Hydroxymcglassonite-(K)

KSr$_4$Si$_8$O$_{20}$(OH)$\cdot$8H$_2$O

Crystal Data: Tetragonal.  
  **Point Group:** 4/m 2/m 2/m.  
  As grains <0.05 mm.

Physical Properties: 
  **Cleavage:** Perfect on {001}.  
  **Tenacity:** Brittle.  
  **Fracture:** n.d.  
  **Hardness =** 4.5-5  
  **D(meas.) =** 2.60(3)  
  **D(calc.) =** 2.614

Optical Properties: 
  **Color:** Colorless.  
  **Streak:** White.  
  **Luster:** Vitreous.  
  **Optical Class:** Uniaxial (+).  
  **ω =** 1.555(5)  
  **ε =** 1.567(5)  
  **Absorption:** O > E.

Cell Data: 
  **Space Group:** P4/mnc.  
  **a** = 9.0792(2)  
  **c** = 16.1551(9)  
  **Z =** 2

X-Ray Diffraction Pattern: Wessels mine, Kalahari Mn fields, Northern Cape Province, South Africa.  
  2.538 (100), 8.008 (94), 3.638 (81), 2.993 (58), 3.940 (50), 4.539 (42), 3.055 (34)

Chemistry: 

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO$_2$</td>
<td></td>
<td>45.99</td>
</tr>
<tr>
<td>K$_2$O</td>
<td></td>
<td>4.56</td>
</tr>
<tr>
<td>CaO</td>
<td></td>
<td>5.52</td>
</tr>
<tr>
<td>SrO</td>
<td></td>
<td>29.66</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>[14.67]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100.40</td>
</tr>
</tbody>
</table>

(1) Wessels mine, Kalahari Mn fields, Northern Cape Province, South Africa; average electron microprobe and Raman spectroscopic analyses, H$_2$O calculated from the structure; corresponds to K$_{1.01}$(Sr$_{2.99}$Ca$_{1.03}$)$_{3}$Si$_{7.99}$O$_{20}$(OH)$\cdot$8H$_2$O.

Polymorphism & Series: Incomplete solid solution with hydroxyapophyllite-(K) cannot be ruled out, as suggested by the size difference between Sr$^{2+}$ and Ca$^{2+}$.

Mineral Group: Apophyllite group with general formula $A^+Ca_4Si_8O_{20}X\cdot8H_2O$.

Occurrence: In a hydrothermal mineral assemblage.

Association: Meieranite, sugilite, aegirine, pectolite, yuzuxiangite.

Distribution: At the Wessels mine, Kalahari Mn fields, Northern Cape Province, South Africa.

Name: Honors James (Jim) A. McGlasson, a retired exploration geologist, mine manager, and consultant. For his dedication to education as former president of the Tucson Gem and Mineral Society, former board member of the Friends of Mineralogy, and an active volunteer at the University of Arizona Mineral Museum and the mineralogy laboratory of the Department of Geosciences at the University of Arizona. The suffix identifies K dominance in the $A$ site; the prefix identifies (OH)$^-$ dominance at the $X$ site.

Type Material: University of Arizona Mineral Museum, Tucson, Arizona, USA (22691 holotype) and the RRUFF Project (R200004 cotype).

References: (1) Yang, H., X. Gu, and M.M. Scott (2022) Hydroxymcglassonite-(K), KSr$_4$Si$_8$O$_{20}$(OH)$\cdot$8H$_2$O, the first Sr-bearing member of the apophyllite group, from the Wessels mine, Kalahari Manganese Field, South Africa. Amer. Mineral., 107, 1818-1822.