Ferristrunzite

\[ \text{Fe}^{3+}\text{Fe}_2^{3+}(\text{PO}_4)_2(\text{OH})_3\cdot5\text{H}_2\text{O} \]

Crystal Data: Triclinic, pseudomonoclinic. Point Group: \( \overline{1} \) or 1. Crystals are acicular, rounded and elongated \( \| [001] \), in subparallel, radial, and matted aggregates, to 3 mm. Twinning: On \{110\}.

Physical Properties: Cleavage: One, probable, parallel X-Z OAP. Tenacity: Brittle. Hardness = n.d. \( D(\text{meas.}) = 2.38-2.50 \) \( D(\text{calc.}) = 2.55 \)

Optical Properties: Semitransparent. Color: Light brownish yellow to pale orange. Streak: Very pale yellow. Optical Class: Biaxial (+). Pleochroism: \( X = \) greenish yellow; \( Z = \) brownish yellow. Orientation: \( Z \wedge c \approx 17^\circ \). Dispersion: Strong. Absorption: \( Z > X \). \( \alpha = 1.664(4) \) \( \beta = [1.698] \) \( \gamma = 1.757(5) \) \( 2V(\text{meas.}) = 77(10)^\circ \)

Cell Data: Space Group: \( P\overline{1} \) or \( P1 \). \( a = 10.01(2) \) \( b = 9.73(2) \) \( c = 7.334(8) \) \( \alpha = 90.50(12)^\circ \) \( \beta = 96.99(10)^\circ \) \( \gamma = 116.43(10)^\circ \) \( Z = 2 \)

X-ray Powder Pattern: Blaton, Belgium. 5.34 (100), 8.87 (80), 3.267 (40), 4.20 (30), 3.442 (30), 3.387 (30), 4.48 (20)

Chemistry:

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>( P_2\text{O}_5 )</td>
<td>28.2</td>
<td>28.47</td>
</tr>
<tr>
<td>( \text{Fe}_3\text{O}_4 )</td>
<td>46.3</td>
<td>48.04</td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td>26.0</td>
<td>23.50</td>
</tr>
<tr>
<td>Total</td>
<td>100.5</td>
<td>100.00</td>
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</table>

(1) Blaton, Belgium; by electron microprobe, total Fe as \( \text{Fe}_3\text{O}_4 \), confirmed by microchemical tests, \( \text{H}_2\text{O} \) by TGA-EGA; corresponds to \( \text{Fe}^{3+}_{0.92}\text{Fe}^{3+}_{2.00}(\text{PO}_4)_2(\text{OH})_{2.52}\cdot5\text{H}_2\text{O} \).

(2) \( \text{Fe}_3(\text{PO}_4)_2(\text{OH})_3\cdot5\text{H}_2\text{O} \).

Occurrence: A rare secondary mineral in argillaceous and clastic sediments, probably as an oxidation product of strunzite (Blaton, Belgium).

Association: Beraunite, crandallite, diadochite, allophane-evansite, strengite, phosphosiderite, caco xenite (Blaton, Belgium).

Distribution: From near Blaton, Belgium. In Germany, at Aprath, near Wuppertal, North Rhine-Westphalia; in the Silbergrube quarry, near Waidhaus, Bavaria; from Ventorp, near Arnsberg, North Rhein-Westphalia.

Name: For ferric iron in the composition and its relation to strunzite.
