

### HYPERSPETRAL IMAGING OF METEORITES

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Hyperspectral imaging is a very new area that can be useful for meteorites investigations. Using the hyperspectral camera you could obtain information about the spectrum of the object in every pixel of the image. We have used the Specim IQ push broom scanner [1] for a different kind of meteorites imaging. Specim IQ has 512x512 resolution, 10-bit line CMOS sensor, 42  $\mu\text{m}$  slit and manual focusing. This is a mobile device that can be used both in laboratories and in expeditions. Previously, for the majority of the objects under study, spectra were obtained on stationary equipment.

Using this equipment has some features. Quality of hyperspectral images strongly depends on used light sources and imaging conditions. We have used two halogen and two infrared lamps to take images. Specim IQ spectra (Fig.1) resemble usual spectrometer spectra in the interval from 450 to 900 nm. Peaks near 880 nm most likely produced by the camera itself. All spectra with artificial light sources were obtained in a special darkened chamber for polished samples in diffuse scattering conditions. Wavelengths positions were checked with standard narrow band filters for 460, 677 and 780 nm. Spectra value was averaged over for least 100 pixels. The Specim IQ could not be used as usual spectrometer because of not fixed distances between object, camera and light sources. So it should be calibrated for each configuration.

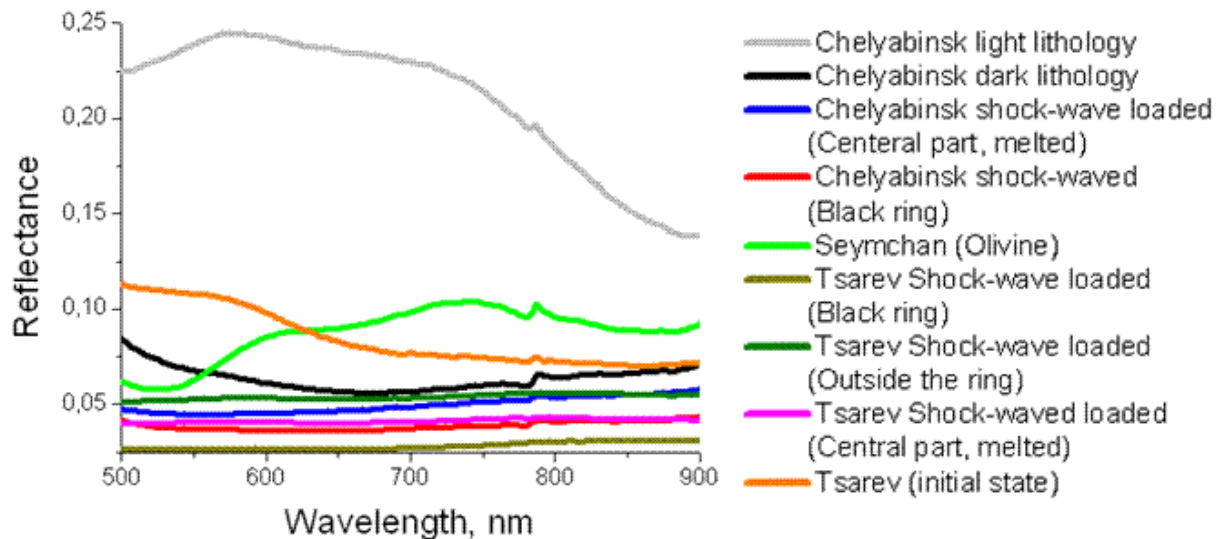


Fig.1. Reflection spectra of silicates phases of some meteorites.

The possibility of using Specim IQ to study such complex objects as meteorites is shown. For spectra obtaining it should be stationary placed to the special darkened chamber and fixed with regarding object and light sources. Spectrum should be corrected by camera function. In field condition, it is necessary to have white reference and tripod. The camera could be used for emission, reflection and absorption spectra.

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**References:** [1] <http://www.specim.fi/iq/> [2] Kruglikov N.A., Grokhovsky V.I. (2017) *Meteoritics & Planetary Science* 52: 6350. [3] Kruglikov N.A., Grokhovsky V.I. (2018) *Meteoritics & Planetary Science* 53: 6356.