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Lunar dust simulants (LHT, JSC, MLS) compared in the frame of secondary emission

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Lunar regolith dust covers a whole surface of the Moon being heavily bombarded by all kinds of particles – photons, electrons, ions. The properties of dust and its charging are the fundamental knowledge for future Moon missions. Different types of simulants of the Lunar regolith were manufactured (JSC, MLS, and recently LHT) for laboratory investigations. This paper presents a series of measurements of secondary electron emission from these three types of simulants. The single grain is levitating and is exposed to the particle beam(s) in our experiment (based on a quadrupole trap). A temporal evolution of the grain charge-to-mass is recorded in course of charging/discharging processes. Based on these records, we can determine the grain specific charge and characteristics of the secondary emission processes. Experimental results from particular simulants are compared with each other and also with the Monte-Carlo simulations.