Akatoreite

\[ \text{Mn}_{8}^{2+} \text{Al}_{2} \text{Si}_{8} \text{O}_{24} \text{(OH)}_{8} \]

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**Crystal Data:**  Triclinic.  Point Group:  \( \overline{1} \).  Rarely as sheaves, to 1 cm, of radiating prisms, elongated and striated \( \| [100] \); fibrous, fine granular, massive.  Twinning:  On \( \{0\overline{2}1\}\); twin axis \( \perp \{0\overline{2}1\}\), lamellar in thin section.

**Physical Properties:**  Cleavage:  Good on \( \{010\} \), poor on \{0\overline{1}2\}.  Hardness = 6  
- D(meas.) = 3.48  
- D(calc.) = 3.47

- Optical Class:  Biaxial (+).  
- Pleochroism:  \( X \rightarrow \) colorless; \( Y \rightarrow \) pale yellow; \( Z \rightarrow \) light canary-yellow.  
- Orientation:  \( X^\| \{010\} \perp g \); \( Y^\| \{010\} \perp g \); \( \gamma = 1.720(1) \)  
- \( 2V(\text{meas.}) = 65.5^\circ \)

**Cell Data:**  Space Group:  \( P\overline{1} \).  \( a = 8.337(2) \)  
- \( b = 10.367(2) \)  
- \( c = 7.629(1) \)  
- \( \alpha = 104.46(1)^\circ \)  
- \( \beta = 93.81(2)^\circ \)  
- \( \gamma = 104.18(1)^\circ \)  
- \( Z = 1 \)

**X-ray Powder Pattern:**  Akatore Creek, New Zealand.  
- 4.665 (100), 3.310 (90), 2.214 (80), 9.681 (60), 3.466 (50), 3.063 (50), 2.866 (50)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>36.4</td>
<td>36.9</td>
</tr>
<tr>
<td>TiO₂</td>
<td>0.03</td>
<td>0.1</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>8.3</td>
<td>6.2</td>
</tr>
<tr>
<td>FeO</td>
<td>1.0</td>
<td>0.9</td>
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<tr>
<td>MnO</td>
<td>47.7</td>
<td>44.2</td>
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<tr>
<td>MgO</td>
<td>0.3</td>
<td>0.8</td>
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<tr>
<td>CaO</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>H₂O</td>
<td>6.21</td>
<td>[10.7]</td>
</tr>
</tbody>
</table>

Total 100.14 [100.0]

(1) Akatore Creek, New Zealand; by electron microprobe, corresponding to \( (\text{Mn}_{8.61}\text{Fe}_{0.19}\text{Mg}_{0.05}\text{Ca}_{0.05})\Sigma_{=8.94}\text{Al}_{2.09}\text{Si}_{7.75}\text{O}_{23.17}\text{(OH)}_{8.83} \).  
(2) Norberg, Sweden; by electron microprobe, average of eight analyses, H₂O by difference; corresponds to \( (\text{Mn}_{8.29}\text{Mg}_{0.27}\text{Fe}_{0.19}\text{Ca}_{0.05})\Sigma_{=8.80}\text{Al}_{1.64}\text{Si}_{8.16}\text{O}_{23.17}\text{(OH)}_{8} \).

**Occurrence:**  In a manganiferous metachert and carbonate lens in schists (Akatore Creek, New Zealand); in manganiferous potassium-rich felsic metavolcanics (Norberg, Sweden).

**Association:**  Rhodochrosite, pyroxmangite, rhodonite, spessartine, quartz, tinzenite, apatite, todorokite, alabandite, hübnerite (Akatore Creek, New Zealand); ganophyllite, rhodochrosite, pyrolusite (Norberg, Sweden).

**Distribution:**  In New Zealand, three km south of Akatore Creek, east Otago, South Island.  From Norberg, Sweden.

**Name:**  For the locality near Akatore Creek, New Zealand.

**Type Material:**  University of Otago, Dunedin; Geological Survey of New Zealand, Lower Hutt, New Zealand; National Museum of Natural History, Washington, D.C., USA, 137285, 142541.

**References:**  

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