

Regolith on iron bodies

*Akiko Nakamura¹, Ryo Ogawa¹, Tomomi Omura¹, Masato Kiuchi¹, Ayako Suzuki², Sunao Hasegawa²

1. Graduate School of Science, Kobe University, 2. Japan Aerospace Exploration Agency

Regolith particles on brittle bodies are formed by impact cratering, impact shattering of blocks on the surface, and thermal fatigue. Regolith on iron bodies is also expected on the surface of iron bodies, based on laboratory impact cratering experiments on iron targets and observation of ejecta by a high-speed camera (Katsura et al., 2011). In this previous study, we also investigated the crater size formed on iron regolith surface using spherical iron particles of 400 micron in diameter. We found that the depth-to-diameter ratio of the crater on iron regolith was slightly deeper than the one on the similar size spherical glass particles and that the Pi-group scaling for the crater volume on the target of glass particles is applicable to the craters on the target of the iron spherical particles.

However, the fragments collected from impact cratering experiments of Gibeon iron meteorite and steel (SS400) targets (Ogawa et al., in this meeting) have irregular shape and thinner than usual rocky fragments. We will discuss on the shape of iron fragments from impact experiments and its possible effect on the cratering efficiency on iron regolith.

Keywords: regolith, impact, iron meteorite, asteroids