Barahonaite-(Al) $(Ca, Cu, Na, Fe^{3+}, Al)_{12}Al_2(AsO_4)_8(OH, Cl)_x \cdot nH_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m,* 2 or *m*. As coatings of curved, thin tabular composite crystals forming rosettes, to 0.2 mm.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: Brittle.
Hardness = 2-3 (possibly). D(meas.) = 3.03 D(calc.) = 2.93-3.11

Optical Properties: Transparent to translucent. *Color*: Pale blue. *Streak*: White.
Luster: Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.616(2)$ $\beta \approx \gamma$ $\gamma = 1.622(2)$ 2V(meas.) = 45-80°

Cell Data: *Space Group*: n.d. $a = 9.964(3)$ $b = 22.43(1)$ $c = 10.555(6)$ $\beta = 92.76(6)°$ $Z = 2$

X-ray Powder Pattern: Dolores prospect, Murcia province, Spain.
22.0 (100), 11.16 (70), 4.983 (50), 3.333 (45), 2.493 (35), 3.003 (30), 3.655 (25)

Chemistry:

	(1)
Na_2O	1.65
MgO	0.00
CaO	15.71
CuO	14.59
Al_2O_3	9.52
Fe_2O_3	0.10
SiO_2	0.14
P_2O_5	0.35
As_2O_5	41.16
SO_3	1.24
Cl	0.06
-O = Cl	0.01
H_2O	[14.49]
Total	100.00

(1) Dolores prospect, Murcia province, Spain; average of 6 electron microprobe analyses, H_2O by difference; anionic groups confirmed by IR, corresponding to $(Ca_{5.75}Cu_{3.77}Na_{1.09}\ Al_{1.84}Fe^{3+}_{0.03})_{\Sigma=12.48}Al_{2.00}[(As_{0.94}S_{0.04}P_{0.01}Si_{0.01})O_4]_8\ [(OH)_{7.95}Cl_{0.04}]_{\Sigma=7.99} \cdot 12.5H_2O$.

Polymorphism & Series: Complete solid solution with barahonaite-(Fe).

Occurrence: A secondary mineral in the oxidized zone of a sulfide deposit.

Association: Arsenocrandallite, arsenogoyazite, conichalcite, cobaltarthurite, chlorargyrite, olivenite, azurite, cornwallite, pharmacosiderite, jarosite, zálesíite, lavendulan.

Distribution: Dolores prospect, near Pastrana, Murcia province, northern Spain and the Gold Hill mine, Toole County, Utah, USA.

Name: Honors Antonio *Barahona* (b. 1937) of Madrid, Spain. The suffix indicates the aluminum analog of *barahonaite*-(Fe).

Type Material: Canadian Museum of Nature, Ottawa, Ontario (85719).

References: (1) Viñals, J., J.L. Jambor, M. Raudsepp, A.C. Roberts, J.D. Grice, M. Kokinos, and W.S. Wise (2008) Barahonaite-(Al) and barahonaite-(Fe), new Ca-Cu arsenate mineral species from Murcia province, Southeastern Spain, and Gold Hill, Utah. Can. Mineral., 46, 205-217. (2) (2008) Amer. Mineral., 93, 1941-1942 (abs. ref. 1).