Canasite $Na_3K_3Ca_5Si_{12}O_{30}(OH,F)_4$

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Crystal Data: Monoclinic. *Point Group: m.* As crystals, to 10 cm; in platy aggregates, to 20 cm; also granular. *Twinning:* Polysynthetic, the twinning plane at an angle of 8° to the less perfect cleavage.

Physical Properties: *Cleavage:* One, very perfect; another, perfect, at 118° to the first. *Fracture:* Splintery, breaks into long acute-angled or wedge-shaped pieces. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 2.707 D(calc.) = [2.65]

Optical Properties: Transparent to translucent. *Color:* Greenish yellow to grayish green. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Orientation:* $Y = b$; $Z \wedge$ less perfect cleavage = 2°. $\alpha = 1.534$ $\beta = 1.538$ $\gamma = 1.543$ 2V(meas.) = 58°

Cell Data: *Space Group: Cm.* $a = 18.836$ $b = 7.244$ $c = 12.636$ $\beta = 111.76(2)°$ Z = 2

X-ray Powder Pattern: Khibiny massif, Russia.
3.080 (100b), 2.907 (80), 1.641 (80), 4.69 (70), 4.81 (60), 2.359 (60), 4.20 (50)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	56.08	55.71	K_2O	8.47	10.63
TiO_2	0.10	0.06	F	2.21	2.17
Al_2O_3	0.55	0.20	Cl	0.22	
Fe_2O_3	1.41	0.72	H_2O^+	1.11	1.25
FeO	0.71	0.36	H_2O^-	0.49	0.60
MnO	0.38	0.41	CO_2	0.20	
MgO	0.05	0.26	P_2O_5	0.04	0.08
CaO	20.95	20.39	$-O = (F,Cl)_2$	0.96	0.91
Na_2O	8.01	7.08	Total	100.02	99.01

(1–2) Khibiny massif, Russia. (3) Murun massif, Russia; analysis not given, stated to correspond to $Na_{2.96}K_{2.94}(Ca_{4.69}Fe_{0.17}Mg_{0.08}Mn_{0.07}Al_{0.05}Ti_{0.01})_{\Sigma=5.07}Si_{12}O_{30}[(OH)_{2.27}F_{1.48}O_{0.25}]_{\Sigma=4.00}$.

Occurrence: In pegmatites in a differentiated alkalic massif (Khibiny massif, Russia); in charoitic rocks (Murun massif, Russia).

Association: Fenaksite, lamprophyllite, titanite, eudialyte, nepheline, pyroxene, orthoclase (Khibiny massif, Russia); tinaksite, miserite, charoite (Murun massif, Russia).

Distribution: On Mts. Yukspor and Rasvumchorr, Khibiny massif, Kola Peninsula, and in the Murun massif, southwest of Olekminsk, Yakutia, Russia.

Name: For CAlcium, sodium, NAtrium, and SIlicon in the chemical composition.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 801; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 61128029; National Museum of Natural History, Washington, D.C., USA, 136472.

References: (1) Dorfman, M.D., D.D. Rogachev, Z.I. Goroshchenko, and E.I. Uspenskaya (1959) Canasite, a new mineral. Trudy Mineralog. Muzeya Akad. Nauk SSSR, 9, 158–166 (in Russian). (2) (1960) Amer. Mineral., 45, 253–254 (abs. ref. 1). (3) Rozhdestvenskaya, I.V., L.V. Nikishova, I.I. Bannova, and Y.D. Lasebnik (1987) Canasite: the refinement of crystal structure and comparison with that of miserite. Acta Cryst., A43, C159. (4) Rozhdestvenskaya, I.V., L.V. Nikishova, I.I. Bannova, and Y.D. Lasebnik (1987) [Canasite: crystal structure typomorphism.] Mineral. Zhurnal, 10(4), 31–41 (in Russian with English abs.).

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