



# PHYSIKALISCHES KOLLOQUIUM

Mittwoch, 22.10.2014, um 16:00 Uhr

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013



## Prof. Dr. Martijn Kemerink

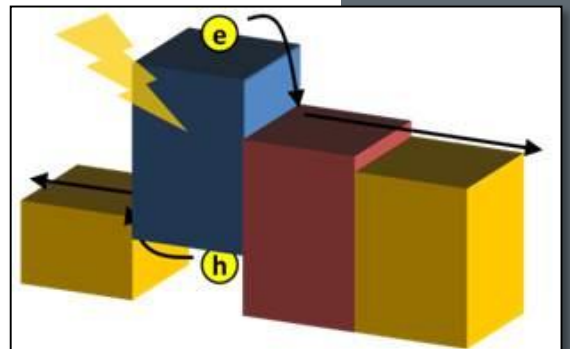
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## The two faces of relaxation in organic solar cells

*Solar cells based on bulk heterojunctions of organic semiconductors are a remarkable class of devices. After two decennia of intense research some of the principles of their functioning, like the mechanism that is responsible for the efficient generation of free charges, are still topic of intense debate. Likewise, it may seem surprising to an outsider that solar cells that convert incoming photons with near-unity efficiency into free charges still have typical efficiencies below 10%; the main reason for this are energy losses that are large compared to what is common in inorganic solar cells.*

*In this colloquium I will address some aspects of the above issues. In particular, I will discuss experiments and modeling results that focus on the role of the so-called energetic disorder that is characteristic for organic semiconductors. This disorder causes a slow relaxation process in which photogenerated charges can lose a substantial amount of energy before they are extracted from the device. The degree to which this energy loss can be avoided will be discussed. At the same time, this energetic relaxation enhances the efficiency of free charge generation by assisting in overcoming the long-range Coulomb interaction that binds the constituent charges in photoexcited excitons. The effects of short-range charge delocalization on this process will be discussed as well.*



Alle Zuhörer sind ab 15.45 Uhr zum Kaffee vor dem Hörsaal eingeladen.