LABORATORY INVESTIGATION OF ELECTROSTATIC DUST TRANSPORT AND REGOLITH SIZE-SORTING ON AIRLESS BODIES. E. Opp¹, X. Wang¹, H.-W. Hsu¹ and M. Horanyi¹, ¹LASP, University of Colorado, Boulder, CO 80303 (Elena.Opp@colorado.edu).

Introduction: Electrostatic dust transport has been suggested as plausible causes for various phenomena observed on airless bodies. For example, the smooth ponded deposits located within craters on the Near Earth Asteroid 433 Eros. In this work, we carry out laboratory experiments to examine the material dependence of the electrostatic dust lofting activity using three composition types of fine-grained material – a lunar simulant, an asteroid simulant, and peridot powder. By characterizing the size distribution of electrostatic lofted dust with different materials, our experiments will inform how different electrostatic dust activity could be on various airless bodies.

In addition, these experiments also allow us to simulate and characterize the electrostatic dust size-sorting effect under controlled laboratory conditions. Previous laboratory experiments show that smaller grains are more likely to be transported and their lofting speeds are likely higher. On airless bodies, smaller regolith grains are thus more likely to be transported and/or removed, resulting in a size-sorted regolith caused by electrostatic processing. We will present visible-to-near infrared reflectance spectra of dusty surfaces before and after electrostatic processing. Our measurements will provide quantitative information to examine the viability of studying electrostatic dust transport on airless bodies with remote sensing techniques.