Biachellaite $(Na, Ca, K)_8(Si_6Al_6O_{24})(SO_4)_2(OH)_{0.5}\cdot H_2O$

Crystal Data: Hexagonal. *Point Group*: 3. As equant dipyramidal-pinacoidal crystals to 1 cm.

Physical Properties: *Cleavage*: Perfect on {$10\bar{1}\ 0$}, imperfect (parting?) on {0001}.
Tenacity: Brittle. *Fracture*: n.d. Hardness = 5 D(meas.) = 2.51(1) D(calc.) = 2.515

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous.
Optical Class: Uniaxial (+). ω = 1.512(1) ε = 1.514(1)

Cell Data: *Space Group*: *P*3. *a* = 12.913(1) c = 79.605(5) Z = 15

X-Ray Diffraction Pattern: Biachella Valley, Sacrofano Caldera, Latium region, Italy.
3.720 (100), 3.300 (47), 11.07 (19), 6.45 (18), 3.576 (18), 3.220 (16), 4.782 (15)

Chemistry:

	(1)
Na_2O	10.06
K_2O	5.85
CaO	12.13
Al_2O_3	26.17
SiO_2	31.46
SO_3	12.71
Cl	0.45
H_2O	1.6
$-O = Cl_2$	0.10
Total	100.33

(1) Biachella Valley, Sacrofano Caldera, Latium region, Italy; average electron microprobe analysis supplemented by IR spectroscopy, H_2O by TGA; corresponding to $(Na_{3.76}Ca_{2.50}K_{1.44})_{\Sigma=7.70}(Si_{6.06}Al_{5.94}O_{24})(SO_4)_{1.84}Cl_{0.15}(OH)_{0.43}\cdot 0.81H_2O$.

Mineral Group: Cancrinite group.

Occurrence: Found in cavities in volcanic ejecta.

Association: Sanidine, diopside, andradite, leucite, hauyne.

Distribution: From the Biachella Valley, Sacrofano Caldera, Sacrofano municipality, Rome province, Latium region, Italy.

Name: For the discovery locality, the *Biachella* Valley.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (3642/1).

References: (1) Chukanov, N.V., R.K. Rastsvetaeva, I.V. Pekov, A.E. Zadov, R. Allori, N.V. Zubkova, G. Giester, D.Y. Pushcharovsky, and K.V. Van (2008) Biachellaite $(Na,Ca,K)_8(Si_6Al_6O_{24})(SO_4)_2(OH)_{0.5}\cdot H_2O$, a new member of the cancrinite group. Zap. Ross. Mineral. Obshch., 137(3), 57-66. (2) Rastsvetaeva, R.K. and N.V. Chukanov (2008) Model of the crystal structure of biachellaite as a new 30-layer member of the cancrinite group. Crystallography Reports, 53, 981-988.