

**Donnerstag, 06.02.2014**

**Hörsaal C, Chemie Zentralbau, 17:15 Uhr**

**Sprecher:** **Natalie Banerji**  
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**Titel:** **The Effect of Microstructure on Charge  
Generation in Organic Solar Cells**

### **Abstract:**

Unlike in inorganic semiconductors, free charge carriers are not significantly generated upon light absorption in organic materials. Instead, a bound exciton is formed, which can be dissociated for solar cell applications by charge separation between an electron donor and an electron acceptor. For solid-state blends of the two components, their precise arrangement into a bulk heterojunction strongly determines the efficiency of charge generation. We have investigated the femtosecond dynamics of charge separation in different blends with well-characterized microstructure. They consisted of conjugated polymer electron donors (pBTTT or PBDTTPD) and the electron-accepting fullerene derivative PCBM. Blends of the pBTTT and PBDTTPD polymers with PCBM gave us access to three different scenarios: Either a single intimately mixed polymer: fullerene phase, an intermixed phase with additional pure PCBM clusters, or a three-phase microstructure of pure polymer aggregates, pure fullerene clusters and intermixed regions. Moreover, we have selectively excited either the fullerene or the polymer in order to evaluate the effect of microstructure on both the electron and hole transfer processes.

**Organisation:** *C. Lambert*