Stanford University

Date: December 6, 2016 2:30pm 3:30pm
Location: JSCBB A108 3415 Colorado Ave, Boulder, CO 80303

Abstract:

In the last five years the power conversion efficiency of solar cells made with perovskite semiconductors has soared from less than 7% to over 22%. Only four other families of semiconductors have ever reached this efficiency. Perovskites are very attractiv e compared to those families because they can be deposited from solution at low cost and they have the right bandgaps to be used in tandem solar cells. In tandems one semiconductor harvests the photons in the solar spectrum that have higher energy and gene rates a large voltage while another semiconductor harvests the photons with lower energy. Using this strategy makes it possible to improve the efficiency by approximately 50%. In this seminar I will discuss:

- Progress towards demonstrating high -efficiency tandems with perovskites stacked on top of conventional silicon solar cells
- x New low band gap perovskites
- x The challenge of making perovskite solar cells stable and three big recent advances that have improved the stability by more than 10,000x
- x

and a Senior Fellow of the Precourt Institute for Energy. His research interests are developing new materia ls for smart windows and solar cells. He has taught courses on nanotechnology, nanocharacterization, organic semiconductors, polymer science and solar cells. He received his undergraduate degree in physics from Princeton University and his PhD degree in Ma terials Science from the University of California at Santa Barbara, where he did research on polymer lasers in the lab of Nobel Laureate Alan Heeger. He won the 2007 Materials Research Society Outstanding Young Investigator Award. He is a technical adviso r to Next Energy, PLANT PV, and Sinovia and his former students have started more than ten companies.

CAMPUS MAP: