Monazite-xenotime from rare-metal granites from Orlovka massif, Eastern Transbaikalia, Russia

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Extremely informative was a studying of monazite-xenotime group minerals from differentiates of rare-metal Li-F granites of Orlovka massif in East Transbaikalia, Russia. There are following sequence of mineral formation: in biotite granites of deep horizons is monazite, in protolithionite granite are moinazite and xenotime, in porphyroblastic muscovite granites is xenotime and in amazonite rare-metal granites is monazite, in quartz-albite-mica greisen is xenotime. Numerous changes of a REE mineral-concentrator in a vertical range of Orlovka massif rocks confirm suggestion about nonmonotonic change of a mode of acidity-alkalinity during formation of differentiates of rare-metal granites.

Evolution of a mineral composition in differentiation process of granites from biotite granites to Li-F amazonite is observed in increasing of huttonitic end-member (that testifies to natural reduction of REE concentration) and of U and Th in monazite.

Xenotime from protholitionite granites from Orlovka massif get in A-type granites fields on the Foerster diagram for xenotime from different types of granites. Xenotime from porphyroblastic granites characterised to the raised contents in them of Gd (up to 4,8 wt.% of Gd2O3) answer a field of S-type granites with Li-mica. Xenotime from endogreisen show very high Dy concentration - up to 7,8 wt.% of Dy2O3.

The temperature of formation of protholitionite granites from the Orlovka deep horizons has been estimated by means of the monazite-xenotime geothermometer under the formula: $D_{Gd(T)}$ = -0,5886 + 1,591*10^{-3} *T (^{o}C), where $D_{Gd} = X_{Gd}{}^{monazite}/X_{Gd}{}^{xenotime}$. The calculated temperature makes 620^{o}C that will be coordinated with the temperature estimated on the zircon geothermometer for these rocks.

Foerster H.-J. (1998) The chemical composition of REE-Y-Th-U rich accessory minerals from peraluminous granites of the Erzgebierge-Fichtelgebirge region, Germany. Part I: The monazite (Ce)-barbantite solid solution series Am. Mineral. 83: 259-272.

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