CHM 4317 – Organometallic chemistry - Winter 2019

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Syllabus

Lecture timetable (from Jan 6th – Apr 4th)

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Tuesday</td>
<td>1:00</td>
<td>SMD 330</td>
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<tr>
<td>Thursday</td>
<td>11:30</td>
<td>FSS 6032</td>
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Final exam TBA

General information

1. There is no textbook for this course section and for studying and reviewing you should rely on the course slideshow posted on the course webpage and your own notes.
2. Office hours. I will be available by email appointment

Course Summary

- Introduction (general description, organic-inorganic-organometallic, main groups versus TM-chemistry, general reactivity)
- General Concepts (VB theory, crystal field, ligand field, isolobality)
- Transition metal chemistry (early, middle and late TM, 18-electron rule, carbonyl and phosphine complexes, cyclopentadienyl and carbocyclic complexes, alkene and allyl complexes, hydrido, alkyl and aryl complexes. Reactivity: oxidative addition, reductive elimination, insertion-deinsertion, reaction of ligands, alkene isomerization, hydrogenation and hydroformylation, carbonylation and metathesis, coupling reactions, CO activation.
- Main group chemistry (organo lithium, Grignards, organo silicon)
- Cluster chemistry (nido- closo- and arachno structures, usage of isolobality concept to rationalize complex structures, EAN and PSET)
- Polymer chemistry (general, classification, processes, polymerization and copolymerizations, ROP, methathesis and ROMP, polycarbonates and polyolefins, polymer characterization)
- Hot topics in OM chemistry
- Brief intro to X-ray diffraction techniques