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# PHOTOEMISSION FROM LUNAR DUST SIMULANT AND SURFACES OF A LUNAR ROVER

**Abstract**

Photoemission from the Moon's surface and the resulting formation of a photo-electron sheath is cited as the dominating force in driving lunar dust levitation and transport. One of the scientific objectives of the Rashid rover of the Emirates Lunar Mission (see Almarzooqi, this conference) is to measure in-situ the lunar photo-electron sheath. The difficulty in acquiring these measurements will be to disentangle between photo-electrons originating from the lunar surface and those generated by the rover surfaces. To overcome this difficulty, numerical modeling of such a mixed sheath requires the knowledge of the photo-electron yield and work function of the rover surface materials as well as the lunar soil. Here, we are reporting the progress and results of these quantities measured on reflective spacecraft surfaces such as ITO-coated thermal-control tape, and on the Lunar Highlands Dust simulant. The results should allow for quantifying the electron background such instrument would create, and provide useful information whether such moondust simulant can be reliably used for studying dust dynamics experimentally on Earth. The data is a compilation of work partly done at New York University Abu Dhabi using a photoelectron extraction monitor, and partly at a synchrotron light source at Elettra Trieste, Italy. A proposal has been made to make use of NASA's real lunar sample in order to measure its photoelectric yield as a function of photon energy and incident angle. Such data would update input into numerical simulations done in preparation for other missions towards the Moon as well.