**How to Write a Post Lab Report**

The post lab report is comprised of four components.

**7. Data and Results**

The data and results section is fairly straight forward. For each experiment, you are told what data and result you need. Include the carbon copy of your written data (such as melting points and percent yield calculations) and any attached data (such as IR spectra and GC chromatograms).

**8. Discussion**

The discussion is needs to typed and submitted to turnitin.com (along with the data analysis and the conclusion as one file). Printout the file from turnitin.com in the correct format (please read the directions on the webpage) and attach it to the data and results. Although every experiment is different, there are a lot of similarities which means you can follow some simple guidelines to help you write a complete discussion. The guidelines are as follows:

**A. The Purpose:** Each experiment has a purpose or several purposes, and you can use this purpose as a guide on what to discuss. For instance, in the distillation experiment, the main goal of the experiment is to identify the unknowns and the ratio. We are using fractional distillation to help obtain the answers to these goals. Therefore, you know that you have to talk about the theory of distillation (what is it, what types are there, what are we using and why we need to use it etc.).

Another experiment is one where you are synthesizing a specific product, such as the nucleophilic substitution experiment. For these, you need to discuss the reaction we are using to produce the product giving a description of how it works. You also need to include any major problems that are encountered when doing these reactions and how they are avoided/prevented.

**B. The lecture:** In each lecture I will give most of the information you will need in the discussion. I also discuss the safety aspects of the experiment so that you can complete the experiment safely. Thus it is important to come to the lecture and take good notes. The safety items do not need to be included in your discussion.

**C. Office Hours:** Every TA holds one office hour a week. I hold two office hours per week. If you have any questions regarding your report, we are some good resources.

Keep the discussions brief and remember to not write in first person. The entire discussion should be roughly one page in length, but each experiment will vary. Also, do not write a discussion where you tell us each step you took during the experiment. You only need to bring up procedure if you are trying to explain why you obtained the data/result you did.

**9. Data Analysis**

The data analysis is where you look at your data and try to determine what it means. You will be asked specific questions about your data. You need to answer the questions in paragraph format. For instance, in the fractional distillation experiment, one of the questions is about identifying the unknowns correctly. Your answer might look like the following:

“*The two solvents in the unknown mixture were determined to be hexane for the lower boiling point solvent and toluene for the higher boiling point solvent, which are correct. The plateaus in the distillation graph pointed to the unknowns being methanol and toluene. For the higher boiling point liquid, the retention time agreed with the distillation graph, although the boiling point was a little low. The lower boiling point liquid had a retention time matching hexane. The gas chromatogram was used as the determining factor for identification since the boiling point of hexane and methanol are similar.”*

The length of your data analysis will vary from experiment to experiment, but it should be between one to one and a half pages long. Also, please remember to not write in first person.

**10. Conclusion**

The conclusion is where you determine the success of your experiment. Bring all the answers to the data analysis questions into answering the whether or not the results were expected. Then determine the most logical reasons as to why the results were or were not as expected. It should be roughly a half page in length, but again it will vary with each experiment. Part of an example conclusion is below.

*“The identity of the two unknowns was determined successfully. However, there were differences with the distillation graph and gas chromatograms. Since the boiling points of both higher and lower boiling points were low, the placement of the thermometer might have been too high. This placement would result in a low temperature reading. It is also possible that the thermometer is inaccurate. However, the temperature of boiling water was recorded as 99.5 °C, making the placement the more plausible reason.”*

**Submission**

The submission of your report includes all the prelab report (1-6) and the post lab report (7-10). Staple the carbon copies of your prelab report, data and results, the printout of the discussion, data analysis and conclusion from Turnitin.com (please make sure that these are submitted as one file). Submit this file to your TA on the assigned period listed in the work schedule.