

**Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research**

The Swiss Institute for Dryland Environmental and Energy Research
Alexandre Yersin Department of Solar Energy and Environmental Physics

A Special Seminar

Experimental Realization and Theoretical Understanding of High Open-Circuit Voltages in Lead-Halide Perovskites



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Abstract:

Efficiencies of lead-halide perovskite based solar cells have increased over the last several years at a speed that is unprecedented in the history of photovoltaic technologies. What is striking is in particular how relatively little engineering was needed to achieve high open-circuit voltages (V_{oc}) that even now come similarly close to the Shockley-Queisser limit than those of Si solar cells after 60 years of technological development. This development inspires two questions, namely how far can we go technological and how do we characterize and understand these results. Here, I will present experimental results on very high open-circuit voltages and discuss the transient and steady state characterization of these high V_{oc} materials and devices. In the second part of the talk I will discuss what we know about non-radiative recombination in these semiconductors and discuss why the material properties of lead-halide perovskites are beneficial for achieving low recombination rates at a given charge carrier concentration.

About the presenter:

Thomas Kirchartz is currently a professor of electrical engineering and information technology at the University Duisburg-Essen and the head of the department of analytics and simulation and the group of organic and hybrid solar cells at the Research Centre Jülich (Institute for Energy and Climate Research). Previously he was a Junior Research Fellow at Imperial College London. His research interests are all aspects regarding the fundamental understanding of photovoltaic devices including their characterization and simulation.

Date & Location:

Tuesday, April 4, 2019, 11:00

Lecture room, Physics Building (ground floor)

