



David P. Fenning

Assistant Professor, Nanoengineering Department
University of California, San Diego, USA

Dr. David P. Fenning is an Assistant Professor in NanoEngineering at UC San Diego, where his group researches materials for solar energy conversion and storage. Currently, his work focuses on defects and reliability in silicon and hybrid perovskite solar cells and CO₂ electrocatalysis for solar fuels. After completing his Ph.D. on silicon solar cell materials at MIT in 2013, he worked with the R&D team at 1366 Technologies Inc., followed by an MIT/Battelle postdoctoral fellowship in solar fuels. He joined the NanoEngineering department in 2015 and is a recipient of the American Chemical Society's PRF New Investigator award. He recently was recognized as a 2017 Hellman Fellow. His research is supported by the DOE SunShot Initiative and the California Energy Commission.

Will lecture on:

Shining (X-ray) Light on the Local Chemistry and Optoelectronic Properties of the Emergent Hybrid Perovskites

The hybrid organic-inorganic perovskites have attracted widespread interest for application in optoelectronics including solar cells, LEDs, lasing, and more because of their apparent defect tolerance and facile synthesis, in stark contrast to commercialized silicon and thin film technologies. In this talk, I will discuss how we are using the resolving power of synchrotron-based X-ray microscopy to investigate the relationship between defects in hybrid perovskites and their optoelectronic performance. Using a series of model materials with varying dimensionality and halide stoichiometry, we have studied the heterogeneity in local chemistry in these films and its significant impact on charge collection. I will also share insights from our recent in situ nanoprobe investigations of non-stoichiometry, defect kinetics, and stability in perovskite material and devices. By understanding and mitigating defects in the bulk and at interfaces, we aim to systematically accelerate the development of these optoelectronic materials.

Monday, August 14th, 2017, 10:00am

Wolfson Department of Chemical Engineering

Lecture Hall 6, 2nd floor

Technion City, Haifa