Moreauite

\( \text{Al}_3(\text{UO}_2)(\text{PO}_4)_3(\text{OH})_2\cdot13\text{H}_2\text{O} \)

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Crystal Data: Monoclinic. Point Group: 2/m. As tabular crystals flattened on \{100\}, may be elongated along [010], to 0.2 mm; as nodules or subparallel aggregates of tablets resembling “open books.”

Physical Properties: Cleavage: Good on \{100\}, micaceous. Hardness = n.d. D(meas.) = 2.64(5) D(calc.) = 2.61 Radioactive; bright green fluorescence under SW and LW UV.

Optical Properties: Translucent to opaque. Color: Greenish yellow. Luster: Vitreous. Optical Class: Biaxial (−). Orientation: Y = b; Z ≃ c; X ≈ a*. \( \alpha = 1.540(3) \quad \beta = 1.552(2) \quad \gamma = 1.558(2) \quad 2V(\text{meas.}) = \text{n.d.} \quad 2V(\text{calc.}) = 70^\circ \)

Cell Data: Space Group: \( \text{P2}_1/c \). \( a = 23.41(6) \quad b = 21.44(4) \quad c = 18.34(3) \quad \beta = 92.0(1)^\circ \) Z = 16

X-ray Powder Pattern: Kobokobo pegmatite, Congo (fully hydrated). 10.80 (100), 11.69 (80), 9.13 (70), 2.931 (70), 14.02 (60), 3.043 (60), 5.43 (40)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{UO}_3 )</td>
<td>38.9</td>
<td>32.8</td>
<td>31.63</td>
</tr>
<tr>
<td>( \text{P}_2\text{O}_5 )</td>
<td>27.2</td>
<td>23.0</td>
<td>23.55</td>
</tr>
<tr>
<td>( \text{Al}_2\text{O}_3 )</td>
<td>20.4</td>
<td>17.2</td>
<td>16.92</td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td>[13.5]</td>
<td>[27.0]</td>
<td>27.90</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.00</td>
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</tbody>
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(1) Kobokobo pegmatite, Congo; by electron microprobe, average of five grains, partially dehydrated, \( \text{H}_2\text{O} \) by difference, corresponding to \( \text{Al}_3\text{UO}_2(\text{PO}_4)_3(\text{OH})_2\cdot13\text{H}_2\text{O} \).
(2) Do.; \( \text{H}_2\text{O} \) calculated from density, supported by TGA. (3) \( \text{Al}_3(\text{UO}_2)(\text{PO}_4)_3(\text{OH})_2\cdot13\text{H}_2\text{O} \).

Occurrence: A rare secondary mineral in the oxidized uraniferous zone of a complex granite pegmatite.

Association: Furongite, ranunculite, phosphosiderite.

Distribution: From the Kobokobo pegmatite, Lusungu River district, Kivu Province, Congo (Zaire).

Name: Honors Professor Jules Moreau (1931– ), Belgian mineralogist, Catholic University of Louvain, Louvain, Belgium.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG6601, RMG6197, RMG6203.