BAGGIE CHEM INQUIRY LAB (SWH)
Experimental design
Chem II H

Theory: endothermic and exothermic rxns, entropy, thermochemistry

Purpose: By experimenting with a ziploc bag and safe materials, students will observe, experiment, and learn to draw inferences through chemical reactions.

Materials: ziploc bags or test tubes or clear plastic vials, bromothymol blue indicator, 10 mL graduated cylinders, calcium chloride, sodium bicarbonate, weighing dishes

Activity:
You will be performing chemical reactions, making observations about the results of these reactions, and then designing your own experiments to explain your observations and test hypotheses that you develop.

- First, you should spend some time exploring the lab materials using all of your senses except taste. Write down your observations regarding the way the chemicals look and smell and feel, etc.
- Students should explore what happens when the chemicals are mixed in baggies or test tubes. Use a teaspoon and measure using a graduated cylinder so that you can record how much substance is used. For example, you could mix a teaspoon of sodium bicarbonate with 10 ml of bromothymol blue solution. What happens? How does this compare with the results of mixing a teaspoon of calcium chloride with 10 ml of indicator? What if a teaspoon of each solid and the indicator are mixed? Students should record what they mixed, including quantities, the time involved to see a reaction (warn them that everything will happen very fast!), the color, temperature, odor, or bubbles involved... anything they can record.
- For example, calcium chloride + bromothymol blue indicator --> heat. Have the students write out reactions for their mixtures.
- Next, students can design experiments to test hypotheses they develop. What do they expect to happen when quantities are changed? What would happen if two components are mixed before a third is added?