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Geochemistry of rare metal granites of the Novo-Akhmirov stock (East Kazakhstan)

I.YU. ANNIKOVA^{1,2*}, A.G. VLADIMIROV^{1,2},
B.A. DIACHKOV³

¹ V.S.Sobolev Institute of Geology and Mineralogy,
Novosibirsk, Russia

(*correspondence: iyannikova@mail.ru)

² Novosibirsk State University, Novosibirsk, Russia

³ East Kazakhstan Technical State University,
Ust-Kamenogorsk, Kazakhstan

Novo-Akhmirov stock of the topaz-zinnwaldite granites, in the works of previous researchers known as the Uhlan stock [1; 2], now becomes of great interest as an ore object (deposit) - alternative to the deposits of lithium and lithium-tantalum pegmatites. This stock has an oval shape and dimensions of the outputs on the earth surface 220 x 110 m, localized on the border of two large structures in the East Kazakhstan - Kalba-Narym ore-bearing zone and the Irtysh shear zone. The host rocks are hornstonesed carbonate-terrigenous rocks (D₂gv). Age of the granites is not yet defined. Granites have massive texture, fine and medium-grained structure and are composed of quartz (30-40 %), albite (25-40 %), microcline (15-35 %), lithium mica, varying in composition from lepidolite to zinnwaldite (10 %), topaz (5 %). Accessory paragenesis requires further study.

Geochemical studies of the granites of Novo-Akhmirov stock showed the following variations in the concentrations of lithophile rare elements, fluorine and boron (for 7 samples): Li (1000-2800 ppm), Rb (830-1380 ppm), Cs (42-55 ppm), Nb (28-62 ppm), Ta (11.9-44 ppm), Sn (170-1200 ppm), F (0.75-1.85 wt. %), B (17-220 ppm), at the same time they are characterized by low contents of Sr (5.7-19 ppm) and Ba (5-14.3 ppm) and extremely low Σ REE (85.99-13.57 ppm).

Thus, according to their geochemical characteristics, the granites of Novo-Akhmirov stock show a considerable similarity to the average compositions of the lithium-fluorine facies of plumazite rare-metal leucogranites [3].

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[1] Maslov et al. (1994) *Petrology* 3 (2), 331-336. [2] Dovgal et al. (1995) *Rus. Geol. & Geophys* 3 (36), 64-71. [3] Tauson L.V. (1977), 279 p.