VISIBLE RANGE SPECTROSCOPY OF SHOCK-WAVE LOADED CHELYABINSK LL5

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Reflectance spectra of atmosphereless bodies are changing due to space weathering caused by damaging of their surfaces. Chelyabinsk meteorite matter is quite convenient for modeling experiments because of enough amount of the matter and complex history [1]. So, shock-wave loading experiments were produced [2]. The microstructure was studied [3] and different kind of structures was distinguished [4]. Previous spectroscopic studies of the Chelyabinsk have focused on the different wavelength ranges commonly used for asteroid remote sensing [5]. Some of FTIR microspectroscopic investigations for comparison between different minerals and lithologies and shock-waved light lithology were made earlier [6,7]. As aresult, we fixed substantial shifts of some olivine peaks in infrared range [7].

Our new experiments were made on bulk samples obtained from the Chelyabinsk meteorite fragments with different lithologies. We used Lambda 35 spectrometer for spectra obtaining. One light lithology sample was shock-wave loaded, cut and polished [2]. Additionally, we annealed one of light lithology samples up to 1100°C for 15 minutes. It is clearly seen that the slope of the spectrum strongly depends on the structure and the treatment (Fig. 1).

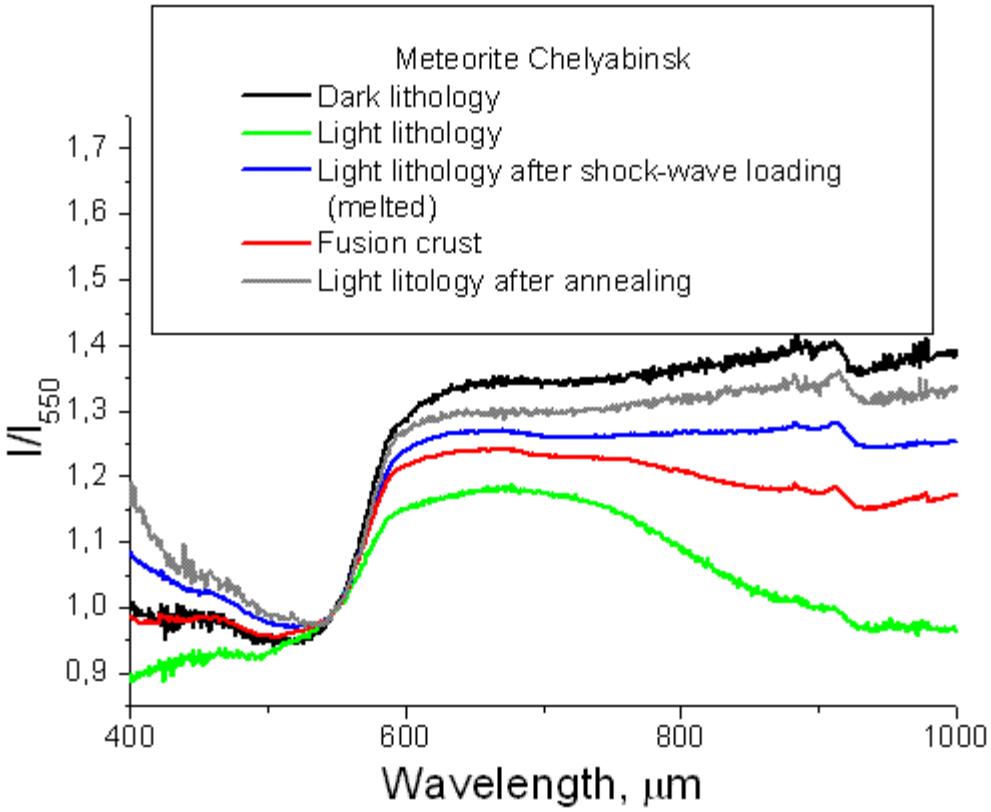

Fig.1. Visible spectra of different structures of the Chelyabinsk meteorite.

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