

Chemistry 461
Inorganic Chemistry Laboratory
Spring 2009

Lab: Wednesdays from 1:00 – 4:50 pm

Lab TA: Austin L. Gille, FW310 Email: agille@niu.edu

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Office Hours: By appointment or just stop by

Lab Text

Z. Szafran, R. M. Pike, M. M. Singh, "Microscale Inorganic Chemistry", Wiley, New York, 1990.

Lab Notebooks

Each student is responsible for keeping a neat lab notebook. This notebook must contain carbon pages so that a copy can be turned in with the lab report. These notebooks can be purchased in the chemistry Stockroom. Before lab, each student **MUST** complete a prelab in his/her lab notebook. The prelab is very important, as its purpose is for the student to summarize the procedure in his/her own words. By doing this, the student becomes familiar with the procedure before actually performing it. Failure to produce a prelab will result in a **point deduction** from the lab report. Along with the prelab, all data, observations, and chemicals used must be recorded in the lab notebook.

Lab Reports

A typed lab report must be handed in for each lab that is completed. Lab reports will be collected at the beginning of class two weeks from the day that the lab was performed and must be completed on an individual basis. The lab report should consist of the following sections:

Introduction	10 pts
Experimental	10 pts
Results	
Observations	10 pts
Yield and Percent Yield	20 pts
Characterization of Product	20 pts
Discussion	10 pts
Conclusion and Answers to Questions	20 pts

Each lab report will be worth 100 points. Carbon sheets from your lab notebook must be attached to the end of your lab report. All lab reports **MUST** follow the format on page 3 of this syllabus or you will be asked to reformat it and it will be counted as late.

Grading

This lab consists of 9 lab reports worth 100 points each and a written comprehensive lab final worth 100 points. The grading scale will be 90.0 – 100 = A, 80.0 – 89.9 = B, 70.0 – 79.9 = C, 60.0 – 69.9 = D. Anything less than 60.0% will result in failure of the course. Failure to attend lab checkout and/or complete the comprehensive lab final will also result in failure of the course.

Lab Schedule

Week	Lab Date	Experiment	Topic
1	1/14		Check In ***Read Ch 1-6 in Lab Book***
2	1/21	26	Synthesis of <i>cis</i> and <i>trans</i> -Co(en) ₂ Cl ₂ ⁺
3	1/28	20	Metal Complexes of Dimethylsulfoxide
4	2/4	22	Synthesis of Metal Acetylacetonates ***Expt 26 Lab Report Due***
5	2/11		Catchup Week ***Expt 20 Lab Report Due***
6	2/18	29	Determination of Δ_o in Cr (III) Complexes ***Expt 22 Lab Report Due***
7	2/25	Handout 1	Preparation of Cr (II) Acetate
8	3/4	37	Platinum (II) Complexes – the Trans Effect ***Expt 29 Lab Report Due***
	3/11		No Lab – Spring Break
9	3/18	40	Preparation and Sublimation of Ferrocene ***Cr (II) Acetate Lab Report Due***
10	3/25	Handout 2	Preparation of (1,3,5-C ₆ H ₃ Me ₃)Mo(CO) ₃ ***Expt 37 Lab Report Due***
11	4/1	30	Preparation and Study of a Cobalt (II) Oxygen Complex ***Expt 40 Lab Report Due***
12	4/8	30	Preparation and Study of a Cobalt (II) Oxygen Complex *** (1,3,5-C ₆ H ₃ Me ₃)Mo(CO) ₃ Lab Report Due***
13	4/15		Check Out
14	4/22		Comprehensive Lab Final ***Expt 30 Lab Report Due***
15	4/29		Exam and Grade Return

Lab Report Format

I. Title Page

This page should contain the following and only the following: your name, course, title of the experiment, and date the experiment was performed.

II. Abstract

This section is a one or two paragraph summary of the experimental procedure and the results of the experiment.

III. Introduction

The introduction should include the theory behind the lab and the purpose for the lab. Balanced chemical equations and formulas should also be included in this section.

IV. Experimental

The procedures and equipment used should be described in enough detail that somebody may reproduce the experiment entirely from your lab report. This section should also contain diagrams of complex apparatuses used in the experiment. A free program can be downloaded from www.acdlabs.com/download/chemsk.html, which can be used to create diagrams of apparatuses.

The experimental section should begin with a materials and methods paragraph. This paragraph should contain all chemicals used, the manufacturer of the chemicals, and the purity of the chemicals. Atmospheric conditions should also be mentioned.

Example: "Chromium (III) chloride (99.9%) was obtained from Aldrich. Acetone was obtained from an unknown source. All chemicals were used without further purification. The experiment was carried out in the air."

V. Results and Data

All raw data should be neatly listed in this section. The spectra should be appended to the end of the lab report with all major peaks labeled and should be referenced in this section. There should also be a discussion of the relevant peaks. Any calculations should also be placed in this section with a sample calculation for each different type of calculation. This is where the yield, percent yield, and theoretical yield should be calculated. Any observations made during the lab should also be noted in this section.

VI. Discussion

This section should contain a discussion of the results that were obtained from the experiment as well as possible sources of error. In other words, interpret the data and explain why you got the results that you did.

VII. Conclusion

This is a summary of the results that you obtained. Also, include answers to the questions in the lab manual. Required questions can be found on page 4 of this syllabus.

VIII. References

The ACS format should be used when citing your references. All references that were used must be cited, including your lab manual.

Other Notes

All lab reports must be typed and double spaced with a 12 point font. Lab reports must contain correct grammar and spelling. Points will be deducted for continuous use of incorrect grammar and misspelling. Do not forget to attach the carbon copies from your lab notebook to the end of your lab report.

Attendance

Since inorganic synthesis is time consuming, our tedious lab schedule does not permit for any make-up labs. Therefore, attendance at all labs is mandatory unless you have a really good reason for not being there. Failure to show up for lab will result in a zero for that week's lab report.

Late Lab Report Policy

Lab reports will be due at the beginning of lab on the day which they are due. Late lab reports will be penalized up to 10 points per day and will not be accepted after the end of lab of the following week.

Academic Misconduct

Cheating and plagiarizing is strictly prohibited. Each student will submit his/her own work, independently of his/her lab partner. Failure to follow these rules will result in a zero for the lab report and a referral to the judicial office.

Required Questions

EXPT 26: 1, 2, 4, 5, 6

EXPT 20: 1, 3

EXPT 22: 1, 2, 3, 4, 5, 7, 8

EXPT 29: 2, 4, 5, 6

Handout 1: 1, 2

EXPT 37: 2, 3, 4

EXPT 40: 1, 2, 3

Handout 2: 1, 2, 3, 4

EXPT 30: 1, 2, 3, 4, 5