droxyl ions in brucite. Weak bonds may then exist between neighboring hydroxyl ions, giving rise to a cooperative process orienting the dipoles. Neutron inelastic scattering and neutron diffraction studies have provided confirming evidence.

REFERENCES


MANGANBERZELIITE FROM FRANKLIN, NEW JERSEY1

Clifford Frohdel and Jun Ito,
Harvard University, Cambridge, Massachusetts.

Manganberzeliite has been identified in a few specimens from Franklin, New Jersey, as granular veinlets up to ¼ inch thick cutting franklinite-willemite ore. No other minerals are associated in the veinlets. A chemical

1 Mineralogical Contribution No. 409, Harvard University.
analysis, cited below, is in very close agreement with the established formula $\text{Mn}_2(\text{Ca, Na})_3(\text{AsO}_4)_3$, with $\text{Na:Ca} = 1:2.18$; small amounts of Fe, Mg and Zn substitute for Mn.

<table>
<thead>
<tr>
<th>MnO</th>
<th>MgO</th>
<th>FeO</th>
<th>ZnO</th>
<th>CaO</th>
<th>Na$_2$O</th>
<th>As$_2$O$_5$</th>
<th>SiO$_2$</th>
<th>H$_2$O</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.64</td>
<td>1.01</td>
<td>0.41</td>
<td>0.61</td>
<td>18.43</td>
<td>4.68</td>
<td>54.52</td>
<td>0.35</td>
<td>0.27</td>
<td>99.92</td>
</tr>
</tbody>
</table>


The mineral has a honey yellow to orange yellow color, with specific gravity $4.21 \pm 0.02$ and an index of refraction of $1.770 \pm 0.002$ in white light. The unit cell dimension calculated from a sharp x-ray powder diffractometer pattern is $a = 12.500 \pm 0.005$ Å. This value is in close agreement with that indicated by the graph relating MnO content and $a$ obtained for the berzelite-manganberzelite series by Blix and Wickman (1959). The mineral is not fluorescent in either long or short-wave ultraviolet radiation. The specimens closely resemble the veinlets of granular, yellow to brown willemite sometimes found cutting the ore bodies at Franklin and Sterling Hill.

This species and its magnesium analogue berzelite are known chiefly from their occurrences at Langban and at the Sjö mine, Sweden. The present occurrence is the first in the United States. The recognition of the mineral at Franklin is owing to the interest of two private mineral collectors, Roy W. Epting of Warwick, N. Y., and Stanley J. Schaub of Westfield, N. J., who noted an isotropic mineral that contained arsenic and manganese in specimens acquired from an old collection.

**Reference**


**THE AMERICAN MINERALOGIST, VOL. 48, MAY-JUNE, 1963**

**THE CRYSTAL STRUCTURE DETERMINATION OF THE ZEOLITE GISMONDITE. CaAl$_2$Si$_2$O$_8$·4H$_2$O.**

*Karl Fischer, Mineralogisches Institut der Universität, Frankfurt am Main, Germany.

**Experimental Procedure and Crystallographic Data**

A single-crystal fragment of gismondite was taken from a sample from Hohenberg near Buehne/Westfalia. A slightly modified Bond apparatus (Bond, 1951) was used to grind a sphere. Its average diameter was meas-