Institute for Materials Science

Dr. Fabio Matteocci
University of Rome "Tor Vergata"

“Semi-transparent Perovskite solar modules: Opportunities for Building Integrated Photovoltaics”

Thursday, May 27th 2021
13:00 – 14:00

Normal: Seminar Room 115, Hallwachsstr. 3 (HAL)
Pandemic version: https://tinyurl.com/nanoSeminar-GA

The development of Visible Transparent Photovoltaics (TPV) appears crucial for the exploitation of BIPV and its application in Nearly Zero Emission Building. Average Visible Transmittance is an important metric for the design of TPV devices based on emergent PV technologies such like OPV, DSSC and PSC. Perovskite solar cells (PSCs) have attracted great interest in the PV field showing record Power Conversion Efficiencies (PCEs) of 25.2% for single-junction and up to 29.1% for PSC/c-Si tandem architecture. These important achievements have been achieved using perovskite absorber with optical band gap in the range of 1.5-1.7eV showing panchromatic absorption in the visible spectrum. Several approaches have been reported in order to guarantee high PCE and AVT value obtained from the device stack: the reduction of the perovskite thickness, the perovskite coverage and the increase of the perovskite band gap. The presentation will give an overview of the PSCs and their applications in PV field reporting recent studies made by the Centre of Hybrid and Organic Solar Energy lab of the University of Rome “Tor Vergata”. Furthermore, the talk will discuss about new results about development of highly semi-transparent PSC using wide-band gap perovskite with optical band gap up to 2.5eV.
Dr. Fabio Matteocci

University of Rome "Tor Vergata"

Fabio Matteocci received his MSc degree in Electrical Engineering from the University of Rome "Tor Vergata" (UTV) in Rome. During his Ph.D. in Electrical Engineering from the Center for Hybrid and Organic Solar Energy (CHOSE) in 2014. He is mainly working on the development of scalable manufacturing for thin-film photovoltaic technologies such as solid-state DSSC and perovskite solar cell. The second topic is referred on the stability of the perovskite solar cell under moisture, heat and light stresses. In the last three years, he is an Assistant Professor in University of Rome "Tor Vergata" developing perovskite solar modules, perovskite/c-Si Tandem and photodetectors. He published more than 55 papers on these topics, reaching an h-index of 23. Since 2019 he is investigating the upscaling of wide band gap perovskite for BIPV application in two European research projects entitled IMPRESSIVE and CITYSOLAR focusing on highly semi-transparent UV-PSC.