Acetaminophen Synthesis Lab Report
Due on Friday, April 2, 2021 before 11:59 PM on Canvas

****Anything turned in after 11:59 PM on April 2nd will be considered late and receive a 25% deduction off the earned score, NO EXCEPTIONS****

****Anything turned in after 11:59 PM on April 3rd will not be accepted at all****

- Title (detailed and specific, it can't just be Acetaminophen Synthesis)

- Abstract

- Summary of the experiment (no experimental details such as masses, temperature, etc.)
- Objectives of the experiment (which technique was used and why)
- Results (% yield, melting points)

- Introduction (information from the gapped notes)

- Very brief overview/introduction to synthesis and the reactions
- Describe the reactions
- Draw the equations for the formation of the Acetaminophen
- Brief overview of isolation/purification techniques and their uses

- Experimental section

- The procedure 'YOU' performed.
- Remember you are writing to a chemist so DO NOT write unnecessary details.
- This is an example of how a synthetic procedure is written:

> "Freshly distilled pyrrole (25 mL) was mixed wih 1 mL of pentafluorobenzaldehyde and the mixture was degassed with argon for 10 min. A portion of 60 µL of TFA was added and the solution changed color to orange. The reaction was left stirring for 1 h under argon, then 50 mL of dichloromethane (DCM) was added and the organic phase was washed with a solution of NaOH 0.1 M (3 X 15 mL) and later with water (2 X 75mL). The organic phase was dried over MgSO4. The solvent was evaporated under reduced pressure and the product was purified in a silica column with hexanes as eluent and gradually increasing the polarity to 20% ethyl acetate in hexanes. The product was recrystallized with DCM/hexanes yielding 1.28 g of the final product (51% yield). Product was then characterized using NMR."

- Results

- Yield (both percent yield and percent recovery)
- Calculations including mass values of reactants/products, equations/units
- Melting point range and LABELED IR spectrum and table of frequencies

- Discussion (all discussion needs to be supported by theory, you will always be talking about your specific experiment, with your own data and chemicals, but the explanation for it is based on theory)

- Discussion of the reaction (why reflux, which bonds are made and broken, etc.)
- Discussion of the theory for the purification techniques used, specifically for your own experiment. (IMFs involved, %recovery, etc.)
- Discussion of techniques used for characterization yield and PURITY (by IR and MP), drawing conclusions from the data about the success of the experiment
- Discussion of what YOU learned/observed and possible reasons for lower yield

NOTE: If your experiment failed, it is preferred you discuss about that, instead of getting somebody else's data. YOU WILL NOT GET POINTS DEDUCTED FOR BAD DATA, BUT YOU CAN LOSE POINTS FOR NOT DISCUSSING THE THEORY. We want you to discuss and analyze your data, even if it is NOT what you expect.

The only exception is if you got absolutely no yield, then you will obtain data from your TA so that you can complete the results section. However, your discussion section should still include why your experiment failed and so on.

- Conclusion

- Summarize the experiment
- Objective of the experiment with the results (MP, IR peaks and %yield)

- References

- You should have more than just one reference.
- The lab packet can be cited as follows:

Arizona State University (2018, Month and Day of retrieval). Name of the Lab Packet. Retrieved from http://myasucouses.asu.edu

Reactions should to be drawn by you (either electronically or by hand)

(Failure to do so will get an automatic ZERO for the figure)