

McGill Chemical Society Seminar Series

Tuesday, 9 December, 2014, 1:00 PM

Otto Maass Chemistry Building, Room 10



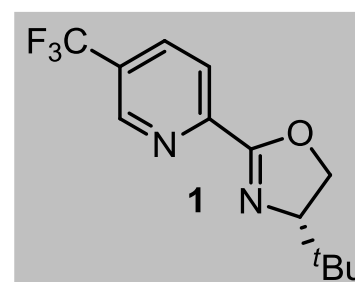
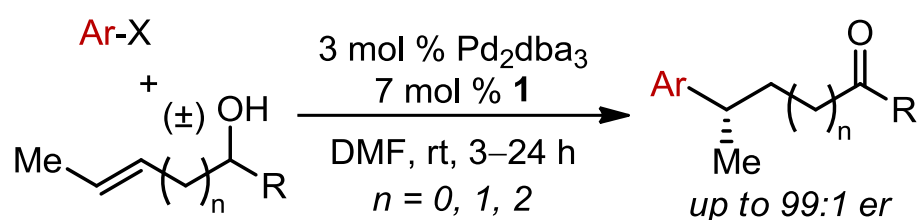
Prof. Matthew S. Sigman

Department of Chemistry, University of Utah

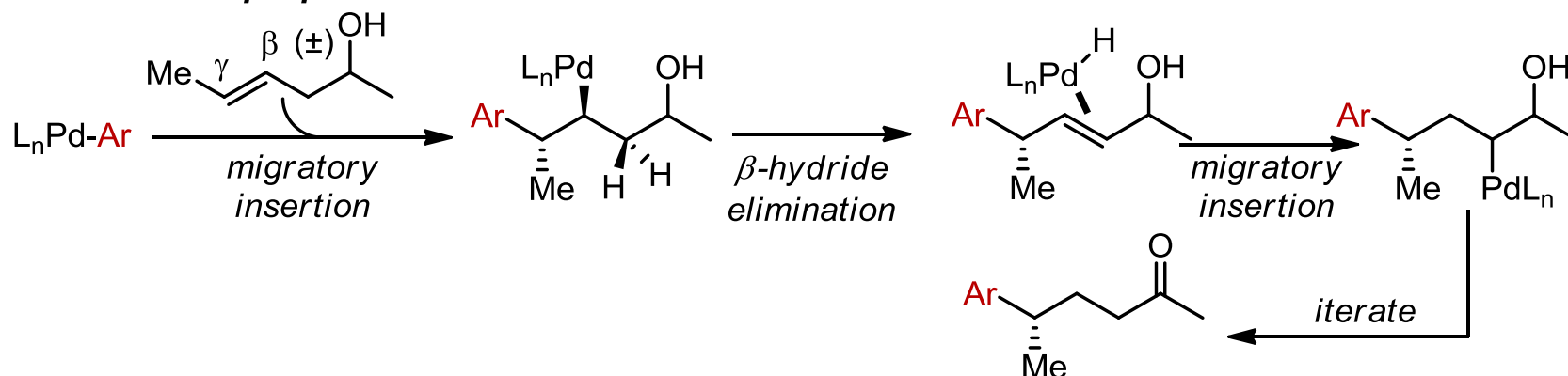
Palladium-Catalyzed Alkene Functionalization Reactions for Synthesis

Critical to the development of catalysts with practical potential in synthetic chemistry is a fundamental understanding of the mechanistic features which lead to a robust and selective catalytic system. Within this regard, our group has focused on the development of new palladium catalysts for various oxidation and cross-coupling reactions wherein mechanistic analysis has played a vital role in catalyst and reaction design.

Enantioselective redox-relay Heck reaction



Mechanistic proposal



This presentation will focus on our recent efforts to design new reactions with a particular emphasis of redox-relay enantioselective Heck reactions,¹ wherein exquisite control of migratory insertion and β -hydride elimination is required for a successful outcome.

Relevant publications:

- 1) Enantioselective Construction of Remote Quaternary Stereocenters, *Nature*, **2014**, 508, 340-344.
- 2) Enantioselective Redox-Relay Oxidative Heck Arylations of Acyclic Alkenyl Alcohols using Boronic Acids, *J. Am. Chem. Soc.* **2013**, 135, 6830-6833.
- 3) Interrogating Selectivity in Catalysis using Molecular Vibrations, *Nature* **2014**, 507, 210-214.
- 4) Enantioselective Heck Arylations of Acyclic Alkenyl Alcohols Using a Redox-Relay, *Science* **2012**, 338, 1455-1458.
- 5) Multidimensional Steric Parameters in the Analysis of Asymmetric Catalytic Reactions, *Nature Chem.* **2012**, 4, 366-374.

