

# Lab Report Guidelines:

- General Style Guidelines:

- The paper should be written in a third person, passive voice.
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- In general, use the past tense. Present tense is used when describing properties of molecules/organisms/etc as they still have these properties.
- Assume the reader of your report is a peer—the average chemistry student. Everything should be explained as such. Assume the reader knows some chemistry but is not an expert.
- Avoid repetition. Avoid repetition. Avoid repetition. Please, your TA has to read a bunch of these reports. We understand there is only so much you can do to vary word choices (a beaker is a beaker, etc) but do what you can to avoid saying the same things over and over again.
- Define abbreviations BEFORE you use them.

- Lab Report Section Clarification:

- Title Page

- This should be its own page.
- Includes title, date, name, lab partners, TA, due date, and section number.

- Abstract

- Should concisely describe the topic, the scope, the principal findings, and the conclusions. Think of this section as a mini-summary of the whole lab.
- Write this **LAST** to accurately reflect the lab as a whole.
- Should be fairly short (under 200 words) but contain all the necessary information.

- Introduction

- Should be a clear statement of the problem/project and why you are studying it.
- Should present the scientific problem at hand to the reader. Start generic and work towards specificity for this lab. Important points include:
  - The nature of the problem and why it is of interest should be discussed first. In short, why does this matter? Why are you looking at this topic? Why are you using this method and not another method?
  - Background. This should include things like theory and instrumentation. How does it work? What information do you get? How do you interpret that information? How does this relate

to the problem you are trying to solve? You can also use this section to describe previous works (with proper literature citations) that have used the method for similar problems. This is generally a good way to explain why you are using the method in the first place.

- This is a great section to include figures and schematics. Give a basic diagram of how the instrumentation works.
- This section should be readable to a broad audience. Ask a friend/sibling/parent who has limited chemistry knowledge to read the intro. If they can understand what you did and why, then the intro is good.

### ○ Methods and Procedures

- This describes what you actually did in lab and is essentially the procedure in your prelab work up, but in paragraph form.
- This needs to be detailed enough that someone could pick up your lab report and go do the experiment with just your lab report as instruction. HOWEVER, this should not be a step by step repetition of the steps taken.
- It is always good practice to specify what chemicals (supplier) and instrumentation (model number) were used during the experiment, though not strictly necessary for the scope of this course.

### ○ Results/Discussion

- THESE ARE THE MOST IMPORTANT SECTIONS OF YOUR REPORTS
- Results need to be presented and summarized in a reader friendly form. That is to say no raw data. You already presented raw data earlier in the report.
- You need to not only mention the results, but also discuss them. This can include a description of the data (e.g. spectra, trends in data, etc,) any problems encountered during the experimentation and how they were resolved or accounted for (or at least what affect they have on your results,) and a general description of how the data were processed/interpreted to get the results.
- Evaluate the data. Is your data good/bad? Is it interpretable or did something go wrong? **Compare any found values to those in literature, where applicable.** *Cite the literature.* If your data doesn't match expected results, give an explanation as to why. Was there an experimental error (e.g. you made the calibration curve incorrectly or with the wrong data?) Is the error from a limitation in the instrumentation? Don't just state there was an issue, be as specific as possible.
- State what your results mean. How do they relate to the problem you are trying to solve? How do they relate to what you discussed in the introduction?
- If there were any errors, this is a good time to discuss what could be done to minimize those errors if you were to run the experiment again. Is there

a better method for making the measurements or making the samples? Is there something that would have helped make the experiment easier?

- Your goal here is to present your data, convince the reader that the data is valid and reliable, and present evidence for your conclusions.
  - DO NOT MAKE CLAIMS WITHOUT EXPLANATIONS. Even if you aren't 100% sure, you need to explain where you draw conclusions. Give your best explanation. Use literature citations where necessary.

## ○ Conclusions

- One paragraph summary. Very similar to the Abstract, but not quite as broad. You are summarizing your work/conclusions and how they relate back to the broad topic.
- Summarize goal(s) of experiment, state whether you reached the goal(s), and briefly describe the implications of your work.