Aqualite $(H_3O)_8(Na,K,Sr)_5Ca_6Zr_3Si_{26}O_{66}(OH)_9Cl$

Crystal Data: Hexagonal. *Point Group*: 3. Crystals, equant, to 3 cm.

Physical Properties: *Cleavage*: None. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 4-5 D(meas.) = 2.58(2) D(calc.) = 2.66 Fluoresces pale yellow in LW UV.

Optical Properties: Transparent. *Color*: Pale pink. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Uniaxial (+). ω = 1.569(1) ε = 1.571(1) *Pleochroism*: *E* = colorless to pink; *O* = pink.

Cell Data: *Space Group*: *R3*. *a* = 14.078(3) *c* = 31.24(1) Z = 3

X-ray Powder Pattern: Inagli massif, Sakha Republic, Russia.
4.39 (100), 2.987 (100), 2.850 (79), 10.50 (44), 6.63 (43), 7.06 (42), 3.624 (41)

Chemistry:

	(1)		(1)
Na_2O	2.91	Ce_2O_3	0.54
K_2O	1.93	Al_2O_3	0.34
CaO	11.14	SiO_2	52.70
SrO	1.75	ZrO_2	12.33
BaO	2.41	TiO_2	0.78
FeO	0.56	Nb_2O_5	0.15
MnO	0.30	Cl	1.50
La_2O_3	0.17	H_2O	9.93
Nd_2O_3	0.36	$-O=Cl_2$	0.34
		Total	99.46

(1) Inagli massif, Sakha Republic, Russia; average of 5 electron microprobe analyses, H_2O by Penfield method, IR confirms H_3O^+, corresponding to $[(H_3O)_{7.94}Na_{2.74}K_{1.20}Sr_{0.49}Ba_{0.46}Fe_{0.23}Mn_{0.12}]_{\Sigma=13.18}Ca_{5.79}REE_{0.19})_{\Sigma=5.98}(Zr_{2.92}Ti_{0.08})_{\Sigma=3}(Si_{25.57}Ti_{0.21}Al_{0.19}Nb_{0.03})_{\Sigma=26}[O_{66.46}(OH)_{5.54}]_{\Sigma=72.0}[(OH)_{2.77}Cl_{1.23}]_{\Sigma=4.0}$.

Mineral Group: Eudialyte group.

Occurrence: In a hydrothermally altered perakaline pegmatite in an alkaline massif.

Association: Natrolite, microcline, eckermanite, aegirine, batisite, innelite, lorenzenite, thorite, galena.

Distribution: Inagli massif, ~30 km ESE of Aldan, Sakha Republic (former Yakutsk), Russia.

Name: From the Latin *aqua* in allusion to the role of "water" in its composition.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow (catalog no. 2668/1).

References: (1) Khomyakov, A.P., G.N. Nechelyustov, and R.K. Rastsvetaeva (2007) Aqualite, $(H_3O)_8(Na,K,Sr)_5Ca_6Zr_3Si_{26}O_{66}(OH)_9Cl$, a new eudialyte-group mineral from the Inagli alkaline massif, Sakha-Yakutsk, Russia, and the problem of oxonium in hydrated eudialyte. Zap. Ross. Mineral. Obshch., 136(2), 39–55 (in Russian, English abstract); (2007) Geology of Ore Deposits, 49, 739–751 (in English). (2) (2009) Amer. Mineral., 94, 1075-1076 (abs. ref. 1).