Sn-Ti mineralizace z revíru Krupka v Krušných horách (Česká republika)

The Sn-Ti mineralization from the ore district Krupka, the Krušné hory Mountains (Czech Republic)

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Abstract

The unusual Sn-Ti mineralization was found at the Krupka ore district, Krušné hory Mountains, Czech Republic. Anatase occurs there in three morphological types: anatase 1 forms bluish grey, grey to brown tabular crystals up to 1 mm in size which forms together with chlorite pseudomorphs after primary rutile; anatase 2 occurs as bluish grey thin tabular crystals up to 0.5 mm which intense replaced primary ilmenite; and anatase 3 forms bluish black to black well-developed bipyramidal crystals 0.5 - 2 mm in size in cavities of gangue or rocks. Rutile was observed only as rare chemically zoned brown relics up to 0.3 mm in size in gangue. Ilmenite was found as black tabular aggregates up to 7 mm intense replaced by younger anatase 2. Cassiterite forms abundant well-formed light brown to brown crystals up to 2 - 3 mm in size. Minerals of hübnerite - ferberite solid-solution (wolframite) was observed as brown to brownish black irregular crystals and grains up to 1 mm in size. Topaz forms colorless to yellowish crystalline coatings and rarely also prismatic crystals up to 1 mm in size. Fluorapatite occurs as white crystalline aggregates and columnar crystals up to 1 - 3 mm in size. Locally abundant beryl forms milky white or more rarely colorless columnar crystals up to 1 cm in length. Bertrandite was observed very rarely as only 20 - 30 μm tabular crystals on corroded beryl aggregates. Chlorite (chamosite) forms very abundant greyish green fine crystalline aggregates in association with muscovite. All described minerals are characterized by PXRD, refined unit-cell parameters and quantitative chemical analyses.

Studied mineral associations were formed by two different minerogenetic processes. The first association, cassiterite, rutile, ilmenite, wolframite, topaz, beryl and fluorapatite, corresponds to known greisen Sn-W mineralization of the Krupka ore district. The high contents of F (topaz, fluorapatite), Be (relatively abundant beryl) and increased content of Ti (rutile, ilmenite) and Mn (hübnerite, up to 26 mol. % pyrophanite component in ilmenite) are characteristic for origin of this association. Above described primary mineralization was later intensively affected by younger low temperature hydrothermal process. This process caused a decomposition of primary rutile and intense alteration of ilmenite and beryl. There are formed several types of anatase, bertrandite and aggregates of phyllosilicates (chlorite, muscovite).

***Key words**: anatase, cassiterite, ore mineralization, X-ray powder data, unit-cell parameters, chemical composition, Krupka ore district, Czech Republic*