VISUAL SPECTRUM OF CHONDRITE L6 METEORITE OZERKI

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The task of measuring terrestrial rock reflectance spectra and their comparison with the spectra of meteoroids and asteroids is extremely important. It is related both to the Solar system body origin and evolution problem, and the problem of detecting space bodies dangerous for the Earth.

One of our coauthors was lucky to find a small fragment of the Ozerki meteorite.

The Ozerki meteorite fall occurred June 21, 2018 near the city of Lipetsk, Russia. It is classified as an Ordinary chondrite L6S4-5W0 (Шарыгин). The meteorite is covered with the crust resulting from its burnout while passing through the atmosphere (Figure 1). The inside part with the basic substance looks typical of chondrites.

We measured the scattering spectrum of this part of the Ozerki meteorite.

We conducted the measuring of the reflectance spectra, based on the methods previously used for the experiments on physical simulation of photometric and spectral characteristics of satellite and asteroid surfaces.

We used a small-size monochromator with a 3-4 nm/mm dispersion concave diffraction grating. As a receiving instrument, we used a photoconductor which is sensitive within the range of 400-900 nm. The incident and scattering light beams formed the angles of 0 and 45 degrees, respectively, to the sample surface normal. For the standard, the flat surface of MgO was used. The relative error of the measurements was 3-4% in the middle of the spectral range and grew up to 10-12% at the range's limits.

Figure 2 shows the averaged Ozerki meteorite spectrum as compared to the basalt lava from Tenerife.

The simplest comparative analysis of the Ozerki meteorite spectrum and volcanic basalt lava with the spectra of stony meteorites and asteroids shows, that visibly they are sufficiently close.

Figure 1. Fragment of Ozerki meteorite L6 (Lipetsk, 2018)

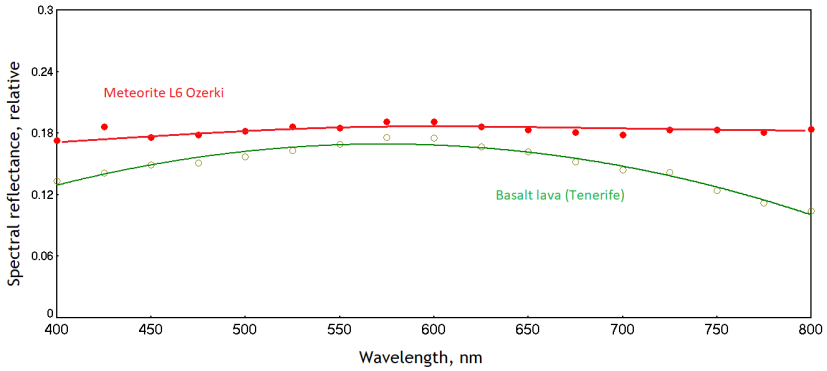

Figure 2. Ozerki meteorite and basalt lava spectra

References

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