

Columbite-tantalite from rare-metal granites of Khangilay ore unit, Transbaikalia

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Minerals of columbite-tantalite group has been studied from differentiates of rocks Khangilay-Orlovka rare-metal rare-metal granit systems (protolithionite – porphyroblastic – amazonite granites) in East Transbaikalia, Russia. In this range of the general trend of change of mineral composition aside increases all over again Mn-columbite, then Mn-tantalite components, similar to change of mineral composition in Zinnovec massif in Czechia is marked. Distinctive feature of these minerals in amazonite granites from Orlovka massif is their precisely expressed zone composition which has been tracked in a mode of the BSE image.

In the majority of grains occur visible relic niobian cores ($Nb > Ta$ in 3 times) which are replaced by homogeneous columbite with expressed crystallographic forms ($Nb > Ta$ in 2 times). The external zone of these crystals has two stratified edging: internal is more tantalitic columbite, on the rim is more niobian. It is especially interesting that new tantalite ($Ta > Nb$ in 2 times, $Mn > Fe$ in 15 times, at the raised maintenance of uranium - up to 0,13 wt.% of U_3O_8) overgrows on these crystallographic forms. Late columbite-tantalite forms discordance trend in relation to the planned tendency. It is main characteristic for Zinnovec and the basic volume of the Orlovka massif. This trend is shown in sharp increase in Ta concentration at a late stage of crystallization and, obviously, corresponds to a metasomatic stage in formation of ore mineralization in massif. Thus in columbite-tantalite composition are possible essential variations in Fe concentration that can be caused by variations of a mode of acidity-alkalinity in mineral-forming environment.

