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Brianyoungit z Plavna v jáchymovském rudním revíru (Česká republika)

Brianyoungite from Plavno in the Jáchymov ore district (Czech Republic)

Bohuslav Bureš

Plevenská 3111, 143 00 Praha 4; e-mail: bohuslav.bures@seznam.cz

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Abstract

Rare zinc hydroxyl carbonate sulfate, mineral brianyoungite, was found in the area of skarn body near the hydrothermal vein No. 13 (2nd level of the shaft Vladimír), Plavno deposit, the Jáchymov ore district, Krušné hory Mountains, Czech Republic. Brianyoungite occurs as very thin white crystalline coatings on an area of up to several cm^2 on altered skarn or more rarely it forms irregular crystalline aggregates up to 2 mm in size or spherical to hemispherical aggregates composed of small thin tabular crystals. Associated minerals are gypsum, hexahydrite, hydromagnesite, nesquehonite, serpierite, smithsonite, šlikite, Zn-rich malachite and ktenasite-like mineral. Brianyoungite is probably monoclinic, the unit-cell parameters refined from X-ray powder diffraction data are: *a* 15.747(4), *b* 6.254(2), *c* 5.482(2) Å, β 90.63(4)°, and *V* 539.8(4) $Å^3$. Its chemical analyses (mean of 4 points) correspond to the empirical formula $Zn_{3.00}[(CO_3)_{0.74}(SO_4)_{0.23}(SiO_4)_{0.03}]_{\Sigma 1.00}(OH)_{3.95}$ on the basis of 3 *apfu* Zn. Raman and infrared spectroscopy confirm presence of $(OH)^-$, $(CO_3)^{2-}$ and $(SO_4)^{2-}$ groups in its crystal structure. The origin of brianyoungite is interpreted as product of (sub) recent supergene alteration of primary sphalerite and other minerals in skarn rock in environment of abandoned mine corridors.

Key words: *brianyoungite, carbonates, supergene mineralization, X-ray powder data, unit-cell parameters, chemical composition, Raman spectroscopy, Plavno, Jáchymov ore district, Czech Republic*

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