Pre-lab Questions – Experiment 6: Reaction Calorimetry

Write answers to the following questions on this page and bring it with you to lab. Show all your work and use correct significant figures.

1. Obtain a literature value for the standard heat of formation of MgO (s). Make sure to properly cite your source.

2. If the ionization of 1.00 g Mg (s) in excess acid solution (Eq 3 from your lab handout) evolves 19.3 kJ of heat, what is the standard enthalpy of formation for Mg^{2+} (aq) expressed in kJ/mol?

3. You have a 100.0 g sample of 0.4 M HCl (aq) at 25.0 °C. If you add 3500.0 J of heat to this solution, what is the final temperature? The specific heat of 0.4 M HCl (aq) is 4.07 $J\,g^{-1}\,°C^{-1}$ *Assume an isolated system – no heat is lost to the surroundings.*