

## Electrical properties of Itokawa grains returned by Hayabusa

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Although a wealth of data exists on the properties of lunar regolith samples returned by Apollo missions e.g. [1,2] as well as investigations on terrestrial minerals, no such experimental data have yet been collected on asteroids material. In this study we present the measured secondary electron emission characteristics from areas of samples RA-QD02-0126-02 and RA-QD02-0136-14 [3] under electronic irradiation within the range 200eV to 5keV. Such measurements are related to surface structure, orientation and mineralogy, and compared to reference measurements including single grains and powders of reference materials of high purity, as well as terrestrial minerals and planetary analogs (see example Figure 1). In addition we observe the build-up of local electric field patterns arising from surface electrostatic charging in relation with grains morphology. Consequences on our understanding of regolith properties and electrostatic effects on planetary regolith will be discussed.

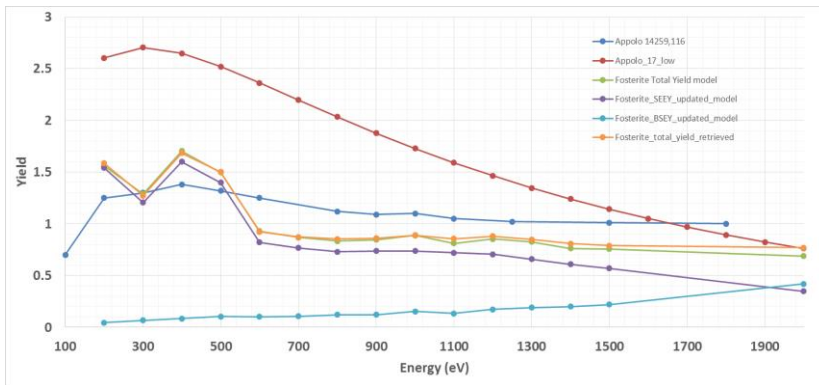


Figure 1: Secondary emission yields measured from Fosterite grains

### References:

- [1] B. Feuerbacher et al, *Proceedings of the Third Lunar Science Conference*, 1972: Vol. 3, pp. 2655-2663
- [2] D.W. Strangway et al, *Earth and Planetary Science Letters*, 1972, Volume 16, Issue 2, pages 275-281,
- [3] Nakamura et al. , 2014, *Meteorit Planet Sci*, 49: 215–227. 10.1111/maps.12247