Type of Position: PhD Researcher (TV-L13, 67%), JGU Mainz, Germany

Research Area: Synthetic Chemistry and Catalysis

Principle Investigator (PI): Prof. Dr. Carsten Streb

Name of Institute: Department of Chemistry, Johannes Gutenberg University Mainz

TRR234-A4: Covalently Linked Photosensitizer-Catalyst Dyads for One-step Materials Integration (Kupfer/Rau/Streb)

A4 explores covalently linked PS-CAT dyads and triads. The systems will be based on metal complex or organic PS as well as polyoxometalate or metal com-plex CAT for HER, WOC, and AOC. Catalytic performance effects of different link-age groups and the electronic communication between the components will be studied. Theoretical modeling of the electronic and photophysical properties will be performed and correlated to the experimental properties of the systems. Peripheral function-alization of model dyads will be used to enable covalent matrix integration.

Short description of the Job: In close collaboration with coordination chemists and theoretical chemists, new approaches for the organic functionalization of molecular metal oxides will be explored. This includes wet-chemical methods from organic ligand design and coordination chemistry, as well as study of the resulting organic-inorganic systems for light-driven hydrogen evolution using spectroscopic and spectro-electrochemical methods. Supramolecular analyses will be used to study solution-phase processes such as aggregation and their effects on the photophysical properties and catalytic performance.

The successful applicant will have a strong background in synthetic chemistry with interest in organic and metal complex synthesis, molecular metal oxide chemistry and performance analyses in solution phase. He/she should be highly motivated to work in an interdisciplinary and international team and should have excellent written and oral communications skills in English.