

**Caryochroite**

**Crystal Data:** Monoclinic. *Point Group:* n.d. Forms centimetric crusts of submicrometric {001} lamellae, elongate along [010], in spheroidal masses.

**Physical Properties:** *Cleavage:* Good on {001}. *Tenacity:* Brittle, aggregates are ductile. *Fracture:* Conchoidal. Hardness = 2.5 D(meas.) = 2.990(5) D(calc.) = 3.076

**Optical Properties:** Opaque. *Color:* Hazel-brown, dark brown in transmitted light. *Streak:* Pale brownish yellow. *Luster:* Dull to waxy. *Optical Class:* Biaxial (-).  $\alpha < 1.700$   $\beta = 1.745(5)$   $\gamma = 1.775(5)$   $2V(\text{meas.}) = 75(10)^\circ$  *Pleochroism:* Z = brown, X = Y = dark brown. *Absorption:* X = Y > Z. *Orientation:* Y = a, Z = b.

**Cell Data:** *Space Group:* n.d.  $a = 16.47(2)$   $b = 5.303(6)$   $c = 24.39(3)$   $\beta = 93.5(2)^\circ$   $Z = 2$

**X-Ray Diffraction Pattern:** Umbozero mine, Mt Alluaiv, Lovozero massif, Kola Peninsula, Russia. 12.1 (100), 13.3 (30), 14.1 (20), 2.631 (13), 2.692 (12), 4.38 (10), 2.968 (8)

Chemistry:	(1)
SiO <sub>2</sub>	35.20
TiO <sub>2</sub>	7.47
Al <sub>2</sub> O <sub>3</sub>	0.66
Fe <sub>2</sub> O <sub>3</sub>	32.31
FeO	1.35
MgO	2.32
SrO	3.21
MnO	2.98
Na <sub>2</sub> O	1.84
K <sub>2</sub> O	0.61
CaO	1.15
<u>H<sub>2</sub>O</u>	<u>9.17</u>
Total	98.27

(1) Umbozero mine, Mount Alluaiv, Lovozero massif, Kola Peninsula, Russia; average electron microprobe analysis supplemented by Mössbauer and IR spectroscopy, H<sub>2</sub>O by TGA; corresponds to  $(\text{Na}_{1.19}\text{Sr}_{0.62}\text{Ca}_{0.41}\text{Mn}_{0.35}\text{K}_{0.26})_{\Sigma=2.83}(\text{Fe}^{3+}_{7.98}\text{Mg}_{1.15}\text{Mn}_{0.49}\text{Fe}^{2+}_{0.38})_{\Sigma=10.00}(\text{Ti}_{1.87}\text{Fe}^{3+}_{0.13})_{\Sigma=2.00}(\text{Si}_{11.74}\text{Al}_{0.26})_{\Sigma=12.00}\text{O}_{54.10}\text{H}_{20.40}$ .

**Occurrence:** Product of the supergene alteration of an unidentified Fe<sup>2+</sup>-rich protophase in cavities in the albite zone of a pegmatite.

**Association:** Albite, elpidite, epididymite, quartz, natrolite, pyrite, galena, sphalerite, bitumen.

**Distribution:** From dumps of the Umbozero mine, Mount Alluaiv, Lovozero massif, Kola Peninsula, Russia.

**Name:** From the Greek for “nut” and “color” in allusion to its hazel-brown color.

**Type Material:** A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (3313/1).

**References:** (1) Kartashov, P.M., G. Ferraris, S.V. Soboleva, and N.V. Chukanov, (2006) Caryochroite, a new heterophyllosilicate mineral species related to nafertisite, from the Lovozero massif, Kola Peninsula, Russia. *Can. Mineral.*, 44, 1331-1339.