

특별세션 논문초록

Preliminary Analyses of Asteroid Bennu Samples Returned by NASA's OSIRIS-REx Mission

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논문초록

NASA's OSIRIS-REx mission returned ~122 g of pristine carbonaceous regolith from Bennu on September 24, 2023. The science team is performing analyses of the mineralogy, chemical and isotopic compositions, and physical properties of the samples. The returned samples consist of particles ranging up to 3.5 cm in size with angular and hummocky morphologies predominating. Reflectance spectra over the visible and infrared wavelengths collected during the spacecraft encounter contained features indicating abundant hydrated phyllosilicates, carbonates, magnetite, organic matter, and rare anhydrous silicates. Laboratory analyses confirmed these detections and identified several other major and minor phases including abundant FeNi sulfides, minor hydrated Mg-rich phosphates as encrustations and in veins, and presolar grains. The Bennu samples show evidence for extensive aqueous alteration and resemble the rare and chemically primitive CI carbonaceous chondrites and samples returned from Ryugu by JAXA's Hayabusa2 mission. Samples of Bennu's uppermost surface, collected by contact pads, help us to understand how recent impacts and irradiation processes have changed the optical properties of Bennu surface materials measured by remote sensing. The analyses thus far highlight the value of sample return by illustrating the pristine nature of the samples compared to meteorites that have been compromised and altered by exposure to the terrestrial environment.

가. 발표분야 : ④ 우리나라 행성과학의 현재와 미래 II

나. 발표형식 : ① 구두발표(포스터발표 불가) ② 구두발표(포스터발표 가능)
 ③ 포스터발표(구두발표 불가) ④ 포스터발표(구두발표 가능)

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