

# Bonding

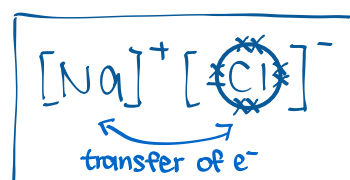
## 1 What is a bond?

- Strong electrostatic force % positively & negatively charged species

2 ionic bond

## 组成的物质

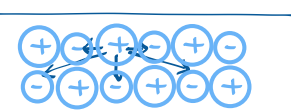
- Grp I-III w/ Grp IV-VII //  
cation & anion → simple / polyatomic ion,  
e.g.  $\text{NaNO}_3$
- +ve : cation
- -ve : anion



- both element, e.g. NaCl
- V || //
- e / polyatomic to  $\text{NaNO}_3$

## DIRECTIONALITY

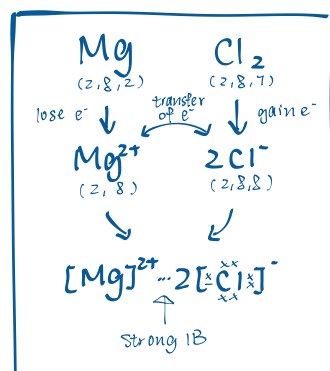
- non-directional



Each ion is attracted by multiple oppositely charged ions.

### FORMATION ( $\text{MgCl}_2$ )

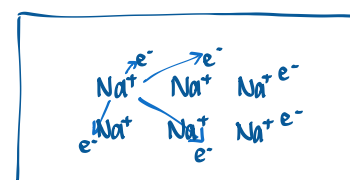
- 1 Mg atom loses 2 outermost shell  $e^- \rightarrow \text{Mg}^{2+}$
  - 2 Cl atoms of each accept 1  $e^-$  to its outermost shell  $\rightarrow \text{Cl}^-$
- $\Rightarrow$  transfer of  $e^-$
- $\rightarrow$  strong IB % them



### 3 Metallic bond

## 组成的物质

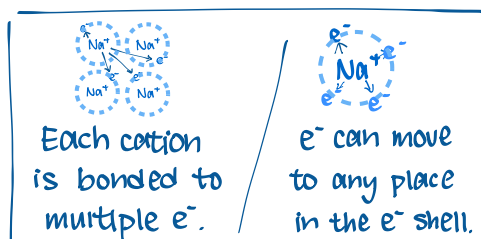
- Grp I-III 自己一个人
  - +ve: metal ion
  - -ve: delocalised  $e^-$
- 还是被 ion 吸引着,  
不是 "free"



还是被 ion 吸引着,  
不是 "free"

## DIRECTIONALITY

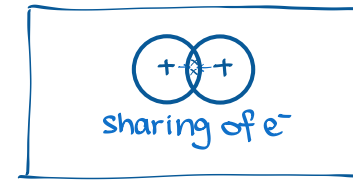
- non-directional



#### 4 Covalent bond

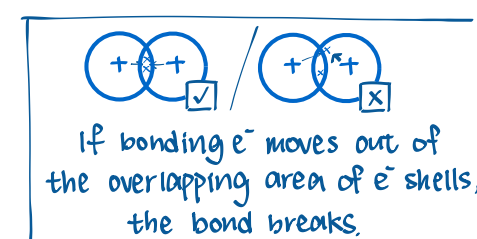
## 组成的物质

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



## DIRECTIONALITY

- directional



## FORMATION (CH<sub>4</sub>)

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