

# Visible reflectance spectra of asteroid regolith - Study on effects of particle size and layer roughness

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It is known that the absolute reflectance, the reflectance phase curve, and the reflectance spectra of asteroid surfaces are affected by the material composition, the surface roughness, and the size of the regolith. Capaccioni et al. (1990) studied changes of the reflectance phase curves due to the surface compaction. Shkuratov et al. (2002) studied the relations between the phase curve and the size of the powders. In these studies, the surface condition was not quantitatively described. Sakai and Nakamura (2004) investigated the correlation between the roughness of the surface and the reflectance spectrum of four powdery materials. Three types of surfaces were prepared and the surface roughness was described by the mean slope angle of the surface. It was found that there is tendency that the absolute reflectance is lower and the reflectance spectrum is redder for rougher surfaces.

In this study, we investigate the variations of the reflectance spectra at visible wavelength region (400-800nm) by the size of the regolith particle. The results will be compared with the previous one in terms of the roughness value. We will discuss on applications of the results for the interpretation of observed spectra of asteroids.