HI ERN ||| Egerlandstraße 3 ||| 91058 Erlangen ||| Germany

Dr.-Ing. Claudia Buerhop
Forschungszentrum Jülich GmbH
Immerwahrstr. 2, 91058 Erlangen
Email: c.buerhop-Lutz@fz-juelich.de
Tel.: 09131/9398-177
www.hi-ern.de

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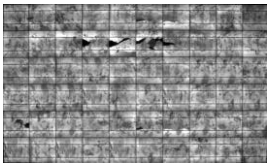
Bachelor / Master Thesis

Performance analyses of PV modules under different mechanical loading situations

The Helmholtz Institute Erlangen-Nürnberg for Renewable Energy (HI ERN) investigates and develops material- and process-based solutions for a climate-neutral, sustainable, and cost-effective utilization of renewable energies. The institute works on the structural and functional characterization, modelling and processing of materials relevant to hydrogen and solar technology. One main goal is the understanding of performance-loss-process relationship with imaging techniques.



Electroluminescence image showing cells cracks and fractures after walking over the PV-module. Interesting is, how these pre-cracked cells affect the future performance and how the power output will be affected.

Tasks:

- Investigation of PV module degradation due to different stress situations mimicking real scenarios at special mechanical load device
- Electroluminescence imaging and performance measurements
- Strain gauge data analyzing
- Image analysing
- Evaluating the degradation process

Qualifications:

- Student of Material Science, Energy Technology, Renewable Energy, Mechanical Engineering
- Profound technical knowledge
- Hands-on mentality

The thesis will be carried out in the labs at Immerwahrstraße 2, 91058 Erlangen and can be written in German or English.

Supervisor: Thilo Winkler, Dr. Claudia Buerhop