Hectorfloresite $Na_9(IO_3)(SO_4)_4$

Crystal Data: Monoclinic, pseudohexagonal. *Point Group:* $2/m$. As crystals, to 1.5 mm, prismatic along [010], typically doubly terminated and pseudohexagonal due to cyclic twinning, exhibiting {100}, {212}, {001}. *Twinning:* Multiple contact twins parallel [010], ubiquitous, on twin planes {001}, {601}, and $\{\overline{6}04\}$, giving a pseudohexagonal outline.

Physical Properties: *Cleavage:* Irregular parting $\perp$ and $\parallel$ to elongation.
Fracture: Conchoidal. *Tenacity:* Brittle. Hardness = ∼2 D(meas.) = 2.80(3) D(calc.) = 2.90

Optical Properties: Transparent to translucent. *Color:* White; colorless in transmitted light.
Luster: [Adamantine.]
Optical Class: Biaxial (–). *Dispersion:* $r < v$, barely perceptible. $\alpha = 1.493(2)$ $\beta = 1.521(2)$ $\gamma = 1.523(2)$ 2V(meas.) = 26(2)°

Cell Data: *Space Group:* $P2_1/a$. $a = 18.775(4)$ $b = 6.9356(7)$ $c = 14.239(2)$ $\beta = 108.91(2)°$ Z = 4

X-ray Powder Pattern: Alianza mine, Chile.
3.880 (100), 2.700 (80), 2.788 (30), 1.9420 (20), 4.69 (15), 6.17 (10), 1.6780 (10)

Chemistry:

	(1)	(2)
I_2O_5	23.2	21.79
SO_3	42.3	41.80
Na_2O	34.5	36.41
Total	100.0	100.00

(1) Alianza mine, Chile; by electron microprobe, average of eight analyses, presence of $(IO_3)^{1-}$ and $(SO_4)^{2-}$ confirmed by IR. (2) $Na_9(IO_3)(SO_4)_4$.

Occurrence: In dessication cavities in a nitrate deposit; may be more widespread than this single locality indicates.

Association: Glauberite, nitratine, blödite, darapskite, halite.

Distribution: From the Alianza nitrate mine, Oficina Victoria, Tarapacá, Chile.

Name: Honors Professor Hector Flores W. (1906–1984), Chilean economic geologist and teacher, University of Chile, Santiago, Chile.

Type Material: National Museum of Natural History, Washington, D.C., USA.

References: (1) Ericksen, G.E., H.T. Evans, Jr., M.E. Mrose, J.J. McGee, J.W. Marinenko, and J.A. Konnert (1989) Mineralogical studies of the nitrate deposits of Chile: VI. Hectorfloresite, $Na_9(IO_3)(SO_4)_4$, a new saline mineral. Amer. Mineral., 74, 1207–1214.