

MO 25: Poster: Photochemistry

Time: Thursday 16:00–18:30

Location: Lichthof

MO 25.1 Th 16:00 Lichthof

The ultrafast photochemistry of 6,8-dinitro-BIPS: Isomers, Isomerization and Ring-closure — JOHANNES BUBACK, MARTIN KULLMANN, FLORIAN LANGHOJER, and TOBIAS BRIXNER — Institut für Physikalische Chemie, Universität Würzburg, 97074 Würzburg

The 6,8-dinitro-BIPS (1',3'-dihydro-1',3',3'-trimethyl-6,8-dinitrospiro[2H-1-benzopyran-2,2'-(2H)-indole]) is a candidate for an electrocyclic molecular switch on spiropyran basis. While the ground state of other substitution patterns is the ring-closed spiropyran isomer, the thermal equilibrium of the 6,8-dinitro-BIPS is shifted to the into ring-open merocyanine. Due to the cis-trans-configuration of the methin bridge connecting the two chromophores several stereoisomers may exist in solution.

We have carried out spectrally resolved transient absorption experiments in the ultraviolet, visible and mid-infrared regime on 6,8-dinitro-BIPS in chloroform with femtosecond time resolution showing ultrafast photoreactions after the excitation. The visible pump pulses were varied from 545 nm to 650 nm resulting in different bleach and recovery behaviour while probing in the visible regime. The spectral structure of the permanent bleach and a temporal analysis of the transient data reveal at least two processes taking place on a picosecond timescale. These can be associated with different merocyanine structures present

in solution which perform ring-closure or isomerization processes.

MO 25.2 Th 16:00 Lichthof

Spectroscopic studies of perylenebisimide dithienylcyclopentene perylenebisimide photoswitchable chromophore complexes — CHRISTIANE HOFMANN¹, MARTTI PÄRS¹, PETER BAUER², MUKUNDAN THELAKKAT², and JÜRGEN KÖHLER¹ — ¹Universität Bayreuth, Lehrstuhl für Experimentalphysik IV, 95440 Bayreuth — ²Universität Bayreuth, Angewandte Funktionspolymere, 95440 Bayreuth

We investigate energy transfer dynamics in a tailor-made organic donor-switch-acceptor triad systems consisting of two perylenebisimide (PBI) units that are covalently linked by a dithienylcyclopentene photoswitch (DCP). The DCP behaves as a photoswitchable unit which modulates the energy transfer rate from BPI to DCP unit, because it acts as a fluorescence quencher in the closed form. The switching efficiency of the photochromic triad dissolved in toluene was studied by steady-state absorption and emission spectroscopy. The switching kinetics and the lifetime of the (BPI) fluorescence was investigated by using a streak camera system with a time resolution of up to a few picoseconds.