

Crystal Data: Monoclinic. *Point Group:* $2/m$. Lathlike crystals, flattened on [100], elongated along [011], to 2 mm; curved, scaly, dendritic; commonly pulverulent, earthy, massive. *Twinning:* On {011}, contact plane, common, forming stellate groups; lamellar.

Physical Properties: *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle; flexible and elastic in thin scales. Hardness = 3.5 VHN = 190–300 (100 g load). $D(\text{meas.}) = 6.45$ (synthetic). $D(\text{calc.}) = 6.515(2)$

Optical Properties: Opaque, transparent only in the thinnest scales. *Color:* Steel-gray, iron-gray, black; brown in transmitted light; light gray with golden tint in reflected light. *Luster:* Metallic.

Optical Class: Biaxial. *Pleochroism:* Distinct; light to dark brown. *Orientation:* $Y = b$; $Z \simeq c$. $2V(\text{meas.}) = \text{Large}$. *Anisotropism:* Strong; blue to gray. *Bireflectance:* Strong.

R_1 – R_2 : (400) 22.8–29.6, (420) 21.9–30.0, (440) 21.0–30.4, (460) 20.4–30.6, (480) 20.1–30.8, (500) 19.8–30.7, (520) 19.7–30.4, (540) 19.6–30.2, (560) 19.5–29.8, (580) 19.5–29.6, (600) 19.4–29.4, (620) 19.4–29.2, (640) 19.4–29.1, (660) 19.4–28.8, (680) 19.3–28.6, (700) 19.3–28.2

Cell Data: *Space Group:* $C2/c$. $a = 4.6837(5)$ $b = 3.4226(5)$ $c = 5.1288(6)$
 $\beta = 99.54(1)^\circ$ $Z = 4$

X-ray Powder Pattern: Synthetic.

2.523 (100), 2.323 (96), 2.530 (49), 2.312 (30), 1.866 (25), 1.505 (20), 1.375 (19)

Chemistry: Nearly pure CuO; modern analyses are not available.

Occurrence: Commonly in the oxidized zone of hydrothermal copper deposits; a volcanic sublimate.

Association: Cuprite, copper, chrysocolla, malachite, azurite, Fe–Mn oxides (hydrothermal); copper chlorides, alkali chlorides, cotunnite (volcanic).

Distribution: Many localities, but few for well-crystallized or pure material. From Vesuvius, Campania, and Etna, Sicily, Italy. In England, at a number of mines in Gwennap, Redruth, St. Just, and elsewhere in Cornwall. At Leadhills, Lanarkshire, Scotland. From Rio Tinto, Huelva Province, Spain. In Germany, at Siegen, Westphalia; from Daaden, Rhineland-Palatinate; and at Neubulach, Black Forest. At Jáchymov (Jochimsthal), Czech Republic. In Russia, from Bogoslovsk and Nizhni Tagil, Ural Mountains, and at the Tolbachik fissure volcano, Kamchatka Peninsula. In the USA, from Copper Harbor, Keweenaw Co., Michigan; at Darwin, Inyo Co., California; an ore at Bisbee, Cochise Co., Arizona. From Chuquicamata, Antofagasta, Chile. At Tsumeb, Namibia.

Name: To honor Professor Michele Tenore (1781–1861), Italian botanist, University of Naples, Naples, Italy.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 507–510. (2) Åsbrink, S. and L.-J. Norrby (1970) A refinement of the crystal structure of copper(II) oxide with a discussion of some exceptional e.s.d.'s. *Acta Cryst.*, 26, 8–15. (3) (1953) NBS Circ. 539, 1, 49.