

Atom	Atomic number (Z)	Ground configuration	First ionization energy/eV†	Ground state
H	1	1s ¹	13.598	² S _{1/2}
He	2	1s ²	24.587	¹ S ₀
Li	3	K2s ¹	5.392	² S _{1/2}
Be	4	K2s ²	9.322	¹ S ₀
B	5	K2s ² 2p ¹	8.298	² P _{1/2} ^o
C	6	K2s ² 2p ²	11.260	³ P ₀
N	7	K2s ² 2p ³	14.534	⁴ S _{3/2} ^o
O	8	K2s ² 2p ⁴	13.618	³ P ₂
F	9	K2s ² 2p ⁵	17.422	² P _{3/2} ^o
Ne	10	K2s ² 2p ⁶	21.564	¹ S ₀
Na	11	KL3s ¹	5.139	² S _{1/2}
Mg	12	KL3s ²	7.646	¹ S ₀
Al	13	KL3s ² 3p ¹	5.986	² P _{1/2} ^o
Si	14	KL3s ² 3p ²	8.151	³ P ₀
P	15	KL3s ² 3p ³	10.486	⁴ S _{3/2} ^o
S	16	KL3s ² 3p ⁴	10.360	³ P ₂
Cl	17	KL3s ² 3p ⁵	12.967	² P _{3/2} ^o
Ar	18	KL3s ² 3p ⁶	15.759	¹ S ₀
K	19	KL3s ² 3p ⁶ 4s ¹	4.341	² S _{1/2}
Ca	20	KL3s ² 3p ⁶ 4s ²	6.113	¹ S ₀
Sc	21	KL3s ² 3p ⁶ 3d ¹ 4s ²	6.54	² D _{3/2}
Ti	22	KL3s ² 3p ⁶ 3d ² 4s ²	6.82	³ F ₂
V	23	KL3s ² 3p ⁶ 3d ³ 4s ²	6.74	⁴ F _{3/2}
Cr	24	KL3s ² 3p ⁶ 3d ⁵ 4s ¹	6.766	⁷ S ₃
Mn	25	KL3s ² 3p ⁶ 3d ⁵ 4s ²	7.435	⁶ S _{5/2}
Fe	26	KL3s ² 3p ⁶ 3d ⁶ 4s ²	7.870	⁵ D ₄
Co	27	KL3s ² 3p ⁶ 3d ⁷ 4s ²	7.86	⁴ F _{9/2}
Ni	28	KL3s ² 3p ⁶ 3d ⁸ 4s ²	7.635	³ F ₄
Cu	29	KLM4s ¹	7.726	² S _{1/2}
Zn	30	KLM4s ²	9.394	¹ S ₀
Ga	31	KLM4s ² 4p ¹	5.999	² P _{1/2} ^o
Ge	32	KLM4s ² 4p ²	7.899	³ P ₀
As	33	KLM4s ² 4p ³	9.81	⁴ S _{3/2} ^o
Se	34	KLM4s ² 4p ⁴	9.752	³ P ₂
Br	35	KLM4s ² 4p ⁵	11.814	² P _{3/2} ^o
Kr	36	KLM4s ² 4p ⁶	13.999	¹ S ₀
Rb	37	KLM4s ² 4p ⁶ 5s ¹	4.177	² S _{1/2}
Sr	38	KLM4s ² 4p ⁶ 5s ²	5.695	¹ S ₀
Y	39	KLM4s ² 4p ⁶ 4d ¹ 5s ²	6.38	³ D _{3/2}
Zr	40	KLM4s ² 4p ⁶ 4d ² 5s ²	6.84	³ F ₂
Nb	41	KLM4s ² 4p ⁶ 4d ⁴ 5s ¹	6.88	⁶ D _{1/2}
Mo	42	KLM4s ² 4p ⁶ 4d ⁵ 5s ¹	7.099	⁷ S ₃
Tc	43	KLM4s ² 4p ⁶ 4d ⁵ 5s ²	7.28	⁶ S _{5/2}
Ru	44	KLM4s ² 4p ⁶ 4d ⁷ 5s ¹	7.37	⁵ F ₅
Rh	45	KLM4s ² 4p ⁶ 4d ⁸ 5s ¹	7.46	⁴ F _{9/2}
Pd	46	KLM4s ² 4p ⁶ 4d ¹⁰	8.34	¹ S ₀
Ag	47	KLM4s ² 4p ⁶ 4d ¹⁰ 5s ¹	7.576	² S _{1/2}
Cd	48	KLM4s ² 4p ⁶ 4d ¹⁰ 5s ²	8.993	¹ S ₀
In	49	KLM4s ² 4p ⁶ 4d ¹⁰ 5s ² 5p ¹	5.786	² P _{1/2} ^o
Sn	50	KLM4s ² 4p ⁶ 4d ¹⁰ 5s ² 5p ²	7.344	³ P ₀

(continued)

Atom	Atomic number (Z)	Ground configuration	First ionization energy/eV†	Ground state
Sb	51	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^3$	8.641	$4S_{3/2}$
Te	52	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^4$	9.009	$3P_2$
I	53	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^5$	10.451	$2P_{3/2}^o$
Xe	54	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^6$	12.130	$1S_0$
Cs	55	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^6 6s^1$	3.894	$2S_{1/2}$
Ba	56	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^6 6s^2$	5.212	$1S_0$
La	57	$KLM4s^2 4p^6 4d^{10} 5s^2 5p^6 5d^1 6s^2$	5.577	$2D_{3/2}$
Ce	58	$KLM4s^2 4p^6 4d^{10} 4f^1 5s^2 5p^6 5d^1 6s^2$	5.47	$1G_4^o$
Pr	59	$KLM4s^2 4p^6 4d^{10} 4f^3 5s^2 5p^6 6s^2$	5.42	$4I_{9/2}^o$
Nd	60	$KLM4s^2 4p^6 4d^{10} 4f^4 5s^2 5p^6 6s^2$	5.49	$5I_4$
Pm	61	$KLM4s^2 4p^6 4d^{10} 4f^5 5s^2 5p^6 6s^2$	5.55	$6H_{5/2}^o$
Sm	62	$KLM4s^2 4p^6 4d^{10} 4f^6 5s^2 5p^6 6s^2$	5.63	$7F_0$
Eu	63	$KLM4s^2 4p^6 4d^{10} 4f^7 5s^2 5p^6 6s^2$	5.67	$8S_{7/2}^o$
Gd	64	$KLM4s^2 4p^6 4d^{10} 4f^7 5s^2 5p^6 5d^1 6s^2$	6.14	$9D_2^o$
Tb	65	$KLM4s^2 4p^6 4d^{10} 4f^9 5s^2 5p^6 6s^2$	5.85	$6H_{15/2}^o$
Dy	66	$KLM4s^2 4p^6 4d^{10} 4f^{10} 5s^2 5p^6 6s^2$	5.93	$5I_8$
Ho	67	$KLM4s^2 4p^6 4d^{10} 4f^{11} 5s^2 5p^6 6s^2$	6.02	$4I_{15/2}^o$
Er	68	$KLM4s^2 4p^6 4d^{10} 4f^{12} 5s^2 5p^6 6s^2$	6.10	$3H_6$
Tm	69	$KLM4s^2 4p^6 4d^{10} 4f^{13} 5s^2 5p^6 6s^2$	6.18	$2F_{7/2}^o$
Yb	70	$KL MN 5s^2 5p^6 6s^2$	6.254	$1S_0$
Lu	71	$KL MN 5s^2 5p^6 5d^1 6s^2$	5.426	$2D_{3/2}$
Hf	72	$KL MN 5s^2 5p^6 5d^2 6s^2$	7.0	$3F_2$
Ta	73	$KL MN 5s^2 5p^6 5d^3 6s^2$	7.89	$4F_{3/2}$
W	74	$KL MN 5s^2 5p^6 5d^4 6s^2$	7.98	$5D_0$
Re	75	$KL MN 5s^2 5p^6 5d^5 6s^2$	7.88	$6S_{5/2}$
Os	76	$KL MN 5s^2 5p^6 5d^6 6s^2$	8.7	$5D_4$
Ir	77	$KL MN 5s^2 5p^6 5d^7 6s^2$	9.1	$4F_{9/2}$
Pt	78	$KL MN 5s^2 5p^6 5d^9 6s^1$	9.0	$3D_3$
Au	79	$KL MN 5s^2 5p^6 5d^{10} 6s^1$	9.225	$2S_{1/2}$
Hg	80	$KL MN 5s^2 5p^6 5d^{10} 6s^2$	10.437	$1S_0$
Tl	81	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^1$	6.108	$2P_{1/2}^o$
Pb	82	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^2$	7.416	$3P_0$
Bi	83	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^3$	7.289	$4S_{3/2}^o$
Po	84	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^4$	8.42	$3P_2$
At	85	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^5$	—	$2P_{3/2}^o$
Rn	86	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^6$	10.748	$1S_0$
Fr	87	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^6 7s^1$	—	$2S_{1/2}$
Ra	88	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^6 7s^2$	5.279	$1S_0$
Ac	89	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^6 6d^1 7s^2$	6.9	$2D_{3/2}$
Th	90	$KL MN 5s^2 5p^6 5d^{10} 6s^2 6p^6 6d^2 7s^2$	—	$3F_2$
Pa	91	$KL MN 5s^2 5p^6 5d^{10} 5f^2 6s^2 6p^6 6d^1 7s^2$	—	$4K_{11/2}$
U	92	$KL MN 5s^2 5p^6 5d^{10} 5f^3 6s^2 6p^6 6d^1 7s^2$	—	$5L_6^o$
Np	93	$KL MN 5s^2 5p^6 5d^{10} 5f^4 6s^2 6p^6 6d^1 7s^2$	—	$6L_{11/2}$
Pu	94	$KL MN 5s^2 5p^6 5d^{10} 5f^6 6s^2 6p^6 7s^2$	5.8	$7F_0$
Am	95	$KL MN 5s^2 5p^6 5d^{10} 5f^7 6s^2 6p^6 7s^2$	6.0	$8S_{7/2}^o$
Cm	96	$KL MN 5s^2 5p^6 5d^{10} 5f^7 6s^2 6p^6 6d^1 7s^2$	—	$9D_2^o$
Bk	97	$KL MN 5s^2 5p^6 5d^{10} 5f^9 6s^2 6p^6 7s^2$	—	$6H_{15/2}^o$
Cf	98	$KL MN 5s^2 5p^6 5d^{10} 5f^{10} 6s^2 6p^6 7s^2$	—	$5I_8$
Es	99	$KL MN 5s^2 5p^6 5d^{10} 5f^{11} 6s^2 6p^6 7s^2$	—	$4I_{15/2}^o$
Fm	100	$KL MN 5s^2 5p^6 5d^{10} 5f^{12} 6s^2 6p^6 7s^2$	—	$3H_6$
Md	101	$KL MN 5s^2 5p^6 5d^{10} 5f^{13} 6s^2 6p^6 7s^2$	—	$2F_{3/2}^o$
No	102	$KL MN O 6s^2 6p^6 7s^2$	—	$1S_0$
Lr	103	$KL MN O 6s^2 6p^6 6d^1 7s^2$	—	$2D_{3/2}$
—	104	$KL MN O 6s^2 6p^6 6d^2 7s^2$	—	$3F_2$

† For the process $A \rightarrow A^+ + e$, where A^+ is in its ground state.