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Zýkait z dolu Lehnschafter u Mikulova v Krušných horách (Česká republika) - popis a Ramanova spektroskopie

Zýkaite from the Lehnschafter mine near Mikulov in the Krušné hory Mts. (Czech Republic) - description and Raman spectroscopy

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Abstract

The zýkaite samples were found at abandoned Lehnschafter mine near Mikulov in the Krušné hory Mts. (Czech Republic). It occurs as irregular white to light greenish rounded to spherical aggregates up to 1.5 cm in size composed of tiny acicular crystals up to 5 - 10 μm in length. Its empirical formula can be expressed as $(Fe_{3.79}Al_{0.02})_{\Sigma 3.81}[(AsO_4)_{2.66}(PO_4)_{0.20}(SiO_4)_{0.07}]_{\Sigma 2.93}(SO_4)_{1.07}(OH)_{0.44}\cdot 15H_2O$ (mean of 3 spot analyzes; on the basis of As+P+S+Si = 4 *apfu*). Zýkaite is probably monoclinic, with the unit-cell parameters refined from X-ray powder diffraction data: *a* 21.195(8), *b* 7.052(2), *c* 36.518(17) Å, β 91.07(2)° and *V* 5458(2) Å^3. Raman spectroscopy documented the presence of both $(AsO_4)^{3-}$ and $(SO_4)^{2-}$ units in the crystal structure of zýkaite. Multiple Raman bands connected with vibrations of water molecules and $(AsO_4)^{3-}$ groups indicate the presence of more structurally non-equivalent these groups in the crystal stucture of zýkaite.

Key words: *zýkaite, supergene minerals, Raman spectroscopy, Lehnschafter mine, Mikulov, Krušné hory Mts., Czech Republic*

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