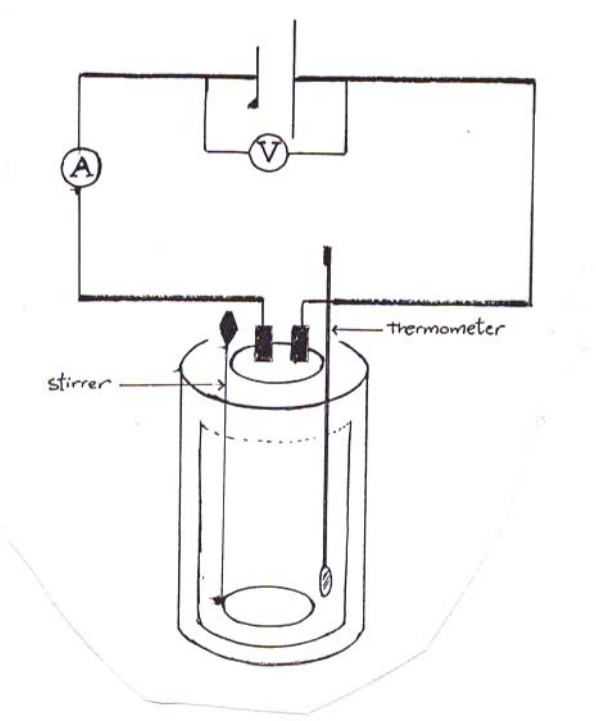
Phys Sc 416/30 **Name_____**
Lab 4.2: Calorimetry v 2004 **Calorimetric Partner_____**

Procedure

1. If it has not been done for you already, remove the little metal cup from the calorimeter and weigh it. Record the mass in the data table.
2. Add 100 mL of water using a graduated cylinder.
3. Find the total mass. Record the total mass in the data table.
4. Subtract to obtain the mass of the H_2O. Record the water's mass in the data table.
5. Place the cup of water into the calorimeter, and put the top back in place.
6. Connect the top to the circuit shown in the diagram. Use the **5A scale** on the ammeter.
7. Connect the voltmeter to the power source (Sigmatron). Connect the wire to the 15 scale on the voltmeter. Make sure the voltmeter is off.
8. Stir and record the initial temperature of the water in the data table..
9. Turn the power on and adjust the voltage to 3 V, making sure that the voltmeter reads 3V. Start counting 10 minutes.
10. Stir the water gently and continuously for exactly 10 minutes. In the meantime record the current reading from the ammeter.
11. After 10 minutes, record the final temperature.



Data

Mass of cup (g)	
Mass of cup + water(g)	
Mass of water(g) (SUBTRACT ABOVE)	
Water's Initial Temperature (^oC)	
Voltage (V)	
Current (A)	
Water's Final Temperature (^oC)	
Time	10 minutes = _____ seconds

Analysis

1. Calculate the amount of energy delivered by the power supply in 10 minutes using $E = VIt$ and the relevant values from the data table.

2. Use $Q = mc\,\Delta t$ and the relevant values from the data table to calculate the actual amount of heat absorbed by the water. Remember $c = 4.19$ J/(g ^{o}C).

3. a. Calculate the difference between Q and E.

   b. Explain why there is a difference between Q and E. If Q >E, where could the extra energy have come from? If Q < E, how was energy lost from the system?

Conclusion: