Karlsruher Institut für Technologie

Open PhD Position on Thermal Evaporation Processes for Perovskite Photovoltaics



(images: Ruiz-Preciso, Breig, Tasforce | KIT)

The rise of perovskite thin-film solar cells in recent years has opened up an exciting route to advance the power conversion efficiency of established photovoltaic technologies. For the first time, a wide bandgap thin-film PV technology is available at low cost that can be combined with established low bandgap semiconductors, such as crystalline Si and CIGS thin-films, in a multijunction tandem device with the potential of surpassing efficiencies of 33%. However, to date several key scientific and technological challenges still need to be overcome to harvest this potential. At KIT, we engage in this worldwide endeavour and research the fundamentals, novel materials and processes for perovskite multijunction photovoltaics.

This PhD position will be part of our endeavour to develop industrially relevant processes for perovskite-based tandem photovoltaics within the EU project NEXUS. The focus of your work will be on the following tasks:

- Development of industrially relevant processes for thermally evaporated perovskite top solar cells for application in perovskite/silicon tandem solar cells.
- Optimization of various processing methods, e.g. co-evaporation, sequential evaporation and close-space sublimation.
- Detailed investigation of the optoelectronic and microstructural properties of thermally evaporated perovskite absorber layers.

You will publish your research results in scientific journals and international conferences and also assist in project work and teaching. The position offers the opportunity for an in-service doctorate.

Infrastructure and Team

The position will be embedded in the Taskforce Perovskite Photovoltaics at KIT, which combines the expertise and equipment of several research groups at KIT. For the fabrication and prototyping of thermally evaporated perovskite solar cells, a broad fabrication and characterization platform will be accessible via the involved institutes, the Light Technology

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Institute (LTI) and the Institute of Microstructure Technology (IMT). The position is within the research group *Thermal Evaporation Processes for Perovskite Semiconductors (TEPPS)* of Dr. Paul Fassl within the *Next Generation Photovoltaics* division of T.T. Prof. Dr. Ulrich W. Paetzold.

Applications

Applicants must hold a Master's degree (M.Sc.) in physics, materials science, electrical engineering, chemistry or related subjects. Knowledge in optoelectronics and in the field of semiconductor physics is required. Experience with working in international teams as well as very good English skills complete your profile.

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

– Motivation letter (1 page max.);

– CV;

– List of publications (if applicable);

– Transcript of records;

– M.Sc. diploma/certificate;

Link to the official job application:

https://jobs.pse.kit.edu/en/jobs/144754/phd-position-scientist-fmd-on-thermal-evaporation-processes-for-perovskite-photovoltaics-part-time-75-field-of-study-electrical-engineering-physics-materials-science-chemistry

Contact Information

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