



Quantum Efficiency Seminar und Colloquium

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Organic Photovoltaics

In the last decade, interest in organic electronic and opto-electronic devices has grown considerably due to their advantages such as potential low cost materials, fabrication on large, light-weight, flexible substrates, and low-temperature processing techniques. Additionally, the synthesis of many different organic materials is possible in order to find suitable electrical and optical properties.

Nowadays, organic photovoltaics are at the transition from lab-scale fabrication to industrial mass production. This talk enlightens the role of Bosch in the field of vacuum-processed small molecular organic solar cells. An overview of the physical basics of organic semiconductors is given as well as an explanation of the fundamentals of (organic) solar cells. To address the demands for industrialization, it is necessary to achieve high efficiencies on large module areas, a cost-efficient production process, and long module lifetimes.

The concept of p-i-n-type solar cells with doped organic transport layers is introduced which is promising to optimize contacts, reliability, and light harvesting. Strategies to improve the short-circuit current J_{sc} , the open-circuit voltage V_{oc} and the fillfactor FF are demonstrated. Finally, an approach for module processing is presented. Therefore, methods for monolithically interconnection and fast deposition techniques have to be developed and improved.

Date: Tuesday, July 17th, 2012 15:45 pm
Location: Lecture Hall 1, Hermann-Herder-Str. 3, Freiburg

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