



Secondary emission from Martian soil simulant

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Growing interest in dust charging physics in the recent years is partially connected with several expected lander missions to the Moon, Mars, and Mercury in a near future. In support of these missions, simulations in the laboratory are potential tools to optimize in situ exploration and measurements. We have investigated properties of Martian soil simulant (JSC Mars-1) using electron microscopy as well as the dust charging experiment, where a single dust grain is trapped in a vacuum chamber and its electronic properties can be studied. Obtained results are compared with measurements on spherical glass grains. The main attention is focused on secondary emission measurements and these results are compared with the new numerical model that includes non-spherical geometry. The measurements reveal that the grain potential is determined by the mean atomic number of the grain material at low (below 1keV) primary energies but it can reach the limit of the field ion emission if the grain is irradiated by energetic electrons.