Mcalpineite $Cu_3Te^{6+}O_6 \cdot H_2O$

Crystal Data: Cubic. *Point Group:* n.d. Sheaflike aggregates of fibrous to prismatic crystals, to 1 μm, in crusts.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 6.65

Optical Properties: Translucent to transparent. *Color:* Emerald-green, olive-green, dark green. *Streak:* Paler green. *Luster:* Adamantine.
Optical Class: Isotropic. $n = [2.01]$

Cell Data: *Space Group:* P^{***}. $a = 9.555(2)$ $Z = 8$

X-ray Powder Pattern: McAlpine mine, California, USA.
2.763 (100), 1.689 (80), 2.384 (70), 1.440 (60), 4.26 (40), 1.873 (40), 4.76 (30)

Chemistry:

	(1)	(2)	(3)
TeO_3	39.05	39.0	40.62
As_2O_5		0.8	
SiO_2	0.65	0.2	
NiO	0.17		
CuO	50.84	51.2	55.21
ZnO		3.1	
PbO	4.68		
H_2O	[4.61]	7.	4.17
Total	[100.00]	101.3	100.00

(1) McAlpine mine, California, USA; by electron microprobe, average of four analyses, H_2O by difference, presence confirmed by IR; corresponds to $(Cu_{2.79}Pb_{0.09}Ni_{0.01})_{\Sigma=2.89}(Te_{0.97}Si_{0.05})_{\Sigma=1.02}O_{5.90} \cdot 1.10H_2O$. (2) Centennial Eureka mine, Utah, USA; by electron microprobe, average of two analyses, H_2O by CHN analyzer; corresponds to $(Cu_{2.56}Zn_{0.15})_{\Sigma=2.71}(Te_{0.88}Si_{0.02}As_{0.02})_{\Sigma=0.92}O_{5.47} \cdot 1.53H_2O$. (3) $Cu_3TeO_6 \cdot H_2O$.

Occurrence: A very rare secondary mineral, formed by alteration of tellurides and tellurium-bearing sulfides.

Association: Quartz, chromian muscovite, choloalite, keystoneite, mimetite, malachite, azurite, annabergite, pyrite, acanthite, hessite, "electrum", altaite, silver, galena, pyrargyrite, sphalerite, owyheeite (McAlpine mine, California, USA); xocomecatlite, jensenite, additional uncharacterized tellurate-tellurites, hinsdalite–svanbergite, goethite (Centennial Eureka mine, Utah, USA).

Distribution: In the USA, from the McAlpine mine, Tuolumne Co., California, and at the Centennial Eureka mine, Tintic district, Juab Co., Utah.

Name: For the locality at which the mineral was originally found, the McAlpine mine, California, USA.

Type Material: The Natural History Museum, London, England, 1992,374; Canadian Geological Survey, Ottawa, Canada, 67163.

References: (1) Roberts, A.C., T.S. Ercit, A.J. Criddle, G.C. Jones, R.S. Williams, F.F. Cureton II, and M.C. Jensen (1994) Mcalpineite, $Cu_3TeO_6 \cdot H_2O$, a new mineral from the McAlpine mine, Tuolumne County, California, and from the Centennial Eureka mine, Juab Co., Utah. Mineral. Mag., 58, 417–424. (2) (1995) Amer. Mineral., 80, 630–631 (abs. ref. 1).