Mohrite \((\text{NH}_4)_2\text{Fe}^{2+}(\text{SO}_4)_2\cdot 6\text{H}_2\text{O}\)

**Crystal Data:** Monoclinic. **Point Group:** 2/m. As subhedral crystals, to 0.2 mm, and irregular laminae.

**Physical Properties:** Cleavage: Perfect on \{102\}; distinct on \{010\}. Hardness = n.d. 
D(meas.) = 1.800–1.862  D(calc.) = 1.805–1.870  Soluble in H\(_2\)O.

**Optical Properties:** Semitransparent. **Color:** Pale green to colorless. **Luster:** Vitreous. 
**Optical Class:** Biaxial (+).  \(\alpha = 1.480–1.486\)  \(\beta = \text{n.d.}\)  \(\gamma = 1.486–1.497\)  2V(meas.) = 65°–75°

**Cell Data:** **Space Group:** \(P2_1/c\) (synthetic).  
\(a = 6.24(1)\)  \(b = 12.65(2)\)  \(c = 9.32(2)\)  
\(\beta = 106.8(1)^\circ\)  \(Z = 2\)

**X-ray Powder Pattern:** Travale, Italy.  
3.801 (100), 4.200 (65), 2.460 (28), 3.153 (25), 3.025 (20), 2.823 (20), 5.40 (18)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{SO}_4)</td>
<td>41.05</td>
<td>42.69</td>
</tr>
<tr>
<td>(\text{FeO})</td>
<td>17.49</td>
<td>9.86</td>
</tr>
<tr>
<td>(\text{MnO})</td>
<td>0.11</td>
<td>0.34</td>
</tr>
<tr>
<td>(\text{MgO})</td>
<td>0.56</td>
<td>5.08</td>
</tr>
<tr>
<td>((\text{NH}_4)_2) (\text{O})</td>
<td>13.13</td>
<td>13.40</td>
</tr>
<tr>
<td>(\text{H}_2)(\text{O})</td>
<td>27.10</td>
<td>28.69</td>
</tr>
<tr>
<td>insol.</td>
<td>0.16</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Total 99.60 100.21

(1) Travale, Italy; corresponds to \((\text{NH}_4)_{1.99}(\text{Fe}_{0.96}\text{Mg}_{0.06}\text{Mn}_{0.01})\Sigma=1.03(\text{SO}_4)_{2.03}\cdot 5.95\text{H}_2\text{O}\).
(2) D.; corresponds to \((\text{NH}_4)_{1.95}(\text{Fe}_{0.52}\text{Mg}_{0.48}\text{Mn}_{0.02})\Sigma=1.02(\text{SO}_4)_{2.01}\cdot 6.01\text{H}_2\text{O}\).

**Occurrence:** In boriferous fumaroles and geysers.

**Association:** n.d.

**Distribution:** From Travale, near Montieri, Val di Cecina, Tuscany, Italy.

**Name:** To honor Karl Friedrich Mohr (1806–1879), German analytical chemist, for whom the synthetic compound has long been named.

**Type Material:** University of Florence, Florence, Italy, 16817/G.

**References:**
(2) (1965) Amer. Mineral., 50, 805 (abs. ref. 1).  