

Nukundamite

(Cu, Fe)₄S₄

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. Tabular hexagonal crystals, to 2 mm, in fan-shaped groups; also as larger irregular masses, to 4 cm long, rarely with a palmlike branching structure; as fine lamellae in sphalerite.

Physical Properties: *Cleavage:* Perfect on {0001}. *Hardness* = n.d. *VHN* = 103–110 (20 g load). *D*(meas.) = 4.30(7) *D*(calc.) = 4.53

Optical Properties: Opaque. *Color:* Copper colored. *Luster:* Metallic. *Pleochroism:* Strong, from reddish orange to pale gray. *Anisotropism:* Very strong, in pale green-gray colors.

*R*₁–*R*₂: (400) 15.4–23.8, (420) 14.9–23.8, (440) 14.3–23.8, (460) 14.1–23.6, (480) 14.0–23.7, (500) 14.1–23.7, (520) 14.7–23.7, (540) 15.8–23.7, (560) 17.1–23.8, (580) 18.7–23.9, (600) 20.4–24.0, (620) 22.1–24.7, (640) 24.0–26.1, (660) 25.7–27.9, (680) 27.3–30.0, (700) 28.7–30.2

Cell Data: *Space Group:* $P\bar{3}m1$ (synthetic). *a* = 3.782(4) *c* = 11.187(8) *Z* = 1

X-ray Powder Pattern: Undu mine, Fiji Islands.

3.143 (100), 2.826 (70), 1.891 (60), 1.847 (55), 2.796 (45), 3.273 (30), 1.568 (25)

Chemistry:

	(1)
Cu	56.51
Fe	9.64
Ag	0.09
As	0.04
S	33.51
Total	99.79

(1) Undu mine, Fiji Islands; by electron microprobe, corresponds to (Cu_{3.37}Fe_{0.66})_{Σ=4.03}S_{3.97}.

Occurrence: A primary mineral in a Kuroko-type deposit (Undu mine, Fiji Islands); also an alteration product of primary chalcopyrite.

Association: Pyrite, covellite, chalcopyrite, bornite, sphalerite.

Distribution: From the Undu mine, Nukundamu, Vanua Levu, Fiji Islands [TL]. In the Grasberg Cu–Au deposit, Irian Jaya. From Bisbee, Cochise Co., Arizona, and at Bingham, Tooele Co., Utah, USA.

Name: For the Fijian locality at Nukundamu.

Type Material: The Natural History Museum, London, England, 1974,5, E1455; National Museum of Natural History, Washington, D.C., USA, 148128.

References: (1) Rice, C.M., D. Atkin, J.F.W. Bowles, and A.J. Criddle (1979) Nukundamite, a new mineral, and idaite. *Mineral. Mag.*, 43, 194–200. (2) (1980) *Amer. Mineral.*, 65, 407 (abs. ref. 1). (3) Sugaki, A., H. Shima, A. Kitakaze, and T. Mizota (1981) Hydrothermal synthesis of nukundamite and its crystal structure. *Amer. Mineral.*, 66, 398–402.