Lithidionite

**Crystal Data:** Triclinic. **Point Group:** \( \overline{1} \). As tiny plates lining cavities in the glassy crust of lapilli.

**Physical Properties:** Hardness = 5–6  
[D(meas.) = 2.75  
D(calc.) = 2.85

**Optical Properties:** Semitransparent. **Color:** Blue.  
**Optical Class:** Biaxial.  
\( \alpha = 1.548 \quad \beta = 1.574 \quad \gamma = \text{n.d.} \quad 2V(\text{meas.}) = 56^{\circ} \)

**Cell Data:**  
**Space Group:** \( \overline{P1} \).  
\( a = 9.80(1) \quad b = 8.01(1) \quad c = 6.97(1) \quad \alpha = 114.12(8)^{\circ} \)
\( \beta = 99.52(6)^{\circ} \quad \gamma = 105.59(8)^{\circ} \quad Z = 2 \)

**X-ray Powder Pattern:** Vesuvius, Italy.  
3.372 (100), 2.409 (85), 3.223 (75), 2.675 (37), 6.75 (35), 3.652 (18), 2.835 (18)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO(_2)</td>
<td>71.57</td>
<td>69.36</td>
<td>60.39</td>
</tr>
<tr>
<td>Fe(_2)O(_3)</td>
<td>0.94</td>
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</tr>
<tr>
<td>FeO</td>
<td>4.02</td>
<td></td>
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<tr>
<td>CuO</td>
<td>6.49</td>
<td>13.29</td>
<td>19.99</td>
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<tr>
<td>PbO</td>
<td>0.73</td>
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<tr>
<td>CaO</td>
<td>3.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Na(_2)O</td>
<td>6.78</td>
<td>5.10</td>
<td>7.79</td>
</tr>
<tr>
<td>K(_2)O</td>
<td>10.92</td>
<td>5.82</td>
<td>11.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>99.78</td>
<td>99.49</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Vesuvius, Italy; average of two analyses of undoubtedly contaminated samples. (2) Do.; considered to contain tridymite \(~40\%). (3) KNaCuSi\(_4\)O\(_{10}\).

**Occurrence:** In lapilli strongly modified by fumerolic action subsequent to the 1873 eruption of Vesuvius.

**Association:** Tridymite, wollastonite, glass.

**Distribution:** Found in the crater of Vesuvius, Campania, Italy.

**Name:** From the Greek for pebble, [Greek diminutive of lithos, for stone; lithidion in English, litidion in Italian] presumably for the size and shape of the lapilli on which the mineral occurs.

**Type Material:** Natural History Museum, Paris, France, 99.788.

**References:**  
(1) Dana, E.S. (1892) Dana’s system of mineralogy, (6th edition), 1041 [lithidionite].  