Ilyukhinite $(H_3O,Na)_{14}Ca_6Mn_2Zr_3Si_{26}O_{72}(OH)_2 \cdot 3H_2O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As grains to 1 mm.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 5
D(meas.) = 2.67(2) D(calc.) = 2.703

Optical Properties: Transparent. *Color*: Brownish orange. *Streak*: White. *Luster*: Vitreous.
Optical Class: Uniaxial (–). ω = 1.585(2) ε = 1.584(2) *Absorption*: *O* > *E*.
Pleochroism: Weak; *O* = orange, *E* = grayish pink.

Cell Data: *Space Group*: *R*3*m*. *a* = 14.1695(6) *c* = 31.026(1) Z = 3

X-ray Powder Pattern: Mount Kukisvumchorr, Khibiny massif, Kola Peninsula, Russia.
2.985 (100), 2.852 (92), 4.371 (89), 1.44 (82), 7.09 (70), 3.805 (47), 6.02 (44)

Chemistry:	(1)
Na_2O	3.07
K_2O	0.32
CaO	10.63
MnO	3.06
FeO	1.15
La_2O_3	0.79
Ce_2O_3	1.21
Nd_2O_3	0.41
TiO_2	0.90
ZrO_2	10.94
Nb_2O_5	1.40
SiO_2	51.24
SO_3	1.14
Cl	0.27
H_2O	10.9
$– O = Cl_2$	0.06
Total	98.27

(1) Mount Kukisvumchorr, Khibiny massif, Kola Peninsula, Russia; average of 5 electron microprobe analyses supplemented by IR spectroscopy, H_2O by gas chromatography; corresponds to $H_{36.04}(Na_{3.82}K_{0.20})(Ca_{5.65}Ce_{0.22}La_{0.14}Nd_{0.07})(Mn_{1.285}Fe_{0.48})(Zr_{2.645}Ti_{0.34})Nb_{0.31}Si_{25.41}S_{0.42}Cl_{0.23}O_{86.82}$.

Mineral Group: Eudialyte group.

Occurrence: In hydrothermally-altered peralkaline pegmatite.

Association: Aegirine, murmanite, albite, microcline, rhabdophane-(Ce), fluorite, sphalerite, molybdenite.

Distribution: From Mount Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.

Name: Honors Russian crystallographer Vladimir Valentinovich Ilyukhin (1934-1982).

Type Material: Geological Museum, Natural History Museum, University of Oslo, Norway (GM 43578).

References: (1) Chukanov, N.V., R.K. Raststvetaeva, K.A. Rozeneberg, S.M. Aksenov, I.V. Pekov, D.I. Belakovskiy, R. Kristiansen, and K.V. Van (2016) Ilyukhinite $(H_3O,Na)_{14}Ca_6Mn_2Zr_3Si_{26}O_{72}(OH)_2 \cdot 3H_2O$ - a new mineral of eudialyte group. Zap. Rossiyskogo Mineral. Obsch., 145(2), 44-57 (in Russian). (2) (2017) Amer. Mineral., 102, 1962 (abs. ref. 1).