Strunzite

\[ \text{Mn}^{2+}\text{Fe}^{3+}_{2}(\text{PO}_{4})_{2}(\text{OH})_{2}\cdot6\text{H}_{2}\text{O} \]

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**Crystal Data:** Triclinic, pseudomonoclinic. **Point Group:** \( \overline{1} \). Crystals are flattened on \{100\}, typically needlelike to hairlike, to 2 cm; in radiating sprays, tufts, and coatings. **Twinning:** On \{12\}, common.

**Physical Properties:** Hardness = n.d. \( D(\text{meas.}) = 2.52(5) \quad D(\text{calc.}) = 2.49 \)

**Optical Properties:** Semitransparent. **Color:** White, pale yellow, straw-yellow, brownish yellow. **Luster:** Vitreous.

**Optical Class:** Biaxial (−). **Pleochroism:** Faint; \( X = \) nearly colorless; \( Y = \) yellow-brown; \( Z = \) darker yellow-brown. **Orientation:** \( Z \wedge c = 10^\circ – 19^\circ \). **Absorption:** \( Z > X = Y \). \( \alpha = 1.619–1.625 \quad \beta = 1.640–1.670 \quad \gamma = 1.696–1.720 \quad 2V(\text{meas.}) = \) Medium. \( 2V(\text{calc.}) = 56^\circ–93^\circ \)

**Cell Data:** Space Group: \( P\overline{1} \). \( a = 10.228(5) \quad b = 9.837(5) \quad c = 7.284(5) \quad \alpha = 90.17(5)^\circ \quad \beta = 98.44(5)^\circ \quad \gamma = 117.44(5)^\circ \quad Z = 2 \)

**X-ray Powder Pattern:** Hagendorf, Germany; nearly identical to ferrostrunzite. 9.02 (10), 5.32 (8), 4.35 (6), 4.27 (6), 3.29 (6), 3.23 (6), 4.50 (5)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P_{2}\text{O}_{5} )</td>
<td>33.0</td>
<td>28.46</td>
</tr>
<tr>
<td>( \text{Fe}<em>{3}\text{O}</em>{3} )</td>
<td>36.0</td>
<td>32.02</td>
</tr>
<tr>
<td>( \text{MnO} )</td>
<td>9.1</td>
<td>14.23</td>
</tr>
<tr>
<td>( \text{H}_{2}\text{O}^+ )</td>
<td>22.5</td>
<td>25.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.6</td>
<td>100.00</td>
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</table>

(1) Hagendorf, Germany. (2) \( \text{Mn}^{2+}\text{Fe}^{3+}_{2}(\text{PO}_{4})_{2}(\text{OH})_{2}\cdot6\text{H}_{2}\text{O} \).

**Occurrence:** A secondary mineral, typically altered from triphylite, in zoned complex granite pegmatites.

**Association:** Triphylite, laueite, rockbridgeite, many other Mn–Fe phosphates.

**Distribution:** From Hagendorf, Waidhaus, and Hühnerkobel, near Zwiesel, Bavaria, Germany. At Blaton, Belgium. In Portugal, from Sabugal, in the Manguada pegmatite, near Mesquitela, and the Bendada pegmatite, near Guarda. In the Gravel Hill mine, Perranzabuloe, Cornwall, England. At the Norrö pegmatite, on Ránö Island, and from near Kapelludden, Utö Island, Sweden. From Morašice, Czech Republic. In the USA, from the Palermo #1 and Fletcher mines, near North Groton,rafton Co., the G.E. Smith mine, Newport, Sullivan Co., and the Fitzgibbon mine, Alstead, Cheshire Co., New Hampshire; in Maine, at the Red Hill quarry, Rumford, and the BB quarry, Norway, Oxford Co., and elsewhere; in the Big Chief mine, one km south of Glendale, and the Hesnard and Etta mines, near Keystone, Pennington Co., from the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota; from the Foote mine, Kings Mountain, Cleveland Co., North Carolina. At several mines around Linópolis, Minas Gerais, Brazil.

**Name:** To honor Dr. Hugo Strunz (1910– ), Professor of Mineralogy, Technical University, Berlin, Germany, for his work on pegmatite phosphate minerals, especially those of Hagendorf, Germany.

**Type Material:** Harvard University, Cambridge, Massachusetts, USA, 106288–106301.

**References:**


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