

# Chemistry 341

Spring 2014

Course: Chemistry 341

Date: Wednesday & Friday

Time: 8:15-11:15A

Location: Flanner Hall 204

Textbook: 1) Szafran, Pike, & Singh Microscale Inorganic Chemistry: A Comprehensive Laboratory (1991)

2) A bound laboratory notebook

Instructor: Prof. Jacob Ciszek

Flanner Hall 122

Phone: (773) 508-3107

E-mail: jciszek@luc.edu

Website: Sakai

**Course Title:** Advanced Inorganic Laboratory

**Course Philosophy:** Chemistry 341 is designed to be your final preparative lab before starting a career in chemistry. Thus, the course finishes your undergraduate education in chemistry by demonstrating many modern techniques and illustrating principles learned in your inorganic course (Chemistry 340). In addition, the course seeks to prepare you for entry into the laboratory environment, be it academic or industrial. As such, an emphasis will be placed on your preparation of a quality notebook and final reports in addition to your successful completion of the experiments.

**Office Hours:** Both your TA (Jonathan Hopwood) and I are available to assist you with questions you may have. We will hold office hours at the following times:

*Jacob Ciszek*

Wednesday 1:00 P-2:15 P (except 1/29)

Friday 1:00 P-2:15 P (except 1/17, 1/31)

*Jonathan Hopwood*

Tuesday 4:00 P – 5:00 P

Thursday 4:00 P – 5:00 P

**Academic Honesty & Discipline:** Honesty is the foundation of the academic system and hence is of the utmost importance. All lab reports should be exclusively your own work and no outside assistance is allowed. In addition, lab reports will be submitted through “turnitin” which automatically checks your text for similarities to content available on the web. In the unfortunate event that a student is caught cheating (plagiarism or other), 100 points will be deducted from your total grade and you will be brought to the attention of the Department Chair and Dean of the College who will determine if further action should be taken.

**Grading:** Your grade is determined primarily by your lab notebooks and written reports with a minor portion resulting from other aspects of the lab. The breakdown can be seen below.

**Grading Scale:**

Lab Reports and Results	7 × 100 pts	700	A > 88%
Notebooks	10 × 10 pts	100	B > 78%
Quiz	100 pts	100	C > 68%
Safety	50 pts	50	D > 58%
Cleanup and Checkout	50 pts	<u>50</u>	
Total		1000	

Lab Reports – These formal reports are to be turned in by the end of the class period listed in the schedule on the next page. Details of the lab report requirements can be found both in the text (p34-35) and in an additional handout given out the first day of class.

Notebooks – Notebooks are collected at the end of the class period listed in the schedule below. They will be graded for completeness/accuracy (4 pts), format (3 pts), and neatness (3 pts). Completeness includes your prelab which is checked at the start of the lab. When evaluating neatness, a random sentence will be chosen from your notebook. If every letter of that sentence is not clear, points will be deducted. Your notebook should follow the rules outlined in Szafran, Pike and Singh (p31-34).

Safety – Lab safety is paramount. It is important to me and it will be important to your future bosses. Hopefully it is important to you. Any time you are in the lab you should be wearing lab glasses or goggles. Good chemical hygiene should be employed. At no time should you be touching chemicals without gloves. At no time should gloves (dirty or not!) be touching anything outside the lab or your cell phone! Cell phone use is not allowed in lab though you may leave the lab if it is urgent. Other unsafe practices are not allowed. 5 points are deducted per instance.

Cleanup – For one or two class periods this semester (schedule on next page), you are responsible for ensuring that the laboratory benches and common areas are clean and encouraging your classmates to cleanup after themselves

Pluses and minuses are not indicated in the grading scale but will be given. This will be done according to the natural breakdown of the grade distributions. Expect this to be the closest 1-2% to the final A-B, B-C, and C-D divisions.

**Approximate schedule (including assigned reading):**

1/15	No lab	-		
1/17	Notebook & Safety, Check-in	1	Handouts, 1-47	
1/22	Lab #26: <i>trans</i> -[Co(en) <sub>2</sub> Cl <sub>2</sub> ]Cl	2	239-242	
1/24	<i>cis</i> -[Co(en) <sub>2</sub> Cl <sub>2</sub> ]Cl	3	242-243	NB due
1/29	Visible Spectroscopy	4	107-113	
1/31	Infrared Spectroscopy/Raman	5	114-125	
2/5	Lab #22: Cr(acac) <sub>3</sub>	6	224-227	Report 1 due, NB due
2/7	Mn(acac) <sub>3</sub>	7	227-229	
2/12	Magnetic Susceptibility	8	49-56	NB due
2/14	Melting Point	9	74-80	
2/19	Lab #29: Crystal Field Splitting	10	248-252	Report 2 due, NB due
2/21	UV-Visible Spectra	11		
2/26	Make-up Laboratory	12		
2/28	Make-up Laboratory	13		
3/12	Lab #34 part A: Wilkinson's Catalyst	14	271-277	Report 3 due, NB due
3/14	IR & <sup>1</sup> H NMR Spectra	15		
3/19	NMR: Styrene Hydrosilylation Kinetics	16	Handout	NB due
3/21	NMR: Kinetics, Product Analysis	17		
3/26	Lab #42 part A: Synthesis of Metal Carbonyls	18	313-316	Report 4 due, NB due
3/28	IR Spectra	19		
4/2	Lab X–Au Nanoparticle Synthesis (sakai)	20	Handout	Report 5 due, NB due
4/4	Plasmons (UV-Vis)	21	Handout	
4/9	Lab Y-Generation of ZnO Nanoparticles (sakai)	22	Handout	Report 6 due, NB due
4/11	Photoluminescence, LED fabrication	23		
4/16	Make-up Laboratory	24		
4/18	Easter	-		
4/23	Check-out	25		Report 7 due, NB due
4/25	Lab Quiz – FH 129	26		

	Last Name	First Name	Cleanup Days		Lab Drawer
Group 1					
1.	Bender	Jon	1/22	1/24	1 & 2
2.	Farmer	Melissa	2/5	2/7	3 & 4
3.	Fluckey	Shawn	2/19	3/12	5 & 6
4.	Manley	Tara	3/19	3/26	7 & 8
5.	Wojtowicz	Aleksandra	4/2	4/9	9 & 10
6.	Ziemke	David	4/11		11 & 12
Group 2					
7.					13 & 14
8.					15 & 16
9.					17 & 18
10.					19 & 20
11.					21 & 22
12.					25 & 26
13.					29 & 30
14.					31 & 32

Group 1 begins compound characterization with the first method scheduled. Group 2 begins compound characterization with the second method.