Due to the enthusiastic response to the organic/bioorganic lectures, the Chemistry Committee decided to introduce a corresponding lectureship in inorganic/organometallic chemistry for the spring semester. Thus, as is presently the case, the organic/bioorganic lecture will be offered in the fall semester and the spring lectureship will focus on inorganic/organometallic chemistry.

BINGHAMTON UNIVERSITY
DEPARTMENT OF CHEMISTRY

THE 16TH BIANNUAL

Eisch Lectureship in Inorganic/ Organometallic Chemistry

Thursday, Dec. 7, 2023, 4 p.m.
Smart Energy Building, Fountain Room

BINGHAMTON
UNIVERSITY
STATE UNIVERSITY OF NEW YORK

23-404

Professor John J. Eisch

A native of Milwaukee, Wis., John J. Eisch received a BS from Marquette University (*summa cum laude*, 1952), and a PhD from Iowa State University in chemistry (1956). He won a Union Carbide Postdoctoral Fellowship to work with Karl Ziegler at the Max Planck Institute in Mulheim, Germany (1956), and at European Research Associates in Brussels (1957). In his early career, Eisch was a faculty member at St. Louis University, University of Michigan and Catholic University. Eisch was hired at Binghamton University (then called SUNY Binghamton) in 1972 as chairman of the Chemistry Department, and became distinguished professor in 1983. Over his 40+ -year career, he graduated 50 PhD students, trained scores of other students, published 400 scientific articles, and also served as expert witness in patent litigations and as an industrial consultant. Eisch was a demanding teacher but took pride in students who performed well. In his personal life, he was extremely sharp-witted and humorous, much to the delight of his close family members. He enjoyed reading, languages (particularly German) and, earlier in life, walking and travel. Until his death at age 88, he remained an active supporter of the Chemistry Department at Binghamton University. He is survived by his wife, Joan, four children and two grandchildren.

Professor John J. Eisch (1930–2019)

Polly L. Arnold

Chemical Sciences Division Director, Lawrence Berkeley National Laboratory and Berkeley College of Chemistry, University of California, Berkeley

Polly L. Arnold is a professor of chemistry at the University of California, Berkeley, and director of the Chemical Sciences Division at Lawrence Berkeley National Laboratory.

After earning an MA in chemistry at the University of Oxford and a DPhil in chemistry at the University of Sussex, she moved to MIT as a Fulbright Scholar with Professor Kit Cummins. She returned to the UK to a faculty position at Nottingham, then moved to the University of Edinburgh in 2007, where she subsequently held the Crum Brown Chair of Chemistry. She moved to Berkeley in 2019.

Her group focuses on exploratory synthetic chemistry of the f-block ions. The development of new catalysts from the earth abundant lanthanides, and reactivity studies of the radioactive actinides, provide fundamental contributions to our understanding of electronic structure and bonding at the bottom of the periodic table. This knowledge improves the extraction and recycling of the technology-critical rare earth ions and our curation of radioactive civil nuclear wastes.

Arnold has lectured worldwide on her science and on diversity in STEM matters, and has advised both government and industry. In 2017, she was awarded the Lord Kelvin Prize, Scotland's senior research prize in the physical sciences. She was also appointed Officer of the Order of the British Empire in 2017 for services to chemistry and to women in science, technology, engineering and mathematics.

She was elected a Fellow of the Royal Society in 2018 for substantial contributions to the improvement of natural knowledge. Last year, she was also selected by the American Chemical Society as one of twelve LGBT in STEM trailblazers.

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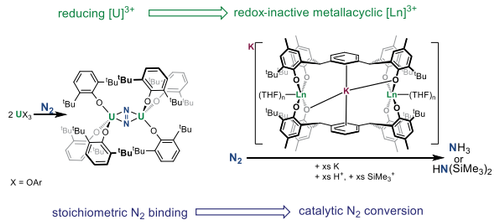
F-Block Dinitrogen Chemistry; from Rarity to Catalysis in a Few Simple Steps

Chemists have spent more than a century trying to copy nature to make catalysts that can convert atmospheric dinitrogen (N2) to ammonia (NH3), or directly to amines (NR3) under mild conditions. Hundreds of complexes based on metals from the d-block are now known to bind N2, and a few catalysts for N2 conversion to ammonia or tris(silyl)amine have been developed.

However, the picture for the metals at the bottom of the periodic table, the f-block, many of which have been deemed "critical elements" for technology, is completely different. The binding of dinitrogen to any f-block metal cation was considered impossible until the turn of the millennium, but a small, yet growing number of weakly-bound N2 complexes are now being reported. Studies of these weak binding interactions contribute to the fundamental understanding of bonding and electronic structure in these large and energy-relevant elements.

We will show what we have learned about N2 binding to f-block centers over the last decade, and our recent development of the first molecular f-block complexes that can catalyse the reduction and functionalization of dinitrogen, first using actinide, and now earth abundant lanthanide cations. We will also discuss the importance of structural control by the molecular framework in enabling the first catalytic conversion of dinitrogen into a secondary silylamine by any metal.



Previous Lectureship Recipients

2012
Stephen L. Buchwald
MIT

2013
David W. C. MacMillan
Princeton University

2014
Brian M. Stoltz
California Institute of Technology

2015
Eric N. Jacobsen
Harvard University

2016
Bob Crabtree
Yale University

Phil Baran
Scripps Research Institute

2017
Stephen J. Lippard
MIT

Daniel A. Singleton
Texas A&M

2018
Clifford P. Kubiak
University of California, San Diego

Scott E. Denmark
Univ. of Illinois, Urbana-Champaign

2019
John F. Hartwig
University of California, Berkeley

Gregory C. Fu
California Institute of Technology

2020
Vern L. Schramm
Albert Einstein College of Medicine

2022
Karen Goldberg
University of Pennsylvania

2023
Kendall N. Houk
University of California, Los Angeles