Lasnierite $(Ca, Sr)(Mg, Fe^{2+})_2Al(PO_4)_3$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As bladed crystals to 120 μm.

Physical Properties: *Cleavage*: n.d. *Tenacity*: n.d. *Fracture*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 3.162

Optical Properties: Transparent. *Color*: Pale pinkish brown to nearly colorless. *Streak*: n.d.
Luster: n.d.
Optical Class: [Biaxial.] Anisotropic. No pleochroism observed. *n*(calc.) = 1.582

Cell Data: *Space Group*: *Pbcn.* *a* = 6.2771(3) *b* = 17.684(3) *c* = 8.1631(4) Z = 4

X-ray Powder Pattern: Calculated pattern.
3.706 (100), 3.305 (99), 2.601 (97), 2.890 (90), 4.421 (83), 2.781 (69), 2.772 (67)

Chemistry:

	(1)
P_2O_5	49.41
Al_2O_3	10.30
MgO	13.34
FeO	9.08
CaO	7.65
SrO	9.00
BaO	0.06
SiO_2	0.16
F	2.62
Cl	0.02
$- O = (F, Cl)_2$	1.11
Total	100.52

(1) Mount Ibity (Bity), Antananarivo Province, Madagascar; average electron microprobe analysis supplemented by Raman spectroscopy; corresponds to $(Ca_{0.59}Sr_{0.37})_{\Sigma=0.96}(Mg_{1.42}Fe_{0.54})_{\Sigma=1.96}Al_{0.87}(P_{2.99}Si_{0.01})_{\Sigma=3.00}(O_{11.41}F_{0.59})_{\Sigma=12}$.

Occurrence: As inclusions in a 1.97 carat, faceted, oval piece of lazulite-bearing blue quartzite.

Association: Quartz, lazulite, chlorapatite, celestite, monazite-(Ce), xenotime-(Y), augelite, trolleite, svanbergite, goyazite, crandallite, berlinite, anhydrite, ilmenite, titanomagnetite, rutile, hematite, muscovite, kyanite, zircon, dumortierite, tourmaline, clinoamphibole.

Distribution: From Mount Ibity (Bity), ~30 km NNE of Soavina, Ambatofinandrahana district, Antananarivo Province, Madagascar.

Name: Honors Emeritus Professor Bernard *Lasnier* (b. 1938), who taught geology, mineralogy, and gemology at the University of Nante, France, and studied lazulite-bearing quartzite from Intremo.

Type Material: Natural History Museum, Paris, France (MNHN 217.001).

References: (1) Rondeau, B., B. Devouard, D. Jacob, P. Roussel, N. Stephant, C. Boulet, V. Mollé, M. Corre, E. Fritsch, C. Ferraris, and G.C. Parodi (2019) Lasnierite, $(Ca,Sr)(Mg,Fe)_2Al(PO_4)_3$, a new phosphate accompanying lazulite from Mt. Ibity, Madagascar: an example of structural characterization from dynamic refinement of precession electron diffraction data on submicrometer sample. Eur. J. Mineral., 31(2), 379-388. (2) (2021) Amer. Mineral., 106, 1360 (abs. ref. 1).