

## Lunar surface areas with featureless reflectance spectra revealed by hyperspectral remote sensing

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Spectral Profiler (SP) onboard SELENE/Kaguya has obtained continuous spectral reflectance data (hyperspectral data) for about 70 million points (0.5 by 0.5 km footprint) on the Moon in the visible and near-infrared wavelength ranges. Using a data mining approach with all the SP data (SP data mining), we have revealed the global distributions of several-kilometer-wide sites with exposed end members of various minerals on the lunar surface: olivine-rich sites, purest anorthosite (PAN) sites, orthopyroxene-rich sites, clinopyroxene-rich sites, and spinel-rich sites. These results are based on the analysis for the diagnostic absorption bands of  $\lambda = 1\mu\text{m}$  and  $2\mu\text{m}$  in the continuous reflectance data for the lunar major minerals. On the other hand, it has also been reported that there are several sites on the Moon exhibiting no absorption band for  $1\mu\text{m}$  and  $2\mu\text{m}$  (hereafter, featureless spectra or FL-spectra). However, it still remains unclear what is the origin for the FL spectra on the Moon. For the interpretations of the origin of the FL spectra, we need to understand the global occurrence trends of FL sites on the Moon. In this study, we conducted the global survey to reveal the global distribution of the FL sites using the SP data mining. From the global distribution data, we will discuss the possible mechanisms and its implications for the lunar primordial crust.

Keywords: remote sensing, hyperspectral, Moon, Kaguya/SELENE