Tochilinite $6\text{Fe}_{0.9}\text{S} \cdot 5(\text{Mg, Fe}^{2+})(\text{OH})_2$

Crystal Data: Monoclinic or triclinic. Point Group: 2, m, 2/m or 1. As radiating aggregates of cylindrical acicular crystals, which may be hollow, to 1 cm; as paper-thin coatings, felted masses, and as clots.

Physical Properties: Cleavage: On {001}. Hardness = n.d. VHN = 15–49 (5 g load). D(meas.) = 2.96 D(calc.) = 3.03


Cell Data: Space Group: $P\overline{2}_1$, $Pm$, or $P\overline{2}1/m$ with $a = 5.42$ $b = 15.77$ $c = 10.74$ $\beta = 95^\circ$ Z = 6, or Space Group: $C1$ with $a = 5.37$ $b = 15.65$ $c = 10.72$ $\alpha = 90^\circ$ $\beta = 95^\circ$ $\gamma = 90^\circ$ Z = 1

X-ray Powder Pattern: Voronezh region, Russia. 5.34 (10), 10.68 (9), 1.845 (7b), 2.20 (6b), 2.04 (5b), 1.537 (5vb), 3.57 (4)

Chemistry: (1) (2)
Fe 40.25 44.92
FeO 6.56
Mg 10.94 16.87 23.00 21.73 [20.99]
S 11.25
H$_2$O 1.60
rem.
(1) Voronezh region, Russia; by electron microprobe, remainder deducted as gibbsite, Al(OH)$_3$; corresponds to 2(Fe$_{0.88}$S)•1.67[(Mg$_{0.71}$Fe$_{0.29}$)$_{\Sigma=1.00}$](OH)$_2$ by analogy to valleriite.
(2) Dumont property, Canada; by electron microprobe, (OH)$^{1-}$ calculated; corresponds to 2(Fe$_{0.94}$S)•1.82[(Mg$_{0.73}$Fe$_{0.27}$)$_{\Sigma=1.00}$](OH)$_2$.

Occurrence: In sulphide-rich serpentinized ultramafic bodies, where it may be of rock-forming mineral abundance; in some carbonaceous chondrite meteorites.

Association: Troilite, pyrrhotite, sphalerite, calcite, lizardite (Voronezh region, Russia); pyrrhotite, forsterite, clinohumite, hydromagnesite, graphite, calcite (Bancoft, Canada).

Distribution: In Russia, in the Voronezh district, from the Nizhni Mammon Cu–Ni deposit, Nizhni Mammon intrusive, 45 km southeast of Pavlovsk [TL], and in the Staromelovatskii intrusive; in the Mir, Udachnaya, and Obnakhennaya diamond pipes, Sakha. At the Grace mine, Morgantown, Berks Co., and the Cornwall open pit, Lebanon Co., Pennsylvania, USA. In Canada, in the Stephen Cross and Maxwell quarries, near Wakefield, and from the Dumont property, near Amos, Quebec; in the Muskox intrusion, Northwest Territories; from near Bancroft, Ontario; other occurrences are known. At the Jucupiranga mine, Sáo Paulo, Brazil. In the Kamaishi mine, Iwate Prefecture, Japan. At the Mt. Keith nickel deposit, 15 km north of Betheno, Western Australia. From The Lizard, Cornwall, England. At Vâlsan, Romania.

Name: In honor of Professor Mitrofan Stepanovich Tochilin (1919–1968), mineralogist and geologist, Voronezh University, Voronezh, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.