



Contribution ID: 135

Type: **Poster**

Improved surface passivation of AgBiS₂ quantum dots for photovoltaic applications

Tuesday, 5 December 2023 14:00 (3 hours)

AgBiS₂ colloidal quantum dots (QDs) are a non-toxic alternative for the commonly used PbS QDs for photovoltaic applications. Similar to its PbS QDs, they show great promise due to a tunable bandgap and solution processing. What makes them stand out is the abundance of materials as well as a high absorption coefficient, which enables to reduce the thickness of the active layer to around 35 nm. Additionally, studies have shown that they are more stable in water and can effectively harvest photons in the near-infrared part of the solar spectrum. One of major issues that impede the development of AgBiS₂ based photovoltaics is QD surface defects induced recombination losses. Here, we aim to improve the surface passivation of individual QDs and improve the charge transport in the QD films using surface ligand treatment with ZnI, mercaptocarboxylic acid (MPA) and TBAI as surface ligands. The optical and electrical properties of corresponding QDs films are characterized utilizing FTIR, XPS and UPS techniques, and further the corresponding device performances are investigated.

Primary author: LOVRIC, Petar (TUM)

Co-authors: ZHONG, Huaying; MÜLLER-BUSCHBAUM, Peter (Technical University of Munich, Physics Department, Garching, Germany)

Presenter: LOVRIC, Petar (TUM)

Session Classification: Poster Session

Track Classification: Material Science