

Intermolecular and Intramolecular Forces

- * Intramolecular Forces: forces that hold the atoms together in a molecule.**
- * These forces or bonds are responsible for the chemical properties of a compound**

- * Intermolecular Forces: forces that exist between molecules.**
- * These forces or bonds are responsible for the physical properties of a compound**

Intramolecular

- * Types of chemical bonds:
 - * Ionic
 - * Covalent
 - * Hydrogen
 - * Metallic

Ionic Bonds

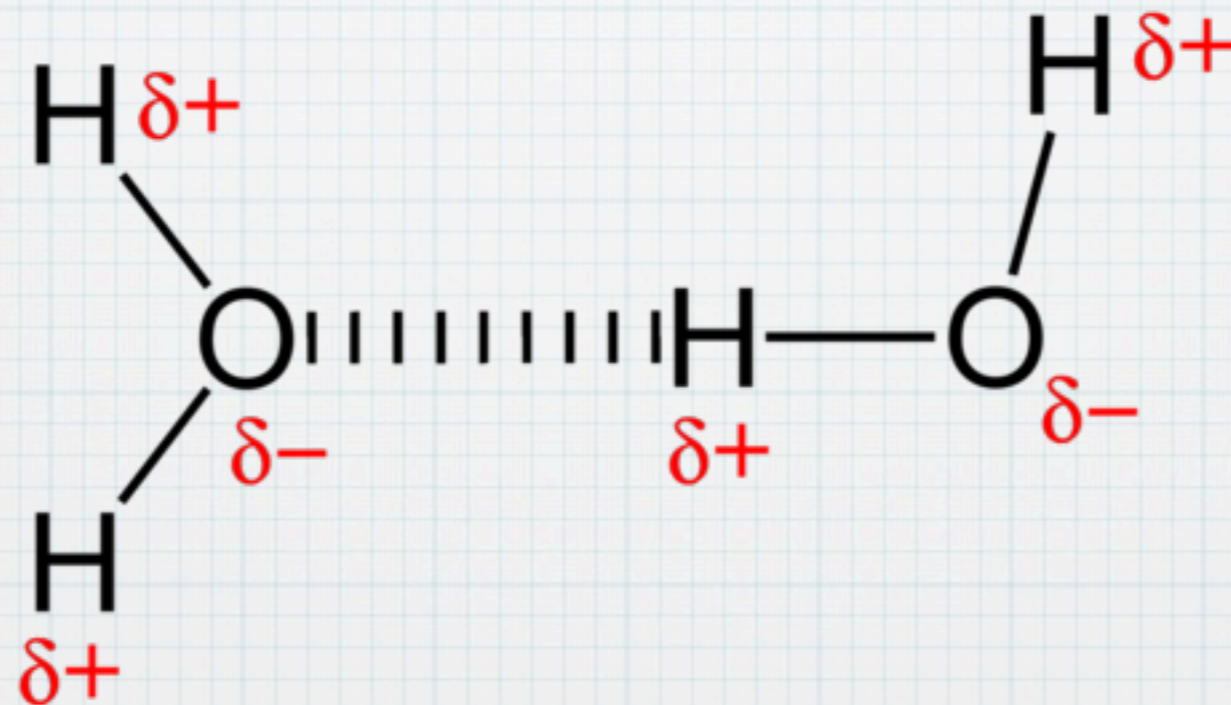
- * Form between metallic and non-metallic atoms with the metallic atom losing an electron.
- * Very strong
- * Form between two atoms having a difference of electronegativity greater than 1.7
- * The structural units are formula units

Covalent Bonds

- * Form between two non-metallic atoms.
- * Polar covalent bonds have an EN of equal or less than 1.7 and greater than 0.4
- * Non-polar covalent bonds have an EN of equal to or less than 0.4

Hydrogen Bonds

- * Form between molecules that contain a hydrogen and a highly electronegative atom.



Metallic Bonding

- * The force of attraction between metals due to the pooling of their valence electrons to form a delocalized 'sea' of electrons.

Metallic Bonding

- * Metals have a low electronegativity and are only loosely held to their nucleus
- * Metal cations are packed closely together, electrons are free to move from atom to atom, surrounding metal ions by a sea or cloud

Metallic Bonding

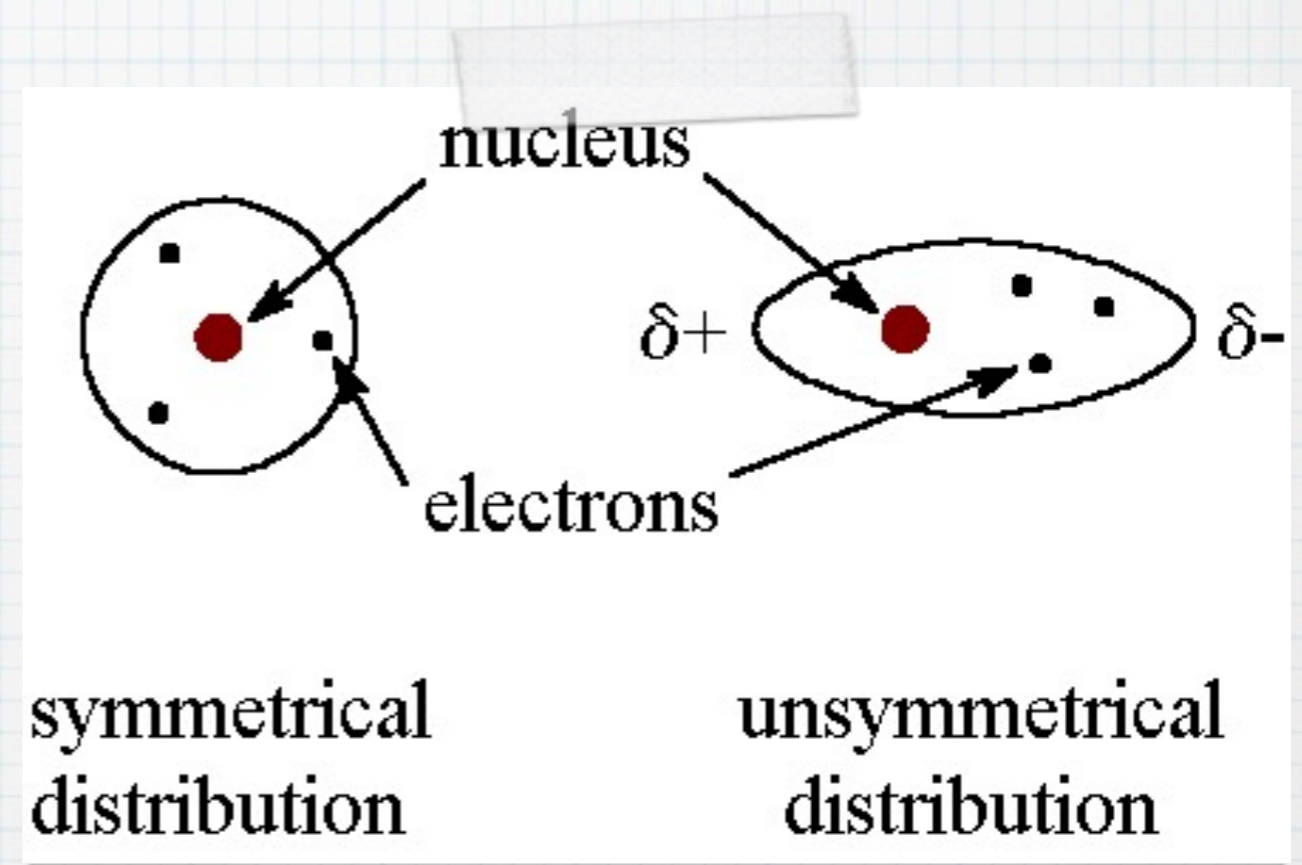
- * This free movement of electrons explains several characteristics of metals
- * Malleability and ductility
- * Conductivity of heat
- * Conductivity of electricity
- * Lustre

Intermolecular Forces

- * Types of intermolecular include:
 - * (London) Dispersion Forces
 - * Dipole- Dipole
 - * Hydrogen Bonds

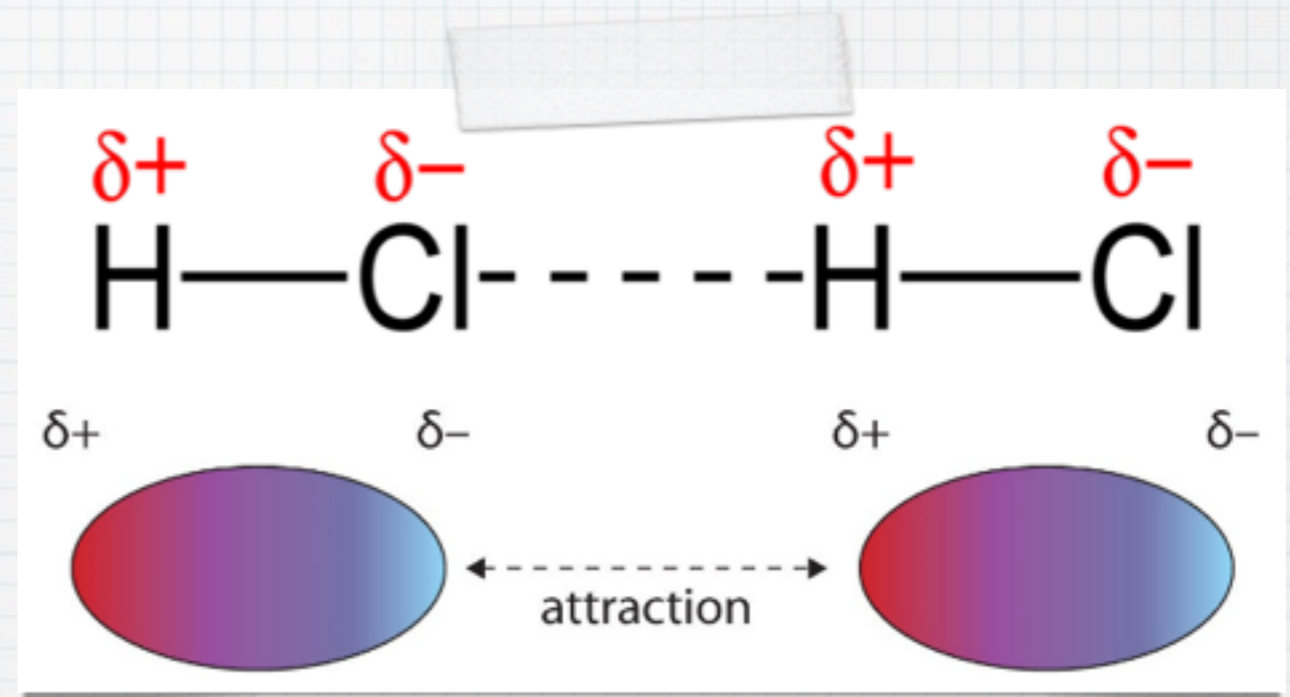
(London) Dispersion Forces

- * Extremely weak intermolecular forces of attraction generated by oscillating electron that produce temporary dipoles



Dipole-Dipole Forces

- * Exist between polar molecules that are generated as a result of the permanent or partial charge of polar molecules



Hydrogen Bonds

- * Exceptionally strong dipole-dipole forces between identical molecules that contain hydrogen and a highly electronegative atom (N,O,F)

