

PHYSIKALISCHES KOLLOQUIUM

EINLADUNG

23.3.2011/Wh

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Am Montag, dem 4.4.2011, 16.15 Uhr in W2-1-148

spricht

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über

**“The role of molecular structure in polymer electronics”**

Conjugated polymers have unique material properties which make them promising for a wide range of applications. The real potential lies in the infinite possibilities for creating new materials for specific applications simply by chemically tuning the molecular structure. Conjugated polymers possess electrical properties comparable to non-crystalline inorganic semiconductors, however, the complex chemical and structural properties of conjugated polymers more closely resemble those of bio-macromolecules. Molecular conformation and interactions play an important role in the functionality of these material systems. Thin polymer films can be processed from solution using a variety of low cost techniques. The molecular structure of the polymer dominates the opto-electronic properties of the film, however the fabrication parameters influence the bulk morphology and sometimes the device performance. A correlation between molecular structure, the characteristics of the mesoscopic polymer thin film and device performance is not trivial and not yet well understood. In this work, several device applications of conjugated polymers are studied and the interplay between the intrinsic molecular properties and the device parameters are explored. The relationship between molecular structure, thin film morphology and charge transport is demonstrated in polymer solar cells and field effect transistors. It is also shown that in the field of bioelectronics, the structural complexity of conjugated polymers can be used to produce novel device applications for molecular recognition.

Einladender: Der Direktor