Juanitaite  
\((\text{Cu}, \text{Ca}, \text{Fe})_{10}\text{Bi}(\text{AsO}_4)_4(\text{OH})_{11} \cdot 2\text{H}_2\text{O})\)

**Crystal Data:** Tetragonal.  
Point Group: 4lm 2lm 2lm.  
As square plates with ‘rounded’ corners, flattened on \(\{001\}\), to 150 \(\mu\)m, in sheaflike aggregates and rosettes.

**Physical Properties:** Cleavage: Perfect on \(\{001\}\) and \(\{110\}\), good on \(\{100\}\).  
Tenacity: Flexible.  
Hardness = \(\sim 1\)  
\(D(\text{meas.}) = 3.61(5)\)  
\(D(\text{calc.}) = 3.56\)

**Optical Properties:** Translucent.  
Color: Olive-green to grass-green.  
Streak: Pale greenish yellow.

Luster: Resinous to dull; reflections from \(\{001\}\) often appear bronzy.

Optical Class: Uniaxial (-).  
\(\omega = 1.785(5)\)  
\(\varepsilon = 1.705(5)\)  
Pleochroism: \(O = \text{olive-brown}\), \(E = \text{olive-green}\).  
Subparallel aggregates are biaxial with \(2V(\text{meas.}) = \sim 20^\circ\).

**Cell Data:** Space Group: \(P4_{2}mnm\).  
\(a = 9.961(3)\)  
\(c = 29.19(2)\)  
\(Z = 4\)

**X-ray Powder Pattern:** Gold Hill mine, Tooele County, Utah, USA.  
14.6 (100), 6.34 (70), 3.146 (60), 7.04 (50), 5.07 (50), 2.535 (50), 3.518 (40)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>\text{CaO}</td>
<td>8.64</td>
<td>8.65</td>
</tr>
<tr>
<td>\text{FeO}</td>
<td>2.32</td>
<td>2.30</td>
</tr>
<tr>
<td>\text{CuO}</td>
<td>35.97</td>
<td>36.09</td>
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<tr>
<td>\text{Bi}_2\text{O}_3</td>
<td>14.82</td>
<td>14.91</td>
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<tr>
<td>\text{As}_2\text{O}_5</td>
<td>29.35</td>
<td>29.41</td>
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<tr>
<td>\text{H}_2\text{O}</td>
<td>[8.90]</td>
<td>8.65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.00</td>
<td>100.00</td>
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</tbody>
</table>

(1) Gold Hill mine, Tooele County, Utah, USA; average of 7 electron microprobe analyses supplemented by IR spectroscopy. \(\text{H}_2\text{O}\) by difference; corresponds to \((\text{Cu}_{7.03}\text{Ca}_{2.39}\text{Fe}_{0.50})\text{Bi}_{0.99}(\text{AsO}_4)_{3.97}(\text{OH})_{10.30}\cdot 2.22\text{H}_2\text{O}\).  
(2) \((\text{Cu}_{7.09}\text{Ca}_{2.41}\text{Fe}_{0.50})\text{Bi}_{0.99}(\text{AsO}_4)_{4}(\text{OH})_{11}\cdot 2\text{H}_2\text{O}\).

**Occurrence:** A secondary mineral from the oxidation of tennantite, chalcopyrite, and pyrite in quartz veins.

**Association:** Mixite, conichalcite, connellite, tyrolite, azurite, gold, quartz.

**Distribution:** From the 30 and 150 foot levels, Gold Hill mine, western Tooele County, Utah, USA.

**Name:** Honors Juanita Curtis, the mineral collector, who found the mineral.

**Type Material:** Los Angeles County Museum of Natural History, Los Angeles, California, USA (45266 and 45267).