

The application of Raman microprobe spectroscopy in the study of fluid and melt inclusions in quartz from Sherlovaya Gora (Russia)

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The complexity of mineral-forming processes in the volatile- granitic systems are shown in example of the rare-metal peraluminous granites. This processes are studied by methods of experimental and theoretical modeling, but this question is still discussed. We have tried to research the composition of the mineral-forming enviroments in the latest state of the magmatic systems.

We have used the method of Raman spectroscopy to define various phases in the fluid inclusions in quartz. Raman spectra were recorded with a Jobin-Yvon LabRam HR800 spectrometer.

As a model we have taken Scherlovaya Gora ore unit (East Transbaikalia) which includes two types of deposits: greisenized rare-metal W-bearing granite with aquamarines, and Sn-bearing K-rhyolites.

We define a lot of sassolite and siderite in fluid inclusions in quartz from greisens of Scherlovaya Gora. It demonstrates the geochemical specialization of these rocks with a number of schorl and siderite. A lot of zeolites are also typical here. As for gases, CO₂ and N₂ were found.

Unique fact was observed: the crystal inclusions in topaz from greisen contain abundant zircon crystals of a size about 100 μm, that form a growth zone on the boundary between milky-white early and framing transparent later topaz.

Topaz, muscovite, albite, cassiterite were identified in the fluid inclusions in quartz from Sn-bearing rhyolites. It is noteworthy, that the studies of evaporated mounds in uncovered inclusions by SEM allowed discovering the crystal Cs, Sn, K, As – containing phases. This confirms the metallogenic specialization of Transbaikalia rhyolites, among which Cs-perlites were found.

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