

**Lawsonbauerite**

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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . As bladed prismatic crystals, elongated along [010], flattened on {001}, showing {001}, {100}, to 0.5 mm, typically in parallel growths.

**Physical Properties:** *Fracture:* Even. *Tenacity:* Moderately brittle. *Hardness* =  $\sim 4.5$   
D(meas.) = 2.87(4) D(calc.) = 2.92

**Optical Properties:** Semitransparent. *Color:* Colorless to white, coated by black manganese oxides. *Luster:* Dull to vitreous.

*Optical Class:* Biaxial (-). *Orientation:*  $Y = b; Z \wedge c = 7^\circ$ . *Dispersion:*  $r > v$ , strong.  
 $\alpha = 1.590(2)$   $\beta = 1.608(2)$   $\gamma = 1.611(2)$   $2V(\text{meas.}) = 42(1)^\circ$   $2V(\text{calc.}) = 45^\circ$

**Cell Data:** *Space Group:*  $P2_1/c$ .  $a = 10.50(5)$   $b = 9.64(5)$   $c = 16.41(8)$   $\beta = 95.21(10)^\circ$   
 $Z = 2$

**X-ray Powder Pattern:** Sterling Hill, New Jersey, USA.

10.5 (100), 5.24 (60), 3.90 (50), 1.587 (50), 2.772 (40), 6.24 (30), 3.33 (30)

**Chemistry:**

	(1)
SO <sub>3</sub>	10.8
FeO	0.1
MnO	32.6
ZnO	23.1
MgO	8.4
H <sub>2</sub> O	[25.0]
Total	[100.0]

(1) Sterling Hill, New Jersey, USA; by electron microprobe, total Fe as FeO, total Mn as MnO, H<sub>2</sub>O by difference; corresponds to  $(\text{Mn}_{6.81}\text{Mg}_{3.09}\text{Fe}_{0.02})_{\Sigma=9.92}\text{Zn}_{4.21}(\text{SO}_4)_{2.00}(\text{OH})_{24.26} \cdot 8.44\text{H}_2\text{O}$ ; later crystal-structure analysis established the formula as  $(\text{Mn}, \text{Mg})_9\text{Zn}_4(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}$ .

**Occurrence:** A rare secondary mineral formed in a metamorphosed stratiform zinc orebody.

**Association:** Sussexite, pyrochroite, zincite, franklinite, calcite.

**Distribution:** From Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA.

**Name:** Honors Lawson H. Bauer (1889–1954), American chemist, New Jersey Zinc Company, Franklin, New Jersey, USA.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 143003.

**References:** (1) Dunn, P.J., D.R. Peacor, and B.D. Sturman (1979) Lawsonbauerite, a new mineral from Sterling Hill mine, New Jersey, and new data for torreyite, *Amer. Mineral.*, 64, 949–952. (2) Treiman, A.H. and D.R. Peacor (1982) The crystal structure of lawsonbauerite,  $(\text{Mn}, \text{Mg})_9\text{Zn}_4(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}$ , and its relation to mooreite. *Amer. Mineral.*, 67, 1029–1034.