

**Chemistry 534**  
**Calorimetry Take Home Lab**

Name \_\_\_\_\_

**Purpose:** To accurately determine the molar heat of solution of ammonium nitrate by taking the heat absorbed by the calorimeter into consideration.

**Procedure**

1. Go to <http://www.chm.davidson.edu/ChemistryApplets/calorimetry/HeatOfSolutionOfAmmoniumNitrate.html>
2. Scroll down to **Part 1**.
3. Record the initial temperature in the data table.
4. Press the start button.
5. Record the minimum temperature.
6. Scroll down to **Part 2**.
7. Change the mass of  $\text{NH}_4\text{NO}_3$  to 10.00 g, and the mass of water to 100.0 g.
8. Record the initial temperature.
9. Press the reset button.
10. Press start.
11. Record the minimum temperature reached.

**Data**

<b>Part 1</b>	
Mass of $\text{NH}_4\text{NO}_3$	5.00 g
Mass of $\text{H}_2\text{O}$	60.00 g
initial temperature	
minimum temperature	
<b>Part 2</b>	
Mass of $\text{NH}_4\text{NO}_3$	10.00 g
Mass of $\text{H}_2\text{O}$	100.00 g
initial temperature	
minimum temperature	

**Analysis**

**Part 1**

1. Calculate  $Q_c$ , that is the heat absorbed by the calorimeter itself. This can be calculated by multiplying  $153. \text{ J / } ^\circ\text{C}$  by the  $\Delta T$  measured in the experiment.
2. Use  $Q_w = mc \Delta T$  to calculate the amount of heat absorbed by the water in the calorimeter.

3. Find the total amount of heat absorbed.
4. Find  $\Delta H$ .
5. Calculate the molar heat of solution,  $\Delta H/n$ .

## **Part 2**

Repeat the above steps to once again calculate  $\Delta H/n$  using the data from Part 2 of the experiment.

## **Conclusion:**