

JEFFREY I. ZINK INORGANIC CHEMISTRY SEMINAR SERIES



Prof. Ingo Krossing

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“Ionic Systems with Weakly Coordinating Anions”

Abstract: IK steers a synthetic inorganic / organometallic chemistry group that bridges to computational, physical, materials and electrochemistry. His core expertise starts with weakly coordinating anions (WCAs) and was extended over the years to basic and applied Ionic Systems, i.e., compounds and materials (systems) in which ions determine their properties. This talk emphasizes our synthetic work on salts of reactive cations in main group and transition metal chemistry.

Part I: In recent years we have yielded direct access to simple salts of the univalent Ga and In cations as well as synthons to the Al cation (Nature Chem. 2022, 14, 1151–1157), all with very good weakly coordinating anions as counterion. This part of the lecture will feature an overview to the interaction of these group 13 cations with a series of ligands that manipulates their frontier orbital energies and induces as a function of orbital energies and steric bulk the clustering of the systems as well as their capability of activating even strong bonds like C-H, Si-H or B-H (Nature Synthesis 2024, 3, 732). With suitable ligands, the systems form terylene-like $[M(L-L)]$ structures that crystallize either monomeric or dimeric and that give, depending on the bulk of the bidentate ligand, a monomer-dimer equilibrium in solution. Their structures and properties as well as use in bond activation are given.

Part II: Removing electrons selectively at high potential and without side reactions is a difficult task we have tackled over the last years (Nature Comm. 2024, 15, 6721; ACIE 2024, 63, e202406742). This part of the lecture presents our advanced reagents and selected applications thereof, recently published (J. Am. Chem. Soc. 2025, 147, 35164; Angew. Chem. Int. Ed. Engl. 2025, e202507494.) and unpublished.

Meet the Speaker

11:45 a.m. | YH 3096

Wednesday, May 6th, 2026

4:00 p.m. | YH4222 - Collaboratory

Dongwon Yoo Seminar & Conference Hall

UCLA College | Physical Sciences
Chemistry & Biochemistry

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