

# UniCat Colloquium

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Lecturer: **Prof. Lawrence Que, Jr.**, Dept. of Chemistry,  
University of Minnesota, Minneapolis, USA

Title: **Bio-inspired Hydrocarbon Oxidations  
by Nonheme Iron Catalysts**

Abstract: We have been investigating the iron-catalyzed oxidations of hydrocarbons by  $\text{H}_2\text{O}_2$  as inspired by the oxidation chemistry of nonheme iron enzymes. Highly stereoselective conversions of olefins to epoxides and/or cis-diols have been observed with the use of  $\text{Fe}(\text{N}_4)(\text{OTf})_2$  and  $\text{Fe}(\text{N}_2\text{O})_2(\text{OTf})_2$  complexes where  $\text{N}_4$  is a tetradentate ligand with four nitrogen donor sites and  $\text{N}_2\text{O}$  is a tridentate ligand with two pyridines and a carbonyl oxygen donor. The nature of the oxidizing species is a question of great interest, and possible oxidants include  $\text{Fe}(\text{III})\text{-OOH}$ ,  $\text{Fe}(\text{IV})=\text{O}$ ,  $\text{Fe}(\text{IV})(\text{OH})_2$ , and  $\text{Fe}(\text{V})=\text{O}$  species. Insights into the catalytic mechanisms of these complexes have been obtained from a combination of product distribution studies with different olefin substrates,  $^{18}\text{O}$  labeling experiments, kinetic studies, and spectroscopic characterization of intermediates trapped at low temperature. Our current views on how these bio-inspired oxidations work will be presented.

Date: **Thursday, 17 March 2011**

Time: **5:15 pm - around 6:45 pm**

Location: **TU Berlin  
Institute of Chemistry, Building C  
Straße des 17. Juni 115, 10623 Berlin  
Room C 130**

Organiser: **Dr. Kallol Ray (HUB)**

Coffee and tea will be served thirty minutes prior to the lecture start.  
**Guests are cordially invited to attend!**

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat