Spiroffite $(Mn^{2+},Zn)_2Te_3^{4+}O_8$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Anhedral crystals, to 1 cm, commonly cleavable massive.

Physical Properties: *Cleavage:* Observed in at least two directions. *Fracture:* Conchoidal. Hardness = ∼3.5 D(meas.) = 5.01(2) D(calc.) = 5.059

Optical Properties: Transparent to translucent. *Color:* Purple, red, pale pink. *Streak:* White. *Luster:* Adamantine.
Optical Class: Biaxial (+). $\alpha = 1.85(1)$ $\beta = 1.91(1)$ $\gamma = [2.20]$ 2V(meas.) = 55(5)°

Cell Data: *Space Group:* $C2/c$. $a = 12.870(2)$ $b = 5.3813(5)$ $c = 11.888(2)$ $\beta = 98.22(1)°$ Z = 4

X-ray Powder Pattern: Moctezuma mine, Mexico.
4.98 (vs), 3.00 (vs), 4.06 (s), 3.31 (s), 2.77 (w), 2.69 (w), 2.60 (w)

Chemistry:

	(1)
TeO_2	76.29
MnO	14.20
ZnO	9.36
CaO	0.15
Total	[100.00]

(1) Moctezuma mine, Mexico; recalculated to 100% from an original total of 100.06% after deduction of H_2O 0.03%, insoluble 0.22%, remnant = Bi_2O_3 0.08%, Sb_2O_3 0.02%, Al_2O_3 0.02%, PbO 0.05%, CdO 0.07%, CoO 0.02%, MgO 0.02%; corresponds to $(Mn_{1.26}Zn_{0.72}Ca_{0.02})_{\Sigma=2.00}Te_{3.01}O_{8.02}$.

Occurrence: Very rare in the oxidized zone of an Au–Te deposit (Moctezuma mine, Mexico); very rare in intensely silicified pyritic shales (Joe mine, Arizona, USA).

Association: Tellurium, tellurite, paratellurite, denningite, mroseite, zemannite (Moctezuma mine, Mexico).

Distribution: From the Moctezuma (Bambolla) mine, 12 km south of Moctezuma, Sonora, Mexico. Large crystals at the Joe mine, Tombstone, Cochise Co., Arizona, USA. From the Kawazu mine, Shizuoka Prefecture, Japan.

Name: To honor Professor Kiril Spiroff (1901–1981), Bulgarian–American mineralogist, Michigan College of Mining and Technology, Houghton, Michigan, USA.

Type Material: Natural History Museum, Paris, France, 175.79; Royal Ontario Museum, Toronto, Canada, M24879; Harvard University, Cambridge, Massachusetts, USA, 108109.

References: (1) Mandarino, J.A., S.J. Williams, and R.S. Mitchell (1963) Spiroffite, a new tellurite mineral from Moctezuma, Sonora, Mexico. Mineral. Soc. Amer. Special Paper 1, 305–309. (2) Cooper, M.A. and F.C. Hawthorne (1996) The crystal structure of spiroffite. Can. Mineral., 34, 821–826.