Georgeite \( \text{Cu}_5(\text{CO}_3)_3(\text{OH})_4 \cdot 6\text{H}_2\text{O} \)

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Crystal Data: Amorphous. Point Group: n.d. As thick to thin pulverulent to massive coatings.

\( D(\text{meas.}) = 2.55(10) \quad D(\text{calc.}) = \text{n.d.} \)


Optical Class: Isotropic. \( n = 1.593(2) \)

Cell Data: Space Group: n.d. \( Z = \text{n.d.} \)

X-ray Powder Pattern: Carr Boyd Rocks mine, Australia; amorphous by X-ray and electron diffraction analysis.

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO(_2)</td>
<td>19.3</td>
<td>19.59</td>
</tr>
<tr>
<td>CuO</td>
<td>58.3</td>
<td>59.02</td>
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<tr>
<td>ZnO</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>H(_2)O</td>
<td>22.0</td>
<td>21.39</td>
</tr>
<tr>
<td>Total</td>
<td>[100.2]</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Carr Boyd Rocks mine, Australia; IR confirms \( \text{OH}^1^- \) and \( \text{H}_2\text{O} \); recalculated after deduction of chalconatronite 12.35% from an original analysis totalling 100.5%; then corresponds to \( (\text{Cu}_{5.01}\text{Zn}_{0.05})\Sigma=5.06(\text{CO}_3)_3(\text{OH})_4\cdot6\text{H}_2\text{O} \). (2) \( \text{Cu}_5(\text{CO}_3)_3(\text{OH})_4 \cdot 6\text{H}_2\text{O} \).

Occurrence: A rare secondary mineral in oxidized portions of a Ni–Cu sulfide deposit.

Association: Malachite, chalconatronite, nickelian magnesite, gypsum.

Distribution: From the Carr Boyd Rocks nickel mine, Yerilla district, 80 km north-northeast of Kalgoorlie, Western Australia.

Name: Honors George Herbert Payne (1912–1989), Chief of the Mineral Division, Government Chemical Laboratories, Perth, Western Australia.
