

**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. As blades, intergrown tablets, and scales, to 0.5 mm; {001} dominant, bounded by {100} and {010}.

**Physical Properties:** *Cleavage:* Perfect {100}, good on {010} and {001}. *Fracture:* Irregular. *Tenacity:* Blades flexible. *Hardness* = 2 *D(meas.)* = 3.28(5) *D(calc.)* = 3.303

**Optical Properties:** Transparent. *Color:* Bright blue. *Streak:* Pale blue. *Luster:* Vitreous. *Optical Class:* Biaxial (-).  $\alpha = 1.627(2)$   $\beta = 1.699(2)$   $\gamma = 1.769(2)$   $2V(\text{calc.}) = 86^\circ$   
*Dispersion:* None. *Orientation:* X = a; Y = c; Z = b. *Pleochroism:* Pronounced, X = deep blue; Y = medium blue; Z = pale blue.

**Cell Data:** *Space Group:* Pnma.  $a = 9.455(2)$   $b = 5.866(2)$   $c = 8.668(2)$   $Z = 4$

**X-ray Powder Pattern:** Tachgagalt mine, Morocco.

4.734 (100), 3.941 (90), 2.489 (50), 1.922 (50), 2.545 (45), 3.192 (40), 1.838 (40)

<b>Chemistry:</b>	(1)	(2)
CuO	72.68	66.6
CaO	0.11	
SiO <sub>2</sub>	1.00	
B <sub>2</sub> O <sub>3</sub>	14.57	14.6
H <sub>2</sub> O	18.85	18.8
Total	107.21	100.0

(1) Tachgagalt mine, Morocco; average of 8 electron microprobe analyses, B<sub>2</sub>O<sub>3</sub> and H<sub>2</sub>O calculated from structure analysis, Ca and Si considered impurities and disregarded; corresponding to Cu<sub>3.02</sub>Zn<sub>0.96</sub>(OH)<sub>5.91</sub>H<sub>0.03</sub>Cl<sub>2.08</sub>. (2) Cu<sub>2</sub>[BO(OH)<sub>2</sub>](OH)<sub>3</sub>.

**Occurrence:** Probably formed as a secondary, low-temperature product of hydrothermal reworking of boron-bearing manganese-oxide ore (gaudefroyite).

**Association:** Henritermierite, gaudefroyite, calcite.

**Distribution:** From Vein #2, Tachgagalt mine, near Ouarzazate, Anti-Atlas Mountains, Morocco.

**Name:** Honors French geologist Jacques Emile Dietrich (b. 1926), who collected the first specimens.

**Type Material:** Natural History Museum of Los Angeles County, California, USA; 52461.

**References:** (1) Kampf, A.R. and G. Favreau (2004) Jacquesdietrichite, Cu<sub>2</sub>[BO(OH)<sub>2</sub>](OH)<sub>3</sub>, a new mineral from the Tachgagalt mine, Morocco: Description and crystal structure. *Eur. J. Mineral.*, 16, 361-366. (2) (2005) *Amer. Mineral.*, 90, 519 (abs. ref. 1).