

MAINZ – Summer School on Photovoltaics in Lausanne (31.05.-04.06.2008)

The Graduate School **MA**aterials Science **IN** Main**Z**, together with CECAM and Psi-k, organised the workshop „Critical Materials Issues in Photovoltaics: Searching for Solutions via Theory and Simulations“ at the École Polytechnique Fédéral de Lausanne (EPFL).



Two days before the actual summer school, a small group from Mainz came to Lausanne for an introduction on solar cells (Rainer Klenk, Helmholtz Zentrum Berlin and Thomas Hahn, University of Jena) and simulation methods (Stanislav Chadov and Thomas Gruhn, both University of Mainz). After the talks on Sunday, there was some time to go on a sightseeing tour through Lausanne. Being situated at the Lake Geneva and near the Alps, Lausanne is a very picturesque city with attractions like the Olympic Museum.

The focus of the workshop was on thin-film solar cells with sessions about CIGS-cells, intermediate band cells and quantum dots. Pretty much everybody of the small international community working in the field was present and there were many discussions after the talks and during the common dinners at fancy restaurants.

During the first day the invited specialists gave lectures about various aspects of thin-film cells: absorbers, doping, transparent conductors, defects and grain boundaries. The most notable speaker probably was Alex Zunger, who is mainly responsible for the progress made in solar cell theory during the last 10 years. His overview on recent theoretical results and the magnitude of special topics presented by the other speakers gave a comprehensive insight into active solar cell science.

The second day was dedicated to intermediate band solar cells. The realisation of photovoltaic devices based on new materials was covered in theory and experimental results. Further on, Alex Zunger introduced the audience to the concept of quantum dots, which was deepened on day three by talks about how to get two electron-hole-pairs out of only one photon. Finally, there was an interesting talk about the creation of libraries of materials given by John Rodgers (Innovative Materials Technologies). Such libraries enable researchers to recognise patterns in material properties and thus select candidate materials with target properties for certain applications.

Certainly, a very important aspect of the workshop was getting to know the people in the field to make future collaborative work easier.

