

Tuesday, 30 June 2015, 5.15pm

Lecture Theatre E, Chemistry Building

Speaker: **Henning Marciniak**
Rostock University

Topic: **Exciton dynamics in supramolecular structures of organic semiconductors**

Abstract: The talk is about the ultrafast dynamics of photogenerated electronic excitations, i.e. excitons, in systems consisting of organic semiconductors. With the help of fs-pump-probe-spectroscopy the dynamics can be time resolved and the influence of structural properties and inhomogeneities of the system can be revealed. In particular the generation of high excitation densities can cause exciton-exciton-annihilation, from whose variation in time the local mobility of the excitons can be derived.

The systems discussed in the talk are thin films of microcrystalline pentacene, molecular aggregates and amorphous polymer films. For pentacene it is shown that the exciton mobility is rather low despite of a relatively high degree of structural order. This can be attributed to an ultrafast relaxation process in the excited state. In contrast, measurements on the aggregates indicate a mobility that is two orders of magnitude larger. Furthermore, the characteristic variation of exciton-exciton-annihilation in time points to a one-dimensional motion. In systems of polymer films a comparably high mobility can appear. However, the influence of defect sites plays a major role here. Moreover, the immobilization of excitons at defect sites competes with energy transfer to dopants in host-guest-systems.

Organisation: *Christoph Lambert*