

Low temperature synthesis of TiO₂ thin films with micrometer-sized channels via wet imprinting

Thursday, 22 May 2014 08:45 (30 minutes)

Hybrid solar cells based on inorganic semiconductors have attracted great attention in recent years as it has special advantages over the conventional fully inorganic or organic solar cells, such as stability, biocompatibility, tunable morphology and low production expense. Among all the inorganic semiconductors, titanium dioxide (TiO₂) has been proved to be a promising candidate for the inorganic component of hybrid solar cells due to its unique optical and electrical properties.

For photovoltaic applications, the performance of the solar cells strongly depends on the morphology of the titanium dioxide layer. And a low temperature routine of TiO₂ layer fabrication is required for flexible substrates like polymers. Here we present a low temperature synthesis of TiO₂ thin films via combining block copolymer assisted sol-gel templating with wet-imprinting technique. TiO₂ thin films with several hundred nanometers thickness are obtained and channel-like superstructures are well fabricated. SEM measurements demonstrate foam-like structures on the surface and GISAXS measurements indicate mesoporous structures inside the film.

Primary author: Mr WANG, Tianyi (TU München)

Co-authors: Mr SONG, Lin (TU München); Prof. MÜLLER-BUSCHBAUM, Peter (TU München)

Presenter: Mr WANG, Tianyi (TU München)

Session Classification: Student Sessions