**Giftgrubeite**

CaMn$_2$Ca$_2$(AsO$_4$)$_2$(AsO$_3$OH)$_2$·4H$_2$O

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As rosettes of tabular crystals flattened on {100} to 0.2 mm.

**Physical Properties:** *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Curved. *Hardness:* 3.5  
D(meas.) = 3.23(2) D(calc.) = 3.24  
Nonfluorescent.

**Optical Properties:**  
*Color:* Colorless, rarely pearl white to pale yellow.  
*Optical Class:* Biaxial (-). *α = 1.630(2)  β = 1.640(2)  γ = 1.646(2)  2V(meas.) = ~72°  
2V(calc.) = 75.1°  
Nonpleochroic.

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MgO</td>
<td>1.82</td>
<td></td>
</tr>
<tr>
<td>CaO</td>
<td>20.26</td>
<td>19.57</td>
</tr>
<tr>
<td>MnO</td>
<td>11.02</td>
<td>16.50</td>
</tr>
<tr>
<td>FeO</td>
<td>2.43</td>
<td></td>
</tr>
<tr>
<td>As$_2$O$_5$</td>
<td>54.54</td>
<td>53.46</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>[10.70]</td>
<td>10.48</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.77</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Giftgrube Mine, St Jacques vein, Rauenthal, Sainte-Marie-aux-Mines, Haut-Rhin Department, Grand Est, France; average electron microprobe analysis supplemented by Raman spectroscopy, H$_2$O for charge balance; corresponding to (Ca$_{3.04}$Mn$_{1.36}$Mg$_{0.38}$Fe$_{0.28}$)$_{2-5.06}$(AsO$_4$_{1.99}(AsO$_3$OH)$_2$·4H$_2$O.  
(2) CaMn$_2$Ca$_2$(AsO$_4$)$_2$(AsO$_3$OH)$_2$·4H$_2$O.

**Polymorphism & Series:** An ordered intermediate member between villyaellenite and sainfeldite.

**Mineral Group:** Hureaulite group.

**Occurrence:** A secondary mineral, formed by alteration of arsenical minerals after mining.

**Association:** Arsenolite, picropharmacolite, pharmacolite, ± haidingerite, chongite, scorodite, Mn-bearing calcite, native arsenic, löllingite.

**Distribution** From the St Jacques vein, Giftgrube Mine, Rauenthal, Sainte-Marie-aux-Mines, Haut-Rhin Department, Grand Est, France.

**Name:** For the mine that yielded the studied material.

**Type Material:** Geology Museum, University of Lausanne, Switzerland (MGL 080133 and 080134).