Plumbopharmacosiderite $Pb_{0.5}Fe^{3+}_4(AsO_4)_3(OH)_4 \cdot 5H_2O$

Crystal Data: Cubic. *Point Group*: $\bar{4}\,3m$. As cubes to 50 μm.

Physical Properties: *Cleavage*: n.d. *Fracture*: Irregular. *Tenacity*: Brittle.
Hardness = 2.5-3 (by analogy to group members). D(meas.) = n.d. D(calc.) = 2.89

Optical Properties: Transparent. *Color*: Pale green to yellowish-green. *Streak*: White.
Luster: Vitreous to resinous.
Optical Class: Isotropic. n = 1.73(1)

Cell Data: Space Group: $P\bar{4}\,3m$. a = 7.9791(2) Z = 1

X-ray Powder Pattern: Monte Falò mine, near Coiromonte, Armeno Municipality, Italy.
8.024 (100), 1.879 (29), 3.252 (23), 3.980 (18), 2.830 (18), 5.859 (15), 4.558 (12)

Chemistry:

	(1)	(2)
As_2O_5	38.41	38.23
P_2O_5	0.07	
SO_3	0.03	
SiO_2	0.04	
Al_2O_3	1.30	
Fe_2O_3	33.37	35.41
CaO	0.03	
BaO	2.61	
ZnO	0.05	
PbO	10.59	12.37
Na_2O	0.12	
K_2O	1.08	
H_2O	[14.17]	13.98
Total	101.87	100.00

(1) Monte Falò mine, near Coiromonte, Armeno Municipality, Italy; average of 8 electron microprobe analyses, H_2O calculated for charge balance; corresponds to $(Pb_{0.42}K_{0.20}Ba_{0.15}Na_{0.03}Ca_{0.01})_{\Sigma=0.81}(Fe^{3+}_{3.69}Al_{0.22})_{\Sigma=3.91}(As_{2.95}Si_{0.01})_{\Sigma=2.96}O_{12}(OH)_{\Sigma=3.90} \cdot 5H_2O$.
(2) $Pb_{0.5}Fe^{3+}_4(AsO_4)_3(OH)_4 \cdot 5H_2O$.

Mineral Group: Pharmacosiderite supergroup, pharmacosiderite group.

Occurrence: On fracture surfaces and formed by weathering of primary Pb-Fe-sulfide minerals.

Association: Arsenopyrite, scorodite, beudantite, segnitite, marcasite, galena, sphalerite, mimetite.

Distribution: At Monte Falò Pb-Zn Mine, near Coiromonte, Armeno Municipality, Novara Province, Italy.

Name: The prefix *plumbo* for the essential lead component and relation to *pharmacosiderite*.

Type Material: Mineralogical Collection, Laboratoire de Minéralogie, University of Liège, Belgium (20392).

References: (1) Vignola, P., N. Rotiroti, F. Hatert, F. Dal Bo, P. Gentile, C. Albertini, M. Merlini, A. Risplendente, and A. Pavese (2018) Plumbopharmacosiderite, $Pb_{0.5}Fe^{3+}_4(AsO_4)_3(OH)_4 \cdot 5H_2O$, a new mineral species from the Monte Falò Pb-Zn Mine Near the Village of Coiromonte in the Armeno Municipality, Novara Province, Italy. Can. Mineral., 56(2), 143-150. (2) (2019) Amer. Mineral., 104(5), 783 (abs. ref 1).