

Synthesis Report

Used for all synthesis experiments

For Organic Chemistry Classes

1411-1412

The Experiment

- ❑ Finish your synthesis experiment, allowing your product to dry over night
 - ❑ Record any physical properties of the product obtained, ex. Melting point or Boiling point, and mass
 - ❑ Keep records of the chemicals you used, such as density, structural formula, or molecular formula
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Yield Data/Calculations

- ❑ Calculate the limiting reactant
- ❑ Compute the theoretical yield in grams from the original amount of the limiting reactant
- ❑ Also calculate the percent yield



Chemical Equations, *in ChemDraw*

- ❑ Must be drawn on ChemDraw program (available in Metz computer lab)
- ❑ Remember to click File, highlight Open Special/ACS-1996.CDS
- ❑ This is so that your paste to Word will be the right size and clearer to read



Report Heading, *in Word*

- ❑ There should be a centered, two-line heading with the title, **Synthesis of...**, and the student's name underneath the title
 - ❑ Cut and paste chemical equations from ChemDraw; These must be centered
 - ❑ Center the title **Experimental Section**
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Report Paragraph, *in Word*

- Title the next section, **General Methods.** and left justify it
 - In the first paragraph include, the reactants, their source (what company they were purchased from), and any purification techniques that were used. If there were no purification techniques needed then state that the reactants “were used as received.” Do not include any other chemicals or drying agents unless they are pertinent to the reaction or were purified in some way.
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Procedure Paragraph, *in Word*

- One paragraph is needed for each compound that was synthesized. Begin this paragraph with the name of the compound in bold, followed its “labeled” number in the equation
 - The procedure is written in the style of the Journal of Organic Chemistry
 - Must be clearly stated what was done in the experiment in third person and not in the style used in giving directions in doing the experiment
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Procedure Paragraph, cont.

- ❑ The most confusing this is what to leave in or leave out in these reports.
 - ❑ Usually the type and size of glassware is not revealed, especially when you are dealing with beakers and Erlenmeyer flasks.
 - ❑ Also do not include how something is done if it is something any chemist is expected to do. Ex. Every chemist knows what suction filtration is...
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Procedure Paragraph, cont.

- ❑ Do not leave out the articles "a" and "the"; use "the" before words such as "mixutre" or "solution"
 - ❑ Do not write in short choppy sentences
 - ❑ Its alright to use conjunctions ex. And
 - ❑ Do not continually use the word "then"
 - ❑ Refer to your chemicals/reactants as the "labeled" number in your chemical equation
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Last Sentence of Procedure Paragraph

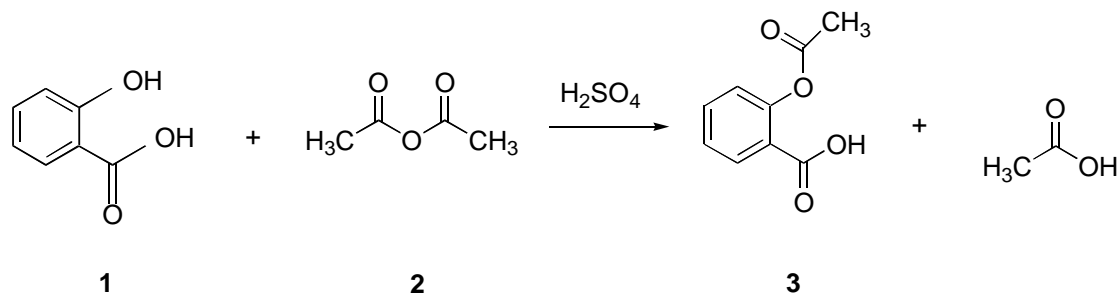
- Usually the last sentence will say "The resulting crystals were collected by suction filtration, rinsed with _____, and air dried to provide # (mass g, percent yield) as _____ crystals, melting/boiling point ____ - ____ °C."
 - Read/check over it and make sure there are not any mistakes.
 - Print out and you are ready to turn it in!
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Example of a Synthesis Report

Synthesis of Aspirin

Student Name

Chemical Equations



Experimental Section

General Methods: Acetic anhydride was purchased from Sigma and Salicylic acid was purchased from Aldrich. Both were used as received. The melting point was determined on a Melt-Temp II apparatus.

Aspirin, 3. To a flask containing 3.000 g of **1** was added to 5.0 mL of **2**. The mixture was stirred and 5 drops of concentrated sulfuric acid was added while stirring. The mixture was heated in a boiling bath for 15 minutes while stirring occasionally. The reaction flask was removed from the bath and 10 mL of ice-cold water was added. The solution was chilled in an ice bath for 20 minutes. The resulting crystals were collected by suction filtration, rinsed with cold water, and air dried to provide **3** (2.993 g, 76.55%) as white crystals, mp 123-126 °C.