

From Atoms to Exospheres: Atomic-scale Modeling to Better Understand the Exosphere-Surface Connection on the Moon and Mercury

For nearly 40 years, studies of the exospheres of Mercury, the Moon, and other airless bodies have been hindered because of uncertainties in our understanding of the surface processes influencing exosphere formation. When meteoroids, the solar wind, and photons impinge onto the surfaces of airless bodies they can produce a thin, non-collisional, atmosphere. Although such surface bound exospheres are thought to be the most common class of atmospheres in our Solar System, they remain poorly understood to date. Understanding the different sources to these exospheres is crucial for understanding the dynamics of volatiles on the Moon and other bodies with surface boundary exospheres. In this talk, I will discuss how, in collaboration with NASA, AMNH, Columbia University, and Boston University we are developing a theoretical approach across multiple dimensional scales to better understand the connection between the surface and the exosphere. Specifically, I will discuss how atomic scale modelling can be used to better understand the physics and energetics underlying ejection processes from minerals relevant to planetary science.

**Thursday April 17th****3:30 - 4:30 p.m.****725 Commonwealth Ave | Room 502****Dr. Liam S. Morrissey****Memorial University**