Zincite $(Zn, Mn^{2+})O$

Crystal Data: Hexagonal. *Point Group:* $6mm$. Crystals rare, typically pyramidal, hemimorphic, with large $\{000\overline{1}\}$, to 2.5 cm, rarely curved; in broad cleavages, foliated, granular, compact, massive. *Twinning:* On $\{0001\}$, with composition plane $\{000\overline{1}\}$.

Physical Properties: *Cleavage:* $\{10\overline{1}0\}$, perfect; parting on $\{000\overline{1}\}$, commonly distinct. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 4 VHN = 205–221 (100 g load). D(meas.) = 5.66(2) D(calc.) = 5.6730 Rare pale yellow fluorescence under LW UV.

Optical Properties: Translucent, transparent in thin fragments. *Color:* Yellow-orange to deep red, rarely yellow, green, colorless; deep red to yellow in transmitted light; light rose-brown in reflected light, with strong red to yellow internal reflections. *Streak:* Yellow-orange. *Luster:* Subadamantine to resinous.
Optical Class: Uniaxial (+). $\omega = 2.013$ $\epsilon = 2.029$
R_1–R_2: (400) 13.0–13.6, (420) 12.8–13.2, (440) 12.6–12.8, (460) 12.3–12.6, (480) 12.1–12.4, (500) 12.0–12.2, (520) 11.8–12.1, (540) 11.8–12.0, (560) 11.7–11.9, (580) 11.6–11.8, (600) 11.4–11.7, (620) 11.3–11.6, (640) 11.2–11.5, (660) 11.1–11.4, (680) 11.0–11.2, (700) 11.0–11.2

Cell Data: *Space Group:* $P6_3mc$ (synthetic). $a = 3.24992(5)$ $c = 5.20658(8)$ $Z = 2$

X-ray Powder Pattern: Synthetic.
2.476 (100), 2.816 (71), 2.602 (56), 1.626 (40), 1.477 (35), 1.911 (29), 1.379 (28)

Chemistry:

	(1)	(2)
SiO_2	0.08	
FeO	0.01	0.23
MnO	0.27	0.29
ZnO	99.63	98.88
Total	99.99	[99.40]

(1) Sterling Hill, New Jersey, USA. (2) Do.; by electron microprobe, original total given as 99.39%.

Occurrence: A primary mineral in metamorphosed stratiform zinc orebodies (New Jersey, USA); a secondary mineral altered from other zinc minerals in oxidized zinc-rich ore deposits; a product of volcanism.

Association: Franklinite, willemite, calcite (New Jersey, USA); zinc, sphalerite, smithsonite, hemimorphite, hausmannite.

Distribution: In the USA, from Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey; in the Tonopah-Belmont mine, Osborne district, Maricopa Co., Arizona, the result of a mine fire; in volcanic ash from Mt. St. Helens, Skamania Co., Washington. At Tsumeb, Namibia. From Kipushi, 28 km southwest of Lubumbashi, Katanga Province, Congo (Shaba Province, Zaire). Other localities have been reported but lack supporting data or an accurate location.

Name: For ZINC in the composition.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 504–506. (2) Dunn, P.J. (1979) Light green zincite from Sterling Hill, Ogdensburg, New Jersey. Mineral. Record, 10, 45–46. (3) Albertsson, J., S.C. Abrahams, and Å. Kvick (1989) Atomic displacement, anharmonic thermal vibration, expansivity and pyroelectric coefficient thermal dependences in ZnO. Acta Cryst., 45, 34–40. (4) Dunn, P.J. (1995) Franklin and Sterling Hill, New Jersey. No publisher, n.p., 558–565. (5) (1953) NBS Circ. 539, 2, 25.