

New data on the substantial composition of Kalba rare metal deposits(Conference Paper)(Открытый доступ)

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Краткое описание

Geotectonic position, features of the geological structure and rare metal specialization of the Kalba-Narym granitoid belt formed in the Hercynian cycle in the postcollision (orogenic) geodynamic situation are considered. A geological-genetic model for the formation of the leading type of rare-metal pegmatite deposits (Ta, Nb, Be, Li, etc.) is presented. They are spatially and genetically related mainly to the granitoids of the 1st phase of the Kalba complex, P1 (Bakennoye, Jubilee, Belaya Gora, etc.). The rhythmically pulsating orientation of the process of pegmatite formation with the introduction of ore-bearing fluids (H₂O, F, B, Cl, Ta, Nb, Be, etc.) is emphasized from the intracamera focus of a semi-closed magmatic system. The preferred location of ore pegmatite veins in granitoids of moderate basicity occupying an intermediate position in the petrochemical composition between normal granites and granodiorites geochemically specialized in Li, Rb, Cs, Sn, Nb, Ta. The leading ore-controlling role of the latitudinal deep faults of the ancient site in the distribution of rare-metal ore fields and deposits (Ognevsk-Bakennoye, Asubulak, Belogorsk, etc.) is determined. There is a zonal structure of pegmatite veins, a gradual development of mineral complexes from the graphic and oligoclase-microcline (non-ore) to microcline-albite and color albite-spodumene (ore). The mineralization of pegmatite veins is determined by the degree of intensity of the manifestation in them of metasomatic processes (microclinization, albitization, greisenization, spodumenization, tourmalinization, etc.) and the identification of the main ore minerals (tantallite-columbite, cassiterite, spodumene and beryl). The diversity of the material composition of rare-metal pegmatites containing many unique minerals (cleavelandite, lepidolite, ambligonite, color tourmaline, spodumene, pollucite, etc.) is reflected, which brings them closer to the pegmatite deposits of foreign countries (Koktogai, Bernik Lake, etc.). New results of the investigation of the material composition of ore-bearing granites, pegmatites and typomorphic minerals using electron microscopy reflecting the distribution of rare-earth, rare-metal, chalcophile and other elements in them are presented. Indicators of rare metal ore formation are rock-forming minerals of granites (quartz, microcline, biotite, muscovite), ore and associated minerals (cleavelandite, lepidolite, cassiterite, etc.). The most informative minerals include mica (muscovite,

giltbertite, lepidolite), colored tourmalines and beryls of different composition and color. Identified typomorphic minerals and geochemical elements-indicators of rare metal pegmatite formation are considered as a leading search criterion in assessing the prospects of the territory of East Kazakhstan. © Published under licence by IOP Publishing Ltd.