Chegemite \( \text{Ca}_7(\text{SiO}_4)_3(\text{OH})_2 \)

**Crystal Data:** Orthorhombic.  
*Point Group:* \( 2/m\ 2/m\ 2/m \).  
Crystals exhibit rhombic cross-sections, typically as granular aggregates, to 5 mm.  
*Twinning:* Probable on \( \{110\} \).

**Physical Properties:**  
*Cleavage:* Imperfect on \( \{010\} \).  
*Fracture:* Conchoidal.  
*Tenacity:* n.d.  
*Hardness:* 5.5–6  
\( \text{VHN} = 306–349 \) (50 g load).  
\( \text{D(meas.)} = 2.86(1) \)

**Optical Properties:**  
*Transparency:* Transparent.  
*Color:* Pink, yellow-pink; white in aggregates; colorless in thin section.  
*Luster:* Vitreous.  
*Optical Class:* Biaxial.  
\( \alpha = 1.621(2) \)  
\( \beta = 1.626(3) \)  
\( \gamma = 1.630(2) \)  
\( 2V_\perp \) (meas.) = \(-80(8)^\circ \)

**Cell Data:**  
*Space Group:* \( \text{Pbnm} \).  
\( a = 5.0696(1) \)  
\( b = 11.3955(1) \)  
\( c = 23.5571(3) \)  
\( Z = 4 \)

**X-ray Powder Pattern:** Northern Caucasus, Kabardino-Balkaria, Russia.  
1.907 (100), 2.993 (80), 2.700 (80), 3.015 (70), 2.720 (70), 2.834 (60), 3.639 (50)

**Chemistry:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>( \text{SiO}_2 )</td>
<td>29.76</td>
<td></td>
</tr>
<tr>
<td>( \text{TiO}_2 )</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td>( \text{Fe}_2\text{O}_3 )</td>
<td>0.02</td>
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<tr>
<td>( \text{CaO} )</td>
<td>65.67</td>
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<tr>
<td>( \text{F} )</td>
<td>1.64</td>
<td></td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td>2.23</td>
<td></td>
</tr>
<tr>
<td>(-\text{O}=\text{F})</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99.11</strong></td>
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</tbody>
</table>

(1) Northern Caucasus, Kabardino-Balkaria, Russia; average of 68 electron microprobe analyses, corresponding to \( \text{Ca}_7(\text{SiO}_{0.997}\text{Ti}_{0.003}\text{O}_4)_3(\text{OH})_1.48\text{F}_{0.52} \).

**Occurrence:** A product of sanidinite facies metamorphism of calcareous xenoliths in ignimbrite.

**Association:** Larnite, spurrite, rondorfite, reinhardbraunsite, wadalite, lakargiite, srebrodolskite.

**Distribution:** Upper Chegem volcanic structure, Northern Caucasus, Kabardino-Balkaria, Russia.

**Name:** For the Chegem River, in the headwater area of which the new mineral was discovered.

**Type Material:** A.E. Fersman Mineralogical Museum in Moscow, Russia (3731/1); Museum of Natural History, Bern, Switzerland (NMBE 39571).

**References:**  