Graduate School Seminar

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INSTITUT FÜR PHYSIK

Talks in WS 2017/2018

Traditio et Innovatio

Universität Rostock

1st February 2018, **15:00 s.t.**

Ayla Päpcke

AG Dynamics of Molecular Systems

Photocatalytic CO_2 reduction by applying a heteroleptic copper(I) photosensitizer

The increasing consumption of fossil fuels in the past 100 years led to a vast release of climate-damaging gases. With an amount of 20-30 % natural gas is the third most important energy source worldwide. Natural gas contains up to 98 % methane which can be obtained by the conversion of carbon dioxide. One possible way is the photocatalytic reaction to carbon monoxide which, afterwards, can be converted in another step via the Fischer-Tropsch-process to hydrocarbons like methane. This photocatalytic technology is a promising method to replace fossil fuels with renewable energies and simultaneously to decrease the emission of CO_2 [1]. A CO_2 reducting system is built up from a copper-based photosensitizer, BIH (1,3-dimethyl-2-phenyl-2,3-dihydro-1H-benzo[d]imidazole) as an electron donator and a manganese-based catalyst. To increase the activity of this photocatalytic system triethanolamine is used as an auxiliary base and proton source. Applying time resolved and stationary fluorescence measurements to the photosensitizer in the presence and absence of the different compounds we investigate, if the proposed reaction scheme is indeed operational, and characterize the efficiency of the photo induced electron transfer steps.

References:

[1] C. Steinlechner, H. Junge, *Angew. Chem.*, 130, 44-46 (2018)

Talk: English
Slides: English

Location: Institute of Physics, Albert-Einstein-Str. 24, HS1