



American Institute of Aeronautics and Astronautics

St. Louis Section

Tuesday, February 21, 2023

Boeing Bldg. 100 Briefing Center

6300 James S. McDonnell Blvd

Berkeley, MO 63134

In-person & virtual options available

Aerospace Plasma Research at Missouri S&T: From Space Propulsion to Lunar Exploration

Presented by Dr. Daoru (Frank) Han, Assistant Professor of Aerospace Engineering at Missouri S&T.



Plasma is the fourth state of matter with a wide range of applications in aerospace. In this talk, I will briefly describe our recent work focused on space environment plasma (low temperature, near-collisionless) with applications to space electric propulsion and exploration of the Moon including plasma-surface-dust interactions and resource utilization. A suite of kinetic particle modeling tools have been developed to enable high fidelity simulations, while a ground test facility

including a large vacuum chamber with plasma sources are being upgraded to carry out vacuum plasma experiments. Ongoing projects include multi-physics modeling of electrospray thrusters, lunar plasma-surface-dust interactions, and beneficiation of lunar regolith for in-situ resource utilization (ISRU).

Dr. Daoru (Frank) Han is currently an Assistant Professor of Aerospace Engineering at Missouri University of Science and Technology (Missouri S&T). His research interests include plasma dynamics with applications to space science and technology, including plasma interactions on the lunar/planetary surface, spacecraft charging, advanced space propulsion, and plasma-materials interactions. Dr. Han received his B.E. degree in Aeronautical Propulsion in 2009 from Nanjing University of Aeronautics and Astronautics, and M.S. in Aerospace Engineering from Missouri S&T in 2011, and Ph.D. in Astronautical Engineering from the University of Southern California in 2015. Before joining Missouri S&T in 2017, he was an Assistant Research Professor at WPI's Aerospace Engineering from 2016 to 2017.

Schedule

5:00 – 5:30 Sign-in / social

5:30 – 6:30 Presentation

6:30 – 7:00 Q&A

Menu

Sandwiches and
Light Refreshments

Ticket Price

Free

RSVP by February 17 using our Jotform

<https://form.jotform.com/230375728222151>

Contact [John and Alex](#) for questions

