晶胞概念

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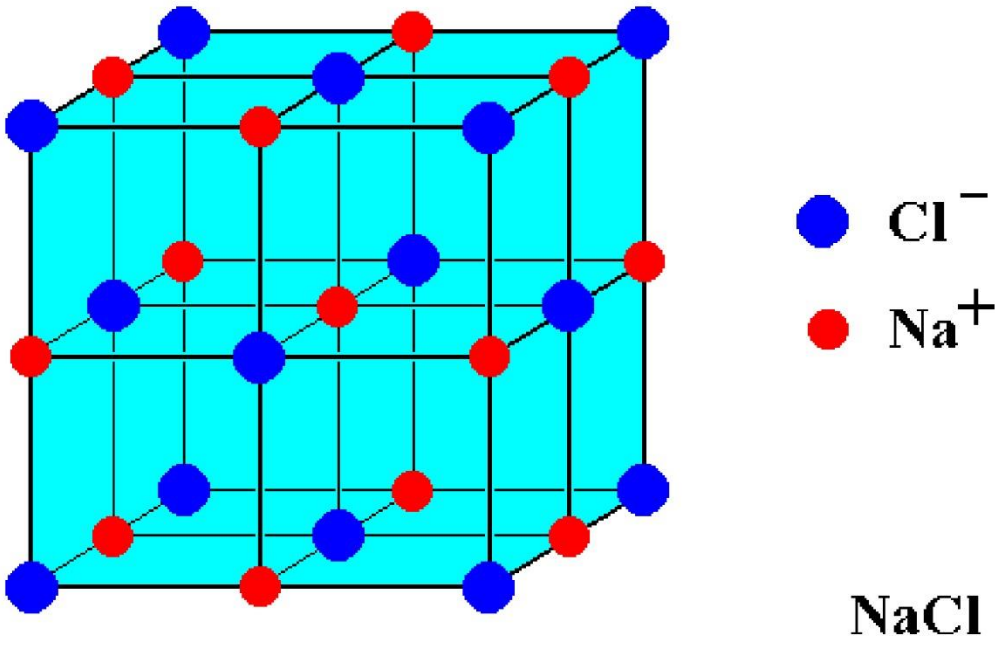
Unit Cell Concepts

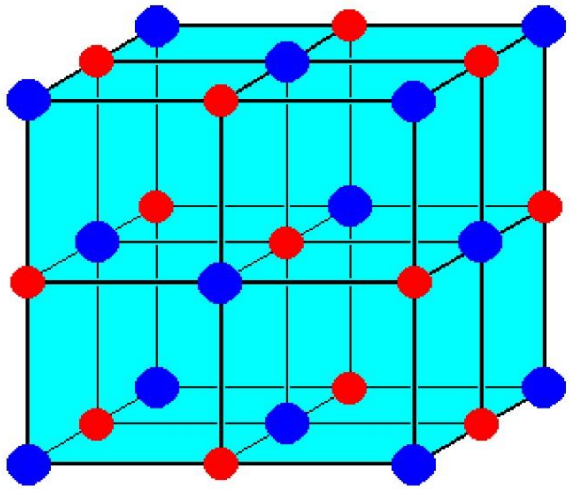


不熟悉的情況(unfamiliar situation)

解題 Concept →

DSE CHEMISTRY

Unit Cell Concepts



NaCl

先睇睇個題目！！

From an experiment, it was found that there are 4 Na^+ ions and 4 Cl^- ions in a cube of sodium chloride crystal of volume $1.80 \times 10^{-22} cm^3$.

(i) Express the total mass of 4Na^+ ions and 4Cl^- ions in terms of the Avogadro's constant L.
(Relative atomic masses: Na=23.0, Cl=35.5)

(ii) Hence, calculate the Avogadro's constant L, given that 1.00 cm^3 of sodium chloride crystal weighs 2.17g.

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Solution

(i) Express the total mass of $4Na^+$ ions and $4Cl^-$ ions in terms of the Avogadro's constant L.
(Relative atomic masses: Na=23.0, Cl=35.5)

$$4Na^+ \text{ ions} = (4 \times 23.0)/ L = 92/L$$
$$4Cl^- \text{ ions} = (4 \times 35.5)/ L = 142/L$$

(ii) Hence, calculate the Avogadro's constant L, given that 1.00 cm^3 of sodium chloride crystal weighs 2.17g.

$$\text{Density of NaCl} = 2.17g / 1cm^3$$
$$= (92/L + 142/L) / 1.80 \times 10^{-22} cm^3$$
$$L = 5.99 \times 10^{23} mol^{-1}$$

DSE CHEMISTRY

解題 Concept

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