UniSysCat Colloquium

Dr. Josh Abbenseth

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Start Time: Thursday, January 16, 2025 05:15 pm

End Time: Thursday, January 16, 2025 06:30 pm

and via Zoom
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Towards sustainable catalysis with main group and transition metal complexes ligated by polyfunctional pincer ligands

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The Abbenseth group focuses on developing innovative strategies for activating small molecules to create catalytic processes that promote sustainable fine chemical production and energy conversion. The approach involves mimicking metal-like bonding behaviors in pnictogens by incorporating them into redox-active, rigid pincer ligands, resulting in T-shaped main group compounds.[1] This unique structural configuration enables oxidative addition reactions and element-ligand cooperativity, paving the way for new methods in sustainable C–E bond-forming catalysis, such as hydroamination. Moreover, the potential of these geometrically constrained pnictogens as ligands for transition metals is being explored.[2]

The redox-active nature of the ligand systems is also exploited in transition metal-mediated small molecule activation, with the aim of achieving challenging transformations, such as dinitrogen splitting and electrocatalytic ammonia oxidation.[3]

[1] *Chem. Eur. J.* **2023**, 29, e202300818

[2] *Chem. Sci.* **2024**, 15, 6036–6043

[3] *Chem. Eur. J.* **2023**, 29, e202203266; *ChemRvix* **2024**, DOI: 10.26434/chemrxiv-2024-5rjl7.

Prof. Dr. Christian Limberg

Organizer