

## Study on X-ray Fluorescence for Future Lunar Landing Mission - Surface Roughness and Ratios of Characteristic X-ray -

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Landing and roving observation for planetary bodies provides more detailed local information of geochemistry, mineralogy and petrology with remote sensing observation[1]. An X-Ray Fluorescence spectroscopy (XRF) is a powerful method on/around the landing point in-situ measurement of chemical abundance. Lunar surface is so heavily weathered by meteorites, micrometeorites, the solar wind, and the cosmic rays that surface grindings of lunar samples should be performed by a rock abrasion tool to remove the weathered surface before the XRF measurements. The relations between surface roughness of sample and ratios of observed characteristic X-ray intensity are studied on the basis of both experiments and simulations[2, 3]. In this presentation, the results of experiments and simulations of grinding level needed for the XRF measurements on planetary surface are compared and discussed.

[1] T. Hashimoto et al., 2011, Acta Astronautica 68, 1386-1391. [2] H. Kusano et al., 2013, Proc. SPIE 8852, 88520B. [3] M. Naito et al., Nucl. Instrum. Methods Phys. A, to be published.

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