

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As thin platy crystals flattened on [100] to 10 mm, grouped in 2-2.5 cm rosettes or spherulites.

Physical Properties: *Cleavage:* Perfect on {100}, with two additional {h0l} cleavages. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 5.5 VHN = 777 (15 g load). *D(meas.)* = 3.43(3) *D(calc.)* = 3.51(1)

Optical Properties: Transparent. *Color:* Colorless or pale brown. *Streak:* White. *Luster:* Vitreous, greasy on fractures.

Optical Class: Biaxial(-). $\alpha = 1.623(3)$ $\beta = 1.636(2)$ $\gamma = 1.642(2)$ $2V(\text{meas.}) = 60(10)^\circ$ $2V(\text{calc.}) = 68(4)^\circ$ *Dispersion:* Weak, $r > v$. *Orientation:* $X = a, Y = b, Z = c$.

Cell Data: *Space Group:* Pcca. $a = 14.44(2)$ $b = 5.187(5)$ $c = 19.82(1)$ $Z = 4$

X-ray Powder Pattern: Lovozero alkaline massif, Kola Peninsula, Russia
4.215 (100), 3.326 (67), 2.965 (83), 2.875 (55), 2.597 (54)

Chemistry:	(1)
Na ₂ O	11.48
MgO	0.52
MnO	3.70
FeO	2.09
ZnO	2.45
CaO	0.33
SrO	13.24
BaO	0.38
La ₂ O ₃	8.64
Ce ₂ O ₃	10.56
Pr ₂ O ₃	0.43
Nd ₂ O ₃	1.06
Al ₂ O ₃	0.01
SiO ₂	44.57
Total	99.46

(1) Lovozero alkaline massif, Kola Peninsula, Russia; average electron microprobe analysis; corresponds to Na₃Sr(Ce,La)(Mn,Zn,Fe)Si₆O₁₇.

Occurrence: In sodalite syenites and in ussingite veins in an alkaline massif.

Association: Aegirine, eudialyte, sodalite, vuonnemite.

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

Name: Prefix, *mangano*, indicates the Mn²⁺-dominant analog of *nordite-Ce*.

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

References: (1) Pekov, I.V., N.V. Chukanov, N.N. Kononkova, D.I. Belakovskiy, D.Yu. Pushcharovskiy, and S.A. Vinogradova (1998) Ferronordite-(Ce) Na₃SrFeSi₆O₁₇ and manganonordite-(Ce) Na₃SrMnSi₆O₁₇ - new minerals from the Lovozero massif, Kola Peninsula. *Zapiski Vseross. Mineral. Obshch.*, 127(1), 32-40 (in Russian, English abs.). (2) (1999) *Amer. Mineral.*, 84(10), 685 (abs. ref. 1). (3) Pushcharovskii, D.Y., I.V. Pekov, J.J. Pluth, J. Smith, G. Ferraris, S.A. Vinogradova, A.V. Arakcheeva, S.V. Soboleva, and E.I. Semenov (1999) Raite, manganonordite-(Ce), and ferronordite-(Ce) from the Lovozero massif: Crystal structures and mineralogical geochemistry. *Crystallography Reports* 44, 565-574.