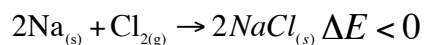


Ionic Bonding

Ionic bonding is the attractive force between a positive ion and a negative ion. Mathematically we can model that force using Coulomb's Law.

$$E = 2.31 \cdot 10^{-19} J \cdot nm \left(\frac{Q_1 Q_2}{r} \right)$$

In general a bond will form when the two atoms bonded together will be lower in energy than the atoms separated.



Lattice Energy

The lattice energy is the change in energy that takes place when two gaseous ions form a solid ionic compound.

The lattice energy depends on the charge of the ions and their size, essentially Coulomb's law.

$$\text{LatticeEnergy} = k \left(\frac{Q_1 Q_2}{r} \right)$$

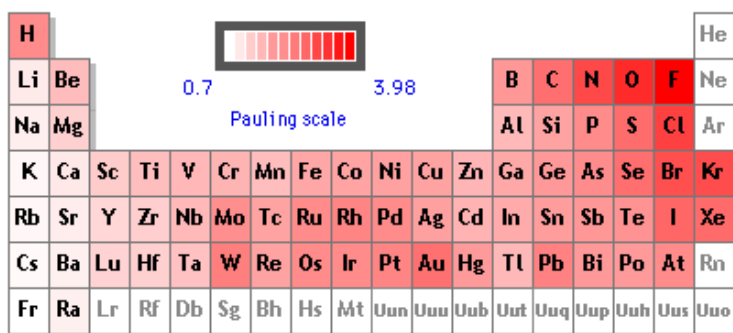
Ex:

Electronegativity

Whether a bond will be ionic or covalent is determined by how strongly the atoms involved attract shared electrons. What we call electronegativity.

The greater the difference in electronegativity between two atoms the more ionic character the bond will have.

We call bonds that are slightly ionic “polar covalent bonds”. Polar covalent bonds mean that the atoms involved in the bond do not share the electrons equally. We therefore have a positive end and a negative end or a positive pole and a negative pole.



©Mark Winter 1995 [web@elements@sheffield.ac.uk]

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No

Ex: