Meurigite-Na $[Na(H_2O)_{2.5}][Fe^{3+}_8(PO_4)_6(OH)_7(H_2O)_4]$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As radial sprays of longitudinally striated laths, flattened on {001} and elongated along [010] to 0.4 mm.

Physical Properties: *Cleavage*: Likely on {001}, not observed. *Fracture*: Splintery. *Tenacity*: Slightly flexible. Hardness = ~3 D(meas.) = 2.94(2) D(calc.) = 2.954

Optical Properties: Translucent. *Color*: White, creamy, or yellow. *Streak*: White. *Luster*: Silky. *Optical Class*: Biaxial (-). α = 1.740(3) β = 1.759(3) γ = 1.763(3) 2V(meas.) = 50(10)° 2V(calc.) = 49° *Orientation*: $X \cong c$, $Z = b$. Nonpleochroic.

Cell Data: *Space Group*: *C*2/*c*. a = 28.835(2) b = 5.1848(4) c = 19.484(1) β = 106.983(6)° Z = 4

X-ray Powder Pattern: Silver Coin mine, Valmy, Iron Point district, Nevada, USA.
9.35 (100), 3.206 (40), 3.107 (30), 13.8 (20), 4.843 (20), 2.971 (15), 2.593 (15)

Chemistry:

	(1)	(2)		(1)	(2)
P_2O_5	32.48	33.38	CuO	0.27	
CaO	0.21		Na_2O	2.13	2.43
MgO	0.03		K_2O	0.32	
Al_2O_3	5.36		H_2O	[16.14]	14.12
Fe_2O_3	42.14	50.07	Total	100.00	100.00
V_2O_5	0.92				

(1) Silver Coin mine, Valmy, Iron Point district, Nevada, USA; average electron microprobe analysis, H_2O by difference, H_3O^+ for charge balance without direct evidence; corresponding to $[Na_{0.86}K_{0.09}Ca_{0.05}(H_2O)_{1.90}(H_3O)^+_{0.60}][Fe^{3+}_{6.63}Al_{1.32}Cu_{0.04}Mg_{0.01}(P_{0.96}V_{0.02}O_4)_6(OH)_7(H_2O)_4]$.
(2) $[Na(H_2O)_{2.5}][Fe^{3+}_8(PO_4)_6(OH)_7(H_2O)_4]$.

Occurrence: A late-stage, low-temperature, secondary mineral in complex phosphate assemblages rich in Fe^{3+} and Na.

Association: Turquoise, intergrown kidwellite/lipscombite, crandallite, goethite.

Distribution: Silver Coin mine, Valmy, Iron Point district, Nevada, USA [TL]. In Australia, at Tom's quarry and Moculta quarry in South Australia, Lake Boga quarry and probably Rixon's Sandstone quarry in Victoria. At an unnamed pegmatite prospect near Linopolis, Minas Gerais, Brazil.

Name: Honors Professor John *Meurig* Thomas (b. 1932), crystal chemist, University of Cambridge, Cambridge, England. The suffix, *Na*, indicates dominant sodium rather than potassium.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (57659 and 57660).

References: (1) Kampf, A.R., P.M. Adams, U. Kolitsch, and I.M. Steele (2009) Meurigite-Na, a new species, and the relationship between phosphofibrite and meurigite [meurigite-K]. Amer. Mineral. 94, 720-727.