

PHYSIKALISCHES KOLLOQUIUM

Referentin: **Dr. Selina Olthof**
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Thema: **Characterizing the electronic structure of novel hybrid perovskites**

Zeit und Ort: Dienstag, 29.5.2018, 16:40 Uhr
Recknagel-Bau, Hörsaal REC/C213, Haeckelstr. 3

Leiter: Prof. Dr. Karl Leo

Kurzfassung: Research on novel semiconducting materials for application in optoelectronic devices has gained increasing interest in the last decades; these technologies can have several advantages over the standard silicon applications which include, e.g., the processability from solution or the application in flexible devices.
One of the newest candidates here are the halide perovskites, which are most well known due to their excellent performance in solar cell. Here, the combination of organic and inorganic components leads to the emergence of excellent optical and electronic properties, while the electronic structure and band gap energy can be readily varied by composition tuning.
In this talk I will discuss measurements based on UV- and inverse photoelectron spectroscopy (PES) done on a wide variety of these hybrid perovskite materials. In combination with density functional theory calculations, we are able to understand the systematic changes in valence and conduction band position. Furthermore, using these surface sensitive PES techniques in combination with X-ray PES, the energetic alignment at device relevant interfaces is probed in-situ. Looking at various bottom contacts, we find that chemical interactions, band bending, and interface dipole formation play an important role during film formation. Overall, such investigations help us to better understand the basic material properties and interface processes, which will lead to the development of improved device concepts.

Biographie: Dr. Selina Olthof obtained a M.Sc. in Physics in 2006 at the University of Stuttgart followed by a Ph.D. on the topic of organic semiconductors under Prof. Karl Leo's supervision from TU Dresden in 2010. After that, she went to Princeton University (USA) for two years, where she worked as a postdoc at the Department of Electrical Engineering with Prof. Antoine Kahn. Since 2013, she is a Junior Researcher at the Institute for Physical Chemistry and currently holds a position as Eleonore-Trefftz Visiting Professor at the TU Dresden.

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