Inorganic Chemistry Lab CHEM 345
Spring 2011

Professor: Nicole Crowder
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Lab: Thursday 2:00-4:45 pm, Jepson 210, 213

Office Hrs: **M** 3:00-3:50; **W** 12:00-1:00, 3:00-4:00; **Th** 11:00-12:30; **F** 1:00-1:50

Materials: coursepack for CHEM 345, carbonless duplication lab notebook, approved safety goggles and lab coat, scientific calculator

Web Site: This course will make use of the Blackboard course management system. Pre-lab materials and experimental procedures may be posted here periodically.

Content: This course will focus mainly on the d-block of the periodic table and include analysis of the structure and reactivity of these metals and the coordination complexes that they form. Areas of exploration will include organometallics and bioinorganic chemistry, solid state structures, and molecular symmetry. The labs will focus on inorganic synthesis techniques and different methods of characterization of inorganic complexes. After completing this course, a student should be able to

- Prepare and characterize inorganic and organometallic complexes using inorganic laboratory techniques and various spectroscopic methods
- Interpret collected data in light of the principles of inorganic chemistry
- Use the chemical literature and begin to write as a scientist using standard literature formats

Grading:

	Points	**Total**
Lab Reports with all notebook assignments (10)	100	1000

Students with a C average or lower on **2/24** will receive a Mid-Semester Deficiency Report.

Lab Reports: Lab reports will be prepared in the style and at the level of the American Chemical Society journal *Inorganic Chemistry*. This is done in an effort to prepare you for the expectations of the discipline. Any references included in the lab report should be cited according to the *ACS Style Guide*. Occasionally, additional questions will be assigned and should be included in the formal lab report. Lab reports must be turned on the day assigned, typically the lab period after the completion of the experiment. Late work will not be accepted without prior arrangements with me and may be subject to a penalty.

Lab Notebook: You will utilize carbonless, duplicate, permanently bound laboratory notebooks, and all recordings must be done **in ink.** The notebook must be recorded neatly and legibly. Mistakes are crossed out with a **single line**, so that the original mistake can be seen. A mistake is **never** obliterated. On each page of the notebook, include the title of the experiment, the date, and your name. Pre-laboratory assignments must be completed in the notebook prior to entering the lab and will include, at the least, a statement of the purpose of the lab and a brief outline of the procedure to be followed. **No pre-lab assignment means the lab may not be conducted.** Each new experiment is started on a new page of the laboratory notebook, and the pages should be numbered in successive order. All data and observations should be recorded, as well as the chemicals used (with their sources) and the instrumentation used. Calculations performed in the laboratory are recorded in the laboratory notebook. Deviations from the stated experimental procedure and any (seemingly) odd occurrences are also recorded. A laboratory notebook never contains too much information. The more information recorded, the better the conclusions that can be drawn from the data.
The colored carbonless copy must be submitted when the corresponding lab report is turned in.

Attendance: Attendance and completion of the experiments is mandatory. Please contact me as soon as possible if you are absent from the laboratory. Missed experiments may be made up only in the case of an emergency. You need to notify me immediately of such an emergency. It is important to note that due to the hands-on nature of the laboratory, **if a student misses three (3) lab periods, they will fail the course.**

Lateness to the pre-laboratory lecture is distracting to others, and students should attempt to be on time. The pre-lab lectures cover important safety and procedural information. If an individual is repeatedly tardy, a five point deduction will occur for each instance.

You should complete as much of the work and planning of your experiments as possible during the assigned laboratory time. **No unauthorized access to the laboratory is permitted.**

Academic Dishonesty: In accordance with the University's Honor Code, all work submitted for grading must be your own and be pledged as such by signing the complete honor pledge at the top of the assignment. Academic dishonesty in any shape or form will not be tolerated. Suspected violations of the Honor Code will be addressed according to the policy established by the Honor Council. Please familiarize yourself with the University's policies of academic dishonesty: ignorance is not an excuse!

Disability Rseources: The Office of Disability Resources has been designated by the University as the primary office to guide, counsel, and assist students with disabilities. You will need to request appropriate accommodations through this office as soon as possible, and then make an appointment with me to discuss your approved accommodation needs. Please bring your accommodation letter with you to the appointment. I will hold any information you share with me in the strictest confidence unless you give me permission otherwise.

Chem 345 Lab Schedule

1/13	Lab Check-In, Safety, Overview
1/20	Synthesis of Two Cobalt Coordination Compounds
1/27	Solid State Modeling Lab
2/3	Identification of Geometrical Isomers of $[Mo(CO)_4L_2]$ by Group Theory
2/10	Identification of Geometrical Isomers of $[Mo(CO)_4L_2]$ by Group Theory
2/17	Synthesis of 4-Coordinate Complexes
2/24	Lab TBD or Literature Assignment
3/3	SPRING BREAK
3/10	Two Linkage Isomers of $[Co(NH_3)_5NO_2]Cl_2$
3/17	Paramagnetism: $Mn(acac)_3$
3/24	Synthesis and Redox of Ferrocene
3/31	Kinetics
4/7	Bioinorganic Coordination Chemistry
4/14	Bioinorganic Coordination Chemistry
4/21	Lab Check-Out

Lab Report Format:

TITLE: The title should accurately, clearly, and concisely reflect the emphasis and content of the paper. The title must be brief and grammatically correct.

AUTHOR NAMES: *Include in the byline all those who have made substantial contributions to the work, even if the paper was actually written by only one person. One author must be designated with an asterisk as the author to whom correspondence should be addressed.*

RECEIVED DATE: Date the report is due.

ABSTRACT: All reports must be accompanied by an abstract. The abstract should briefly state the problem or purpose of the research, indicate the theoretical or experimental plan used, summarize the principal findings, and point out major conclusions. The abstract may be no longer than 300 words.

KEYWORDS: Provide significant keywords to aid the reader in literature retrieval.

REPORT TEXT: Please prepare the sections of a journal article indicated for the lab report. The article sections should follow the format of the ACS journal *Inorganic Chemistry* and should include the level of detail that is indicated by representative articles from this journal. The report should be prepared in the past tense and should not be written in first-person.

The introduction section must contain **at least 4 references** to articles from peer-reviewed journals that are relevant to the topic of discussion. These references should be included as endnotes and should be cited following the *ACS Style Guide* format. If a reaction mechanism is proposed for the system under study, the schematic should be included here, either drawn by hand or done in ChemDraw.

The experimental section should include the names and suppliers of all chemicals used, as well as the make and model number for any instrumentation used. A brief explanation of the experimental method should be included here. If a novel technique or analytical method is used, it may be presented in further detail.

The results and discussion section should include any relevant graphs, tables, charts, spectra, etc. as needed to present the data.

EXTRA QUESTIONS: If indicated, answers should be provided for extra questions pertaining to the lab. If the conclusions or results and discussion section is required for the lab report, these answers should be incorporated into that section, if appropriate. If not, simply answer the questions and turn them in with the required sections.