

Ch 112, 2016: Project Topics

The goal of the project is for you to get familiar with an area of research and to be challenged to design new research directions. You should use a topic below as starting point for a focused review and proposal in that area of chemistry. The paper should be four pages long, in JACS communication format (download template online). The first 2.5 pages should focus on background and presenting a challenge in the field, and the remaining 1.5 pages should be focused on your proposed new direction(s). The deadline for selecting your topic is October 6. Send an email to the TAs with your top three choices; priority will be given in the order of email arrival. The abstract is due on October 13. The final project is due on November 22. For the paper critique select an article that is related to your project.

- Methodology of M-C Multiple Bonds: Z/E Selectivity in Olefin Metathesis
- Methodology of M-C Multiple Bonds: Alkyne Metathesis
- Methodology of M-C Multiple Bonds: Selectivity in Polymer Synthesis
- From Discrete Molecular Precursors to Well-Defined Heterogeneous Catalysts
- Frustrated Lewis Pairs in Small Molecule Activation
- Selective Oxygenation Methodology with Iron: Mechanism and Catalysis
- Dioxygen in Organic Methodology: Mechanism of Transition Metal Catalysis
- Substrate Activation at Metal-Metal Bonds
- Reduction of Nitrogen Oxides
- C-F Bond Activation by Transition Metal Complexes
- C-F Bond Formation by Transition Metal Complexes
- Selectivity in C-C Bond Forming Reactions with First-Row Transition Metals
- Hydrogenation and Hydrosilylation with First-Row Transition Metals
- Ligand Non-Innocence in Transition Metal Catalysis
- Metal-Organic Frameworks in Catalysis
- Singlet Fission
- Metal-Alkane Complexes
- Uncommon Oxidation States for Selected Transition Metal: Effects on Reactivity
- Perovskites as Semiconductors
- Single-Molecule Magnets (Clusters)
- Single-Molecule Magnets (Mononuclear Complexes)
- Metal-H₂ Compounds
- Long-Lived Luminescent First-Row Transition Metal Complexes
- Biomass Conversion: Activation of C-O Bonds in Glycerol, Lignin, and Related Compounds
- Nuclear Fuel Recycling: Actinide Specific Ligand Framework Development
- Lanthanide Separation Based on Ligand Design
- C-H Bond Activation by Metal Centers
- Dioxygen Reduction at Multimetallic Sites
- Generation of H₂ from Water: Mechanism and Catalysis
- Dinitrogen Reduction: Biology vs Synthetic Chemistry
- Reduction of CO₂: Mechanism and Catalysis
- Reduction and Coupling of C₁ Species (CO, CO₂) to Liquid Fuels (C_{n>1}): Mechanism and Catalysis