

Speaker Abstracts Karlsruhe Days of Optics & Photonics



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Harnessing disorder for energy applications

Light management is key to design highly efficient solar cells, be it for collecting or for trapping sunlight. One challenge associated to photovoltaics is the need to develop light harvesting materials that are efficient over a broad spectral range and under various incidence angles. Here, structural disorder, often seen as a defect in engineered materials, can be purposely exploited to fulfill these requirements. The working principles of such disordered structures in different optical regimes will be introduced together with the fabrication routes developed at the KIT. As solar cells and light-emitting diodes are reciprocal devices, we will discuss how the concepts matured for photovoltaics can also benefit to light sources for improving their emission properties, for example in general lighting applications.