## 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 $\mu$m, 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).