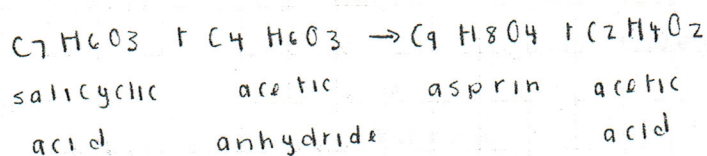


EXP. NUMBER 4	EXPERIMENT/SUBJECT Organic Chemistry - I	DATE [redacted]	42
NAME [redacted]	LAB PARTNER [redacted]	LOCKER/DESK NO. [redacted]	COURSE & SECTION NO. chem 1AA3

## Prelab Questions

1. Calculate the theoretical yield of your Aspirin from the procedure below.



1:1 stoichiometric ratio

$$2 \text{ g C}_7\text{H}_6\text{O}_3 \div \frac{138.12 \text{ g}}{\text{mol}} = 0.01488 \text{ mol C}_7\text{H}_6\text{O}_3$$

$$\% \text{ } 0.01488 \text{ mol C}_9\text{H}_8\text{O}_4 \text{ (aspirin)}$$

$$0.01488 \text{ mol} \cdot \frac{180.16 \text{ g}}{\text{mol}} = 2.609 \text{ g C}_9\text{H}_8\text{O}_4$$

% The theoretical yield of aspirin is 2.609g.

2. Explain we recrystallize the Aspirin. Why does the ethanol have to be hot?

Recrystallization is a technique used to purify the aspirin. By slowly cooling a hot, saturated solution of aspirin, the molecules of aspirin will align in a crystal lattice (forming crystals). Impurities will remain in the solution (only molecules of aspirin will fit into crystal lattice).

3. Identify all functional groups found in both products and reactants.

- salicylic acid: carboxylic acid alcohol
- Acetic Anhydride: (ester) acid anhydride
- Aspirin: carboxylic acid ester
- Acetic acid: carboxylic acid

Purpose: The purpose of this experiment is to synthesize aspirin (acetyl salicylic acid) from the acid-catalyzed reaction of salicylic acid and acetic anhydride, through filtration and recrystallization. Also, to learn to identify various functional groups.

procedure: The experiment was carried out as described in the 2011 / 2012 chemistry 1A03/1AA3 Laboratory Manual, Experiment organic chemistry - I.

## Observations:

- salicylic acid is a white crystal-like, powdery substance. Pure white in colour like snow with a shine to it.
- when 4 mL acetic anhydride are added, crystals separate and are dispersed throughout solution.
- when 5 drops of concentrated H<sub>2</sub>SO<sub>4</sub> are added, the crystals disappear into a clear solution.

SIGNATURE	DATE	WITNESS/TA	DATE
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