

## Project V: Identification, Properties and Synthesis of an Unknown Organic Compound

For project IV, we will follow the lab on page 135 of the *Cooperative Chemistry Laboratory Manual, 5<sup>th</sup> edition* with some modifications. For this experiment, your group will be given an unknown organic compound. There are three goals to this project.

### Goal 1: Identify the Unknown Compound

- The unknown organic compound will be one of 8 possible compounds.
- There will be samples of compounds with the possible functional groups.
- When using a technique for the first time, you will want to perform the test on a known compound before performing the test on your unknown.
- There is information in the lab manual that will be useful in deciding what tests to perform in order to identify your unknown compound.
- **Before conducting any experimental work, look up the hazard warnings for each of the possible 8 organic compounds and provide the NFPA health rating and flammability rating for each. See Goal 3.**

### Goal 2: Chemical and Physical Properties

- You will need to discover as many chemical and physical properties as possible using the chemicals and equipment available in the lab.

### Goal 3: Literature Search

- Goal 3 requires you to use various reference sources for finding scientific data. This is an individual assignment. Each member of your group must conduct their own literature search.
  - Look up a MSDS for each of the possible 8 organic compounds.
  - What are the NFPA health and flammability ratings?

### Grading Project V:

- Prelab Assignments
- Notebook
  - Descriptive Table of Contents
  - Numbered pages
  - Include date data was collected
  - Raw data recorded
  - Procedures and observations recorded
  - Write in ink
  - Mistakes crossed out appropriately
- Weekly Reports
- Peer Evaluation
- Oral Report

### Safety Precautions:

- Wear safety goggles and protective gloves at all times. You will be using several different solvents. If you get any solution on you, wash immediately with lots of water and inform your lab instructor.
- **NO OPEN FLAMES**
- Dispose of all waste in the labeled containers in the common equipment area. Use a wash bottle to rinse glassware into the container.
- You will use several different reagents throughout this experiment. Many of the reagents are located in the common reagent area in the front of the lab. When you need a reagent, take a container to the stock solution and remove the amount that you need into your container.
- Never pour anything back into the stock solution.
- Never lay reagent bottle stoppers or caps on the lab bench. The entire reagent may become contaminated. In addition, the residue on the bench may be hazardous and linger for days or weeks. This could injure someone well after the fact. Hold the stopper in your other hand while you get the material out of the bottle. Replace stoppers immediately and completely.

- Balances are especially sensitive, expensive devices. **Never weigh chemicals directly on the pan.** Use a container such as a beaker or flask. Remove the container from the balance, add the chemical and then replace the container. If you spill anything onto the balance, please notify the instructor immediately.

**Background Reading and Practice Problems:**

***Cooperative Chemistry Laboratory Manual***

- Project 14: Identification, Properties and Synthesis of an Unknown Organic Compound
  - There is information in the lab manual that will help you figure out how to identify an unknown organic compound
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