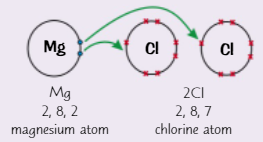
Tuesday 24th May 2022

Chemistry Paper 1 Revision

Types of Bonds

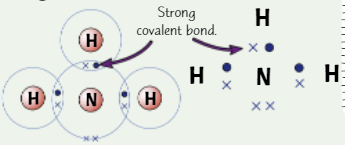
Ionic Bonding:

When a metal and non-metal react, the metal **loses** electrons to become stable, and the non-metal **gains** those electrons. The electrons are “transferred” from the metal to the non-metal.



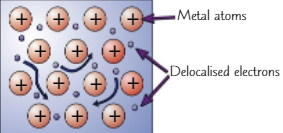
Covalent Bonding

Two non-metal atoms “share” electrons in a covalent bond in order to become stable. Each bond provides **1** atom to share.



Metallic Bonding

The giant structure of positive metal ions is held in place by the negatively charged delocalised electrons. These electrons give metals their properties.



Properties of Bonded Structures

Ionic Compound:

* Made of positive and negative ions
* Electrostatic attraction between opposite charged ions creates strong bonds **in all directions**.
* Normally formed when metals react with non-metals
* Examples include table salt (NaCl)

Giant Ionic Structures:

* High melting and boiling points due to strong bonds
* Can conduct electricity when molten/liquid due to delocalised (free) electrons.

Giant Covalent Structures:

* Very High melting and boiling points
* Insoluble in water
* Do not conduct electricity (except graphite)

Giant Metallic Structures

* Conducts heat and electricity due to delocalised electrons
* Malleable (can be shaped) due to the separate layers of metal ions that can slide past each other
* Ductile (can be drawn into a wire) due to separate ion layers
* High melting point due to strong electrostatic bonds

Group 1 Metals (Alkalis)

These elements all have **one electron** in their outermost shell, making them very reactive, and giving them similar properties. The trends for the group 1 element are:

* Increasing reactivity moving down the group
* Lower melting and boiling points
* Higher relative atomic mass

Reactions:

* All alkali metals react form ionic compounds with non-metals (for example NaCl – table salt) because it is easy for them to lose their outer electron.
* Reacts vigorously with water, producing hydrogen gas:
* Reacts with chlorine to produce a salt when heated:
* Reacts with oxygen to form a metal oxide (making them become dull)

Group 7 Elements (Halogens)

\*\*Placeholder\*\*