***X-Ray Data Booklet Table 1-3.*** *Photon energies and relative intensities of K-, L-, and M-shell lines shown in Fig. 1-1, arranged by increasing energy. An intensity of 100 is assigned to the strongest line in each shell for each element.*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 54.3 | 3 Li | $K\alpha_{1,2}$ | 150 |
| 108.5 | 4 Be | $K\alpha_{1,2}$ | 150 |
| 183.3 | 5 B | $K\alpha_{1,2}$ | 151 |
| 277 | 6 C | $K\alpha_{1,2}$ | 147 |
| 348.3 | 21 Sc | Ll | 21 |
| 392.4 | 7 N | $K\alpha_{1,2}$ | 150 |
| 395.3 | 22 Ti | Ll | 46 |
| 395.4 | 21 Sc | $L\alpha_{1,2}$ | 111 |
| 399.6 | 21 Sc | $L\beta_1$ | 77 |
| 446.5 | 23 V | Ll | 28 |
| 452.2 | 22 Ti | $L\alpha_{1,2}$ | 111 |
| 458.4 | 22 Ti | $L\beta_1$ | 79 |
| 500.3 | 24 Cr | Ll | 17 |
| 511.3 | 23 V | $L\alpha_{1,2}$ | 111 |
| 519.2 | 23 V | $L\beta_1$ | 80 |
| 524.9 | 8 O | $K\alpha_{1,2}$ | 151 |
| 556.3 | 25 Mn | Ll | 15 |
| 572.8 | 24 Cr | $L\alpha_{1,2}$ | 111 |
| 582.8 | 24 Cr | $L\beta_1$ | 79 |
| 615.2 | 26 Fe | Ll | 10 |
| 637.4 | 25 Mn | $L\alpha_{1,2}$ | 111 |
| 648.8 | 25 Mn | $L\beta_1$ | 77 |
| 676.8 | 9 F | $K\alpha_{1,2}$ | 148 |
| 677.8 | 27 Co | Ll | 10 |
| 705.0 | 26 Fe | $L\alpha_{1,2}$ | 111 |
| 718.5 | 26 Fe | $L\beta_1$ | 66 |
| 742.7 | 28 Ni | Ll | 9 |
| 776.2 | 27 Co | $L\alpha_{1,2}$ | 111 |
| 791.4 | 27 Co | $L\beta_1$ | 76 |
| 811.1 | 29 Cu | Ll | 8 |
| 833 | 57 La | $M\alpha_1$ | 100 |
| 848.6 | 10 Ne | $K\alpha_{1,2}$ | 150 |
| 851.5 | 28 Ni | $L\alpha_{1,2}$ | 111 |
| 868.8 | 28 Ni | $L\beta_1$ | 68 |
| 883 | 58 Ce | $M\alpha_1$ | 100 |
| 884 | 30 Zn | Ll | 7 |
| 929.2 | 59 Pr | $M\alpha_1$ | 100 |
| 929.7 | 29 Cu | $L\alpha_{1,2}$ | 111 |
| 949.8 | 29 Cu | $L\beta_1$ | 65 |
| 957.2 | 31 Ga | Ll | 7 |
| 978 | 60 Nd | $M\alpha_1$ | 100 |
| 1,011.7 | 30 Zn | $L\alpha_{1,2}$ | 111 |
| 1,034.7 | 30 Zn | $L\beta_1$ | 65 |
| 1,036.2 | 32 Ge | Ll | 6 |
| 1,041.0 | 11 Na | $K\alpha_{1,2}$ | 150 |
| 1,081 | 62 Sm | $M\alpha_1$ | 100 |
| 1,097.9 | 31 Ga | $L\alpha_{1,2}$ | 111 |
| 1,120 | 33 As | Ll | 6 |
| 1,124.8 | 31 Ga | $L\beta_1$ | 66 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 1,131 | 63 Eu | $M\alpha_1$ | 100 |
| 1,185 | 64 Gd | $M\alpha_1$ | 100 |
| 1,188.0 | 32 Ge | $L\alpha_{1,2}$ | 111 |
| 1,204.4 | 34 Se | Ll | 6 |
| 1,218.5 | 32 Ge | $L\beta_1$ | 60 |
| 1,240 | 65 Tb | $M\alpha_1$ | 100 |
| 1,253.6 | 12 Mg | $K\alpha_{1,2}$ | 150 |
| 1,282.0 | 33 As | $L\alpha_{1,2}$ | 111 |
| 1,293 | 66 Dy | $M\alpha_1$ | 100 |
| 1,293.5 | 35 Br | Ll | 5 |
| 1,317.0 | 33 As | $L\beta_1$ | 60 |
| 1,348 | 67 Ho | $M\alpha_1$ | 100 |
| 1,379.1 | 34 Se | $L\alpha_{1,2}$ | 111 |
| 1,386 | 36 Kr | Ll | 5 |
| 1,406 | 68 Er | $M\alpha_1$ | 100 |
| 1,419.2 | 34 Se | $L\beta_1$ | 59 |
| 1,462 | 69 Tm | $M\alpha_1$ | 100 |
| 1,480.4 | 35 Br | $L\alpha_{1,2}$ | 111 |
| 1,482.4 | 37 Rb | Ll | 5 |
| 1,486.3 | 13 Al | $K\alpha_2$ | 50 |
| 1,486.7 | 13 Al | $K\alpha_1$ | 100 |
| 1,521.4 | 70 Yb | $M\alpha_1$ | 100 |
| 1,525.9 | 35 Br | $L\beta_1$ | 59 |
| 1,557.4 | 13 Al | $K\beta_1$ | 1 |
| 1,581.3 | 71 Lu | $M\alpha_1$ | 100 |
| 1,582.2 | 38 Sr | Ll | 5 |
| 1,586.0 | 36 Kr | $L\alpha_{1,2}$ | 111 |
| 1,636.6 | 36 Kr | $L\beta_1$ | 57 |
| 1,644.6 | 72 Hf | $M\alpha_1$ | 100 |
| 1,685.4 | 39 Y | Ll | 5 |
| 1,692.6 | 37 Rb | $L\alpha_2$ | 11 |
| 1,694.1 | 37 Rb | $L\alpha_1$ | 100 |
| 1,709.6 | 73 Ta | $M\alpha_1$ | 100 |
| 1,739.4 | 14 Si | $K\alpha_2$ | 50 |
| 1,740.0 | 14 Si | $K\alpha_1$ | 100 |
| 1,752.2 | 37 Rb | $L\beta_1$ | 58 |
| 1,775.4 | 74 W | $M\alpha_1$ | 100 |
| 1,792.0 | 40 Zr | Ll | 5 |
| 1,804.7 | 38 Sr | $L\alpha_2$ | 11 |
| 1,806.6 | 38 Sr | $L\alpha_1$ | 100 |
| 1,835.9 | 14 Si | $K\beta_1$ | 2 |
| 1,842.5 | 75 Re | $M\alpha_1$ | 100 |
| 1,871.7 | 38 Sr | $L\beta_1$ | 58 |
| 1,902.2 | 41 Nb | Ll | 5 |
| 1,910.2 | 76 Os | $M\alpha_1$ | 100 |
| 1,920.5 | 39 Y | $L\alpha_2$ | 11 |
| 1,922.6 | 39 Y | $L\alpha_1$ | 100 |
| 1,979.9 | 77 Ir | $M\alpha_1$ | 100 |
| 1,995.8 | 39 Y | $L\beta_1$ | 57 |
| 2,012.7 | 15 P | $K\alpha_2$ | 50 |
| 2,013.7 | 15 P | $K\alpha_1$ | 100 |
| 2,015.7 | 42 Mo | Ll | 5 |

| | | | |
|---|---|---|---|
| 2,039.9 | 40 Zr | $L\alpha_2$ | 11 |
| 2,042.4 | 40 Zr | $L\alpha_1$ | 100 |
| 2,050.5 | 78 Pt | $M\alpha_1$ | 100 |
| 2,122 | 43 Tc | Ll | 5 |
| 2,122.9 | 79 Au | $M\alpha_1$ | 100 |
| 2,124.4 | 40 Zr | $L\beta_1$ | 54 |
| 2,139.1 | 15 P | $K\beta_1$ | 3 |
| 2,163.0 | 41 Nb | $L\alpha_2$ | 11 |
| 2,165.9 | 41 Nb | $L\alpha_1$ | 100 |
| 2,195.3 | 80 Hg | $M\alpha_1$ | 100 |
| 2,219.4 | 40 Zr | $L\beta_{2,15}$ | 1 |
| 2,252.8 | 44 Ru | Ll | 4 |
| 2,257.4 | 41 Nb | $L\beta_1$ | 52 |
| 2,270.6 | 81 Tl | $M\alpha_1$ | 100 |
| 2,289.8 | 42 Mo | $L\alpha_2$ | 11 |
| 2,293.2 | 42 Mo | $L\alpha_1$ | 100 |
| 2,302.7 | 40 Zr | $L\gamma_1$ | 2 |
| 2,306.6 | 16 S | $K\alpha_2$ | 50 |
| 2,307.8 | 16 S | $K\alpha_1$ | 100 |
| 2,345.5 | 82 Pb | $M\alpha_1$ | 100 |
| 2,367.0 | 41 Nb | $L\beta_{2,15}$ | 3 |
| 2,376.5 | 45 Rh | Ll | 4 |
| 2,394.8 | 42 Mo | $L\beta_1$ | 53 |
| 2,420 | 43 Tc | $L\alpha_2$ | 11 |
| 2,422.6 | 83 Bi | $M\alpha_1$ | 100 |
| 2,424 | 43 Tc | $L\alpha_1$ | 100 |
| 2,461.8 | 41 Nb | $L\gamma_1$ | 2 |
| 2,464.0 | 16 S | $K\beta_1$ | 5 |
| 2,503.4 | 46 Pd | Ll | 4 |
| 2,518.3 | 42 Mo | $L\beta_{2,15}$ | 5 |
| 2,538 | 43 Tc | $L\beta_1$ | 54 |
| 2,554.3 | 44 Ru | $L\alpha_2$ | 11 |
| 2,558.6 | 44 Ru | $L\alpha_1$ | 100 |
| 2,620.8 | 17 Cl | $K\alpha_2$ | 50 |
| 2,622.4 | 17 Cl | $K\alpha_1$ | 100 |
| 2,623.5 | 42 Mo | $L\gamma_1$ | 3 |
| 2,633.7 | 47 Ag | Ll | 4 |
| 2,674 | 43 Tc | $L\beta_{2,15}$ | 7 |
| 2,683.2 | 44 Ru | $L\beta_1$ | 54 |
| 2,692.0 | 45 Rh | $L\alpha_2$ | 11 |
| 2,696.7 | 45 Rh | $L\alpha_1$ | 100 |
| 2,767.4 | 48 Cd | Ll | 4 |
| 2,792 | 43 Tc | $L\gamma_1$ | 3 |
| 2,815.6 | 17 Cl | $K\beta_1$ | 6 |
| 2,833.3 | 46 Pd | $L\alpha_2$ | 11 |
| 2,834.4 | 45 Rh | $L\beta_1$ | 52 |
| 2,836.0 | 44 Ru | $L\beta_{2,15}$ | 10 |
| 2,838.6 | 46 Pd | $L\alpha_1$ | 100 |
| 2,904.4 | 49 In | Ll | 4 |
| 2,955.6 | 18 Ar | $K\alpha_2$ | 50 |
| 2,957.7 | 18 Ar | $K\alpha_1$ | 100 |
| 2,964.5 | 44 Ru | $L\gamma_1$ | 4 |
| 2,978.2 | 47 Ag | $L\alpha_2$ | 11 |
| 2,984.3 | 47 Ag | $L\alpha_1$ | 100 |
| 2,990.2 | 46 Pd | $L\beta_1$ | 53 |
| 2,996.1 | 90 Th | $M\alpha_1$ | 100 |
| 3,001.3 | 45 Rh | $L\beta_{2,15}$ | 10 |
| 3,045.0 | 50 Sn | Ll | 4 |
| 3,126.9 | 48 Cd | $L\alpha_2$ | 11 |
| 3,133.7 | 48 Cd | $L\alpha_1$ | 100 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 3,143.8 | 45 Rh | $L\gamma_1$ | 5 |
| 3,150.9 | 47 Ag | $L\beta_1$ | 56 |
| 3,170.8 | 92 U | $M\alpha_1$ | 100 |
| 3,171.8 | 46 Pd | $L\beta_{2,15}$ | 12 |
| 3,188.6 | 51 Sb | Ll | 4 |
| 3,190.5 | 18 Ar | $K\beta_{1,3}$ | 10 |
| 3,279.3 | 49 In | $L\alpha_2$ | 11 |
| 3,286.9 | 49 In | $L\alpha_1$ | 100 |
| 3,311.1 | 19 K | $K\alpha_2$ | 50 |
| 3,313.8 | 19 K | $K\alpha_1$ | 100 |
| 3,316.6 | 48 Cd | $L\beta_1$ | 58 |
| 3,328.7 | 46 Pd | $L\gamma_1$ | 6 |
| 3,335.6 | 52 Te | Ll | 4 |
| 3,347.8 | 47 Ag | $L\beta_{2,15}$ | 13 |
| 3,435.4 | 50 Sn | $L\alpha_2$ | 11 |
| 3,444.0 | 50 Sn | $L\alpha_1$ | 100 |
| 3,485.0 | 53 I | Ll | 4 |
| 3,487.2 | 49 In | $L\beta_1$ | 58 |
| 3,519.6 | 47 Ag | $L\gamma_1$ | 6 |
| 3,528.1 | 48 Cd | $L\beta_{2,15}$ | 15 |
| 3,589.6 | 19 K | $K\beta_{1,3}$ | 11 |
| 3,595.3 | 51 Sb | $L\alpha_2$ | 11 |
| 3,604.7 | 51 Sb | $L\alpha_1$ | 100 |
| 3,636 | 54 Xe | Ll | 4 |
| 3,662.8 | 50 Sn | $L\beta_1$ | 60 |
| 3,688.1 | 20 Ca | $K\alpha_2$ | 50 |
| 3,691.7 | 20 Ca | $K\alpha_1$ | 100 |
| 3,713.8 | 49 In | $L\beta_{2,15}$ | 15 |
| 3,716.9 | 48 Cd | $L\gamma_1$ | 6 |
| 3,758.8 | 52 Te | $L\alpha_2$ | 11 |
| 3,769.3 | 52 Te | $L\alpha_1$ | 100 |
| 3,795.0 | 55 Cs | Ll | 4 |
| 3,843.6 | 51 Sb | $L\beta_1$ | 61 |
| 3,904.9 | 50 Sn | $L\beta_{2,15}$ | 16 |
| 3,920.8 | 49 In | $L\gamma_1$ | 6 |
| 3,926.0 | 53 I | $L\alpha_2$ | 11 |
| 3,937.6 | 53 I | $L\alpha_1$ | 100 |
| 3,954.1 | 56 Ba | Ll | 4 |
| 4,012.7 | 20 Ca | $K\beta_{1,3}$ | 13 |
| 4,029.6 | 52 Te | $L\beta_1$ | 61 |
| 4,086.1 | 21 Sc | $K\alpha_2$ | 50 |
| 4,090.6 | 21 Sc | $K\alpha_1$ | 100 |
| 4,093 | 54 Xe | $L\alpha_2$ | 11 |
| 4,100.8 | 51 Sb | $L\beta_{2,15}$ | 17 |
| 4,109.9 | 54 Xe | $L\alpha_1$ | 100 |
| 4,124 | 57 La | Ll | 4 |
| 4,131.1 | 50 Sn | $L\gamma_1$ | 7 |
| 4,220.7 | 53 I | $L\beta_1$ | 61 |
| 4,272.2 | 55 Cs | $L\alpha_2$ | 11 |
| 4,286.5 | 55 Cs | $L\alpha_1$ | 100 |
| 4,287.5 | 58 Ce | Ll | 4 |
| 4,301.7 | 52 Te | $L\beta_{2,15}$ | 18 |
| 4,347.8 | 51 Sb | $L\gamma_1$ | 8 |
| 4,414 | 54 Xe | $L\beta_1$ | 60 |
| 4,450.9 | 56 Ba | $L\alpha_2$ | 11 |

| | | | |
|---|---|---|---|
| 4,453.2 | 59 Pr | Ll | 4 |
| 4,460.5 | 21 Sc | $K\beta_{1,3}$ | 15 |
| 4,466.3 | 56 Ba | $L\alpha_1$ | 100 |
| 4,504.9 | 22 Ti | $K\alpha_2$ | 50 |
| 4,507.5 | 53 I | $L\beta_{2,15}$ | 19 |
| 4,510.8 | 22 Ti | $K\alpha_1$ | 100 |
| 4,570.9 | 52 Te | $L\gamma_1$ | 8 |
| 4,619.8 | 55 Cs | $L\beta_1$ | 61 |
| 4,633.0 | 60 Nd | Ll | 4 |
| 4,634.2 | 57 La | $L\alpha_2$ | 11 |
| 4,651.0 | 57 La | $L\alpha_1$ | 100 |
| 4,714 | 54 Xe | $L\beta_{2,15}$ | 20 |
| 4,800.9 | 53 I | $L\gamma_1$ | 8 |
| 4,809 | 61 Pm | Ll | 4 |
| 4,823.0 | 58 Ce | $L\alpha_2$ | 11 |
| 4,827.5 | 56 Ba | $L\beta_1$ | 60 |
| 4,840.2 | 58 Ce | $L\alpha_1$ | 100 |
| 4,931.8 | 22 Ti | $K\beta_{1,3}$ | 15 |
| 4,935.9 | 55 Cs | $L\beta_{2,15}$ | 20 |
| 4,944.6 | 23 V | $K\alpha_2$ | 50 |

| | | | |
|---|---|---|---|
| 4,952.2 | 23 V | $K\alpha_1$ | 100 |
| 4,994.5 | 62 Sm | Ll | 4 |
| 5,013.5 | 59 Pr | $L\alpha_2$ | 11 |
| 5,033.7 | 59 Pr | $L\alpha_1$ | 100 |
| 5,034 | 54 Xe | $L\gamma_1$ | 8 |
| 5,042.1 | 57 La | $L\beta_1$ | 60 |
| 5,156.5 | 56 Ba | $L\beta_{2,15}$ | 20 |
| 5,177.2 | 63 Eu | Ll | 4 |
| 5,207.7 | 60 Nd | $L\alpha_2$ | 11 |
| 5,230.4 | 60 Nd | $L\alpha_1$ | 100 |
| 5,262.2 | 58 Ce | $L\beta_1$ | 61 |
| 5,280.4 | 55 Cs | $L\gamma_1$ | 8 |
| 5,362.1 | 64 Gd | Ll | 4 |
| 5,383.5 | 57 La | $L\beta_{2,15}$ | 21 |
| 5,405.5 | 24 Cr | $K\alpha_2$ | 50 |
| 5,408 | 61 Pm | $L\alpha_2$ | 11 |
| 5,414.7 | 24 Cr | $K\alpha_1$ | 100 |
| 5,427.3 | 23 V | $K\beta_{1,3}$ | 15 |
| 5,432 | 61 Pm | $L\alpha_1$ | 100 |
| 5,488.9 | 59 Pr | $L\beta_1$ | 61 |

| | | | |
|---|---|---|---|
| 5,531.1 | 56 Ba | $L\gamma_1$ | 9 |
| 5,546.7 | 65 Tb | Ll | 4 |
| 5,609.0 | 62 Sm | $L\alpha_2$ | 11 |
| 5,613.4 | 58 Ce | $L\beta_{2,15}$ | 21 |
| 5,636.1 | 62 Sm | $L\alpha_1$ | 100 |
| 5,721.6 | 60 Nd | $L\beta_1$ | 60 |
| 5,743.1 | 66 Dy | Ll | 4 |
| 5,788.5 | 57 La | $L\gamma_1$ | 9 |
| 5,816.6 | 63 Eu | $L\alpha_2$ | 11 |
| 5,845.7 | 63 Eu | $L\alpha_1$ | 100 |
| 5,850 | 59 Pr | $L\beta_{2,15}$ | 21 |
| 5,887.6 | 25 Mn | $K\alpha_2$ | 50 |
| 5,898.8 | 25 Mn | $K\alpha_1$ | 100 |
| 5,943.4 | 67 Ho | Ll | 4 |
| 5,946.7 | 24 Cr | $K\beta_{1,3}$ | 15 |
| 5,961 | 61 Pm | $L\beta_1$ | 61 |
| 6,025.0 | 64 Gd | $L\alpha_2$ | 11 |
| 6,052 | 58 Ce | $L\gamma_1$ | 9 |
| 6,057.2 | 64 Gd | $L\alpha_1$ | 100 |
| 6,089.4 | 60 Nd | $L\beta_{2,15}$ | 21 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 6,152 | 68 Er | Ll | 4 |
| 6,205.1 | 62 Sm | $L\beta_1$ | 61 |
| 6,238.0 | 65 Tb | $L\alpha_2$ | 11 |
| 6,272.8 | 65 Tb | $L\alpha_1$ | 100 |
| 6,322.1 | 59 Pr | $L\gamma_1$ | 9 |
| 6,339 | 61 Pm | $L\beta_2$ | 21 |
| 6,341.9 | 69 Tm | Ll | 4 |
| 6,390.8 | 26 Fe | $K\alpha_2$ | 50 |
| 6,403.8 | 26 Fe | $K\alpha_1$ | 100 |
| 6,456.4 | 63 Eu | $L\beta_1$ | 62 |
| 6,457.7 | 66 Dy | $L\alpha_2$ | 11 |
| 6,490.4 | 25 Mn | $K\beta_{1,3}$ | 17 |
| 6,495.2 | 66 Dy | $L\alpha_1$ | 100 |
| 6,545.5 | 70 Yb | Ll | 4 |
| 6,587.0 | 62 Sm | $L\beta_{2,15}$ | 21 |
| 6,602.1 | 60 Nd | $L\gamma_1$ | 10 |
| 6,679.5 | 67 Ho | $L\alpha_2$ | 11 |
| 6,713.2 | 64 Gd | $L\beta_1$ | 62 |
| 6,719.8 | 67 Ho | $L\alpha_1$ | 100 |
| 6,752.8 | 71 Lu | Ll | 4 |
| 6,843.2 | 63 Eu | $L\beta_{2,15}$ | 21 |
| 6,892 | 61 Pm | $L\gamma_1$ | 10 |
| 6,905.0 | 68 Er | $L\alpha_2$ | 11 |
| 6,915.3 | 27 Co | $K\alpha_2$ | 51 |
| 6,930.3 | 27 Co | $K\alpha_1$ | 100 |
| 6,948.7 | 68 Er | $L\alpha_1$ | 100 |
| 6,959.6 | 72 Hf | Ll | 5 |
| 6,978 | 65 Tb | $L\beta_1$ | 61 |
| 7,058.0 | 26 Fe | $K\beta_{1,3}$ | 17 |
| 7,102.8 | 64 Gd | $L\beta_{2,15}$ | 21 |
| 7,133.1 | 69 Tm | $L\alpha_2$ | 11 |
| 7,173.1 | 73 Ta | Ll | 5 |
| 7,178.0 | 62 Sm | $L\gamma_1$ | 10 |
| 7,179.9 | 69 Tm | $L\alpha_1$ | 100 |
| 7,247.7 | 66 Dy | $L\beta_1$ | 62 |
| 7,366.7 | 65 Tb | $L\beta_{2,15}$ | 21 |
| 7,367.3 | 70 Yb | $L\alpha_2$ | 11 |
| 7,387.8 | 74 W | Ll | 5 |
| 7,415.6 | 70 Yb | $L\alpha_1$ | 100 |
| 7,460.9 | 28 Ni | $K\alpha_2$ | 51 |
| 7,478.2 | 28 Ni | $K\alpha_1$ | 100 |
| 7,480.3 | 63 Eu | $L\gamma_1$ | 10 |
| 7,525.3 | 67 Ho | $L\beta_1$ | 64 |
| 7,603.6 | 75 Re | Ll | 5 |
| 7,604.9 | 71 Lu | $L\alpha_2$ | 11 |
| 7,635.7 | 66 Dy | $L\beta_2$ | 20 |
| 7,649.4 | 27 Co | $K\beta_{1,3}$ | 17 |
| 7,655.5 | 71 Lu | $L\alpha_1$ | 100 |
| 7,785.8 | 64 Gd | $L\gamma_1$ | 11 |
| 7,810.9 | 68 Er | $L\beta_1$ | 64 |
| 7,822.2 | 76 Os | Ll | 5 |
| 7,844.6 | 72 Hf | $L\alpha_2$ | 11 |
| 7,899.0 | 72 Hf | $L\alpha_1$ | 100 |
| 7,911 | 67 Ho | $L\beta_{2,15}$ | 20 |
| 8,027.8 | 29 Cu | $K\alpha_2$ | 51 |

| | | | |
|---|---|---|---|
| 8,045.8 | 77 Ir | Ll | 5 |
| 8,047.8 | 29 Cu | $K\alpha_1$ | 100 |
| 8,087.9 | 73 Ta | $L\alpha_2$ | 11 |
| 8,101 | 69 Tm | $L\beta_1$ | 64 |
| 8,102 | 65 Tb | $L\gamma_1$ | 11 |
| 8,146.1 | 73 Ta | $L\alpha_1$ | 100 |
| 8,189.0 | 68 Er | $L\beta_{2,15}$ | 20 |
| 8,264.7 | 28 Ni | $K\beta_{1,3}$ | 17 |
| 8,268 | 78 Pt | Ll | 5 |
| 8,335.2 | 74 W | $L\alpha_2$ | 11 |
| 8,397.6 | 74 W | $L\alpha_1$ | 100 |
| 8,401.8 | 70 Yb | $L\beta_1$ | 65 |
| 8,418.8 | 66 Dy | $L\gamma_1$ | 11 |
| 8,468 | 69 Tm | $L\beta_{2,15}$ | 20 |
| 8,493.9 | 79 Au | Ll | 5 |
| 8,586.2 | 75 Re | $L\alpha_2$ | 11 |
| 8,615.8 | 30 Zn | $K\alpha_2$ | 51 |
| 8,638.9 | 30 Zn | $K\alpha_1$ | 100 |
| 8,652.5 | 75 Re | $L\alpha_1$ | 100 |
| 8,709.0 | 71 Lu | $L\beta_1$ | 66 |

| | | | |
|---|---|---|---|
| 8,721.0 | 80 Hg | Ll | 5 |
| 8,747 | 67 Ho | $L\gamma_1$ | 11 |
| 8,758.8 | 70 Yb | $L\beta_{2,15}$ | 20 |
| 8,841.0 | 76 Os | $L\alpha_2$ | 11 |
| 8,905.3 | 29 Cu | $K\beta_{1,3}$ | 17 |
| 8,911.7 | 76 Os | $L\alpha_1$ | 100 |
| 8,953.2 | 81 Tl | Ll | 6 |
| 9,022.7 | 72 Hf | $L\beta_1$ | 67 |
| 9,048.9 | 71 Lu | $L\beta_2$ | 19 |
| 9,089 | 68 Er | $L\gamma_1$ | 11 |
| 9,099.5 | 77 Ir | $L\alpha_2$ | 11 |
| 9,175.1 | 77 Ir | $L\alpha_1$ | 100 |
| 9,184.5 | 82 Pb | Ll | 6 |
| 9,224.8 | 31 Ga | $K\alpha_2$ | 51 |
| 9,251.7 | 31 Ga | $K\alpha_1$ | 100 |
| 9,343.1 | 73 Ta | $L\beta_1$ | 67 |
| 9,347.3 | 72 Hf | $L\beta_2$ | 20 |
| 9,361.8 | 78 Pt | $L\alpha_2$ | 11 |
| 9,420.4 | 83 Bi | Ll | 6 |
| 9,426 | 69 Tm | $L\gamma_1$ | 12 |

| | | | |
|---|---|---|---|
| 9,442.3 | 78 Pt | $L\alpha_1$ | 100 |
| 9,572.0 | 30 Zn | $K\beta_{1,3}$ | 17 |
| 9,628.0 | 79 Au | $L\alpha_2$ | 11 |
| 9,651.8 | 73 Ta | $L\beta_2$ | 20 |
| 9,672.4 | 74 W | $L\beta_1$ | 67 |
| 9,713.3 | 79 Au | $L\alpha_1$ | 100 |
| 9,780.1 | 70 Yb | $L\gamma_1$ | 12 |
| 9,855.3 | 32 Ge | $K\alpha_2$ | 51 |
| 9,886.4 | 32 Ge | $K\alpha_1$ | 100 |
| 9,897.6 | 80 Hg | $L\alpha_2$ | 11 |
| 9,961.5 | 74 W | $L\beta_2$ | 21 |
| 9,988.8 | 80 Hg | $L\alpha_1$ | 100 |
| 10,010.0 | 75 Re | $L\beta_1$ | 66 |
| 10,143.4 | 71 Lu | $L\gamma_1$ | 12 |
| 10,172.8 | 81 Tl | $L\alpha_2$ | 11 |
| 10,260.3 | 31 Ga | $K\beta_3$ | 5 |
| 10,264.2 | 31 Ga | $K\beta_1$ | 66 |
| 10,268.5 | 81 Tl | $L\alpha_1$ | 100 |
| 10,275.2 | 75 Re | $L\beta_2$ | 22 |
| 10,355.3 | 76 Os | $L\beta_1$ | 67 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 10,449.5 | 82 Pb | $L\alpha_2$ | 11 |
| 10,508.0 | 33 As | $K\alpha_2$ | 51 |
| 10,515.8 | 72 Hf | $L\gamma_1$ | 12 |
| 10,543.7 | 33 As | $K\alpha_1$ | 100 |
| 10,551.5 | 82 Pb | $L\alpha_1$ | 100 |
| 10,598.5 | 76 Os | $L\beta_2$ | 22 |
| 10,708.3 | 77 Ir | $L\beta_1$ | 66 |
| 10,730.9 | 83 Bi | $L\alpha_2$ | 11 |
| 10,838.8 | 83 Bi | $L\alpha_1$ | 100 |
| 10,895.2 | 73 Ta | $L\gamma_1$ | 12 |
| 10,920.3 | 77 Ir | $L\beta_2$ | 22 |
| 10,978.0 | 32 Ge | $K\beta_3$ | 6 |
| 10,982.1 | 32 Ge | $K\beta_1$ | 60 |
| 11,070.7 | 78 Pt | $L\beta_1$ | 67 |
| 11,118.6 | 90 Th | Ll | 6 |
| 11,181.4 | 34 Se | $K\alpha_2$ | 52 |
| 11,222.4 | 34 Se | $K\alpha_1$ | 100 |
| 11,250.5 | 78 Pt | $L\beta_2$ | 23 |
| 11,285.9 | 74 W | $L\gamma_1$ | 13 |
| 11,442.3 | 79 Au | $L\beta_1$ | 67 |
| 11,584.7 | 79 Au | $L\beta_2$ | 23 |
| 11,618.3 | 92 U | Ll | 7 |
| 11,685.4 | 75 Re | $L\gamma_1$ | 13 |
| 11,720.3 | 33 As | $K\beta_3$ | 6 |
| 11,726.2 | 33 As | $K\beta_1$ | 13 |
| 11,822.6 | 80 Hg | $L\beta_1$ | 67 |
| 11,864 | 33 As | $K\beta_2$ | 1 |
| 11,877.6 | 35 Br | $K\alpha_2$ | 52 |
| 11,924.1 | 80 Hg | $L\beta_2$ | 24 |
| 11,924.2 | 35 Br | $K\alpha_1$ | 100 |
| 12,095.3 | 76 Os | $L\gamma_1$ | 13 |
| 12,213.3 | 81 Tl | $L\beta_1$ | 67 |
| 12,271.5 | 81 Tl | $L\beta_2$ | 25 |
| 12,489.6 | 34 Se | $K\beta_3$ | 6 |
| 12,495.9 | 34 Se | $K\beta_1$ | 13 |
| 12,512.6 | 77 Ir | $L\gamma_1$ | 13 |
| 12,598 | 36 Kr | $K\alpha_2$ | 52 |
| 12,613.7 | 82 Pb | $L\beta_1$ | 66 |
| 12,622.6 | 82 Pb | $L\beta_2$ | 25 |
| 12,649 | 36 Kr | $K\alpha_1$ | 100 |
| 12,652 | 34 Se | $K\beta_2$ | 1 |
| 12,809.6 | 90 Th | $L\alpha_2$ | 11 |
| 12,942.0 | 78 Pt | $L\gamma_1$ | 13 |
| 12,968.7 | 90 Th | $L\alpha_1$ | 100 |
| 12,979.9 | 83 Bi | $L\beta_2$ | 25 |
| 13,023.5 | 83 Bi | $L\beta_1$ | 67 |
| 13,284.5 | 35 Br | $K\beta_3$ | 7 |
| 13,291.4 | 35 Br | $K\beta_1$ | 14 |
| 13,335.8 | 37 Rb | $K\alpha_2$ | 52 |
| 13,381.7 | 79 Au | $L\gamma_1$ | 13 |
| 13,395.3 | 37 Rb | $K\alpha_1$ | 100 |
| 13,438.8 | 92 U | $L\alpha_2$ | 11 |
| 13,469.5 | 35 Br | $K\beta_2$ | 1 |
| 13,614.7 | 92 U | $L\alpha_1$ | 100 |
| 13,830.1 | 80 Hg | $L\gamma_1$ | 14 |

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|---|---|---|---|
| 14,097.9 | 38 Sr | $K\alpha_2$ | 52 |
| 14,104 | 36 Kr | $K\beta_3$ | 7 |
| 14,112 | 36 Kr | $K\beta_1$ | 14 |
| 14,165.0 | 38 Sr | $K\alpha_1$ | 100 |
| 14,291.5 | 81 Tl | $L\gamma_1$ | 14 |
| 14,315 | 36 Kr | $K\beta_2$ | 2 |
| 14,764.4 | 82 Pb | $L\gamma_1$ | 14 |
| 14,882.9 | 39 Y | $K\alpha_2$ | 52 |
| 14,951.7 | 37 Rb | $K\beta_3$ | 7 |
| 14,958.4 | 39 Y | $K\alpha_1$ | 100 |
| 14,961.3 | 37 Rb | $K\beta_1$ | 14 |
| 15,185 | 37 Rb | $K\beta_2$ | 2 |
| 15,247.7 | 83 Bi | $L\gamma_1$ | 14 |
| 15,623.7 | 90 Th | $L\beta_2$ | 26 |
| 15,690.9 | 40 Zr | $K\alpha_2$ | 52 |
| 15,775.1 | 40 Zr | $K\alpha_1$ | 100 |
| 15,824.9 | 38 Sr | $K\beta_3$ | 7 |
| 15,835.7 | 38 Sr | $K\beta_1$ | 14 |
| 16,084.6 | 38 Sr | $K\beta_2$ | 3 |

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|---|---|---|---|
| 16,202.2 | 90 Th | $L\beta_1$ | 69 |
| 16,428.3 | 92 U | $L\beta_2$ | 26 |
| 16,521.0 | 41 Nb | $K\alpha_2$ | 52 |
| 16,615.1 | 41 Nb | $K\alpha_1$ | 100 |
| 16,725.8 | 39 Y | $K\beta_3$ | 8 |
| 16,737.8 | 39 Y | $K\beta_1$ | 15 |
| 17,015.4 | 39 Y | $K\beta_2$ | 3 |
| 17,220.0 | 92 U | $L\beta_1$ | 61 |
| 17,374.3 | 42 Mo | $K\alpha_2$ | 52 |
| 17,479.3 | 42 Mo | $K\alpha_1$ | 100 |
| 17,654 | 40 Zr | $K\beta_3$ | 8 |
| 17,667.8 | 40 Zr | $K\beta_1$ | 15 |
| 17,970 | 40 Zr | $K\beta_2$ | 3 |
| 18,250.8 | 43 Tc | $K\alpha_2$ | 53 |
| 18,367.1 | 43 Tc | $K\alpha_1$ | 100 |
| 18,606.3 | 41 Nb | $K\beta_3$ | 8 |
| 18,622.5 | 41 Nb | $K\beta_1$ | 15 |
| 18,953 | 41 Nb | $K\beta_2$ | 3 |
| 18,982.5 | 90 Th | $L\gamma_1$ | 16 |

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|---|---|---|---|
| 19,150.4 | 44 Ru | $K\alpha_2$ | 53 |
| 19,279.2 | 44 Ru | $K\alpha_1$ | 100 |
| 19,590.3 | 42 Mo | $K\beta_3$ | 8 |
| 19,608.3 | 42 Mo | $K\beta_1$ | 15 |
| 19,965.2 | 42 Mo | $K\beta_2$ | 3 |
| 20,073.7 | 45 Rh | $K\alpha_2$ | 53 |
| 20,167.1 | 92 U | $L\gamma_1$ | 15 |
| 20,216.1 | 45 Rh | $K\alpha_1$ | 100 |
| 20,599 | 43 Tc | $K\beta_3$ | 8 |
| 20,619 | 43 Tc | $K\beta_1$ | 16 |
| 21,005 | 43 Tc | $K\beta_2$ | 4 |
| 21,020.1 | 46 Pd | $K\alpha_2$ | 53 |
| 21,177.1 | 46 Pd | $K\alpha_1$ | 100 |
| 21,634.6 | 44 Ru | $K\beta_3$ | 8 |
| 21,656.8 | 44 Ru | $K\beta_1$ | 16 |
| 21,990.3 | 47 Ag | $K\alpha_2$ | 53 |
| 22,074 | 44 Ru | $K\beta_2$ | 4 |
| 22,162.9 | 47 Ag | $K\alpha_1$ | 100 |
| 22,698.9 | 45 Rh | $K\beta_3$ | 8 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 22,723.6 | 45 Rh | $K\beta_1$ | 16 |
| 22,984.1 | 48 Cd | $K\alpha_2$ | 53 |
| 23,172.8 | 45 Rh | $K\beta_2$ | 4 |
| 23,173.6 | 48 Cd | $K\alpha_1$ | 100 |
| 23,791.1 | 46 Pd | $K\beta_3$ | 8 |
| 23,818.7 | 46 Pd | $K\beta_1$ | 16 |
| 24,002.0 | 49 In | $K\alpha_2$ | 53 |
| 24,209.7 | 49 In | $K\alpha_1$ | 100 |
| 24,299.1 | 46 Pd | $K\beta_2$ | 4 |
| 24,911.5 | 47 Ag | $K\beta_3$ | 9 |
| 24,942.4 | 47 Ag | $K\beta_1$ | 16 |
| 25,044.0 | 50 Sn | $K\alpha_2$ | 53 |
| 25,271.3 | 50 Sn | $K\alpha_1$ | 100 |
| 25,456.4 | 47 Ag | $K\beta_2$ | 4 |
| 26,061.2 | 48 Cd | $K\beta_3$ | 9 |
| 26,095.5 | 48 Cd | $K\beta_1$ | 17 |
| 26,110.8 | 51 Sb | $K\alpha_2$ | 54 |
| 26,359.1 | 51 Sb | $K\alpha_1$ | 100 |
| 26,643.8 | 48 Cd | $K\beta_2$ | 4 |
| 27,201.7 | 52 Te | $K\alpha_2$ | 54 |
| 27,237.7 | 49 In | $K\beta_3$ | 9 |
| 27,275.9 | 49 In | $K\beta_1$ | 17 |
| 27,472.3 | 52 Te | $K\alpha_1$ | 100 |
| 27,860.8 | 49 In | $K\beta_2$ | 5 |
| 28,317.2 | 53 I | $K\alpha_2$ | 54 |
| 28,444.0 | 50 Sn | $K\beta_3$ | 9 |
| 28,486.0 | 50 Sn | $K\beta_1$ | 17 |
| 28,612.0 | 53 I | $K\alpha_1$ | 100 |
| 29,109.3 | 50 Sn | $K\beta_2$ | 5 |
| 29,458 | 54 Xe | $K\alpha_2$ | 54 |
| 29,679.2 | 51 Sb | $K\beta_3$ | 9 |
| 29,725.6 | 51 Sb | $K\beta_1$ | 18 |
| 29,779 | 54 Xe | $K\alpha_1$ | 100 |
| 30,389.5 | 51 Sb | $K\beta_2$ | 5 |
| 30,625.1 | 55 Cs | $K\alpha_2$ | 54 |
| 30,944.3 | 52 Te | $K\beta_3$ | 9 |
| 30,972.8 | 55 Cs | $K\alpha_1$ | 100 |
| 30,995.7 | 52 Te | $K\beta_1$ | 18 |
| 31,700.4 | 52 Te | $K\beta_2$ | 5 |
| 31,817.1 | 56 Ba | $K\alpha_2$ | 54 |
| 32,193.6 | 56 Ba | $K\alpha_1$ | 100 |
| 32,239.4 | 53 I | $K\beta_3$ | 9 |
| 32,294.7 | 53 I | $K\beta_1$ | 18 |
| 33,034.1 | 57 La | $K\alpha_2$ | 54 |
| 33,042 | 53 I | $K\beta_2$ | 5 |
| 33,441.8 | 57 La | $K\alpha_1$ | 100 |
| 33,562 | 54 Xe | $K\beta_3$ | 9 |
| 33,624 | 54 Xe | $K\beta_1$ | 18 |
| 34,278.9 | 58 Ce | $K\alpha_2$ | 55 |
| 34,415 | 54 Xe | $K\beta_2$ | 5 |
| 34,719.7 | 58 Ce | $K\alpha_1$ | 100 |
| 34,919.4 | 55 Cs | $K\beta_3$ | 9 |
| 34,986.9 | 55 Cs | $K\beta_1$ | 18 |
| 35,550.2 | 59 Pr | $K\alpha_2$ | 55 |
| 35,822 | 55 Cs | $K\beta_2$ | 6 |

| | | | |
|---|---|---|---|
| 36,026.3 | 59 Pr | $K\alpha_1$ | 100 |
| 36,304.0 | 56 Ba | $K\beta_3$ | 10 |
| 36,378.2 | 56 Ba | $K\beta_1$ | 18 |
| 36,847.4 | 60 Nd | $K\alpha_2$ | 55 |
| 37,257 | 56 Ba | $K\beta_2$ | 6 |
| 37,361.0 | 60 Nd | $K\alpha_1$ | 100 |
| 37,720.2 | 57 La | $K\beta_3$ | 10 |
| 37,801.0 | 57 La | $K\beta_1$ | 19 |
| 38,171.2 | 61 Pm | $K\alpha_2$ | 55 |
| 38,724.7 | 61 Pm | $K\alpha_1$ | 100 |
| 38,729.9 | 57 La | $K\beta_2$ | 6 |
| 39,170.1 | 58 Ce | $K\beta_3$ | 10 |
| 39,257.3 | 58 Ce | $K\beta_1$ | 19 |
| 39,522.4 | 62 Sm | $K\alpha_2$ | 55 |
| 40,118.1 | 62 Sm | $K\alpha_1$ | 100 |
| 40,233 | 58 Ce | $K\beta_2$ | 6 |
| 40,652.9 | 59 Pr | $K\beta_3$ | 10 |
| 40,748.2 | 59 Pr | $K\beta_1$ | 19 |
| 40,901.9 | 63 Eu | $K\alpha_2$ | 56 |
| 41,542.2 | 63 Eu | $K\alpha_1$ | 100 |
| 41,773 | 59 Pr | $K\beta_2$ | 6 |
| 42,166.5 | 60 Nd | $K\beta_3$ | 10 |
| 42,271.3 | 60 Nd | $K\beta_1$ | 19 |
| 42,308.9 | 64 Gd | $K\alpha_2$ | 56 |
| 42,996.2 | 64 Gd | $K\alpha_1$ | 100 |
| 43,335 | 60 Nd | $K\beta_2$ | 6 |
| 43,713 | 61 Pm | $K\beta_3$ | 10 |
| 43,744.1 | 65 Tb | $K\alpha_2$ | 56 |
| 43,826 | 61 Pm | $K\beta_1$ | 19 |
| 44,481.6 | 65 Tb | $K\alpha_1$ | 100 |
| 44,942 | 61 Pm | $K\beta_2$ | 6 |
| 45,207.8 | 66 Dy | $K\alpha_2$ | 56 |
| 45,289 | 62 Sm | $K\beta_3$ | 10 |
| 45,413 | 62 Sm | $K\beta_1$ | 19 |
| 45,998.4 | 66 Dy | $K\alpha_1$ | 100 |
| 46,578 | 62 Sm | $K\beta_2$ | 6 |
| 46,699.7 | 67 Ho | $K\alpha_2$ | 56 |
| 46,903.6 | 63 Eu | $K\beta_3$ | 10 |
| 47,037.9 | 63 Eu | $K\beta_1$ | 19 |
| 47,546.7 | 67 Ho | $K\alpha_1$ | 100 |
| 48,221.1 | 68 Er | $K\alpha_2$ | 56 |
| 48,256 | 63 Eu | $K\beta_2$ | 6 |
| 48,555 | 64 Gd | $K\beta_3$ | 10 |
| 48,697 | 64 Gd | $K\beta_1$ | 20 |
| 49,127.7 | 68 Er | $K\alpha_1$ | 100 |
| 49,772.6 | 69 Tm | $K\alpha_2$ | 57 |
| 49,959 | 64 Gd | $K\beta_2$ | 7 |
| 50,229 | 65 Tb | $K\beta_3$ | 10 |
| 50,382 | 65 Tb | $K\beta_1$ | 20 |
| 50,741.6 | 69 Tm | $K\alpha_1$ | 100 |
| 51,354.0 | 70 Yb | $K\alpha_2$ | 57 |
| 51,698 | 65 Tb | $K\beta_2$ | 7 |
| 51,957 | 66 Dy | $K\beta_3$ | 10 |
| 52,119 | 66 Dy | $K\beta_1$ | 20 |
| 52,388.9 | 70 Yb | $K\alpha_1$ | 100 |
| 52,965.0 | 71 Lu | $K\alpha_2$ | 57 |
| 53,476 | 66 Dy | $K\beta_2$ | 7 |

***Table 1-3.*** *Energies and intensities of x-ray emission lines (continued).*

| Energy (eV) | Element | Line | Relative intensity |
|---|---|---|---|
| 53,711 | 67 Ho | $K\beta_3$ | 11 |
| 53,877 | 67 Ho | $K\beta_1$ | 20 |
| 54,069.8 | 71 Lu | $K\alpha_1$ | 100 |
| 54,611.4 | 72 Hf | $K\alpha_2$ | 57 |
| 55,293 | 67 Ho | $K\beta_2$ | 7 |
| 55,494 | 68 Er | $K\beta_3$ | 11 |
| 55,681 | 68 Er | $K\beta_1$ | 21 |
| 55,790.2 | 72 Hf | $K\alpha_1$ | 100 |
| 56,277 | 73 Ta | $K\alpha_2$ | 57 |
| 57,210 | 68 Er | $K\beta_2$ | 7 |
| 57,304 | 69 Tm | $K\beta_3$ | 11 |
| 57,517 | 69 Tm | $K\beta_1$ | 21 |
| 57,532 | 73 Ta | $K\alpha_1$ | 100 |
| 57,981.7 | 74 W | $K\alpha_2$ | 58 |
| 59,090 | 69 Tm | $K\beta_2$ | 7 |
| 59,140 | 70 Yb | $K\beta_3$ | 11 |
| 59,318.2 | 74 W | $K\alpha_1$ | 100 |
| 59,370 | 70 Yb | $K\beta_1$ | 21 |
| 59,717.9 | 75 Re | $K\alpha_2$ | 58 |
| 60,980 | 70 Yb | $K\beta_2$ | 7 |
| 61,050 | 71 Lu | $K\beta_3$ | 11 |
| 61,140.3 | 75 Re | $K\alpha_1$ | 100 |
| 61,283 | 71 Lu | $K\beta_1$ | 21 |
| 61,486.7 | 76 Os | $K\alpha_2$ | 58 |
| 62,970 | 71 Lu | $K\beta_2$ | 7 |
| 62,980 | 72 Hf | $K\beta_3$ | 11 |
| 63,000.5 | 76 Os | $K\alpha_1$ | 100 |
| 63,234 | 72 Hf | $K\beta_1$ | 22 |
| 63,286.7 | 77 Ir | $K\alpha_2$ | 58 |
| 64,895.6 | 77 Ir | $K\alpha_1$ | 100 |
| 64,948.8 | 73 Ta | $K\beta_3$ | 11 |
| 64,980 | 72 Hf | $K\beta_2$ | 7 |
| 65,112 | 78 Pt | $K\alpha_2$ | 58 |
| 65,223 | 73 Ta | $K\beta_1$ | 22 |
| 66,832 | 78 Pt | $K\alpha_1$ | 100 |
| 66,951.4 | 74 W | $K\beta_3$ | 11 |
| 66,989.5 | 79 Au | $K\alpha_2$ | 59 |
| 66,990 | 73 Ta | $K\beta_2$ | 7 |
| 67,244.3 | 74 W | $K\beta_1$ | 22 |
| 68,803.7 | 79 Au | $K\alpha_1$ | 100 |
| 68,895 | 80 Hg | $K\alpha_2$ | 59 |
| 68,994 | 75 Re | $K\beta_3$ | 12 |
| 69,067 | 74 W | $K\beta_2$ | 8 |
| 69,310 | 75 Re | $K\beta_1$ | 22 |
| 70,819 | 80 Hg | $K\alpha_1$ | 100 |
| 70,831.9 | 81 Tl | $K\alpha_2$ | 60 |
| 71,077 | 76 Os | $K\beta_3$ | 12 |
| 71,232 | 75 Re | $K\beta_2$ | 8 |
| 71,413 | 76 Os | $K\beta_1$ | 23 |
| 72,804.2 | 82 Pb | $K\alpha_2$ | 60 |
| 72,871.5 | 81 Tl | $K\alpha_1$ | 100 |
| 73,202.7 | 77 Ir | $K\beta_3$ | 12 |
| 73,363 | 76 Os | $K\beta_2$ | 8 |
| 73,560.8 | 77 Ir | $K\beta_1$ | 23 |
| 74,814.8 | 83 Bi | $K\alpha_2$ | 60 |

| | | | |
|---|---|---|---|
| 74,969.4 | 82 Pb | $K\alpha_1$ | 100 |
| 75,368 | 78 Pt | $K\beta_3$ | 12 |
| 75,575 | 77 Ir | $K\beta_2$ | 8 |
| 75,748 | 78 Pt | $K\beta_1$ | 23 |
| 77,107.9 | 83 Bi | $K\alpha_1$ | 100 |
| 77,580 | 79 Au | $K\beta_3$ | 12 |
| 77,850 | 78 Pt | $K\beta_2$ | 8 |
| 77,984 | 79 Au | $K\beta_1$ | 23 |
| 79,822 | 80 Hg | $K\beta_3$ | 12 |
| 80,150 | 79 Au | $K\beta_2$ | 8 |
| 80,253 | 80 Hg | $K\beta_1$ | 23 |

| | | | |
|---|---|---|---|
| 82,118 | 81 Tl | $K\beta_3$ | 12 |
| 82,515 | 80 Hg | $K\beta_2$ | 8 |
| 82,576 | 81 Tl | $K\beta_1$ | 23 |
| 84,450 | 82 Pb | $K\beta_3$ | 12 |
| 84,910 | 81 Tl | $K\beta_2$ | 8 |
| 84,936 | 82 Pb | $K\beta_1$ | 23 |
| 86,834 | 83 Bi | $K\beta_3$ | 12 |
| 87,320 | 82 Pb | $K\beta_2$ | 8 |
| 87,343 | 83 Bi | $K\beta_1$ | 23 |
| 89,830 | 83 Bi | $K\beta_2$ | 9 |

| | | | |
|---|---|---|---|
| 89,953 | 90 Th | $K\alpha_2$ | 62 |
| 93,350 | 90 Th | $K\alpha_1$ | 100 |
| 94,665 | 92 U | $K\alpha_2$ | 62 |
| 98,439 | 92 U | $K\alpha_1$ | 100 |
| 104,831 | 90 Th | $K\beta_3$ | 12 |
| 105,609 | 90 Th | $K\beta_1$ | 24 |
| 108,640 | 90 Th | $K\beta_2$ | 9 |
| 110,406 | 92 U | $K\beta_3$ | 13 |
| 111,300 | 92 U | $K\beta_1$ | 24 |
| 114,530 | 92 U | $K\beta_2$ | 9 |