

Bonding

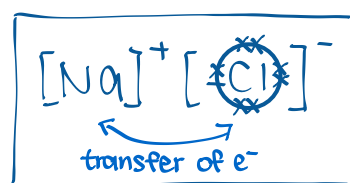
1 What is a bond?

- Strong electrostatic force % positively & negatively charged species

2 Ionic bond

组成的物质

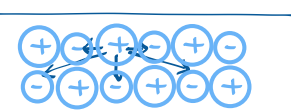
- Grp I-III w/ Grp IV-VII //
cation & anion → simple / polyatomic ion,
e.g. NaNO_3
- +ve : cation
- -ve : anion



- both element, e.g. NaCl
- V || //
- e / polyatomic to NaNO_3

DIRECTIONALITY

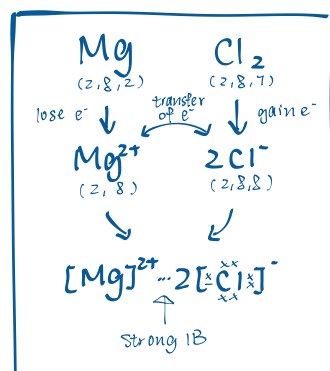
- non-directional



Each ion is attracted by multiple oppositely charged ions.

FORMATION (MgCl_2)

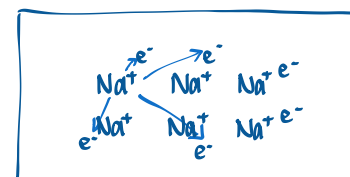
- 1 Mg atom loses 2 outermost shell $e^- \rightarrow \text{Mg}^{2+}$
 - 2 Cl atoms of each accept 1 e^- to its outermost shell $\rightarrow \text{Cl}^-$
- \Rightarrow transfer of e^-
- \rightarrow strong IB % them



3 Metallic bond

组成的物质

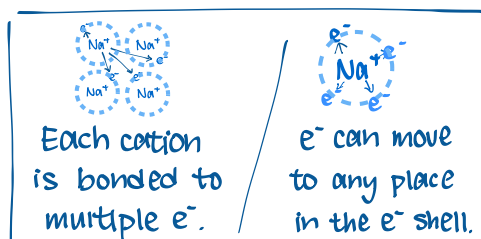
- Grp I-III 自己一个人
 - +ve: metal ion
 - -ve: delocalised e^-
- 还是被 ion 吸引着,
不是 "free"



还是被 ion 吸引着,
不是 "free"

DIRECTIONALITY

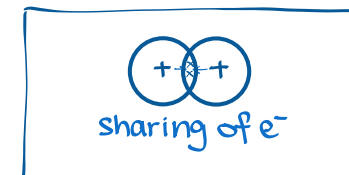
- non-directional



4 Covalent bond

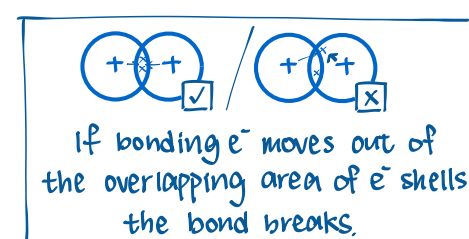
组成的物质

- Grp IV - VII 自然组合
- +ve : nucleus
- -ve : bonding e^-



DIRECTIONALITY

- directional



FORMATION (CH₄)

- 1 C atom has 4 outermost shell e^- , of each shares 1 e^- from H atom
- \Rightarrow Strong CB \therefore them