Merelaniite  

Mo₄PbₓVₙSb₁₅

Crystal Data: Triclinic.  
Point Group: 1 or 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.  
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.  
Birefringence: Strong, pale gray to almost white.

Anisotropism: Strong, blue and pale orange-brown tints.

Cell Data:  
Space Group: C1 or C1.The Q layer: a = 5.929(8) b = 5.961(5) c = 12.03(1) α = 91.33(9)° β = 90.88(5)° γ = 91.79(4)°  
Z = 4 The H layer: a = 5.547(9) b = 3.156(4) c = 11.91(1) α = 89.52(9)° β = 92.13(5)° γ = 90.18(4)°  
Z = 2

X-ray Powder Pattern: Merelani Hills, Lelatema Mountains, Manyara Region, Tanzania.  
2.965 (100), 5.94 (60), 2.722 (40), 6.14 (30), 1.829 (30), 2.968 (25), 2.673 (20)

Chemistry:  
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 Mo₄₃₅Pb₄₆₇As₂₀₉₅ V₀₃₆Sb₄₃₃Bi₉₀₃₃Mn₀₅₃₃Cu₀₃₃(S₁₄₇₀Se₀₃₀); [²(Pb₀.₈₀Sb₀.₂₀Bi₀.₀₇As₀.₀₂V³⁺₀.₀₂)e=±1.00]  
³[(Mo³⁺₀.₈₅V⁵⁻₀.₃₅W⁴⁺₀.₀₁Cu⁴⁺₀.₀₁)e=±1.00]S₂₀₂₉Se₀₆.  
(2) Mo₄PbₓVₙSb₁₅.

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. (NMMNH 177015), USA; and the Department of Earth Sciences, University of Florence, Italy.

References:  
Minerals, 6(4), 115.  
(2) (2020) Amer. Mineral., 105, 1113-1114 (abs. ref. 1).