Jacquesdietrichite  \( \text{Cu}_2[\text{BO(OH)}_2](\text{OH})_3 \)

**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 (-).  
\( \alpha = 1.627(2) \)  
\( \beta = 1.699(2) \)  
\( \gamma = 1.769(2) \)  
\( 2V(\text{calc.}) = 86^\circ \)

**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)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CuO</td>
<td>72.68</td>
<td>66.6</td>
</tr>
<tr>
<td>CaO</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>SiO₂</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>B₂O₃</td>
<td>14.57</td>
<td>14.6</td>
</tr>
<tr>
<td>H₂O</td>
<td>18.85</td>
<td>18.8</td>
</tr>
<tr>
<td>Total</td>
<td>107.21</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(1) Tachgagalt mine, Morocco; average of 8 electron microprobe analyses, B₂O₃ and H₂O calculated from structure analysis, Ca and Si considered impurities and disregarded; corresponding to \( \text{Cu}_3.02\text{Zn}_{0.96}(\text{OH})_{5.91}\text{H}_{0.03}\text{Cl}_{2.08} \).  
(2) \( \text{Cu}_2[\text{BO(OH)}_2](\text{OH})_3 \).

**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:**  
(2) (2005) Amer. Mineral., 90, 519 (abs. ref. 1).