

CHEMISTRY Departmental Seminar

Spring 2019
CHEM 285/191 Schedule
Tuesday at 4:30-5:45PM
Room Duncan Hall 250

April 16th, 2019

Mr. Jacob Hickey
SJSU Radlauer Lab
MS Final Oral Seminar

Incorporating Iridium Pincer Complexes in Polymeric Scaffolds for Site-Isolated Catalytic Alkane Dehydrogenation

Alkanes remain a difficult resource to harness through chemical transformation. Iridium pincer complexes can catalyze alkane dehydrogenation at elevated temperatures (generally $> 180\text{ }^{\circ}\text{C}$) and display high thermal stability and modularity. Based on the precedent with zeolite and micellar materials, we hypothesize that incorporating an iridium complex into a macromolecular framework will lead to catalysts with increased stability, compatibility, and reactivity and will overcome several limitations of the iridium-catalyzed reaction, namely the need for high catalyst loading and high reaction temperatures as well as the poor long-term stability of the catalyst. To that end, two small molecule iridium POCOP pincer complexes were synthesized as benchmarking complexes. Synthesis of a vinyl-appended analogue for direct polymerization into a polymer chain is also underway. To explore the effects of polymeric scaffolding for catalyst isolation and enhancement, our first target is a linear polystyrene structure, though we plan to use more complicated polymer structures such as star polymers as the research progresses. These iridium systems are currently being studied as alkane dehydrogenation catalysts using a range of temperatures and concentrations to examine their reactivity under various conditions.