

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 β 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)

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

(1) Lovozero alkaline massif, Kola Peninsula, Russia; electron microprobe analysis supplemented by IR spectroscopy; corresponds to (Na_{5.96}Ca_{0.01}) $_{\Sigma=5.97}$ (Mn_{0.53}Fe²⁺_{0.49}) $_{\Sigma=1.02}$ Al_{3.95}Si_{8.03}O₂₆.

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

Association: Na-K feldspar, villiaumite, sodalite, nepheline, analcime, aegirine, tisinialite, 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, Na₆(Mn, Fe)Al₄Si₈O₂₆, 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).