Tlalocite $(Cu,Zn)_{16}(Te^{4+}O_3)(Te^{6+}O_4)_2Cl(OH)_{25}\cdot 27H_2O$

Crystal Data: Orthorhombic. *Point Group:* n.d. As velvety crusts composed of spherules or arcuate bands of subparallel lath-shaped crystals, to 10 μm.

Physical Properties: *Tenacity:* Gummy and sectile. Hardness = 1 D(meas.) = 4.55(1) D(calc.) = 4.58

Optical Properties: Semitransparent. *Color:* Capri blue; pale green in transmitted light. *Streak:* Very pale blue.
Optical Class: Biaxial (–). *Pleochroism:* X = green; $Y = Z$ = bluish green. *Absorption:* $Z > Y > X$. $\alpha = 1.758(2)$ $\beta = 1.796(2)$ $\gamma = 1.810(5)$ 2V(meas.) = 64° 2V(calc.) = 61°

Cell Data: *Space Group:* n.d. $a = 16.780(3)$ $b = 19.985(4)$ $c = 12.069(3)$ Z = 4

X-ray Powder Pattern: Bambollita mine, Mexico.
16.787 (10), 4.201 (10), 8.394 (8), 3.355 (6), 1.560 (5), 2.796 (3), 2.588 (3b)

Chemistry:

	(1)
TeO_3	15.0
TeO_2	6.1
CuO	31.0
ZnO	19.3
Cl	1.3
H_2O	27.7
$-O = Cl_2$	0.3
Total	100.1

(1) Bambollita mine, Mexico; results from several partial analyses, CuO and ZnO by AA, Te and Cl by spectrophotometry, H_2O by gravimetry; corresponds to $Cu_{9.92}Zn_{6.03}(Te^{4+}O_3)_{0.97}(Te^{6+}O_4)_{2.17}Cl_{0.93}(OH)_{24.69}\cdot 26.78H_2O$.

Occurrence: Very rare in partially oxidized portions of a tellurium-bearing polymetallic hydrothermal sulfide vein.

Association: Tenorite, azurite, malachite.

Distribution: From the Oriental (Bambollita) mine, northeast of the Moctezuma (Bambolla) mine, 12 km south of Moctezuma, Sonora, Mexico.

Name: For *Tlaloc*, the Toltec and Aztec god of rain, in allusion to the high essential water content.

Type Material: Natural History Museum, Paris; National School of Mines, Paris, France; The Natural History Museum, London, England; Harvard University, Cambridge, Massachusetts, 119091; National Museum of Natural History, Washington, D.C., USA, 135057.

References: (1) Williams, S.A. (1975) Xocomecatlite, $Cu_3TeO_4(OH)_4$, and tlalocite, $Cu_{10}Zn_6(TeO_3)(TeO_4)_2Cl(OH)_{25}\cdot 27H_2O$, two new minerals from Moctezuma, Sonora, Mexico. Mineral. Mag., 40, 221–226. (2) (1976) Amer. Mineral., 61, 504 (abs. ref. 1). (3) Roberts, A.C. (1978) An orthorhombic cell for tlalocite. Geol. Surv. Can. Paper 78–1C, 104.