Fluorcanasite $K_3Na_3Ca_5Si_{12}O_{30}F_4 \cdot H_2O$

Crystal Data: Monoclinic. *Point Group*: *m*. As prismatic crystals to 2 mm along [010].

Physical Properties: *Cleavage*: Good on {100} and {20$\bar{1}$ }, perfect on {001}. *Tenacity*: Brittle. *Fracture*: Hackly along [010], stepped in other directions. Hardness = 5 D(meas.) = 2.68(2) D(calc.) = 2.69 Nonfluorescent.

Optical Properties: Transparent. *Color*: Purple. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). $\alpha = 1.538(1)$ $\beta = 1.546(1)$ $\gamma = 1.549(1)$ 2V(meas.) = 60(2)° 2V(calc.) = 63° *Dispersion*: $r > v$. *Pleochroism*: Y = purple, Z = lilac, X = amber-yellow. *Absorption*: $Y > Z > X$. *Orientation*: $b = Y$, $a \wedge Z = 3°$, $c \wedge X = 19°$.

Cell Data: *Space Group*: *Cm*. $a = 18.846(4)$ $b = 7.242(1)$ $c = 12.650(2)$ $\beta = 111.84(2)°$ Z = 2

X-Ray Diffraction Pattern: Kirovsk mine, Mt. Kukisvumchorr, Khibiny massif, Russia. 3.082 (100), 2.915 (85), 4.712 (46), 4.204 (41), 3.340 (35), 5.872 (33), 2.658 (30)

Chemistry:

	(1)
Na_2O	7.19
K_2O	10.91
CaO	19.55
FeO	0.27
MnO	2.08
SiO_2	55.84
F	4.10
H_2O	[2.22]
$-O = F_2$	1.73
Total	100.43

(1) Kirovsk mine, Mt. Kukisvumchorr, Khibiny massif, Russia; average electron microprobe analysis supplemented by IR spectroscopy, H_2O calculated from structure; corresponding to $K_{2.99}Na_{3.00}(Ca_{4.50}Mn_{0.38}Fe^{2+}_{0.05})_{\Sigma=4.93}Si_{12}O_{29.93}[F_{2.79}(OH)_{1.21}]_{\Sigma=4} \cdot 0.98H_2O$.

Occurrence: In hyperalkaline pegmatite in an alkaline massif.

Association: Microcline, nepheline, aegirine, scherbakovite, lamprophyllite, pectolite, mosandrite, villiaumite, rasvumite, molybdenite.

Distribution: From the dumps of the Kirovsk apatite mine, Mt. Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.

Name: The suffix, *fluor*, identifies the fluorine-dominant analogy of *canasite*.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (3020/1).

References: (1) Khomyakov A.P., G.N. Nechelyustov, G.K. Krivokoneva, R.K. Rastsvetaeva, K.A. Rozenberg, and I.V.Rozhdestvenskaya (2009) Fluorcanasite, $K_3Na_3Ca_5Si_{12}O_{30}(F,OH)_4 \cdot H_2O$, a new mineral species from the Khibiny Alkaline Pluton, Kola Peninsula, Russian, and new data on canasite. Geology of Ore Deposits 51, 757-766.