



Seminarankündigung

**Dienstag, 5. Juni 2018
14:00 Uhr**

WSI, Seminarraum S 101

“Optoelectronic properties and halide demixing in Br-containing metal halide perovskites”

New semiconductor materials show immense potential as building blocks in emerging optoelectronic devices. However, the quest continues for semiconductors that possess suitable bandgaps for efficiently capturing the solar spectrum, are composed of abundant elements, and can be deposited over large areas at low cost.

Organometal halide perovskite semiconductors have emerged as promising candidates for optoelectronic applications including low-cost photovoltaics, and especially as wide bandgap absorbers in tandem cells. However, there remain key questions about the effects on the material properties, stability, and underlying mechanisms of alloying perovskites with Br to widen the bandgap. In this seminar, we will present our work on optoelectronic properties, sub-bandgap electronic states, and cation-dependent halide demixing in Br-containing metal halide perovskites. Despite excellent intrinsic material properties revealed by power-dependent photoluminescence measurements there are indications of defect states close to midgap. Those states could impact photocarrier recombination and energy conversion efficiency in higher bandgap alloys, particularly at photovoltaic-relevant illumination densities. This talk will also address halide demixing by directly comparing the effect of the nature of the cation on phase stability under illumination. Advances in reducing halide segregation are achieved without sacrificing electronic properties and offer promise of stable and efficient top cells for future photovoltaic tandem devices.

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