

Optical spectra of (25143) Itokawa via Hayabusa/AMICA observation

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Understanding of space weathering effect is important since it provides a clue to the evolution scenario of target asteroids. The near-Earth asteroid (25143) Itokawa shows a diverse of spectral properties in Hayabusa/AMICA images, suggesting a various degree of space weathering on the surface. It is known that the space weathering changes the spectra of siliceous asteroids redder, eliminating the absorption around 1 μm . Taking the advantage of the availability of AMICA at 0.38-1.01 μm , we contrive to derive the spectra at different terrains on Itokawa. It is, however, reported that the scattered light components severely degrade the AMICA images, especially at the wavelengths $>0.86 \mu\text{m}$. Here we upgraded a technique introduced in Ishiguro (2014) using a simplex technique for the subtraction of scattered light components, and derive the spectra using full set of AMICA seven channels. Our new technique enables to apply for the longest channel (i.e., zs-band at 1.01 μm) images. From these reflectance spectra, we tentatively estimated the surface ages at the different location to be 0.8-2 Myr. Based on this data together with results in previous publications, we shall discuss about the evolutionary scenario of this asteroid.

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