PŮVODNÍ PRÁCE/ORIGINAL PAPER

Primárny nízkotermálny delafossit ($CuFeO_2$) z odkaliska Slovinky (Slovensko)

Primary low-temperature delafossite ($CuFeO_2$) from mine tailing Slovinky (Slovakia)

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Abstract

Delafossite was found in the upper parts of the mine tailing Slovinky. Micro Raman spectroscopy, electron microprobe analysis (EMPA) and X-ray microdiffraction were used for identification of delafossite. The Raman spectrum of delafossite measured at 532 nm is characterized by two main bands at 351 cm^{-1} and 689 cm^{-1}. The average empirical formula of delafossite is (n = 7): $Cu_{1.00}Fe_{1.01}O_{1.99}$. Lattice parameters of delafossite refined by the Rietveld method were acquired by Le Bail decomposition and are following: *a* = 3.038(1) Å, *b* = 17.167(6) Å and *V* = 137.27(7) $Å^3$. Based on its texture, chemical composition and micro Raman data, delafossite probably comes from the primary quartz-siderite-sulphide mineralization. Delafossite occurs as compact grains or relics in goethite and malachite or in the form of botryoidal aggregates together with goethite and malachite. We suppose that delafossite has undergone an oxidation process and forms goethite and malachite in the environment of the mine tailing. From the primary minerals the most common ones are siderite, quartz, pyrite and chalcopyrite, less common ones are gypsum, muscovite, arsenopyrite and tetrahedrite. The most frequent supergene mineral is goethite, less common ones are malachite and cuprite. Covellite in the form of blue coating on chalcopyrite was observed scarce.

Key words: *delafossite, micro Raman spectroscopy, EMPA, X-ray microdiffraction, mine tailing, Slovinky, Slovak Republic*

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