

3. In the appendix of this book, look up the specific heat capacity of the material the calorimeter is made of and record the information in the top left corner of your data table.

Finding the Specific Heat Capacity of a Metal

4. Choose a location where you can set up the experiment away from the edge of the table and from other groups. Make sure the switch of the hot plate is in the “off” position before you plug it in.
5. Fill a metal heating vessel with 200 mL of water and place it on the hot plate, as shown in **Figure 1**. Turn on the hot plate and adjust the heating control to heat the water.
6. Measure out about 100 g of the metal sample. Record the number of the metal sample (1, 2, and so on) in your data table. Hold the thermometer in the metal heating dipper, and very carefully pour the sample into the metal heating dipper. Make sure the bulb of the thermometer is surrounded by the metal. Place the dipper with metal contents into the heating vessel. Hold the thermometer while the sample is heating.
7. While the sample is heating, determine the mass of the stirring rod and empty inner cup of the calorimeter. Record the mass in your data table. Do not leave the hot plate unattended.
8. Use the second thermometer to measure room temperature. For the water in the calorimeter, you will need about 100 g of water that is a little colder than room temperature. Put the water in a beaker. Place the thermometer in the water to check the temperature of the water. (Do not use water colder than 5°C below room temperature. You may need to use ice to get the initial temperature low enough, but make sure all the ice has melted before pouring the water into the calorimeter.)



Figure 1

Step 5: Start heating the water before you begin the rest of the lab. Never leave a hot plate unattended when it is turned on.

Step 6: Be very careful when pouring the metal sample in the dipper around the thermometer. Make sure the thermometer bulb is surrounded by the metal sample.

Step 12: Begin taking temperature readings a few seconds before adding the sample to the calorimeter.

Step 15: Record the *highest* temperature reached by the water, sample, and calorimeter combination.