PŮVODNÍ PRÁCE/ORIGINAL PAPER

Vybrané supergenní minerály uranu z tachovské rudní oblasti (Česká republika)

Selected supergene uranium minerals from the Tachov ore area (Czech Republic)

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Abstract

The occurrence of three uranyl minerals (uranophane-beta, metauranocircite, metatorbernite) was found at the Tachov ore area (western Bohemia, Czech Republic). Uranophane-beta was determined at abandoned uranium deposit Vítkov II. It forms dark to orange yellow crystalline aggregates up to 1 × 3 cm in size and rare idiomorphic prismatic crystals up to 3 mm in length. It is monoclinic, space group $P\,2_1/a$, the unit-cell parameters refined from X-ray powder diffraction data are: a 13.960(1), b 15.468(1), c 6.6318(8) Å, β 91.41(1)° and V 1431.6(2) Å^3. Chemical analyses of uranophane-beta correspond to the empirical formula $(Ca_{1.00}Co_{0.01}Ni_{0.01})_{\Sigma 1.02}(UO_2)_{2.00}(SiO_3OH)_{2.00}\cdot 5H_2O$. Metauranocircite and metatorbernite was found at material from small open pit at Ostrov near Tachov. Metauranocircite forms yellow crystalline coatings up to 2 × 3 cm in size on quartz gangue or older metatorbernite composed by tabular crystals up to 2 mm in size. It is monoclinic, space group $P\,2_1/a$, the unit-cell parameters refined from X-ray powder diffraction data are: a 9.783(2), b 9.885(2), c 16.878(2) Å, γ 89.93° and V 1632.3(4) Å^3. Chemical analyses of metatorbernite correspond to the empirical formula $(Ba_{1.04}Ca_{0.02}Co_{0.01}Ni_{0.01})_{\Sigma 1.08}(UO_2)_{2.04}[(PO_4)_{1.99}(AsO_4)_{0.01}]_{\Sigma 2.00}\cdot 6H_2O$. Metatorbernite occurs as green crystalline coatings up to 2 × 2 cm in size on quartz gangue composed by tabular crystals up to 3 mm in size. It is tetragonal, space group $P\,4/n$, the unit-cell parameters refined from X-ray powder diffraction data are: a 6.9702(9), c 17.329(2) Å and V 841.8(2) Å^3. Chemical analyses of metatorbernite correspond to the empirical formula $(Cu_{0.77}Co_{0.01})_{\Sigma 0.78}(UO_2)_{2.03}[(PO_4)_{1.84}(AsO_4)_{0.16}]_{\Sigma 2.00}\cdot 8H_2O$. The origin of studied mineral association is interpreted as product of *in-situ* supergene alteration of primary uranium mineralization in environment under the present surface.

Key words: *uranocircite, uranophane-beta, metatorbernite, powder X-ray diffraction data, unit-cell parameters, chemical composition, the Vítkov II uranium deposit, the Ostrov near Tachov occurrence, Czech Republic.*

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