

X-ray Absorption and Emission Energies of the Elements

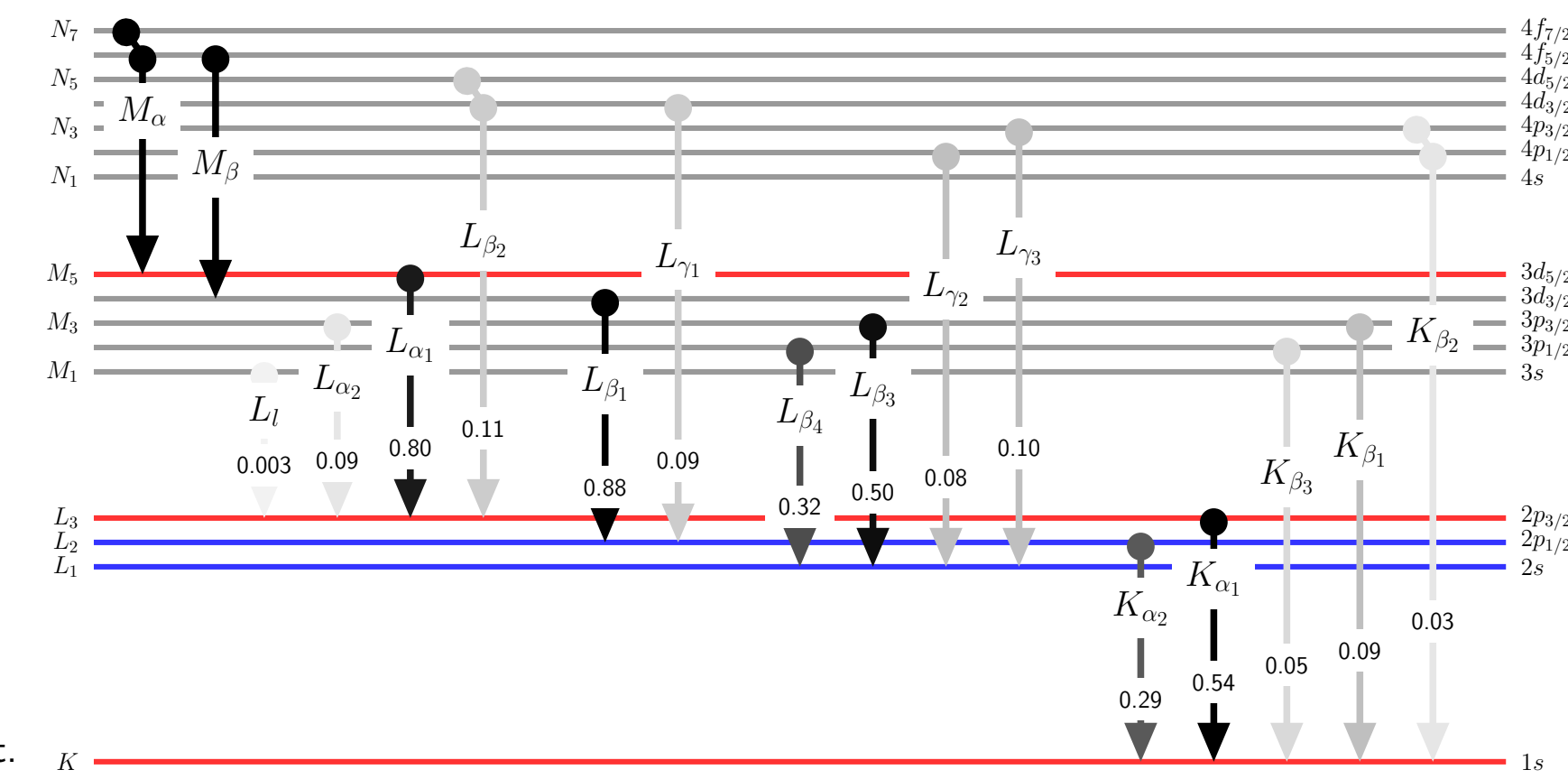
H hydrogen 14 1.0079	Li lithium 55 6.941	Na sodium 1071 22.9898	K potassium 3908 39.0983	Rb rubidium 15200 85.4678	Cs cesium 35985 132.905	Fr francium 101137 223.02
Be beryllium 112 9.0122	Mg magnesium 1303 24.305	Ca calcium 4038 40.08	Sc scandium 4492 44.9559	Y yttrium 17038 88.9059	Ba barium 37441 137.33	Ra radium 103922 226.025
B boron 188 10.81	Al aluminum 1559 26.9815	Ga gallium 10367 69.72	In indium 27940 114.82	Tl thallium 85530 204.383	Pb lead 88005 207.2	Bi bismuth 90526 208.98
C carbon 284 12.011	Si silicon 1839 28.0855	Ge germanium 11103 72.59	Sn tin 29200 118.69	Pb lead 88005 207.2	Po polonium 93105 208.982	At astatine 95730 209.987
N nitrogen 410 14.0067	P phosphorus 2146 30.9738	As arsenic 11867 74.9216	Sb antimony 30491 121.75	Bi bismuth 90526 208.98	Po polonium 93105 208.982	At astatine 95730 209.987
O oxygen 543 15.9994	S sulfur 2472 32.06	Se selenium 12658 78.96	Te tellurium 13814 127.6	Po polonium 93105 208.982	At astatine 95730 209.987	Rn radon 98404 222.018
F fluorine 697 18.9984	Cl chlorine 2822 35.453	Br bromine 13474 79.904	I iodine 33169 126.905	At astatine 95730 209.987	Po polonium 93105 208.982	At astatine 95730 209.987
Ne neon 870 20.179	Ar argon 3206 39.948	Kr krypton 14326 83.8	Xe xenon 34561 131.29	Rn radon 98404 222.018	Po polonium 93105 208.982	At astatine 95730 209.987

Symbol	Z
K edge	K _{α1} K _{β1}
L ₁ edge	L _{β3} L _{β4}
L ₂ edge	L _{β1} L _{γ1}
L ₃ edge	L _{α1} L _{β2}
M ₅ edge	M _α M _β
Mass	oxidation states

Atomic Data and Energies from
W. T. Elam, B. D. Ravel and J. R. Sieber,
Radiation Physics and Chemistry 63, pp 121-128 (2002)

Common oxidation states from wikipedia.org, after
N. N. Greenwood and A. Earnshaw,
Chemistry of the Elements, 2nd ed. (1997).

All energies in eV.
Emission line strengths are approximate, and vary with element.



B boron 188 10.81	C carbon 284 12.011	N nitrogen 410 14.0067	O oxygen 543 15.9994	F fluorine 697 18.9984	Ne neon 870 20.179
Al aluminum 1559 26.9815	Si silicon 1839 28.0855	P phosphorus 2146 30.9738	S sulfur 2472 32.06	Cl chlorine 2822 35.453	Ar argon 3206 39.948
Ga gallium 10367 69.72	Ge germanium 11103 72.59	As arsenic 11867 74.9216	Se selenium 12658 78.96	Br bromine 13474 79.904	Kr krypton 14326 83.8
In indium 27940 114.82	Sn tin 29200 118.69	Sb antimony 30491 121.75	Te tellurium 13814 127.6	I iodine 33169 126.905	Xe xenon 34561 131.29
Tl thallium 85530 204.383	Pb lead 88005 207.2	Bi bismuth 90526 208.98	Po polonium 93105 208.982	At astatine 95730 209.987	Rn radon 98404 222.018



This Periodic Table is available at:
<https://gsecars.uchicago.edu/page/xraytable>
Version 4, 04-April-2019



Ce cerium 40443 140.12	Pr praseodymium 6548 140.908	Nd neodymium 6164 144.24	Pm promethium 5723 144.913	Sm samarium 6071 150.36	Eu europium 6520 151.96	Gd gadolinium 6071 157.25	Tb terbium 6071 158.925	Dy dysprosium 6071 162.5	Ho holmium 6071 164.93	Er erbium 6071 167.26	Tm thulium 6071 168.934	Yb ytterbium 6071 173.04	Lu lutetium 6071 174.967
Th thorium 109651 232.038	Pa protactinium 112601 231.036	U uranium 115606 238.051	Np neptunium 118669 237.048	Pu plutonium 121791 239.052	Am americium 124982 243.061	Cm curium 128241 247.07	Bk berkelium 131556 247.07	Cf californium 134939 251.08	Es einsteinium 115032 251.08	Fm fermium 115032 251.08	Md mendelevium 115032 251.08	No nobelium 115032 251.08	Lr lawrencium 115032 251.08