



Conditions of tourmalinization formations Eastern Transbaykalia gold deposits, related with mesozoic riftogenic volcanism (Russia)

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Chemical composition and formation conditions of tourmaline from matrix of ore veins of the Eastern Transbaykaliae gold deposits (Darasun, Talatuy, Baley, Sredne-Golgotay, Teremkin and Borovushka) have been studied. All these deposits are spatially related to the Na- and K-rich mesozoic riftogenic porphyry-type subvolcanic intrusive bodies.

Tourmalinization was the early stage of mineralization occurred just before deposition of the commercial associations. The Mössbauer study indicates that the $\text{Fe}^{3+}/\text{Fe}_{tot}$ ratio in tourmalines ranges from 0.47 to 0.85. The highest values of Fe^{3+} are situated in upper levels and the lowest one in deep levels. Wide range of the $\text{Fe}^{3+}/\text{Fe}_{tot}$ value is typical for the Transbaykalian gold deposits tourmaline and it indicates wide ranges of $f(\text{O}_2)$ and pH value of mineralizing fluids.

On the ternary Fe-Al-Mg plots figurative points of tourmaline composition fall mostly under the schorl-dravite join and show the linear distributions from Mg-rich to Fe-rich. Such distributions are characteristic for the propylitic tourmaline from the Berezovskoye gold deposit, Urals, Russia (Kudryavtseva, Baksheev, 2003) and tourmaline from the propylitic zones of the porphyry-copper deposits (King et al., 2000). These data allow ascribing the tourmaline of Transbaykalian gold deposits to the propylitic

association.

Primary, pseudosecondary and secondary fluid inclusions (FI) have been distinguished in quartz. At the same time this quartz contained the tourmaline. On the basis of phase composition primary and pseudosecondary FI can be divided into three types: I - three- and multiphase inclusions of chloride brine; II - two phase inclusions, and III – gas-dominated inclusions with meniscus of H₂O and occasionally liquid CO₂. Ore deposits were formed from magmatogene fluids of 0.4 to 55.8 wt.% eq. NaCl salinity subjected to mixing with meteoric water. The temperature of ore deposit formations lays in a wide range from 120 to 620Ñ and the pressure ranges from 0.07 to 2.3 kbar. Ore deposition took place at variable but relatively high f_{O_2} and variable pH value of mineralizing fluid. It is in a good agreement with the data on subvolcanic level of ore deposition under investigation.

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