TECHNISCHE UNIVERSITÄT CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

Mittwoch, 05.02.2020, um 11:15 Uhr

Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

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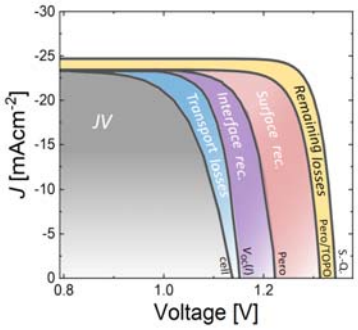
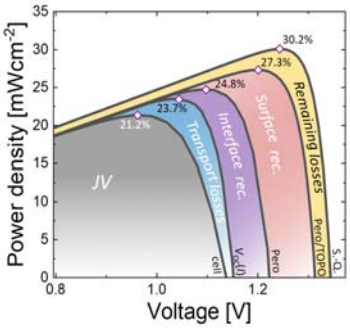
Institute of Physics and Astronomy, University of Potsdam

Pathways towards 30% efficient single-junction perovskite solar cells

Perovskite semiconductors demonstrate a large potential for commercial applications in single and multijunction solar cells, detectors or LEDs. A key for these applications is their highly fluorescent nature due to low defect densities and their simple processability from solution. Recent studies highlight that the opto-electronic quality of the absorber layer is comparable to GaAs in terms of external fluorescence. However, the high internal voltage in the absorber layer can often not be directly translated into an equal external voltage at the metal electrodes in complete devices. In this talk, I discuss the reason for this discrepancy with particular focus on non-radiative recombination in the bulk, the perovskite/transport layer interfaces and metal contacts. The study comprises a range of perovskite compositions with different bandgaps and several, commonly used charge transport layer. I will also demonstrate how to experimentally measure the efficiency potential of any neat perovskite film on glass with or without attached transport layers. In addition, voltage dependent PL measurements on complete cells provide insights into the internal and external voltage in the power generating *JV*-regime. The findings are corroborated by device simulations which outline important considerations unlock power conversion efficiencies of 30% in single junction perovskite solar cells.





Alle Zuhörer sind ab 11:00 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Carsten Deibel, Tel. 0371 531 34878

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