

Hoganite



MONOCLINIC

Locality: The Potosi silver – lead – zinc deposit, 2 km northeast of Broken Hill, New South Wales, Australia (Lat. 31°56'S, Long. 141°30'E).

Occurrence: In gossan near a mass of decomposing leaves. Associated minerals are: goethite, hematite, quartz, linarite, malachite, azurite, cuprian smithsonite, cerussite and paceite.

General appearance: Isolated prisms (up to 0.6 mm long).

Physical, chemical and crystallographic properties: *Luster:* vitreous. *Diaphaneity:* transparent. *Color:* dark bluish green. *Streak:* pale blue. *Luminescence:* nonfluorescent. *Hardness:* 1½. *Tenacity:* brittle. *Cleavage:* could not be observed, but {001} perfect and {110} distinct are reported on synthetic material. *Fracture:* conchoidal. *Density:* 1.93 g/cm³ (calc.). **Crystallography:** Monoclinic, *C2/c*, *a* 13.162, *b* 8.555, *c* 13.850 Å, β 117.08°, *V* 1388.6 Å³, *Z* = 8, *a:b:c* = 1.5385:1:1.6189. *Morphology:* forms observed are similar to those reported for synthetic crystals {10 $\bar{1}$ }, {01 $\bar{1}$ }, {2 $\bar{1}$ 1}, {110} and {1 $\bar{1}$ 2}; also reported are synthetic {110} tablets with {001}, {100} and {20 $\bar{1}$ }. *Twinning:* none observed, but butterfly twins have been reported for synthetic crystals. **X-ray powder-diffraction data:** 6.921(100)(110), 6.176(14)(002), 5.872(9)(200), 5.382(10)(11), 3.592(11)(22 $\bar{1}$), 3.532(28)(202), 2.291(9)(33 $\bar{3}$), 2.278(10)(402). The data in the paper are indexed on the alternate setting in space group *A2/a* to compare with the data in PDF 27–145, but have been changed here for the given cell in space group *C2/c*. **Optical data:** Biaxial (+), α 1.533, β 1.541, γ 1.554, 2*V*(meas.) 85°, 2*V*(calc.) 77°; dispersion *r* < *v*, medium; pleochroism strong *X* blue, *Y* pale bluish, *Z* pale bluish green, *X* > *Y* > *Z*; orientation unknown. See Comments. **Chemical analytical data:** Wet-chemical analysis by AAS (Ca, Cu, Mg, Zn, Pb and Fe), CHN analyzer (C and H) and O by difference gave: C 23.85, H 3.95, Cu 31.6, Fe 0.4, O (40.2), Total (100.00) wt.%. Empirical formula: C_{4.01}H_{7.90}O_{5.07}Cu_{1.00}Fe_{0.01} or Cu_{1.00}(CH₃COO)_{2.00}•0.95H₂O. **Relationship to other species:** It is an acetate.

Name: After Graham P. Hogan (b. 1957), of Broken Hill, New South Wales, Australia, a miner and well-known collector of Broken Hill minerals, who originally recovered the material.

Comments: IMA No. 2001–029. Owing to the very small amount of natural material, the optical properties were determined from synthetic crystals grown from aqueous solutions.

HIBBS, D.E., KOLITSCH, U., LEVERETT, P., SHARPE, J.L. & WILLIAMS, P.A. (2002): Hoganite and paceite, two new acetate minerals from the Potosi mine, Broken Hill, Australia. *Mineralogical Magazine* **66**, 459-464.