

Zajímavý výskyt fosfátů v okolí Líštěnce u Votic (Česká republika)

An interesting phosphate occurrence around Líštěnec near Votice (Czech Republic)

LUBOŠ VRTIŠKA*, RADANA MALÍKOVÁ A JIŘÍ SEJKORA

Mineralogicko-petrologické oddělení, Národní muzeum, Cirkusová 1740, 193 00 Praha 9 - Horní Počernice;
*e-mail: lubos_vrtiska@nm.cz

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Abstract

An interesting phosphate mineral assemblage was found at several sites close to the Líštěnec village near Votice (central Bohemia, Czech Republic). Recently defined fluorwavellite forms light blue to blue spherical aggregates and crusts in fissures of graphitic gneisses (historical sample) or quartz gangue (new finds). It is orthorhombic, space group *Pcnm* with following unit-cell parameters refined from the X-ray powder diffraction data: *a* 9.6259(8), *b* 17.381(2), *c* 6.9946(6) Å, *V* 1170.3(2) Å³ (historical sample) and *a* 9.635(3), *b* 17.366(5), *c* 6.993(2) Å and *V* 1169.9(6) Å³ (new finds). Empirical formulae of fluorwavellite from both finds is possible to express as $(Al_{2.90}V_{0.03}Fe_{0.02}K_{0.01})_{\Sigma 2.96}(PO_4)_{4/2.00}F_{1.00}((OH)_{1.73}F_{0.12})_{\Sigma 2.85} \cdot 5H_2O$ (historical sample) and $(Al_{2.84}V_{0.16}Fe_{0.03}Ca_{0.02}K_{0.02}Cr_{0.02})_{\Sigma 3.09}(PO_4)_{4/2.00}(F_{0.81}(OH)_{0.19})(OH)_{2.23} \cdot 5H_2O$ (new finds). Variscite occurs as green transparent crusts and aggregates. Samples from both occurrences belong to variscite of Messbach type with following orthorhombic unit-cell parameters: *a* 9.906(2), *b* 9.659(2), *c* 17.175(4) Å, *V* 643.4(3) Å³ (historical sample) and *a* 9.902(3), *b* 9.654(2), *c* 17.179(4) Å, *V* 1642.1(7) Å³ (new finds). Their empirical formulae are: $(Al_{0.99}V_{0.02}Fe_{0.01})_{\Sigma 1.02}(PO_4)_{4/0.99}F_{0.05} \cdot 2H_2O$ (historical sample) and $(Al_{0.94}V_{0.02}Fe_{0.03}Cr_{0.01})_{\Sigma 1.00}(PO_4)_{4/1.00}F_{0.06} \cdot 2H_2O$ (new finds). Pyromorphite forms crusts and aggregates at fissures of quartz gangue consisting from yellow to light green crystals up to 5 mm in length. It is hexagonal, space group *P6₃/m* with unit-cell parameters refined from the X-ray powder diffraction pattern: *a* 9.985(3), *c* 7.3365(1) Å and *V* 633.5(2) Å³. Its chemical composition correspond to empirical formula $Pb_{2.95}Ca_{0.01}(P_{2.95}As_{0.03}Cr_{0.02})_{\Sigma 3.00}Cl_{1.00}$. Rare plumbogummite was found as white (with yellowish or bluish tint) crusts in small cavities of quartz composed by tiny idiomorphic trigonal crystals. It is trigonal, space group *R-3m* with following unit-cell parameters refined from X-ray powder diffraction data: *a* 7.033(3), *c* 16.7534(3) Å and *V* 717.6(3) Å³. Its chemical analyses correspond to Pb-, Al- and P-dominant member of alunite supergroup. Very rare kintoreite occurs as yellow to brownish yellow tiny idiomorphic trigonal crystals in cavities of quartz gangue. Its chemical composition correspond to Pb-, Fe- and P-dominant member of alunite supergroup. An extensive Al-Fe substitution is characteristic for studied plumbogummite and kintoreite.

Key words: Al-phosphates, plumbogummite, kintoreite, fluorwavellite, variscite, pyromorphite, unit-cell parameters, chemical composition, Líštěnec, Votice, Czech Republic

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