

Chemistry Colloquia

Driving Ligand Properties to Extremes using the Power of Substituents: Inert Bond Activation, Light-Responsive Materials and Catalysis



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Universität Innsbruck

Molecular Inorganic Chemistry

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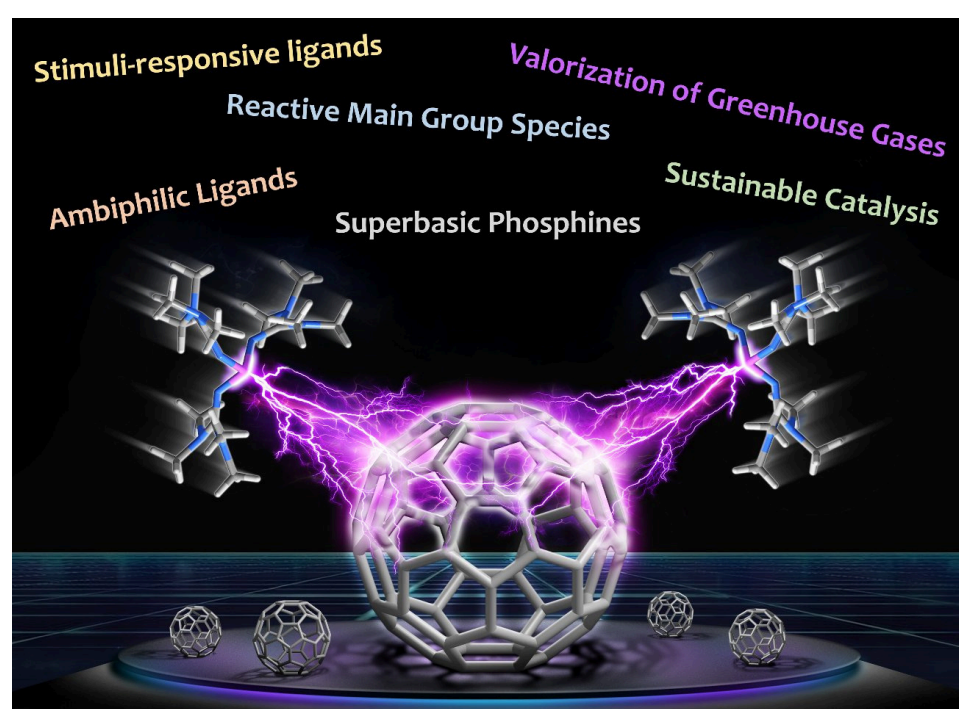
March
Thursday

2026

11:00

Heinzel Seminar Room

Ligand design is a powerful lever for controlling the structure, reactivity, and function of metal complexes. This lecture will show how strong substituent effects can be exploited to push ligand properties into extreme regimes and thereby enable predictable tuning of electronic structure and reactivity. I will introduce a general strategy to markedly increase the donor strength of classical ligands (phosphines and (poly)pyridines) and highlight carbon-based ambiphilic ligands with unusual reactivity. These platforms unlock new opportunities across coordination chemistry and catalysis, from switchable photoactive complexes and reversibly controllable polymer materials to pathways for valorization of greenhouse gases. Together, these studies address a central question in modern inorganic chemistry: how far can substituent effects drive molecular properties, and how can that leverage be translated into solutions to fundamental scientific challenges?



Fabian Dielmann is Professor of Molecular Inorganic Chemistry at the Universität Innsbruck. He earned his PhD from the Universität Regensburg, complemented by research internships at The Ohio State University and the Université Rennes, and then pursued postdoctoral work at the University of California, Riverside, and the University of California, San Diego. He began his independent career at the Universität Münster and later served as a visiting professor at Université Paul Sabatier Toulouse III. In 2020, he was appointed Professor of Organometallic Chemistry at Innsbruck. His research spans molecular inorganic chemistry and homogeneous catalysis, with an emphasis on bond activation reaction and developing transformations relevant to the energy transition.