Contribution ID: **61** Type: **Poster**

Highly ordered titania films with incorporated germanium nanoparticles calcined under different atmospheres

Wednesday, 11 December 2019 15:40 (20 minutes)

Mesoporous titania films with ordered nanostructures show great promise in various applications, such as solar cells. To optimize solar cell performance, pre-synthesized crystalline germanium nanoparticles around 10 nm are introduced into mesoporous titania films. The influence of different calcination atmospheres (air and argon) on the morphology and properties of TiO2/Ge composite films is studied. Resulting surface and inner morphology changes are investigated by scanning electron microscopy and grazing incidence small-angle X-ray scattering (GISAXS), respectively. Elemental composition of the TiO2/Ge composite films calcined in air and argon is compared via X-ray photoelectron spectroscopy. The crystalline and optical properties are observed by X-ray diffraction, transmission electron microscopy and ultraviolet–visible spectroscopy, respectively. Through the incorporation of germanium nanoparticles with varied weight percent and calcination under different atmospheres, the optimized morphology and properties of TiO2/Ge composite films will be obtained, providing a promising candidate for solar cell photoanodes.

Primary author: LI, Nian

Co-authors: Mrs SHANSHAN, Yin (Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien); Mr HEGER, Julian (Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien); Mr SCHAFFRINNA, Roy (Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien); Prof. MÜLLER-BUSCHBAUM, Peter (Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien)

Presenter: LI, Nian

Session Classification: Poster session

Track Classification: Materials Science