

HIGHLY SALINE FLUID INCLUSIONS ALONG THE UPPONY – RUDABÁNYA – SZENDRŐ MTS. LINE, NE - HUNGARY

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The presence of some highly saline fluids was discovered in quartz (+/- calcite bearing) veins and veinlets from the Uppony–Szendrő Mts., (including the northern part of Rudabánya Mt.) along the so-called “Darnó Megatectonic Line”.

The Uppony and Szendrő Mts. are built up by Paleozoic (Devonian-Carboniferous) sediments, including volcanoclasts, shales, and marbles, which display anchi-epimetamorphosed features (Árkai, 1977; Árkai et al., 1981). Inserted into this line, the northern part of the Rudabánya Mt. (Perkupa–Telekes region) contains a Permo-Triassic anhydrite-bearing evaporite sequence.

The rocks show auto-segregated lenses of quartz, and quartz+/-calcite bearing veins–veinlets with traces of recrystallization. Some parts of these objects exhibit small geodes with grown-up, free quartz crystals with a few cm dimensions. Further constituents are: Au, Ni-Sb-, Pb-Sb-S bearing fine particles, rutile, chlorite, K-feldspar (“adularia”), carbonates. These minerals were identified by optical microscopy and routine microprobe analyses.

The free quartz crystals are delineated by simple {10-10}, {10-11}, {01-11} faces, in a few cases there are dypiramids {51-61} too. The crystals either have “ideal”, perfectly terminated, rocky-crystals (Szendrő), “corn-like”, or with curved (stepped) rhombohedron faces – (Perkupa-Telekes), or twisted – “Gwindel” – appearance (Uppony).

The microthermometric results of the studied fluid inclusions in quartz show a wide range of homogenization temperature based on investigations of two-phase (liquid-vapor) and three-phase (liquid+vapor+solid) inclusions. The main parameters are: Th: 300–115 °C, with the presence of NaCl-CaCl₂-MgCl₂ bearing fluids (indicated by Te: -25–60 °C), with board range of salinity (0–4 / 10–21 / 35 > NaCl eq.wt %) –in the former cases including three-phase, inclusions (with a halite crystal as the solid phase). Typical and frequent is the accidentally trapped constituent is anhydrite, checked by Raman spectroscopic analyses (Gatter, 1989; Gatter, 2003).

The detailed microthermometric study show cooling–diluting tendency of the fluids in 2–3 substages. The using of independent data for the geothermometry confirmed the calculated trapping temperature from leachate results.

The further analytical data of the halogen leachates and the light stable isotope also support the hydrothermal leaching model of these fluids.

References

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