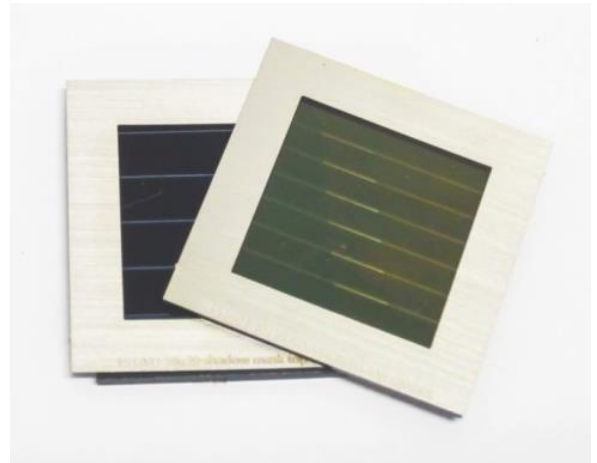


Open PhD Position on Novel Vacuum-Processed Absorber Materials for Perovskite Solar Cells



Motivation

The rise of perovskite thin-film solar cells in recent years has opened up an exciting route toward a high-efficient and low-cost PV technology. In addition, due to their adjustable bandgap, perovskite absorbers can be combined with low-bandgap absorbers like silicon or CIGS in multi-junction solar cells with the potential of surpassing power conversion efficiencies above 30% at potentially low fabrication costs. However, to date several key scientific and technological challenges still need to be overcome to harvest this potential. One main challenge on the way toward market majority of this auspicious technology is the limited scalability to industrial relevant device areas as well as reproducibility of the fabrication process. In order to tackle these challenges, together with our international project partners from industry and academia, our team at KIT investigates the fabrication of high-efficient perovskite solar cells with industrially friendly vacuum-based deposition methods. This PhD project will investigate novel material compositions for the fabrication of perovskite absorbers with bandgaps between 1.2 eV and 1.8 eV via vacuum-based methods as well as their integration in perovskite-based tandem solar cells. The repertoire will range from established tandem solar cell concepts based on silicon or CIGS solar cells to the more advanced concept of all-perovskite tandem solar cells.

At KIT, we engage in this worldwide endeavour and research the fundamentals, novel materials, and processes for perovskite multi-junction photovoltaics. We are looking for highly motivated and excellent candidates with a strong personal drive for scientific research. Therefore, we are looking forward to your application to join our international team!

Infrastructure and Supervision

The thesis will be conducted within the perovskite PV taskforce at KIT, which combines the expertise and equipment of several research groups at KIT. For the fabrication and prototyping of vacuum-

based perovskite solar cells a broad fabrication and characterization platform will be accessible via the involved institutes, the Light Technology Institute (LTI) and the Institute of Microstructure Technology (IMT). In particular, a novel high-end thermal evaporation system develop specifically for the challenges of the perovskite deposition was recently set up in our group that will be used throughout this project. The scientific results will be published in peer-reviewed international journals and presented at international conferences. The thorough supervision and close collaboration within an interdisciplinary team will support the PhD candidate.

Applications

Applications of highly motivated and excellent candidates with a M.Sc. degree in Physics, Chemistry, Materials Science, Electrical Engineering, or related subjects are welcome. The ideal candidate would have prior experience in photovoltaics, vacuum-processed optoelectronics, materials science and/or device characterization.

For the application please provide the following documents in electronic form:

- Motivation letter (max. 1 page)
- CV
- Master diploma and transcript of records
- Letter of recommendation

Apply through the KSOP PhD application portal with the reference number **KSOP-2020-01**.

Contact Information

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