Bukovskýite \( \text{Fe}_2^{3+}(\text{AsO}_4)(\text{SO}_4)(\text{OH}) \cdot 7\text{H}_2\text{O} \)

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Crystal Data: Triclinic. Point Group: \( \overline{1} \) or \( \overline{1} \). Crystals, needlelike, elongated along [011], to 0.5 mm, showing \( \{0kl\} \) forms, terminated by \( \{100\} \) and \( \{30\overline{2}\} \), may be in radial groups; generally in aggregates, forming nodules.

Physical Properties: Cleavage: On \( \{010\} \), imperfect. Fracture: Uneven, earthy. Tenacity: Flexible in crystals. Hardness = Soft. \( D(\text{meas.}) = 2.334 \) \( D(\text{calc.}) = 2.336 \)

Optical Properties: Semitransparent. Color: Yellowish green to grayish green. Streak: Pale yellowish. Optical Class: Biaxial; birefringence 0.049–0.056. Orientation: Extinction angle = 22°. \( \alpha = \text{n.d.} \) \( \beta = 1.570–1.582 (\beta') \) \( \gamma = 1.626–1.631 (\gamma') \) \( 2V(\text{meas.}) = \text{n.d.} \)

Cell Data: Space Group: \( P\overline{1} \) or \( P1 \). \( a = 10.722(5) \) \( b = 14.079(5) \) \( c = 10.284(5) \) \( \alpha = 93.50(4)° \) \( \beta = 115.96(4)° \) \( \gamma = 90.27(4)° \) \( Z = 4 \)

X-ray Powder Pattern: Kaňk, Czech Republic. 9.197 (100), 8.884 (60), 9.625 (43), 3.077 (36), 3.920 (35), 2.458 (23), 5.338 (20)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{SO}_3 )</td>
<td>16.50</td>
<td>16.35</td>
</tr>
<tr>
<td>( \text{As}_2\text{O}_5 )</td>
<td>22.10</td>
<td>23.46</td>
</tr>
<tr>
<td>( \text{Fe}_2\text{O}_3 )</td>
<td>32.42</td>
<td>32.60</td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td>28.12</td>
<td>27.59</td>
</tr>
<tr>
<td>Total</td>
<td>[99.14]</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Kaňk, Czech Republic; original total given as 99.32%, presence of \( \text{AsO}_4 \), \( \text{SO}_4 \), and \( \text{OH}^{1-} \) confirmed by IR; assuming \( \text{H}_2\text{O}^{+} \) 0.69%, corresponds to \( \text{Fe}_{2.00}(\text{AsO}_4)_{0.95}(\text{SO}_4)_{1.02}(\text{OH})_{1.00} \cdot 7\text{H}_2\text{O} \).

(2) \( \text{Fe}_2(\text{AsO}_4)(\text{SO}_4)(\text{OH}) \cdot 7\text{H}_2\text{O} \).

Occurrence: A post-mining surficial weathering product of Fe–As sulfides.

Association: Arsenopyrite, pyrite, quartz.

Distribution: Found in dumps of the Kuntery and other mines, Kaňk, 2.5 km north of Kutná Hora, Czech Republic.

Name: To honor Antonín Bukovský (1865–1950), Professor at the secondary school of Kutná Hora, Czech Republic, who first analyzed the mineral.

Type Material: Charles University, 14240; National Museum, Prague, Czech Republic, 53411.

References: