

Physical chemistry lab assignment



However, this is not a traditional lab in that you will not be provided a detailed procedure on how to perform the experiment. Part of the process is to develop the procedure yourselves. The reasoning behind this is twofold: (i) to reduce the number of lab reports you have to write and therefore the time you have to spend on the lab outside of lab hours; (ii) to encourage you to think about the experiments you will be ongoing and to provide you with the time to actually ‘experiment’ and understand the concepts. Week 1: The group develops an experimental procedure to achieve the objective of the experiment. The ‘guiding questions’ in the lab manual, as well as your TA, will help you develop the procedure.

Answer all guiding questions as best you can. By the end of the lab period, your group must submit a detailed procedure to your TA, who will provide comments to be returned at the beginning of week 2. Important: Your TA will not tell you outright if the procedure is ‘right’ or Wrong. Week 2: Your TA will return your proposed procedure with suggestions. You should modify the procedure accordingly and get most of your experiments done in Week 2. Make use of the fact that you have two people to get the experiments done efficiently. If your procedure required significant modifications it is possible that you will not be 2 weeks of lab time to get everything done.

Answer any remaining ‘guiding questions’. Week 3: All experiments should be finished during this lab period. Start analyzing the data so that you can see if there are critical experimental data you are missing – use the time to perform any missing experiments. Remember the Task are there to help. All ‘guiding questions’ should be answered by now. You should also start to put together a complete draft of your reports, which should subsequently be

typed and handed in to your TA on the same afternoon of the following week. (Please ask your TA for details regarding where and when the labs should be submitted.) One report should be submitted by each member the group (two reports total).

The data will be the same in both reports but you must be very careful to not plagiarism each others' reports. The original procedure submitted to the TA in Week 1 should be stapled on the back of the report. You must also submit your notes/answers for the guiding questions (individually).

-4- Overall Mark distribution formal lab report 70 % answers to guiding questions 10 % lab etiquette, preparation, and participation 20 %, based on:

- 0 punctuality
- 0 amount of time in spent in the lab
- 0 fair workload distribution with partner
- 0 understanding of procedures and theory
- 0 ability to work in an organized and time-effective manner
- 0 overall lab etiquette (e. G. Maintains clean work areas, polite interactions with Task and partners, ensures any necessary data is communicated to partner in a timely manner)

Some Reference Books

Dads, R. C. Experimental physical chemistry Q 453. 2 . DID Matthews, G. Peter. , Experimental physical chemistry Q 457 . MIM Shoemaker and Garland, Experiments in physical chemistry Q 457 . ASS Shoemaker and Garland, Experiments in physical chemistry Q 457 . ASS 1983 MR. 1985 MR. 1989 MR. 1996 MR. Please also refer to the “ Handbook of Chemistry and Physics” in the lab, and to other publications, fundamental constants, etc. But please minimize your citations of websites in your report (I. E. Do not cite Wisped).

-5_ Guidelines for Laboratory Reports One of the most important aspects of this course is the production of a quality lab port. Reports should be typed. If this is not possible, clearly handwritten reports are also

acceptable. Your demonstrator has been instructed not to give a grade for a report that she or he cannot read! Since you will only be submitting two reports for the whole term, you should invest substantial effort in making these reports something you are proud of. Reports must be handed in to the demonstrator. The penalty for late lab reports (without a valid medical excuse) is 10% per day, including weekend days.

General Each student must prepare their own independent report. The report must be neat and organized and written. N sentences and paragraphs. While spelling and grammar will not be marked explicitly, both must be of sufficiently high standard that the reader can understand Use passive conjugation (no “ I” or “ we”...) Number all pages. Outline of General Format and Approximate Marking Scheme Title page [2 marks] Objectives [5 marks] Introduction [10 marks Experimental Procedure [25 marks Results and Discussion: Results [20 marks Data tables Calculations Graphs Discussion Questions Conclusion [3 marks] References (Note: The actual marking scheme can differ slightly depending on the experiment.)

Title Page – Must include letter and title of the experiment, course code, student number, due date, date of submission, partner’s name, demonstrator’s name Objectives – State the goal of the experiment, the methods and/or apparatus. Should be 2-3 sentences. E. G. The goal of this experiment is to study the formation of an chimera of pecten in cyclopaean by emission spectroscopy. Introduction (-?? 2-3 pages double spaced) -6- Discussion of the purposes of the experiment and the theory behind the subject. Explain relevant chemical concepts by using definitions, limitations of laws and/or approximations made during the derivation of a formula. Give <https://assignbuster.com/physical-chemistry-lab-assignment/>

important formulae and define all the terms. Give the value and units of constants.

Number your equations. Example of Equation Presentation $p = \text{pressure}$, $V = \text{volume}$, $n = \text{moles of gas}$, $T = \text{temperature}$ $R = 8.3145 \text{ J/K. Mol Ideal gas constant}$ Experimental Procedure (very important since you are the one developing the procedure) ; Your experimental procedure should be written in sentences and paragraphs. It should be detailed description of what you actually did in the lab - not what you planned to do and not what you were supposed to do, but what you actually did. It should include a description of all chemicals used (grade and manufacturer wherever possible), concentrations of all reagents. Instruments, name, edition of any software).

Describe in detail how you came up with the procedure, with reference to the guiding questions If your procedure changed from Week 1 to Week 2, describe the changes Provide a table with the uncertainty of the instruments used during the experiment. Example of Error Table (also see Guide to Presentation of Data):

Instrument	2 ml pipette	5 ml pipette	250 ml volumetric flask	scale
Uncertainty	0.02 ml	0.2 ml	0.0001 g	

Results Section Results Tables While it is a good practice to organize results into a table/graph wherever possible, the text MUST refer to EVERY table and graph. Present all results (measured/calculated/literature) in tabular form and include all error estimates and units.

Experimental data will be a copy of what you obtained in the lab, with more detail about uncertainties and units. The independent variable (the experimental parameter that is deliberately set up) should be in a vertical

column with the corresponding values of the dependent variable (the measured property) in a column to the right. For example, in Table 2 low the mass of the pellet is the independent variable and the boiling point is the dependent variable. Tables should be numbered and appear throughout the text, not grouped at the end of the report. Briefly describe the table in the preceding text. The reader should know what to look for in the table ahead of time. Figure and Table Captions are critical.