

REPORT FORMAT

Some experiments will have in a written format. Other experiments will have an oral report.

1. WRITTEN REPORT

IT IS TOTALLY FORBIDDEN TO USE PREVIOUS YEARS WRITTEN REPORTS (BIBLES)

Those students, who are proven to be guilty of this offense, will be graded either incomplete (I) or failed (F). See section on Ethics.

The written report, **no longer than 10 pages, spacing 1.5** (without cover sheets and Appendices) should consist of the following elements:

- A. Grade sheet
- B. Data summary sheet
- C. Written report

On the first page print:

- Title of the experiment
- Your Name (Your partner's name for Kinetics)
- Your TA name
- Section MW or TR
- Abstract

- (1) **Title**. This should be a brief, clear description of the subject of the report.
- (2) **Abstract**. This is a concise statement of the major results obtained. It should consist of *only* 2-4 complete sentences. It is best prepared after the rest of the report has been completed.
- (3) **Introduction**. The record of an experiment should begin with a concise statement about the experiment to be performed, with balanced chemical equations where relevant, and a statement about the goal of the experiment. The second page of the written report starts always with the Introduction.
- (4) **Procedures and Observations**. Refer to the manual for descriptions of experimental procedures, but be sure to record any deviation from the suggested procedure. Clearly labeled sketches of experimental setups are usually preferable to lengthy descriptions. Particularly when describing a synthesis, attempt to use a style similar to that commonly employed in describing synthetic procedures in scientific journals (e.g., "...a solution of 10.0 g of reactant A in 50 mL of anhydrous ether was added dropwise and with stirring over a period of 30 minutes, to ..."). For each reactant, the correct name, formula, source, grade or stated purity, weight (or volume and density in case of a pure liquid, or volume

and concentration in case of a solution), should be recorded. Standard data (m.p., b.p., etc., of reagents are not necessary. In addition, the volumes of any reaction solvents used should be specified. These data are very important and should be noted in table form.

(5) **Summary of results.** All data, yields, calculated results, etc. should be presented, preferably in tables or graphs if applicable.

(6) **Calculations and Graphs.** A sample calculation should always precede results of calculations based on a formula. Notebook entries in this category should be done in the laboratory. Experience should soon convince you that problems with quality, internal consistency, and data validity, which are detected immediately, are more quickly and efficiently rectified. Graphs should always be done separately on good quality paper referenced in your notebook.

(7) **Analysis of Data and Errors.** **ALL ANALYSIS OF DATA IS TO BE DONE INDIVIDUALLY**, even for the Kinetics experiment where data is obtained with a partner. The reproducibility and precision of data should always be examined, and the major sources of errors identified. Detailed statistical analyses of error are rarely called for, but when possible, you should attempt to distinguish between systematic and random error.

(8) **Discussion, Interpretation.** The outcome of each experiment should be quantitatively and qualitatively discussed in relation to the goals of the experiment as stated in the introduction. You should:

- (a) briefly summarize the key results of each experiment;
- (b) explain the significance of your findings;
- (c) explain any unusual difficulties or problems which may have led to poor results;
- (d) offer suggestions for how the experimental procedure or design could be improved.
- (e) answer all questions posed in the laboratory manual as part of the overall discussion-not as a series of questions and answers.

(9) **Conclusion.** A very brief (1-3 sentence) conclusion to the experiment based on the data collected and analyzed.

(10) **References.** Present a numbered list of references to texts, monographs, journal article, standard computer programs.

(11) **Appendices.** This is the place to put hard copies of computer output (tables, spectra). Each Appendix should have a number and a title and be referred to in the body of the report.

(12) **Leftover unknowns and samples of prepared compounds** are turned in to your TA. Solid derivatives should be placed in a small vial and appropriately labeled: Student's name, Exp. No., Name of the compound.

Note: Consult the following paper: Spector Thomas, "Writing a Scientific Manuscript. Highlights for Success," *J. Chem. Educ.* **1994**, *71*, 47-50. Xerox copies are available upon request. The *ACS Style Guide*, Janet S. Dodded, is also a useful reference.

2. ORAL REPORT

After completing the last experiment, you will present your results and analysis to your TA in the form of an **INFORMAL ORAL REPORT**. In this report, you should tell your TA briefly:

- the purpose of experiment;
- relevant theoretical background;
- what happened in **your** experiment;
- present your results and analysis;

Much of the preparation for your Oral Report will be the same as for a Notebook Report such as those you have turned in for earlier experiments. In particular, the data analysis, graphing and plotting, error analysis, etc. should be carried through to completion and the results should be presented in an appropriate form (tables, plots, etc.) for efficient communication. You will bring your lab notebook, raw data, analysis, results, plots, and any other materials that are appropriate, and you will discuss your experiment with your TA. You may bring notes, books, and pretty much anything (inanimate), which will help you in your discussion. You may work with other students; use written reports from earlier years, and in general use any sources you want to prepare for your oral. You are, of course, expected to do your own data analysis and calculations. You may use any sources of help in understanding the analysis as well as any other aspect of the experiment.

You should plan on discussing your experiment for about 10-12 minutes. Be aware that it is impossible to present everything that you know about the experiment. Therefore you should plan very selectively what you choose to present. During the last 8-10 minutes your TA will ask questions pertaining to your experimental work.

The objectives of the oral are to encourage you to learn as much as possible, and to find out how much you know in an efficient manner. In an informal exam of this type there is no substitute for knowing the material.

After analyzing your data and mastering the material, you will want to spend time organizing your presentation. You may want to use some notes, especially to guide you through theoretical discussions. You may use a blackboard if you wish. You may also just show your (neatly written) notes to your TA on occasion, rather than transcribe them onto the board. (This is especially convenient if there are many equations.) Do whatever makes you most comfortable, without wasting time. You will need to show your TA spectra, plots, etc. As always, attention should be paid to the **presentation** of data and results so that they are easily understood. **Write neatly**, label the axes of plots, indicate units, errors, etc.

You should come prepared to “take the initiative” and guide the oral exam. Otherwise your TA will be forced to take the initiative by asking you question after question, likely venturing into territory you may prefer not to explore. Be prepared to give an informal but well organized presentation. Your presentation should include the following elements, in sequence:

- Introduction;
- Background (why you did it);
- Experimental (what you did);
- Results (what happened);
- Discussion (including answers to questions posed in the manual);
- Conclusions.

The oral should not be a harrowing experience. Just tell your TA:

- what the experiment is about (briefly);
- what you know about it;
- what you did (briefly);
- what the results were, and why.

Ordinarily, you will not turn in your data, analysis, results, etc. However, you must do so if your TA so requests after your oral exam.

Your grade will reflect your ability to convince the TA that you understand the most important aspects of the experiment. The experiment grade sheet will be used by TA as guideline for grading you.

Oral schedules will be posted on the 5.310 bulletin board located near the entrance to the GC Room. Check the day, date, time and topic of your oral Report. Plan to come to the Reference Room approximately ten minutes prior to your scheduled Oral Report time. You will be directed to the Section of the Lab where your Report will be heard.

IF THERE IS ANY PROBLEM WITH THE TIMING OF YOUR ORAL REPORT SEE Dr. GHEORGHIU! (OTHERWISE NO CHANGES IN THE SCHEDULE ARE PERMITTED).