Cabalzarite $CaMg_2(AsO_4)_2 \cdot 2H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Crystals to 1 mm are hatchet-like with curved faces to fibrous or tabular flattened on (001) with a prism and two pinacoids; as complex polycrystalline aggregates to 5 mm.

Physical Properties: *Cleavage*: None. *Fracture*: Irregular. *Tenacity*: n.d. Hardness = ~5 VHN = 418-447, 429 average (50 g load). D(meas.) = 3.89(3) D(calc.) = 3.73 Nonfluorescent.

Optical Properties: Transparent. *Color*: Light brownish to salmon-pink or orange-brown. *Streak*: Colorless. *Luster*: Vitreous.
Optical Class: *n*(calc.) = 1.77(6) Optically inhomogeneous with oblique or mosaic extinction.

Cell Data: *Space Group*: *C*2/*m*. $a = 8.925(2)$ $b = 6.143(1)$ $c = 7.352(1)$ $\beta = 115.25(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Falotta mine, Graubünden, Switzerland.
3.159 (100), 2.942 (60), 2.684 (55), 2.519 (52), 3.373 (47), 4.895 (46), 3.078 (37)

Chemistry:

	(1)
As_2O_5	55.57
SiO_2	0.05
Al_2O_3	9.84
MgO	7.54
Fe_2O_3	4.38
Mn_2O_3	0.55
SrO	0.49
CaO	13.64
H_2O	[7.11]
Total	99.17

(1) Falotta mine, Graubünden, Switzerland; average electron microprobe analysis, supplemented by TGA, H_2O and OH calculated for 10 oxygens pfu, assuming that all Fe and Mn is trivalent, and $(OH + H_2O) = 2$, normalized so that As + Si = 2.00; corresponding to $(Ca_{1.00}Sr_{0.02})(Al_{0.80}Fe_{0.23}Mg_{0.77}Mn_{0.03})_{\Sigma=1.83}(AsO_4)_2[(H_2O)_{1.26}(OH)_{0.74}]_{\Sigma=2}$.

Mineral Group: Tsumcorite group.

Occurrence: Formed by hydrothermal remobilization of arsenic during retrograde metamorphism, under lowest to sub-greenschist facies conditions, of syn-sedimentary exhalative Mn deposits embedded in radiolarites.

Association: Quartz, adularia, kutnohorite, tilasite, grischunite, arseniosiderite, tripuhyite, Mn-oxyhydroxides (rancieite-takanelite), arsenogoyazite.

Distribution: From the Falotta mine, Graubünden, Switzerland.

Name: Honors Walter *Cabalzar* (b. 1919) an amateur Swiss collector, who participated in the description of two new minerals from Falotta (grischunite and geigerite).

Type Material: Geology Museum, Lausanne, Switzerland (MGL73785) and at the Natural History Museum, Basel, Switzerland.

References: (1) Brugger, J., N. Meisser, K. Schenk, P. Berlepsch, M. Bonin, T. Armbruster, D. Nyfeler, and S. Schmidt (2000) Description and crystal structure of cabalzarite $Ca(Mg,Al,Fe)_2(AsO_4)_2(H_2O,OH)_2$, a new mineral of the tsumcorite group. Amer. Mineral., 85(9), 1307-1314.