Quick Tips Cont…

- It is not necessary to say that you "obtained" an item, like in the manual. It is enough to state that you are using it (i.e. "… carefully transferred to a *test tube*")

Results and Discussion

These could be written together or separately. What is the most logical/powerful way to present and discuss your data?

If you decide to keep them separate, avoid drawing conclusions in the **Results**. Only present the data that is relevant to your objective and that you will discuss. Choose *either* a table *or* a graph for each set of data, never both. To help you decide, consider the *readability* of both and which would make more sense for the kind of data you've collected. Beneath each table, include sample calculations when appropriate (i.e. percent yield, molecular formula). Begin with variables, and then plug in your data. If you're not tech savvy, save some space to do it by hand.

Quick Tips

- Begin titles (tables) and captions (graphs) with a number (i.e. Figure 3) so that you can easily refer to them in your discussion
- Titles should be specific. It's OK to summarize the column headings of a table
- Remember significant figures!
- Mention units in the column heading, but not in the remaining rows
- Use scientific notation, written as 10^3, not E-3 or 10^3

The **Discussion** should include the following, in no particular order:

Restate the **objective** of the experiment. Discuss what type of data was collected to achieve the goal and explain how *your* data was used to answer the question.

Fully discuss *all* data from the **Results**, citing specific values and evidence. Connect the Results back to the purpose of the experiment. What do your results indicate? What conclusion can you draw?

Discuss whether or not the findings agree with your **expectations**. If you had a hypothesis, *explain* why it was proven or not using your data.

If the findings do not agree well with expected values, explain why that may be. Be specific about what **sources of error** were present or why you made your original prediction.

Quick Tips

- Refer to *specific* data from your results, not just the table or figure it's found in
- If your data isn't perfect, it doesn't mean it's not worth discussing

Conclusion

Summarize the *key* data that led to the conclusion (remember to cite) and connect the findings back to the objective. This section can be the last paragraph of the Discussion, but is typically *separate* for *full* lab reports.

A special thanks to Professor Brindle, Professor Fitzgerald, Professor Rau, and Professor Krisch

The Writing Center's Guide to Chemistry Lab Reports

Before you begin…

- **Read** the manual and Moodle for specific assignment instructions
- Take **good notes** during pre-lab lecture and during your experiment
- Remember your **audience** isn't your professor, but another "chemistry student"
- Remember that a lab report is a form of writing. Grammar, organization, and fluency are important, so make an **outline**
- Use your **resources**. Ask your professors and TAs for clarification, and **make an appointment** at the Writing Center at any point in the process

Format

- Double-spaced, 12pt, Times New Roman
- Page numbers on every page *except* Title
- Passive voice (no personal pronouns)
- Past tense (the Introduction can vary)
- Do not use contractions (do not vs. don't)
- Sections should be clearly labeled (underline, bolded, etc.), but avoid changing the font size
- Print on both sides

Title Page

Name of Experiment*
Your name
Due Date of the Lab Report
Compound X/ Partner Y/ Measurement Z
Lab Day and Section Number
Trinity College, Hartford CT

*For general, it's ok to use the given title. For organic, mention the compounds analyzed, the results (i.e. ID of unknown), etc. Capitalize the first word if lengthy.

Abstract

Write a sentence or two about each section of the report, discussing the *key* pieces. Cite necessary data as you would in the Discussion. This part of the report is single-spaced and is typically written after the report is complete. Your audience for this section is asking, "What is this report about, and do I want to read it?"

An expanded version of this guide can be found on our website: linkitylinklink

Introduction

Include the following (order can vary):

If you're stuck, the **objective** is a good place to start. What is the goal of the experiment? Note that the "learning objective" mentioned in your lab manual is *not* relevant to the scientific purpose that you are writing about.

A **hypothesis** is sometimes required, and is included after the purpose is stated. What do you expect the outcome to be? For organic, this may be a proposed mechanism. Careful to not let what you learn after lab influence how you write your hypothesis.

Explain **how** your experiment reaches the goal. What methods are used to get to the objective? Talk about the specific *design* of the experiment.

Finally, write about relevant **background information**. This may include reaction equations, mechanisms, an explanation of techniques, chemical principles, etc. Anything that is necessary to set the stage. Your lab manual's experiment introductions and pre-lab lectures have good examples of what kind of information is relevant. Remember to *cite* any resources you use with a superscript.

Quick Tips

- **Equations** should either be drawn using ChemDraw, or space should be left so that they can be hand-drawn in.
- Abbreviate terms as **acronyms**, but only the first time you use them (i.e. Thin Layer Chromotography (TLC)).

Quick Tips Cont…

- As for the **tense**, it can either be past *or* future as long as you are consistent with what you choose. When you are talking about *facts* and not about what you did/will do, write in the present.
- You have some creative freedom here, so why not make it an **interesting** read? Just avoid beginning with "Chemistry is all around us…"

Experimental

Your goal for this section is to tell your audience what you did, so that they can *reproduce* the experiment. Here is where taking good notes really comes into play. Write in full sentences about what was *actually* done. Your biggest mistake would be to copy the lab manual. Things may not go as planned, causing you to improvise, or your professor may make a change to the procedure.

Quick Tips

- Give enough detail so that another chemistry student can **reproduce** your results. Your audience knows the basics.
- Write out numbers one to ten, unless it is a measurement (i.e. three test tubes, 4M)
- Give measured quantity values in grams and moles for reactants (i.e. salicylic acid (1.392g, 0.109mol))
- Never start a sentence with a number
- Don't capitalize the names of chemicals
- Numbers that begin with decimals should start with 0s (i.e. .1 ml should be 0.1 ml)
- If you used a major instrument, mention its name (i.e. IR Spectrometer 9900)