

**Picosecond time-resolved X-ray diffraction of the short living excited states of electron-transfer compounds**. S. Teichert<sup>1,2</sup>, F. Schotte<sup>2</sup>, H. Staerk<sup>1</sup>, K.A. Zachariasse<sup>1</sup> and M. Wulff<sup>2</sup>, *Max Planck Institute for Biophysical Chemistry, Dep. 010, D-37070 Göttingen, Germany; European Synchrotron Radiation Facility B.P. 220, Grenoble Cedex 38043, France.*

Keywords: time-resolved X-ray diffraction, light-excited states, ultra fast structural rearrangements.

In this contribution we would like to report on the picosecond structural rearrangements of photo-active organic solids on the excited state potential energy surface. After a short introduction into the spectroscopic properties of solid electron transfer systems on the femtosecond up to the sub-nanosecond time-scale, the optical properties are compared with structural results obtained by picosecond time-resolved X-ray diffraction.

Since the typical lifetimes of such light-excited species are in the sub-nanosecond / nanosecond regime, picosecond time-resolved X-ray diffraction is the best-suited method in order to extract structural information within the lifetime of these processes. Here, rearrangements of the atomic positions - initiated by a femto-second laser pulse - are probed by picosecond X-ray pulses, which are generated by a synchrotron source of the third generation.

The results are discussed with particular emphasis on intramolecular (vibrational) energy redistribution (IVR).