月周回衛星「かぐや」による地球起源酸素イオンの観測
KAGUYA observation of terrestrial oxygen transported to the Moon

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Oxygen, the most abundant element of Earth and Moon, is a key element to understand the various processes in the Solar system, since it behaves not only as gaseous phase but also as the solid phase (silicates). Here, we report observations from the Japanese spacecraft Kaguya of significant 1-10 keV O^+ ions only when the Moon was in the Earth’s plasma sheet. Considering the valence and energy of observed ions, we conclude that terrestrial oxygen has been transported to the Moon from the Earth’s upper atmosphere (at least 2.6 x 10^4 ions cm^{-2} sec^{-1}). This new finding could be a clue to understand the complicated fractionation of oxygen isotopic composition of the very surface of lunar regolith (particularly the provenance of a ^{16}O-poor component), which has been a big issue in the Earth and Planetary science.

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