Contribution ID: **94** Type: **Poster**

Printed block copolymer templated ZnO photoanodes for photovoltaic applications

Wednesday, December 8, 2021 10:30 AM (1h 30m)

ZnO has received much attention over the past years because it has a wide range of properties, including high transparency, piezoelectricity, wide-bandgap semiconductivity, high electron mobility and low crystallization temperature. To improve the photovoltaic performance of ZnO-based hybrid solar cell devices, an interconnected mesoporous inorganic nanostructure is favorable, which can provide a high surface-to-volume ratio for exciton separation within their lifetime and a good pathway for charge carrier transport. To fabricate the mesoporous inorganic ZnO semiconductors, various methods can be employed, such as chemical vapor deposition, wet chemical method and, hydrothermal synthesis. Among these methods, the diblock copolymer assisted sol-gel synthesis approach has been corroborated by countless reports to be powerful in its morphology tunability.
In the present work, an amphiphilic diblock copolymer is used as the template and suitable printing parameters are selected to fabricate the mesoporous ZnO films with varied morphologies. Grazing-incidence small angle X-ray scattering (GISAXS) is used to probe the inner film morphology without intervening the film formation process or impairing the printed films.

Author: TIAN, Ting

Co-authors: YIN, Shanshan; TU, Suo (Institute of Functional Materials); WIENHOLD, Kerstin; MÜLLER-BUSCHBAUM, Peter (TU München, Physik-Department, LS Funktionelle Materialien); WEINDL, Christian (TUM Physik); ROTH, Stephan V.; SCHWARTZKOPF, Matthias (DESY); LIANG, Suzhe (Lehrstuhl für Funktionelle Materialien, Physik-Department, Technische Universität München, James-Franck-Straße 1, 85748 Garching, Germany)

Presenter: TIAN, Ting

Session Classification: Poster Session II

Track Classification: Material Science