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VISUAL SPECTRUM OF CHONDRITE L6 METEORITE OZERKI

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*The **Ozerki meteorite*** fall occurred June 21, 2018 near the city of Lipetsk, Russia. It is classified as an Ordinary chondrite *L6S4-5W0.*
One of our coauthors was lucky to find a small fragment of the Ozerki meteorite.

The meteorite is covered with the crust resulting from its burnout while passing through the atmosphere (Figure 3). The inside part with the basic substance looks typical of chondrites.

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

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.

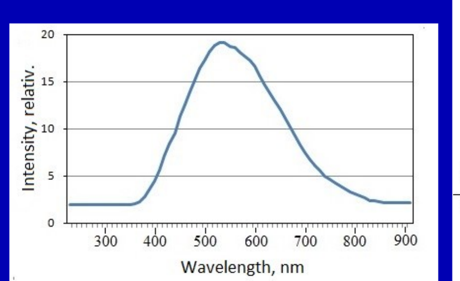

Figure 1
Relatively spectral sensitivity

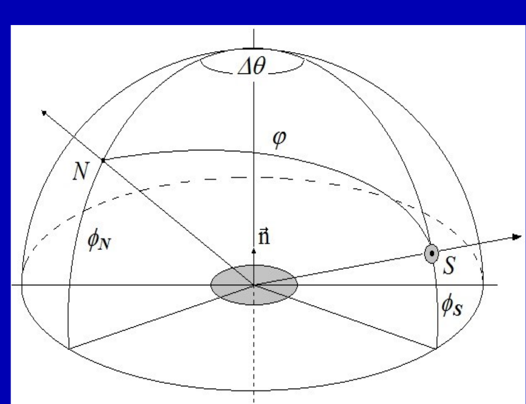

Figure 2
Reference system

$$\begin{cases} d\Phi(\lambda) = b(\lambda)\sin\phi_N \, d\omega dS, \\ d\Phi_0 = b_0(\lambda)\sin\phi_N \, d\omega dS. \end{cases}$$

$$b(\lambda) = b_0(\lambda)\frac{d\Phi(\lambda)}{d\Phi_0(\lambda)}.$$

S and *N* – light source (the Sun) and the receiver (observer);
ϕ_s and ϕ_N – the light source's and the photometer's latitudes;
$\Delta\theta$ - the difference between longitudes of the source and the detector;
n – normal to the sample surface;
$b(\lambda)$ and dS – brightness and square of illuminated surface;
$d\omega$ - the receiver solid angle;
$d\Phi$ - the flux from the surface;
$d\Phi_0$ - the flux from orthotropic standard surface.

Figure 3 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 3
Fragment of Ozerki meteorite L6 (Lipetsk, 2018)

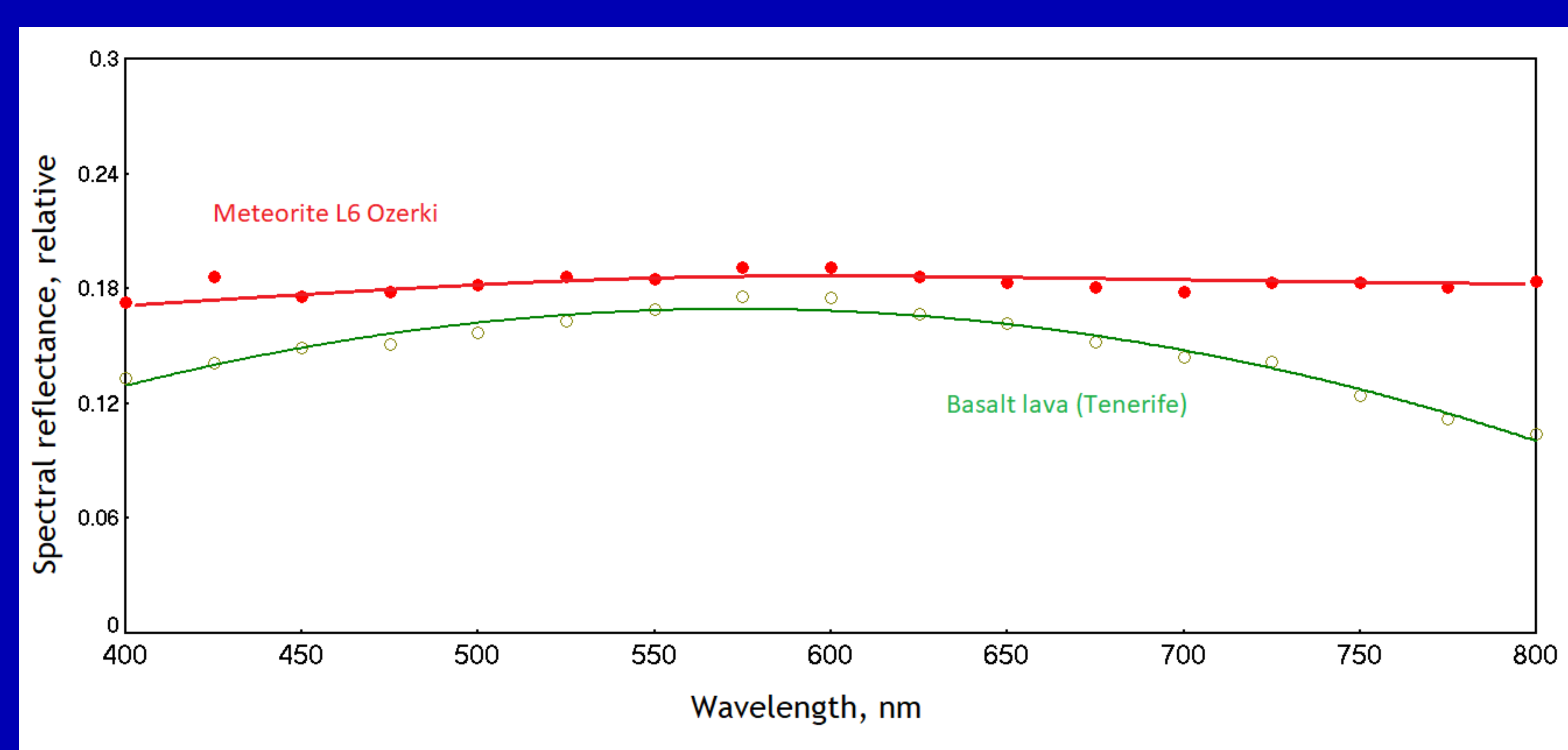

Figure 4
Figure 2. Ozerki meteorite and basalt lava spectra

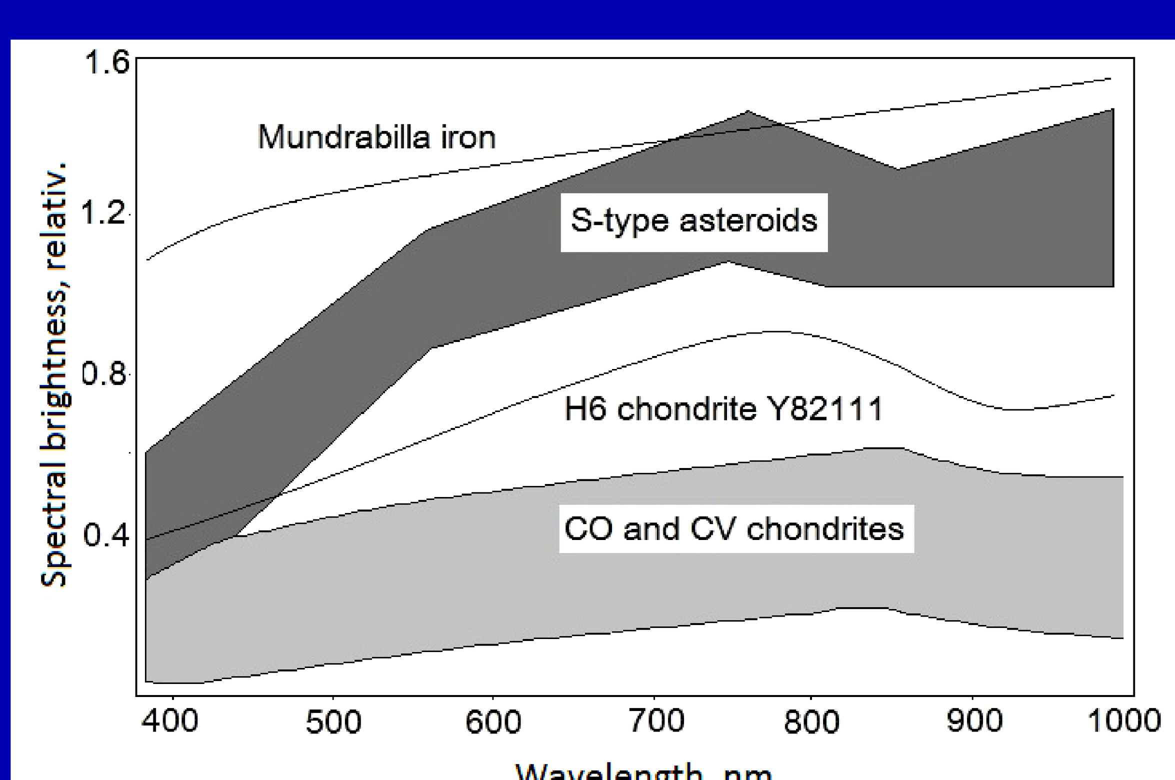

Figure 5
Relatively spectral brightness of S-asteroids (*Moroz et al., 1996; Lin et al., 2014*) and H, L, LL chondrites (*Trigo-Rodriges et al., 2013; Vernazza et al., 2008*).
Shown here for comparison (*Hiroi et al., 1993*) are: the spectrum of iron meteorite Mundrabilla (found in West Australia in 1911 r.), which does not at all coincide with the spectra of S-asteroids and stony meteorites, and the spectrum of the typical stony meteorite Yamato82111 (found in Antarctica in 1982).

References

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