

Results of the experimental study and algorithm examination for the identification of the lunar surface materials using LISM data

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Mineralogical identification of the lunar surface material and estimation of its chemical composition is one of the most important scientific goals of LISM (Lunar Imager / SpectroMeter) data analyses. For this purpose we study reflectance spectra of mineral mixture. Measurements of reflectance spectra of mass fraction mixtures of two possible mineral components, which include orthopyroxene, clinopyroxene, olivine, plagioclase and ilmenite, on the moon have been made in our laboratory. Using those reflectance spectra we developed an algorithm for the estimation of mineral abundance and chemical composition using correlation between the abundance of certain mineral(s) and the ratio of absorption band depth.