ACS Local Section
Maryland
Chemist of the Year Award

Maryland Section of the American Chemical Society

An invitation
To celebrate the recognition of the
2023 Maryland Chemist of the Year

David P. Goldberg

Professor in the Department of Chemistry, Johns Hopkins University

"For his outstanding contributions to Inorganic Chemistry"

His research focuses on employing synthetic inorganic chemistry to answer fundamental questions regarding structure, spectroscopy, and reactivity pertinent to bioinorganic chemistry.

Award Lecture:

Heme and Nonheme Transition Metal Centers: Synthetic Biomimetic Complexes for Small Molecule Activation, Mechanistic Insights, and Catalysis

Small molecule activation by transition metal centers is at the heart of chemistry and biology. Some of the most important and difficult challenges facing humanity include disease, energy transduction and storage, and environmental sustainability, and in all of these areas small molecules (e.g. O_2, N_2, CO_2, NO, H_2S, CH_4) and their redox transformations mediated by transition metal centers play an essential role. Nature employs a remarkable class of biomolecules known as metalloenzymes to carry out these transformations. With inspiration from nature, our laboratory designs and synthesizes novel transition metal complexes as structural, spectroscopic, and functional analogs of the metal-containing active sites found in both heme and nonheme metalloenzymes. This talk will describe our efforts in the synthesis of new organic ligands and their related heme and nonheme transition metal complexes for the activation of small molecules such as dioxygen (O_2) and nitric oxide (NO). Metal ions of biological significance and environmental compatibility will be the focus, including iron (Fe) and manganese (Mn). The isolation, trapping, and spectroscopic characterization of rare, metastable analogs of mechanistic intermediates will be highlighted, including high-valent metal-oxo and metal-hydroxo species, as well as metal-dioxygen and metal-nitrosyl adducts. The reactivity and mechanism of these complexes in fundamental processes such as proton-coupled electron-transfer (PCET), oxygen-atom-transfer (OAT), and metal-ligand radical transfer reactions will be discussed, together with kinetic, thermodynamic, and computational analyses.

Thursday, February 8, 2024
5:30 P.M. Reception, 6:00 P.M. Ceremony

The Great Hall in Levering Hall
3400 N Charles Street, Baltimore MD 21218
Parking is available see Campus map

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