



# Einladung zum Physikalischen Kolloquium

**Montag, 02.05.2011  
16:15 Uhr in N24/H13**



**Prof. Greg Engel**

University of Chicago  
Department of Chemistry

## Probing Design Principles of Quantum Biology

While the warm, wet, disordered environment within a protein might appear to be the least hospitable environment for coherent quantum dynamics, recent work has shown that biology exploits some manifestly quantum mechanical behaviors in photosynthetic light-harvesting antennae. To image the underlying excited state dynamics, we have developed a new spectroscopic method allowing us to capture excitonic structure in real time. Through this method and other ultrafast multidimensional spectroscopies, we have captured coherent dynamics within photosynthetic antenna complexes. New femtosecond spectroscopic data will be presented to show long-lived quantum coherence at room temperature, the robustness of the dynamics to perturbation, and new evidence that the dynamics entangle the excitons with the bath. These same spectral signatures can be exploited to create new spectroscopic tools to elucidate the underlying Hamiltonian. The implications of this mixing for excitonic transport will be discussed along with prospects for transferring underlying design principles to synthetic systems.

Ab 15.45 Uhr Kaffee, Tee und Kekse vor dem Hörsaal H13

**Organisation: Prof. Marti, Tel.: 23011  
Dr. Retzker, Tel.: 22902  
Host: Prof. Plenio, Tel.: 22900**