(posted on course web site)

Investigation of Dried Aspirin (Conducted *2.5 weeks after* the synthesis is complete!)

Once the aspirin you prepared has had two weeks to dry, you'll be able to analyze it to determine the yield of your synthesis and the melting point and IR spectrum of the aspirin you have synthesized. *Don't attempt to follow the steps below until your aspirin has had a chance to dry, or you'll get worthless data, waste your time, and mess up your yield determination!*

To determine your yield, you will want to determine the mass of your (filter cup + filter paper + aspirin) to the nearest 0.01 g, and determine by difference your experimental yield of dried product. Be sure to do this first, and be careful: the dried aspirin may be exceedingly fluffy, and easily blown away!

Both you and your lab partner should *independently* determine the melting point of your synthesized aspirin, using the same technique you learned last week.

To obtain the IR spectrum of your synthesized aspirin, use the same procedure you learned in the first week of this experiment, and used on the commercial stuff.

When you have completed the analysis of your synthesized aspirin, please place your filter cup, with any remaining aspirin still in it, in one of the collection bins in the hoods of our lab room.

ANALYSIS (DUE ON NOVEMBER ~~13TH~~ 23)

Note: This is a multiple session lab. You do not have to hand in your laboratory notebook until after you complete the "investigation of dried aspirin," described above. At the intervening lab meeting, you'll do additional computational work that ties in closely with what you did this week. Then the week after that, you'll collect data on your dried product, and then be able to complete the lab writeup.

Your lab ~~manual~~ → notebook should detail your synthesis and analysis of aspirin, including everything you did in the first week of this lab, as well as the follow-up analysis work you did this week. Provide an introduction, a clear description of the experimental procedure you followed, and a discussion of your results. Provide enough detail in your procedure that a scientist of your level of training could reproduce what you did in the laboratory, based only on what is written in your report. Describe what your senses told you (what you saw and smelled) along the way! Include the follow-up work you did this week that completes this experiment: your observations of the dried product, its melting point, and a copy of each IR database search, taped into your lab book (for commercial aspirin and your synthesized aspirin). + copies of the 2 IR spectra

You should report the percent yield for your aspirin synthesis and present *in detail* a calculation of how you determined the percent yield. (This includes the determination and calculation of the theoretical yield you expect based on your actual experimental work. If you don't wish to re-write your determination of the limiting reagent, reference and include your ASA, making sure that what it shows is valid and correct!) The percent yield of a reaction is defined as ~~[ ]~~ not necessary

$$\%\ Yield = \frac{actual\ yield}{theoretical\ yield} \times 100\%,$$

where the theoretical yield is found by identifying the limiting reactant. Be cognizant of significant figures in reporting your yield! If your yield differs from 100% (and most likely it will), provide plausible suggestions as to the likely cause for the yield value you observed. (Where did the "extra product" go, or come from?) End with a conclusion, in which you assess the melting-point, infra-red, and observational evidence to decide whether or not you actually synthesized aspirin. Make sure your conclusion includes a summary of the key results and findings from the experiment: whether you believe you actually made aspirin, your yield, and the melting point and IR match of the stuff you made. be sure to do this!