

## Reflectance Spectra of Jovian Small Satellites and Implication of their Origin

TAKATO, Naruhisa<sup>1\*</sup> ; TERADA, Hiroshi<sup>1</sup> ; YOSHIDA, Fumi<sup>1</sup> ; OHTSUKI, Keiji<sup>2</sup>

<sup>1</sup>National Astronomical Observatory of Japan, <sup>2</sup>Kobe Univ.

### Abstract

Jupiter has many small satellites other than the four giant Galilean satellites. Four of them revolve inside Io's orbit and others revolve outside Calisto's orbit. Based on the similarities of their photometric and orbital properties, these small satellites are thought to be captured asteroids. However, it is still unknown where and when these satellites were captured by Jupiter. We can reveal the dynamic history of our solar system evolution by investigating these questions.

Here, we have made optical spectroscopies of 11 small satellites which were not yet taxonomically classified by spectroscopy so far. We compared the number ratio of C- and X-type to D-type of the 11 satellites, and the Hilda and Trojan groups observed recently by Grav et al. (2012) as a function of diameter. We found that the diameter-(C,X)/D relation of the Jovian irregular satellites is similar to that of Hilda's, not Trojan's. This result suggests that the Jovian irregulars and the Hilda members originate from the same source of asteroids.

We also observed the 3.05  $\mu\text{m}$  narrow-band photometry of the inner small satellite Thebe and found that there is absorption. This can be attributed to hydrated minerals.

Keywords: satellites, Jupiter, spectrum, Hilda group, Trojan