



Photoemission from glass dust grains: First results

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Dust grains are widely present in both interstellar space as well as on numerous space objects like the Moon or asteroids. Quite often, the dust consists of large amount of SiO_2 . While every object in the space is exposed to impacting particles from the Sun (photons, electrons, and ions), the dust grains become charged. Interesting phenomena (e.g., Lunar horizon glow, dust fountains, and levitation) may appear as a consequence of different conditions at the light and dark lunar sides. Although they were observed already during Apollo and Surveyor missions, these effects are still not fully understood.

We present laboratory measurements carried on the single SiO_2 grain of micron size caught in the electrodynamic trap and exposed to UV and electron irradiations. Analyzing the dust motion (oscillation frequency and position), we can evaluate its specific charge. In this paper, we are comparing equilibrium charge-to-mass ratios given by a secondary electron emission induced by 400 eV electrons (about a maximum of the secondary emission) and by the UV-induced photoemission from the He I lamp (≈ 21 eV). Initial results indicate that the resulting charge is about twice larger for photoemission.