Elbrusite \[\text{Ca}_3(\text{U}^{6+}_{0.5}\text{Zr}_{1.5})(\text{Fe}^{3+}_{2}\text{O}3)\]

**Crystal Data:** Cubic. **Point Group:** 4/m 3 2/m. As skeletal crystals to 15 \(\mu\)m with dominant \{110\} and minor \{211\}. Often as zones and spots within \text{Fe}^{3+}-dominant kimzeyite crystals.

**Physical Properties:** **Cleavage:** None. **Tenacity:** Brittle. **Fracture:** Irregular. **Hardness = n.d.** D(meas.) = n.d. D(calc.) = 4.801 Radioactive and nearly completely metamict.

**Optical Properties:** Transparent to translucent. **Color:** Dark-brown to black. **Streak:** Brown. **Luster:** Vitreous to dull, resinous. **Optical Class:** [Isotropic.\( n = \) n.d.]

**Cell Data:** **Space Group:** Ia\(\bar{3}\) d. \(a \approx 12.55\)

**X-ray Powder Pattern:** n.d.

**Chemistry:**

<table>
<thead>
<tr>
<th>UO(_3)</th>
<th>V(_2)O(_5)</th>
<th>ThO(_2)</th>
<th>HfO(_2)</th>
<th>SnO(_2)</th>
<th>ZrO(_2)</th>
<th>TiO(_2)</th>
<th>SiO(_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.14</td>
<td>0.05</td>
<td>0.65</td>
<td>0.25</td>
<td>5.13</td>
<td>17.11</td>
<td>2.12</td>
<td>0.79</td>
</tr>
</tbody>
</table>

(1) Upper Chegem caldera, Northern Caucasus, Russia; average of 6 electron microprobe analyses supplemented by Raman spectroscopy; corresponding to \((\text{Ca}_{3.040}\text{Th}_{0.018}\text{Y}_{0.001})_{\geq 3.059}(\text{U}^{6+}_{0.658}\text{Zr}_{1.040} \text{Sn}_{0.230}\text{Hf}_{0.089}\text{Mg}_{0.004})_{\leq 1.941}(\text{Fe}^{3+}_{1.573}\text{Fe}^{2+}_{0.559}\text{Al}_{0.539}\text{Ti}^{4+}_{0.196}\text{Si}_{0.196}\text{Sn}_{0.025}\text{V}^{5+}_{0.004})\text{O}_{3} \text{O}_{12}\).

**Polymorphism & Series:** Complex solid solutions with kimzeyite and toturite described by \(\text{Ca}_3(\text{U,Zr,Sn,Ti,Sb,Sc,Nb}).(\text{Fe,Al,Ti})\text{O}_{12}\).

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

**Occurrence:** In spurrite zones in skarn developed in xenoliths in ignimbrite.

**Association:** Spurrite, rondorfite, wadalite, kimzeyite, perovskite, lakargiite, ellestadite-(OH), hillebrandite, afwillite, hydrocalumite, ettringite group minerals, hydrogроссular.

**Distribution:** From the Upper Chegem caldera, near Mt. Lakargi, on the interfluve between the Chegem and Kenstanty Rivers, Kabardino-Balkaria, Northern Caucasus, Russia.

**Name:** For the highest peak in Europe, Mt. Elbrus (5642 m), Northern Caucasus, Russia.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (3840/1).