

**Meurigite-Na**

**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 (-).  $\alpha = 1.740(3)$   $\beta = 1.759(3)$   $\gamma = 1.763(3)$   $2V(\text{meas.}) = 50(10)^\circ$   $2V(\text{calc.}) = 49^\circ$  *Orientation:*  $X \cong c$ ,  $Z = b$ . Nonpleochroic.

**Cell Data:** *Space Group:*  $C2/c$ .  $a = 28.835(2)$   $b = 5.1848(4)$   $c = 19.484(1)$   $\beta = 106.983(6)^\circ$   $Z = 4$

**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 <sub>2</sub> O <sub>5</sub>	32.48	33.38	CuO	0.27
CaO	0.21		Na <sub>2</sub> O	2.13 2.43
MgO	0.03		K <sub>2</sub> O	0.32
Al <sub>2</sub> O <sub>3</sub>	5.36		H <sub>2</sub> O	[16.14] 14.12
Fe <sub>2</sub> O <sub>3</sub>	42.14	50.07	Total	100.00 100.00
V <sub>2</sub> O <sub>5</sub>	0.92			

- (1) Silver Coin mine, Valmy, Iron Point district, Nevada, USA; average electron microprobe analysis, H<sub>2</sub>O by difference, H<sub>3</sub>O<sup>+</sup> for charge balance without direct evidence; corresponding to  $[\text{Na}_{0.86}\text{K}_{0.09}\text{Ca}_{0.05}(\text{H}_2\text{O})_{1.90}(\text{H}_3\text{O}^+)_{0.60}][\text{Fe}^{3+}_{6.63}\text{Al}_{1.32}\text{Cu}_{0.04}\text{Mg}_{0.01}(\text{P}_{0.96}\text{V}_{0.02}\text{O}_4)_6(\text{OH})_7(\text{H}_2\text{O})_4]$ .  
 (2)  $[\text{Na}(\text{H}_2\text{O})_{2.5}][\text{Fe}^{3+}_8(\text{PO}_4)_6(\text{OH})_7(\text{H}_2\text{O})_4]$ .

**Occurrence:** A late-stage, low-temperature, secondary mineral in complex phosphate assemblages rich in Fe<sup>3+</sup> 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.