Výskyty unikátního monometalického stříbrného zrudnění na žíle H14F3 mezi 7. a 9. patrem šachty č. 21 Háje, příbramský uran-polymetalický revír (Česká republika)

Occurrences of unique monometallic Ag mineralization at the H14F3 vein between the 7th and 9th level of the shaft No. 21 Háje, the Příbram uranium-base metal ore district, Czech Republic

Pavel Škácha[1)2)], Jiří Sejkora[2)], František Knížek[3)], Vladimír Slepička[4)], Jiří Litochleb[2)] a Ivana Jebavá[2)]

[1)]Hornické muzeum Příbram, náměstí Hynka Kličky 293, 261 01 Příbram VI; skacha-p@muzeum-pribram.cz
[2)] Mineralogicko-petrologické oddělení, Národní muzeum, Cirkusová 1740, 193 00 Praha 9 - Horní Počernice
[3)] 261 02 Příbram VII/127
[4)] 261 02 Příbram VII/405

Škácha P., Sejkora J., Knížek F., Slepička V., Litochleb J., Jebavá I. (2012) Výskyty unikátního monometalického stříbrného zrudnění na žíle H14F3 mezi 7. a 9. patrem šachty č. 21 Háje, příbramský uran-polymetalický revír (Česká republika). *Bull. mineral.-petrolog. Odd. Nár. Muz. (Praha) 20, 2, 230-254. ISSN 1211-0329*.

Abstract

During the preliminary exploration for the silver ore on the veins H14F and H14F3, between 6th and 9th level of the shaft No. 21 in the vein node Háje (Příbram uranium and base - metal ore district, Central Bohemia, Czech Republic), occurrences of monometallic Ag ores represented by native silver, dyscrasite, allargentum and Ag-Sb sulphides were found in years 1980 - 1990. We accumulated a detailed geological and mineralogical profile of a unique silver mineralization of the vein H14F3 between 7th and 9th level of the shaft No. 21 (mining blocks HD14F3-901, HD14F3-801, HD14F3-701) with emphasis on formerly undiscovered or insufficiently described silver and antimony minerals. Siderite and calcite represented the most abundant gangue minerals. Galena, sphalerite and löllingite are fairly rare sulphides on the locality. Allargentum was found in association with dyscrasite and it probably represents its hydrothermal alte- ration product. Its empirical formula is $Ag_{0.85}(Sb_{0.14}As_{0.01})_{\Sigma 0.15}$. Andorite forms prismatic crystals under 1 mm in association with miargyrite crystals. N_{chem} values vary between 4.17 - 4.63 and the percentage of andorite substitution varies between 91 - 102. Native antimony occurred rarely as irregular aggregates up to 0.3 mm closely growing together with dyscrasite on the border of miargyrite grains. Its empirical formula is $Sb_{0.99}As_{0.01}S_{0.01}$. Stibnite was found rarely in form of typical radial aggregates or individual crystals to 15 mm. Its empirical formula is $Sb_{2.02}S_{2.98}$. Sb-rich arsenic was found as three morphological and genetically distinct generations. It is the most common ore mineral in the upper vein interval around the 7th level. The chemical composition of all 3 generations is very similar. Except for the dominating arsenic (0.91 - 0.99 *apfu*) significant Sb contents (0.01 - 0.09 *apfu*) and minor Ag and S content were also found. Dyscrasite is the most interesting ore mineral in the locality with many morphological varieties from typical columnar, through tabular to thin prismatic crystals. Dyscrasite is usually zonal, zones correspond to distinct ratios of Ag/Sb and fewer also to Sb/Hg ratios. Freibergite was found as irregular grains up to 150 μm in association with silver on the 8th level. Its empirical formula is $Ag_6(Cu_{4.28}Ag_{0.34})_{\Sigma 4.62}(Fe_{1.79}Zn_{0.08})_{\Sigma 1.87}(Sb_{4.23}As_{0.07})_{\Sigma 4.30}S_{12.22}$. Freieslebenite occurred as very rare idiomorphic crystals to 0.2 mm growing on arsenic III in calcite. Its empirical formula is $Pb_{0.99}Ag_{1.03}Sb_{1.01}S_{2.97}$. Galena was found in form of grains up to several cm large in association with Sb arsenic and also as microscopic inclusions growing in silver or semseyite. Galena is chemically very pure only with small amount of Sb. Löllingite forms mostly silver bands on the sides of vein fillings consisted of individual lenticular crystals to 1 mm. Its empirical formula is $(Fe_{0.79}Ni_{0.20}Co_{0.03})_{\Sigma 1.02}(As_{1.88}Sb_{0.04}S_{0.07})_{\Sigma 1.99}$. Miargyrite forms pseudomorphosis after dyscrasite and Sb arsenic or individual crystals on the 7th level. Average empirical formula of all types of miargyrite can be expressed as $Ag_{1.03}(Sb_{1.01}As_{0.01})_{\Sigma 1.02}S_{1.95}$. Pyrargyrite was found only on specimens from the 8th level in association with native silver as grains and pseudomorphoses after dyscrasite up to 2 cm. Its empirical formula is $Ag_{3.15}(Sb_{0.96}As_{0.02})_{\Sigma 0.98}S_{2.86}$. Pyrrhotite forms tabular bronze magnetic crystals to 2 mm. Fe content (1 *apfu* S) vary between 0.913 - 0.940 *apfu*, which for empirical formula $Fe_{1-x}S$ correspond to values of x = 0.06 - 0.09. Semseyite was found rarely in form of microscopic polymineral tin-white aggregates growing on arsenic II together with andorite and miargyrite crystals. Its empirical formula is $(Pb_{8.63}Ag_{0.26})_{\Sigma 8.89}(Sb_{8.15}As_{0.04})_{\Sigma 8.19}S_{20.93}$. Sphalerite occurred mainly as orange to red crystals and grains, growing in arsenic II (7th level), or as microscopic xenomorphic aggregates growing on silver (8th level). Sphalerite usually contains constant Fe contents up to 0.01 *apfu* and Cd up to 0.003 *apfu*. Younger sphalerite generation of which strong catodoluminiscence is typical has Cd content up to 0.004 *apfu* and absence of Fe content. Stibarsen forms up to several mm large aggregates mainly in association with arsenic I, which characteristically contain large amount of Sb arsenic grains. Its empirical formula is $Sb_{0.91}As_{1.09}$. Silver was found in form of wires and bush like aggregates (8th level). Silver is non-homogenous which is induced mainly by the Hg contents to 3.36 wt. % (0.02 *apfu*) and also by Sb content to 1.19 wt. % (0.01 *apfu*). The vertical zonality probably formed by late hydrothermal solutions was found on this vein. Hydrothermal solutions dissolved primary mineralization

especially in lower parts of the vein and the crystallization of younger mineral phases followed. These processes gave rise to rich occurrences of native silver and Hg silver together with pyrargyrite and allargentum around and above the 8th level, while the older Sb arsenic accompanied by dyscrasite and regenerated miargyrite predominate around the 7th level.

Key words: *dyscrasite, miargyrite, freieslebenite, freibergite, allargentum, andorite, semseyite, stibnite, chemical composition, X-ray data, the Příbram uranium-base metal district, Central Bohemia, Czech Republic*