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## S E M I N A R

## aus

## Halbleiterphysik und Nanotechnologie

## Di, 15.11.2011, 11 Uhr c.t.
## Hörsaal für Physik

# "Microscopic Characterization of Nanostructured Silicon Thin Films for Solar Cells"


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Individual grains in silicon thin films prepared close to the border between the amorphous and microcrystalline growth have sizes from 10 to ~ 1000 nm. The grains may be aggregated in typical cones connected to each other via boundaries or surrounded by amorphous tissue. Macroscopic properties and also the operation of the devices based on nanostructured silicon are determined by the properties of structural components, their spatial arrangement and mutual interaction. Local variation of the internal fields are usually not taken into account for discussing the operation of thin film solar cells, in spite of the fact that both the thickness and spatial features are comparable to photon wavelengths, leading to pronounced near field effects. Conductive atomic-force microscopy (C-AFM) has been used to access the electrical properties on the nanometer scale. CAFM measurements were complemented by maps obtained by Raman microspectroscopy and novel photoconductive AFM (PC-AFM).

Research has been performed in collaboration with A. Vetushka, M. Ledinský, B. Rezek, J. Stuchlik, and J. Kočka.