

Abstract for HESTPV workshop

Correlative electron microscopy approaches for perovskite solar cells

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The present contribution will give an overview of correlative research work on perovskite-type materials for photovoltaics employing scanning (SEM) and transmission electron microscopy (TEM) as well as atomic force microscopy (AFM). Preliminary results obtained on $\text{CH}_3\text{NH}_3\text{PbI}_3$ and $\text{CH}_3\text{NH}_3\text{PbBr}_3$ thin films and solar cells will be presented. Another line of research is directed on wide-gap, inorganic CsPbBr_3 thin films synthesized by spin-coating and evaporation, as well as on corresponding powder samples used as reference. So far, energy-dispersive X-ray spectroscopy, cathodoluminescence, electron-beam-induced current and electron backscatter diffraction in SEM as well as imaging and electron diffraction in TEM have been applied for the analysis of phase distributions and electrical/optoelectronic properties. In addition, also scanning spreading resistance measurements have been performed using an AFM setup. Difficulties in phase identification and in sample stability under the electron beam will be reported.