

Dienstag, 25.07.2017

Hörsaal D, Chemiezentralgebäude, 17:15 Uhr

Sprecher: Christoph Lienau
(Universität Oldenburg)

Titel: Ultrafast multidimensional spectroscopy of charge-transfer processes in light-harvesting systems

Abstract:

The efficient conversion of (sun-)light into electrical or chemical energy is one of the most fundamental processes in biology and at the same time a highly-relevant challenge in current energy research. Generally, it is well understood that the underlying microscopic conversion processes happen on an exceedingly short femtosecond time scale and typically involve the transfer of charge from an optically bright donor moiety to an optically dark acceptor system. What is less clear is whether vibronic quantum coherence is helpful or maybe even necessary for those processes to occur and to what extent vibronic quantum coherence modifies the transport of charges through these systems. In my talk, I want to give a few examples how ultrafast, two-dimensional optical spectroscopy – combined with advanced theoretical modelling - can shed new light on those questions how it can provide quite detailed insight into quantum-coherent photoinduced charge separation processes [1-3]. Specifically, I want to discuss the possible role of conical intersections on these processes.

[1] C. A. Rozzi, S. M. Falke, N. Spallanzani, A. Rubio, E. Molinari, D. Brida, M. Mauri, G. Cerullo, H. Schramm, J. Christoffers, and C. Lienau, Quantum coherence controls the charge separation in a prototypical artificial light harvesting system, *Nature Communications* 4, 1602 (2013).

[2] S. M. Falke, C. A. Rozzi, D. Brida, M. Maiuri, M. Amato, E. Sommer, A. de Sio, A. Rubio, G. Cerullo, E. Molinari, and C. Lienau, Coherent ultrafast charge transfer in an organic photovoltaic blend, *Science* 344, 1001 (2014)

[3] A. De Sio, F. Troiani, J. Rehault, E. Sommer, J. Lim, S.F. Huelga, M.B. Plenio, M. Maiuri, G. Cerullo, E. Molinari, and C. Lienau. Tracking the coherent generation of polaron pairs in conjugated polymers. *Nature Comm.* 7, 13742 (2016)

Organisation: M. Hensen

Kontakt: Prof. Dr. Tobias Brixner, Institut für Physikalische und Theoretische Chemie
brixner@phys-chemie.uni-wuerzburg.de

Weitere Informationen unter:

<http://www.phys-chemie.uni-wuerzburg.de/startseite/veranstaltungen/>