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Lindgrenite, monoclinic $Cu_3(MoO_4)(OH)_2$, from Cínovec, Krušné hory Mountains - the first occurrence in the Czech Republic

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Abstract

A very rare mineral lindgrenite, $Cu_3(MoO_4)_2(OH)_2$, was found in material from the 3rd level of abandoned Cínovec mine 1 of the Cínovec Sn-W deposit, Krušné hory Mountains, northern Bohemia. This is the first occurrence of this mineral in the Czech Republic. Lindgrenite occurs there as olive green irregular coatings on the area up to 0.5 × 1 cm in size formed by hemispherical to spherical aggregates up to 0.3 mm across with crystalline surface in association with brochantite. Lindgrenite is monoclinic, space group $P2_1/n$, the unit-cell parameters refined from X-ray powder diffraction data are: a 5.3934(18), b 14.032(2), c 5.6098(15) Å, β 98.54(2)° and V 419.86(16) Å^3. Chemical analyses of lindgrenite correspond to the empirical formula $(Cu_{2.92}Fe_{0.03})_{\Sigma 2.95}(MoO_4)_{1.97}(PO_4)_{0.07}(AsO_4)_{0.01}(OH)_{1.70}$ on the basis of 5 atoms *pfu*. Its origin is connected with simultaneous weathering of primary Cu (tennantite) and Mo (molybdenite) minerals in the conditions of supergene zone *in-situ*.

Key words: *lindgrenite, unit-cell parameters, chemical composition, Raman spectroscopy, Cínovec, Czech Republic*

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