

Chemguide – questions

ENTHALPIES OF SOLUTION

- Define the term *enthalpy change of solution* for an ionic substance such as sodium chloride.
 - Define the term *hydration enthalpy* for an ion like Na^+ or Cl^- .
- The table shows the hydration enthalpies of a number of ions. The values are taken from a data table on the Royal Society of Chemistry website.

	hydration enthalpy (kJ mol^{-1})
Li^+	-545
Na^+	-418
K^+	-351
Mg^{2+}	-1923
Cl^-	-338

- Explain why the hydration enthalpy falls as you go down Group 1 from Li^+ to K^+ .
- Explain why the value for Mg^{2+} is so much greater than that of Na^+ .
- Would the value for Ca^{2+} be more negative or less negative than that of Mg^{2+} ? Explain your reasoning.
- If the lattice dissociation enthalpy of magnesium chloride, MgCl_2 , is $+2526 \text{ kJ mol}^{-1}$ (source: www.webelements.com), estimate the enthalpy change of solution of MgCl_2 .