	13	1	1.496	58.00693	3	3	42.51	53.00	70.34	111.92											
Ta	$M\alpha$		8	100	73	6	1.709	58.01599	3		42.52	53.01	70.36	111.95											
As	$L\alpha_{1,2}$		6	100	33	6	1.282	58.02539	4		42.53	53.02	70.37	111.98											
P	$K8_1$		10	3	15	0	2.136	58.03799	3	3	42.54	53.03	70.39	112.02											
Y	$L\alpha_1$		9	100	39	6	1.922	58.03918	4		42.54	53.03	70.39	112.02											
La	M8	A	4	45	57	6	0.854	58.03999	2		42.54	53.03	70.39	112.02											
Y	$L\alpha_2$		9	10	39	6	1.920	58.10219	4		42.59	53.10	70.48	112.20											
Al	$SK\alpha'$		7	2	13	1	1.493	58.13318	3	3	42.61	53.13	70.52	112.30											
Cd	M_2-N_4		3	50	48	6	0.639	58.19998	2		42.66	53.19	70.61	112.49											
Ta	N_4-N_6		1		73	6	0.213	58.20000	1		42.66	53.19	70.61	112.49											
Ni	$L\alpha_{1,2}$		4	100	28	6	0.851	58.24399	3		42.70	53.23	70.68	112.62											
Se	$L\beta_{3,4}$	H	7	2	34	6	1.490	58.24699	3		42.70	53.24	70.68	112.63											
Pt	$M\beta$		10	50	78	6	2.127	58.27998	3		42.72	53.27	70.73	112.73											
Os	$M\alpha$	D	9	100	76	6	1.914	58.30199	3		42.74	53.29	70.76	112.79											
La	$M\zeta$		3	.01	57	6	0.638	58.31996	2		42.75	53.31	70.78	112.85											
Mn	$L\alpha_{1,2}$		3	100	25	6	0.637	58.34999	2		42.78	53.34	70.82	112.93											
Zr	$L\beta_1$		10	45	40	6	2.124	58.35999	4		42.78	53.35	70.84	112.96											
Al	$K\alpha_1$		7	100	13	6	1.486	58.37537	5	3	42.80	53.36	70.86	113.01											
Al	$K\alpha_{1,2}$		7	150	13	6	1.486	58.38094	5	3	42.80	53.37	70.87	113.03											
Al	$K\alpha_2$		7	50	13	6	1.486	58.39209	5	3	42.81	53.38	70.88	113.06											
Au	$M\alpha_1$		10	100	79	6	2.123	58.39998	3		42.82	53.39	70.89	113.08											
W	N_5-N_7		1		74	6	0.212	58.39999	1		42.82	53.39	70.89	113.08											
Bf	$M\beta$		8	45	72	6	1.697	58.42400	3		42.83	53.41	70.93	113.15											
Ne	$K\alpha_{1,2}$		4	100	10	6	0.848	58.43999	3		42.85	53.43	70.95	113.20											
Re	$M\beta$		9	45	75	6	1.906	58.53600	3		42.92	53.52	71.08	113.49											
Au	$M\alpha_2$		10	100	79	6	2.118	58.53998	3		42.92	53.53	71.09	113.50											
Rb	Ll		7	3	37	6	1.482	58.54520	4		42.93	53.53	71.10	113.52											
Rb	$L\alpha_1$		8	100	37	6	1.694	58.54639	4		42.93	53.53	71.10	113.52											
Na	$SK\alpha_5$		5	2	11	0	1.058	58.58499	3	3	42.96	53.57	71.15	113.63											
Rb	$L\alpha_2$		8	10	37	6	1.692	58.60080	4		42.97	53.59	71.17	113.68											
Br	$L\alpha_{1,2}$		7	100	35	6	1.480	58.62219	4		42.99	53.61	71.20	113.75											
Nb	Ll		9	3	41	6	1.902	58.65839	4		43.01	53.64	71.25	113.85											

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sr	$L\beta_6$		9	3	38	6	1.901	58.67189	4		43.02	53.66	71.27	113.89											
Cd	M_3-M_5		1	1	48	6	0.211	58.70000	1		43.05	53.68	71.31	113.98											
Tb	$M\beta$		6	45	65	6	1.266	58.75200	3		43.09	53.74	71.39	114.14											
Mg	$SK\alpha_4$		6	8	12	1	1.264	58.84662	3	3	43.16	53.83	71.52	114.42											
Y	Ll		8	3	39	6	1.685	58.85039	4		43.16	53.83	71.52	114.43											
Na	$SK\alpha_4$		5	10	11	0	1.052	58.92999	3	3	43.22	53.91	71.63	114.67											
Mg	$SK\alpha_3$		6	8	12	1	1.262	58.94281	3	3	43.23	53.92	71.65	114.71											
Na	$SK\alpha_3$		5	10	11	0	1.050	59.02499	3	3	43.30	54.01	71.77	114.96											
Mg	$SK\alpha'$		6	2	12	1	1.259	59.08710	2	3	43.34	54.07	71.86	115.15											
Na	$SK\alpha'$		5	3	11	0	1.047	59.18500	3	3	43.42	54.16	71.99	115.45											
Fe	Ln		3	2	26	6	0.628	59.25000	2		43.47	54.23	72.08	115.65											
Rh	M_2-M_4		1	1	45	6	0.209	59.29999	1		43.51	54.28	72.15	115.80											
Mg	$K\alpha_{1,2}$		6	100	12	6	1.253	59.34000	4	3	43.54	54.32	72.21	115.93											
Tm	$M\alpha$		7	100	69	6	1.462	59.35999	2		43.55	54.34	72.24	115.99											
W	N_5-N_6		1		74	6	0.208	59.50000	1		43.66	54.48	72.44	116.42											
Rb	M_3-N_1		1		37	6	0.208	59.50000	1		43.66	54.48	72.44	116.42											
La	$M\alpha$	A	4	100	57	6	0.833	59.51999	2		43.68	54.50	72.46	116.49											
Na	$K\alpha_{1,2}$		5	100	11	6	1.041	59.55049	4	3	43.70	54.53	72.51	116.58											
Rh	M_3-N_1		2	10	45	6	0.416	59.59998	1		43.74	54.58	72.58	116.73											
Sr	$L8_1$		9	45	38	6	1.871	59.61508	4		43.75	54.59	72.60	116.78											
Au	$M\zeta_1$		8	2	79	6	1.660	59.72800	3		43.84	54.70	72.76	117.14											
Y	$L\beta_3$		10	3	39	6	2.072	59.83199	4		43.92	54.81	72.91	117.46											
Zn	$L\beta_1$		5	26	30	6	1.034	59.91499	3		43.98	54.89	73.02	117.72											
Tb	$M\alpha$		6	100	65	6	1.240	60.00000	2		44.05	54.97	73.14	117.99											
Sn	M_2-N_1		3	1	50	6	0.620	60.00000	1		44.05	54.97	73.14	117.99											
Er	$M\beta$		7	45	68	6	1.443	60.14398	3		44.16	55.12	73.35	118.45											
Y	$L8_4$		10	3	39	6	2.060	60.18599	4		44.19	55.16	73.41	118.59											
Pd	$M_1-N_{2,3}$		3	1	46	6	0.617	60.29997	1		44.28	55.27	73.57	118.95											
Hf	$M\alpha$		8	100	72	6	1.644	60.31200	3		44.29	55.28	73.59	118.99											
Ir	$M\beta$		10	45	77	6	2.053	60.37999	3		44.34	55.35	73.68	119.21											
Fe	Ll		3	8	26	6	0.615	60.44998	2		44.40	55.42	73.78	119.44											
Pt	$M\alpha_1$		10	100	78	6	2.050	60.46999	3		44.41	55.44	73.81	119.50											
Ag	M_3-M_5		1	1	47	6	0.205	60.50000	1		44.44	55.47	73.85	119.60											
Re	$M\alpha$		9	100	75	6	1.842	60.56099	3		44.48	55.53	73.94	119.80											
Pt	$M\alpha_2$		10	100	78	6	2.046	60.57999	3		44.50	55.55	73.97	119.86											
Sb	M_3-N_1		3	10	51	6	0.614	60.59999	1		44.51	55.57	74.00	119.93											
Kr	$L\beta_1$		8	35	36	6	1.636	60.60799	3		44.52	55.58	74.01	119.95											
Zr	$L\alpha_1$		10	100	40	6	2.042	60.70499	4		44.59	55.67	74.15	120.27											
Si	K8		9	2	14	6	1.836	60.77699	3	2	44.65	55.75	74.25	120.51											
Zr	$L\alpha_2$		10	10	40	6	2.040	60.77798	4		44.65	55.75	74.25	120.51											
Cd	$M_4-O_{2,3}$	A	2	10	48	6	0.408	60.79999	1		44.67	55.77	74.28	120.59											
Lu	$M\beta$		8	45	71	6	1.631	60.80800	3		44.67	55.78	74.29	120.61											
W	$M\beta$		9	45	74	6	1.835	60.81299	3		44.68	55.78	74.30	120.63											
Y	$L8_6$		10	3	39	6	2.034	60.94199	4		44.78	55.91	74.48	121.06											
Si	$K\beta_1$		9	2	14	1	1.829	61.00200	3	2	44.82	55.97	74.57	121.26											
Ge	$L8_1$		6	35	32	6	1.218	61.04999	3		44.86	56.02	74.64	121.42											
P	$SK\alpha_4$		10	5	15	1	2.029	61.08812	3	3	44.89	56.06	74.69	121.54											
Rb	$L8_3$		9	3	37	6	1.826	61.08839	4		44.89	56.06	74.69	121.55											
Ta	$N_5-N_{6,7}$		1		73	6	0.203	61.09999	1		44.90	56.07	74.71	121.58											
Cu	Ll		4	5	29	6	0.811	61.14400	3		44.93	56.11	74.77	121.73											
Se	$L\beta_1$		7	35	34	6	1.419	61.15059	4		44.94	56.12	74.78	121.75											
P	$SK\alpha_3$		10	5	15	1	2.027	61.16629	3	3	44.95	56.13	74.81	121.81											
Zn	$L\alpha_{1,2}$		5	100	30	6	1.012	61.26999	3		45.03	56.24	74.95	122.16											
Rb	$L\beta_4$		9	3	37	6	1.817	61.38629	4		45.12	56.35	75.12	122.55											
Cd	$M\gamma$		3	100	48	6	0.606	61.40996	2		45.14	56.38	75.15	122.63											
Mo	Ll		10	3	42	6	2.015	61.50800	4		45.22	56.48	75.30	122.97											
Gd	$M\beta$		6	45	64	6	1.209	61.52399	3		45.23	56.49	75.32	123.02											
P	$K\alpha_1$	H	10	100	15	6	2.013	61.56999	3	3	45.26	56.54	75.38	123.18											
P	$K\alpha_{1,2}$	H	10	150	15	6	2.013	61.57997	3	3	45.27	56.55	75.40	123.22											
Cd	M_5-O_3	A	2	1	48	6	0.402	61.59998	1		45.29	56.57	75.43	123.28											
P	$K\alpha_2$	H	10	50	15	6	2.012	61.59999	3	3	45.29	56.57	75.43	123.28											
Er	$M\alpha$		7	100	68	6	1.405	61.73999	2		45.40	56.71	75.63	123.77											
Sr	$L\alpha_1$		9	100	38	6	1.806	61.76518	4		45.42	56.73	75.67	123.86											
Ti	Ln		2	1	22	6	0.401	61.78000	2		45.43	56.75	75.69	123.91											
Sr	$L\alpha_2$		9	10	38	6	1.804	61.82729	4		45.46	56.80	75.76	124.07											

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Nb	$M_{4,5}O_{2,3}$	A	1	10	41	6	0.200	61.89999	1		45.52	56.87	75.86	124.33											
Pt	Mz_1		8	2	78	6	1.602	61.90399	3		45.52	56.87	75.87	124.34											
Ba	Mz		3	1	56	6	0.601	61.92000	2		45.54	56.89	75.89	124.40											
Ag	M_2-N_4		3	50	47	6	0.600	61.97997	2		45.58	56.95	75.98	124.61											
Sc	$L\beta_1$		2	10	21	6	0.400	62.03998	2		45.63	57.01	76.06	124.82											
Y	$L\beta_1$		10	45	39	6	1.995	62.12000	4		45.69	57.09	76.18	125.10											
Br	$L\beta_{3,4}$	H	8	2	35	6	1.596	62.13599	3		45.70	57.11	76.20	125.16											
Ga	$L\beta_{3,4}$		6	2	31	6	1.197	62.15399	3		45.72	57.12	76.23	125.22											
Ru	M_2-M_4		1	1	44	6	0.199	62.20000	1		45.75	57.17	76.29	125.39											
Nd	Mβ		5	55	60	6	0.996	62.20000	2		45.75	57.17	76.29	125.39											
Zr	Ll		9	3	40	6	1.792	62.26649	4		45.81	57.24	76.39	125.63											
Sn	Mz		2	1	50	6	0.397	62.47998	2		45.97	57.45	76.70	126.40											
As	$L\beta_{3,4}$		7	2	33	6	1.388	62.50299	3		45.99	57.47	76.73	126.48											
Kr	$L\alpha_{1,2}$		8	100	36	6	1.586	62.53600	3		46.01	57.51	76.78	126.60											
Ge	$L\alpha_{1,2}$		6	100	32	6	1.188	62.61659	4		46.08	57.59	76.90	126.89											
Ir	$M\alpha_1$		10	100	77	6	1.980	62.61998	3		46.08	57.59	76.90	126.91											
Co	$L\beta_1$		4	18	27	6	0.791	62.66399	3		46.11	57.64	76.97	127.07											
Os	Mβ		10	45	76	6	1.978	62.66998	3		46.12	57.64	76.98	127.09											
Sr	Ll		8	3	38	6	1.582	62.68959	4		46.13	57.66	77.00	127.16											
Sc	$L\alpha_{1,2}$		2	100	21	6	0.395	62.69998	2		46.14	57.67	77.02	127.20											
Ti	Ll		2	1	22	6	0.395	62.71997	2		46.16	57.69	77.05	127.27											
Lu	Mα		8	100	71	6	1.581	62.71999	3		46.16	57.69	77.05	127.27											
Ir	$M\alpha_2$		10	100	77	6	1.975	62.74998	3		46.18	57.72	77.09	127.38											
Ho	M8		7	45	67	6	1.383	62.75499	3		46.19	57.73	77.10	127.40											
Gd	Mα		6	100	64	6	1.185	62.75999	2		46.19	57.73	77.11	127.42											
Tl	Mz_1		9	2	81	6	1.777	62.76599	3		46.19	57.74	77.11	127.44											
W	$M\alpha_1$		9	100	74	6	1.775	62.84698	3		46.26	57.82	77.23	127.74											
Rb	$L\beta_6$		9	3	37	6	1.775	62.85779	4		46.27	57.83	77.25	127.78											
Ba	M_4-O_3		4	10	56	6	0.789	62.87999	2		46.28	57.85	77.28	127.87											
Pd	M_3-M_5		1	1	46	6	0.197	62.89999	1		46.30	57.87	77.31	127.94											
W	$M\alpha_2$		9	100	74	6	1.773	62.92799	3		46.32	57.90	77.35	128.05											
Se	$L\alpha_{1,2}$		7	100	34	6	1.379	62.92999	4		46.32	57.90	77.35	128.05											
Lu	N_4-N_6		1		71	6	0.197	63.00000	1		46.38	57.97	77.46	128.32											
N	Kα		2	100	7	6	0.392	63.19998	2	1	46.53	58.18	77.75	129.07											
Ta	Mβ		9	45	73	6	1.765	63.20699	3		46.54	58.18	77.76	129.10											
Yb	M8		8	45	70	6	1.567	63.27199	3		46.59	58.25	77.85	129.35											
Nd	Mα		5	100	60	6	0.978	63.39999	2		46.69	58.38	78.04	129.84											
V	$L\beta_{3,4}$	H	3	.1	23	6	0.585	63.56996	2		46.82	58.55	78.29	130.50											
Si	$SK\alpha_4$		9	3	14	1	1.754	63.59889	3	3	46.84	58.58	78.33	130.61											
U	N_4-N_6		2		92	6	0.390	63.59998	1		46.84	58.58	78.33	130.62											
Ba	M_4-O_2		4	10	56	6	0.779	63.64000	2		46.88	58.62	78.39	130.77											
Sr	$L\beta_3$		10	3	38	6	1.947	63.67200	4		46.90	58.65	78.44	130.90											
Rb	$L\beta_1$		9	45	37	6	1.752	63.68309	4		46.91	58.66	78.46	130.94											
Si	$SK\alpha_3$		9	6	14	1	1.752	63.69087	3	3	46.91	58.67	78.47	130.97											
Te	Mγ		4	100	52	6	0.778	63.71999	2		46.94	58.70	78.51	131.09											
Ba	Mγ		5	100	56	6	0.972	63.75000	2		46.96	58.73	78.55	131.21											
Cr	$L\beta_1$		3	20	24	6	0.583	63.80997	2		47.01	58.79	78.64	131.45											
Co	$L\alpha_{1,2}$		4	100	27	6	0.776	63.88799	3		47.07	58.87	78.76	131.76											
Sb	M_2-N_4		4	50	51	6	0.776	63.92000	2		47.09	58.90	78.80	131.89											
Te	M_4-$O_{2,3}$		3	10	52	6	0.581	64.01999	2		47.17	59.01	78.95	132.29											
Sr	$L8_4$		10	3	38	6	1.936	64.02599	4		47.18	59.01	78.96	132.31											
Si	$K\alpha_1$		9	100	14	6	1.740	64.12877	5	3	47.26	59.12	79.11	132.73											
Si	$K\alpha_{1,2}$		9	150	14	6	1.739	64.13620	5	3	47.26	59.12	79.12	132.76											
Si	$K\alpha_2$		9	50	14	6	1.739	64.15118	5	3	47.27	59.14	79.14	132.82											
Mo	Mz		1	10	42	6	0.193	64.37999	2		47.45	59.37	79.48	133.77											
Ho	Mα		7	100	67	6	1.347	64.39999	2		47.47	59.39	79.51	133.85											
Y	$L\alpha_1$		10	100	39	6	1.922	64.48799	4		47.54	59.48	79.64	134.22											
Eu	M8		6	45	63	6	1.153	64.50000	3		47.55	59.49	79.66	134.27											
Sn	M_3-N_1		3	10	50	6	0.577	64.50000	1		47.55	59.49	79.66	134.27											
Y	$L\alpha_2$		10	10	39	6	1.920	64.55798	4		47.59	59.55	79.75	134.52											
Ru	M_2-N_1		2	1	44	6	0.384	64.59998	1		47.63	59.59	79.81	134.69											
B	AK		1		5	1	0.192	64.59999	1		47.63	59.59	79.81	134.69											
Os	Mα	D	10	100	76	6	1.914	64.77998	3		47.77	59.78	80.08	135.47											
Cr	$L\alpha_{1,2}$		3	100	24	6	0.573	64.92000	2		47.88	59.92	80.28	136.07											
Br	$L8_1$		8	35	35	6	1.526	65.00079	4		47.94	60.00	80.40	136.43											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Re	Mβ		10	45	75	6	1.906	65.03999	3		47.97	60.04	80.46	136.60											
Ni	Ln		4	3	28	6	0.762	65.07996	2		48.00	60.08	80.52	136.78											
Yb	N_4-N_6		1		70	6	0.190	65.09999	1		48.02	60.10	80.55	136.87											
Nb	Ll		10	3	41	6	1.902	65.17598	4		48.08	60.18	80.67	137.21											
Sr	$Lβ_6$		10	3	38	6	1.901	65.19098	4		48.09	60.19	80.69	137.28											
Yb	Mα		8	100	70	6	1.521	65.19199	3		48.09	60.20	80.69	137.28											
Cu	$Lβ_1$		5	20	29	6	0.950	65.26498	3		48.15	60.27	80.80	137.61											
Ta	Mα		9	100	73	6	1.709	65.26799	3		48.15	60.27	80.80	137.62											
Pr	Mβ		5	45	59	6	0.949	65.29999	2		48.17	60.31	80.85	137.77											
Te	M_5-O_3		3	1	52	6	0.569	65.34000	2		48.21	60.35	80.91	137.95											
Ag	Mγ		3	100	47	6	0.568	65.45998	2		48.30	60.47	81.09	138.50											
Dy	Mβ		7	45	66	6	1.325	65.49899	3		48.33	60.51	81.15	138.68											
Rh	M_3-M_5		1	1	45	6	0.189	65.50000	1		48.33	60.51	81.15	138.69											
Mn	Ln		3	1	25	6	0.567	65.54997	2		48.37	60.56	81.23	138.92											
Lu	N_5-$N_{6,7}$		1		71	6	0.189	65.70000	1		48.49	60.71	81.45	139.63											
Hf	Mβ		9	45	72	6	1.697	65.72699	3		48.51	60.74	81.49	139.75											
Eu	Mα		6	100	63	6	1.131	65.75999	2		48.54	60.78	81.54	139.91											
Rb	$Lα_1$		9	100	37	6	1.694	65.86469	4		48.62	60.88	81.70	140.41											
As	$Lβ_1$		7	35	33	6	1.317	65.89870	4		48.64	60.92	81.75	140.58											
Rb	$Lα_2$		9	10	37	6	1.692	65.92589	4		48.67	60.94	81.79	140.71											
Tm	Mβ		8	45	69	6	1.503	65.99199	3		48.72	61.01	81.89	141.03											
Ga	$Lβ_1$		6	35	31	6	1.125	66.13799	3		48.83	61.16	82.11	141.76											
Al	$SKα_4$		8	4	13	1	1.499	66.16537	3	3	48.85	61.19	82.15	141.90											
Nb	M_2-N_4		2	50	41	6	0.375	66.19998	1		48.88	61.23	82.20	142.07											
Y	Ll		9	3	39	6	1.685	66.20668	4		48.89	61.23	82.21	142.10											
Sr	$Lβ_1$		10	45	38	6	1.871	66.23898	4		48.91	61.27	82.26	142.27											
Al	$SKα_3$		8	8	13	1	1.496	66.29362	3	3	48.95	61.32	82.35	142.54											
Pd	M_2-N_4		3	50	46	6	0.561	66.29997	1		48.96	61.33	82.35	142.58											
Al	$SKα'$		8	2	13	1	1.493	66.43793	3	3	49.07	61.47	82.56	143.29											
Se	$Lβ_{3,4}$	H	8	2	34	6	1.490	66.56799	3		49.17	61.60	82.76	143.97											
Cu	$Lα_{1,2}$		5	100	29	6	0.930	66.67999	3		49.26	61.72	82.93	144.57											
Al	$Kα_1$		8	100	13	6	1.486	66.71471	5	3	49.29	61.75	82.98	144.75											
Pr	Mα		5	100	59	6	0.929	66.71500	3		49.29	61.75	82.98	144.75											
Al	$Kα_{1,2}$		8	150	13	6	1.486	66.72107	5	3	49.29	61.76	82.99	144.79											
Al	$Kα_2$		8	50	13	6	1.486	66.73383	5	3	49.30	61.77	83.01	144.86											
Ni	Ll		4	8	28	6	0.743	66.77197	3		49.33	61.81	83.07	145.06											
Mn	Ll		3	2	25	6	0.556	66.86998	2		49.41	61.91	83.22	145.60											
Rb	Ll		8	3	37	6	1.482	66.90880	4		49.44	61.95	83.28	145.82											
Br	$Lα_{1,2}$		8	100	35	6	1.480	66.99680	4		49.51	62.04	83.41	146.31											
Ag	$M_{4,5}O_{2,3}$	A	2	1	47	6	0.370	67.00000	1		49.51	62.05	83.42	146.33											
Dy	Mα		7	100	66	6	1.293	67.12999	2		49.61	62.18	83.62	147.07											
Th	N_4-N_6		2		90	6	0.369	67.13998	2		49.62	62.19	83.63	147.13											
Au	Mz_1		9	2	79	6	1.660	67.19398	3		49.66	62.25	83.71	147.44											
Re	Mα		10	100	75	6	1.842	67.28998	3		49.74	62.34	83.86	148.01											
Cl	Ln		1	100	17	6	0.184	67.32999	2		49.77	62.39	83.92	148.25											
Si	Kβ		10	2	14	6	1.836	67.52998	3	2	49.93	62.59	84.23	149.47											
W	Mβ		10	45	74	6	1.835	67.56999	3		49.96	62.63	84.29	149.72											
B	Kα		1	100	5	6	0.183	67.59999	1	0	49.99	62.66	84.34	149.91											
Sm	Mβ		6	45	62	6	1.100	67.62000	2		50.00	62.69	84.37	150.03											
Sb	Mγ		4	100	51	6	0.733	67.67999	2		50.05	62.75	84.46	150.42											
As	$Lα_{1,2}$		7	100	33	6	1.282	67.69629	4		50.06	62.76	84.48	150.52											
Sn	M_2-N_4		4	50	50	6	0.732	67.71997	2		50.08	62.79	84.52	150.67											
Ga	$Lα_{1,2}$		6	100	31	6	1.098	67.75200	3		50.11	62.82	84.57	150.88											
Si	$Kβ_1$		10	2	14	1	1.829	67.78000	3	2	50.13	62.85	84.61	151.06											
Tm	Mα		8	100	69	6	1.462	67.84000	2		50.17	62.91	84.70	151.46											
Hf	Mα		9	100	72	6	1.644	67.85098	3		50.18	62.92	84.72	151.53											
Rb	$Lβ_3$		10	3	37	6	1.826	67.87599	4		50.20	62.95	84.76	151.70											
Cl	Ll		1	100	17	6	0.183	67.89999	2		50.22	62.97	84.80	151.86											
Kr	$Lβ_1$		9	35	36	6	1.636	68.18399	3		50.45	63.27	85.24	153.84											
Th	O_3-$P_{4,5}$		1		90	6	0.182	68.20000	1		50.46	63.28	85.26	153.96											
Rb	$Lβ_4$		10	3	37	6	1.817	68.20699	4		50.47	63.29	85.27	154.01											
Ru	M_3-M_5		1	1	44	6	0.181	68.29999	1		50.54	63.39	85.41	154.69											
Zn	Ln		5	2	30	6	0.906	68.39999	2		50.62	63.49	85.57	155.45											
Lu	Mβ		9	45	71	6	1.631	68.40900	3		50.63	63.50	85.58	155.52											
Tb	Mβ		7	45	65	6	1.266	68.54399	3		50.73	63.64	85.79	156.59											

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Sr	$L\alpha_1$		10	100	38	6	1.806	68.62799	4		50.80	63.73	85.92	157.27											
Mg	$SK\alpha_4$		7	8	12	1	1.264	68.65439	3	3	50.82	63.76	85.96	157.50											
Sr	$L\alpha_2$		10	10	38	6	1.804	68.69699	4		50.85	63.80	86.03	157.86											
Cd	M_2-N_1		3	1	48	6	0.541	68.69998	1		50.86	63.80	86.04	157.88											
Er	$M\beta$		8	45	68	6	1.443	68.73599	3		50.88	63.84	86.09	158.19											
Ce	$M\beta$		5	45	58	6	0.902	68.75000	2		50.90	63.86	86.11	158.31											
Mg	$SK\alpha_3$		7	8	12	1	1.262	68.76662	3	3	50.91	63.87	86.14	158.46											
Sm	$M\alpha$		6	100	62	6	1.081	68.81999	2		50.95	63.93	86.22	158.93											
Mo	M_2-M_4		1	1	42	6	0.180	68.89999	1		51.01	64.01	86.35	159.66											
Mg	$SK\alpha'$		7	2	12	1	1.259	68.93495	2	3	51.04	64.05	86.40	159.98											
Fe	$L\beta_1$		4	20	26	6	0.718	69.03998	2		51.13	64.16	86.57	161.00											
Zr	Ll		10	3	40	6	1.792	69.18500	4		51.24	64.31	86.79	162.50											
Mg	$K\alpha_{1,2}$		7	100	12	6	1.253	69.23000	4	3	51.28	64.35	86.86	162.99											
Yb	$N_5-N_{6,7}$		1		70	6	0.179	69.29999	1		51.33	64.43	86.97	163.78											
U	$N_5-N_{6,7}$		2		92	6	0.356	69.59998	1		51.57	64.74	87.44	167.74											
Pt	$M\zeta_1$		9	2	78	6	1.602	69.64200	3		51.60	64.78	87.51	168.41											
Tl	$M\zeta_1$		10	2	81	6	1.777	69.73999	3		51.68	64.89	87.67	170.12											
Nb	$M\gamma$		2	100	41	6	0.355	69.79999	1		51.73	64.95	87.76	171.34											
W	$M\alpha_1$		10	100	74	6	1.775	69.82999	3		51.75	64.98	87.81	172.01											
Rb	$L\beta_6$		10	3	37	6	1.775	69.84200	4		51.76	64.99	87.83	172.30											
Se	$L\beta_1$		8	35	34	6	1.419	69.88640	4		51.80	65.04	87.90	173.47											
Pd	$M\gamma$	H	3	100	46	6	0.532	69.89996	1		51.81	65.05	87.92	173.87											
Br	$L\beta_{3,4}$	H	9	2	35	6	1.596	69.90298	3		51.81	65.06	87.92	173.97											
W	$M\alpha_2$		10	100	74	6	1.773	69.91998	3		51.83	65.07	87.95	174.52											
Tb	$M\alpha$		7	100	65	6	1.240	70.00000	2		51.89	65.16	88.08												
Zr	$M_{4,5}O_{2,3}$	A	1		40	6	0.177	70.00000	1		51.89	65.16	88.08												
Zn	Ll		5	4	30	6	0.884	70.09999	2		51.97	65.26	88.23												
Ce	$M\alpha$		5	100	58	6	0.883	70.20000	2		52.05	65.37	88.39												
Ta	$M\beta$		10	45	73	6	1.765	70.23000	3		52.07	65.40	88.44												
Sc	Ln		2	1	21	6	0.353	70.25998	2		52.10	65.43	88.49												
Na	$SK\alpha_5$		6	2	11	0	1.058	70.30199	3	3	52.13	65.47	88.55												
Kr	$L\alpha_{1,2}$		9	100	36	6	1.586	70.35298	3		52.17	65.53	88.64												
Fe	$L\alpha_{1,2}$		4	100	26	6	0.705	70.35999	2		52.18	65.53	88.65												
Sr	Ll		9	3	38	6	1.582	70.52579	4		52.31	65.71	88.91												
Lu	$M\alpha$		9	100	71	6	1.581	70.55998	3		52.34	65.74	88.97												
Er	$M\alpha$		8	100	68	6	1.405	70.56000	2		52.34	65.74	88.97												
Mo	M_2-N_1		2	1	42	6	0.351	70.59998	1		52.37	65.79	89.03												
Si	$SK\alpha_4$		10	3	14	1	1.754	70.66544	3	3	52.42	65.86	89.13												
Na	$SK\alpha_4$		6	10	11	0	1.052	70.71599	3	3	52.46	65.91	89.21												
Rb	$L8_1$		10	45	37	6	1.752	70.75899	4		52.49	65.95	89.28												
Si	$SK\alpha_3$		10	6	14	1	1.752	70.76764	3	3	52.50	65.96	89.30												
Na	$SK\alpha_3$		6	10	11	0	1.050	70.82999	3	3	52.55	66.03	89.40												
O	$K\alpha$		3	100	8	6	0.525	70.85999	2	1	52.57	66.06	89.45												
Na	$SK\alpha'$		6	3	11	0	1.047	71.02199	3	3	52.70	66.23	89.70												
Sc	Ll		2	1	21	6	0.348	71.17999	2		52.83	66.40	89.96												
Yb	$M\beta$		9	45	70	6	1.567	71.18098	3		52.83	66.40	89.96												
Ge	$L\beta_1$		7	35	32	6	1.218	71.22499	3		52.87	66.44	90.03												
Si	$K\alpha_1$		10	100	14	6	1.740	71.25420	5	3	52.89	66.47	90.08												
Si	$K\alpha_{1,2}$		10	150	14	6	1.739	71.26244	5	3	52.90	66.48	90.09												
Si	$K\alpha_2$		10	50	14	6	1.739	71.27908	5	3	52.91	66.50	90.12												
Ni	$L8_1$		5	21	28	6	0.869	71.35500	3		52.97	66.58	90.24												
As	$L8_{3,4}$		8	2	33	6	1.388	71.43199	3		53.03	66.66	90.36												
Na	$K\alpha_{1,2}$		6	100	11	6	1.041	71.46059	4	3	53.06	66.69	90.41												
Co	Ln		4	2	27	6	0.694	71.47998	2		53.07	66.71	90.44												
V	$L8_1$		3	10	23	6	0.519	71.63997	2		53.20	66.88	90.70												
Ho	$M8$		8	45	67	6	1.383	71.71999	3		53.26	66.97	90.83												
Sn	$M\gamma$		4	100	50	6	0.691	71.75995	2		53.29	67.01	90.90												
Gd	$M\beta$		7	45	64	6	1.209	71.77798	3		53.31	67.03	90.92												
Ca	$L\beta_1$	A	2	10	20	6	0.345	71.87997	2		53.39	67.14	91.09												
Zn	$L8_1$		6	26	30	6	1.034	71.89799	3		53.41	67.15	91.12												
Se	$L\alpha_{1,2}$		8	100	34	6	1.379	71.92000	4		53.42	67.18	91.16												
Nb	M_2-M_4		1	1	41	6	0.172	72.09999	1		53.57	67.37	91.45												
Nb	$M\zeta$		1	1	41	6	0.172	72.18999	2		53.64	67.46	91.60												
Ga	$L8_{3,4}$		7	2	31	6	1.197	72.51299	3		53.90	67.81	92.12												
Ta	$M\alpha$		10	100	73	6	1.709	72.51999	3		53.90	67.81	92.14												

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
La	M8	A	5	45	57	6	0.854	72.54999	2		53.93	67.85	92.18												
Th	N_5-$N_{6,7}$		2		90	6	0.341	72.63998	2		54.00	67.94	92.33												
Ca	$L\alpha_{1,2}$	A	2	100	20	6	0.341	72.65997	2		54.02	67.96	92.37												
Er	N_4-N_6		1		68	6	0.171	72.70000	1		54.05	68.01	92.43												
V	$L\alpha_{1,2}$		3	100	23	6	0.511	72.75000	2		54.09	68.06	92.51												
F	SKα^{11}		4	30	9	1	0.681	72.79999	2	3	54.13	68.11	92.60												
Ni	$L\alpha_{1,2}$		5	100	28	6	0.851	72.80499	3		54.13	68.12	92.60												
F	SKα^{1}		4	35	9	1	0.680	72.87994	2	3	54.19	68.20	92.73												
Cr	Ln		3	1	24	6	0.510	72.89996	2		54.21	68.22	92.76												
Hf	Mβ		10	45	72	6	1.697	73.02998	3		54.31	68.36	92.97												
Ne	$K\alpha_{1,2}$		5	100	10	6	0.848	73.04999	3		54.33	68.38	93.01												
Ge	$L\alpha_{1,2}$		7	100	32	6	1.188	73.05269	4		54.33	68.38	93.01												
Br	$L\beta_1$		9	35	35	6	1.526	73.12589	4		54.39	68.46	93.13												
Co	Ll		4	9	27	6	0.678	73.16797	3		54.43	68.50	93.20												
Rb	$L\alpha_1$		10	100	37	6	1.694	73.18298	4		54.44	68.52	93.23												
Ag	M_5-N_1		3	1	47	6	0.508	73.19998	1		54.45	68.54	93.26												
Gd	Mα		7	100	64	6	1.185	73.21999	2		54.47	68.56	93.29												
Rb	$L\alpha_2$		10	10	37	6	1.692	73.25099	4		54.49	68.59	93.34												
F	Kα		4	100	9	6	0.677	73.27997	2	2	54.52	68.62	93.39												
Yb	Mα		9	100	70	6	1.521	73.34099	3		54.57	68.69	93.49												
Cd	M_3-N_1		3	10	48	6	0.506	73.50000	1		54.69	68.86	93.75												
Zn	$L\alpha_{1,2}$		6	100	30	6	1.012	73.52399	3		54.71	68.88	93.79												
Y	Ll		10	3	39	6	1.685	73.56299	4		54.74	68.93	93.86												
Cd	Mz		2	1	48	6	0.337	73.59998	1		54.77	68.96	93.92												
Ho	Mα		8	100	67	6	1.347	73.59999	2		54.77	68.96	93.92												
Tm	Mβ		9	45	69	6	1.503	74.24098	3		55.29	69.65	95.00												
Cr	Ll		3	1	24	6	0.500	74.34000	2		55.37	69.76	95.16												
La	Mα	A	5	100	57	6	0.833	74.39999	2		55.42	69.82	95.26												
Al	SKα_4		9	4	13	1	1.499	74.43605	3	3	55.45	69.86	95.32												
Al	SKα_3		9	8	13	1	1.496	74.58032	3	3	55.57	70.02	95.57												
Nd	Mβ		6	55	60	6	0.996	74.63998	2		55.61	70.08	95.67												
Au	Mz_1		10	2	79	6	1.660	74.65999	3		55.63	70.10	95.70												
Al	SKα^{1}		9	2	13	1	1.493	74.74266	3	3	55.70	70.19	95.84												
Pd	$M_{4,5}O_{2,3}$	A	2	10	46	6	0.331	74.79999	1		55.74	70.25	95.94												
Dy	Mβ		8	45	66	6	1.325	74.85599	3		55.79	70.31	96.04												
Se	$L\beta_{3,4}$	H	9	2	34	6	1.490	74.88899	3		55.82	70.35	96.09												
Mo	M_3-M_5		1	10	42	6	0.166	74.89999	1		55.83	70.36	96.11												
Mo	M_3-N_1		2	100	42	6	0.331	75.00000	1		55.91	70.47	96.28												
Rh	Mγ		3	100	45	6	0.496	75.02998	2		55.93	70.50	96.33												
Al	Kα_1		9	100	13	6	1.486	75.05405	5	3	55.95	70.53	96.37												
Al	$K\alpha_{1,2}$		9	150	13	6	1.486	75.06120	5	3	55.96	70.53	96.39												
Al	Kα_2		9	50	13	6	1.486	75.07556	5	3	55.97	70.55	96.41												
Eu	Mβ		7	45	63	6	1.153	75.25000	3		56.11	70.74	96.71												
Rb	Ll		9	3	37	6	1.482	75.27238	4		56.13	70.76	96.75												
As	$L\beta_1$		8	35	33	6	1.317	75.31279	4		56.16	70.81	96.82												
Br	$L\alpha_{1,2}$		9	100	35	6	1.480	75.37138	4		56.21	70.87	96.92												
Hf	Mα		10	100	72	6	1.644	75.38998	3		56.22	70.89	96.95												
Kr	$L\beta_1$		10	35	36	6	1.636	75.75998	3		56.52	71.29	97.59												
Sn	M_4-$O_{2,3}$		3	10	50	6	0.490	75.89996	1		56.64	71.44	97.83												
Lu	Mβ		10	45	71	6	1.631	76.00999	3		56.73	71.56	98.02												
Nd	Mα		6	100	60	6	0.978	76.07999	2		56.78	71.64	98.14												
Er	N_5-$N_{6,7}$		1		68	6	0.162	76.29999	1		56.96	71.88	98.52												
Tm	Mα		9	100	69	6	1.462	76.31999	2		56.98	71.90	98.56												
Te	M_3-N_1		4	10	52	6	0.649	76.39996	1		57.04	71.99	98.70												
Cu	Ll		5	5	29	6	0.811	76.42999	3		57.07	72.02	98.75												
Mn	$L\beta_1$		4	30	25	6	0.649	76.43994	2		57.08	72.03	98.77												
Ba	Mγ		6	100	56	6	0.972	76.50000	2		57.13	72.10	98.87												
Ru	M_2-N_4		3	1	44	6	0.486	76.50000	2		57.13	72.10	98.87												
Zr	M_2-M_4		1		40	6	0.162	76.70000	1		57.29	72.31	99.22												
Dy	Mα		8	100	66	6	1.293	76.71999	2		57.31	72.34	99.26												
Eu	Mα		7	100	63	6	1.131	76.71999	2		57.31	72.34	99.26												
Nb	M_2-N_1		2	1	41	6	0.323	76.79999	1		57.37	72.42	99.40												
Br	M_2-N_1		1		35	6	0.161	76.89999	1		57.45	72.53	99.57												
Sn	M_5-O_3		3	1	50	6	0.482	77.09999	1		57.62	72.75	99.93												
Ga	$L\beta_1$		7	35	31	6	1.125	77.16100	3		57.67	72.82	100.04												

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Er	$M\beta$		9	45	68	6	1.443	77.32799	3		57.80	73.00	100.33												
As	$L\alpha_{1,2}$		8	100	33	6	1.282	77.36719	4		57.83	73.04	100.40												
Pt	$M\zeta_1$		10	2	78	6	1.602	77.37999	3		57.84	73.06	100.42												
Cd	M_2-N_4		4	50	48	6	0.639	77.59998	2		58.02	73.30	100.82												
Br	$L\beta_{3,4}$		H10	2	35	6	1.596	77.66998	3		58.08	73.38	100.94												
Mn	$L\alpha_{1,2}$		4	100	25	6	0.637	77.79999	2		58.19	73.52	101.17												
Ag	M_3-N_1		3	10	47	6	0.477	78.00000	1		58.35	73.74	101.53												
Kr	$L\alpha_{1,2}$		10	100	36	6	1.586	78.16998	3		58.49	73.93	101.84												
Cu	$L\beta_1$		6	20	29	6	0.950	78.31799	3		58.61	74.09	102.11												
Co	$L\beta_1$		5	18	27	6	0.791	78.32999	3		58.62	74.10	102.13												
Tb	$M\beta$		8	45	65	6	1.266	78.33600	3		58.63	74.11	102.14												
Pr	$M\beta$		6	45	59	6	0.949	78.35999	2		58.65	74.14	102.18												
Sr	Ll		10	3	38	6	1.582	78.36198	4		58.65	74.14	102.19												
Lu	$M\alpha$		10	100	71	6	1.581	78.39998	3		58.68	74.18	102.26												
Nb	M_3-M_5		1	1	41	6	0.158	78.39999	1		58.68	74.18	102.26												
Mg	$SK\alpha_4$		8	8	12	1	1.264	78.46216	3	3	58.73	74.25	102.37												
Mg	$SK\alpha_3$		8	8	12	1	1.262	78.59042	3	3	58.84	74.39	102.60												
Pd	M_2-N_1		3	1	46	6	0.473	78.59999	1		58.85	74.40	102.62												
Ba	M_4-O_3		5	10	56	6	0.789	78.59999	2		58.85	74.40	102.62												
Se	$L\beta_1$		9	35	34	6	1.419	78.62219	4		58.86	74.43	102.66												
Mg	$SK\alpha'$		8	2	12	1	1.259	78.78281	2	3	59.00	74.60	102.95												
Sm	$M\beta$		7	45	62	6	1.100	78.88998	2		59.08	74.72	103.15												
Fe	Ln		4	2	26	6	0.628	79.00000	2		59.17	74.85	103.35												
Ga	$L\alpha_{1,2}$		7	100	31	6	1.098	79.04399	3		59.21	74.89	103.43												
Yb	$M\beta$		10	45	70	6	1.567	79.08998	3		59.25	74.95	103.52												
Mg	$K\alpha_{1,2}$		8	100	12	6	1.253	79.12000	4	3	59.27	74.98	103.57												
Er	$M\alpha$		9	100	68	6	1.405	79.37999	2		59.49	75.27	104.05												
Ag	$M\zeta$		2	1	47	6	0.312	79.53998	2		59.62	75.45	104.35												
Ba	M_4-O_2		5	10	56	6	0.779	79.54999	2		59.63	75.46	104.37												
Te	$M\gamma$		5	100	52	6	0.778	79.64999	2		59.71	75.57	104.55												
Br	M_3-N_1		1		35	6	0.155	79.79999	1		59.83	75.74	104.83												
Co	$L\alpha_{1,2}$		5	100	27	6	0.776	79.85999	3		59.88	75.80	104.94												
Sb	M_2-N_4		5	50	51	6	0.776	79.89999	2		59.92	75.85	105.02												
Tb	$M\alpha$		8	100	65	6	1.240	80.00000	2		60.00	75.96	105.20												
Cu	$L\alpha_{1,2}$		6	100	29	6	0.930	80.01599	3		60.01	75.98	105.23												
Pr	$M\alpha$		6	100	59	6	0.929	80.05798	3		60.05	76.02	105.31												
Te	$M\zeta$		3	1	52	6	0.464	80.15996	2		60.13	76.14	105.50												
Sm	$M\alpha$		7	100	62	6	1.081	80.28999	2		60.24	76.28	105.75												
As	$L\beta_{3,4}$		9	2	33	6	1.388	80.36099	3		60.30	76.36	105.88												
Fe	Ll		4	8	26	6	0.615	80.59998	2		60.50	76.63	106.34												
Ho	$M\beta$		9	45	67	6	1.383	80.68498	3		60.57	76.73	106.50												
Rn	$M\gamma$		3	100	44	6	0.461	80.69998	1		60.58	76.74	106.53												
Sb	M_3-N_1		4	10	51	6	0.614	80.79999	1		60.66	76.86	106.72												
Zr	$M\zeta_2$		1		40	6	0.153	80.89999	1		60.75	76.97	106.91												
Se	$L\alpha_{1,2}$		9	100	34	6	1.379	80.90999	4		60.75	76.98	106.93												
Ca	Ln		2	1	20	6	0.306	80.91998	2		60.76	76.99	106.95												
Ti	$L\beta_1$		3	10	22	6	0.458	81.14996	2		60.95	77.25	107.39												
Br	$L\beta_1$		10	35	35	6	1.526	81.25099	4		61.04	77.37	107.58												
Ni	Ln		5	3	28	6	0.762	81.34995	2		61.12	77.48	107.77												
Ge	$L\beta_1$		8	35	32	6	1.218	81.39999	3		61.16	77.53	107.87												
Nb	M_3-N_1		2	10	41	6	0.305	81.39999	1		61.16	77.53	107.87												
Yb	$M\alpha$		10	100	70	6	1.521	81.48999	3		61.24	77.64	108.04												
Y	M_2-M_4		1		39	6	0.152	81.50000	1		61.24	77.65	108.06												
Rh	$M_{4,5}O_{2,3}$	A	2	10	45	6	0.303	81.79999	1		61.49	77.99	108.65												
Cd	$M\gamma$		4	100	48	6	0.606	81.87994	2		61.56	78.08	108.80												
Ca	Ll		2	1	20	6	0.303	81.91998	2		61.59	78.12	108.88												
Na	$SK\alpha_5$		7	2	11	0	1.058	82.01898	3	3	61.68	78.24	109.07												
V	Ln		3	1	23	6	0.453	82.01999	2		61.68	78.24	109.08												
Gd	$M\beta$		8	45	64	6	1.209	82.03200	3		61.69	78.25	109.10												
Zn	Ln		6	2	30	6	0.906	82.07999	2		61.73	78.30	109.19												
Zr	M_3-M_5		1		40	6	0.151	82.09999	1		61.74	78.33	109.23												
Zr	$M\zeta_1$		1		40	6	0.151	82.09999	1		61.74	78.33	109.23												
Ti	$L\alpha_{1,2}$		3	100	22	6	0.452	82.25999	2		61.88	78.51	109.55												
Tm	$M\beta$		10	45	69	6	1.503	82.48999	3		62.07	78.77	110.00												
Ce	$M\beta$		6	45	58	6	0.902	82.50000	2		62.08	78.78	110.02												

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Na	$SK\alpha_4$		7	10	11	0	1.052	82.50198	3	3	62.08	78.79	110.03												
Na	$SK\alpha_3$		7	10	11	0	1.050	82.63499	3	3	62.19	78.94	110.29												
Ag	M_2-N_4		4	50	47	6	0.600	82.63995	2		62.20	78.94	110.30												
Al	$SK\alpha_4$		10	4	13	1	1.499	82.70673	3	3	62.25	79.02	110.43												
Ho	$M\alpha$		9	100	67	6	1.347	82.79999	2		62.33	79.13	110.62												
Na	$SK\alpha'$		7	3	11	0	1.047	82.85899	3	3	62.38	79.19	110.74												
Al	$SK\alpha_3$		10	8	13	1	1.496	82.86703	3	3	62.39	79.20	110.75												
Ga	$L8_{3,4}$		8	2	31	6	1.197	82.87199	3		62.39	79.21	110.76												
Dy	$N_{4,5}N_{6,7}$		1		66	6	0.149	83.00000	0		62.50	79.35	111.02												
Al	$SK\alpha'$		10	2	13	1	1.493	83.04741	3	3	62.54	79.41	111.12												
Se	$L\beta_{3,4}$	H	10	2	34	6	1.490	83.20999	3		62.67	79.60	111.44												
V	Ll		3	1	23	6	0.446	83.30997	2		62.76	79.71	111.65												
Na	$K\alpha_{1,2}$		7	100	11	6	1.041	83.37070	4	3	62.81	79.78	111.77												
Al	$K\alpha_1$		10	100	13	6	1.486	83.39339	5	3	62.83	79.81	111.82												
S	Ll,n		1	100	16	6	0.149	83.39999	1		62.83	79.81	111.83												
Al	$K\alpha_{1,2}$		10	150	13	6	1.486	83.40134	5	3	62.83	79.81	111.83												
Al	$K\alpha_2$		10	50	13	6	1.486	83.41728	5	3	62.85	79.83	111.86												
Ni	Ll		5	8	28	6	0.743	83.46497	3		62.89	79.89	111.96												
Ge	$L\alpha_{1,2}$		8	100	32	6	1.188	83.48878	4		62.91	79.92	112.01												
Rb	Ll		10	3	37	6	1.482	83.63599	4		63.03	80.08	112.31												
Gd	$M\alpha$		8	100	64	6	1.185	83.67999	2		63.07	80.14	112.40												
Pd	M_3-N_1		3	10	46	6	0.444	83.69998	1		63.08	80.16	112.44												
Br	$L\alpha_{1,2}$		10	100	35	6	1.480	83.74599	4		63.12	80.21	112.53												
Zn	$L\beta_1$		7	26	30	6	1.034	83.88100	3		63.24	80.37	112.81												
Zn	Ll		6	4	30	6	0.884	84.12000	2		63.44	80.64	113.31												
U	N_6-O_5		2		92	6	0.294	84.19998	1		63.50	80.74	113.47												
Dy	$M\beta$		9	45	66	6	1.325	84.21298	3		63.52	80.75	113.50												
Ce	$M\alpha$		6	100	58	6	0.883	84.23999	2		63.54	80.78	113.55												
Rh	M_2-N_1		3	1	45	6	0.441	84.29997	1		63.59	80.85	113.68												
Pb	N_4-N_6		2		82	6	0.293	84.59998	1		63.84	81.20	114.31												
Sb	$M\gamma$		5	100	51	6	0.733	84.59999	2		63.84	81.20	114.31												
Sn	M_2-N_4		5	50	50	6	0.732	84.64996	2		63.88	81.26	114.41												
As	$L\beta_1$		9	35	33	6	1.317	84.72688	4		63.95	81.35	114.57												
Tm	$M\alpha$		10	100	69	6	1.462	84.79999	2		64.01	81.43	114.73												
Cr	$L\beta_1$		4	20	24	6	0.583	85.07996	2		64.25	81.76	115.32												
Te	M_4-$O_{2,3}$		4	10	52	6	0.581	85.35999	2		64.48	82.08	115.92												
Ni	$L\beta_1$		6	21	28	6	0.869	85.62599	3		64.71	82.40	116.49												
Sr	M_2-M_4		1		38	6	0.145	85.70000	1		64.77	82.48	116.65												
Zn	$L\alpha_{1,2}$		7	100	30	6	1.012	85.77798	3		64.84	82.57	116.82												
Er	$M\beta$		10	45	68	6	1.443	85.91998	3		64.96	82.74	117.13												
Eu	$M\beta$		8	45	63	6	1.153	86.00000	3		65.03	82.83	117.30												
Tb	$N_{4,5}N_{6,7}$		1		65	6	0.144	86.00000	0		65.03	82.83	117.30												
Sn	M_3-N_1		4	10	50	6	0.577	86.00000	1		65.03	82.83	117.30												
Fe	$L8_1$		5	20	26	6	0.718	86.29997	2		65.28	83.19	117.96												
Dy	$M\alpha$		9	100	66	6	1.293	86.30998	2		65.29	83.20	117.99												
Y	M_3-$M_{4,5}$		1		39	6	0.143	86.50000	1		65.45	83.42	118.41												
Cr	$L\alpha_{1,2}$		4	100	24	6	0.573	86.56000	2		65.50	83.49	118.54												
U	N_6-O_4		2		92	6	0.286	86.59998	1		65.54	83.54	118.63												
Sb	$M\zeta$		3	1	51	6	0.429	86.63997	2		65.57	83.59	118.72												
As	$L\alpha_{1,2}$		9	100	33	6	1.282	87.03809	4		65.91	84.06	119.61												
La	$M\beta$	A	6	45	57	6	0.854	87.05998	2		65.93	84.09	119.66												
Nd	$M\beta$		7	55	60	6	0.996	87.07999	2		65.95	84.11	119.71												
Pd	$M\zeta$		2	1	46	6	0.284	87.19998	1		66.05	84.25	119.98												
Ag	$M\gamma$		4	100	47	6	0.568	87.27997	2		66.12	84.35	120.16												
Se	$L\beta_1$		10	35	34	6	1.419	87.35799	4		66.18	84.44	120.34												
Ni	$L\alpha_{1,2}$		6	100	28	6	0.851	87.36600	3		66.19	84.45	120.36												
Ne	$K\alpha_{1,2}$		6	100	10	6	0.848	87.65999	3		66.44	84.80	121.04												
Eu	$M\alpha$		8	100	63	6	1.131	87.67999	2		66.46	84.82	121.08												
Fe	$L\alpha_{1,2}$		5	100	26	6	0.705	87.94998	2		66.69	85.15	121.71												
Tb	$M\beta$		9	45	65	6	1.266	88.12799	3		66.84	85.36	122.13												
Ga	$L\beta_1$		8	35	31	6	1.125	88.18399	3		66.89	85.43	122.26												
Er	$M\alpha$		10	100	68	6	1.405	88.20000	2		66.91	85.45	122.30												
Mg	$SK\alpha_4$		9	8	12	1	1.264	88.26993	3	3	66.97	85.53	122.46												
Pd	M_2-N_4		4	50	46	6	0.561	88.39996	1		67.08	85.69	122.77												
Mg	$SK\alpha_3$		9	8	12	1	1.262	88.41423	3	3	67.09	85.70	122.80												

El	Line	C	N	I	Z	R	KeV	Lambda 10⁻	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Mg	$SK\alpha'$		9	2	12	1	1.259	88.63066	2	3	67.28	85.96	123.32												
Nd	$M\alpha$		7	100	60	6	0.978	88.75999	2		67.39	86.12	123.63												
Mg	$K\alpha_{1,2}$		9	100	12	6	1.253	89.00999	4	3	67.60	86.42	124.24												
Mn	Ll		4	2	25	6	0.556	89.15997	2		67.73	86.60	124.60												
Ba	$M\gamma$		7	100	56	6	0.972	89.25000	2		67.81	86.71	124.82												
La	$M\alpha$	A	6	100	57	6	0.833	89.27998	2		67.84	86.75	124.90												
As	$L\beta_{3,4}$		10	2	33	6	1.388	89.28999	3		67.84	86.76	124.92												
Co	Ln		5	2	27	6	0.694	89.34998	2		67.90	86.83	125.07												
Rh	M_3-N_1		3	10	45	6	0.416	89.39996	1		67.94	86.90	125.19												
C	$K\alpha$		2	100	6	6	0.277	89.39999	1	1	67.94	86.90	125.19												
Ru	$M_{4,5}O_{2,3}$	A	2	1	44	6	0.277	89.59998	1		68.11	87.14	125.69												
Ho	$M\beta$		10	45	67	6	1.383	89.64998	3		68.15	87.20	125.81												
Sn	$M\gamma$		5	100	50	6	0.691	89.69994	2		68.20	87.26	125.94												
Se	$L\alpha_{1,2}$		10	100	34	6	1.379	89.89999	4		68.37	87.50	126.44												
Tb	$M\alpha$		9	100	65	6	1.240	90.00000	2		68.46	87.63	126.70												
Pb	$N_5-N_{6,7}$		2		82	6	0.275	90.00000	1		68.46	87.63	126.70												
Sm	$M\beta$		8	45	62	6	1.100	90.15999	2		68.60	87.82	127.10												
Ga	$L\alpha_{1,2}$		8	100	31	6	1.098	90.33600	3		68.75	88.04	127.55												
Hg	N_4-N_6	H	2		80	6	0.274	90.39999	1		68.80	88.12	127.72												
Sb	M_2-M_4		2	1	51	6	0.274	90.39999	1		68.80	88.12	127.72												
F	$SK\alpha''$		5	30	9	1	0.681	90.99998	2	3	69.33	88.85	129.29												
F	$SK\alpha'$		5	35	9	1	0.680	91.09993	2	3	69.41	88.98	129.56												
Cd	$M_4-O_{2,3}$	A	3	10	48	6	0.408	91.19998	1		69.50	89.10	129.82												
Cu	$L\beta_1$		7	20	29	6	0.950	91.37099	3		69.65	89.31	130.29												
Sr	$M_3-M_{4,5}$		1		38	6	0.136	91.39999	1		69.67	89.35	130.36												
Pr	$M\beta$		7	45	59	6	0.949	91.41998	2		69.69	89.37	130.42												
Co	Ll		5	9	27	6	0.678	91.45996	3		69.73	89.42	130.53												
Rb	M_2-M_4		1		37	6	0.135	91.50000	1		69.76	89.47	130.64												
Ge	$L\beta_1$		9	35	32	6	1.218	91.57498	3		69.83	89.57	130.84												
F	$K\alpha$		5	100	9	6	0.677	91.59996	2	2	69.85	89.60	130.91												
Bi	N_6-O_4		1		83	6	0.135	91.59999	1		69.85	89.60	130.91												
Cu	Ll		6	5	29	6	0.811	91.71599	3		69.95	89.74	131.23												
Sm	$M\alpha$		8	100	62	6	1.081	91.75999	2		69.99	89.80	131.35												
Ho	$M\alpha$		10	100	67	6	1.347	91.99998	2		70.20	90.09	132.02												
Gd	$M\beta$		9	45	64	6	1.209	92.28600	3		70.45	90.45	132.82												
Cd	M_5-O_3	A	3	1	48	6	0.402	92.39996	1		70.55	90.60	133.15												
Ti	Ln		3	1	22	6	0.401	92.67000	2		70.79	90.93	133.93												
Y	M_2-N_1		2		39	6	0.267	92.95999	2		71.04	91.30	134.78												
Tl	$N_5-N_{6,7}$		2		81	6	0.267	93.00000	1		71.08	91.35	134.90												
Sc	$L\beta_1$		3	10	21	6	0.400	93.05997	2		71.13	91.43	135.08												
Pd	$M\gamma$	H	4	100	46	6	0.532	93.19995	1		71.25	91.60	135.49												
Si	N_7-O_5		1		83	6	0.133	93.20000	1		71.25	91.60	135.49												
Ga	$L\beta_{3,4}$		9	2	31	6	1.197	93.23099	3		71.28	91.64	135.59												
Cu	$L\alpha_{1,2}$		7	100	29	6	0.930	93.35199	3		71.39	91.79	135.95												
Y	Mz		1		39	6	0.133	93.39999	1		71.43	91.86	136.10												
Pr	$M\alpha$		7	100	59	6	0.929	93.40099	3		71.43	91.86	136.10												
Dy	$M\beta$		10	45	66	6	1.325	93.56999	3		71.58	92.07	136.62												
Au	N_4-N_6		2		79	6	0.265	93.59998	1		71.61	92.11	136.71												
Sn	Mz		3	1	50	6	0.397	93.71997	2		71.71	92.26	137.08												
Na	$SK\alpha_5$		8	2	11	0	1.058	93.73599	3	3	71.73	92.28	137.13												
Ge	$L\alpha_{1,2}$		9	100	32	6	1.188	93.92488	4		71.89	92.52	137.73												
Co	$L\beta_1$		6	18	27	6	0.791	93.99599	3		71.96	92.61	137.95												
P	$AL_{2,3}$		1		15	6	0.132	94.00000	0		71.96	92.62	137.96												
Sc	$L\alpha_{1,2}$		3	100	21	6	0.395	94.04997	2		72.00	92.68	138.12												
Ti	Ll		3	1	22	6	0.395	94.07996	2		72.03	92.72	138.22												
Gd	$M\alpha$		9	100	64	6	1.185	94.13998	2		72.08	92.80	138.41												
As	$L\beta_1$		10	35	33	6	1.317	94.14099	4		72.08	92.80	138.41												
Na	$SK\alpha_4$		8	10	11	0	1.052	94.28799	3	3	72.21	92.99	138.89												
Ba	M_4-O_3		6	10	56	6	0.789	94.31999	2		72.24	93.03	138.99												
Na	$SK\alpha_3$		8	10	11	0	1.050	94.43999	3	3	72.35	93.18	139.38												
O	$K\alpha$		4	100	8	6	0.525	94.47998	2	1	72.39	93.23	139.51												
K	Ln		2	100	19	6	0.262	94.47998	2		72.39	93.23	139.51												
Sn	M_2-M_4		2	1	50	6	0.262	94.59998	1		72.49	93.39	139.91												
Na	$SK\alpha'$		8	3	11	0	1.047	94.69600	3	3	72.58	93.51	140.23												
N	$K\alpha$		3	100	7	6	0.392	94.79997	2	1	72.67	93.64	140.58												

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Na	$K\alpha_{1,2}$		8	100	11	6	1.041	95.28079	4	3	73.10	94.27	142.24												
Rh	Mz		2	1	45	6	0.260	95.34000	2		73.15	94.34	142.44												
U	N_4-N_6		3		92	6	0.390	95.39996	1		73.20	94.42	142.66												
Ba	M_4-O_2		6	10	56	6	0.779	95.45999	2		73.26	94.50	142.87												
K	Ll		2	100	19	6	0.260	95.47998	2		73.28	94.52	142.94												
Te	M_3-N_1		5	10	52	6	0.649	95.49995	1		73.29	94.55	143.01												
V	$L\beta_1$		4	10	23	6	0.519	95.51996	2		73.31	94.58	143.09												
Mn	$L\beta_1$		5	30	25	6	0.649	95.54993	2		73.34	94.61	143.19												
Te	$M\gamma$		6	100	52	6	0.778	95.57999	2		73.36	94.65	143.30												
Zn	Ln		7	2	30	6	0.906	95.75999	2		73.53	94.89	143.96												
Hg	N_5-$N_{6,7}$	H	2		80	6	0.259	95.79999	1		73.56	94.94	144.11												
Co	$L\alpha_{1,2}$		6	100	27	6	0.776	95.83199	3		73.59	94.98	144.22												
Zn	$L8_1$		8	26	30	6	1.034	95.86400	3		73.62	95.02	144.34												
Sb	M_2-N_4		6	50	51	6	0.776	95.87999	2		73.63	95.04	144.40												
Dy	$M\alpha$		10	100	66	6	1.293	95.89998	2		73.65	95.07	144.48												
Pt	N_4-N_5		2		78	6	0.258	96.19998	1		73.92	95.46	145.61												
Ce	$M\beta$		7	45	58	6	0.902	96.25000	2		73.96	95.53	145.81												
Th	N_6-O_5		2		90	6	0.257	96.39999	1		74.10	95.73	146.39												
Rb	M_3-$M_{4,5}$		1		37	6	0.128	96.70000	1		74.37	96.12	147.59												
As	$L\alpha_{1,2}$		10	100	33	6	1.282	96.70898	4		74.38	96.13	147.63												
Eu	M8		9	45	63	6	1.153	96.75000	3		74.41	96.19	147.80												
Ru	M_2-N_1		3	1	44	6	0.384	96.89996	1		74.55	96.38	148.42												
Cd	M_2-N_4		5	50	48	6	0.639	96.99997	2		74.64	96.52	148.84												
Y	M_3-N_1		2		39	6	0.256	97.00000	1		74.64	96.52	148.84												
V	$L\alpha_{1,2}$		4	100	23	6	0.511	97.00000	2		74.64	96.52	148.84												
Dy	$N_{4,5}O_{2,3}$		1		66	6	0.128	97.20000	1		74.82	96.78	149.70												
Mn	$L\alpha_{1,2}$		5	100	25	6	0.637	97.24998	2		74.86	96.85	149.92												
Ni	Ln		6	3	28	6	0.762	97.61993	2		75.20	97.34	151.59												
Tb	$M\beta$		10	45	65	6	1.266	97.92000	3		75.47	97.74	153.01												
Sm	$N_{4,5}N_{6,7}$		1		62	6	0.126	98.00000	0		75.54	97.85	153.40												
Cd	M_3-N_1		4	10	48	6	0.506	98.00000	1		75.54	97.85	153.40												
Zn	$L\alpha_{1,2}$		8	100	30	6	1.012	98.03200	3		75.57	97.89	153.56												
Mg	$SK\alpha_4$		10	8	12	1	1.264	98.07770	3	3	75.61	97.95	153.79												
Zn	Ll		7	4	30	6	0.884	98.13998	2		75.67	98.04	154.11												
Mg	$SK\alpha_3$		10	8	12	1	1.262	98.23804	3	3	75.76	98.17	154.61												
Ce	$M\alpha$		7	100	58	6	0.883	98.28000	2		75.79	98.23	154.83												
Mg	$SK\alpha'$		10	2	12	1	1.259	98.47852	2	3	75.98	98.49	155.89												
Eu	$M\alpha$		9	100	63	6	1.131	98.63998	2		76.12	98.71	156.78												
Fe	Ln		5	2	26	6	0.628	98.75000	2		76.22	98.86	157.41												
Au	N_5-$N_{6,7}$		2		79	6	0.251	98.79999	1		76.27	98.93	157.70												
Mg	$K\alpha_{1,2}$		10	100	12	6	1.253	98.89999	4	3	76.36	99.06	158.30												
Th	N_6-O_4		2		90	6	0.250	99.00000	1		76.45	99.20	158.91												
Ga	$L8_1$		9	35	31	6	1.125	99.20699	3		76.64	99.48	160.24												
Nb	M_2-N_4		3	50	41	6	0.375	99.29997	1		76.72	99.61	160.87												
Nd	$M\beta$		8	55	60	6	0.996	99.51999	2		76.92	99.91	162.44												
Ni	$L\beta_1$		7	21	28	6	0.869	99.89699	3		77.27	100.43	165.52												
Tb	$M\alpha$		10	100	65	6	1.240	100.00000	2		77.36	100.57	166.48												
Th	N_7-O_5		2		90	6	0.248	100.00000	1		77.36	100.57	166.48												
Rh	$M\gamma$		4	100	45	6	0.496	100.03998	2		77.40	100.62	166.87												
Ni	Ll		6	8	28	6	0.743	100.15796	3		77.51	100.79	168.11												
Pb	N_6-O_5		1		82	6	0.124	100.20000	1		77.55	100.85	168.58												
Ir	N_4-N_6		2		77	6	0.247	100.39999	1		77.73	101.12	171.15												
Ag	$M_{4,5}O_{2,3}$	A	3	1	47	6	0.370	100.50000	1		77.82	101.26	172.78												
Te	M_3-M_5		2	1	52	6	0.246	100.59998	1		77.92	101.40	174.89												
Th	N_4-N_6		3		90	6	0.369	100.70998	2		78.02	101.55													
Fe	Ll		5	8	26	6	0.615	100.74997	2		78.05	101.61													
Sb	M_3-N_1		5	10	51	6	0.614	100.99998	1		78.28	101.96													
Sn	M_4-$O_{2,3}$		4	10	50	6	0.490	101.19995	1		78.47	102.24													
Sm	M8		9	45	62	6	1.100	101.42999	2		78.68	102.56													
Nd	$M\alpha$		8	100	60	6	0.978	101.43999	2		78.69	102.58													
Sb	$M\gamma$		6	100	51	6	0.733	101.51999	2		78.77	102.69													
La	$M\beta$	A	7	45	57	6	0.854	101.56999	2		78.81	102.76													
Sn	M_2-N_4		6	50	50	6	0.732	101.57996	2		78.82	102.78													
Ga	$L\alpha_{1,2}$		9	100	31	6	1.098	101.62799	3		78.87	102.84													
Ge	$L\beta_1$		10	35	32	6	1.218	101.74998	3		78.98	103.02													

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Lligh (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Pt	N_5-$N_{6,7}$		2		78	6	0.244	101.79999	1		79.03	103.09													
Ni	$L\alpha_{1,2}$		7	100	28	6	0.851	101.92699	3		79.14	103.27													
Ba	$M\gamma$		8	100	56	6	0.972	102.00000	2		79.21	103.37													
Tb	$N_{4,5}O_{2,3}$		1		65	6	0.121	102.20000	1		79.40	103.66													
Ne	$K\alpha_{1,2}$		7	100	10	6	0.848	102.26999	3		79.46	103.76													
Cd	$M\gamma$		5	100	48	6	0.606	102.34993	2		79.54	103.87													
Pb	N_6-O_4		1		82	6	0.121	102.39999	1		79.58	103.94													
Gd	$M\beta$		10	45	64	6	1.209	102.53999	3		79.71	104.14													
Sr	M_2-N_1		2		38	6	0.242	102.59998	1		79.77	104.23													
Sm	$M\alpha$		9	100	62	6	1.081	103.22998	2		80.36	105.14													
Ag	M_2-N_4		5	50	47	6	0.600	103.29994	2		80.43	105.24													
Fe	$L\beta_1$		6	20	26	6	0.718	103.55997	2		80.67	105.62													
Ga	$L\beta_{3,4}$		10	2	31	6	1.197	103.58998	3		80.70	105.66													
P	$L_{2,3}$-M		1	100	15	6	0.119	103.79999	1		80.89	105.97													
Os	N_4-N_6		2		76	6	0.239	103.79999	1		80.89	105.97													
Ag	M_3-N_1		4	10	47	6	0.477	104.00000	1		81.08	106.26													
Cd	M_2-M_4		2	1	48	6	0.238	104.00000	1		81.08	106.26													
Br	M_2-M_4	D	1		35	6	0.119	104.00000	1		81.08	106.26													
La	$M\alpha$	A	7	100	57	6	0.833	104.15999	2		81.23	106.50													
Pb	N_7-O_5		1		82	6	0.119	104.29999	1		81.37	106.70													
Ge	$L\alpha_{1,2}$		10	100	32	6	1.188	104.36098	4		81.42	106.79													
U	N_5-$N_{6,7}$		3		92	6	0.356	104.39996	1		81.46	106.85													
Sb	M_3-M_5		2	1	51	6	0.237	104.39999	1		81.46	106.85													
Cu	$L\beta_1$		8	20	29	6	0.950	104.42400	3		81.48	106.89													
Pr	$M\beta$		8	45	59	6	0.949	104.48000	2		81.54	106.97													
Gd	$M\alpha$		10	100	64	6	1.185	104.59999	2		81.65	107.15													
Ru	$M\zeta$		2	1	44	6	0.237	104.67999	2		81.73	107.27													
Nb	$M\gamma$		3	100	41	6	0.355	104.69998	1		81.74	107.29													
Sc	Ln		3	1	21	6	0.353	105.38997	2		82.40	108.33													
Na	$SK\alpha_5$		9	2	11	0	1.058	105.45299	3	3	82.46	108.42													
Fe	$L\alpha_{1,2}$		6	100	26	6	0.705	105.53998	2		82.54	108.55													
Ir	N_5-$N_{6,7}$		2		77	6	0.235	105.59998	1		82.60	108.64													
Mo	M_2-N_1		3	1	42	6	0.351	105.89996	1		82.89	109.10													
Na	$SK\alpha_4$		9	10	11	0	1.052	106.07399	3	3	83.05	109.36													
Na	$SK\alpha_3$		9	10	11	0	1.050	106.24498	3	3	83.22	109.62													
Cr	$L\beta_1$		5	20	24	6	0.583	106.34995	2		83.32	109.79													
Na	$SK\alpha'$		9	3	11	0	1.047	106.53299	3	3	83.49	110.07													
Cu	$L\alpha_{1,2}$		8	100	29	6	0.930	106.68799	3		83.64	110.31													
Te	M_4-$O_{2,3}$		5	10	52	6	0.581	106.69998	2		83.65	110.32													
Pr	$M\alpha$		8	100	59	6	0.929	106.74399	3		83.70	110.39													
Sc	Ll		3	1	21	6	0.348	106.76999	2		83.72	110.43													
Nd	$N_{4,5}N_{6,7}$		1		60	6	0.116	107.00000	0		83.94	110.79													
Cu	Ll		7	5	29	6	0.811	107.00198	3		83.94	110.79													
Na	$K\alpha_{1,2}$		9	100	11	6	1.041	107.19089	4	3	84.13	111.08													
Sr	M_3-N_1		2		38	6	0.231	107.19998	1		84.13	111.10													
Co	Ln		6	2	27	6	0.694	107.21997	2		84.15	111.13													
Sn	M_3-N_1		5	10	50	6	0.577	107.50000	1		84.42	111.57													
Eu	$M\beta$		10	45	63	6	1.153	107.50000	3		84.42	111.57													
Ru	$M\gamma$		4	100	44	6	0.461	107.59998	1		84.52	111.72													
Sn	$M\gamma$		6	100	50	6	0.691	107.63992	2		84.56	111.79													
Ca	$L\beta_2$	A	3	10	20	6	0.345	107.81996	2		84.73	112.07													
Zn	$L\beta_1$		9	26	30	6	1.034	107.84698	3		84.76	112.11													
Ag	M_2-M_4		2	1	47	6	0.230	108.00000	1		84.91	112.36													
Sr	$M\zeta_2$		1		38	6	0.115	108.00000	1		84.91	112.36													
W	N_2-N_4		2		74	6	0.230	108.00000	1		84.91	112.36													
Ti	$L\beta_1$		4	10	22	6	0.458	108.19995	2		85.10	112.67													
Cr	$L\alpha_{1,2}$		5	100	24	6	0.573	108.20000	2		85.10	112.67													
Sn	M_3-M_5		2	1	50	6	0.229	108.39999	1		85.30	112.99													
Sr	$M\zeta_1$		1		38	6	0.114	108.70000	1		85.59	113.47													
Th	N_5-$N_{6,7}$		3		90	6	0.341	108.95998	2		85.84	113.89													
Ca	$L\alpha_{1,2}$	A	3	100	20	6	0.341	108.98996	2		85.87	113.94													
Ag	$M\gamma$		5	100	47	6	0.568	109.09996	2		85.98	114.12													
F	$SK\alpha''$		6	30	9	1	0.681	109.19998	2	3	86.08	114.28													
F	$SK\alpha'$		6	35	9	1	0.680	109.31992	2	3	86.20	114.48													
Os	N_5-$N_{6,7}$		2		76	6	0.227	109.39999	1		86.27	114.61													

El	Line	C	N	I	Z	R	Kev	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypa (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
Zn	Ln		8	2	30	6	0.906	109.43999	2		86.31	114.67													
Mo	$M_{4,5}O_{2,3}$	A	2	50	42	6	0.226	109.59998	1		86.47	114.93													
Eu	Mα		10	100	63	6	1.131	109.59999	2		86.47	114.93													
Co	$L\beta_1$		7	18	27	6	0.791	109.66199	3		86.53	115.03													
Ti	$L\alpha_{1,2}$		4	100	22	6	0.452	109.67999	2		86.55	115.06													
Co	Ll		6	9	27	6	0.678	109.75195	3		86.62	115.18													
F	Kα		6	100	9	6	0.677	109.91995	2	2	86.79	115.46													
Ce	Mβ		8	45	58	6	0.902	110.00000	2		86.87	115.59													
Ba	M_4-O_3		7	10	56	6	0.789	110.03999	2		86.90	115.66													
Ga	$L\beta_1$		10	35	31	6	1.125	110.23000	3		87.09	115.97													
Zn	$L\alpha_{1,2}$		9	100	30	6	1.012	110.28600	3		87.15	116.07													
Cd	Mz		3	1	48	6	0.337	110.39996	1		87.26	116.26													
Pd	M_2-N_4		5	50	46	6	0.561	110.49995	1		87.36	116.42													
Cu	AM_1		1		29	6	0.112	110.59999	1		87.46	116.59													
Be	AK		1		4	6	0.112	111.00000	0		87.86	117.27													
Ba	M_4-O_2		7	10	56	6	0.779	111.37000	2		88.22	117.89													
Mn	Ll		5	2	25	6	0.556	111.44997	2		88.30	118.03													
Te	Mγ		7	100	52	6	0.778	111.50999	2		88.36	118.13													
Pd	M_3-N_1		4	10	46	6	0.444	111.59998	1		88.45	118.29													
W	N_4-N_6		2		74	6	0.222	111.59998	1		88.45	118.29													
Ar	Ln	H	2	100	18	6	0.222	111.79999	1		88.65	118.63													
Co	$L\alpha_{1,2}$		7	100	27	6	0.776	111.80399	3		88.66	118.64													
Sb	M_2-N_4		7	50	51	6	0.776	111.85999	2		88.71	118.74													
Nd	Mβ		9	55	60	6	0.996	111.95999	2		88.81	118.91													
Eu	$N_{4,5}O_{2,3}$		1		63	6	0.111	112.00000	1		88.85	118.98													
Zn	Ll		8	4	30	6	0.884	112.15999	2		89.01	119.26													
Pd	$M_{4,5}O_{2,3}$	A	3	10	46	6	0.331	112.19998	1		89.05	119.33													
Ce	Mα		8	100	58	6	0.883	112.31999	2		89.18	119.54													
Mo	M_3-N_1		3	100	42	6	0.331	112.50000	1		89.36	119.85													
Ar	Ll	H	2	100	18	6	0.220	112.59998	1		89.46	120.03													
Sm	Mβ		10	45	62	6	1.100	112.69998	2		89.56	120.21													
Ga	$L\alpha_{1,2}$		10	100	31	6	1.098	112.92000	3		89.78	120.60													
Pr	$N_{4,5}N_{6,7}$		1		59	6	0.110	113.00000	0		89.86	120.74													
Tl	N_6-O_5		1		81	6	0.110	113.00000	1		89.86	120.74													
Pd	M_2-M_4		2	1	46	6	0.219	113.00000	1		89.86	120.74													
Br	M_3-$M_{4,5}$		1		35	6	0.109	113.79999	1		90.67	122.18													
Ni	Ln		7	3	28	6	0.762	113.88992	2		90.77	122.35													
Rb	M_2-N_1		2		37	6	0.217	114.00000	1		90.88	122.55													
Be	Kα	A	1	100	4	6	0.109	114.00000	0	0	90.88	122.55													
Nd	Mα		9	100	60	6	0.978	114.11998	2		91.00	122.77													
Ni	$L\beta_1$		8	21	28	6	0.869	114.16800	3		91.05	122.86													
Te	M_3-N_1		6	10	52	6	0.649	114.59995	1		91.49	123.66													
Mn	$L\beta_1$		6	30	25	6	0.649	114.65991	2		91.55	123.77													
Sm	Mα		10	100	62	6	1.081	114.69998	2		91.59	123.84													
Ba	Mγ		9	100	56	6	0.972	114.75000	2		91.65	123.94													
Nb	M_2-N_1		3	1	41	6	0.323	115.19998	1		92.11	124.79													
Tl	N_6-O_4		1		81	6	0.108	115.29999	1		92.21	124.98													
La	Mβ	A	8	45	57	6	0.854	116.07999	2		93.02	126.49													
Cd	M_2-N_4		6	50	48	6	0.639	116.39996	2		93.35	127.12													
Ta	N_4-N_6		2		73	6	0.213	116.39999	1		93.35	127.12													
Ni	$L\alpha_{1,2}$		8	100	28	6	0.851	116.48799	3		93.45	127.29													
Pd	Mγ	H	5	100	46	6	0.532	116.49994	1		93.46	127.31													
Mn	$L\alpha_{1,2}$		6	100	25	6	0.637	116.69998	2		93.67	127.71													
W	N_5-N_7		2		74	6	0.212	116.79999	1		93.77	127.91													
Ni	Ll		7	8	28	6	0.743	116.85095	3		93.83	128.02													
Ne	$K\alpha_{1,2}$		8	100	10	6	0.848	116.87999	3		93.86	128.07													
Na	$SK\alpha_5$		10	2	11	0	1.058	117.16998	3	3	94.16	128.66													
Sm	$N_{4,5}O_{2,3}$		1		62	6	0.106	117.39999	1		94.40	129.13													
Cd	M_3-M_5		2	1	48	6	0.211	117.39999	1		94.40	129.13													
Cu	$L\beta_1$		9	20	29	6	0.950	117.47699	3		94.48	129.29													
Pr	Mβ		9	45	59	6	0.949	117.53999	2		94.55	129.42													
Tl	N_7-O_5		1		81	6	0.105	117.70000	1		94.72	129.75													
Na	$SK\alpha_4$		10	10	11	0	1.052	117.85999	3	3	94.89	130.08													
Na	$SK\alpha_3$		10	10	11	0	1.050	118.04999	3	3	95.09	130.48													
O	Kα		5	100	8	6	0.525	118.09998	2	1	95.14	130.59													

El	Line	C	N	I	Z	R	KeV	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Na	SKα'		10	3	11	0	1.047	118.37000	3	3	95.43	131.16													
Sb	Mγ		7	100	51	6	0.733	118.43999	2		95.51	131.31													
Fe	Ln		6	2	26	6	0.628	118.50000	2		95.57	131.44													
Sn	M_2-N_4		7	50	50	6	0.732	118.50995	2		95.58	131.46													
Rh	M_2-M_4		2	1	45	6	0.209	118.59998	1		95.68	131.65													
Rb	M_3-N_1		2		37	6	0.208	119.00000	1		96.10	132.52													
W	N_5-N_6		2		74	6	0.208	119.00000	1		96.10	132.52													
La	Mα	A	8	100	57	6	0.833	119.03999	2		96.15	132.61													
Na	$K\alpha_{1,2}$		10	100	11	6	1.041	119.10100	4	3	96.21	132.74													
Rh	M_3-N_1		4	10	45	6	0.416	119.19995	1		96.32	132.96													
Ag	Mz		3	1	47	6	0.312	119.30997	2		96.44	133.20													
V	$L\beta_1$		5	10	23	6	0.519	119.39995	2		96.53	133.40													
Zn	$L\beta_1$		10	26	30	6	1.034	119.82999	3		97.00	134.37													
Cu	$L\alpha_{1,2}$		9	100	29	6	0.930	120.02399	3		97.21	134.82													
Pr	Mα		9	100	59	6	0.929	120.08699	3		97.28	134.96													
Fe	$L\beta_1$		7	20	26	6	0.718	120.81996	2		98.07	136.68													
Fe	Ll		6	8	26	6	0.615	120.89996	2		98.16	136.87													
Ag	M_3-M_5		2	1	47	6	0.205	121.00000	1		98.27	137.11													
Sb	M_3-N_1		6	10	51	6	0.614	121.19998	1		98.49	137.59													
V	$L\alpha_{1,2}$		5	100	23	6	0.511	121.25000	2		98.54	137.72													
Ca	Ln		3	1	20	6	0.306	121.37997	2		98.69	138.04													
Cd	M_4-$O_{2,3}$	A	4	10	48	6	0.408	121.59998	1		98.93	138.58													
Nb	M_3-N_1		3	10	41	6	0.305	122.09999	1		99.48	139.85													
Ta	N_5-$N_{6,7}$		2		73	6	0.203	122.19998	1		99.59	140.10													
Cu	Ll		8	5	29	6	0.811	122.28799	3		99.69	140.33													
Cd	M_3-N_1		5	10	48	6	0.506	122.50000	1		99.93	140.89													
Zn	$L\alpha_{1,2}$		10	100	30	6	1.012	122.53999	3		99.97	140.99													
Rh	$M_{4,5}O_{2,3}$	A	3	10	45	6	0.303	122.69998	1		100.15	141.42													
Cd	Mγ		6	100	48	6	0.606	122.81992	2		100.28	141.74													
Ca	Ll		3	1	20	6	0.303	122.87997	2		100.35	141.90													
Si	$AL_{2,3}$		1		14	6	0.101	123.00000	0		100.48	142.22													
Zn	Ln		9	2	30	6	0.906	123.11998	2		100.62	142.55													
Fe	$L\alpha_{1,2}$		7	100	26	6	0.705	123.12997	2		100.63	142.58													
Ce	Mβ		9	45	58	6	0.902	123.75000	2		101.33	144.32													
Nb	$M_{4,5}O_{2,3}$	A	2	10	41	6	0.200	123.79999	1		101.38	144.47													
Ag	M_2-N_4		6	50	47	6	0.600	123.95993	2		101.56	144.93													
Sc	$L\beta_1$		4	10	21	6	0.400	124.07996	2		101.70	145.28													
Ru	M_2-M_4		2	1	44	6	0.199	124.39999	1		102.06	146.24													
Nd	Mβ		10	55	60	6	0.996	124.39999	2		102.06	146.24													
Rh	Mγ		5	100	45	6	0.496	125.04997	2		102.81	148.28													
Co	Ln		7	2	27	6	0.694	125.08997	2		102.85	148.41													
Co	$L\beta_1$		8	18	27	6	0.791	125.32799	3		103.13	149.19													
Sc	$L\alpha_{1,2}$		4	100	21	6	0.395	125.39996	2		103.21	149.43													
Sn	Mγ		7	100	50	6	0.691	125.57991	2		103.42	150.03													
Ba	M_4-O_3		8	10	56	6	0.789	125.75999	2		103.63	150.65													
Pd	M_3-M_5		2	1	46	6	0.197	125.79999	1		103.67	150.79													
Lu	N_4-N_6		2		71	6	0.197	126.00000	1		103.91	151.50													
Zn	Ll		9	4	30	6	0.884	126.17999	2		104.11	152.15													
U	N_6-O_5		3		92	6	0.294	126.29997	1		104.25	152.59													
Ce	Mα		9	100	58	6	0.883	126.35999	2		104.32	152.82													
N	Kα		4	100	7	6	0.392	126.39996	2	1	104.37	152.97													
Sn	M_4-$O_{2,3}$		5	10	50	6	0.490	126.49994	1		104.49	153.35													
Rb	M_4-N_3		1		37	6	0.098	126.79999	1		104.84	154.52													
Nd	Mα		10	100	60	6	0.978	126.79999	2		104.84	154.52													
Pb	N_4-N_6		3		82	6	0.293	126.89996	1		104.96	154.92													
Ba	M_4-O_2		8	10	56	6	0.779	127.28000	2		105.41	156.52													
F	SKα''		7	30	9	1	0.681	127.39998	2	3	105.55	157.04													
Te	Mγ		8	100	52	6	0.778	127.43999	2		105.59	157.22													
Ba	Mγ		10	100	56	6	0.972	127.50000	2		105.67	157.49													
F	SKα'		7	35	9	1	0.680	127.53990	2	3	105.71	157.67													
Cr	$L\beta_1$		6	20	24	6	0.583	127.61993	2		105.81	158.04													
Co	$L\alpha_{1,2}$		8	100	27	6	0.776	127.77599	3		105.99	158.77													
Rb	Mz_2		1		37	6	0.097	127.79999	1		106.02	158.89													
Sb	M_2-N_4		8	50	51	6	0.776	127.84000	2		106.07	159.08													
Te	M_4-$O_{2,3}$		6	10	52	6	0.581	128.03998	2		106.31	160.08													

El	Line	C	N	I	Z	R	Kev	Lambda	P	A	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Co	Ll		7	9	27	6	0.678	128.04395	3		106.31	160.10													
F	Kα		7	100	9	6	0.677	128.23994	2	2	106.55	161.12													
Ni	$L\beta_1$		9	21	28	6	0.869	128.43900	3		106.79	162.22													
Rb	Mz_1		1		37	6	0.096	128.70000	1		107.10	163.78													
Mo	Mz		2	10	42	6	0.193	128.75998	2		107.17	164.16													
Nd	$N_{4,5}O_{2,3}$		1		60	6	0.096	128.89999	1		107.34	165.08													
Sn	M_3-N_1		6	10	50	6	0.577	129.00000	1		107.46	165.78													
Cr	$L\alpha_{1,2}$		6	100	24	6	0.573	129.84000	2		108.49	174.31													
U	N_6-O_4		3		92	6	0.286	129.89996	1		108.56	175.50													
Ag	M_3-N_1		5	10	47	6	0.477	130.00000	1		108.68														
Ni	Ln		8	3	28	6	0.762	130.15991	2		108.88														
Yb	N_4-N_6		2		70	6	0.190	130.19998	1		108.93														
Cu	$L\beta_1$		10	20	29	6	0.950	130.52998	3		109.34														
La	Mβ	A	9	45	57	6	0.854	130.58998	2		109.41														
Pr	Mβ		10	45	59	6	0.949	130.59999	2		109.42														
Pd	Mz		3	1	46	6	0.284	130.79997	1		109.67														
Ag	Mγ		6	100	47	6	0.568	130.91995	2		109.82														
Rh	M_3-M_5		2	1	45	6	0.189	131.00000	1		109.92														
Ni	$L\alpha_{1,2}$		9	100	28	6	0.851	131.04900	3		109.98														
Lu	N_5-$N_{6,7}$		2		71	6	0.189	131.39999	1		110.42														
Ne	$K\alpha_{1,2}$		9	100	10	6	0.848	131.48999	3		110.53														
Nb	M_2-N_4		4	50	41	6	0.375	132.39996	1		111.69														
Pd	M_2-N_4		6	50	46	6	0.561	132.59995	1		111.94														
Cu	$L\alpha_{1,2}$		10	100	29	6	0.930	133.35999	3		112.92														
Pr	Mα		10	100	59	6	0.929	133.42999	3		113.01														
Ni	Ll		8	8	28	6	0.743	133.54395	3		113.16														
Te	M_3-N_1		7	10	52	6	0.649	133.69994	1		113.36														
Mn	Ll		6	2	25	6	0.556	133.73996	2		113.41														
Mn	$L\beta_1$		7	30	25	6	0.649	133.76990	2		113.45														
La	Mα	A	9	100	57	6	0.833	133.91998	2		113.65														
C	Kα		3	100	6	6	0.277	134.09999	1	1	113.89														
Ru	$M_{4,5}O_{2,3}$	A	3	1	44	6	0.277	134.39996	1		114.28														
Ru	Mγ		5	100	44	6	0.461	134.49997	1		114.41														
Cl	Ln		2	100	17	6	0.184	134.65997	2		114.62														
Pb	N_5-$N_{6,7}$		3		82	6	0.275	135.00000	1		115.08														
B	Kα		2	100	5	6	0.183	135.19998	1	0	115.34														
Ti	$L\beta_1$		5	10	22	6	0.458	135.24994	2		115.41														
Sb	Mγ		8	100	51	6	0.733	135.35999	2		115.56														
Sn	M_2-N_4		8	50	50	6	0.732	135.43994	2		115.67														
Si	$L_{2,3}$-M		1	100	14	6	0.091	135.50000	1		115.75														
Sb	M_2-M_4		3	1	51	6	0.274	135.59999	1		115.88														
Hg	N_4-N_6	H	3		80	6	0.274	135.59999	1		115.88														
Cd	M_2-N_4		7	50	48	6	0.639	135.79996	2		116.15														
Cl	Ll		2	100	17	6	0.183	135.79999	2		116.15														
Mn	$L\alpha_{1,2}$		7	100	25	6	0.637	136.14998	2		116.63														
Th	O_3-$P_{4,5}$		2		90	6	0.182	136.39999	1		116.97														
Pr	$N_{4,5}O_{2,3}$		1		59	6	0.091	136.50000	1		117.11														
Ru	M_3-M_5		2	1	44	6	0.181	136.59998	1		117.24														
Zn	Ln		10	2	30	6	0.906	136.79999	2		117.52														
Zn	AM_2		1		30	6	0.090	137.00000	1		117.80														
Ti	$L\alpha_{1,2}$		5	100	22	6	0.452	137.09999	2		117.94														
Ce	Mβ		10	45	58	6	0.902	137.50000	2		118.49														
Cu	Ll		9	5	29	6	0.811	137.57399	3		118.60														
Mo	M_2-M_4		2	1	42	6	0.180	137.79999	1		118.91														
Fe	$L\beta_1$		8	20	26	6	0.718	138.07996	2		119.31														
Fe	Ln		7	2	26	6	0.628	138.25000	2		119.55														
Yb	N_5-$N_{6,7}$		2		70	6	0.179	138.59998	1		120.05														
Y	M_2-N_1		3		39	6	0.267	139.43999	2		121.27														
Pd	M_3-N_1		5	10	46	6	0.444	139.49997	1		121.35														
Tl	N_5-$N_{6,7}$		3		81	6	0.267	139.50000	1		121.35														
Nb	Mγ		4	100	41	6	0.355	139.59998	1		121.50														
Pd	Mγ	H	6	100	46	6	0.532	139.79993	1		121.79														
Zr	$M_{4,5}O_{2,3}$	A	2		40	6	0.177	140.00000	1		122.09														
Zn	Ll		10	4	30	6	0.884	140.19998	2		122.39														
Au	N_4-N_6		3		79	6	0.265	140.39996	1		122.68														

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
Ce	$M\alpha$		10	100	58	6	0.883	140.39999	2		122.68														
Fe	$L\alpha_{1,2}$		8	100	26	6	0.705	140.71997	2		123.16														
Co	$L\beta_1$		9	18	27	6	0.791	140.99399	3		123.58														
Fe	Ll		7	8	26	6	0.615	141.04996	2		123.66														
Sb	M_3-N_1		7	10	51	6	0.614	141.39998	1		124.20														
Ba	M_4-O_3		9	10	56	6	0.789	141.47998	2		124.32														
K	Ln		3	100	19	6	0.262	141.71997	2		124.69														
O	$K\alpha$		6	100	8	6	0.525	141.71997	2	1	124.69														
Sn	M_2-M_4		3	1	50	6	0.262	141.89996	1		124.97														
Al	AL_1		1		13	6	0.087	142.50000	1		125.90														
Ni	$L\beta_1$		10	21	28	6	0.869	142.70999	3		126.24														
Co	Ln		8	2	27	6	0.694	142.95996	2		126.63														
Rh	Mz		3	1	45	6	0.260	143.00999	2		126.71														
Ba	M_4-O_2		9	10	56	6	0.779	143.18999	2		127.00														
K	Ll		3	100	19	6	0.260	143.21997	2		127.05														
V	$L\beta_1$		6	10	23	6	0.519	143.27994	2		127.15														
Cd	$M\gamma$		7	100	48	6	0.606	143.28990	2		127.16														
Te	$M\gamma$		9	100	52	6	0.778	143.36998	2		127.29														
Sn	$M\gamma$		8	100	50	6	0.691	143.51990	2		127.53														
Hg	N_5-$N_{6,7}$	H	3		80	6	0.259	143.69998	1		127.83														
Co	$L\alpha_{1,2}$		9	100	27	6	0.776	143.74799	3		127.90														
Ca	$L\beta_1$	A	4	10	20	6	0.345	143.75995	2		127.92														
Sb	M_2-N_4		9	50	51	6	0.776	143.81999	2		128.02														
Zn	AM_3		1		30	6	0.086	143.89999	1		128.15														
Nb	M_2-M_4		2	1	41	6	0.172	144.19998	1		128.65														
Pt	N_4-N_6		3		78	6	0.258	144.29997	1		128.81														
Nb	Mz		2	1	41	6	0.172	144.37997	2		128.94														
Ce	$N_{4,5}O_{2,3}$		1		58	6	0.086	144.39999	1		128.98														
Th	N_6-O_5		3		90	6	0.257	144.59999	1		129.31														
Ag	M_2-N_4		7	50	47	6	0.600	144.61992	2		129.34														
La	$M\beta$	A	10	45	57	6	0.854	145.09999	2		130.15														
Ca	$L\alpha_{1,2}$	A	4	100	20	6	0.341	145.31995	2		130.53														
Er	N_4-N_6		2		68	6	0.171	145.39999	1		130.67														
V	$L\alpha_{1,2}$		6	100	23	6	0.511	145.50000	2		130.84														
Y	M_3-N_1		3		39	6	0.256	145.50000	1		130.84														
F	SKα''		8	30	9	1	0.681	145.59998	2	3	131.01														
Ni	$L\alpha_{1,2}$		10	100	28	6	0.851	145.60999	3		131.03														
F	SKα'		8	35	9	1	0.680	145.75989	2	3	131.29														
Ne	$K\alpha_{1,2}$		10	100	10	6	0.848	146.09999	3		131.88														
Co	Ll		8	9	27	6	0.678	146.33594	3		132.30														
Ni	Ln		9	3	28	6	0.762	146.42990	2		132.46														
F	$K\alpha$		8	100	9	6	0.677	146.55994	2	2	132.70														
Cd	M_3-N_1		6	10	48	6	0.506	147.00000	1		133.49														
Au	N_5-$N_{6,7}$		3		79	6	0.251	148.19998	1		135.72														
Rb	M_1-M_3	D	1		37	6	0.084	148.20000	1		135.72														
Th	N_6-O_4		3		90	6	0.250	148.50000	1		136.29														
La	$M\alpha$	A	10	100	57	6	0.833	148.79999	2		136.87														
Cr	$L\beta_1$		7	20	24	6	0.583	148.88992	2		137.05														
Rh	M_3-N_1		5	10	45	6	0.416	148.99994	1		137.26														
Te	M_4-$O_{2,3}$		7	10	52	6	0.581	149.37997	2		138.01														
Pd	$M_{4,5}O_{2,3}$	A	4	10	46	6	0.331	149.59998	1		138.46														
Mo	M_3-M_5		2	10	42	6	0.166	149.79999	1		138.86														
Mo	M_3-N_1		4	100	42	6	0.331	150.00000	1		139.27														
Th	N_7-O_5		3		90	6	0.248	150.00000	1		139.27														
Rh	$M\gamma$		6	100	45	6	0.496	150.05997	2		139.40														
Ni	Ll		9	8	28	6	0.743	150.23694	3		139.76														
Sn	M_3-N_1		7	10	50	6	0.577	150.50000	1		140.31														
Ir	N_4-N_6		3		77	6	0.247	150.59999	1		140.53														
Te	M_3-M_5		3	1	52	6	0.246	150.89996	1		141.17														
Cr	$L\alpha_{1,2}$		7	100	24	6	0.573	151.48000	2		142.44														
Sn	M_4-$O_{2,3}$		6	10	50	6	0.490	151.79993	1		143.15														
Cd	M_4-$O_{2,3}$	A	5	10	48	6	0.408	151.99997	1		143.61														
Sb	$M\gamma$		9	100	51	6	0.733	152.27998	2		144.26														
Sn	M_2-N_4		9	50	50	6	0.732	152.36993	2		144.47														
Er	N_5-$N_{6,7}$		2		68	6	0.162	152.59998	1		145.01														

El	Line	C	N	I	Z	R	KeV	Lambda	P	Δ	Lmel (Film)	Llign (Film)	Lstear (Film)	Llaur (Film)	Chlor (001)	KAP (100)	RbAP (100)	Mica (002)	Gypm (020)	ADP (101)	EDDT (020)	PET (002)	Qtz (100)	ADP (200)	Graph (002)
								10^{-}																	
La	$N_{4,5}O_{2,3}$	1		57	6		0.081	152.59999	1		145.01														
Pt	N_5-$N_{6,7}$	3		78	6		0.244	152.69998	1		145.25														
Ag	$M\gamma$	7	100	47	6		0.568	152.73994	2		145.35														
Te	M_3-N_1	8	10	52	6		0.649	152.79993	1		145.49														
Cu	Ll	10	5	29	6		0.811	152.85999	3		145.64														
Mn	$L\beta_1$	8	30	25	6		0.649	152.87988	2		145.69														
Zr	M_2-M_4	2		40	6		0.162	153.39999	1		146.97														
Br	M_2-N_1	2		35	6		0.161	153.79999	1		148.00														
Sr	M_2-N_1	3		38	6		0.242	153.89996	1		148.26														
Pd	M_2-N_4	7	50	46	6		0.561	154.69994	1		150.42														
Sc	$L\beta_1$	5	10	21	6		0.400	155.09995	2		151.57														
Cd	M_2-N_4	8	50	48	6		0.639	155.19995	2		151.86														
Fe	$L\beta_1$	9	20	26	6		0.718	155.33995	2		152.28														
Mn	$L\alpha_{1,2}$	8	100	25	6		0.637	155.59998	2		153.06														
Os	N_4-N_6	3		76	6		0.239	155.69998	1		153.37														
Cd	M_2-M_4	3	1	48	6		0.238	156.00000	1		154.32														
Ag	M_3-N_1	6	10	47	6		0.477	156.00000	1		154.32														
Mn	Ll	7	2	25	6		0.556	156.02995	2		154.42														
Sb	M_3-M_5	3	1	51	6		0.237	156.59999	1		156.33														
Co	$L\beta_1$	10	18	27	6		0.791	156.65999	3		156.54														
Sc	$L\alpha_{1,2}$	5	100	21	6		0.395	156.74995	2		156.86														
Nb	M_3-M_5	2	1	41	6		0.158	156.79999	1		157.04														
Zn	$M_{2,3}M_{4,5}$	1	100	30	6		0.079	157.00000	0		157.77														
Ru	Mz	3	1	44	6		0.237	157.01999	2		157.85														
Ba	M_4-O_3	10	10	56	6		0.789	157.19998	2		158.53														
N	$K\alpha$	5	100	7	6		0.392	157.99995	2	1	161.86														
Fe	Ln	8	2	26	6		0.628	158.00000	2		161.86														
Fe	$L\alpha_{1,2}$	9	100	26	6		0.705	158.30997	2		163.33														
Ir	N_5-$N_{6,7}$	3		77	6		0.235	158.39996	1		163.78														
Ba	N_4-O_3	1		56	6		0.078	159.00000	1		167.18														
Ba	M_4-O_2	10	10	56	6		0.779	159.09999	2		167.84														
Te	$M\gamma$	10	100	52	6		0.778	159.29999	2		169.28														
Cu	AM_2	1		29	6		0.078	159.50000	1		170.94														
Br	M_3-N_1	2		35	6		0.155	159.59998	1		171.90														
Co	$L\alpha_{1,2}$	10	100	27	6		0.776	159.71999	3		173.22														
Sb	M_2-N_4	10	50	51	6		0.776	159.79999	2		174.27														