

# CORE-CM SEMINAR

## Michigan State University

**Prof. Ive Hermans**  
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Department of Chemistry  
Department of Chemical and Biological Engineering  
Wisconsin Energy Institute

### Science and Serendipity in Heterogeneous Catalysis Research

#### Short abstract

Understanding the synthesis, structure and performance of heterogeneous catalysts is a complex challenge that requires a multidisciplinary approach. In my talk I will summarize our studies on the nature of the active sites in Sn $\beta$  using advanced *ex* and *in situ* characterization techniques. In the second part of my talk I will present our recent progress on understanding the two-dimensional dispersion of group V metal oxides on silica. Anchoring mechanisms, as well as practical ways to improve the dispersion beyond the state-of-the-art will be addressed. Supported metal oxides are key-catalysts for the Oxidative DeHydrogenation (ODH) of propane, a promising on-purpose production method for propene from shale gas. Improvements in the space-time-yield, and unprecedented selectivity will be discussed.

#### Short bio

Ive Hermans obtained a Ph.D. under the supervision of Profs. Pierre Jacobs and Jozef Peeters (2006; K. U. Leuven, Belgium). In addition to his scientific education, Ive Hermans also holds a postgraduate degree in Business Administration (K. U. Leuven, 2006). After post-doctoral research on *in situ* spectroscopy and reaction engineering with Prof. Alfons Baiker, he became an assistant professor for heterogeneous catalysis (spring 2008) at ETH Zurich in Switzerland. January 2014, Prof. Hermans moved to the University of Wisconsin-Madison, and holds a dual appointment in the Department of Chemistry and the Department of Chemical and Biological Engineering. His group focuses on the mechanistic understanding of catalytic technology using a variety of techniques. His work and mentoring is well recognized in the community, *e.g.* through the ExxonMobil Chemical European Science & Engineering Award (2009), the Emerging Research Award by the ACS Division of Energy and Fuels (2014), and the Postdoc Mentoring Award by the UW Postdoctoral Association (2016).

**Special Day: Monday, Nov. 7, 2016**  
**11:20 a.m.**  
**Room 136 Chemistry Bldg.**  
**Host: Professor Mitch Smith**