Sacrofanite

$(Na, Ca, K)_9(Si, Al)_{12}O_{24}$
$[(OH)_2, (SO_4), (CO_3), Cl_2]_3 \cdot nH_2O$

Crystal Data: Hexagonal. *Point Group:* $6mm$, $\bar{6}m2$, or $6/m\ 2/m\ 2/m$. As hexagonal prisms, flattened on {0001}, to 2 cm.

Physical Properties: *Cleavage:* Perfect on {0001}, {$01\bar{1}0$}. Hardness = 5.5–6
D(meas.) = 2.423(5) D(calc.) = 2.446

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Pearly.
Optical Class: Uniaxial (–). $\omega = 1.505(1)$ $\epsilon = 1.486(1)$

Cell Data: *Space Group:* $P6_3mc$, $P\bar{6}2c$, or $P6_3/mmc$. $a = 12.865(4)$ $c = 74.240(10)$
Z = 14

X-ray Powder Pattern: Sabatini Mountains, Italy.
3.73 (100), 3.483 (43), 2.648 (30), 3.685 (26), 3.74 (25), 2.149 (18), 11.12 (12)

Chemistry:

	(1)
SiO_2	33.06
Al_2O_3	24.94
Fe_2O_3	0.35
CaO	8.76
Na_2O	16.50
K_2O	5.56
Cl	0.59
H_2O^+	2.47
SO_3	7.77
CO_2	1.00
$-O = Cl_2$	0.13
Total	[100.87]

(1) Sabatini Mountains, Italy; by XRF, Na by AA, Ca and H by microanalyser, H_2O by TGA, original total given as 99.87%; corresponds to $(Na_{6.25}Ca_{1.83}K_{1.39})_{\Sigma=9.47}(Si_{6.26}Al_{5.74})_{\Sigma=12.00}O_{24}[(OH)_{2.69}(SO_4)_{1.14}(CO_3)_{0.27}Cl_{0.20}]_{\Sigma=4.30} \cdot 0.27H_2O$.

Mineral Group: Cancrinite group.

Occurrence: As crystals lining a cavity in an ejected block of volcanic rock.

Association: Sanidine, andradite, fassaite, leucite, haüyne.

Distribution: From Valle Biachella, 3.2 km north-northwest of Sacrofano, in the Sacrofano caldera, Lazio, Italy.

Name: For the type locality in the Sacrofano volcanic area, Italy.

Type Material: University of Rome, Rome, Italy, 24332; Natural History Museum, Paris, France.

References: (1) Burragato, F., G.C. Parodi, and P.F. Zanazzi (1980) Sacrofanite – a new mineral of the cancrinite group. Neues Jahrb. Mineral., Abh., 140, 102–110. (2) (1981) Amer. Mineral., 66, 1100 (abs. ref. 1).