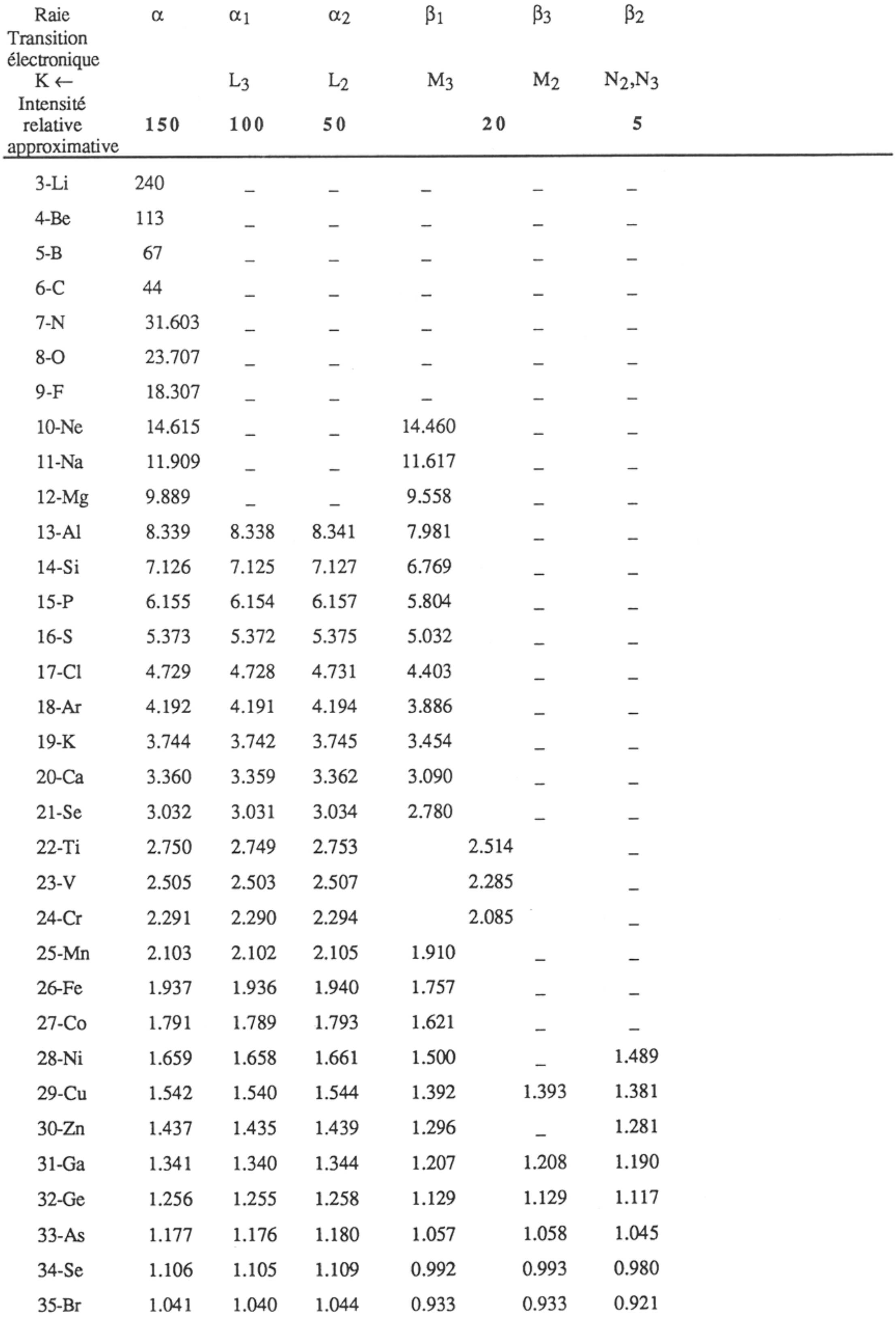
# Annexe II : Raies de fluorescence

Série K (en Å) [1/3]



| Raie | $\alpha$ | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_3$ | $\beta_2$ |
|---|---|---|---|---|---|---|
| Transition électronique K ← |  | $L_3$ | $L_2$ | $M_3$ | $M_2$ | $N_2,N_3$ |
| Intensité relative approximative | **150** | **100** | **50** | **20** |  | **5** |
| 3-Li | 240 | _ | _ | _ | _ | _ |
| 4-Be | 113 | _ | _ | _ | _ | _ |
| 5-B | 67 | _ | _ | _ | _ | _ |
| 6-C | 44 | _ | _ | _ | _ | _ |
| 7-N | 31.603 | _ | _ | _ | _ | _ |
| 8-O | 23.707 | _ | _ | _ | _ | _ |
| 9-F | 18.307 | _ | _ | _ | _ | _ |
| 10-Ne | 14.615 | _ | _ | 14.460 | _ | _ |
| 11-Na | 11.909 | _ | _ | 11.617 | _ | _ |
| 12-Mg | 9.889 | _ | _ | 9.558 | _ | _ |
| 13-Al | 8.339 | 8.338 | 8.341 | 7.981 | _ | _ |
| 14-Si | 7.126 | 7.125 | 7.127 | 6.769 | _ | _ |
| 15-P | 6.155 | 6.154 | 6.157 | 5.804 | _ | _ |
| 16-S | 5.373 | 5.372 | 5.375 | 5.032 | _ | _ |
| 17-Cl | 4.729 | 4.728 | 4.731 | 4.403 | _ | _ |
| 18-Ar | 4.192 | 4.191 | 4.194 | 3.886 | _ | _ |
| 19-K | 3.744 | 3.742 | 3.745 | 3.454 | _ | _ |
| 20-Ca | 3.360 | 3.359 | 3.362 | 3.090 | _ | _ |
| 21-Se | 3.032 | 3.031 | 3.034 | 2.780 | _ | _ |
| 22-Ti | 2.750 | 2.749 | 2.753 | 2.514 |  | _ |
| 23-V | 2.505 | 2.503 | 2.507 | 2.285 |  | _ |
| 24-Cr | 2.291 | 2.290 | 2.294 | 2.085 |  | _ |
| 25-Mn | 2.103 | 2.102 | 2.105 | 1.910 | _ | _ |
| 26-Fe | 1.937 | 1.936 | 1.940 | 1.757 | _ | _ |
| 27-Co | 1.791 | 1.789 | 1.793 | 1.621 | _ | _ |
| 28-Ni | 1.659 | 1.658 | 1.661 | 1.500 | _ | 1.489 |
| 29-Cu | 1.542 | 1.540 | 1.544 | 1.392 | 1.393 | 1.381 |
| 30-Zn | 1.437 | 1.435 | 1.439 | 1.296 | _ | 1.281 |
| 31-Ga | 1.341 | 1.340 | 1.344 | 1.207 | 1.208 | 1.190 |
| 32-Ge | 1.256 | 1.255 | 1.258 | 1.129 | 1.129 | 1.117 |
| 33-As | 1.177 | 1.176 | 1.180 | 1.057 | 1.058 | 1.045 |
| 34-Se | 1.106 | 1.105 | 1.109 | 0.992 | 0.993 | 0.980 |
| 35-Br | 1.041 | 1.040 | 1.044 | 0.933 | 0.933 | 0.921 |

# Série K (en Å) [2/3]

| Raie | $\alpha$ | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_3$ | $\beta_2$ |
|---|---|---|---|---|---|---|
| Transition électronique K ← |  | $L_3$ | $L_2$ | $M_3$ | $M_2$ | $N_2$,$N_3$ |
| Intensité relative approximative | **150** | **100** | **50** | **20** |  | **5** |
| 36-Kr | 0.981 | 0.980 | 0.984 | 0.879 | 0.879 | 0.866 |
| 37-Rb | 0.927 | 0.926 | 0.930 | 0.829 | 0.830 | 0.817 |
| 38-Sr | 0.877 | 0.875 | 0.880 | 0.783 | 0.784 | 0.771 |
| 39-Y | 0.831 | 0.829 | 0.833 | 0.740 | 0.741 | 0.771 |
| 40-Zr | 0.788 | 0.786 | 0.791 | 0.701 | 0.702 | 0.690 |
| 41-Nb | 0.748 | 0.747 | 0.751 | 0.665 | 0.666 | 0.645 |
| 42-Mo | 0.710 | 0.709 | 0.713 | 0.632 | 0.633 | 0.621 |
| 43-Te | 0.674 | 0.673 | 0.676 | 0.601 | 0.602 | 0.590 |
| 44-Ru | 0.644 | 0.643 | 0.647 | 0.572 | 0.573 | 0.562 |
| 45-Rh | 0.614 | 0.613 | 0.617 | 0.546 | 0.546 | 0.535 |
| 46-Pd | 0.587 | 0.585 | 0.590 | 0.521 | 0.521 | 0.510 |
| 47-Ag | 0.561 | 0.559 | 0.564 | 0.497 | 0.498 | 0.487 |
| 48-Cd | 0.536 | 0.535 | 0.339 | 0.475 | 0.476 | 0.465 |
| 49-In | 0.514 | 0.512 | 0.517 | 0.455 | 0.455 | 0.455 |
| 50-Sn | 0.492 | 0.491 | 0.495 | 0.435 | 0.436 | 0.426 |
| 51-Sb | 0.472 | 0.470 | 0.475 | 0.417 | 0.418 | 0.408 |
| 52-Te | 0.453 | 0.451 | 0.456 | 0.400 | 0.401 | 0.391 |
| 53-I | 0.435 | 0.433 | 0.438 | 0.384 | 0.385 | 0.376 |
| 54-Xe | 0.418 | 0.416 | 0.421 | 0.369 | – | 0.360 |
| 55-Cs | 0.402 | 0.401 | 0.405 | 0.355 | 0.355 | 0.346 |
| 56-Ba | 0.387 | 0.385 | 0.390 | 0.341 | 0.342 | 0.333 |
| 57-La | 0.373 | 0.371 | 0.376 | 0.328 | 0.329 | 0.320 |
| 58-Ce | 0.359 | 0.357 | 0.362 | 0.316 | 0.317 | 0.309 |
| 59-Pr | 0.346 | 0.344 | 0.349 | 0.305 | 0.305 | 0.297 |
| 60-Nd | 0.334 | 0.332 | 0.337 | 0.294 | 0.294 | 0.287 |
| 61-Pm | 0.322 | 0.312 | 0.325 | 0.283 | 0.284 | 0.276 |
| 62-Sm | 0.311 | 0.309 | 0.314 | 0.274 | 0.274 | 0.267 |
| 63-Eu | 0.301 | 0.299 | 0.304 | 0.264 | 0.265 | 0.258 |
| 64-Gd | 0.291 | 0.289 | 0.294 | 0.255 | 0.256 | 0.249 |
| 65-Tb | 0.281 | 0.279 | 0.284 | 0.246 | 0.246 | 0.329 |
| 66-Dy | 0.272 | 0.270 | 0.275 | 0.237 | 0.238 | 0.231 |
| 67-Ho | 0.263 | 0.261 | 0.266 | 0.230 | 0.231 | 0.224 |
| 68-Er | 0.255 | 0.253 | 0.258 | 0.222 | 0.223 | 0.217 |
| 69-Tm | 0.246 | 0.244 | 0.250 | 0.215 | 0.216 | 0.210 |

## Série K (en Å) [3/3]

| Raie | $\alpha$ | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_3$ | $\beta_2$ |
|---|---|---|---|---|---|---|
| Transition électronique K ← | | $L_3$ | $L_2$ | $M_3$ | $M_2$ | $N_2,N_3$ |
| Intensité relative approximative | **150** | **100** | **50** | **20** | | **5** |
| 70-Yb | 0.238 | 0.236 | 0.241 | 0.208 | 0.209 | 0.203 |
| 71-Lu | 0.231 | 0.229 | 0.234 | 0.202 | 0.203 | 0.197 |
| 72-Hf | 0.224 | 0.222 | 0.227 | 0.195 | 0.196 | 0.190 |
| 73-Ta | 0.217 | 0.215 | 0.220 | 0.190 | 0.191 | 0.185 |
| 74-W | 0.211 | 0.209 | 0.213 | 0.184 | 0.185 | 0.179 |
| 75-Re | 0.204 | 0.202 | 0.207 | 0.179 | 0.179 | 0.174 |
| 76-Os | 0.198 | 0.196 | 0.201 | 0.173 | 0.174 | 0.169 |
| 77-Ir | 0.193 | 0.191 | 0.196 | 0.168 | 0.169 | 0.164 |
| 78-Pt | 0.187 | 0.185 | 0.190 | 0.163 | 0.164 | 0.159 |
| 79-Au | 0.182 | 0.180 | 0.185 | 0.159 | 0.160 | 0.155 |
| 80-Hg | 0.177 | 0.175 | 0.180 | 0.154 | 0.155 | 0.150 |
| 81-Tl | 0.172 | 0.170 | 0.175 | 0.150 | 0.151 | 0.146 |
| 82-Pb | 0.167 | 0.165 | 0.170 | 0.146 | 0.117 | 0.162 |
| 83- Bi | 0.162 | 0.161 | 0.165 | 0.142 | 0.143 | 0.135 |
| 84-Po | 0.158 | 0.156 | 0.161 | 0.138 | 0.139 | 0.134 |
| 85-At | 0.154 | 0.152 | 0.157 | 0.134 | 0.135 | 0.131 |
| 86-Rn | 0.150 | 0.148 | 0.153 | 0.131 | 0.132 | 0.127 |
| 87-Fr | 0.146 | 0.144 | 0.149 | 0.127 | 0.128 | 0.124 |
| 88-Ra | 0.142 | 0.140 | 0.145 | 0.124 | 0.125 | 0.120 |
| 89-Ac | 0.138 | 0.136 | 0.141 | 0.121 | 0.121 | 0.117 |
| 90-Th | 0.135 | 0.133 | 0.138 | 0.117 | 0.118 | 0.114 |
| 91-Pa | 0.131 | 0.129 | 0.134 | 0.114 | 0.115 | 0.111 |
| 92-U | 0.128 | 0.126 | 0.131 | 0.111 | 0.112 | 0.108 |
| 93-Np | 0.125 | 0.123 | 0.128 | 0.109 | _ | 0.105 |
| 94-Pu | 0.122 | 0.120 | 0.125 | 0.106 | _ | 0.103 |
| 95-Am | 0.119 | 0.117 | 0.122 | 0.103 | _ | 0.100 |
| 96-Cm | 0.116 | 0.114 | 0.119 | 0.101 | _ | 0.098 |
| 97-Bk | 0.113 | 0.111 | 0.116 | 0.098 | _ | 0.095 |
| 98-Cf | 0.110 | 0.108 | 0.113 | 0.097 | _ | 0.093 |

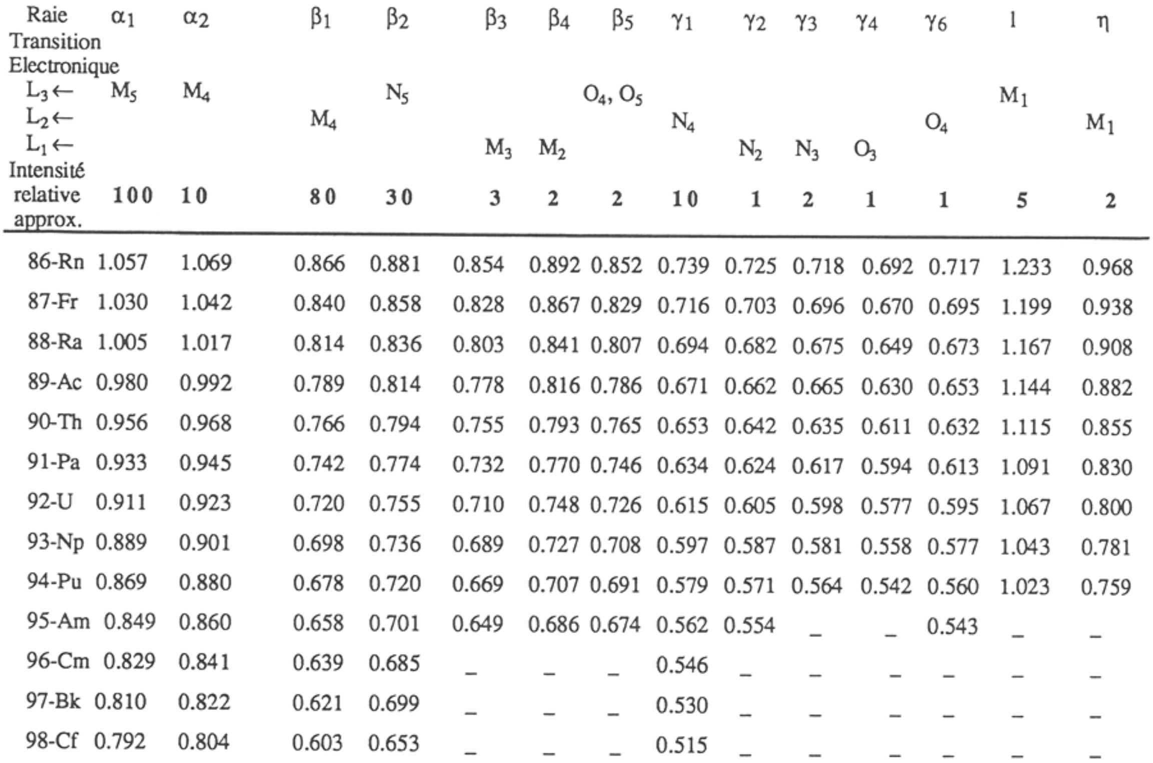
# Séries L (en Å) [1/3]

| Raie | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_2$ | $\beta_3$ | $\beta_4$ | $\beta_5$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\gamma_4$ | $\gamma_6$ | l | $\eta$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transition Electronique | | | | | | | | | | | | | | |
| $L_3$ ← | $M_5$ | $M_4$ | | $N_5$ | | | $O_4, O_5$ | | | | | | $M_1$ | |
| $L_2$ ← | | | $M_4$ | | | | | $N_4$ | | | | $O_4$ | | $M_1$ |
| $L_1$ ← | | | | | $M_3$ | $M_2$ | | | $N_2$ | $N_3$ | $O_3$ | | | |
| Intensité relative approx. | **100** | **10** | **80** | **30** | **3** | **2** | **2** | **10** | **1** | **2** | **1** | **1** | **5** | **2** |
| 16-S | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | 83.400 | |
| 17-Cl | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | 67.840 | 67.250 |
| 18-Ar | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | 56.212 | 56.813 |
| 19-K | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | 47.834 | 47.325 |
| 20-Ca | 36.393 | | 36.022 | _ | _ | _ | _ | _ | _ | _ | _ | _ | 41.042 | 40.542 |
| 21-Sc | 31.393 | | 31.072 | _ | _ | _ | _ | _ | _ | _ | _ | _ | 35.671 | 35.20 |
| 22-Ti | 27.445 | | 27.074 | _ | _ | _ | _ | _ | _ | _ | _ | _ | 31.423 | 30.942 |
| 23-V | 24.309 | | 23.898 | _ | 21.890 | | _ | _ | _ | _ | _ | _ | 27.826 | 27.375 |
| 24-Cr | 21.713 | | 21.323 | _ | 19.429 | | _ | _ | _ | _ | _ | _ | 24.840 | 24.339 |
| 25-Mn | 19.489 | | 19.158 | _ | 17.575 | | _ | _ | _ | _ | _ | _ | 22.315 | 21.864 |
| 26-Fe | 17.602 | | 17.690 | _ | 15.710 | | _ | _ | _ | _ | _ | _ | 20.201 | 19.730 |
| 27-Co | 16.000 | | 15.698 | _ | 14.240 | | _ | _ | _ | _ | _ | _ | 18.358 | 17.860 |
| 28-Ni | 14.595 | | 14.308 | _ | 13.146 | | _ | _ | _ | _ | _ | _ | 16.693 | 16.304 |
| 29-Cu | 13.357 | | 13.079 | _ | 12.115 | | _ | _ | _ | _ | _ | _ | 15.297 | 14.940 |
| 30-Zn | 12.282 | | 12.009 | _ | 11.185 | | _ | _ | _ | _ | _ | _ | 14.081 | 13.719 |
| 31-Ga | 11.313 | | 11.045 | _ | 10.365 | | _ | _ | _ | _ | _ | _ | 12.976 | 12.620 |
| 32-Ge | 10.436 | | 10.194 | _ | 9.580 | 9.640 | _ | _ | _ | _ | _ | _ | 11.944 | 11.608 |
| 33-As | 9.671 | | 9.414 | _ | 8.930 | | _ | _ | _ | _ | _ | _ | 11.069 | 10.732 |
| 34-Se | 8.990 | | 8.735 | _ | 8.321 | | _ | _ | _ | _ | _ | _ | 10.293 | 9.959 |
| 35-Br | 8.375 | | 8.126 | _ | 7.767 | | _ | _ | _ | _ | _ | _ | 9.583 | 9.253 |
| 36-Kr | 7.817 | | 7.576 | _ | 7.264 | 7.304 | _ | _ | _ | _ | _ | _ | 8.946 | 8.626 |
| 37-Rb | 7.318 | 7.325 | 7.075 | _ | 6.788 | 6.821 | _ | _ | 6.045 | | _ | _ | 8.363 | 8.042 |
| 38-Sr | 6.863 | 6.870 | 6.623 | _ | 6.367 | 6.403 | _ | _ | 5.644 | | _ | _ | 7.836 | 7.517 |
| 39-Y | 6.449 | 6.456 | 6.211 | _ | 5.983 | 6.018 | _ | _ | 5.283 | | _ | _ | 7.356 | 7.040 |
| 40-Zr | 6.070 | 6.077 | 5.836 | 5.586 | 5.632 | 5.668 | _ | 5.384 | 4.953 | | _ | _ | 6.918 | 6.606 |
| 41-Nb | 5.725 | 5.732 | 5.492 | 5.238 | 5.310 | 5.346 | _ | 5.036 | 4.654 | | _ | _ | 6.517 | 6.210 |
| 42-Mo | 5.406 | 5.414 | 5.176 | 4.923 | 5.013 | 5.048 | _ | 4.726 | 4.380 | | _ | _ | 6.150 | 5.847 |
| 43-Tc | 5.114 | 5.123 | 4.887 | 4.636 | 4.737 | 4.773 | _ | 4.440 | 4.138 | | _ | _ | 5.819 | 5.516 |
| 44-Ru | 4.846 | 4.854 | 4.620 | 4.372 | 4.487 | 4.523 | _ | 4.182 | 3.897 | | _ | _ | 5.503 | 5.204 |
| 45-Rh | 4.597 | 4.605 | 4.374 | 4.130 | 4.253 | 4.289 | _ | 3.944 | 3.685 | | _ | _ | 5.217 | 4.922 |
| 46-Pd | 4.368 | 4.376 | 4.146 | 3.909 | 4.034 | 4.071 | _ | 3.725 | 3.489 | | _ | _ | 4.952 | 4.660 |
| 47-Ag | 4.154 | 4.162 | 3.935 | 3.703 | 3.834 | 3.870 | _ | 3.523 | 3.307 | | _ | _ | 4.707 | 4.418 |
| 48-Cd | 3.956 | 3.965 | 3.739 | 3.514 | 3.644 | 3.681 | _ | 3.336 | 3.137 | | _ | _ | 4.480 | 4.193 |
| 49-In | 3.752 | 3.781 | 3.555 | 3.339 | 3.470 | 3.507 | _ | 3.162 | 2.980 | | 2.926 | _ | 4.629 | 3.983 |

# Séries L (en Å) [2/3]

| Raie | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_2$ | $\beta_3$ | $\beta_4$ | $\beta_5$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\gamma_4$ | $\gamma_6$ | l | $\eta$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transition Electronique | | | | | | | | | | | | | | |
| $L_3 \leftarrow$ | $M_5$ | $M_4$ | | $N_5$ | | | $O_4$, $O_5$ | | | | | | $M_1$ | |
| $L_2 \leftarrow$ | | | $M_4$ | | | | | $N_4$ | | | | $O_4$ | | $M_1$ |
| $L_1 \leftarrow$ | | | | | $M_3$ | $M_2$ | | | $N_2$ | $N_3$ | $O_3$ | | | |
| Intensité relative approx. | **100** | **10** | **80** | **30** | **3** | **2** | **2** | **10** | **1** | **2** | **1** | **1** | **5** | **2** |
| 50-Sn | 3.600 | 3.609 | 3.385 | 3.175 | 3.306 | 3.344 | _ | 3.001 | 2.835 | | 2.778 | _ | 4.071 | 3.789 |
| 51-Sb | 3.439 | 3.148 | 3.226 | 3.023 | 3.152 | 3.190 | _ | 2.852 | 2.695 | | 2.639 | _ | 3.888 | 3.607 |
| 52-Te | 3.290 | 3.299 | 3.077 | 2.882 | 3.009 | 3.046 | _ | 2.712 | 2.567 | | 2.511 | _ | 3.716 | 3.418 |
| 53-I | 3.149 | 3.158 | 2.937 | 2.751 | 2.874 | 2.912 | _ | 2.582 | 2.447 | | 2.391 | _ | 3.357 | 3.280 |
| 54-Xe | 3.017 | 3.025 | 2.803 | 2.626 | 2.745 | 2.784 | _ | _ | _ | | _ | _ | 3.421 | 3.143 |
| 55-Cs | 2.892 | 2.902 | 2.683 | 2.511 | 2.628 | 2.666 | _ | 2.348 | 2.237 | 2.233 | 2.174 | _ | 3.267 | 2.994 |
| 56-Ba | 2.776 | 2.785 | 2.567 | 2.404 | 2.516 | 2.555 | _ | 2.242 | 2.138 | 2.134 | 2.075 | _ | 3.135 | 2.862 |
| 57-La | 2.665 | 2.674 | 2.458 | 2.303 | 2.410 | 2.449 | _ | 2.141 | 2.046 | 2.041 | 1.983 | _ | 3.006 | 2.740 |
| 58-Ce | 2.561 | 2.570 | 2.356 | 2.208 | 2.311 | 2.349 | _ | 2.048 | 1.960 | 1.955 | 1.899 | _ | 2.892 | 2.620 |
| 59-Pr | 2.463 | 2.473 | 2.259 | 2.119 | 2.216 | 2.255 | _ | 1.961 | 1.879 | 1.874 | 1.819 | _ | 2.784 | 2.512 |
| 60-Nd | 2.370 | 2.382 | 2.166 | 2.035 | 2.126 | 2.166 | _ | 1.878 | 1.801 | 1.797 | 1.745 | 1.855 | 2.675 | 2.409 |
| 61-Pm | 2.283 | 2.292 | 2.081 | 1.956 | 2.042 | 2.081 | _ | 1.799 | 1.729 | 1.724 | _ | _ | 2.591 | 2.322 |
| 62-Sm | 2.199 | 2.210 | 1.998 | 1.882 | 1.962 | 2.000 | 1.779 | 1.726 | 1.659 | 1.655 | 1.606 | _ | 2.482 | 2.218 |
| 63-Eu | 2.120 | 2.131 | 1.920 | 1.812 | 1.887 | 1.926 | _ | 1.657 | 1.597 | 1.591 | 1.544 | _ | 2.395 | 2.131 |
| 64-Gd | 2.046 | 2.057 | 1.847 | 1.746 | 1.815 | 1.853 | _ | 1.592 | 1.534 | 1.529 | 1.485 | _ | 2.312 | 2.049 |
| 65-Tb | 1.976 | 1.986 | 1.777 | 1.682 | 1.747 | 1.785 | 1.577 | 1.530 | 1.477 | 1.471 | 1.427 | _ | 2.234 | 1.973 |
| 66-Dy | 1.909 | 1.920 | 1.710 | 1.623 | 1.681 | 1.720 | _ | 1.473 | 1.423 | 1.417 | 1.374 | _ | 2.158 | 1.898 |
| 67-Ho | 1.845 | 1.856 | 1.647 | 1.567 | 1.619 | 1.658 | _ | 1.417 | 1.371 | 1.364 | 1.323 | _ | 2.086 | 1.826 |
| 68-Er | 1.785 | 1.796 | 1.587 | 1.514 | 1.561 | 1.601 | _ | 1.364 | 1.321 | 1.315 | 1.276 | _ | 2.019 | 1.757 |
| 69-Tm | 1.726 | 1.738 | 1.530 | 1.463 | 1.505 | 1.544 | _ | 1.316 | 1.274 | 1.268 | 1.229 | _ | 1.955 | 1.695 |
| 70-Yb | 1.672 | 1.682 | 1.476 | 1.416 | 1.452 | 1.491 | 1.387 | 1.268 | 1.228 | 1.222 | 1.185 | 1.243 | 1.894 | 1.635 |
| 71-Lu | 1.619 | 1.630 | 1.424 | 1.370 | 1.402 | 1.441 | 1.342 | 1.222 | 1.185 | 1.179 | 1.143 | 1.198 | 1.836 | 1.478 |
| 72-Hf | 1.569 | 1.580 | 1.374 | 1.327 | 1.353 | 1.392 | 1.298 | 1.179 | 1.144 | 1.138 | 1.103 | 1.155 | 1.782 | 1.523 |
| 73-Ta | 1.522 | 1.533 | 1.327 | 1.285 | 1.307 | 1.346 | 1.256 | 1.138 | 1.105 | 1.099 | 1.065 | 1.114 | 1.728 | 1.471 |
| 74-W | 1.476 | 1.487 | 1.282 | 1.245 | 1.263 | 1.302 | 1.215 | 1.098 | 1.068 | 1.062 | 1.028 | 1.074 | 1.678 | 1.421 |
| 75-Re | 1.433 | 1.444 | 1.238 | 1.206 | 1.220 | 1.260 | 1.177 | 1.061 | 1.032 | 1.026 | 0.993 | 1.037 | 1.630 | 1.374 |
| 76-Os | 1.391 | 1.402 | 1.197 | 1.169 | 1.179 | 1.218 | 1.140 | 1.025 | 0.998 | 0.992 | 0.959 | 1.001 | 1.585 | 1.328 |
| 77-Ir | 1.352 | 1.363 | 1.158 | 1.135 | 1.141 | 1.179 | 1.106 | 0.991 | 0.966 | 0.959 | 0.928 | 0.967 | 1.541 | 1.285 |
| 78-Pt | 1.313 | 1.325 | 1.120 | 1.102 | 1.104 | 1.142 | 1.072 | 0.958 | 0.934 | 0.928 | 0.897 | 0.934 | 1.499 | 1.243 |
| 79-Au | 1.277 | 1.288 | 1.083 | 1.070 | 1.68 | 1.106 | 1.040 | 0.927 | 0.905 | 0.898 | 0.867 | 0.903 | 1.460 | 1.202 |
| 80-Hg | 1.242 | 1.253 | 1.049 | 1.040 | 1.034 | 1.072 | 1.010 | 0.897 | 0.876 | 0.869 | 0.839 | 0.873 | 1.422 | 1.164 |
| 81-Tl | 1.207 | 1.218 | 1.015 | 1.010 | 1.001 | 1.039 | 0.981 | 0.868 | 0.848 | 0.842 | 0.812 | 0.845 | 1.385 | 1.127 |
| 82-Pb | 1.175 | 1.186 | 0.983 | 0.982 | 0.969 | 1.007 | 0.953 | 0.840 | 0.822 | 0.815 | 0.786 | 0.817 | 1.350 | 1.092 |
| 83-Bi | 1.144 | 1.155 | 0.952 | 0.955 | 0.939 | 0.977 | 0.926 | 0.814 | 0.796 | 0.790 | 0.761 | 0.791 | 1.317 | 1.058 |
| 84-Po | 1.114 | 1.125 | 0.922 | 0.929 | 0.909 | 0.948 | 0.900 | 0.788 | 0.772 | 0.765 | 0.736 | 0.765 | 1.283 | 1.024 |
| 85-At | 1.085 | 1.097 | 0.894 | 0.905 | 0.881 | 0.919 | 0.875 | 0.763 | 0.747 | 0.740 | 0.713 | 0.741 | 1.256 | 0.997 |

# Séries L (en Å) [3/3]



| Raie | $\alpha_1$ | $\alpha_2$ | $\beta_1$ | $\beta_2$ | $\beta_3$ | $\beta_4$ | $\beta_5$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\gamma_4$ | $\gamma_6$ | l | $\eta$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transition Electronique | | | | | | | | | | | | | | |
| $L_3 \leftarrow$ | $M_5$ | $M_4$ | | $N_5$ | | | $O_4$, $O_5$ | | | | | | $M_1$ | |
| $L_2 \leftarrow$ | | | $M_4$ | | | | | $N_4$ | | | | $O_4$ | | $M_1$ |
| $L_1 \leftarrow$ | | | | | $M_3$ | $M_2$ | | | $N_2$ | $N_3$ | $O_3$ | | | |
| Intensité relative approx. | **100** | **10** | **80** | **30** | **3** | **2** | **2** | **10** | **1** | **2** | **1** | **1** | **5** | **2** |
| 86-Rn | 1.057 | 1.069 | 0.866 | 0.881 | 0.854 | 0.892 | 0.852 | 0.739 | 0.725 | 0.718 | 0.692 | 0.717 | 1.233 | 0.968 |
| 87-Fr | 1.030 | 1.042 | 0.840 | 0.858 | 0.828 | 0.867 | 0.829 | 0.716 | 0.703 | 0.696 | 0.670 | 0.695 | 1.199 | 0.938 |
| 88-Ra | 1.005 | 1.017 | 0.814 | 0.836 | 0.803 | 0.841 | 0.807 | 0.694 | 0.682 | 0.675 | 0.649 | 0.673 | 1.167 | 0.908 |
| 89-Ac | 0.980 | 0.992 | 0.789 | 0.814 | 0.778 | 0.816 | 0.786 | 0.671 | 0.662 | 0.665 | 0.630 | 0.653 | 1.144 | 0.882 |
| 90-Th | 0.956 | 0.968 | 0.766 | 0.794 | 0.755 | 0.793 | 0.765 | 0.653 | 0.642 | 0.635 | 0.611 | 0.632 | 1.115 | 0.855 |
| 91-Pa | 0.933 | 0.945 | 0.742 | 0.774 | 0.732 | 0.770 | 0.746 | 0.634 | 0.624 | 0.617 | 0.594 | 0.613 | 1.091 | 0.830 |
| 92-U | 0.911 | 0.923 | 0.720 | 0.755 | 0.710 | 0.748 | 0.726 | 0.615 | 0.605 | 0.598 | 0.577 | 0.595 | 1.067 | 0.800 |
| 93-Np | 0.889 | 0.901 | 0.698 | 0.736 | 0.689 | 0.727 | 0.708 | 0.597 | 0.587 | 0.581 | 0.558 | 0.577 | 1.043 | 0.781 |
| 94-Pu | 0.869 | 0.880 | 0.678 | 0.720 | 0.669 | 0.707 | 0.691 | 0.579 | 0.571 | 0.564 | 0.542 | 0.560 | 1.023 | 0.759 |
| 95-Am | 0.849 | 0.860 | 0.658 | 0.701 | 0.649 | 0.686 | 0.674 | 0.562 | 0.554 | _ | _ | 0.543 | _ | _ |
| 96-Cm | 0.829 | 0.841 | 0.639 | 0.685 | _ | _ | _ | 0.546 | _ | _ | _ | _ | _ | _ |
| 97-Bk | 0.810 | 0.822 | 0.621 | 0.699 | _ | _ | _ | 0.530 | _ | _ | _ | _ | _ | _ |
| 98-Cf | 0.792 | 0.804 | 0.603 | 0.653 | _ | _ | _ | 0.515 | _ | _ | _ | _ | _ | _ |