

## Enthalpy of Solution Calculations

- 1 Calculate the enthalpy of solution of NaCl given that the lattice enthalpy of formation of NaCl is  $-771 \text{ kJmol}^{-1}$  and the enthalpies of hydration of sodium and chloride ions are  $-406$  and  $-364 \text{ kJmol}^{-1}$  respectively.
- 2 Calculate the enthalpy of hydration of bromide ions given that the hydration enthalpy of barium ions is  $-1360 \text{ kJmol}^{-1}$ , the lattice enthalpy of formation for  $\text{BaBr}_2$  is  $-1937 \text{ kJmol}^{-1}$  and the enthalpy of solution of  $\text{BaBr}_2 = -38 \text{ kJmol}^{-1}$ .
- 3 Calculate the lattice enthalpy of formation of calcium iodide given that its enthalpy of solution is  $-120 \text{ kJmol}^{-1}$  and the enthalpies of hydration of calcium and iodide ions are  $-1650$  and  $-293 \text{ kJmol}^{-1}$  respectively.
- 4 Calculate the enthalpy of solution of the ammonium chloride using this data:  $\Delta H_{\text{hyd}}$  ( $\text{kJ mol}^{-1}$ ):  $\text{NH}_4^+ -301$ ;  $\text{Cl}^- -364$ ; Lattice enthalpy of dissociation ( $\text{kJ mol}^{-1}$ ): ammonium chloride  $+640 \text{ kJ mol}^{-1}$ .