



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

***The influence of defects on the electron lifetime in CIGS thin film solar cells.***

During the fabrication and usage of solar modules defects can occur which may lead to local shunts and thus harm the module performance. Neither the origin nor the exact influence of these defects have been understood in detail yet.

In this master thesis (which is embedded in a joint project funded by the BMBF) the influence of such defects on the lifetime of the electrons in the absorber layer of CIGS thin film solar cells is to be investigated. The lifetime is a critical parameter for the photovoltaic quality of the absorber that can be measured by means of time-resolved photoluminescence (TRPL). The main question is, how a defect affects the lifetime and how this influence depends on the lateral distance to the defect.

For this purpose the existing TRPL setup is supposed to be extended to include the ability to scan a sample, so that lateral fluctuations of the lifetime may be imaged. On the other hand a method is to be developed that allows to extract the electron lifetime from the PL decay of solar cells. The investigation of the defects may be done on well-defined artificial defects which are induced by a focussed ion beam (FIB).

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