Crystal Data: Hexagonal. *Point Group*: 6/*m*. As roughly spherical clusters to 100 μm, comprised of very thin, needle-like crystals to ~40 μm around a core of stubbier, broken crystals <5 μm.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = <3 likely. D(meas.) = n.d. D(calc.) = 3.374 Nonfluorescent under SW UV.

Optical Properties: [Translucent.] *Color*: White. *Streak*: White. *Luster*: Pearly.
Optical Class: Uniaxial (-). ω(calc.) = 1.79(1) ε(calc.) = 1.71(1) *n*(calc. average) = 1.762
Pleochroism: Faint, *O* = grayish blue, *E* = brownish yellow. *Absorption*: *E* > *O*.

Cell Data: *Space Group: P*6$_3$/*m*. *a* = 13.3360(19) *c* = 11.604(2) Z = 2

X-Ray Diffraction Pattern: Bambolla mine (aka Moctezuma mine), Moctezuma, Sonora, Mexico. 3.223 (100), 11.667 (89), 8.240 (38), 2.905 (37), 3.503 (31), 4.395 (29), 4.107 (29)

Chemistry:

	(1)	(2)
Al_2O_3	29.69	36.03
SiO_2	0.08	
SO_2	[1.71]	1.89
SO_3	[2.14]	2.36
Cl	0.22	
Fe_2O_3	1.36	
ZnO	0.17	
TeO_2	[43.65]	47.00
TeO_3	[9.78]	
H_2O	[10.29]	12.73
-O = Cl	0.05	.
Total	99.32	100.00

(1) Bambolla mine, Moctezuma, Sonora, Mexico; average electron microprobe and IR spectroscopic analyses, H_2O calculated from structure, assuming a 1:1 ratio of $(SO_3)^{2-}$:$(SO_4)^{2-}$ and $(Al^{3+}+Te^{6+}+Fe^{3+}+Zn^{2+}) = 12$; corresponds to $(Al_{10.64}Te^{6+}_{1.01}Fe^{3+}_{0.31}Zn_{0.04})_{\Sigma=12}(Te^{4+}_{5.00}Pb_{0.02})_{\Sigma=5.02}(S^{4+}_{0.49}S^{6+}_{0.49}Si_{0.02})_{\Sigma=1.00}O_{21.53}[(OH)_{20.86}Cl_{0.11}]_{\Sigma=20.97}$. (2) $Al_{12}(Te^{4+}O_3)_5[(SO_3)_{0.5}(SO_4)_{0.5}](OH)_{24}$.

Occurrence: From oxidation of primary tellurium and/or telluride phases. Al^{3+} from the weathering of K-feldspar, a common rock-forming mineral in nearby rhyolite.

Association: On tellurite and quartz.

Distribution: From the Bambolla mine (aka Moctezuma mine), Moctezuma, Sonora, Mexico.

Name: From the Nahuatl word for "fuzzy" ("tomiollo") in allusion to the appearance as near-spherical clusters of crystals.

Type Material: Museums Victoria, Melbourne, Victoria, Australia (M55489).

References: (1) Missen, O.P., S.J. Mills, M.S. Rumsey, J. Spratt, J. Najorka, A.R. Kampf, and B. Thorne (2022) The new mineral tomiolloite, $Al_{12}(Te^{4+}O_3)_5[(SO_3)_{0.5}(SO_4)_{0.5}](OH)_{24}$: A unique microporous tellurite structure. Amer. Mineral., 107, 2167-2175.