Polylithionite  

KLi$_2$AlSi$_4$O$_{10}$(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.

Physical Properties:  

**Cleavage:** {001}, perfect.  

**Fracture:** Uneven.  

**Hardness =** 2–3  

D(meas.) = 2.58–2.82  

D(calc.) = 2.84  

May fluoresce lemon-yellow under SW UV.

Optical Properties:  

**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.

Optical Class: Biaxial (−).  

$\alpha = 1.53$  

$\beta = 1.551$–1.556  

$\gamma = 1.555$–1.559  

2V(meas.) = 0°–43°

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>
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<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>
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<tr>
<td>TiO$_2$</td>
<td>trace</td>
<td></td>
<td>Na$_2$O</td>
<td>2.06</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>
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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>
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<tr>
<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>
<td></td>
<td>H$_2$O$^-$</td>
<td>0.33</td>
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<tr>
<td>CaO</td>
<td>0.73</td>
<td></td>
<td>−O = F$_2$</td>
<td>1.89</td>
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<tr>
<td>Total</td>
<td>99.28</td>
<td>99.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Mt. Karnasurt, Kola Peninsula, Russia; corresponds to K$_{0.95}$(Li$_{1.67}$Na$_{0.27}$Ca$_{0.05}$Mg$_{0.02}$Mn$_{0.01}$)$_2$O$_{2.02}$(Al$_{1.03}$Fe$^{3+}_{0.01}$)$_2$O$_{10.25}$[F$_{0.05}$(OH)$_{0.91}$]$\Sigma = 1.86$.  

(2) Ilulissat 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, teneioliite, steenstrupine, aegirine, analcime, epistolite.


Name: From the Greek poly, 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 (abs. ref. 4).  


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