SFB 1078

Protonation Dynamics in Protein Function

Colloquium

Mon, **Jan. 12**, 2015 · **16:15 – 18:30** · Lecture Hall B of the Physics Dept. at Freie Universität Berlin (Arnimallee 14, 14195 Berlin-Dahlem)

16:15 **Prof. Andreas Dreuw**, Ruprecht-Karls Universität Heidelberg, Germany

Proton-transfer steered mechanism of DNA damage repair by (6-4)-photolyases

In his talk, Prof. Dreuw will present an elaborate quantum chemical investigation of the repair mechanism of DNA (6-4) photolesions by (6-4) photolyases. The initial steps of excitation energy transfer as well as the generation of the catalytic electron mediating the final repair is studied. The subsequent repair process restoring the original undamaged DNA bases will be explained in detail and related to recent experimental findings.

17:30 **Prof. Martina Havenith**, Ruhr-Universität Bochum, Germany

New Insights into the Role of Water in Biological Function: Terahertz Absorption Spectroscopy Studies of the Solvation Dynamics of Biomolecules

THz absorption spectroscopy showed an efficient dynamical coupling of the THz dynamics of biomolecules with those of their hydration shells. The development of Kinetic THz Absorption (KITA) spectroscopy allows changes in hydration dynamics to be followed in real time during biological function. A combination of time resolved X-ray studies and THz absorption studies reveals that, as enzyme–substrate binding develops, but before a full complex is formed, the movement of water near the protein is retarded. Prof. Havenith will discuss the role of this gradient of water motions, the so-called “hydration funnel”. [Link to the full abstract.]

Coffee and tea are ready at 16:00 and during the break. *www.sfb1078.de*

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