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Fluid inclusion and stable isotope study of the Kasejovice gold district, central Bohemia

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A b s t r a c t. Quartz gangue from the Variscan gold-bearing Kasejovice district (Jakub Mine) of the Moldanubian Drosendorf Unit, Bohemian Massif, was studied by fluid inclusion, stable isotope and SEM-CL techniques. Quartz of the early mineralization stage precipitated from a heterogeneous, unmixed, low-salinity (3.0–1.5 wt% NaCl eq.), H_2O-CO_2 fluid with minor admixture of other gases (CH_4, N_2, H_2S) at 2–1 kbar and 220–300 °C. Oxygen isotope signature of these fluids ($\delta^{18}O$: +8.0 to +6‰ SMOW at 360–300 °C) is ambiguous with respect to the discrimination between deep crustal metamorphic and magmatic fluid sources, but the former one is more likely with respect to CO_2-CH_4-H_2O ratios. The late mineralization stages occurred mostly from aqueous-only fluids under decreasing temperatures (from ~200 to ~100 °C) and pressures (< 0.5 kbar). The observed variety of SEM-CL quartz textures includes oscillatory, growth and sector zoning and deformation related textures.

K e y w o r d s: gold ores, hydrothermal processes, geochemical controls, fluid inclusions, stable isotopes, oxygen, pressure, temperature, Moldanubicum