

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As irregular grains to 1 mm, some showing {001}, and as phenocrysts to 5 mm.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Tenacity:* Brittle. *Fracture:* n.d.  
Hardness = 3-4 D(meas.) = 2.67(2) D(calc.) = 2.71

**Optical Properties:** Transparent. *Color:* Bright blue. *Streak:* n.d. *Luster:* Vitreous to pearly.  
*Optical Class:* Biaxial (-).  $\alpha = 1.539(2)$   $\beta = 1.551(2)$   $\gamma = 1.554(2)$   $2V(\text{meas.}) = 54^\circ$   
*Dispersion:*  $r < v$ . *Orientation:*  $Y = b, c \wedge X = 45^\circ$  in  $\beta$  acute.

**Cell Data:** *Space Group:* C2/m.  $a = 15.033(3)$   $b = 8.001(1)$   $c = 10.478(2)$   $\beta = 113.51(1)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Lovozero alkaline massif, Kola Peninsula, Russia.  
3.068 (100), 3.623 (92), 3.995 (65), 3.485 (58), 3.552 (56), 2.613 (39), 3.362 (33)

<b>Chemistry:</b>	(1)
K <sub>2</sub> O	0.02
CaO	0.04
SrO	0.01
MnO	3.94
FeO	3.68
Al <sub>2</sub> O <sub>3</sub>	21.18
TiO <sub>2</sub>	0.01
SiO <sub>2</sub>	50.76
Total	99.08

(1) Lovozero alkaline massif, Kola Peninsula, Russia; electron microprobe analysis supplemented by IR spectroscopy; corresponds to (Na<sub>5.96</sub>Ca<sub>0.01</sub>) $\Sigma=5.97$ (Mn<sub>0.53</sub>Fe<sup>2+</sup><sub>0.49</sub>) $\Sigma=1.02$ Al<sub>3.95</sub>Si<sub>8.03</sub>O<sub>26</sub>.

**Occurrence:** In lovozerite-lomonosovite nepheline syenite in an alkaline massif.

**Association:** Na-K feldspar, villiaumite, sodalite, nepheline, analcime, aegirine, tisanalite, lamprophyllite.

**Distribution:** At the Lovozero alkaline massif, Kola Peninsula, Russia.

**Name:** The prefix, *mangano*, indicates the manganese analog of *naujakasite*.

**Type Material:** A.E. Fersman Mineralogical Museum, Moscow, Russia.

**References:** (1) Khomyakov, A.P., G.N. Nechelyustov, G. Ferraris, and G. Ivaldi (2000) Manganonaujakasite, Na<sub>6</sub>(Mn, Fe)Al<sub>4</sub>Si<sub>8</sub>O<sub>26</sub>, a new mineral from the Lovozero alkaline massif, Kola Peninsula. *Zapiski Vseross. Mineral. Obshch.*, 129(4), 48-53 (in Russian, English abs.). (2) (2001) *Amer. Mineral.*, 86, 1113 (abs. ref. 1).