

**Hydrothermal alteration and sources of fluids in the Juomasuo Au-Co deposit,  
Kuusamo Schist Belt, Finland**

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The Juomasuo Au-Co deposit in the Paleoproterozoic Kuusamo Schist Belt is hosted by a volcano-sedimentary sequence, which was metamorphosed in upper greenschist-lower amphibolite facies during the Svecofennian orogeny. Our current petrographic and geochemical observations revealed that the sequence of protoliths consists of ultramafic, mafic, intermediate and felsic volcanic rocks, as well as metasedimentary rocks and albitites. There is no strict lithological control on the mineralization. Hydrothermal alteration mineralogy was established on the basis of petrography and molar element ratios calculated from whole-rock geochemical data. Au and Co enrichments are mainly connected to sericitic (K-mica) alteration and subordinately to chlorite-biotite alteration. Local U, Mo and REE enrichments are confined to superimposing fractures. The pre-ore albitites host mineralization in their silicified parts only.

Fluid inclusion data indicate that high-salinity (>20 NaCl equiv. wt%) carbonic-aqueous fluids can be connected to early (prograde metamorphic) albitization. Low-salinity (~5 NaCl equiv. wt%) carbonic-aqueous fluids can be assigned to the later retrograde metamorphism. Late, low temperature aqueous fluids with salinities from 15-20 to 5 NaCl equiv. wt% also interacted with the rocks. Tourmaline (dravite) is an ubiquitous accessory mineral in albitite and is predominantly characterised by heavy B-isotope compositions (from +6 to +16 ‰  $\delta^{11}\text{B}$ ). This finding, together with the fluid inclusion salinities, supports the earlier hypothesis (Vanhanen, 2001), that parent fluids of albitization and some stages of mineralization at Juomasuo contained evaporite-related components.

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**References:**

Vanhanen, E., 2001. Geology, mineralogy and geochemistry of the Fe-Co-Au-(U) deposits in the Paleoproterozoic Kuusamo Schist Belt, Northeastern Finland. Geol Surv Finland Bull 399, 230p.