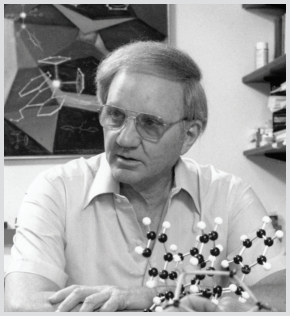
# MARVIN D. RAUSCH LECTURESHIP IN ORGANOMETALLIC CHEMISTRY



**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 John F. Hartwig, 2019
Professor Eric Jacobsen, 2018
Professor Stephen Buchwald, 2017
Professor Wolfgang Herrmann, 2016
Professor Karl Wieghardt, 2015
rofessor Tobin J. Marks, 2014
Professor Jerry L. Atwood, 2013
Professor Robert G. Bergman, 2012

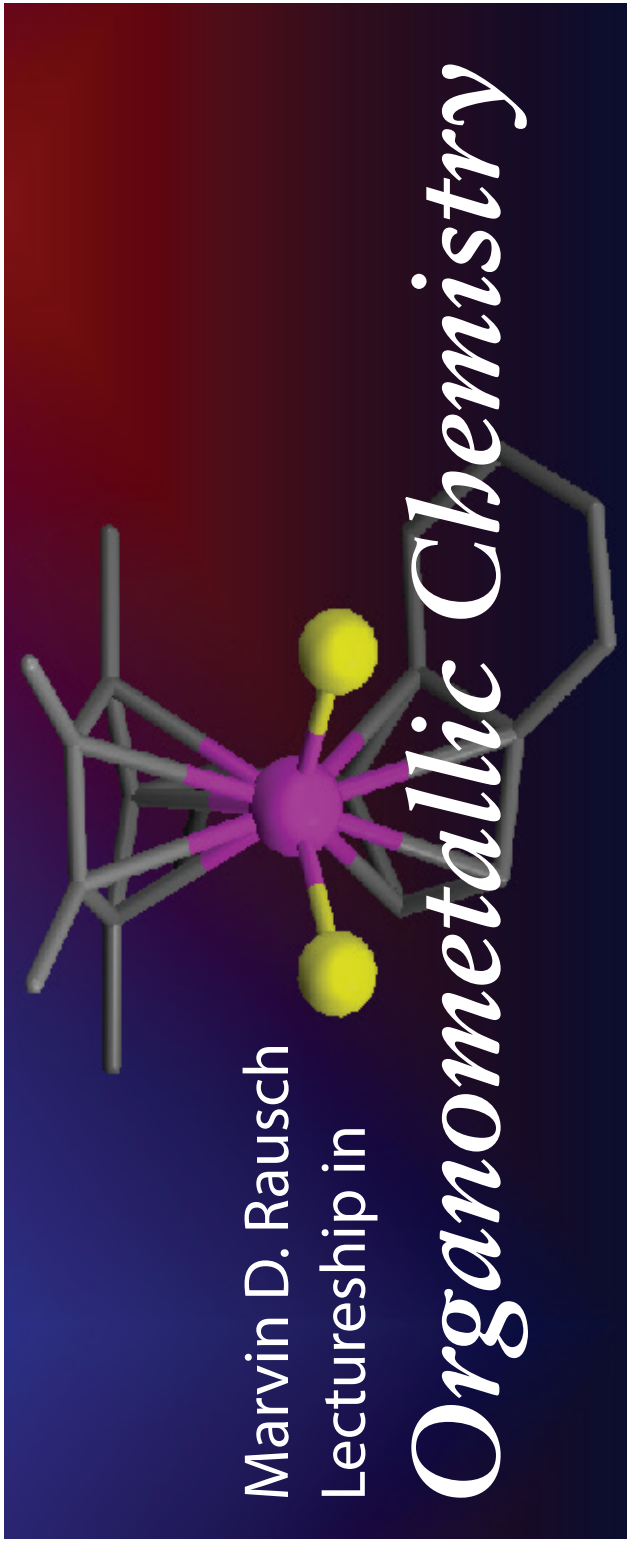
The Department of Chemistry, University of Massachusetts Amherst
presents

# PROFESSOR KAREN I. GOLDBERG

Department of Chemistry, University of Pennsylvania

## *"Molecular Oxygen as a Reagent in Late Transition Metal Organometallic Chemistry"*

Thursday, May 6, 2021
11:30 a.m.
Zoom



# KarenGoldberg

***Karen Goldberg*** is a Vagelos Professor in Energy Research and the inaugural Director of the Vagelos Institute for Energy Science and Technology at the University of Pennsylvania (Penn). She earned her A.B. from Barnard College and her Ph.D. in chemistry from the University of California, Berkeley. Following postdoctoral study at The Ohio State University, she joined the faculty at Illinois State University, a primarily undergraduate institution in 1989. In 1995, she moved to the University of Washington (UW) in Seattle and in 2010, became the Nicole A. Boand Endowed Professor in Chemistry at UW. From 2007-2017, Professor Goldberg also served as Director of the first NSF Phase II Center for Chemical Innovation, the Center for Enabling New Technologies through Catalysis (CENTC), a collaborative effort between 18 principal investigators and their students at 14 institutions across North America (America (www.nsfcentc.org). In 2017, she moved to her current position at Penn.

Professor Goldberg is best known for her work developing mechanistic understanding of fundamental organometallic reactions and for application of that knowledge to the creation and optimization of new catalytic systems. Her lab has made significant contributions to our understanding of the mechanisms of C-H, C-C and C-X reductive elimination and oxidative addition reactions, b-hydride elimination reactions and the insertion of molecular oxygen into metal-hydride and metal-carbon bonds. Professor Goldberg has been an invited speaker at conferences and universities around the world and has published over 125 papers. More than 60 graduate students and postdoctoral research associates and over 70 undergraduate students have trained in her laboratories.

Professor Goldberg has served on the Advisory Boards of the American Chemical Society (ACS) journals *Inorganic Chemistry, Accounts of Chemical Research* and *Organometallics*, as co-Chair of the 2012 Gordon Research Conference on Green Chemistry, as a member of the Chemistry Selection Committee for Sloan Research Fellowships, as Chair for the Chemistry Division of the American Association for the Advancement of Science and as Councilor for the Division of Inorganic Chemistry at the ACS. She currently serves as a member of the Board on Chemical Sciences and Technology (BCST) at the National Academy of Sciences, as a member of the International Advisory Committee of the International Solvay Institutes, on the Scientific Advisory Boards of the NSF Center for Sustainable Nanotechnology (CSN) and the NSF Center for Innovative and Strategic Transformation of Alkane Resources (CISTAR), on the Technical Review Panel for the Materials and Chemical Science and Technology Directorate at the National Renewable Energy Laboratory (NREL), and on the Advisory Boards of the Royal Society of Chemistry journals *Green Chemistry* and *Chemical Society Reviews*. She was elected a Fellow of the American Association for the Advancement of Science and a member of the Washington State Academy of Science in 2012. In 2015, she received the Carol Tyler Award from the International Precious Metal Institute and in 2016, the ACS Award for Organometallic Chemistry. She was elected to the American Academy of Arts and Sciences in 2017 and to the National Academy of Sciences in 2018.

## *"Molecular Oxygen as a Reagent in Late Transition Metal Organometallic Chemistry "*

Abstract: From environmental and economic standpoints, molecular oxygen represents the ideal oxidant for chemical transformations. It is readily available, inexpensive (particularly if used without separation from air) and environmentally benign. However, more expensive and/or hazardous oxidants are often employed in homogeneous metal-catalyzed oxidation reactions. An insufficient knowledge of how transition metal complexes react with molecular oxygen has inhibited catalyst design of effective aerobic systems. Kinetic and mechanistic studies of the reactions of oxygen with various late metal complexes, including metal alkyls and hydrides, will be presented along with our nascent mechanistic understanding of these reactions. The generality of these aerobic oxidation reactions and the potential for incorporation into hydrocarbon functionalization strategies will be discussed.