

Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research
The Swiss Institute for Dryland Environmental and Energy Research
Alexandre Yersin Department of Solar Energy and Environmental Physics

Title:

From quantum dots and halide perovskite nanoparticles to hybrid quantum dot-perovskite solar cells

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Abstract:

The study of colloidal semiconductor nanoparticles and their formation and transformation processes highlights the tremendous possibilities in their use in solar cells. I will first provide an overview of the current state of the art of colloidal semiconductor nanocrystal solar cells and the synthetic routes that led to their development. I will then present recent results on the formation and growth mechanism of cesium lead halide (CsPbX_3) nanocrystals which exhibit the tremendous effects of surface passivation on their growth and crystal habit. Reversible transformation (in solution) between CsPbX_3 and Cs_4PbX_6 , driven by small modifications of the acid-base ratio in solution reveal, on one hand, the rapid structural transformations these particles can undergo, and on the other point at routes to stabilize either phase. Finally, a new solar cell design using tin sulfide quantum dots to template a halide perovskite, somewhat analogous to bulk heterojunction cells, will be presented.

Date & Location:

**Tuesday, January 16, 2018, 11:00
Lecture room, Physics Building (ground floor)**

