Fuenzalidaite $K_6(Na,K)_{10}Mg_{10}(SO_4)_{12}(IO_3)_{12}\cdot 12H_2O$

Crystal Data: Hexagonal. *Point Group:* $\bar{3}\ 2/m$. As thin pseudorhombohedral platy {0001} crystals with hexagonal outline, modified by $\{10\bar{1}2\}$, to < 200 μm; as blebs and flattened micaceous aggregates.

Physical Properties: *Cleavage:* On $\{11\bar{2}0\}$, likely, visible on SEM images. *Tenacity:* Brittle. Hardness = 2–3 D(meas.) = n.d. D(calc.) = 3.284 Slowly soluble in H_2O.

Optical Properties: Transparent. *Color:* Colorless to bright yellow. *Luster:* Vitreous. *Optical Class:* Uniaxial (–). $\omega = 1.622(5)$ $\epsilon = 1.615(5)$

Cell Data: *Space Group:* $P\bar{3}c1$. $a = 9.4643(4)$ $c = 27.336(6)$ $Z = 1$

X-ray Powder Pattern: Near Oficina Santa Luisa, Chile.
3.927 (100), 13.67 (50), 3.023 (41), 7.05 (40), 2.681 (33), 3.515 (24), 2.327 (21)

Chemistry:

	(1)
SO_3	20.9
SeO_3	0.1
CrO_3	0.2
I_2O_5	49.3
MgO	10.0
Na_2O	5.2
K_2O	5.9
H_2O	n.d.
Total	91.6

(1) Near Oficina Santa Luisa, Chile; by electron microprobe, amounts thought low due to decay in electron beam, H_2O confirmed by crystal-structure analysis; corresponds to $K_{5.7}Na_{7.6}Mg_{11.3}[(SO_4)_{11.9}(CrO_4)_{0.1}]_{\Sigma=12.0}(IO_3)_{13.4}\cdot 12H_2O$.

Polymorphism & Series: Forms a series with carlosruizite.

Occurrence: A rare constituent of nitrate ores.

Association: Nitratine, halite, probertite, darapskite.

Distribution: From one km south of Oficina Santa Luisa, Antofagasta, Chile.

Name: Honors Humberto Fuenzalida P. (1904–1966), first Director of the Chilean School of Geology, University of Chile, Santiago, Chile.

Type Material: n.d.

References: (1) Konnert, J.A., H.T. Evans, Jr., J.J. McGee, and G.E. Ericksen (1994) Mineralogical studies of the nitrate deposits of Chile: VII. Two new saline minerals with the composition $K_6(Na,K)_4Na_6Mg_{10}(XO_4)_{12}(IO_3)_{12}\cdot 12H_2O$: fuenzalidaite (X = S) and carlosruizite (X = Se). Amer. Mineral., 79, 1003–1008.