Polylithionite $\text{KLi}_2\text{AlSi}_4\text{O}_{10}(\text{F, OH})_2$

Crystal Data: Monoclinic. Point Group: $2/m$. Pseudohexagonal crystals, tabular $\| \{001\}$, to 10 cm. As irregularly shaped aggregates of fine scaly crystals.

D(meas.) = 2.58–2.82 D(calc.) = 2.84 May fluoresce lemon-yellow under SW UV.

Optical Properties: Transparent. Color: Bright to pale pink, cream to white, colorless, pale brown to yellow-brown, bluish, greenish; in transmitted light, colorless. Luster: Pearly to waxy when fine-grained.

Cell Data: Space Group: $C2/m$. $a = 5.189$ $b = 8.974$ $c = 10.067$ $\beta = 100^\circ 27'$ $Z = 2$  

X-ray Powder Pattern: Lovozero massif, Russia.  
3.27 (10), 2.56 (10), 1.969 (10), 1.493 (10), 1.631 (9), 1.290 (9), 4.89 (8)

Chemistry:  

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>(1)</th>
<th>(2)</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO$_2$</td>
<td>60.83</td>
<td>59.25</td>
<td>Li$_2$O</td>
<td>6.23</td>
<td>9.04</td>
</tr>
<tr>
<td>TiO$_2$</td>
<td>trace</td>
<td></td>
<td>Na$_2$O</td>
<td>2.06</td>
<td>7.63</td>
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<tr>
<td>Al$_2$O$_3$</td>
<td>13.11</td>
<td>12.57</td>
<td>K$_2$O</td>
<td>11.13</td>
<td>5.37</td>
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<tr>
<td>Fe$_2$O$_3$</td>
<td>0.18</td>
<td>0.93</td>
<td>F$^-$</td>
<td>4.50</td>
<td>7.32</td>
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<td>MnO</td>
<td>0.12</td>
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<td>H$_2$O$^+$</td>
<td>1.71</td>
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<tr>
<td>MgO</td>
<td>0.24</td>
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<td>H$_2$O$^-$</td>
<td>0.33</td>
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</tr>
<tr>
<td>CaO</td>
<td>0.73</td>
<td></td>
<td>$-\text{O} = \text{F}_2$</td>
<td>1.89</td>
<td>3.08</td>
</tr>
</tbody>
</table>

Total 99.28 99.03

(1) Mt. Karnasurt, Kola Peninsula, Russia; corresponds to $K_{0.95}[\text{Li}_{1.67}\text{Na}_{0.27}\text{Ca}_{0.05}\text{Mg}_{0.02}\text{Mn}_{0.01}]\Sigma = 2.03(\text{Al}_{1.03}\text{Fe}_{3+}_{0.01})\Sigma = 1.04\text{Si}_{4.05}\text{O}_{10.25}[\text{F}_{0.05}(\text{OH})_{0.91}]\Sigma = 1.86$  

(2) Ilímaussaq intrusion, Greenland.

Mineral Group: Mica group.

Occurrence: In irregular segregations and veinlets, as a late-stage and metasomatic replacement mineral, in syenite pegmatites in a differentiated alkalic massif (Lovozero massif, Russia).

Association: Microcline, natrolite, taeniolite, steenstrupine, aegirine, analcime, epistolite.


Name: From the Greek polý, for many or much, and in allusion to its high LITHIum content.

Type Material: University of Copenhagen, Copenhagen, Denmark.

References:  
(1) Dana, E.S. (1892) Dana’s system of mineralogy, (6th edition), 626–627.  
(5) Chem. Abs., 94, 50381 (abstr. ref. 4).  

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