MID-INFRARED MICROSPECTROMETRY OF CHELYABINSK LL5 OLIVINE

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Asteroids classification taxonomy and differendclasses asteroids belonging to some parent bodies of Solar system problems are fundamental.So the space weathering dramatically changes reflectance spectra of athmosphere-lessbodyes. The Chelyabinsk meteorite matter is quite convenient for modeling experiments on different space weathering mechanisms because of very poor contamination and oxidation thanks to fast recovery and complex history [1,2]. Some of spectroscopic investigations and modeling experiments were made on different minerals and litologies of the Chelyabinsk meteorite earlier. Our experiments were made on bulk samples obtained from Chelyabisk meteorite fragments by polishing. Spectra were calculated by meaning of some spectra obtained on olivine grains by microscopic infrared fourier-transformed spectroscopy with 0.8 mm diaphragm at SIMEX FT801 IR Spetrometer with IR-Microscope Micran-2.

Previous spectroscopic studies of the Chelyabinsk have focused on the different spectra ranges commonly used for asteroid remote sensing [1,2].The LL5 lithology and bulk meteorite material shows typical Vis/NIR spectral features [1]. Nevertheless brecha structure provides another two litologies (dark and dark melted [1]). So we have used samples with different litologies to compare results with shock-wave loaded sample in future. Substatial shift of the olivine 986 and 946 peaks positions corresponding to Chelyabinsk meteorite typical litologies seems to be corresponds to all olivine of this meteorite. The Seymchan meteorite olivine spectrum obtained by the same technology is shown for comparision. The Seymchan has another history as stony-iron meteorite. Olivine of this meteorite was formed during very slow fractional crystallization. As result Seymchan meteorite olivine spectrum peaks show substantially lower shifts as it seen on the fig.1.

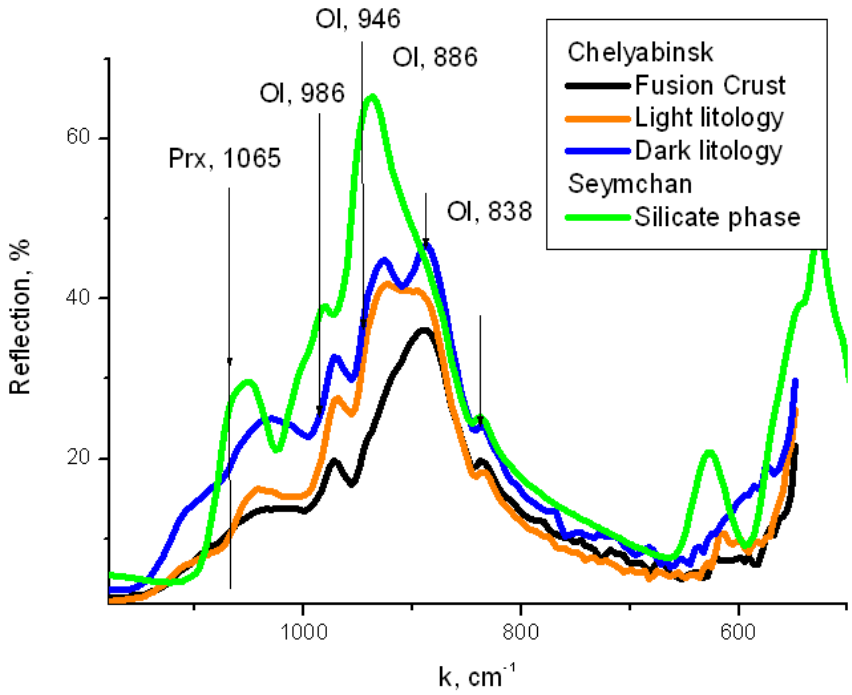

Fig.1. Mid-infrared spectra of differend kind of structures of the Chelyabinsk and the Seymcan meteorites.

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[1] Morlok A. et al. (2017) *Icarus* 284:431–442. [2] Kohout T. et al.(2015) XLVI LPS, Abstract#2072.