Quiz 6.2 – Calorimetry

Name: Key

Question 1 (5 points)

Find the enthalpy of solvation for NaOH based on experimental data from class.

(Remember that $C_{water} = 4.185 \frac{J}{g°C}$)

$M_{NaOH} = 6.804\,g \left| \frac{1\ mol\ NaOH}{40.00\,g\ NaOH} \right. = 0.1701\ moles\ NaOH$

$M_{H_2O} = 100.0\,g$

$T_i = 22.5°C \qquad T_f = 37.8°C \qquad \Delta T = 15.3°C$

$q_{cal} = 106.804\,g \cdot 4.184\ J/g°C \cdot 15.3°C = 6837\,J \qquad q_{rxn} = -6837\,J$

$\Delta H = \frac{-6837\,J}{0.1701\ mol} = -40,194\ J/mol \rightarrow -40.2\ kJ/mol$

True Value = $-44.5\ kJ/mol$