

INFLUENCE OF THE SOLAR WIND PROTON IN MINERALS CONTAINED C-TYPE ASTEROIDS.

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Introduction: Recent years, it was suggested that the water is formed by interaction between solar wind protons and minerals at lunar surface, e.g., [1], [2]. There is a strong possibility that the interaction affects surface of another airless bodies, e.g., [3], [4]. We must understand this weathering effect for small airless body explorations.

Method: We simulated the solar wind irradiation on the minerals that might be contained in C-type asteroids which is the target of HAYABUSA-2 project. The simulation of irradiation of solar wind protons was achieved using ion implantation device at WERC, Fukui. This device can irradiate H_2^+ beam with 10 keV. The irradiation chamber was drew vacuum under 1×10^{-5} Pa. The total amount of H_2^+ was 10^{18} ion/cm². After irradiated the spectra were measured using FTIR, which resolution was 2.0 cm^{-1} .

Results: The $3 \mu\text{m}$ region of reflectance spectra of minerals contained in C-type asteroid was altered by proton implantation. Their change was relatively simple in olivine that is anhydrous minerals. Hydrated minerals, antigorite, showed conspicuous change at the bands related to bonding state of -OH. In this study, we showed that the alteration of feature related with OH/H₂O is different from each minerals.

[1] Pieters C. M. 2009. *Science* 326:568–572. [2] Sunshine J. M. 2009. *Science* 326:565–568. [3] Clark R. N. 2009. *Science* 326:562–564. [4] Granahan J. C. 2014. Abstract #1092. 45th Lunar and Planetary Science Conference.