



CHTW Presents:

Functional Materials for Energy and Photonics

Dr. Marina S. Leite (UC Davis)

Friday, September 30, 2022, at 12 PM

Livestreaming in CHTM, Room 103

Zoom ID: 980 8635 8340, Passcode 562084

ABSTRACT

My research group is engaged in fundamental and applied research in emerging materials for energy harvesting and storage, and photonics. To reveal how the electrical and optical responses vary at relevant length scales, we acquire nanoscale resolved “photographs” and “movies” of the performance of inhomogeneous materials for photovoltaics, by means of sophisticated nanospectroscopic methods that we have developed. Our measurements provide a tomography of charge carrier generation, recombination, and collection within materials ranging from well-established thin films to emerging halide perovskites. We probe the correlation between perovskites’ stability and the chemical changes that occur when the material is exposed to humidity, oxygen, temperature, light, and bias. We have recently implemented machine learning algorithms to predict material degradation with accuracy >90%. Concerning optical materials, we design and probe metallic materials beyond noble metals. We overcome the constraint imposed by the pre-defined dielectric functions of metals through alloying, where we have recently developed a library of their optical properties. Moreover, we recently established a platform based on earth-abundant materials for reconfigurable and biodegradable photonics. Overall, our approach enables new materials with *on demand* optical response for applications ranging from photocatalysis to color displays



Speaker Bio: Leite is an Associate Professor in Materials Science and Engineering at UC Davis. She has delivered >150 invited talks at conferences and research institutions around the globe, and was one of the Chairs of the 2021 Fall Materials Research Society Meeting. Leite is the awardee of the 2022 UC Davis Chancellor’s Fellowship, the 2016 APS Ovshinsky Sustainable Energy Fellowship from the American Physical Society (APS) and of the 2014 Maryland Academy of Sciences Outstanding Young Scientist Award. Before joining UC Davis, Leite was an associate professor at the University of Maryland. She also worked for two years at NIST and was a post-doctoral scholar at Caltech. Under her guidance, the researchers in the group have received 79 awards in the last nine years, including 10 NSF graduate fellowships. Leite’s research has been funded by NSF-MMN, NSF-EPMD, NSF-SSMC, DARPA, ARO, NSF-MRI, ARL, and Sandia.

Questions? Contact:
fcavallo@unm.edu

Pizza will be served

