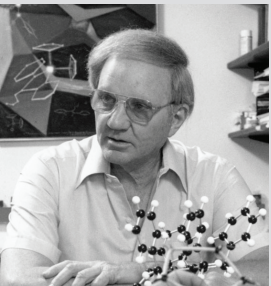


MARVIN D. RAUSCH LECTURESHIP IN ORGANOMETALLIC CHEMISTRY

Professor Marvin D. Rausch was a devoted faculty member of the Department of Chemistry at UMass Amherst from 1963 to 2001. He was widely recognized for research in organometallic chemistry and authored or co-authored over 350



scientific articles and served on the editorial boards of several journals in this area of chemistry. Professor Rausch mentored over 40 PhD students during his tenure here, and his course in advanced laboratory methodology set a standard for the training of advanced undergraduate and beginning graduate students. In addition to sponsoring this honorary seminar, he was also a generous donor to UMass Amherst's Athletic program and gave part of his fantastic crystal and mineral collection to the Department of Geosciences. To see a sample of the collection go to www.geo.umass.edu/rauschmineralgallery/

The **Marvin D. Rausch Lectureship in Organometallic Chemistry** was established to provide support for a lecture series which will be presented by individuals with outstanding established reputations in any aspect of organometallic chemistry. In this context, organometallic chemistry is described as the chemistry of chemical components which possess a direct carbon-to-metal bond. Areas of potential expertise for the focus of the Marvin D. Rausch Lectureship in Organometallic Chemistry include synthesis, catalysis, structure, bonding, spectroscopy, applications, or related areas.

We are extremely grateful to the late Prof. Rausch and family for the endowment of this seminar series.

Previous Speakers:

Professor Gregory H. Robinson, 2022
Professor Karen Goldberg, 2021
Professor John F. Hartwig, 2019
Professor Eric Jacobsen, 2018
Professor Stephen Buchwald, 2017
Professor Wolfgang Herrmann, 2016
Professor Karl Wieghardt, 2015
Professor Tobin J. Marks, 2014
Professor Jerry L. Atwood, 2013
Professor Robert G. Bergman, 2012
Professor Thomas E. Bitterwolf, 2011

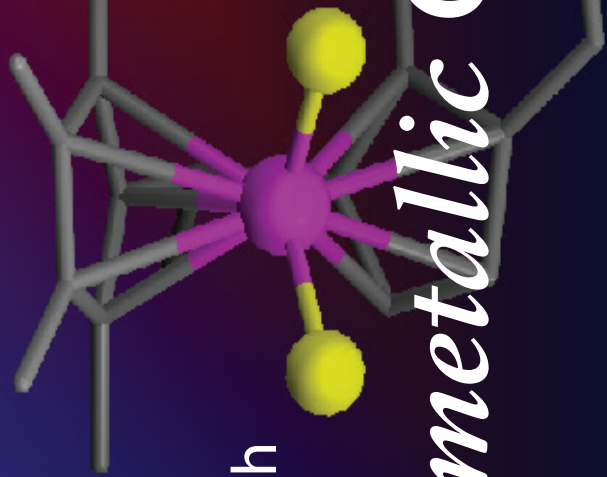
“Incorporating Metal-Ligand and Metal-Metal Cooperativity into First Row Transition Metal Catalysis”

Thursday, May 11, 2023
11:30 a.m.
LSL S330-340

The Department of Chemistry, University of Massachusetts Amherst
presents

PROFESSOR CHRISTINE THOMAS

Ohio State University
Department of Chemistry and Biochemistry,



Marvin D. Rausch
Lectureship in

Organometallic Chemistry

Christine Thomas

Christine Thomas received her B.S. in chemistry from Lafayette College in 2001, where she worked with Professor Chip Nataro. She received her Ph.D. in 2006 at Caltech under the direction of Professor Jonas C. Peters. Christine went on to pursue postdoctoral work with Professors Marcetta Y. Darensbourg and Michael B. Hall at Texas A&M University. In 2008, Christine began her career as an Assistant Professor of Chemistry at Brandeis University. Christine was selected for DOE's Early Career Research Program in 2010, was named a 2011 Alfred P. Sloan Fellow, and received an NSF CAREER award in 2012. She was selected as a 2012 *Organometallics* Fellow, was named a 2013/2014 *Chemical Communications* Emerging Investigator and was selected for the 2015 *Dalton Transactions* Lectureship. She was admitted as a Fellow of the Royal Society of Chemistry in 2014. Christine's dedication to teaching was recognized by the 2012 Michael L. Walzer '56 Award for Excellence in Teaching at Brandeis University. At Brandeis University, Christine was promoted to Associate Professor with tenure in May 2013 and to full Professor in July 2016. Christine joined the Department of Chemistry and Biochemistry at The Ohio State University in January 2018 as the Fox Professor of Chemistry. In 2019, Christine was appointed Vice Chair of Graduate Studies in the Department of Chemistry and Biochemistry at Ohio State University. She has been on the Editorial Advisory Board of *Chemical Communications* since 2012, is on the Board of Directors of *Inorganic Syntheses*, and has been serving as an Associate Editor of *Dalton Transactions* since 2014. Christine was Chair of the 2018 Gordon Research Conference on Organometallic Chemistry and served as 2020 Chair of the Organometallic Chemistry subdivision of the ACS Division of Inorganic Chemistry.



“Incorporating Metal-Ligand and Metal-Metal Cooperativity into First Row Transition Metal Catalysis”

Abstract: The formation and cleavage of chemical bonds in catalytic reactions relies on accessible two-electron redox processes that are often challenging for base metals such as first row and early transition metals. Metal-ligand and metal-metal cooperativity provide a potential solution to this challenge by enabling heterolytic bond cleavage processes and/or facilitating redox processes. Both strategies will be discussed, showcasing the many ways that metal-ligand and bimetallic cooperativity can operate and the methods by which cooperativity can be built into catalyst design. A tridentatepincer ligand featuring a reactive N-heterocyclic phosphido fragment is found to be both redox active and an active participant in bond activation across the metal-phosphide bond, with catalytic applications in alkene hydrofunctionalization. A tetradentate bis(amido)bis(phosphide) ligand has been coordinated to iron and it has been shown that the resulting complex can activate B-H and Si-H bonds across the two iron-amide bonds in the molecule without requiring a change in the formal metal oxidation state. In the context of metal-metal cooperativity, phosphinoamide-linked early/late heterobimetallic frameworks have been shown to support metal-metal multiple bond and facilitate redox processes across a broad range of metal-metal combinations and the resulting complexes have been shown to activate small molecules and catalyze organic transformations.

<https://u.osu.edu/thomaslab/>