Kerimasite

\[ \text{Ca}_3\text{Zr}_2(\text{Fe}^{3+}_2\text{Si})\text{O}_{12} \]

**Crystal Data:** Isometric.  
**Point Group:** 4/m 3 2/m.  
As spherical grains to sharp trapezohedral {211} crystals to 180 \( \mu \text{m} \).

**Physical Properties:**  
**Cleavage:** None.  
**Fracture:** Irregular.  
**Tenacity:** Brittle.  
D(meas.) = n.d.  
D(calc.) = 4.104(1)  
**Hardness:** ~ 7  
VHN = 1168-1288 (25 g load).

**Optical Properties:**  
**Transparency:** Transparent.  
**Color:** Light to dark brown; yellow-green in transmitted light.  
**Streak:** n.d.  
**Luster:** Vitreous.  
**Optical Class:** Isotropic to anisotropic.  
\( n = 1.945(5) \)

**Cell Data:**  
**Space Group:** Ia\( \bar{3} \) d.  
\( a = 12.5512(15) \)  
\( Z = 8 \)

**X-ray Powder Pattern:** Kerimasi volcano, Gregory rift, northern Tanzania.  
2.808 (100), 3.141 (89), 2.563 (89), 1.677 (75), 4.445 (67), 1.741 (25), 1.402 (21)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{Fe}_2\text{O}_3 )</td>
<td>16.92</td>
<td>16.01</td>
<td>Pr( \text{O}_3 )</td>
<td>0.10</td>
</tr>
<tr>
<td>( \text{Al}_2\text{O}_3 )</td>
<td>6.77</td>
<td>6.83</td>
<td>Nd( \text{O}_3 )</td>
<td>0.43</td>
</tr>
<tr>
<td>( \text{SiO}_2 )</td>
<td>7.32</td>
<td>8.37</td>
<td>Sm( \text{O}_3 )</td>
<td>0.13</td>
</tr>
<tr>
<td>( \text{ZrO}_2 )</td>
<td>27.93</td>
<td>34.42</td>
<td>Gd( \text{O}_3 )</td>
<td>0.10</td>
</tr>
<tr>
<td>( \text{TiO}_2 )</td>
<td>1.04</td>
<td>2.10</td>
<td>Dy( \text{O}_3 )</td>
<td>0.11</td>
</tr>
<tr>
<td>( \text{Nb}_2\text{O}_5 )</td>
<td>8.78</td>
<td>3.00</td>
<td>Er( \text{O}_3 )</td>
<td>0.06</td>
</tr>
<tr>
<td>( \text{MgO} )</td>
<td>0.63</td>
<td>0.16</td>
<td>Hf( \text{O}_3 )</td>
<td>0.16</td>
</tr>
<tr>
<td>( \text{Y}_2\text{O}_3 )</td>
<td>0.71</td>
<td>0.30</td>
<td>Ca( \text{O} )</td>
<td>25.86</td>
</tr>
<tr>
<td>( \text{La}_2\text{O}_3 )</td>
<td>0.18</td>
<td>0.09</td>
<td>Mn( \text{O} )</td>
<td>0.33</td>
</tr>
<tr>
<td>( \text{Ce}_2\text{O}_3 )</td>
<td>0.64</td>
<td>0.31</td>
<td>Total</td>
<td>98.20</td>
</tr>
</tbody>
</table>

(1) Kerimasi volcano, northern Tanzania; average of 7 electron microprobe analyses supplemented by Raman spectroscopy; corresponding to \( \text{Ca}_2.89\text{Mn}_{0.02}\text{Ce}_{0.02}\text{Nd}_{0.02}\text{La}_{0.02}\text{Sm}_{0.01}\text{Hf}_{0.01}\text{Y}_{2.98} \times \text{f}^{3+}_{1.33} \text{Al}_{0.67}\text{Si}_{0.50}\text{Ti}_{0.09}\text{O}_{12} \)

(2) Kerimasi volcano, northern Tanzania; average of 20 electron microprobe analyses supplemented by Raman spectroscopy; corresponding to \( \text{Ca}_2.90\text{Mn}_{0.02}\text{Ce}_{0.02}\text{Nd}_{0.01}\text{La}_{0.01}\text{Sm}_{0.01}\text{Hf}_{0.01}\text{Y}_{0.02}\text{Ti}_{0.01}\text{Si}_{0.82}\text{Al}_{0.18}\text{O}_{12} \)

**Mineral Group:** Garnet supergroup, schorlomite group.

**Occurrence:** A magmatic phase in calcite carbonatite associated with a nephelinitic volcano (Kerimasi) and surrounding pyroclastic rocks (carbonatite agglomerates and tuffs).

**Association:** Calcite, rarely fluorapatite and magnesioferrite.

**Distribution:** From Kerimasi volcano and the Loluni, Kisete and Loolmurwak explosion craters, Gregory rift, northern Tanzania.

**Name:** For the Kerimasi volcano in Tanzania.

**Type Material:** Natural History Museum, London, England (BM.1995,P6(47); BM.1995,P6(22)), and the Mineralogical Museum, Department of Mineralogy, Faculty of Geology, St. Petersburg State University, St. Petersburg, Russia (#1/19363).