
 Oral | Symbol U (Union) | Union

[U-06_28AM1]New Progress toward the Understanding of Small Solar System Bodies

Convener:*Masahiko Arakawa(Graduate School of Science, Kobe University), Taishi Nakamoto(Tokyo Institute of Technology), Sei-ichiro WATANABE(Division of Earth and Planetary Sciences, Graduate School of Science, Nagoya University), Masanao Abe(Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency), MASATERU ISHIGURO(Department of Physics and Astronomy, Seoul National University), Chair:Masahiko Arakawa(Graduate School of Science, Kobe University)

Mon. Apr 28, 2014 9:00 AM - 10:45 AM 503 (5F)

This session is aimed at setting up a forum to discuss how we can make progresses in our understanding of the solar system evolution with our hands on data. Presentations related to the science of the small bodies in the solar system (satellites, asteroids, comets, interplanetary dust particles, trans-Neptunian objects, and planetesimals) are invited. In addition to the extensive astronomical/remote-sensing observations and theoretical works, Hayabusa has brought us samples back from Itokawa (S-type asteroid) for unprecedentedly detailed analysis. The results of the Hayabusa sample initial analysis do prove that analysis of returned samples will play a key role in our future study of the solar system evolution. While the mission preparation of Hayabusa2, which is targeted at a more primordial asteroid than Itokawa (1999JU3, C-type), is being matured, expectation of building a new gateway to biology-flavored topics via organic material and aqueous alteration analysis is ramping up. In this session, after summarizing the cutting-edge results obtained by various studies, including the impact physics important for the asteroid evolution, we will discuss the future shape of the study of the solar system evolution.

10:30 AM - 10:45 AM

[U06-P06_PG]How to detect a small crater produced by Small Carry-on Impactor (SCI) using Thermal InfraRed Camera (TIR)

3-min talk in an oral session

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Keywords:Hayabusa-2, Impact, SCI, TIR, cater thermal model, asteroid

In Hayabusa-2 mission, a crater will be formed on the surface of a C-type asteroid 1999JU3 using Small Carry-on Impactor (SCI) and the crater should be quickly detected from the mother ship. The detection, however, will become difficult when the crater is very small with a diameter of only 30 cm, near to the resolution limit of on-board cameras. On the other hand, Thermal InfraRed Camera (TIR) mounted on Hayabusa-2 has a possibility to detect such a small crater even if the crater size is sub-pixel of TIR resolution, because the temperature on the surface of a small crater is expected to be different from that around the crater. We, therefore, have started examination about the possibility and method to detect a SCI-formed small crater using TIR. In this presentation, we introduce the basic idea and the preliminary results of our modeling.