Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

QE

Quantum Efficiency Seminar und Colloquium

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Synthesis and self-organization of well-defined and defect-free semicrystalline conjugated polymers

Conjugated polymers (CP) are intriguing materials for the use as active materials in organic electronic devices. Understanding structure formation in semi-crystalline CPs is key prior to the use of such complex materials in applications. Here we present chain growth and step growth polymerizations to synthesize semicrystalline donor and acceptor conjugated polymers, and present detailed structural investigations. The Kumada Catalyst Transfer polymerization (KCTP) is used to prepare end-functionalized poly(3- hexylthiophene) (P3HT), defect-free P3HT with a regioregularity of 100 %, and naphthalene-diimide thiophene (NDI-T2) copolymers. Step growth polycondensations such as Suzuki and Stille coupling are used where chain growth polymerizations reach their limit, specifically for the preparation of electron acceptor polymers NDI-Tx copolymers with assymmetric repeat units. End group analysis, molecular weight, polydispersity and structure formation are discussed in detail, from which general conclusions are drawn.

Date: **Tuesday, November 13th, 2012 14:15 pm**
Location: **Lecture Hall 1, Hermann-Herder-Str. 3, Freiburg**

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