

# **Chemistry 2.4 AS 91164 Bonding and Energy**

## Molecular Solids – Predicting Solubility in Water

#### **Success Criteria:**

o Justify the solubility of two molecular substances

### Steps to answering solubility questions

- 1. State whether each substance is soluble/miscible or not soluble/miscible in water
- 2. Explain the shape of the two molecules (number of electron regions, repulsion, bonded and lone pairs)
- 3. Explain the polarity of the two molecules (electronegativity, bond polarity, symmetry, overall polarity)
- 4. State polar substances dissolve in polar solvents and vice-versa
- 5. State polarity of each molecular substance
- 6. Summarize by linking polarity of each molecule to the molecules solubility/miscibility in water

### **Sample NCEA Style Question:**

Ammonia ( $NH_3$ ) and Tetrafluoromethane ( $CF_4$ ) are both colourless liquids at room temperature. Which substance is miscible in water and justify by referring to the polarity of each molecule.	Determine