

2018 Fall Semester

Chemistry Laboratory III- CH353
Exp.0. Orientation

Department of Chemistry

2018. 8. 28~30

Course Information

- Course Number: CH353
- Lecture: Experiment: credit = 0:6 h:2
- Lab: 502, 506
(Goong-Ni Laboratory Building, E6-5)

- Instructors: David G. Churchill
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Teaching assistants and contact information

- Chief TA: Minkyung Jang
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Course Objective

- 1) To present and reinforce basic laboratory techniques and practices.
- 2) To introduce elementary methods of assessing the significance of experimental measurements.
- 3) To form an environment that enables chemistry undergraduates to acquire a positive attitude toward chemistry and chemical research.

Course Requirement

1. Preparation in advance of experimental work. Completion of pre-laboratory reading preparation for successful experimentation.
2. The wearing of eye protection and appropriate lab clothing at all times while in the laboratory.
3. Preparation and timely submission of lab reports. (Grading will be based on the following criteria)
 - (a) Supplying sufficient numbers of observations and experimental details.
 - (b) Showing detailed methods of processing the experimental data. (NOTE) For quantitative analytical experiments: presentation of calculations and conclusions regarding the accuracy and the precision of experimental results are essential. Errors and the inherent errors based on the measurements need to be considered.

Grading

Total: Nine experiments (each 80 pts) = 720 pts
see below for the breakdown and two exams = 180 pts

Grades: A (45-50%), B (45-50%), C-D (5%) per class.

Midterm exam (Inorganic chemistry, 10%) + Final exam
(Biochemistry 10%)

Laboratory Schedule

- Exp.0. Introduction, Work Instructions, and Laboratory Safety : Chankyu Lim
- Exp.1. Synthesis of $\text{Cr}(\text{acac})_3$ and $\text{Co}(\text{acac})_3$: Jaehyuck Choi, Minkyung Jang
- Exp.2. Tetraphenylporphyrin and Its Copper(II) Complex : Jaehyuck Choi,
Minkyung Jang
- Exp.3. Ferrocene and Its Derivative (1) : Nara Kim, Sehye Min
- Exp.4. Ferrocene and Its Derivative (2) and (3) : Nara Kim, Sehye Min
- Exp.5. Polymerase Chain Reaction (PCR) : Hyeokjin Oh
- Exp.6. DNA Purification : Jinwoo Choi
- Exp.7. Plasmid Ligation and Transformation : Hyeokjin Oh
- Exp.8. Protein Purification and SDS PAGE (I) : Kibeom Hong
- Exp.9. Protein Purification and SDS PAGE (II) : Suyeong Han

| Week | Period | Experiment # | | | | | Notes |
|------|----------------|-----------------------------|-----|----------|----------|----------|-----------------------------|
| | | Mon | Tue | Wed | Thu | Fri | |
| 1 | 8/27-8/31 | | | [Exp.0.] | [Exp.0.] | [Exp.0.] | |
| 2 | 9/3-9/7 | | | [Exp.1.] | [Exp.1.] | [Exp.1.] | |
| 3 | 9/10-9/14 | | | [Exp.2.] | [Exp.2.] | [Exp.2.] | |
| 4 | 9/17-9/21 | | | [Exp.3.] | [Exp.3.] | [Exp.3.] | |
| 5 | 9/24-9/28 | | | | | | The Korean Thanksgiving Day |
| 6 | 10/1-10/3-10/5 | | | [Exp.4.] | [Exp.4.] | [Exp.4.] | |
| 7 | 10/8-10/12 | | | | | | |
| 8 | 10/15-10/19 | Mid-term Examination Period | | | | | Inorganic Chemistry Exam |

| Week | Period | Experiment # | | | | | Notes |
|-----------|--------------------|---------------------------------|-----|---------|---------|---------|--------------------------|
| | | Mon | Tue | Wed | Thu | Fri | |
| 9 | 10/22-10/26 | | | [Exp.5] | [Exp.5] | [Exp.5] | |
| 10 | 10/29-11/2 | | | [Exp.6] | [Exp.6] | [Exp.6] | |
| 11 | 11/5-11/9 | | | [Exp.7] | [Exp.7] | [Exp.7] | |
| 12 | 11/12-11/16 | | | [Exp.8] | [Exp.8] | [Exp.8] | |
| 13 | 11/19-11/23 | | | [Exp.9] | [Exp.9] | [Exp.9] | |
| 14 | 11/26-11/30 | | | | | | |
| 15 | 12/3-12/7 | | | | | | |
| 16 | 12/10-12/14 | Final Examination Period | | | | | Biochemistry Exam |

Methods of Evaluation

The student will be evaluated based on his/her performance of the requirement listed below.

Point total per experiment = 80 points

1) Attitude (20 pts)

(a) Punctuality (5 pts)

(b) Exhibition of proper Lab Safety (5 pts)

(c) Appropriate cleanliness; e.g., uncluttered research area (5 pts)

(d) Appearance of being undistracted and focused on tasks at hand (5 pts)

2) Laboratory Reports (60 pts)

(a) Introduction (5 pts) & Procedure (5 pts)

(b) Data & Results (30 pts)

- Quantitative results: Data, calculations, table & graphs

- Qualitative results: Observations

(c) Discussion (20 pts)

- Summary

- Assessment of results

- Conclusions

(d) Inclusion of references

Part . Attitude

- Section: Attendance-Late Coming
- Points: 0 ~ 5 pts
- Explanations

If you have arrived at the lab in time for roll call, you will receive the full score (5 pts). If you arrive 5 min late, you will receive 3 pts. If you arrive 20 min late, you will receive 0 pts. If you are 20 minutes late, you can not participate in the dys's lab experiment. (No re-takes.)

Part . Attitude

- Section: Attendance- Absence without notice
- Points: 0 pt
- Explanations

If you are absent 3 times without proper notification, a credit of "F" will be recorded.

*The lab experiment is ONLY permitted in registered class.

*Valid excuses include an illness (valid doctor's excuse) or uncommon circumstances beyond one's control (death in the family), etc.

* The student must submit a written verification of absence to be excused.

Part . Attitude

- Section: Lab safety/ Cleanliness
- Points: 5 pt
- Explanations

Check-list: Safety glasses, attire (lab coat), proper chemical waste handling, limited or no breakage of glassware.

Or after completion of the lab, TA will check the cleanliness of your bench and surroundings. (plus the analytical balance station.)

Part . Attitude

- Section: Focus
- Points: 5 pt
- Explanations

Check list: Avoiding gossiping, avoiding handling mobile phone (touching, ringing, chatting), and so on.: 5 pts

Part . Laboratory Report

Report Format

| Date | | (If this part is missing, deduct 3 points) | |
|----------------|-----------------------------|---|-----------------------|
| Name | | If missing, -2 pts | Before the experiment |
| Date | | If missing, -2 pts | |
| Title | | If missing, -2 pts | |
| Introduction | 5, 2, 0 | | |
| Chemicals | | MSDS search for all chemicals: Toxicity, physical properties If missing, -4 | |
| Procedure | 5, 2, 0 | Copying the procedure on the manual is meaningless. Record actual procedure that you've done during the lab | After the experiment |
| Data & results | 30, 25, 20, 15, 10, 5, 0 | Quantitative results: Data, calculation, tables & graphs Qualitative results: Observations | |
| Discussion | 20, 15, 10, 5, 0 | Assessing the results, and drawing appropriate conclusions from all of the data acquired, and all analysis performed. Try to put this assignment into perspective with general knowledge, course content, and possible cutting edge research areas. | |
| Reference | | If missing, -2 pts | |

Policy regarding late lab reports

Lab reports are due at the start (<10 min) of the scheduled experiment, unless otherwise indicated. At this time, the student is able to obtain full (100% maximum) credit on this work. Your score will be affected by the size of the delay, as follows.

- Within 24 hours: 90% total credit possible
- Between 24 and 48 hours: 80%
- Between 48-72 hours: 70%
- More than 72 hours: 0%

Laboratory Makeup Policy

- Make-ups are allowable only for students who missed labs for legitimate reasons and received the TA's permission to make up a lab(s). (Give a written documentation to your lab TA at the next lab meeting or bring it to his/her research lab. You will also need to ask for permission to make up the missed lab)
- Missed labs without a valid excuse, shall count as zero (0), and the student will not be allowed to make up this missed lab.
- Students are not allowed to make up late lab reports or to make up more than two experiments during the scheduled lab make-up time. Re-doing labs is not possible.
- Missed scheduled make-ups will be counted as zero and will not be rescheduled unless exceptional circumstances are determined.
- If more than three labs are missed, with or without valid excuses, the student will fail the course.
- The lab TA(s) will inform you of the make-up schedule and due-dates for make-up reports.

**Good luck and
Best wishes for an error-free
and accident-free term.**