

Expectations for Your Laboratory Report on Experiments 8 and 9

- Each lab team should turn in one report.
- The tasks under the “Calculations and Data Analysis” and the “Report” sections of your lab manual should be addressed fully in your lab notebooks.
- Do not answer the “Discussion Questions” in your lab notebook.
- **The due date for your report is postponed to Monday, December 19.** You are required to turn in only the final version of your paper to me. You will not be turning in a first draft to the writing assistant. However, I would be happy to read a first draft of your paper and provide feedback. You would not be graded on this draft. However, you must give me this first draft by December 12.

The basic structure and expectations are the same as for your first lab report. I have noted below issues you should be aware of, and topics specific to this pair of experiments.

Again, provide a specific and descriptive **Title**.

The **Abstract** in the first lab report was generally good. Avoid providing too much detail, especially about the experimental procedure.

The **Introduction** for this lab report should briefly address coordination compounds in general, as well as the specific properties (bonding, color, and paramagnetism) of the coordination compound you synthesized. You should also briefly discuss the methods, precipitation and spectrometry, which you used to analyze your compound. Be sure to cite all **References** used to help you write the **Introduction**.

I was quite pleased with the **Procedure** section in your first lab report. For this report, you should provide a clear description of what you did for both Experiments 8 and 9, and what you observed. Given the nature of these experiments, it is appropriate for the **Procedure** section to be rather lengthy (but not ridiculously long). You do not need to draw (or reproduce drawings of) any apparatus unless you feel it will aid your discussion.

The **Results and Discussion** section should first present the key numerical results: the percent yield of your compound, and the formula you determined for it (that is, the values of x and y in $\text{Co}(\text{NH}_3)_x\text{Cl}_y$). However, it is not necessary to present how you did your calculations in exhaustive detail, since you will have already presented detailed sample calculations in your notebooks. (Many lab teams provided more detail than was necessary on their calculations in the first lab report.)

You should next answer in narrative form the first two “Discussion Questions” in your lab manual. What I mean by narrative form is, do not type out one of the discussion questions, and then present your answer. Instead, write one or more coherent paragraphs that address the issues raised by the discussion questions—what affected your yield, and the accuracy of your analysis? In your discussion of the accuracy of your analysis, you should include a copy of your Beer’s Law plot, and address its reliability. That is, is the plot very linear—is its R^2 value close to 1? If not, what could have caused this? Why is a non-linear Beer’s Law plot bad?

It is generally not necessary to state qualitative observations here, since you will have already presented them in the **Procedure** section. The only observations you need to repeat are those that may explain errors in your numerical results. For example, you may have gotten a yield of Compound A higher than 100%. This may have been due to a large amount of black

charcoal which did not get properly filtered. It makes sense to mention in the **Results and Discussion** section if you indeed observed black particles in your final product.

Your report's **Conclusions** should summarize what you have accomplished in the experiment. Unlike the **Abstract**, the conclusion need not recapitulate every part of the paper. This section should also contain your answer to the third discussion question, as well as specific ideas about what you would do differently if you had the opportunity to repeat the experiments. Avoid subjective or personal comments.

As before, in your **References** section, follow the American Chemical Society's conventions. See your first lab handout for examples.

Finally, remember what Barbara and I said about scientific grammar and style. Here are the key points:

- Do not capitalize names of elements
- Use the passive voice
- Do not use the imperative mood or the future tense in the **Procedure** section! This section is not functioning as a lab manual, telling future students what to do. Instead, use the indicative mood and the past tense, presenting what was done and what was observed.
- Provide a caption for every figure or table
- Report numbers to the correct number of significant figures
- Put a space between a number and its unit. The one exception is with the percent sign.
- Avoid contractions
- "Data" is a plural word; "datum" is singular