A bio-inspired approach for electrocatalytic H_2 production

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Research in multi-electron reduction catalysis for small molecules has gained importance in addressing energy and environmental challenges. Metal ions commonly promote these redox processes, and our focus is on thiolate-based scaffolds inspired by the active sites of enzymes like hydrogenases. The goal is to design robust water-active catalysts utilizing thiolate ligands and noble-free metal ions for innovative catalysis in H_2 production.

In this presentation, I will outline our strategy for developing optimized catalytic systems, which combines not only rational design and understanding of mechanisms but also takes into account various aspects of the catalytic conditions, such as homogeneous or heterogeneous processes and how to supply electrons, i.e., chemically, via electro-assisted or photo-assisted processes.