

## Isotopes of elemental carbon in the Chelyabinsk meteorite

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Isotope composition of elemental carbon in Chelyabinsk meteorite fragments (date of iron-fall – 15 February 2013) was studied. A fragments covered by dark fusion crust with thickness about 1 mm had amorphous or sometime roundish shape with size about 0.7-1.5 cm. Outer crust and traces of silicate material melting were removed mechanically. Mineralogical composition of fragments under investigation was reported by [1,2]. The meteorite previously classified as LL5 chondrite (S4, W0) [GEOKHI RAS].

Analytical procedure includes advance warming-up (1000°C) of samples in helium continuous flow during two hours. Then the samples were combusted in oxygen (950°C) during 40 minutes. Carbon isotope composition were determined using Thermo Finnigan 253 mass spectrometer and GasBanch with specially-constructed line [3]. Table exhibit obtained data.

Table. Carbon content and isotopic composition of elemental carbon in Chelyabinsk meteorite. Variation of given isotopic composition values not exceed ~1,5 ‰ within at least two measurements.

Sample	Weight mg	Content C, ppm	Carbon-13 (PDB)
2.36	29.2	340	-24,5
2.55	7.51	1270	-23.6
3.14	7.15	6710	-22.7
2.73	8.91	2120	-16.8
4.03	10,8	3700	-17,9

Thus carbon content and  $\delta^{13}\text{C}$  values remains in usual order for CO-type meteorites [4].

[1] Sharygin, Karmanov, Timina, Tomilenko, Podgornykh, <http://www.igm.nsc.ru/Menu/NewsDetails.aspx?newsid=44>;

[2] Sharygin, Timina, Karmanov, Tomilenko & Podgornykh (2013) *Min Mag*, this volume; [3] Semenova & Ponomarchuk (2009) *GCA* 73, A1193; [4] Pearson, Sephton, Franchi, Gibson & Gilmore (2006) *Meteoritics & Planetary Science* 41, 1899–1918.

## The results of preliminary study of magnetic fabric in the Panj-Kuh granitoid, SE Damghan - Iran

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Panj-Kuh pluton (15 km<sup>2</sup>) is located in the most northern part of Central Iran structural zone, SE Damghan. The pluton intruded in Eocene volcanic - sedimentary rocks and compositionally ranges from monzonite to syenite. It is I-type granite, calc-alkaline and metaluminous in nature and it's associated Fe oxide deposit created by sodic-calcic and potassic alteration [1].

Magnetic fabric on the Panj-Kuh granitoid carried out by (MFK1-FA) Kappbridge susceptometer (AGICO, Brno) operating at low field ( $4 \times 10^{-4}\text{T}$ ; 920 Hz) at Geomagnetic Lab of Shahrood University of Technology. According to the determined measurements (41 stations and 262 fragments), mean values of the magnetic susceptibility ( $K_m$ ) for syenite and monzonite are 37880 and 22713  $\mu\text{SI}$ , respectively. The rocks due to the relatively high average magnetic susceptibility ( $K_m > 400 \mu\text{SI}$ ) belongs to ferromagnetic granites and the magnetite is the main iron bearing mineral carrying magnetic susceptibility. Where the Na-Ca alteration - characterized by the partial or full absence of magnetite and biotite and appearance of albite and scapolite – is intensified, magnetic susceptibility magnitude is decreased. The main identified microstructural types in the studied pluton is magmatic. The percentage of anisotropy (P%) values vary from 1 to 1.2 and show positive correlation with degree of deformation. Shape parameter of magnetic ellipsoid (T) values varies from 0.93 to -0.48 and most of magnetic ellipsoids are oblate.

[1] Sheibi & Esmaeily (2004) in 5th international symposium on Eastern Mediterranean Geology, 1242-1243.