

Handin 6 Thermochemistry

1. For a pure substance the heat capacity can be expressed as $C_p = A + BT + CT^{-2}$. Find the change in the enthalpy for a pure substance for a change in temperature from T_1 to T_2 at constant pressure from:

$$\left(\frac{\partial H}{\partial T}\right)_p = C_p$$

2. The enthalpy of combustion at 25°C for camphor, $C_{10}H_{16}O$, is -5902.3 kJ/mol. Calculate $\Delta_f H^\circ$ at this temperature.

3. The enthalpy of formation of pure $H_2SO_4(l)$ is -813.99 kJ mol⁻¹. The enthalpy of solution of $H_2SO_4(l)$ is -96.19 kJ mol⁻¹, to give an infinitely dilute solution. Calculate the enthalpy of formation of $SO_4^{2-}(aq)$.