



The research field of the Laboratory for Chalcogenide Photovoltaics (LCP) of the department of Energy and Semiconductor Research (EHF) of the Institute of Physics at the Carl-von-Ossietzky University of Oldenburg offers a master thesis for students of the subjects physics and engineering physics with the title

Temperature dependent quantum efficiency measurements with light bias at CIGS solar cells.

One focus of the LCP-group lies on Cu(In,Ga)Se₂ (CIGS)–Solar cells. It is well known, that a buffer layer in-between the Absorber and the front electrode acts beneficially on the hetero contact formation and therefore on the performance of the solar cell. During the last decades the most efficient solar cells were achieved by using a Cadmium-Sulfide buffer layer. Never the less during the last years there are upcoming concerns to process cadmium-free solar cells.

In this thesis CIGS-solar cells with an Indium Sulfide buffer layer of varying doping concentration should be investigated. It was found that solar cells with a highly doped buffer layer show metastable behavior under white light soaking. The metastable behavior especially shows up in the quantum efficiency- and current voltage- measurements. This thesis contains a systematic study of the metastable behavior of the solar cells, including the temperature dependence of the phenomena. Due to these concerns the available set up for temperature dependent quantum efficiency measurements should be extended with a white bias light source.

Applicants should have experience in characterization of solar cells. Simulation and/or programming skills are beneficial.

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