

CBC SEMINAR ANNOUNCEMENT

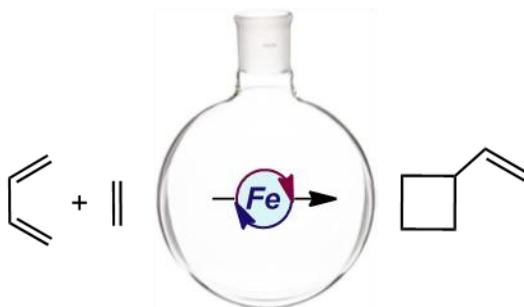
Singapore Nanyang Chemistry Distinguished Lecture



Professor Paul Chirik
Princeton University

Catalysis with Earth Abundant Metals

Transition metal catalysis has revolutionized modern society by enabling new chemical transformations with unprecedented activity and control over selectivity. Applications range from new silicone materials to transforming hydrocarbons into fuels to building blocks for pharmaceuticals. Our laboratory has been actively engaged in developing catalysts based on earth abundant elements rather than more traditionally deployed precious metals that are some of the least available elements in the Earth's crust. The inspirations for this chemistry extend beyond catalyst cost; ultimately we aim to discover new reactivity that exploits the unique electronic structures of first row transition metals. My lecture will combine applications developed in combination with industrial collaborators. Earth abundant catalysts for commercial silicone production (*Science* **2012**, 335, 567, *ACS Catalysis* **2016**, 6, 4105), asymmetric alkene hydrogenation (*Science* **2013**, 342, 1054, *J. Am. Chem. Soc.* **2016**, 3562), C-H functionalization (*J. Am. Chem. Soc.* **2014**, 136, 4133; **2016**, 138, 766) and radiolabeling of pharmaceuticals (*Nature* **2016**, 529, 195) have been developed. More recently we have been focused on the discovery of new catalytic reactions for the valorization of simple alkenes – those that are now overabundant due to the development of vast natural gas reserves. An iron-catalyzed method for the diastereo- and regioselective intermolecular [2+2] cycloaddition of commodity alkenes has been discovered (*Science* **2015**, 349, 960). Through continued ligand evolution and understanding of electronic structure, we have discovered base metal catalysts that promote chemistry unknown with established precious metal variants. The mechanisms of the various catalytic transformations, the importance of electronic structure controlled through ligand manipulation and strategies for imparting air stability will be a highlighted throughout.



Date:	18th January 2017 (Wednesday)
Time:	10:30am – 12:00pm
Venue:	SPMS Lecture Theatre 5
Host:	Asst Professor Soo Han Sen