GESELLSCHAFT DEUTSCHER CHEMIKER

GDCh

Bioinorganic Catalysts for Energy and Sustainable Chemistry Processes

13th June 2022

4 pm c.t.

H48 + Zoom

Meeting-ID: 650 3347 6840
Kenncode: 114136

Prof. Dr. Corinna Hess

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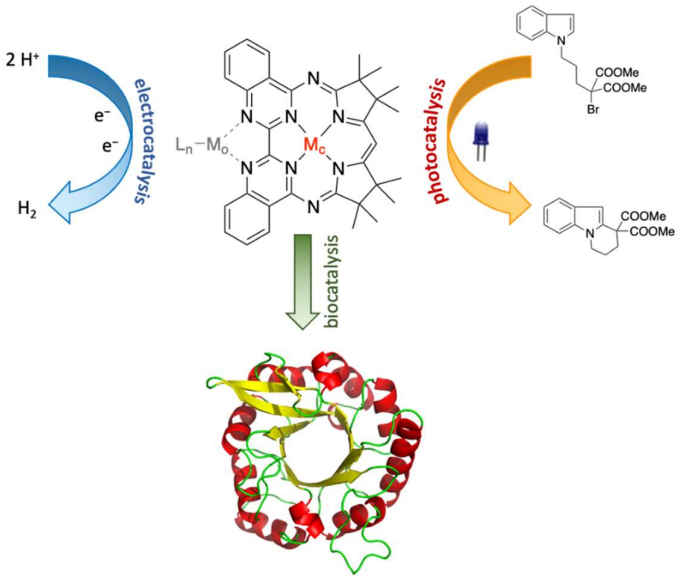
https://uni-regensburg.zoom.us/j/65033476840?pwd=MHM2U3JncUIxcTNCZmYyVis3ei8vQT09



The development of molecular inorganic catalysts—particularly electro- and photocatalysts—is integral to the advancement of renewable energy technologies and sustainable chemistry methods. Research in my group draws on bio-inspired approaches to the development of catalysts based on earth-abundant metals. We aim to address several key questions: 1) how to effectively manage protons and electrons in complex multi-electron reactions; 2) what the key features are that enable light driven catalysis by earth-abundant inorganic complexes; and 3) how to effectively harness cooperative and second sphere interactions for catalysis. My principal research program involves studies with a series of late, first-row transition metal complexes coordinated by the bioinspired Mabiq ligand. The Co- and Fe-Mabiq complexes are effective electrocatalysts for H_2 evolution and CO_2 reduction. The reactions proceed via ligand-assisted pathways, in which the Mabiq ligand acts as both an electron and proton storage site. The series of metal-Mabiq complexes also exhibit unique photochemical properties that allow their application in various light-driven C-C and C-N bond forming reactions. In addition, we are examining the development of hybrid metalloenzymes that will allow us to exploit the extended active site environment to regulate reactivity.