

DEPARTMENTS OF CHEMISTRY

Seminar Series



MONDAY, September 21, 2026 - 12:00 Noon
MC H313

Ionic Systems with Weakly Coordinating Anions...



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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 tetraylene 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 including mechanistic aspects, e.g., as in *Chem. Sci.* **2026**, 17, 4004-4020 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; *Chem. Sci.* **2026**, 17, 12385-12393) and unpublished. Novel developments include single electron metal-metal bonds.