Lannonite $HCa_4Mg_2Al_4(SO_4)_8F_9 \cdot 32H_2O$

Crystal Data: Tetragonal. *Point Group:* n.d. Crystals are square platy, to 20 μm, in warty or nodular aggregates.

Physical Properties: Hardness = 2 D(meas.) = 2.22 D(calc.) = 2.32

Optical Properties: Semitransparent. *Color:* Chalky white.
Optical Class: Uniaxial (+). $\omega = 1.460$ $\epsilon = 1.478$

Cell Data: *Space Group:* n.d. $a = 6.84$ $c = 28.01$ Z = 1

X-ray Powder Pattern: Lone Pine mine, New Mexico, USA.
13.98 (10), 4.840 (8), 3,456 (7), 3.980 (5), 3.325 (5), 4.666 (4), 2.908 (4)

Chemistry:

	(1)	(2)
SO_3	34.40	34.93
Al_2O_3	11.06	11.12
MgO	4.46	4.40
CaO	12.06	12.23
F	9.44	9.32
H_2O	32.00	31.93
$-O = F_2$	3.97	3.93
Total	99.45	100.00

(1) Lone Pine mine, New Mexico, USA; by microanalysis, H_2O by the Penfield method.
(2) $HCa_4Mg_2Al_4(SO_4)_8F_9 \cdot 32H_2O$.

Occurrence: A rare post-mine mineral deposited from solutions derived from an oxidizing breccia zone.

Association: Fluorite, gypsum, khademite, wilcoxite, pyrite.

Distribution: From the Lone Pine mine, Wilcox district, near Silver City, Catron Co., New Mexico, USA.

Name: Honoring Dan Lannon, who early staked claims in the Wilcox district, New Mexico, USA.

Type Material: Natural History Museum, Paris, France; The Natural History Museum, London, England, 1980,546; National Museum of Natural History, Washington, D.C., USA, 149526.

References: (1) Williams, S.A. and F.P. Cesbron (1983) Wilcoxite and lannonite, two new fluosulphates from Catron Co., New Mexico. Mineral. Mag., 47, 37–40. (2) (1984) Amer. Mineral., 69, 407 (abs. ref. 1).