

## "Hybrid Materials for Efficient Energy Generation and Information Technologies"

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Title: Investigation of instability mechanisms in perovskite based hybrid solar cells

Recently, perovskite based hybrid solar cells yielded a power conversion efficiency of up to 15%. However, the IV characteristics showed a hysteresis during forward and backward potential scanning that affected the efficiency by more than 30%. A similar observation was made for different scan rates of the IV curves.

The aim of the PhD thesis is to investigate the underlying mechanisms that cause these large changes of the conversion efficiency. To shine light on these instability mechanisms electrical, photo-electrical, and photoluminescence measurements of the hybrid structures will be performed. The influence of interfaces in the solar cell will be investigated by photoelectron spectroscopies, while localized states in the bulk will be measured using sub-band gap absorption.