

Chemistry in Society

Worksheet 4

1. 4g of potassium chloride, KCl, was dissolved in 50cm3 of water. The initial temperature of the water was 20.4oC and the highest temperature of solution was 18.8oC.

Calculate the enthalpy of solution.

1. 3.03g of potassium nitrate, KNO3, was dissolved in 100cm3 of water. The initial temperature of the water was 17.5oC and the highest temperature of solution was 15oC.

Calculate the enthalpy of solution.

1. A 250ml solution of 2.25moldm-3 HCl was neutralised by 250ml of NaOH solution. The temperature increased by 33oC. Calculate the enthalpy of neutralisation.

1. Calculate the enthalpy change for the following reaction:  
     
   enthalpy of formation of ammonia to be -45.9kJmol-1, the enthalpy of formation of nitrogen monoxide 90.29kJmol-1 and the enthalpy of formation of water to be -285.83kJmol-1.

1. Calculate the enthalpy change for the combustion of propane:  
     
   -285.83 kJ/mol

1. Calculate the enthalpy change for the combustion of propane if 33g of propane were used.

1. Calculate the enthalpy change for the complete combustion of carbon using the equations:
2. Find the ΔH of:  
    ΔH = -537 kJ  
    ΔH = +52 kJ  
    ΔH = +680 kJ
3. Find the ΔH of:  
    ΔH = -298 kJ  
    ΔH = +198 kJ

1. Calculate the ΔH for the following reaction, using average bond enthalpies, assuming all compounds are in their gaseous states:

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