

INM-KOLLOQUIUM

“WHAT CAN NANO REALLY DO FOR SOLAR?”

Prof. Dr. E.C. Garnett
Universität Amsterdam

Dienstag, 06.02.2018, 11.00 Uhr

INM, Leibniz-Saal, Campus D2 5
Gastgeber: Prof. Dr. Tobias Kraus

Over the past decade there has been extensive research into using nanostructures for solar cells. Although many interesting optical and electrical phenomena have been observed, nanostructured solar cells still have not exceeded (or even reached) the same efficiency level as their bulk counterparts. The goal of this talk is to describe the ways in which nanoscience can theoretically improve solar cells and outline the remaining fundamental and applied research necessary to realize such theoretical gains in practice.

The talk will consist of two parts. First, ways in which nanoscience can help reach the standard Shockley-Queisser efficiency limit (34%) will be discussed. In particular, new methods for making a variety of relevant monocrystalline materials will be presented. Besides enhancing the intrinsic performance, such monocrystalline systems also present ideal model systems for nanoscale characterization, which can help in identifying and mitigating remaining loss mechanisms. Furthermore, a new characterization technique will be described which allows for fair performance comparison between nanoscale macroscopic solar cells. Second, concepts for going beyond the 34% efficiency limit will be discussed. These include implementing directional emitting nanostructures that can reduce photon entropy loss as well as new designs for multijunction solar cells that take advantage of the unique properties of nanomaterials.

Wir laden 15 Minuten vor Beginn zu einem Get-together mit dem Referenten ein.

KONTAKT

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