



TECHNISCHE UNIVERSITÄT  
CHEMNITZ

# Institut für Physik Physikalisches Kolloquium



**Mittwoch, 20.05.2015, um 16:00 Uhr**

Ort: Reichenhainer Str. 90;

Zentrales Hörsaal- und Seminargebäude, Raum 2/N013

**Dr. Markus C. Scharber**

Johannes Kepler Universität Linz, Österreich

## ***Solution processed Perovskite Solar Cells***

The search for efficient, easy-to-process and low-cost absorber materials for solar energy conversion has been one of the main activities of the photovoltaic research community for the last few decades. Organic-inorganic hybrid perovskites based on methyl ammonium lead trihalide compounds are one of the most promising materials due to their excellent optical and light harvesting properties, tunable by varying the chemical composition. In addition the perovskite semiconductors show balanced electron and hole mobility, long-range diffusion length and slow recombination of charge carriers. The precursor for organic-inorganic hybrid perovskites can be easily prepared or are commercially available at relatively low costs. And the materials can be processed from solution onto flexible or rigid substrates using printing compatible methods. The rapid development in the device fabrication techniques has led to a tremendous increase in power conversion efficiencies of perovskite based solar cells in a short period of time from 3-4 % in 2009 to 20.1 % in 2014. Though many reports show high efficiency numbers, there are many open questions remaining:

- The long term stability of reported device structures
- Characterization procedure of organic-inorganic hybrid perovskites due to the hysteresis observed in the current-voltage curves
- Processing of perovskite films

I will summarize our recent work on perovskite solar cells. We have developed a robust process for making perovskite layers on various different substrates including ultrathin flexible foils. Prepared devices are reasonably stable under ambient conditions and we were able to prepare a set of demonstrators based on ultra-light-weight solar cells. I will also discuss the current efficiency limitations of our devices based on a radiative limit analysis and the potential future improvements.



Alle Zuhörer sind ab 15:45 zum Kaffee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:  
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