**Title: Catalytic Asymmetric Transfer Hydrogenation of Polar Bonds Using Iron Catalysts**

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***Abstract***

The asymmetric reductions of prochiral ketones or imines to produce enantiopure alcohols or amines, respectively are industrially important processes for the pharmaceutical and other fine chemicals industries. The observation by Noyori’s group and our group of intermediates containing amido ligands Ru-NR2 and hydride and amine ligands RuH(NHR2) in the catalytic reduction of ketones led us to design and investigate the mechanism of catalysts containing mixed nitrogen and phosphorus ligands. In particular we are interested in making environmentally and economically more friendly homogeneous catalysts based on iron. This lecture is an overview of some recent studies of our new catalysts for the highly efficient asymmetric reduction of ketones and imines. The catalysts are prepared by a flexible self-assembly process where iron(II) acts as the templating agent.

***Biography***

Robert H. Morris is the Chair of the Chemistry Department of the University of Toronto in Canada. He was born in Ottawa, Canada, in 1952. He received his PhD from the University of British Columbia in 1978. After postdoctoral work at the Nitrogen Fixation Laboratory, University of Sussex and the Pennsylvania State University he joined the faculty of the University of Toronto in 1980. He was appointed full Professor there in 1989 and Chair in 2010. His research interests include inorganic, organic and catalytic chemistry with applications in the fine chemical industry. In all Morris has published over 190 articles and 8 book chapters and holds three patents. Several of his past students and postdoctoral fellows have faculty positions in universities or have opened successful businesses. His work has been recognized within Canada with the Rutherford Medal in Chemistry from the Royal Society of Canada in 1991, the CSC Alcan Lecture Award, 1995 and the Award for Pure or Applied Inorganic Chemistry, 1998. He is a fellow of the Chemical Institute of Canada and a Fellow of the Royal Society of Canada. With the RSC he is currently Director of the Division of Mathematical and Physical Sciences.