Castellaroite $Mn^{2+}_3(AsO_4)_2 \cdot 4.5H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As bladed crystals, flattened on [001], striated and elongated parallel to [100] that display {110}, {012}, and {001}, to 2 mm. Typically in radial aggregates to 5 mm.

Physical Properties: *Cleavage*: Perfect on {001}. *Tenacity*: Flexible. *Fracture*: Curved. Hardness = 2.5 D(meas.) = 3.14(2) D(calc.) = 3.164 Soluble in dilute HCl.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous to silky. *Optical Class*: Biaxial (-). α = 1.644(1) β = 1.662(1) γ = 1.667(1) 2V(meas.) = 57(1)° 2V(calc.) = 55° *Orientation: Y* = *b*, *Z* ≈ *a*. *Dispersion*: Moderate, *r* < *v*. *Pleochroism*: None.

Cell Data: Space Group: $P2_1/n$. a = 8.7565(8) b = 13.4683(13) c = 18.652(2) β = 94.876(7)° Z = 8

X-ray Powder Pattern: Monte Nero mine, Rocchetta Vara, La Spezia, Liguria, Italy.
10.90 (100), 3.043 (87), 2.656 (85), 9.27 (67), 3.323 (47), 2.165 (46), 6.97 (42)

Chemistry:	(1)	(2)
MnO	41.62	40.63
As_2O_5	43.35	43.89
P_2O_5	0.82	
H_2O	[15.69]	15.48
Total	100.48	100.00

(1) Monte Nero mine, Rocchetta Vara, La Spezia, Liguria, Italy; average of 28 electron microprobe analyses supplemented by Raman spectroscopy, H_2O from stoichiometry; corresponds to $Mn^{2+}_{3.02}(As_{1.94}P_{0.06})_{\Sigma=2.00}O_{12.5}H_{8.96}$. (2) $Mn^{2+}_3(AsO_4)_2 \cdot 4.5H_2O$.

Occurrence: A secondary mineral precipitated from oxidizing hydrothermal fluids.

Association: Coralloite, manganohörnesite, rhodochrosite, sarkinite, sterlinghillite, strashimirite, wallkilldellite (Monte Nero mine); braccoite, hematite, manganberzeliite, orthoclase, tiragalloite (Valletta mine).

Distribution: In Italy, from the Monte Nero mine, Rocchetta Vara, La Spezia, Liguria, and the Valletta mine, near Canosio, Cuneo, Piedmont.

Name: Honors Fabrizio Castellaro (b. 1970), an Italian mineral collector specializing in the minerals of Liguria, who discovered the first specimens.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (65603 and 65604) and the Natural Science Museum, Torino, Italy (M/U 16950 and 16951).

References: (1) Kampf, A.R., F. Cámara, M.E. Ciriotti, B.P. Nash, C. Belestra, and L. Chiappino (2016) Castellaroite, $Mn^{2+}_3(AsO_4)_2 \cdot 4.5H_2O$, a new mineral from Italy related to metaswitzerite. Eur. J. Mineral., 28(3), 687-696. (2) (2017) Amer. Mineral., 102, 917-918 (abs. ref. 1).