

INSTRUCTIONS FOR COMPLETING CHEM 1412 LABORATORY REPORTS

General All sections of the report should be written in third person, meaning there should be no use of personal pronouns such as “I”, “you”, or “we”. The report should also be written in past tense, as if it was done yesterday, using complete sentences and correct grammar. Please use double spacing.

Each laboratory report must have an appropriate title. Please use the title that is given for the experiment in your lab manual. The title and all participants should be listed on a cover sheet.

Introduction

The introduction states the objective, or goal, of the experiment in a single complete sentence. In some cases, a second sentence may also be used to state secondary goals or specify the method of analysis that is being used.

Theory

This is a brief description of the chemical principles or properties being illustrated or measured in this experiment. If a certain reaction is being studied, then a balanced reaction equation should be written in this section. If a scientific principle or mathematical relationship is being tested, it should be stated in this section.

Experimental

- I.) Materials and Reagents – This section lists all of the chemicals and substances used in the experiment. List any safety precautions in this section for handling of specific reagents. Briefly describe any specialized equipment or apparatus used in sample preparation. Any instrument used to analyze the sample(s) should also be described. If you are unsure of how to describe the instrument, use the internet and library data bases to find examples of where the instrument is described in the peer-reviewed literature.
- II.) Procedure – Use numbered steps and provide enough detail for someone else to repeat the procedure. Read the lab manual procedure first, then write a **detailed procedure** in your own words. Include stoichiometric calculations on any reagents or samples. Notes on procedural mistakes and modifications due to a recovery effort should also be recorded here.

- III.) Safety - Safety precautions in this section should only refer to the specific procedures being performed. General safety precautions about reagents should be in the Materials and Reagents section.

Results

Observations can be supplied in this section; however, the section should mainly be devoted to results in numerical and graphical form. Provide results, both qualitative and quantitative, on the unknown determination. Parameters such as the range, mean, and average deviation should be used to define the uncertainty of the final measured result. If any outlier points are excluded from the analysis, provide the statistical justification.

Conclusions

The conclusion is the answer(s) to the experimental question(s) that is/are deduced from the experimental results. This discussion should attempt to explain why a certain result was obtained or why a certain result was not obtained. It should address the degree to which the objective was achieved. It should include theoretical concepts in explaining why a certain result was obtained. Communicate on the sources of error in your determination. Do not confuse mistakes with experimental error. Mistakes in the procedure should be described in the Procedure Section. Describe any experimental errors with regard to sample preparation separately from error inherent in the instrumental technique. Again, human mistakes in sample preparation or instrument operation are not the same as experimental error.

References

Include reference citations used in the preparation of the laboratory report pertaining to the procedure or instrumentation. Usually, between two and five citations, with at least one from the peer reviewed scientific literature, should be included.