CHEMICAL COMPOSITION OF THE GALACTIC COMIC RAYS BY THE TRACK INVESTIGATION IN OLIVINE CRYSTALS FROM THE MARJALAHTI PALLASITE. N. M. Okat'eva[1], N. G. Polukhina[1], A. B. Alexandrov[1], A. V. Bagulya[1], M. S. Vladimirov[1], L. A. Goncharova[1], A. I. Ivliev[2], G. V. Kalinina[2], L. L. Kashkarov[2], N. S. Konovalova[1], A. S. Roussetski[1], N. I. Starkov[2] . [1]Lebedev Physical Institute, RAS, Moscow 119991 Russia. E-mail: poluhina@sci.lebedev.ru . [2]Vernadsky Institute of Geochemistry and Analytical Chemistry, RAS, Moscow 119991 Russia. E-mail: leokash@mail.ru

Introduction: In the framework of OLYMPIA project [1] there was developed a basic method for the heavy and super heavy galactic cosmic ray (GCR) nuclei charge determination. The preliminary experimental results of the determined nucleus charges were presented in [2, 3].

Method of the nuclei charge determination. Geometrical (track-length L) and dynamical (track-etch rate V_{TR}) parameters of chemically etched tracks in non-annealed olivine crystals from the Marjalahti pallasite are analyzed [4]. The method for identification of GCR heavy and super-heavy nuclei includes precise measurements of the L and V_{TR} for step-by-step chemical etching of the olivine crystals. Parameters of individual tracks are recorded with a help of a unique highly effective measuring facility PAVICOM [5]. For the calibration of track parameters the olivine crystals from Marjalahti pallasite were exposed with Xe and U beams of UNILAC accelerator in Durmstadt.

Results. There was held the detailed analysis for 853 registered tracks. The distribution for the identified charge values of the registered nuclei in comparison with the data of apparatus measuring [6, 7] shows the trend lines are in good agreement and coinsidence with accuracy (1 – 2) charge unit.

Relative abundance of some groups of the GCR super-heavy (Z>56) nuclei detected for tracks from the Marjalahti pallasite olivine crystals is given in table.

Charge group	N_Z (*)	Track density, cm^{-3}	Relative abundance
$23 \le Z \le 28$	~3000	$(1 - 5) \times 10^9$	1
$56 \le Z \le 59$	133	6.0×10^4	2×10^{-5}
$60 \le Z \le 69$	282	1.3×10^5	4.3×10^{-5}
$70 \le Z \le 79$	146	6.6×10^4	2.2×10^{-5}
$80 \le Z \le 89$	8	3.6×10^3	1.2×10^{-6}
$90 \le Z \le 92$	4	1.8×10^3	6×10^{-7}

(*) Number of tracks registered in ~2.2 mm^3 of 27 olivine crystals.

Conclusions: The obtained by now data of the GCR super-heavy nuclei group (Z>50) charge spectrum bring to following conclusions. (1) In the total number of the 853 registered tracks with the charge Z>50 four of them must correspond to Th-U nuclei group. (2) The ratio of up to day registered nuclei with Z > 50 to nuclei of iron group (23<Z<28) makes ~ 1.2×10^{-6} and ~ 6×10^{-7} for the Pt-Pb and Th-U groups correspondingly.

This work was supported by RFBR grant № 06-02-16835.

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