Organometallics 2019: Course Syllabus

June 13, 2019

Teaching Team

- **Instructor:** Keary Engle (keary@scripps.edu)
- **TAs:** Joseph Derosa (jderosa@scripps.edu), Tyler St. Denis (tstdenis@scripps.edu)

Schedule

- **Day/Time:** M and W, 10–11:30 AM (except when indicated)
- **Location:** Keck Auditorium

Lecture Schedule

- **DAY 1:** Strong Inference + Main Group Organometallics
- **DAY 2:** Organotransition Metal Complexes: History, Structure, and Bonding I
- **DAY 3:** Organotransition Metal Complexes: History, Structure, and Bonding II
- **DAY 4:** Elementary Reactions I
- **DAY 5:** Elementary Reactions II
- **DAY 6:** Elementary Reactions III
- **DAY 7:** Carbenes and Other M–C and M–X Multiple Bonds
- **DAY 8:** GUEST - Catalytic Cycloadditions (V. Schmidt, UCSD)
- **DAY 9:** Principles of Catalysis and Ancillary Ligand Design
- **DAY 10:** Catalytic Hydrogenation
- **DAY 11:** Catalytic Carbonylation
- **DAY 12:** MIDTERM
- **DAY 13:** Wacker- and Heck-Type Nucleopalladation
- **DAY 14:** Allylic Substitution Chemistry
- **DAY 15:** Olefin Metathesis
- **DAY 16:** Catalytic Cross-Coupling
- **DAY 17:** GUEST - Industrial Applications of Olefin Metathesis (J. Phillips/A. Johns, Materia)
- **DAY 18:** C–H Activation
- **DAY 19:** GUEST - Application, Mechanism and Catalyst Activation in the Real World (M. Eastgate, BMS)
- **DAY 20:** GUEST - Natural and Artificial Metalloenzymes (H. Renata, Scripps-FL)
- **DAY 21:** Wikipedia Page Presentations
- **DAY 22:** GUEST - Catalysis in Discovery Chemistry (R. Patman, Pfizer)
- **DAY 23:** Photochemistry of Coordination Complexes
- **DAY 24:** FINAL EXAM

Grading

- **Participation:** 5%
- **Homework:** 10%
- **Wikipedia Project:** 15%
- **Midterm:** 30%
- **Final:** 40%

Wikipedia Project

- **Overview:** pick a topic relevant to OM chemistry where no suitable wikipedia article exists and (re)write the article (with figures/images)
- **Pick Topic:** by 4/10/19 (e-mail Keary)
- **Article Draft Due:** by 5/08/19
- **Peer Review:** by 5/15/19
- **Final Version:** by 5/20/19
- **In Class Summary**: 5/22/19

Textbooks

- *Organotransition Metal Chemistry: From Bonding to Catalysis* (Hartwig)
- *The Organometallic Chemistry of the Transition Metals* (Crabtree)

March

Su	Mo	Tu	We	Th	Fr	Sa
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

April

Su	Mo	Tu	We	Th	Fr	Sa
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May

Su	Mo	Tu	We	Th	Fr	Sa
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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Class
Guest
Test