Labyrinthite $(Na, K, Sr)_{35}Ca_{12}Fe_3Zr_6TiSi_{51}O_{144}(O, OH, H_2O)_9Cl_3$

Crystal Data: Hexagonal. *Point Group*: 3. As rounded grains, to 1.0 cm.

Physical Properties: *Cleavage*: n.d. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 5-6 D(meas.) = 2.88(2) D(calc.) = 2.87

Optical Properties: Transparent. *Color*: Vivid pink. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Uniaxial (+). ω = 1.597(1) ε = 1.601(1)

Cell Data: *Space Group*: *R*3. a = 14.239(1) c = 60.733(7) Z = 3

X-ray Powder Pattern: Khibiny alkaline massif, Kola Peninsula, Russia.
2.977 (100), 2.853 (88), 4.324 (68), 3.230 (44), 3.550 (39), 2.685 (38), 3.049 (36)

Chemistry:

	(1)
Na_2O	16.77
K_2O	1.11
CaO	10.73
SrO	1.24
FeO	2.56
MnO	1.00
Ce_2O_3	0.27
SiO_2	50.04
ZrO_2	11.90
TiO_2	0.67
Cl	1.70
F	0.11
H_2O	1.58
-O = (Cl, F)	0.43
Total	99.25

(1) Khibiny alkaline massif, Kola Peninsula, Russia; average of 8 EDS electron microprobe analyses, OH and H_2O confirmed by IR, H_2O by Penfield method, corresponding to $(Na_{33.30}K_{1.45}Sr_{0.74})_{\Sigma=35.49}(Ca_{11.77}Ce_{0.10})_{\Sigma=11.87}(Fe_{2.19}Mn_{0.87})_{\Sigma=3.06}Zr_{5.94}(Ti_{0.52}Si_{0.26})_{\Sigma=0.78}Si_{51}O_{144.48}(OH)_{4.80}Cl_{2.95}F_{0.36}\cdot 3H_2O$.

Mineral Group: Eudialyte group.

Occurrence: A late-stage pegmatitic mineral in an alkaline igneous complex.

Association: K-feldspar, sodalite, alkali amphiboles, aegirine, pectolite, lamprophyllite, lomonosovite, villiaumite, lovozerite-group minerals.

Distribution: Eveslogchorr Mountain, Khibiny alkaline massif, Kola Peninsula, Russia.

Name: Alludes to its very complex (*labyrinthine*) crystal structure.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, 2624/2.

References: (1) Khomyakov, A.P., G.N. Nechelyustov, and R.K. Rastsvetaeva (2006) Labyrinthite $(Na, K, Sr)_{35}Ca_{12}Fe_3Zr_6TiSi_{51}O_{144}(O, OH, H_2O)_9Cl_3$, a new mineral with a modular eudialyte-like structure from Khibiny alkaline massif, Kola Peninsula, Russia. Zap. Ross. Mineral. Obshch., 135(2), 38–49 (in Russian, English abstract). (2) (2009) Amer. Mineral., 94, 400 (abs. ref. 1). (3) Rastsvetaeva, R.K., and A.P. Khomyakov (2001) Modular structure of a sodium-rich analogue of eudialyte with the doubled *c*-parameter and *R*3 symmetry. Crystallogr. Reports, 46, 752–757. (4) (2002) Amer. Mineral., 87, 767 (abs. ref. 3).