Tundrite-(Ce) $Na_3(Ce,La)_4(Ti,Nb)_2(SiO_4)_2(CO_3)_3O_4(OH)\cdot 2H_2O$

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Crystals acicular along [001] and flattened on {010}, to 3 cm; as stellate groups and spherulitic masses. *Twinning:* On {010}, producing pseudorhombohedra.

Physical Properties: *Cleavage:* Pronounced on {010}. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = ~3 D(meas.) = 3.70–4.12 D(calc.) = 4.06

Optical Properties: Transparent. *Color:* Brownish yellow, greenish yellow to bright light green. *Streak:* Yellowish gray. *Luster:* Vitreous to adamantine.
Optical Class: Biaxial (+). *Pleochroism:* Weak; X = pale yellow; Z = greenish yellow.
Orientation: $Z \wedge c = 4°–14°$. $\alpha = 1.743$ $\beta = 1.80$ $\gamma = 1.88$ 2V(meas.) = 76°

Cell Data: *Space Group:* $P1$. $a = 7.533(4)$ $b = 13.924(6)$ $c = 5.010(2)$ $\alpha = 99°52(2)'$ $\beta = 70°50(3)'$ $\gamma = 100°59(2)'$ Z = 1

X-ray Powder Pattern: Ilímaussaq intrusion, Greenland.
13.49 (100), 2.505 (100), 3.448 (90), 2.766 (90), 3.535 (80), 6.784 (70), 1.914 (70)

Chemistry:

	(1)
SiO_2	10.03
TiO_2	12.20
La_2O_3	8.57
Ce_2O_3	24.38
Nd_2O_3	10.25
RE_2O_3	5.80
Nb_2O_5	3.44
CaO	0.75
Na_2O	8.20
CO_3	16.38
Total	[100.00]

(1) Ilímaussaq intrusion, Greenland; by electron microprobe, C confirmed by loss on ignition; original analysis given as elements, here recalculated to oxides, corresponding to $Na_{3.17}(Ce_{1.78}Nd_{0.73}La_{0.63}RE_{0.41}Ca_{0.16})_{\Sigma=3.71}(Ti_{1.83}Nb_{0.31})_{\Sigma=2.14}(SiO_4)_{2.00}(CO_3)_{3.27}O_{4.25}$.

Occurrence: In pegmatite veins associated with nepheline syenites.

Association: Aegirine, lamprophyllite, lorenzenite, rhabdophane (Mt. Lepkhe-Nelm, Russia); natrolite, microcline, albite, aegirine, fluorite, rinkite, eudialyte (Ilímaussaq intrusion, Greenland).

Distribution: On Mt. Lepkhe-Nelm, Lovozero massif, Kola Peninsula, Russia. In southern Greenland, from the Ilímaussaq intrusion, at Kringlerne, on the Kangerdluarssuk Plateau, and at Kvanefjeld. From Mont Saint-Hilaire, Quebec, Canada.

Name: After the Lovozero massif (formerly the Lovozero tundra), Kola Peninsula, Russia, where it was discovered, and the *cerium* content.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72020.

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