

Chem 110 Experiment 9: Hot Stuff: An Energy Conservation Problem

Prelab Lecture
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What is the purpose of this lab?

The title suggests that this is about energy conservation, but really this experiment is about one thing and one thing alone: learning how to design an experiment.

You're going to face a particular challenge in this experiment because you're to solve your problem without learning the associated theory. Therefore part of what you'll be doing is putting forth guesses (hypotheses) that will affect your experimental design.

What are the key parts in experimental design?

1. Clearly identifying your question. In this case the question is laid out before you: how do I determine a temperature that is above the maximum temperature on my thermometer (other than buying a new one).
2. Identify a possible approach. Clearly state the assumptions behind the approach.
3. Identify the data that must be collected in your approach.
4. Design a sequence of detailed steps to carry out your approach.

What tools do we have at our disposal?

A thermometer with maximum temperature 40° C, some Styrofoam cups, graduated cylinders, a constant temperature bath with your hot water, and the other items listed in your manual.

Will we work with our usual partners?

You'll work as a group in each table.

What kind of report will we have?

You'll write a one page report detailing your procedure and results. You'll also do an oral report at the end of lab.

Notebook record:

Since you're going to be making up your own procedure, it's especially important for your record of what you did to be complete and accurate. To facilitate this, each group should appoint a recorder. The recorder will keep the record for the group. It is not necessary to copy the record made by the recorder into each person's notebook. The

notebook record to be turned in should consist of the prelab that you have each done, plus a single copy of the group notebook record.

Honor stuff:

All work in this experiment should be done collaboratively by each group of three or four. Each group will receive a group grade.