[#6002]

VISUAL SPECTRUM OF ORDINARY CHONDRITE H5 SIERRA GORDA 008

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The meteorite Sierra Gorda 008 was found in the Chile's Atacama Desert, Antofagasta province by Timur Kryachko on April, 10, 2018. It coordinates are: Latitude 22°30.15'S; Longitude 69°7.97'W. It was classified as an ordinary chondrite H5.
The meteorite is covered with the crust resulting from its burnout while passing through the atmosphere. The inside part with the basic substance looks typical of chondrites.
We investigated the piece from this meteorite with the mass of 53 g was presented by Museum of the Universe, Dedovsk, Moscow region to Ryazan astronomy amauter Alexey Busarov (Figure 3).
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.

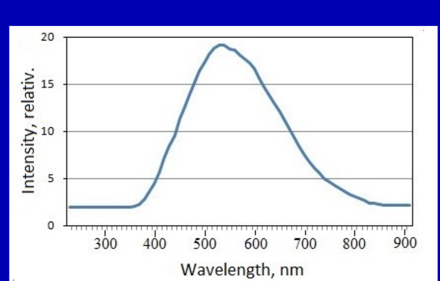

Figure 1
Relatively spectral sensitivity

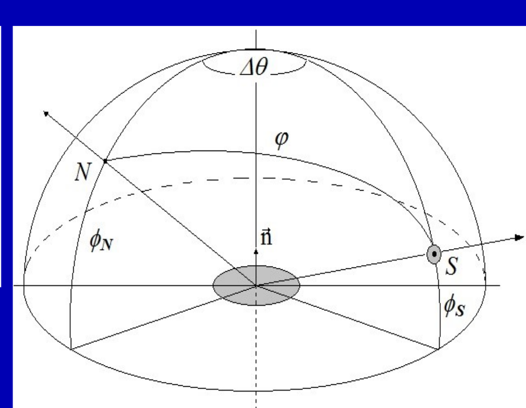

Figure 2
Reference system

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

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

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 Sierra Gorda 008 meteorite spectrum as compared to the basalt lava from Tenerife.
The simplest comparative analysis of the Sierra Gorda 008 meteorite spectrum and volcanic basalt lava with the spectra of stony meteorites and asteroids shows, that visibly they are sufficiently close.

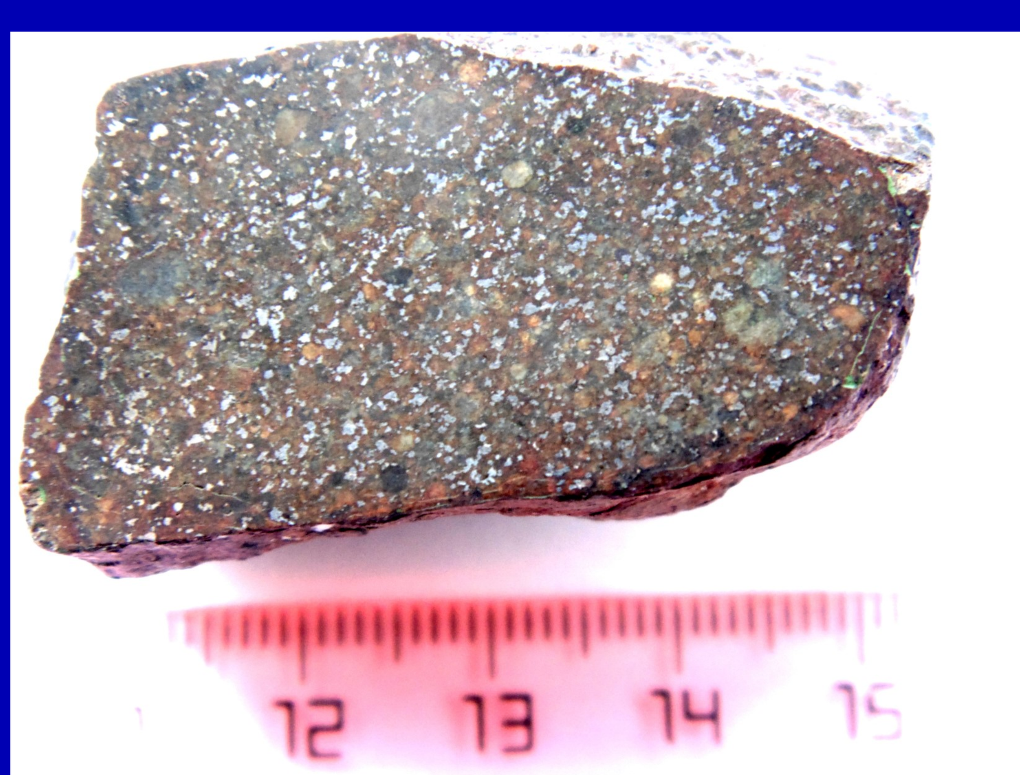

Figure 3
Fragment of Sierra Gorda 008 meteorite

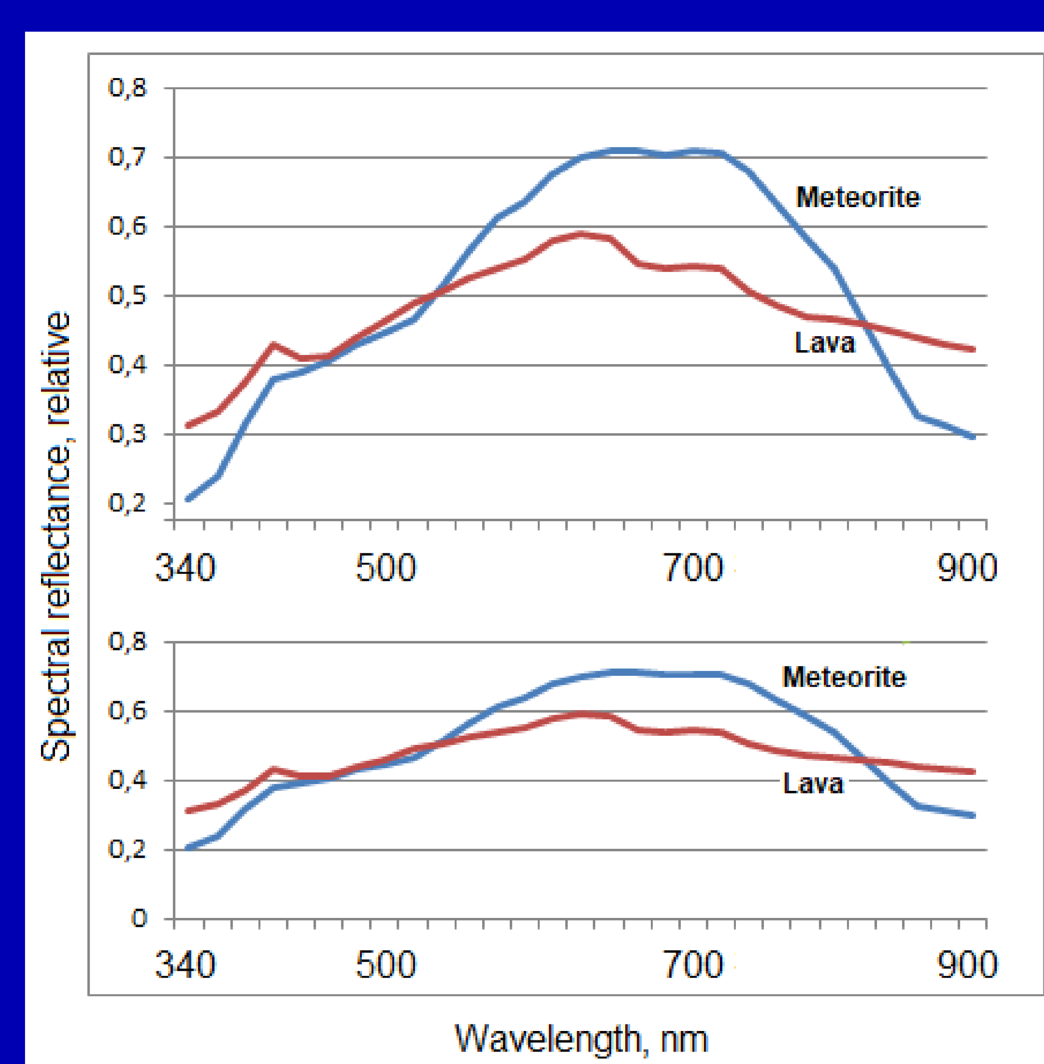

Figure 4
Sierra Gorda 008 and basalt lava spectra

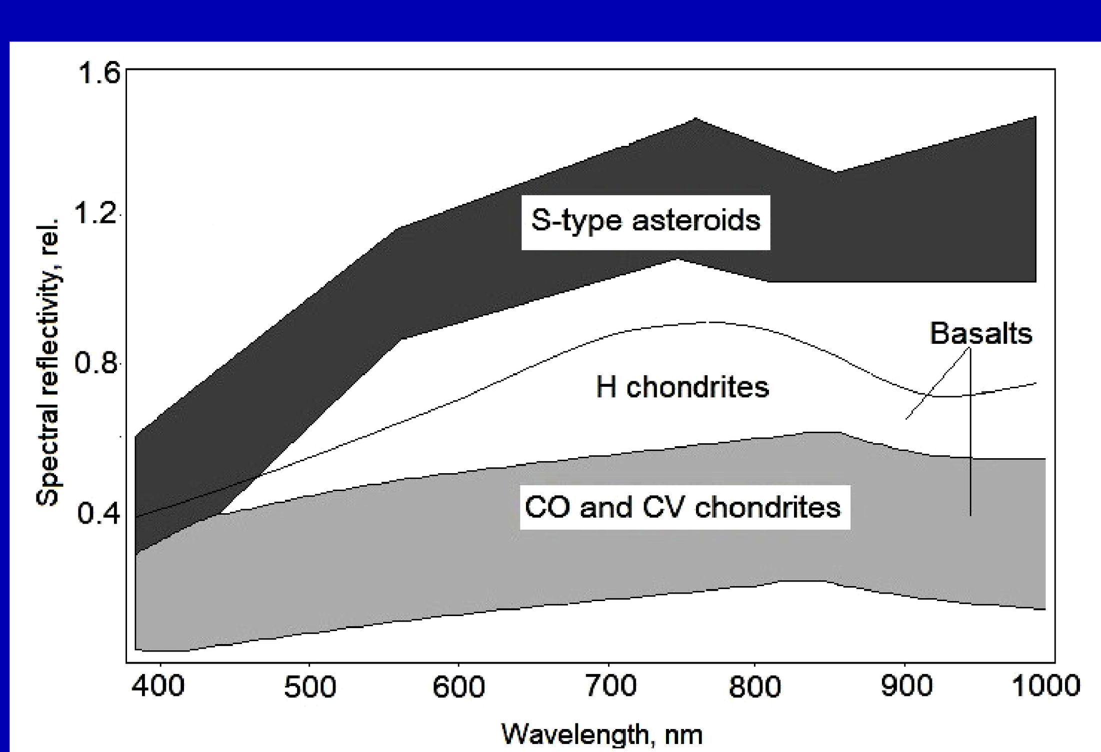

Figure 5

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*).

References

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