SFB 1078

Protonation Dynamics in Protein Function

Mon, **Jan 14,** 2019

15:15 – 18:30

Freie Universität Berlin
Physics Department
Lecture Hall B

(Arnimallee 14, 14195 Berlin-Dahlem)

Colloquium

Prof. Jürgen Köhler – Universität Bayreuth, Germany

Photophysics of molecular aggregates

Molecular aggregates have attracted considerable attention during the last decades. This is due to the ability of these systems to transport excitation energy almost free of energy losses on nanoscopic dimensions, which makes molecular aggregates promising candidates for light harvesting purposes. In such supramolecular structures the tight packing of the molecular building blocks results in strong intermolecular interactions that lead to the formation of exciton states, i.e., electronically excited states that are delocalized over a range of molecules. Hence, the electronically excited states of a multichromophoric assembly feature interesting collective properties inducing processes such as intermolecular energy and charge transfer. Usually, this is accompanied by a spectral shift of the optical absorptions and by a redistribution of the oscillator strengths with respect to the spectral properties of the monomers. How, and to what extent, the photophysical parameters of the aggregate change depends crucially on the magnitudes of the intra- and intermolecular couplings imposed by the architecture of the supramolecular arrangement of the building blocks. The talk will discuss these topics on the example of the lightharvesting apparatus of green-sulfur bacteria, which belong to the most efficient antenna systems in photosynthesis.

Dr. Samantha Hardman – University of Manchester, United Kingdom

Protonation Dynamics and Protein Function

Dr. Hardman is a Senior Experimental Officer at the Manchester Institute of Biotechnology. She primarily works with Prof. Nigel Scrutton's research group which aims to understand the catalytic power of enzymes and mode of action of photo-activatable proteins, and to exploit their use in sustainable chemicals biosynthesis and industrial biotechnology programmes. The reactions of many enzymes and photoreceptors involve some form of protonation step. Here we present research using time-resolved laser spectroscopy to monitor the light-induced reactions, over ps-ms timescales, of a variety of biological systems including photoreceptors (phytochromes) and light-activated enzymes (e.g. protochlorophyllide oxidoreductase).

Coffee and tea are ready at 15:00 and during the break from 16:10 – 16:30.

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