

**R006-28**

**A 会場 : 9/26 AM2 (10:45-12:30)**

**12:15~12:30**

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## **Terrestrial-origin O<sup>+</sup> ions below 1 keV near the Moon measured with the KAGUYA satellite**

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Currently, lunar exploration is being planned by many countries. Among them, NASA plans to build a near-lunar manned base “Gateway” as part of a lunar exploration program called the Artemis Program. One of the main objectives of the Gateway is to elucidate the ion composition around the Moon. Prior to the launch of the Gateway, it is important to investigate the ion composition around the Moon using data from the lunar orbiter KAGUYA, which was launched by Japan in 2007. Results of such studies will be useful for a future analysis of the Gateway data. According to a previous study using the KAGUYA data by Terada et al. [2017], O<sup>+</sup> ions with energies of 1 – 10 keV, which are considered to be accelerated ions of Earth origin, were abundant only when the Moon was located within the Earth’s plasma sheet. O<sup>+</sup> ions with energies below 1 keV were often observed when KAGUYA was positioned on the dayside of the Moon, and thus were concluded to be ions of lunar origin. This previous study examined in detail only one particular day (April 21, 2008) when the Moon was located within the Earth’s magnetotail. However, it is possible that some O<sup>+</sup> ions with energies below 1 keV are also of terrestrial origin. In this study, we analyze O<sup>+</sup> ions with energies below 1 keV for two typical events when the Moon was located within the magnetic lobe. It is found in three time intervals (14 – 21 UT on June 19, 2008, 14 – 24 UT on June 7, 2009, and 11 – 12 UT on June 8, 2009) that O<sup>+</sup> ions coming into the polar angle of 0 degree – 22.5 degree of the PACE/IMA instrument have larger counts than those into the polar angle of 67.5 degree – 90 degree, indicating that these O<sup>+</sup> ions are possibly terrestrial origin. We also statistically investigate the correlation between the Earth’s geomagnetic activity and the difference of the count ratios of O<sup>+</sup> ions to the moon ions (Na<sup>+</sup> and Al<sup>+</sup>) between the polar angles 0 degree – 22.5 degree and 67.5 degree – 90 degree using the whole mission data from KAGUYA between October 4, 2007 and June 11, 2009. In presentation, we will discuss the contribution of the low-energy O<sup>+</sup> ions of terrestrial origin to the lunar environment.