Hydroxycancrinite $Na_8Al_6Si_6O_{24}(OH, CO_3)_2 \cdot 2H_2O$

Crystal Data: Hexagonal. *Point Group:* 6. Massive aggregates, with grains to 1.5 cm.

Physical Properties: *Cleavage:* Perfect on $\{10\bar{1}0\}$. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 6 D(meas.) = 2.32(2) D(calc.) = 2.26

Optical Properties: Transparent. *Color:* Light blue; colorless in thin section. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (+). $\omega = 1.494(2)$ $\epsilon = 1.501(2)$

Cell Data: *Space Group:* $P6_3$. $a = 12.740(3)$ $c = 5.182(2)$ $Z = 1$

X-ray Powder Pattern: Lovozero massif, Russia; resembles cancrinite.
3.26 (100), 3.68 (70), 4.70 (60), 2.756 (50), 2.433 (30), 6.43 (25), 4.17 (20)

Chemistry:

	(1)
SiO_2	36.32
Al_2O_3	31.15
Fe_2O_3	0.18
MnO	0.03
MgO	0.11
CaO	0.92
Na_2O	23.43
K_2O	0.45
H_2O	5.41
CO_2	1.59
Total	99.59

(1) Lovozero massif, Russia, corresponding to $(Na_{7.46}Ca_{0.16}K_{0.10}Mg_{0.03}Fe^{3+}_{0.02})_{\Sigma=7.77}(Al_{6.03}Si_{5.97})_{\Sigma=12.00}O_{24}[(OH)_{1.23}(CO_3)_{0.36}]_{\Sigma=1.59} \cdot 2.35H_2O$.

Mineral Group: Cancrinite group.

Occurrence: In veins in ultra-agpaitic pegmatites in a differentiated alkalic massif.

Association: Natrolite, steenstrupine, vuonnemite, epistolite, mountainite, ilmajokite, nastrophite.

Distribution: On Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia.

Name: For predominant *hydroxyl* in its composition, and its relation to *cancrinite*.

Type Material: Vernadsky Geological Museum, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

References: (1) Khomyakov, A.P., T.N. Nadezhina, R.K. Rastsvetaeva, and E.A. Pobedimskaya (1992) Hydroxycancrinite $Na_8[Al_6Si_6O_{24}](OH)_2 \cdot 2H_2O$ – a new mineral. Zap. Vses. Mineral. Obshch., 121(1), 100–105 (in Russian). (2) (1993) Amer. Mineral., 78, 1315 (abs. ref. 1). (3) (1994) Mineral. Abs., 45, 111 (abs. ref. 1). (4) Nadezhina, T.N., R.K. Rastsvetaeva, E.A. Pobedimskaya, and A.P. Khomyakov (1991) Crystal structure of natural hydroxyl-containing cancrinite. Kristallografiya (Sov. Phys. Crystal.), 36, 591–595 (in Russian). (5) Hassan, I. and H.D. Grundy (1991) The crystal structure of basic cancrinite, ideally $Na_8[Al_6Si_6O_{24}](OH)_2 \cdot 3H_2O$. Can. Mineral., 29, 377–383.