

SFB
1078



Protonation Dynamics
in Protein Function

Mon, January 20,
2019

15:15 – 17:30

Freie Universität Berlin
Physics Department
Lecture Hall B

(Arnimallee 14, 14195 Berlin-Dahlem)

➤ Colloquium

➤ **Dr. Przemyslaw Nogly** – ETH Zürich, Switzerland

Synergy between synchrotrons and free electron lasers in studying ion transport with serial crystallography

Ion pumping microbial rhodopsins are integral membrane proteins employing a common 7-transmembrane helices architecture to transport different ion types. The specific residue composition impacts the protein dynamics and transport mechanism.

Rhodopsins utilize retinal chromophore to harvest light energy for protein activation, which makes them an ideal target for pump-probe experiments. We employ serial crystallography to capture structural intermediates in “real-time” and at non-cryogenic temperatures. I will present a combination of the X-ray Free Electron Laser and more accessible synchrotron data, which provide complementary insights into protein dynamics and ion transport.

➤ **Dr. Dimitrios Fotiadis** – University of Bern, Switzerland

Proteorhodopsin: From structure to bionanotechnological applications

In synthetic biology, energy-supplying modules are essential building blocks for the bottom-up assembly of functional biomolecular nanofactories. Proteorhodopsin, a light-driven proton pump, is an ideal candidate to provide energy in form of an electrochemical proton gradient.

We have engineered and tested versions of proteorhodopsin, e.g., introduced a chemical switch to switch on and off the proton function, towards their applications in complex molecular systems. Furthermore, we have investigated functional and structural aspects of proteorhodopsin, in particular its oligomeric organization. These and other aspects will be addressed and discussed in the presentation.

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

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