PRELIMINARY RESULTS ON STUDYING OF METEORITES FROM GEOLOGICAL MUSEUM OF KAZAN UNIVERSITY BY X-RAY FLUORESCENCE AND COMPUTED X-RAY TOMOGRAPHY.

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In this work we want to perform investigations of meteorites from geological museum of Kazan Federal University. Collection of museum includes different types of meteorites: chondrites, achondrites, stony-iron, iron etc.

Using non-destructive methods was performed for investigations almost all samples from museum collection. Particular attention was on studying of chondrules and iron-nickel alloys. The aim was to study elemental composition and distribution of this objects in the body of meteorite, their geometry, sizes and studying secondary alterations such as melting, diffusion etc.

For such investigations we used Micro X-ray Fluorescence method and X-ray computed tomography. For determining elemental composition was used polycapillary Micro X-ray Fluorescence spectrometer M4 Tornado (Bruker). Elemental mapping of the surface made almost for all meteorites from collection (which is valid size and have polish surface). Analysis conditions were chosen individually, depending on a sample. Maximum possible current is 600mkA, voltage – up to 50 kV, minimum size of X-ray point from 25 micron. Result of the measurements is elements distribution on the surface. Computed X-ray tomography was performed on Phoenix v|tome|x s (General Electrics). It is versatile high-resolution system for 3D computed tomography (CT) (micro ct and nano ct) . To allow high flexibility, the v|tome|x s is equipped with a 180 kV/15 W high-power nanofocus X-ray tube and a 240 kV/320 W microfocus tube.. Due to this unique combination, the CT system is a very effective and reliable tool for the studying inclusions in meteorites and looking into our samples. Best resolution that we can get for our samples is ~ 1 μm.