Ag-Sb-Pb MINERALIZATION OF THE VEIN H14F3, SHAFT 21, PŘÍBRAM URANIUM AND BASE-METAL ORE DISTRICT (CZECH REPUBLIC)

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There are two significant ore districts in the Příbram ore region (Czech Republic, Central Bohemia) – the Březové Hory base-metal ore district and the Příbram uranium and base-metal ore district. Ore veins of the Příbram uranium and base-metal district are mostly concentrated in exocontact of the Central Bohemian Plutonic Complex in the Neoproterozoic and Cambrian volcanosedimentary formations. Příbram ore area is the most important Ag-Pb-Zn-Sb-U deposit in Czech Republic, and one of the most important hydrothermal vein deposits of this type on the world. In Příbram area was mined about 3450 tons of Ag, 420 000 tons of Pb and about 48 000 tons of U (AUTHORS COLLECTIVE, 2003). Shaft 21 is located in the central part of the Příbram uranium and base-metal ore district in the "ore node" called Háje (after Háje village). The ore vein H14F3 (mined from the shaft 21) is known because of the occurrence of the interesting silver - antimony mineralization, especially rich dyscrasite accumulations (KNÍŽEK *et al.,* 1990).

By the revision of the specimens from this vein, interesting association of Ag-Sb-Pb minerals, Hg-silver and pyrargyrite were found in deeper parts of the vein (8th level of the shaft, -400 m). Both minerals are common as pseudomorphosis after dyscrasite; the Sb-rich arsenic was usually hydrothermally leached in this place. The most common ore mineral near the 7th level of the shaft (-350 m) is Sb-rich arsenic, which forms at least two generations, at some places also common sphalerite, galena and löllingite occur. Dyscrasite forms there large morphological scale of varieties from thin needles, thin plates to thick columnar crystals covered by younger Sb-arsenic. The younger type of dyscrasite forms coatings and aggregates growing directly in the calcite. The average large of crystals is about 1–2 cm and the maximum large of thin columnar crystals reached up to 6 cm. The (Ag + Hg)/(Sb + As) ratio for thin tabular bent crystals is between 3.53 and 4.06, for thin tabular crystals 3.60–3.93, for thick columnar crystals 3.45–4.03, for hydrothermal altered thick columnar crystals 3.43–4.22 and for younger regenerated tin white coatings is ratio between 2.89 and 3.23. We know at least three types of dyscrasite in the Příbram area (ŠKÁCHA *et al.,* 2006). The Ag/Sb ratio of oldest dyscrasite from Příbram varies between 3.4–3.6 (type I), 3.6–4.2 (type II including dyscrasite from the ore vein H14F3) and 3.5–3.6 (youngest type III). At studied mineralization, allargentum is rarer than dyscrasite with usually closely intergrowth; x for allargentum formula $Ag_{1-x}Sb_x$ varies from 0.14–0.16. Dyscrasite crystals and rarely Sb-arsenic aggregates can be replaced by younger miargyrite, which also forms crystals up to 0.5 cm and its chemical composition can be expressed as $Ag_{1.03}(Sb_{1.01}As_{0.01})_{\Sigma 1.02}S_{1.95}$. Rare freieslebenite with chemical composition $Ag_{1.03}Pb_{0.99}Sb_{1.01}S_{2.97}Cl_{0.01}$ forms crystals up to 0.5 mm growing on pseudomorphosis of miargyrite after Sb-arsenic. Tiny elongated andorite crystals up to 0.2 mm with empirical formula $(Pb_{0.98}Fe_{0.06})_{\Sigma 1.04}Ag_{1.07}(Sb_{2.96}As_{0.02})_{\Sigma 2.98}S_{5.88}$ and semseyite (grains up to 30 μm in andorite crystals) with empirical formula $(Pb_{8.64}Ag_{0.26})_{\Sigma 8.90}Sb_{8.15}S_{20.94}$ were found in association with dyscrasite and miargyrite. Andorite crystals are significantly zoned with %And (MAKOVICKY & KARUP-MØLLER, 1984) 91–102 (mean 96) and N 4.17–4.63 (mean 4.42). Crystals of pyrrhotite and stibnite in calcite gangue represent the younger mineral phases of the vein.

This described occurrence of Ag-Sb-Pb mineralization is similar to the well-known dyscrasite occurrence on the vein H14F (6th level, shaft 21) in the same area (KOLESÁR, 1990). The main difference is in the chemistry of the late hydrothermal solutions and in the variability of mineral phases. Whereas on the H14F ore vein, the only known mineral phases originated from the hydrothermal alteration of dyscrasite are Hg-silver and allargentum, on the H14F3 ore vein was found interesting association comprised of Hg-silver, allargentum, miargyrite, andorite, semseyite and freieslebenite.

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