



Einladung zum Vortrag

von

11. Februar 2010

Dr. Jan Anton Koster
EINDHOVEN UNIVERSITY OF TECHNOLOGY

Transport of charges and excitons in polymer solar cells: the impact of morphology

Polymer electronic devices show great promise for applications such as light-emitting diodes, field-effect transistors, and solar cells. Light absorption in polymers does not directly lead to free charge carriers, but rather excitons are formed. In order to extract their energy, however, it is necessary to split up these excitons into separate charges. This can be achieved by mixing the polymer with another suitable material so that charges are generated once the excitons reach the interface.

This talk focuses on the transport efficiency of excitons towards the interface between both blend constituents. By imaging the blend with electron tomography a three dimensional description of the morphology on the nanometre scale is obtained. This description is then used to calculate the efficiency of exciton quenching. Good agreement is found between solar cell efficiency and exciton quenching efficiency.

Charge transport is one of the most important processes in a solar cell. By numerically solving the Pauli master equation, the effect of morphology on charge transport is studied. This approach allows for studying the field and carrier density dependence of the mobility. The predicted mobilities are compared with recent literature results.

Termin: Mittwoch, 24. Februar 2010, 10 Uhr

Ort: Universität Ulm, Helmholtzstr. 18, Raum He 220

Interessenten sind herzlich eingeladen.

gez. V. Schmidt