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Department of Chemistry

Seminar

9:45 a.m. Tuesday, December 4, 2012 • 331 Smith Hall

Postdoctoral Scholar

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Department of Chemistry
University of Wisconsin-Madison

*Catalyst and Reaction Design Toward Improved
 α -Olefin Polymerization, Hydroformylation and Other
Catalytic Methodologies*



Abstract

First, the structure-electronics relationship of a class of fluxional tridentate post-metallocene group 4 and 5 propylene polymerization precatalysts will be discussed. These complexes can readily interconvert between C_2 - and C_s -symmetric isomers or C_2 -symmetric enantiomers depending on the nature of the ligand donor atoms. When activated with methylaluminoxane (MAO), most of the catalysts give moderate to good activity for the polymerization of polypropylene with unexpected and unusual regioselectivity. Furthermore, these complexes serve as highly active precatalysts for the hydroamination of internal alkynes and exhibit unusual catalytic activity in the formation of pyrroles and substituted benzenes. Finally, the kinetics and mechanism of rhodium *bis*(diazaphospholane)-catalyzed asymmetric styrene hydroformylation will be explored. Experimental and computational studies have shown that these highly regio- and enantioselective catalysts can completely invert their selectivity by performing catalysis under extremely low pressures of syngas (CO/H₂).

Host: Wayne Gladfelter

Refreshments will be served prior to the seminar.