

Einladung zum Gastvortrag
im Rahmen des Seminars für Chemie und Technologie
der Materialien von

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**„Solution-processing of metal oxide layers and
nanostructures for low-cost thin film photovoltaics”**

Thin-film photovoltaics (TFPV) bear a huge potential for providing abundant and affordable energy in the future's global electricity-generation mix. TFPV assemble a number of exceptional features. Unlike silicon, they are based on direct bandgap semiconductor absorbers (such as the copper-indium-gallium-diselenide or cadmium telluride) with very high absorption coefficient, so that they can be made very thin (in the μm range). This reduces the materials consumption, increases the processing speed and offers flexibility in terms of module design and application.

Particularly important for the large-scale implementation of TFPV is the drastic reduction of processing costs, which is served by the replacement of the cost-intensive, vacuum-based techniques by solution-based routes. Such processing routes are particularly suitable for the deposition of metal oxides, which are indispensable components to all thin-film photovoltaic cells, being employed mostly as transparent conductive electrodes, buffer and window layers, but also as solar absorbers. In this seminar we will focus on the electrochemical deposition, chemical bath deposition and spray pyrolysis of zinc oxide (ZnO) transparent conductive materials doped with group-13 metals (Al, Ga, In), as well as Mg. We will describe the chemistry and mechanisms that influence the structural, optical and electrical properties of ZnO films and nanostructures and elaborate on their implementation in thin film cells. Finally, we will discuss the prospects and potential of all-oxide photovoltaic cells based on electrodeposited, *p*-type cuprous oxide (Cu_2O) absorber.

Freitag, 17. Juni 2016, 14:00 Uhr
Seminarraum 2 der Fakultät für Chemie
Währinger Straße 42, 1090 Wien

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