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Rapidcreekit z haldy dolu Mayrau ve Vinařicích u Kladna - první potvrzený nález v České republice

Rapidcreekite from the mine dump of Mayrau mine, Vinařice near Kladno - the first confirmed find in the Czech Republic

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Abstract

We have undertaken a study of the rare hydrated calcium sulfate carbonate mineral, rapidcreekite, from the burnt mine dump of the Mayrau coal mine at Vinařice near Kladno, central Bohemia (Czech Republic). This is the first confirmed occurrence of this mineral in the Czech Republic. Rapidcreekite forms rich crystalline aggregates up to several cm^2 in size and radially arranged aggregates up to 2 - 5 mm in diameter, both composed of well-developed flattened acicular crystals up to 2 mm in length. Rapidcreekite crystals are colourless to whitish, transparent to translucent and have an intensive vitreous luster. The quantitative chemical analyses of rapidcreekite agree well with the proposed ideal composition and correspond to the following empirical formula $Ca_{1.00}(SO_4)_{0.97}(CO_3)_{0.99}(PO_4)_{0.03}\cdot 4H_2O$ (on the basis of 2 Ca+S+P atoms *pfu*). Rapidcreekite is orthorhombic, the space group *Pcnb*, with the unit-cell parameters refined from X-ray powder diffraction data: *a* 15.5324(13), *b* 19.2334(18), *c* 6.1702(7) Å and *V* 1843.3(2) $Å^3$. Raman spectroscopy documented the presence molecular water, sulfate and carbonate units in the crystal structure of rapidcreekite.

Key words: *rapidcreeckite, chemical composition, X-ray powder diffraction data, Raman spectra, Mayrau mine, Vinařice near Kladno, central Bohemia, Czech Republic*

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