Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

PPS004-04 Room: 201A Time: May 25 09:45-10:00

Experimental study on the impact disruption of rubble pile bodies

Yukihiro Fujita[1*], Masahiko Arakawa[1], Koji Dohi[1]

[1]Nagoya University

Impact disruption of the rubble-pile target was studied to clarify the reaccumulation condition of rubble-pile bodies in the solar system. The nylon projectile accelerated up to 2 k/m by the two-stage light gas gun impacted on the rubble-pile targets composed of the glass bead with the diameter of 7, 10 and 16mm. We observed the catastrophic disruption of the rubble pile targets by a high-speed video camera and recovered the impact fragments to obtain the size distribution. As a result, it was found that the rubble-pile targets were more resistant to disruption and has a lower antipodal velocity compared to the homogeneous targets such as quartz. We discussed the disruption mechanism of the rubble-pile target in terms of the secondary impact by the fragments and the implication for the reaccumulation process of small rocky bodies.

Keywords: rubble pile bodies, impact disruption, minor body, planetesimals, re-accumulation, size distribution of impact fragments