

Point Loma Nazarene University  
Department of Chemistry

**CHE4067 – Advanced Inorganic Chemistry Laboratory  
Spring Term, 2022**

Tuesday, 1:30 – 5:00 pm, Sator Hall 216

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Office hours: MW, 12:30 – 1:30 pm; T, 11 am – noon

Sator 206  
(619) 849-3251

*Prerequisite*

Completion or enrollment in CHE4068 is required.

**Course Description**

The preparation, purification and characterization of main group and transition metal inorganic and organometallic compounds.

**Course Objectives**

At the completion of this course, students will be able to:

- synthesize inorganic compounds using literature procedures.
- characterize inorganic compounds using a range of techniques, including NMR, UV/vis, FT-IR, and magnetic susceptibility..
- communicate the results of experiments clearly and concisely using the journal format of the American Chemical Society.

*Prelabs*

Prelab write-ups of procedure are required before starting any lab. It should include a flow diagram of what you expect to accomplish during that lab period, brief procedures, waste handling, and safety considerations. Prelabs should be emailed to me the night before you wish to work in lab.

*Lab Notebooks*

Lab notebooks are an essential component of research. A handout will be provided with guidelines for proper notebook format and notebooks will be graded.

*Recommended texts*

There are no specific textbooks required for this course, but I recommend that you own at least one general inorganic text. Suitable books include,

“Inorganic Chemistry” Miessler and Tarr, any edition.

“Inorganic Chemistry” Shriver and Atkins, any edition.

“Concepts and Models of Inorganic Chemistry” Douglas, McDaniel, & Alexander, Wiley.

“Inorganic Chemistry” Huheey, Keiter, & Keiter, Harper Collins.

*Grading:*

Notebook	10 %
Prelab	15 %
Product Yield and Purity	20 %
Lab Reports	55 %

*Grading Scale:*

A	90 – 100 %
B	80 – 90 %
C	70 – 80 %
D	60 – 70 %
F	< 60 %

## Lab Topics

Week	Date	Topic
1	1/11	<b>No lab</b>
2	1/18	<b>Lab Introduction and Safety Meeting</b>
3	1/25	<b>Synthesis of metal acac complexes I</b>
4	2/1	<b>Synthesis and purification of metal acac Complexes II</b>
5	2/8	<b>Electronic Spectroscopy of acac complexes</b> First draft of experimental section due.
6	2/15	<b>IR spectra and magnetic measurements of acac complexes</b>
7	2/22	<b>NMR spectroscopy of acac complexes</b> Second draft of experimental section due
8	3/1	<b>Final characterization of acac complexes (nmr, electrochem, ICP)</b>
	3/8	<b>Spring Break</b>
9	3/15	<b>Group Projects</b> Experimental Section due for acac complexes
10	3/22	<b>Group Projects</b>
11	3/29	<b>Group Projects</b>
12	4/5	<b>Group Projects</b>
13	4/12	<b>Group Projects</b>
14	4/19	<b>Group Projects</b> Draft of final lab report due
15	4/26	<b>Group Projects</b>

**Final Exam Week: Paper due by Wednesday, May 4.**

**PLNU Mission**  
**To Teach ~ To Shape ~ To Send**

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

**PLNU FINAL EXAMINATION POLICY.** Successful completion of this class requires taking the final examination on its scheduled day and time. The final examination schedule is posted on the [Undergraduate Records](#) site. No requests for early examinations or alternative days will be approved.

**PLNU COPYRIGHT POLICY.** Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**STATE AUTHORIZATION.** State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

**INCOMPLETES AND LATE ASSIGNMENTS.** All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

**PLNU ACADEMIC HONESTY POLICY.** Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

**SPIRITUAL CARE.** Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the [Office of Spiritual Development](#)

**USE OF TECHNOLOGY.** In order to be successful in the online environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements](#) information. Additionally, students are required to have headphone speakers compatible with their computer available to use. If a student is in need of technological resources please contact [student-tech-request@pointloma.edu](mailto:student-tech-request@pointloma.edu). Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

**PLNU ACADEMIC ACCOMMODATIONS POLICY.** PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center ([EAC@pointloma.edu](mailto:EAC@pointloma.edu) or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.