

Radovanite

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. Forms aggregates to 2 mm consisting of equidimensional to slightly elongate (along *a* or *b*) crystals to 0.15 mm, displaying {101}, {011}, {001}, {010}, {hk0}, and {hkl}.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = n.d. D(meas.) = 3.9(1) D(calc.) = 3.79(1) Nonfluorescent.

Optical Properties: Transparent. *Color:* Pistachio-green. *Streak:* Green. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.80(1)$ $\beta = 1.84(1)$ $\gamma = 1.86(1)$ $2V(\text{meas.}) = 65(5)^\circ$ $2V(\text{calc.}) = 70(3)^\circ$ *Orientation:* $X = c$, $Y = a$, $Z = b$. *Pleochroism:* Moderate: $X =$ light green to colorless, $Y =$ yellow green, $Z =$ pistachio green.

Cell Data: *Space Group:* Pnma. $a = 9.585(1)$ $b = 13.143(1)$ $c = 8.0884(7)$ $Z = 4$

X-ray Powder Pattern: Roua copper deposit, Daluis gorge, Alpes-Maritimes, France. 3.090 (100), 6.179 (90), 3.241 (40), 6.88 (25), 2.710 (25), 2.214 (25), 3.871 (20)

Chemistry:	(1)
CuO	26.3
Fe ₂ O ₃	12.7
Al ₂ O ₃	0.04
P ₂ O ₅	0.3
As ₂ O ₅	19.93
Al ₂ O ₃	34.32
<u>H₂O</u>	<u>[6.41]</u>
Total	100.00

(1) Roua copper deposit, Daluis gorge, Alpes-Maritimes, France; average electron microprobe analysis, H₂O estimated by difference, Fe valence from the structure refinement; corresponds to Cu_{1.93}Fe³⁺_{0.92}Al_{0.01}P_{0.02}As⁵⁺_{1.01}As³⁺_{2.01}H_{4.15}O₁₁.

Occurrence: A secondary mineral in a hydrothermal copper deposit.

Association: Cuprite, native copper, malachite, trippkeite, olivenite, algodonite.

Distribution: At the Roua copper deposit, upper part of the Var valley (Daluis gorge), Alpes-Maritimes, France.

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Type Material: Department of Mineralogy, Natural History Museum of Geneva, Switzerland.

References: (1) Sarp, H. and L. Guenee (2002) Radovanite, Cu₂Fe³⁺(As⁵⁺O₄)(As³⁺O₂OH)₂H₂O, a new mineral: its description and crystal structure. Archs Sci. Genève, 55(1), 47-55. (2) (2003) Amer. Mineral., 88, 1177-1178 (abs. ref. 1).