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Research keywords: (Photocatalysis, Artificial Photosynthesis, Water Splitting, Photodynamic Therapy, DSSC's)

We focus our research activities on light driven reactions catalyzed by molecular species. Within this area we work on light driven water splitting, light driven synthesis of NADH and analogoues, photocatalytic CO_2 reduction and application of metal complexes inside living cells for photodynamic therapy.[1-4] The central competence of our research group lies in the ability to synthesize tailored photoredoxactive metal complexes of Ruthenium, Osmium, Rhenium and Iridium which we can characterize with respect to the photochemical and redoxchemical properties in great detail.

To develop our abilities further, we would be interested in structurally versatile POM architectures with redox active components which could be photochemically activated towards changes in structures or other relevant properties. We possess the capability to covalently attach photoactive metal complexes to POM's.

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[2] A. K. Mengele, G. M. Seibold, B. J. Eikmanns, S. Rau, *ChemCatChem*, **2017**, 9, 4369-4376

[3] S. Kaufhold, D. Imanbaew, C. Riehn, S. Rau, *Sustainable Energy Fuels*, **2017**, 1, 2066-2070

[4] S. Chakrabortty, B. K. Agrawalla, A. Stumper, N.M. Vegi, S. Fischer, C. Reichardt, M. Koegler, B. Dietzek, M. Feuring-Buske, C. Buske, S. Rau, T. Weil, *J. Am. Chem. Soc.*, **2017**, 139(6), 2512-2519