

SFB  
1078



Protonation Dynamics  
in Protein Function

## ➤ Colloquium

Mon, June 1, 2015 · 16:15 – 18:30 · Lecture Hall B of the Physics Dept.  
at Freie Universität Berlin (Arnimallee 14, 14195 Berlin-Dahlem)

**16:15 Prof. Jürgen Köhler, Universität Bayreuth, Germany**

### ***Conformational Memory of Single Photosynthetic Pigment-Protein Complexes. A Precursor of Non-Photochemical Quenching?***

To learn more about the conformational fluctuations of a protein, Prof. Köhler and his group exploit the phenomenon of fluorescence intermittency, also termed blinking. Until now spontaneous conformational fluctuations of proteins have been assumed to reflect a stochastic random process. The single-molecule study to be presented shows a system where a protein, the LH2 complex from a purple photosynthetic bacterium, displays clear conformational memory. Prof. Köhler will argue that such a behaviour is exactly the process that can facilitate the evolution of control of switching between two conformational states that can then be used to regulate protein function. [\[Link to the full abstract\]](#)

**17:30 Dr. Gerhard Hummer, Max Planck Institute of Biophysics, Frankfurt a.M., Germany**

### ***Water wires, water gates, and water locks***

We have used molecular simulations to examine the role of water in the biomolecular transport of protons and ions, from model pores to complex proton pumps and ion channels. We found that these systems exploit the unusual structural, dynamic, and thermodynamic properties of water in the nanoscale confinement of protein pores or cavities. Hydration thus emerges as a central factor in key biomolecular functions, including enzymatic catalysis, signal transfer, and energy transduction.

Coffee and tea are ready at 16:00 and during the break.

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