

Morphological characterization of novel material systems for hybrid photovoltaics

Tuesday, 20 June 2017 14:34 (1 minute)

Organic materials have been found to offer various, promising advantages for photovoltaic (PV) devices like flexibility and the potential of low-cost/large scale production. Hybrid devices combine these advantages with the chemical/physical stability of inorganic materials and, thus, overcome the issue of limited lifetimes of purely organic cells. Poly(styrene-block-ethylene oxide) templated sol-gel chemistry is used to synthesize high surface-to-volume ratio, mesoporous titania thin films, which allows for precise structure control and an increased amount of interface. The n-type, electron conducting titania thin film serves as a basis for novel organic material studies. The studies aim to introduce new material combinations to the field of hybrid PV and to open up pathways for enhanced efficiency in terms of energy conversion and band alignment. Thin film spectral absorption characterization is carried out via UV/Vis measurements. Furthermore, morphological characterization is realized via SEM, XRD and TOF-GISANS to extract the efficiency of backfilling and the crystal structure of the system.

Primary author: Mr HOHN, Nuri (TU München, Physik-Department, LS Funktionelle Materialien)

Co-authors: Prof. RIVARD, Eric (University of Alberta, Department of Chemistry); Mr MICHAEL, Giebel (TU München, Chemistry Department, LS für Anorganische Chemie mit Schwerpunkt Neue Materialien); Prof. MÜLLER-BUSCHBAUM, Peter (TU München, Physik-Department, LS Funktionelle Materialien); Prof. FÄSSLER, Thomas F. (LS für Anorganische Chemie mit Schwerpunkt Neue Materialien)

Presenter: Mr HOHN, Nuri (TU München, Physik-Department, LS Funktionelle Materialien)

Session Classification: Poster