Dokumenttyp: Zeitschriftenaufsatz


Titel des Beitrags: Modeling and simulation of energetically disordered organic solar cells

Abstract: The aim of this work is to present a consistent model for simulation of organic solar cells (OPV) with a correct description of mobility, density of state, organic-metal contacts, and exciton. We simulate the photoconversion by means of an integration of the optical and electrical part: light absorption is calculated with a Transfer Matrix Model and the charge transport is computed using Drift Diffusion approach including the effect of energetically disorder materials. Most model parameters are directly taken from experiment. The model is used to study the effect of energetic disordered materials and cell thickness on the performance of the cell in terms of short circuit current, open circuit voltage, and fill factor. Based on the results of this model, it will be possible to design and predict the optimal thickness of OPV toward higher efficiencies.

Stichworte: Excitons Carrier mobility Active layer Carrier generation Electric fields


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