



PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2011/2012

Montag, 30.01.2012, 12 Uhr c.t. H-NB

Functional Layers for Thin Film Inorganic Solar Cells: Plasma Processes

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Solar cells are devices which allow the conversion of sunlight directly into electricity by means of the photovoltaic (PV) effect. PV is presently recognized as one of the options to provide a significant contribution to the energy requirements in 2050, i.e. 30 TW, in a sustainable way. Presently, the PV industry is developing and two important challenges need to be addressed: the cost of electricity produced by PV, which is 10x higher than the electricity produced by conventional resources, and the increase in conversion efficiency.

This seminar will introduce the audience to the fundamentals and working principles of a solar cell, and will highlight the main (fundamental, as well as fabrication process-related) loss mechanisms in a solar cell. Furthermore, the so-called three generations of solar cells, and their efforts in addressing the issues of cost reduction and improvement in efficiency will be presented. In particular, by focusing on the 1st generation (i.e. crystalline silicon-based) and 2nd generation (thin film-based), the seminar will also address the role of plasma-based technologies in developing thin functional films for the improvement of the solar cell efficiency, or high growth rate processing solutions to meet the demands of low cost-high throughput. A few examples include: thin film silicon-based tandem solar cells to better harvest the solar spectrum, transparent conductive oxides to collect the charge carriers generated in the absorber layer, thin poly-crystalline silicon absorber layers.

Einführung: Prof. Dr. J. Benedikt

Die Fakultät lädt alle Interessierten herzlich ein.

Ab 11.45 Uhr Kaffee/Tee im Hörsaal