IEEE METROPOLITAN LOS ANGELES SECTION
PHOTONICS SOCIETY CHAPTER

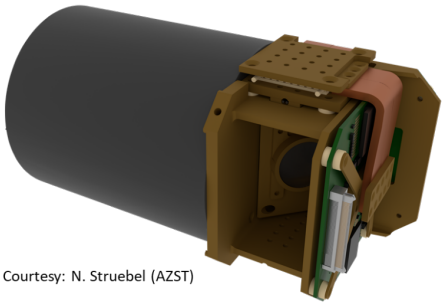
Advanced Technology Enabling CubeSat and Flagship Missions

November 21, 2019 (Thursday), 5:30 pm
Moore Laboratory of Engineering, Room B270
California Institute of Technology, Pasadena, CA 91109

AGENDA

5:30 pm – Refreshments/Pizza
6:00 pm – Announcements
6:10 pm – Lecture, Dr. Jewell
7:00 pm – Discussions
7:30 pm – Adjournment

IEEE Metro-LA Photonics Chapter special lecture event


Courtesy: N. Struebel (AZST)

Significant advances in instrument technologies are enabling exciting new science in astrophysics, planetary science, and heliophysics. For example, JPL's 2D-doping is a band structure engineering process that results in near-100% internal quantum efficiency and ultrastability, and can be applied to virtually any silicon-based detector architecture. When paired with advanced UV coatings, 2D-doped detectors exhibit record performance. In this talk I will discuss these technologies and their application to the Star-Planet Activity Research CubeSat (SPARCS), currently in development. SPARCS will be a 6U CubeSat whose mission will be to observe M stars in two ultraviolet (UV) bands—SPARCS far UV (S-FUV: 153-171 nm) and SPARCS near UV (S-NUV: 260-300 nm). SPARCS would be the first mission to provide time-dependent spectral slope, intensity and evolution of M dwarf stellar radiation; measurements that are critical to deciphering observations of planetary atmosphere from missions such as JWST.

Dr. April D. Jewell is a member of the Technical Staff in JPL's *Advanced Detectors, Systems and Nanoscience Group*. She has degrees from George Washington University (BS, Chemistry) and Tufts University (PhD, Chemistry). Her work is focused on post-fabrication processing and optimization techniques for silicon-based imagers with the goal of fine-tuning a detector's response for project- or mission-specific applications. Dr. Jewell's work is a combination of material science and process development; she uses molecular beam epitaxy (MBE) for surface band structure engineering and atomic layer deposition (ALD) for nanometer-scale coatings and filters. Dr. Jewell's surface science background allows her to develop MBE and ALD processes that are general enough that they can be applied to virtually any silicon-based imager. Dr. Jewell is a recent recipient of SPIE's Rising Researcher Award and JPL's Charles Elachi Award for Early Career Achievement.

Directions and Parking: Parking on the Caltech campus is accessible from Michigan Avenue, south of Del Mar Avenue. Parking is free after 5 pm. Moore Lab location:
http://www.caltech.edu/map/the-gordon-and-betty-moore-laboratory-of-engineering
Reservation: Please RSVP with your IEEE membership # to shouleh.nikzad@jpl.nasa.gov You are welcome to bring your spouse as a guest. Non-members can go to www.ieee.org/join, then send your membership number.