

CHEM.425 Inorganic Chemistry Lab.

Spring 2008-2009.

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General:

CHEM.422 is co-requisite for 425 (the inverse does not apply).

The CHEM.425 lab-lecture is currently scheduled for Mon. 9 am. The lab activities are in 12-409 Mon. 3-6 & Wed. 10-1. Any other possible schedule changes will be discussed in lab-lecture.

Eye protection must be used during the lab periods. Hoods and gloves should be utilized for manipulations involving any potentially hazardous, dusty or volatile compounds.

The lab sequence involves (a) regularly scheduled experiments performed by everybody in the class, plus (b) an "individual project", chosen and performed by one pair of students. Your grade for the course will be determined according to your laboratory reports. Keep in mind that a lab report should communicate not only the quantitative results of the experiment but also the quality of your data and your understanding of the experiment. Reports should be done using the appropriate software and are due 2 weeks after the completion of the experiment. If a report is submitted late, then for each Drexel class day by which a report is overdue, 5% of the marks are deducted. In any case, any and all lab reports for a grade must be submitted no later than noon, Mon. June 8th if you are a "graduating student". If you are not graduating, then the reports deadline is Fri. June 12th. Your 425 grade is also dependent on timely attendance at the lab-lecture, and participation in the attendant discussion.

You may choose to perform experiments in "teams" of two people. However, the lab reports for the experiment must be written independently of the other team member, even though the data would be utilized in common.

The format of the reports should be that of a research paper in *ACS Inorganic Chemistry*. Be sure to include the following elements: (1) Title Page; (2) *Introduction* (be concise); (3) *Experimental Procedure*; (4) *Experimental Data* (tabular format, with proper units); (5) *Results & Conclusions*; (6) References.

In (7) an *Appendix*: show the calculations used in obtaining intermediate and final results, including any equations used in proceeding from data to results. In case of duplicate, triplicate, or other multiple sets of data, only one set of calculations need be shown, but all results should be listed in tabular form. When averaging or data-fitting is called for, a standard deviation should be listed as well as a mean. Also include any graphs, charts, and spectra from the experiment.

Regularly Scheduled Experiments:

<i>Experiment</i>	<i>Days Needed</i>
Crystal Field Properties of Ni ²⁺ /Cu ²⁺ Compounds.	2
Synthesis and Excited-State Chemistry of Ru(Bipy) ₃ ²⁺	2
Transport across a Model Liquid Membrane	1
Assembly and Properties of a Macrocyclic Complex.	2
Synthesis of a Silicone Polymer	1
An Inorganic Photovoltaic Device.	2
(Arene)Mo(CO) ₃ π-Complexes	1.5
A Ruthenium Nitrosyl Complex from Diazald [®]	1.5
Ligation Equilibrium of a Metalloprotein	1

Individual Projects:

You and your lab partner should choose one of these from the instructor's sign-up sheet, and initial that experiment to claim it. The list of experiments will be available in week-2. The schedule to be followed is:

- By April 6th: sign up for your choice of project.
- By April 15th: submit your written proposal for performing the project. You will need to outline: (1) Apparatus and (amounts of) reagents required;(2) The experimental procedure; (3) A description of the methods to be used for appropriately characterizing the product(s), indicating what measurements will be made; (4) your planned timetable for performing the work; (5) References. The Instructors will review and critique your proposal.
- You will have your second lab period of week-7 plus both your lab periods of week-8 (May 18-22) to perform the experimental work. There is also free time (*e.g.*, while refluxing a reaction) during earlier experimental periods, when you can get started on your project.
- May 29 - June 5: write up your experiment. The written report should again be in the format of a research paper in ACS *Inorganic Chemistry*.