Spectral variability and mineral abundances along Chang'E-4 Yutu-2 rover's traverse

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The Chang'E-4 has successfully landed at Von Kármán crater on the far side of the Moon on January 3, 2019, and its Yutu-2 rover has explored the lunar surface for more than one year and traversed over 300 m. The Visible and Near-infrared Imaging Spectrometer (VNIS) on board the rover provides us an excellent opportunity to study the mineralogy of Von Kármán crater located in South Pole-Aitken (SPA) impact basin through *in situ* measurements [1, 2]. Using the visible and near-infrared data from the the rover, we studied spectral variability of the lunar regolith at the landing site and derived mineral abundances along rover's traverse. These analyses provide important clues on the evolution history of the region.

Our results show that the lunar soils contains about 10% olivine (OLV), 60% plagioclase (PLAG), and 30% pyroxene (PYX). The mineral abundances for lunar rocks show no big differences from that of lunar soil. Although Von Kármán crater mostly are filled with mare basalt, but our results indicate that the lunar soil and rocks have strong mixing effects due to the impact ejecta from the surrounding craters such as Finsen crater, and there is little contribution from the beneath mare basalt. The mineralogical information at Von Kármán crater in SPA returned by China's CE-4 mission provide important clues on the geological evolution of the region.

[1] He, Z., et al. (2019). Journal of Applied Remote Sensing,13(02). [2] Li, C., et al. (2019). Sensors, 19(12), 2806.