

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals to 0.5 mm are elongated along [100], flattened on {010}, and show {010}, {011}, {101}, and {001}. As aggregates, to 1 mm.

Physical Properties: *Cleavage:* Good on {001}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 4-4.5 D(meas.) = 3.9(1) D(calc.) = 3.80 Nonfluorescent. Soluble in HCl.

Optical Properties: Transparent. *Color:* Bottle-green. *Streak:* Light green. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.745(5)$ $\beta = 1.755(5)$ $\gamma = 1.760(5)$ $2V(\text{meas.}) = 71(2)^\circ$ $2V(\text{calc.}) = 70.1(4)^\circ$ *Dispersion:* Strong, $r < v$. *Orientation:* $X = a$, $Y = c$, $Z = b$. Nonpleochroic.

Cell Data: *Space Group:* $Pnma$. $a = 5.6906(4)$ $b = 17.061(1)$ $c = 9.732(1)$ $Z = 4$

X-ray Powder Pattern: Roua mines, upper Var valley, Alpes-Maritimes, France. 8.520 (100), 3.221 (90), 3.721 (60), 3.102 (40), 2.817 (35), 2.795 (35), 2.350 (25)

Chemistry:	(1)	(2)
CuO	44.87	44.15
As ₂ O ₅	42.44	42.53
H ₂ O	[12.69]	13.32
Total	100.00	100.00

(1) Roua mines, upper Var valley, Alpes-Maritimes, France; average electron microprobe analysis, H₂O by difference; corresponding to $\text{Cu}_{3.09}\text{As}_{2.02}\text{H}_{7.71}\text{O}_{12}$. (2) $\text{Cu}_3(\text{AsO}_4)_2 \cdot 4\text{H}_2\text{O}$.

Occurrence: A secondary mineral in small geodes.

Association: Olivenite, conichalcite, clinotyrolite, cornubite, kolfanite, pharmacosiderite, gerhardtite, atacamite, gilmarite, wallkilldellite-Fe, cuprite, domeykite, algodonite, native copper.

Distribution: From the old Cu mines of Roua, upper Var valley (the Daluis gorge), western margin of the Barrot Dome, Alpes-Maritimes, France.

Name: Honors Pierre *Rolland* (b. 1940), who collected the material studied.

Type Material: Natural History Museum, Geneva, Switzerland (447.008).

References: (1) Sarp, H. and R. Čěrny (2000) Rollandite, $\text{Cu}_3(\text{AsO}_4)_2 \cdot 4\text{H}_2\text{O}$, a new mineral: its description and crystal structure. *Eur. J. Mineral.*, 12, 1045-1050. (2) (2001) *Amer. Mineral.*, 86, 768-769, (abs. ref. 1).