Merelaniite $Mo_4Pb_4VSbS_{15}$

Crystal Data: Triclinic. *Point Group*: 1 or $\bar{1}$. As cylindrical whiskers, to 100 μm in diameter and to 12 mm long, with a lamellar habit consisting of tightly coiled layers (some with undulating diameters and naturally unraveled segments) that resemble "scrolls" terminated by a cone.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: Splintery. Hardness = n.d. *Tenacity*: Malleable, flexible. D(meas.) = n.d. D(calc.) = 4.895

Optical Properties: Opaque. *Color*: Dark gray; gray to white in reflected light. *Streak*: Dark gray to black. *Luster*: Metallic. *Optical Class*: n.d. *Pleochroism*: Weak, gray to white. *Bireflectance*: Strong, pale gray to almost white. *Anisotropism*: Strong, blue and pale orange-brown tints. R_1-R_2: (400) 37.6-47.6, (420) 37.4-47.2, (440) 37.2-46.8, (460) 36.9-46.5, (470) 36.8-46.3, (480) 36.6-46.1, (500) 36.3-45.7, (520) 36.0-45.1, (540) 35.7-44.4, (546) 35.6-44.1, (560) 35.4-43.5, (580) 35.0-42.7, (589) 34.8-42.3, (600) 34.6-41.8, (620) 34.4-41.0, (640) 34.3-40.2, (650) 34.3-39.9, (660) 34.2-39.6, (680) 34.1-39.2, (700) 34.0-39.0

Cell Data: Space Group: *C*1 *or* $C\bar{1}$.
Q layer: $a = 5.929(8)$ $b = 5.961(5)$ $c = 12.03(1)$ $\alpha = 91.33(9)°$ $\beta = 90.88(5)°$ $\gamma = 91.79(4)°$ $Z = 4$
H layer: $a = 5.547(9)$ $b = 3.156(4)$ $c = 11.91(1)$ $\alpha = 89.52(9)°$ $\beta = 92.13(5)°$ $\gamma = 90.18(4)°$ $Z = 2$

X-ray Powder Pattern: Merelani Hills, Lelatema Mountains, Manyara Region, Tanzania.
2.965 (100), 5.94 (60), 2.272 (40), 6.14 (30), 1.829 (30), 2.968 (25), 2.673 (20)

Chemistry:	(1)	(2)		(1)	(2)
Cu	0.01		V	2.26	2.73
Pb	42.40	44.41	Mo	21.10	20.56
Mn	0.05		W	0.55	
Sb	2.59	6.52	S	24.05	25.77
Bi	3.56		Se	1.25	.
As	0.39		Total	98.20	99.99

(1) Merelani Hills, Lelatema Mountains, Manyara Region, Tanzania; average of 13 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to $Mo_{4.33}Pb_{4.00}As_{0.10}V_{0.86}Sb_{0.43}Bi_{0.33}Mn_{0.05}W_{0.05}Cu_{0.03}(S_{14.70}Se_{0.30})$; $[^{Q}(Pb_{0.80}Sb_{0.09}Bi_{0.07}As_{0.02}V^{3+}_{0.02})_{\Sigma=1.00}]$ $[^{H}(Mo^{4+}_{0.85}V^{3+}_{0.15}W^{4+}_{0.01}Cu^{+}_{0.01})_{\Sigma=1.02}]S_{2.92}Se_{0.06}$. (2) $Mo_4Pb_4VSbS_{15}$.

Polymorphism & Series: Cylindrite homologous series.

Occurrence: In crevices loosely attached to alabandite crystals, intimately associated with masses of loosely aggregated graphite crystals. In a region of granulite-facies metamorphism of organic-rich black-shales rich in vanadium. No specimens collected in situ.

Association: Zoisite (variety tanzanite), prehnite, stilbite, chabazite, tremolite, diopside, quartz, calcite, graphite, alabandite, wurtzite.

Distribution: From the tanzanite gem mines, Merelani Hills, near Arusha, Lelatema Mountains, Manyara Region, Tanzania.

Name: Honors the local miners, past and present, living and working in the township of *Merelani*.

Type Material: Natural History Museum, London, England (BM 2016,100); the A.E. Seaman Mineral Museum, Houghton, Michigan (DM 31323, DM 31324, and DM 31325) and the National Museum of Natural History, Washington, D.C. (NMNH 177015), USA; and the Department of Earth Sciences, University of Florence, Italy.

References: (1) Jaszczak, J.A., M.S. Rumsey, L. Bindi, S.A. Hackney, M.A. Wise, C.J. Stanley, and J. Spratt (2016) Merelaniite, $Mo_4Pb_4VSbS_{15}$, a new molybdenum-essential member of the cylindrite group, from the Merelani Tanzanite Deposit, Lelatema Mountains, Manyara Region, Tanzania. Minerals, 6(4), 115. (2) (2020) Amer. Mineral., 105, 1113-1114 (abs. ref. 1).