

Organometallic Chemistry
CHEM 574, Spring 2023
Tuesday and Thursday, 11:00 AM to 11:50 AM, 1051 Gilman Hall

Instructor: Prof. Levi Stanley (3101E Hach Hall, Phone: 515-294-3609, e-mail: lstanley@iastate.edu - please include 531 in the subject of messages)

Office hours: M and W 11-11:50 AM or by appointment in 3101E Hach Hall.

Communication: Email – I welcome your email with questions about the course. To ensure your email is answered, please follow these guidelines: 1) please include “574” somewhere in the subject line; 2) please send your email from an iastate.edu address; and 3) Please DO NOT use Canvas to send me emails.

Textbook: There are no required textbooks for the class. However, I strongly recommend *Organotransition Metal Chemistry: From Bonding to Catalysis* by John Hartwig as a resource to aid in your understanding of the course content. An additional text you may consider acquiring is *The Organometallic Chemistry of Transition Metals* by Robert H. Crabtree.

Canvas: Course information including a course syllabus, supplemental materials, announcements, and grades will be uploaded to Canvas. Please do not use Canvas to contact me. Please use my university email address to contact me.

Exams: There will be three 100-point midterm exams. **All exams are cumulative.** Exam due dates are as follows:

Exam 1:	February 21
Final Exam:	April 6
Exam 3:	May 8 – May 11 – Date and Time TBD

Grading: The course will be graded out of 300 points based on scores for three 100 point exams.

Course Objectives: This course is intended to provide an overview of modern organometallic chemistry by introducing fundamental organometallic reactions and their applications in catalysis.

Learning Environment: My goal for this course is to create an active learning environment. To accomplish this goal, you as students must be willing to engage in the learning process. Questions from students, answers to my questions, and participation in problem solving activities are expected.

Tentative Schedule

Date	Topic
1/17/23	Course Details and Introduction to Organometallic Chemistry
1/19/23	Introduction to Organometallic Chemistry
1/24/23	Counting Electrons
1/26/23	Counting Electrons
1/31/23	Lewis Basic Ligands and Carbonyl Ligands
2/2/23	Phosphine Ligands
2/7/23	Alkyl Ligands and More
2/9/23	Alkene and Alkyne Ligands
2/14/23	Arene and Cp Ligands
2/16/23	Substitution Reactions
2/21/23	Exam 1
2/23/23	Substitution Reactions
2/28/23	Oxidative Addition and Reductive Elimination
3/2/23	Oxidative Addition and Reductive Elimination
3/7/23	Migratory Insertion
3/9/23	Migratory Insertion
3/21/23	Introduction to Catalysis
3/23/23	Hydrogenation
3/28/23	Hydrogenation
3/30/23	Hydroformylation
4/4/23	Hydroformylation
4/6/23	Exam 2
4/11/23	Acetic Acid Synthesis
4/13/23	Cross Coupling
4/18/23	Polymerization and Metathesis
4/20/23	Metathesis
4/25/23	C-H Activation
4/27/23	C-H Activation
5/2/23	Allylic Substitution
5/4/23	Allylic Substitution
5/8/23-5/11/23	Exam 3 – Date and Time TBD

University Policies

Academic Dishonesty

The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the [Dean of Students Office](#).

Accessibility

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Discrimination and Harassment

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S.

Veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email eooffice@iastate.edu.

Free Expression

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Prep Week

This class follows the Iowa State University Prep Week policy, as noted in the ISU Policy Library and section 10.6.4 of the Faculty Handbook. Visit the [ISU Policy Library website](#) for policy wording.

Religious Accommodations

Iowa State University welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request reasonable accommodation for religious practices. In all cases, you must put your request in writing. The instructor will review the situation in an effort to provide a reasonable accommodation when possible to do so without fundamentally altering a course. For students, you should first discuss the conflict and your requested accommodation with your professor at the earliest possible time. You or your instructor may also seek assistance from the [Dean of Students Office](#) at 515-294-1020 or [the Office of Equal Opportunity](#) at 515-294-7612.

Contact Information for Academic Issues: If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu