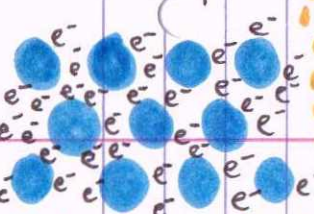


What happens?



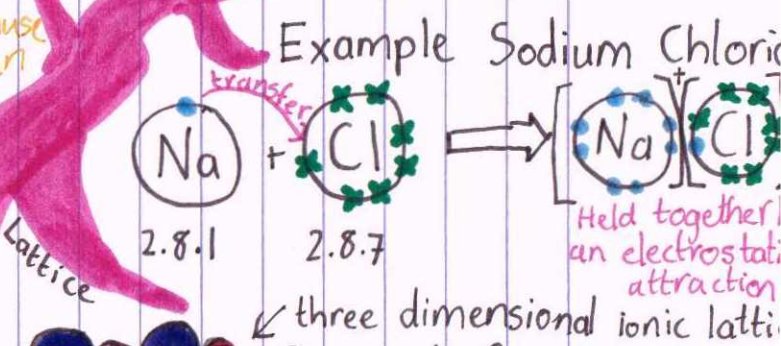
* A metallic bond is the attraction between delocalised electrons and positive metal ions

Metals use their outermost electrons to form a sea of electrons which move in all directions throughout the lattice. The free electrons act like electron glue holding the metal ions together.

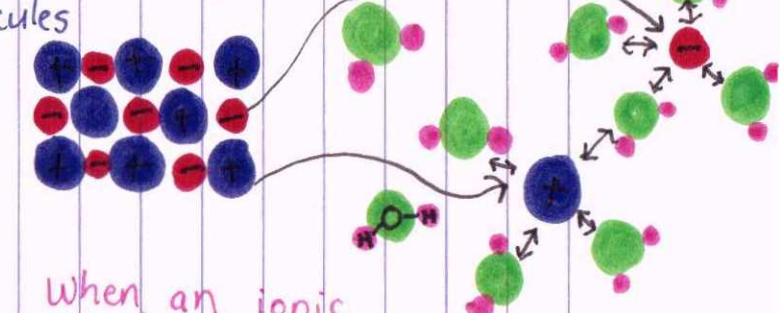
Alloy = a mixture of 2 or more elements at least 1 of which is a metal + the resulting mixture has metallic properties

- Properties of alloys:
- 1) Electrical conductors: Metals are good conductors because they have free electrons.
 - 2) Melting/boiling point varies between metals: e.g. Iron alloy is malleable because the layers can slide past each other.
 - 3) Malleable/Ductile/Sonorous.

Ionic bonds = form when a metal transfers electrons to a non-metal producing ions. An ion is a charged particle. Ionic bonds are strong attractions between oppositely charged ions. When atoms lose/gain electrons they gain a full outer shell.



- Physical Properties of Ionic Compounds:
- 1) High melting/boiling point = large amount of energy required to break strong ionic bonds.
 - 2) Conducts when molten/dissolved = ions are free to move + carry charge.
 - 3) Usually dissolves in water.

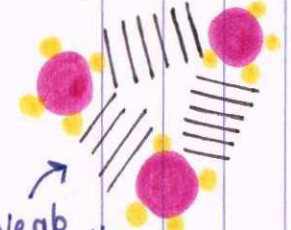


When an ionic substance dissolves in water the ionic lattice breaks down + the ions become free to move about the solution. The ions are now hydrated.

Giant Covalent Structures (x2)

- 1) Diamond
- non-conductor of electricity
 - high melting/boiling point
 - the hardest substance on earth
 - insoluble in water

Simple Covalent Molecules e.g. methane



weak van der Waals between molecules

- 2) Graphite
- conducts electricity
 - soft + slippery
 - high melting + boiling point
 - insoluble in water
 - * used in pencils

- 1) Low melting/boiling points = weak van der Waals easily broken
- 2) Does not conduct electricity = no ions free to move/carry a charge
- 3) Low solubility in water.

Bonding

Between two non-metals to form a bond by sharing electrons. * diatomic molecules have covalent bonds

