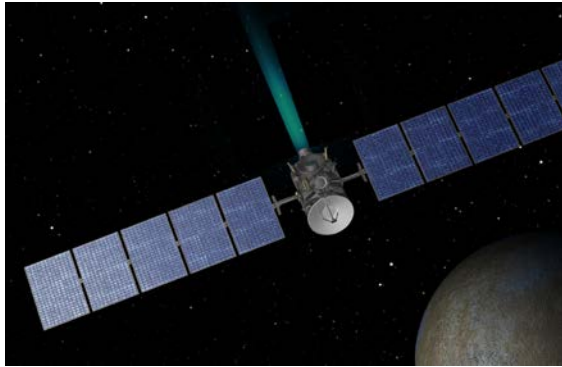




AEROSPACE ENGINEERING SCIENCES

Seminar



Richard Wirz

Associate Professor
University of California, Los Angeles

Micro Electric Propulsion Developing micro-scale plasma thrusters for future space missions

Electric Propulsion (EP) enables space exploration and Earth orbiting missions that were previously impossible with conventional chemical propulsion. With the miniaturization of spacecraft and the increasing importance of distributed spacecraft formations, there is a rapidly growing need for micro-scale electric propulsion to perform low-cost space exploration and Earth science missions

In this talk, Prof. Wirz will discuss the missions enabled by micro-electric propulsion and the research needed to demonstrate these devices for both small and large spacecraft. To this end, he will present his **Plasma & Space Propulsion Laboratory's** efforts investigating: (1) EP Technology and the challenges for miniaturization, (2) the Applied Plasma Science related to these challenges, and (3) the more fundamental Plasma Physics related to plasma behavior and confinement at these scales.

This talk will describe the labs efforts to develop miniature EP devices, including: the world's first and most efficient noble gas miniature ion thruster (MiXI), and the first-ever Magnetically Shielded Miniature (MaSMi) Hall thruster. Since most EP devices, especially at small-scale, exhibit complex plasma physics phenomena that are poorly captured by current theory and models, these efforts include the development of simple, canonical experiments and related theory/models that are tailored specifically to the development and validation of robust and predictive EP plasma models. At the end of the talk, Prof. Wirz will give a brief overview of his Energy Innovation Laboratory's efforts in large-scale energy storage and advanced wind turbine blade design.

Wednesday, April 27, 2016

12:00pm

Onizuka Conference Room

Bio: **Richard Wirz** is an Associate Professor in the UCLA Department of Mechanical & Aerospace Engineering, where he is the Director of the Plasma & Space Propulsion Laboratory and the Energy Innovation Laboratory. He holds a joint appointment in the Electric Propulsion Group at NASA Jet Propulsion Lab (JPL). He received his Ph.D. and M.S. degrees from the California Institute of Technology (Caltech) and two B.S. degrees from Virginia Tech. He has multiple NASA awards for accomplishments related to new electric propulsion technologies. Recently, he was selected as the Energy Lead for the Steering Committee of the UCLA campus-wide Energy/Water/Ecosystem Grand Challenge. He has also received school-wide and departmental awards for teaching excellence.

