

8.4.5: Ionization Energies and Electron Affinities

73 H 1312							He 2372
58 Li 520	-18* Be 899	29* B 801	121* C 1086	-58* N 1402	142 O 1314	331 F 1681	Ne 2080
52 Na 496	-54* Mg 738	48* Al 578	134* Si 786	75* P 1012	200 S 1000	348 Cl 1251	Ar 1520
K 419	Ca 590	Ga 579	Ge 762	65 As 946	207* Se 941	324 Br 1140	Kr 1351
Rb 403	Sr 549	In 558	Sn 708	Sb 834	222* Te 869	296 I 1008	Xe 1170
Cs 376	Ba 503	Tl 589	Pb 715	Bi 703	Po 812	At	Rn 1037

* Electron affinities marked with an asterisk (*) have been obtained from theoretical calculations rather than experimental measurements. The heavy colored line separates metals (ionization energy usually below about 800 kJ mol^{-1}) from nonmetals.

This table gives ionization energies and electron affinities for common elements, and displays the information in terms of the periodic table. Ionization energies are in black, with electron affinities in red. For ionization energies, two general tendencies arise. First, as one moves down a given group in the periodic table, the ionization energy decreases. Second, as one moves from left to right across the periodic table (from an alkali-metal atom to a noble gas), the ionization energy increases on the whole. While electron affinities display fewer regularities on the table, trends do exist. All the halogens have values of about 300 kJ mol^{-1} while the group VI nonmetals have somewhat lower values, in the region of 200 kJ mol^{-1} or less.

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