

1s, 2s, 2p, 3s, 3p, [4s, 3d], 4p, [5s, 4d], 5p, [6s, 4f, 5d], 6p, [7s, 5f, 6d]

Table 9-2 The Energy Ordering of the Outer Filled Subshells

Quantum Numbers n, l	Designation of Subshell	Capacity of Subshell $2(2l + 1)$
—	—	—
—	—	—
6, 2	6d	10
5, 3	5f	14
7, 0	7s	2
6, 1	6p	6
5, 2	5d	10
4, 3	4f	14
6, 0	6s	2
5, 1	5p	6
4, 2	4d	10
5, 0	5s	2
4, 1	4p	6
3, 2	3d	10
4, 0	4s	2
3, 1	3p	6
3, 0	3s	2
2, 1	2p	6
2, 0	2s	2
1, 0	1s	2

↑
 Increasing energy
 (less negative)

← Lowest energy
 (most negative)

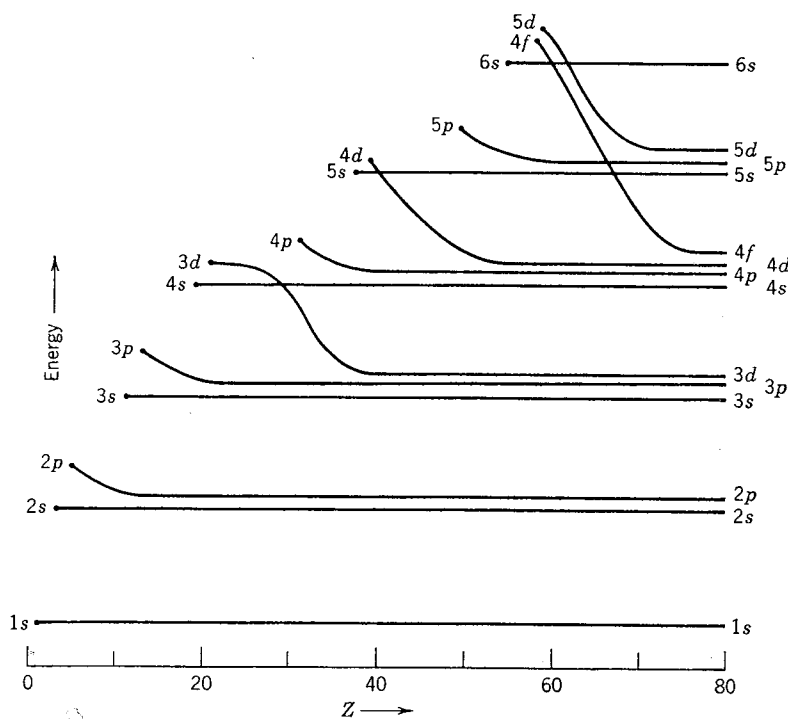


Figure 9-14 A schematic representation of the energy ordering of all the subshells in an atom, as a function of its atomic number Z . Each curve begins at the Z for which the subshell begins to be occupied. Only subshells occupied in atoms through mercury are shown, so all curves stop at $Z = 80$. The ordering of the outer filled subshells in various atoms is found on the left side of the diagram. The ordering of all filled subshells in mercury is found on the right side of the diagram. The energy scale is non-linear and, furthermore, varies with Z .

1s, 2s, 2p, 3s, 3p, [4s, 3d], 4p, [5s, 4d], 5p, [6s, 4f, 5d], 6p, [7s, 5f, 6d]

1s	1 H																	2 He						
2s	3 Li	4 Be																	5 B	6 C	7 N	8 O	9 F	10 Ne
3s	11 Na	12 Mg																	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4s	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr $4s^1 3d^5$	25 Mn	26 Fe	27 Co	28 Ni	29 Cu $4s^1 3d^{10}$	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr						
5s	37 Rb	38 Sr	39 Y	40 Zr	41 Nb $5s^1 4d^4$	42 Mo	43 Tc	44 Ru $5s^1 4d^7$	45 Rh $5s^1 4d^8$	46 Pd $5s^0 4d^{10}$	47 Ag $5s^1 4d^{10}$	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe						
6s	55 Cs	56 Ba	57 La Lanthanides	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt $6s^1 5d^9$	79 Au $6s^1 5d^{10}$	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn						
7s	87 Fr	88 Ra	89 Ac Actinides																					
	s^1	s^2	d^1	d^2	d^3	d^4	d^5	d^6	d^7	d^8	d^9	d^{10}	p^1	p^2	p^3	p^4	p^5	p^6						
4f	58 Ce $5d^0 4f^2$	59 Pr $5d^0 4f^3$	60 Nd $5d^0 4f^4$	61 Pm $5d^0 4f^5$	62 Sm $5d^0 4f^6$	63 Eu $5d^0 4f^7$	64 Gd $5d^1 4f^7$	65 Tb $5d^0 4f^9$	66 Dy $5d^0 4f^{10}$	67 Ho $5d^0 4f^{11}$	68 Er $5d^0 4f^{12}$	69 Tm $5d^0 4f^{13}$	70 Yb $5d^0 4f^{14}$	71 Lu $5d^1 4f^{14}$										
5f	90 Th $6d^2 5f^0$	91 Pa $6d^1 5f^2$	92 U $6d^1 5f^3$	93 Np $6d^1 5f^4$	94 Pu $6d^1 5f^5$	95 Am $6d^1 5f^6$	96 Cm $6d^1 5f^7$	97 Bk $6d^1 5f^8$	98 Cf $6d^0 5f^{10}$	99 Es $6d^0 5f^{11}$	100 Fm $6d^0 5f^{12}$	101 Md $6d^0 5f^{13}$	102 No $6d^0 5f^{14}$	103 Lw $6d^1 5f^{14}$										
	f^1	f^2	f^3	f^4	f^5	f^6	f^7	f^8	f^9	f^{10}	f^{11}	f^{12}	f^{13}	f^{14}										

Figure 9-13 The periodic table of the elements, showing the electron configuration for each element.

1s, 2s, 2p, 3s, 3p, [4s, 3d], 4p, [5s, 4d], 5p, [6s, 4f, 5d], 6p, [7s, 5f, 6d]

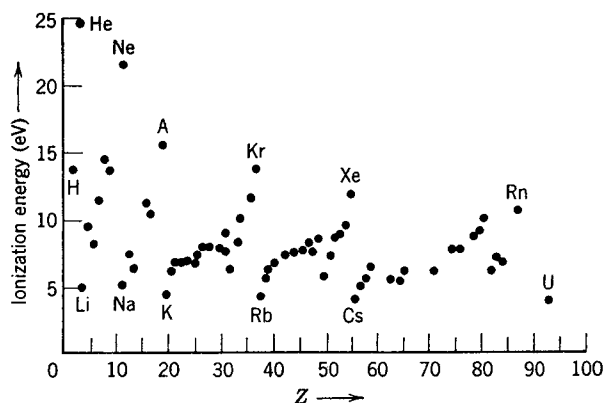


Figure 9-15 The measured ionization energies of the elements.