

## Department of Chemistry

# Synthetic Inorganic Chemistry *Fall 2005*

**Chemistry 0307** (CRN 029-000)

**Chemistry 0407** (CRN 013-051)

*One hour lecture and six hours laboratory per week.*

**Prerequisite:** Before attempting this course you need to have completed a course in inorganic chemistry (Chemistry 0301 or the equivalent).

**Disability disclosure:** This course involves the use of many toxic materials, which need to be handled with specific safety procedures. If you have a physical or emotional disability, which might limit you in appropriately following such procedures, you should not take this class.

**Meeting times:**

<b>Lecture:</b>	Tuesday	11:40-12:30am	BE 121	J. Gilbert
<b>Lab:</b>	Tuesday & Thursday	1:10-4:00pm	BE 211	J. Gilbert

**Instructor information:**

Dr. Jay Gilbert      BE 346    (215) 204-7140    [jgil@temple.edu](mailto:jgil@temple.edu)

**Office hours:**

Mon 1:30-3:00pm; Tue & Thurs 9:00-10:00am; additional times by appointment.

**Text and safety equipment:**

**Microscale Inorganic Chemistry**, Szafran/Pike/Singh, Wiley, 1991

You will also need safety glasses or goggles and a laboratory coat or apron. You will not be permitted to enter the laboratory without these protective items. Safety practices which were required in your previous laboratory courses (general, organic, and analytical) will continue to be required in this course.

**Goals of the course:**

This course is designed to familiarize the student with the techniques of chemical synthesis which are specific to the preparation of inorganic compounds. Although theory will be included in the discussions, this is primarily a course in technique and methods. Because chemical procedures can sometimes require more or less class time than may have been required in the previous year's course, it is impossible at this point to give a reliable calendar of all experiments, which will be attempted. The first four experiments, however, will be:

Our first experiment:	<b>Exp 2;</b> Synthesis of the Group(IIA) Metal Oxalate Hydrates
Our second experiment:	<b>Exp 9;</b> The Oxidation States of Tin
Our third experiment:	<b>Exp 4;</b> Preparation of trialkoxyboranes
Our fourth experiment:	<b>Exp 16;</b> Preparation of Sodium Tetrathionate

Subsequent experiments will be scheduled as time, equipment, and availability of starting materials permit.

### **Grading:**

There will be a midterm exam worth 200 points (Tuesday, October 25, regular class time) and the final exam worth 300 points (Thursday, December 13, 11:00am-1:00pm). Your laboratory reports (each worth 50 points) will obviously count for a significant portion of your total score. You should maintain a laboratory notebook in a format convenient for you to follow. The laboratory reports will be required to follow a prescribed format, indicated below.

### **Format of Laboratory Reports**

In order to provide uniformity for lab reports, the following format shall be employed. Reports should be easily read, which means that they should be typed, computer-printed, or CLEARLY hand printed.

Computers with word processing software are available in BE 220. If you keep a reasonable lab notebook, most of the information below will already be in your notebook.

You are expected to attend laboratory and carry out the experiments yourself. Laboratory reports must reflect work, which you (and not others) actually did.

- 1. Goal:** State briefly the goal or purpose of the synthesis. (What does it demonstrate, what special technique is involved, or why is it appropriate as an example for study?)
- 2. Reaction:** Give the equation or equations used in the experiment.
- 3. Reagents** In table form, list the chemical used, the amount needed for the reaction, and the actual masses (or volumes) used. List important properties of each reagent (as noted in the text).
- 4. Apparatus:** If the experiment requires apparatus more complicated than simple pouring and stirring in beakers and Erlenmeyer flasks, give a sketch of the apparatus.
- 5. Procedure and Observations:** List stepwise the procedure followed in the experiment. Note the purpose of each operation or added reagent (this will be a big help in preparing you for the midterm and final exams). Note whenever an operation or added reagent results in an apparent change in the reaction materials.
- 6. Calculations:** Give the yield obtained and using the theoretical yield, calculate the percent yield of product. Show all work (If you are typing or computer-printing your work, this section can be hand-printed.)
- 7. Conclusions:** Comment on the yield and attempt to explain why it may be higher than expected or lower than expected. Sketch the molecular structure of the product.

## **INCOMPLETES / WITHDRAWALS:**

This course will adhere to the Department's and the University Policy regarding the last date to drop or withdraw from the course. The last date to drop is Monday, September 12<sup>th</sup>.

Withdrawals can occur until a later time. For the university policy please see

[http://policies.temple.edu/getdoc.asp?policy\\_no=02.10.14](http://policies.temple.edu/getdoc.asp?policy_no=02.10.14). For this semester this date will be Monday, 31<sup>st</sup> October. To obtain an "incomplete", the usual incomplete contract must be signed upon completion of 60% of the work. The student's accumulated total to that point should be more than 75% of the possible points. Non-attendance to the lab does not constitute "dropping" the course. Official withdraws can only be done through the Registrar's office.

**HELP!!!** Make certain you take full advantage of all the academic support services available at Temple - on the Main Campus. These include instructor office hours; the Math and Science Resource Center (MSRC) **relocated from Curtis Hall Room 17, 13th & Montgomery**, Main Campus in addition to Supplemental Instruction sessions. The services provided at the MSRC include one-on-one tutoring, computer lab, weekly group tutorials/supplementary instruction, final exam review sessions, and a resource library. The center is open 6 days a week AND IS FREE. For additional information check <http://www.temple.edu/MSRC>.

**Disability Resources and Services:** Any student who has a need for accommodation based on the impact of a disability should contact their instructor privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at 215.204.1280 in 100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities.

**Problems:** You should first attempt to resolve any problems that you are having with your laboratory or recitation instructor(s). If after speaking with the instructor you have not resolved the issue, you should speak with the course coordinator before speaking to your lecturer. As coordinator he will attempt to mediate, but the ultimate decision is often determined by department policy. **DO NOT** expect your instructor to make new policy. *However, if you are having problems with the professional conduct of your instructor you should contact the course coordinator immediately.*

**Make-ups:** There will be no make-ups of missed recitation quizzes, tests, or final examinations.

**Cheating:** All students are expected to adhere to the highest levels of academic integrity. Any students found cheating (i.e. copying answers to exam, quiz, or homework; submitting experimental data that they did not collect; presenting graphs and calculations; or otherwise taking credit for work that they did not perform) will receive a failing grade in the course. They will also be reported to the Dean's office in the College of Science and Technology.

**Miscellaneous:** 1). Cell phones are to be turned off during lecture and exams. 2). No electronic devices other than a basic "four function" calculator may be used during an exam. 3). During testing situations, you have completed the test when you leave the room. Visit the restroom facilities before sitting for your exams. 4) Photo identification may be required at any test. Be prepared.