***Determining the Heat of Combustion***

***Purpose:***

To determine the heat of combustion of a paraffin wax candle by calorimetry.

***Materials:***

Combustion calorimetry apparatus (see pre-lab)

***Procedures:***

1. Assemble the calorimetry apparatus as instructed in the pre-lab.
2. Weigh the candle and base to the nearest 0.01g and record your value.
3. Using a graduated cylinder measure out exactly 100mL of cold water and add to the smaller metal can.
4. Measure and record the initial temperature of the water.
5. Light the candle and heat the can until the water reaches a temperature of 35OC, at which time the candle should be carefully extinguished (do not spill any wax).
6. Continue to measure the temperature of the water until the temperature reaches a maximum, record this final temperature.
7. Weigh the candle and base as before and record the final mass.
8. Repeat a second time with new, cold water.

***Data:***

**Trial 1:**

Initial mass of candle final mass of candle

Initial temperature of water final temperature of water ΔT

**Trial 2:**

Initial mass of candle final mass of candle

Initial temperature of water final temperature of water ΔT

***Questions and Calculations:***

1. Calculate the amount of heat absorbed by the water for each trial.
2. Calculate the amount of heat released per gram of candle wax that was burned for each trial.
3. Calculate the average heat released per gram of candle wax.
4. If wax has a chemical formula of C25H52, how much heat per mole of wax is produced by combustion?
5. What assumptions and sources of error are present in this investigation?