PŮVODNÍ PRÁCE/ORIGINAL PAPER

Supergenní minerály As ze štoly č. 2 Preisselberg, rudní revír Krupka (Česká republika)

Supergene As minerals from the Gallery No. 2, Preisselberg, the Krupka ore district (Czech Republic)

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Abstract

An interesting As-rich supergene mineral association was found at abandoned Gallery No. 2 Preisselberg, the Krupka ore district, Krušné hory Mountains, Czech Republic. Scorodite forms there abundant greyish to light green earthy, massive to fine crystalline aggregates up to 3 cm; its hemispherical aggregates up to 3 mm in size was observed in their cavities. It is orthorhombic, space group *Pcab*, the unit-cell parameters refined from X-ray powder diffraction data are: *a* 8.939(2), *b* 10.279(3), *c* 9.999(3) Å and *V* 918.8(4)Å^3; its chemical analyses correspond to the empirical formula $(Fe_{0.99}Al_{0.01}Cu_{0.01})_{\Sigma 1.01}[(AsO_4)_{0.99}(SO_4)_{0.01}]_{\Sigma 1.00} \cdot 2H_2O$ on the basis of As+P+S = 1 *apfu*. Barium-rich pharmacosiderite-Q was found as greyish green, fine crystalline aggregates up to 1 cm in size with well-formed pseudocubic crystals up to 1 - 2 mm in cavities. It is tetragonal, space group *P-42m*, the unit-cell parameters refined from X-ray powder diffraction data are: *a* 7.959(2), *c* 8.0325(2) Å and *V* 508.8(1) Å^3; its chemical analyses correspond to the empirical formula $(K_{0.36}Ba_{0.22}Na_{0.05})_{\Sigma 0.63}(Fe_{3.98}Al_{0.12}Cu_{0.01})_{\Sigma 1.11}(AsO_4)_{3.00}(OH)_{4.15} \cdot 6H_2O$ on the basis of As+P = 3 *apfu*. Rare mixite occurs there as green or bluish green acicular crystals up to 1 mm in length formed small groups or rich radial aggregates in cavities of scorodite - pharmacosiderite matrix. Mixite is hexagonal, space group $P6_3/m$, the unit-cell parameters refined from X-ray powder diffraction data are: *a* 13.631(1), *c* 5.912(1)Å, and *V* 951.3(1)Å^3; its chemical analyses correspond to the empirical formula $(Bi_{0.75}Ca_{0.34}Al_{0.10})_{\Sigma 1.19}(Cu_{5.37}Fe_{0.40})_{\Sigma 5.77}[(AsO_4)_{2.97}(SiO_4)_{0.02}(PO_4)_{0.01}]_{\Sigma 3.00}(OH)_{5.76} \cdot 3H_2O$ on the basis of As+Si+P = 3 *apfu*. The origin of this As-rich mineral association is interpreted as product of weathering of primary ore minerals (predominantly arsenopyrite) in conditions of supergene zone *in-situ*.

Key words: *scorodite, pharmacosiderite-Q, mixite, powder X-ray diffraction data, unit-cell parameters, chemical composition, the Krupka ore district, Czech Republic*

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