

Chemistry 626 – Organometallic Chemistry, Structures and Mechanisms

Fall, 2006, Thursday Evenings

Dr. Kevin Cannon (215-881-7468, kcc10@temple.edu)
Office hours: 4:00 – 6:00 PM, Thursday, or by appointment

Text: The Organometallic Chemistry of Transition Metals, Fourth Edition.
Robert H. Crabtree, John Wiley & Sons, New York
<http://www.ilpi.com/organomet>; electronic text

Course Description: The intent of this course is to provide those interested in transition metal organometallic chemistry an introduction to the fundamental reaction mechanisms and topics of structure. The first five to six weeks of the course will discuss electronic and geometric structure of transition metal complexes, periodic trends concerning structure and reactivity, and basic reaction mechanisms (ligand substitution, addition, elimination, and insertion reactions). Afterwards, structures and mechanisms will be surveyed according to ligand type. Some applications toward catalysis and organic synthesis will be presented.

Prerequisite for this course: none

Scheduling: There is no attendance policy for this course. However, the student is responsible for all the material and assignments covered during the lectures. It is the student's obligation to contact me to obtain missed materials. Material covered from the Crabtree text is listed below; it is to be read prior to the lecture. Occasionally, quizzes may be given at the beginning of lecture to evaluate the students' comprehension of fundamental concepts covered in the lecture.

Grading: Grades for this course will be assigned according to the following scheme:

Two tests, 15% each
Midterm, 30 %
Final Exam, 40 %

Make-ups: There will be no make-ups of missed tests or examinations.

Examination policy: Unless otherwise indicated by the instructor, all quizzes and examinations are "closed book," meaning no books, notes, or reference material may be consulted during the Test period.

Questions: Questions and answers provide a useful vehicle to understanding. I expect and welcome questions during the lecture. Please ask questions at any time – don't be shy!!! Chances are your classmates may have the same questions as well.

Tentative Syllabus

<u>Class</u>	<u>Topic</u>	<u>Chapter(s)</u>
8/31	Introduction	1,2
9/7	Structure and Bonding	1,2
9/14	Ligand Substitution	4
9/21	Oxidative Addition	6
9/28	Reductive Elimination	6
10/5	Insertion Reactions	7, 12.2, 14.5
10/12	Chemistry of Carbon-Metal Bonds	3,5, 14.1, 14.4
10/19	Chemistry of Carbon-Metal Bonds	12.4
10/26	Metal Olefin Addition Reactions	9, 14.3
11/2	Nucleophilic and Electrophilic Addition	8, 14.6
11/9	Carbenes and Olefin Metathesis	11, 12.1
11/16	Carbenes and Olefin Metathesis	
11/21*	Cluster Complexes	13
11/30	Physical Methods	10
12/14	Final Exam	