Chemistry 2.4 AS 91164 Bonding and Energy

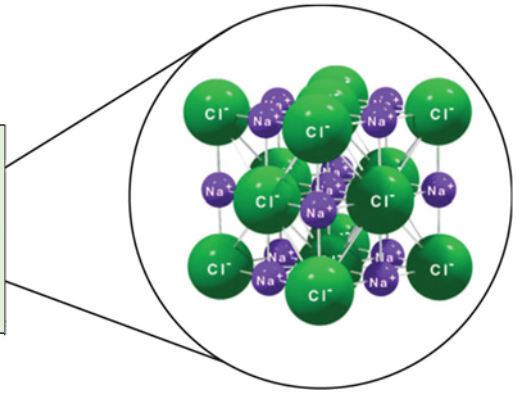
Ionic Solids – Solubility and conductivity

Success Criteria:

- Link the structure of Ionic solids with its solubility and conductivity in different states

Metal + Non-Metal

An ionic solid is made up of ions held together by **strong electrostatic forces** between +ve (cations) and –ve (anions) ions in a 3-dimensional lattice.



Answering Solubility Questions

1. [X] is an ionic solid
2. [X] is made up of ions held together by strong electrostatic attractions between +ve and –ve ions in a lattice.
3. The electrostatic attractions of polar water molecules have sufficient strength to pull the ions apart,
4. therefore the ionic solid will dissolve and is soluble in water

Answering Conductivity Questions

1. [X] is an ionic solid
2. [X] is made up of ions held together by strong electrostatic forces between +ve and –ve ions in a lattice.
3. Electrical conductivity requires free moving charged particles in a substance.
4. When ionic substance is **solid** the ions are not free to move therefore it **does not conduct** electricity
5. But when the ionic substance is **melted** the electrostatic bonds are broken and the ions are free to move, and therefore **it does conduct** electricity

Sample NCEA Style Question:

Explain both the electrical conductivity, and solubility in water, for zinc chloride, $ZnCl_2$, using your knowledge of structure and bonding.

_____

_____

_____

_____

_____

_____

_____