



Observation of ions from the Moon by MAP-PACE IMA onboard SELENE(KAGUYA)

Shoichiro Yokota (1), Yoshifumi Saito (1), Takaaki Tanaka (1), Kazushi Asamura (1), Masaki Nishino (1), and Hideo Tsunakawa (2)

(1) ISAS/JAXA, Space Plasma Phys., Sagamihara, Japan (yokota@stp.isas.jaxa.jp), (2) Tokyo Institute of Technology

The Moon has no global intrinsic magnetic field and only has a very thin atmosphere. Ion measurements made from lunar orbit give us the information regarding interactions between the solar wind and the planetary surface. The ion mass spectrometry also provides the surface composition and the source and loss mechanisms of planetary tenuous atmospheres. An ion energy mass spectrometer MAP-PACE IMA onboard a lunar orbiter SELENE(KAGUYA) has detected low-energy ions from the Moon at an altitude of 100 km. IMA has identified ion species of He⁺, C⁺, O⁺, Na⁺, K⁺ and Ar⁺. The measurements of ions from the Moon enable us to continuously monitor the lunar exospheres. The 1.5-year observation of SELENE(KAGUYA) shows that the ions from the Moon have been detected both when the Moon is exposed to the solar wind and when it is in the Earth's lobe region. The observation suggests that the solar wind is not the dominant source mechanism for the lunar exospheres. Moreover, the MAP-PACE IMA shows the dependence on the solar zenith angle and the dawn-dusk asymmetry. We report the features of the lunar exospheres obtained by the SELENE(KAGUYA) observation and discuss the source mechanism of the lunar exospheres.