

INORGANIC CHEMISTRY SEMINAR



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Bioinspired Coordination Complexes and Polymers for Energy Applications

Abstract: Research in the Marinescu group focuses on the development of novel catalytic systems for efficient solar-to-fuel technologies. Inspired by biological systems, we design molecular catalysts that involve hydrogen bonding networks capable of small molecule activation, and multiple proton and electron transfers. We have shown that cobalt complexes with pendant proton relays (NH groups) act as highly efficient catalysts for the reduction of CO₂ to CO, and that the presence of the pendant NH moiety is crucial for catalysis.

We also explore the immobilization of metal complexes via metal-organic frameworks (MOFs). We have shown that metal dithiolene units can be successfully integrated into one- and two-dimensional frameworks, which display unique electronic properties – they catalyze with remarkable activity the electrocatalytic conversion of water into hydrogen, and their electrical conductivity is among that of the best coordination polymers.

Wednesday, May 1st, 2019
3440 Mol Sci
4:30 p.m.