DEFINITION

Ionic bonding occurs between a metal and a non metal ion with the electrostatic attraction between the ions. The electron will leave the low electronegative metal and move to the high electronegative non-metal.

Characteristics

electrons placed inside the atoms

strong electrostatic bonds

no directional preference

high melting and boiling points

soluble in polar solvents (water, alcohols, ...)

WHY?

BECAUSE OF LATTICE ENERGY

it is the enthalpy of formation of the ionic compound from gaseous ions, the measurement of the bonds' strength

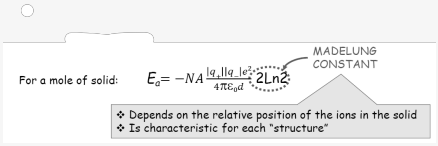
Type of ionic interactions

electrostatic (main intercation)

repulsive (between the electrons)

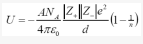
repulsive (between the nuclei)

Formulae



Formulae

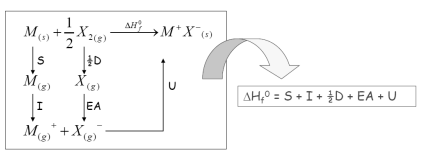
Born-Landé equation



Born-Haber Cycle

Lattice energy cannot be easily obtained experimentally	Thus , we apply the Hess Law to realize indirect calculations
standard enthalpy of formation	ΔHf
enthalpy of sublimation	ΔHs=S
enthalpy of dissociation	ΔHd=D
ionization energy (take an electron)	ΔHi=I
electron affinity (add an electron)	ΔHEA=EA

Born-Haber Cycle



Ionic Liquids (IL)

Salts in liquid state at room temperature made of ions	Possible when the ionic charges aren't too high and the distance is large enough
Useful properties	
-non volatile	-remain in liquid state up to 400ºC
-non flammable	-good solvents for reactions
-reduced volume	-easy reuse

Ionic Conductors (Superconductors)