Okruschite $Ca_2Mn^{2+}_5Be_4(AsO_4)_6(OH)_4{\cdot}6H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As imperfect, thick-tabular to blocky aggregates, to 0.3 mm, composed of curved and randomly oriented laths to 150 μm. Crystals exhibit {010}, {100}, and {001}.

Physical Properties: *Cleavage*: Distinct on {010} and parting on {100}. *Fracture*: n.d. *Tenacity*: Brittle. Hardness = 3.5 D(meas.) = 3.33(2) D(calc.) = 3.34

Optical Properties: Translucent. *Color*: White. *Streak*: n.d. *Luster*: Vitreous. *Optical Class*: Biaxial (-). α = 1.671(3) β = 1.682(2) γ = 1.687(3) 2V(meas.) = 65(5)° 2V(calc.) = 68° *Orientation*: *X* = *b*. *Dispersion:* Weak, *r* > *v*.

Cell Data: *Space Group*: *C*2/*c*. *a* = 16.33(4) *b* = 12.03(3) *c* = 6.93(1) β = 94.84(5)° Z = 2

X-ray Powder Pattern: Fuchs quarry, near Sailauf, Spessart Mountains, Bavaria, Germany. 3.25 (100), 9.68 (39), 4.95 (34), 4.17 (34), 3.11 (32), 2.841 (27), 2.711 (26)

Chemistry:	(1)	(2)
Li_2O	0.04	
BeO	7.70	7.14
MgO	1.68	
CaO	8.28	8.01
MnO	16.27	25.33
FeO	4.89	
Al_2O_3	0.22	
As_2O_5	51.11	49.23
H_2O	11.0	10.29
Total	101.19	100.00

(1) Fuchs quarry, near Sailauf, Bavaria, Germany; electron microprobe analysis supplemented by IR spectroscopy, H_2O by gas chromatography, Li and Be by ICP MS method; corresponding to $Ca_{1.99}(Mn_{3.09}Fe_{0.92}Mg_{0.56}Al_{0.06}Li_{0.04})_{\Sigma=4.67}Be_{4.15}(AsO_4)_{5.99}(OH)_{3.64}{\cdot}6.40H_2O$.
(2) $Ca_2Mn^{2+}_5Be_4(AsO_4)_6(OH)_4{\cdot}6H_2O$.

Occurrence: In a hydrothermal vein cross-cutting rhyolite.

Association: Braunite, Mn-bearing calcite, arseniosiderite.

Distribution: At Fuchs quarry, near Sailauf, Spessart Mountains, Bavaria, Germany.

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Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (94233).

References: (1) Chukanov, N.V., G. Möhn, I.V. Pekov, D.I. Belakovskiy, Y.V. Bychkova, V.V. Gurzhiy and J.A. Lorenz (2014) Okruschite, $Ca_2Mn^{2+}_5Be_4(AsO_4)_6(OH)_4{\cdot}6H_2O$, a new roscherite-group mineral from Sailauf, Bavaria, Germany. Eur. J. of Mineral., 26, 589-595.
(2) (2016) Amer. Mineral., 101, 751 (abs. ref. 1).