

ASTRONOMY COLLOQUIUM

**DR. LAUREN E. MC KEOWN
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Dr. Lauren Mc Keown is an Assistant Professor in Planetary Science within the Department of Physics at the University of Central Florida where she is currently building her FROSTIE icy planetary surface processes lab. Prior to UCF, she was a Postdoctoral Research Fellow at NASA's Jet Propulsion Laboratory, held appointments at The Natural History Museum and University of Cambridge in the UK and graduated with a PhD in Planetary Science from Trinity College Dublin. Her research focuses on how planetary surfaces, particularly on Mars, Europa and small bodies, evolve through physical processes like sublimation, transient liquid brine activity, impacts and atmosphere-surface interactions. Her work combines laboratory experiments in thermal-vacuum chambers, simulant development and analysis, remote sensing, and terrestrial field analogs to investigate how ice interacts with regolith and other surface materials under extraterrestrial conditions. She is especially interested in how volatile phase-change dynamics can shape landscapes across the solar system and what these processes can tell us about environmental change, habitability, and geological history.

WHEN:

Monday, April 27th,
3:45 PM

WHERE:

Physical Sciences,
Bldg. 19,
Room 103



SPIDERS, PLUMES AND OTHER WEIRD AND WONDERFUL ICY GEOMORPHOLOGY ON MARS, EUROPA AND IN THE LABORATORY: EXPERIMENTAL ANALOG APPROACHES TO UNDERSTAND SURFACE AND SUBSURFACE VOLATILE ACTIVITY



Remote observations of landforms developed on icy planetary surfaces, for example Mars, icy moons such as Europa and Enceladus, and small bodies Ceres and Vesta have elucidated the role that volatile phase change has in surface modification. In turn, whether endogenous or exogenous, better understanding the formation of such features can provide insight to the environments under which they form. Such an understanding is crucial for lander development, for example in optimizing instruments for surface sample acquisition and handling. While decades of empirical measurements of field analogs here on Earth have aided in growing our understanding, environmental conditions are often vastly different on airless bodies or for planetary surfaces under tenuous atmospheres. Therefore, experiments investigating the interaction between volatiles undergoing phase change and planetary regolith simulants, while limited in scale, are necessary to bridge the gap between remote observations and numerical models. In this talk, I will review some experimental studies I have conducted to investigate the formation of icy surface features and to develop simulants, encompassing Mars, Europa, Enceladus and small bodies. I will also discuss my new laboratory at UCF: the Facility for Research Observing Simulated Topography of Icy Environments (FROSTIE) and future work that my growing group will conduct in this area.

