Lawsonbauerite 
\((\text{Mn}^{2+}, \text{Mg})_9\text{Zn}_4(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}\)

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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 Class: Biaxial (−). Orientation: \(Y = b; Z \land c = 7^\circ\). 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:
\[
\begin{array}{ll}
\text{SO}_3 & 10.8 \\
\text{FeO} & 0.1 \\
\text{MnO} & 32.6 \\
\text{ZnO} & 23.1 \\
\text{MgO} & 8.4 \\
\text{H}_2\text{O} & [25.0] \\
\hline
\text{Total} & [100.0]
\end{array}
\]

(1) Sterling Hill, New Jersey, USA; by electron microprobe, total Fe as FeO, total Mn as MnO, H\(_2\)O by difference; corresponds to \((\text{Mn}_{6.81}\text{Mg}_{5.09}\text{Fe}_{0.02})_{2}\text{Zn}_{4.21}(\text{SO}_4)_{2.06}(\text{OH})_{24.26} \cdot 8.44\text{H}_2\text{O}\); later crystal-structure analysis established the formula as \((\text{Mn, Mg})_9\text{Zn}_4(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}\).

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.
