

Nordite-(La)**(Na, Mn)₃(Sr, Ca)(La, Ce)(Zn, Mg)Si₆O₁₇**

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Crystal Data: Orthorhombic; may be metamict. *Point Group:* $2/m\ 2/m\ 2/m$. Rare crystals are poorly formed, elongated along [001] and tabular on {100}. As lamellae, to 1 cm; as radial fibrous aggregates of curved and lamellar crystals.

Physical Properties: *Cleavage:* Good on {100}. *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 3.43–3.48 D(calc.) = [3.41]

Optical Properties: Semitransparent. *Color:* Light brown; pale brown in thin section. *Streak:* White. *Luster:* Vitreous, greasy on fracture. *Optical Class:* Biaxial (–). *Orientation:* $X = a$; $Y = b$; $Z = c$. $\alpha = 1.619$ – 1.620
 $\beta = 1.630$ – 1.640 $\gamma = 1.642$ – 1.644 $2V(\text{meas.}) = 31^\circ$ – 32°

Cell Data: *Space Group:* $Pcca$. $a = 14.27(3)$ $b = 5.16(1)$ $c = 19.45(15)$ $Z = 4$

X-ray Powder Pattern: Lovozero massif, Russia.

2.95 (100), 2.86 (100), 1.764 (80), 1.144 (80), 3.31 (60), 2.77 (60), 2.42 (60)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	45.53	45.07	ZnO		3.90
ThO ₂		0.26	MgO	2.00	1.66
Y ₂ O ₃	0.95		CaO	4.46	3.74
La ₂ O ₃	10.48	11.52	SrO	7.40	7.11
Ce ₂ O ₃	8.77	9.38	BaO		0.35
Fe ₂ O ₃	1.84	1.15	Na ₂ O	11.70	11.20
FeO		2.12	K ₂ O	0.08	
MnO	6.04	3.29	Cl	trace	
			Total	99.25	100.75

(1) Lovozero massif, Russia. (2) Do.; corresponds to $(\text{Na}_{2.81}\text{Mn}_{0.19})_{\Sigma=3.00}(\text{Sr}_{0.54}\text{Ca}_{0.46})_{\Sigma=1.00}(\text{La}_{0.52}\text{Ce}_{0.42}\text{Ca}_{0.06})_{\Sigma=1.00}(\text{Zn}_{0.38}\text{Mg}_{0.32}\text{Mn}_{0.17}\text{Fe}_{0.13})_{\Sigma=1.00}(\text{Si}_{5.85}\text{Fe}_{0.15})_{\Sigma=6.00}\text{O}_{17.04}$. Analyses are known of material with Ce > La but with no other properties described.

Occurrence: Extremely rare in pegmatites in sodalite syenite in a differentiated alkalic massif.

Association: Sodalite, ussingite, murmanite, chkalovite, belovite, steenstrupine, lomonosovite, eudialyte, microcline, nepheline, aegirine, sphalerite, neptunite, lamprophyllite.

Distribution: In the valley of the Chinglusuai River and elsewhere in the Lovozero massif, Kola Peninsula, Russia.

Name: From the mineral's "northern origin" and *lanthanum* content.

Type Material: n.d.

References: (1) Gerasimovsky, V.E. (1941) Nordite, a new mineral of the Lovozero Tundras. Doklady Acad. Nauk SSSR, 32, 496–498 (in Russian). (2) (1943) Amer. Mineral., 28, 282–283 (abs. ref. 1). (3) Bakakin, V.V., N.V. Belov, S.V. Borisov, and L.P. Solovyeva [Solov'eva] (1970) The crystal structure of nordite and its relationship to melilite and datolite-gadolinite. Amer. Mineral., 55, 1167–1181. (4) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 316–317.