

PHYSIKALISCHES KOLLOQUIUM
EINLADUNG

Monday, 14.12.2015, 16.15 p.m., W2-1-148

speaks

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about

Nanostructured organic and hybrid solar cells

Thin film solar cells such as organic and hybrids solar cells often suffer from incomplete light-harvesting. In this talk I will present some examples how it is possible to modify the optical interaction through the implementation of nanostructures.

One example are thin multilayered electrodes, such as $\text{TiO}_2/\text{Ag}/\text{TiO}_2$ (TAT) multilayer as ITO replacement. This electrode allows to directly tune the optical cavity mode towards maximized photocurrent generation by varying the thickness of the layers in the sandwich structure. This enables tailored optimization of the transparent electrode for different organic thin film photovoltaics without alteration of their electro-optical properties.

Another methods is the use of wavelength-scaled structured ITO/ TiO_2 electrodes, which we prepared via direct laser interference patterning the TiO_2 layer. Two representative thin-film solar cell architectures are deposited on top: an organic solar cell featuring blended P3HT:PCBM as active material, and a hybrid solar cell with Sb_2S_3 as inorganic active material. A direct correlation in the asymmetry in total absorption enhancement and in structure-induced light in-coupling is spectroscopically observed for the two systems.

All interested persons are cordially invited.

Gez. Prof. Dr. Manuela Schiek