Wölsendorfite  
\((\text{Pb, Ca})\text{U}_2\text{O}_7 \cdot 2\text{H}_2\text{O}\)

**Crystal Data:**  
Orthorhombic.  
*Point Group:* 2/m 2/m 2/m, mm2, or 222.  
As spherulites and crystalline incrustations.

**Physical Properties:**  
*Cleavage:* \{001\}, good.  
*Hardness* = n.d.  
*D*(meas.) = 6.8(1)  
*D*(calc.) = 6.815  
Radioactive.

**Optical Properties:**  
Semitransparent.  
*Color:* Red-orange to carmine-red.  
*Optical Class:* Biaxial.  
\(\alpha = 2.05(3)\)  
\(\beta = \text{n.d.}\)  
\(\gamma = 2.09(1)\)  
2V(meas.) = n.d.

**Cell Data:**  
*Space Group:* C2/m 2/m 2/m, Cmm2, or C222.  
*a* = 11.95(5)  
*b* = 13.99(7)  
*c* = 7.02(5)  
*Z* = 6

**X-ray Powder Pattern:**  
Shinkolobwe, Congo.  
3.09 (100), 3.44 (90b), 1.907 (60), 6.90 (40), 2.734 (30), 2.010 (30), 1.734 (30)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UO(_3)</td>
<td>69.80</td>
<td>69.05</td>
</tr>
<tr>
<td>SiO(_2)</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Al(_2)O(_3)</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>FeO</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>PbO</td>
<td>23.14</td>
<td>22.50</td>
</tr>
<tr>
<td>CaO</td>
<td>1.24</td>
<td>0.09</td>
</tr>
<tr>
<td>BaO</td>
<td>3.27</td>
<td></td>
</tr>
<tr>
<td>K(_2)O</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>H(_2)O</td>
<td>4.30</td>
<td>[4.18]</td>
</tr>
<tr>
<td>insol.</td>
<td>0.48</td>
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<tr>
<td>Total</td>
<td>98.96</td>
<td>[100.00]</td>
</tr>
</tbody>
</table>

(1) Wölsendorf, Germany; corresponds to \((\text{Pb}_{0.85}\text{Ca}_{0.18})\Sigma=1.03\text{U}_{2.00}\text{O}_{7.14} \cdot 1.96\text{H}_2\text{O}\).  
(2) Randboldal, Greenland; by electron microprobe, \(\text{H}_2\text{O}\) by difference; corresponds to \((\text{Pb}_{0.81}\text{Ba}_{0.17}\text{Fe}_{0.04}\text{K}_{0.02}\text{Ca}_{0.01})\Sigma=1.05(\text{U}_{1.95}\text{Si}_{0.04}\text{Al}_{0.02})\Sigma=2.01\text{O}_{7.00} \cdot 2\text{H}_2\text{O}\).

**Occurrence:**  
A rare alteration product of uraninite in the oxide zone of uranium-bearing mineral deposits.

**Association:** Uraninite, rutherfordiné, becquerelite, masuyite, kasolite, metastudtite (Shinkolobwe, Congo).

**Distribution:** From Wölsendorf, Bavaria, Germany. At Kerségalec, near Lignol, Morbihan, France. In the Val Rendena, Trentino-Alto Adige, Italy. From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire). At Okla, near Franceville, Gabon. From Great Bear Lake, Northwest Territories, Canada. In the Williams quarry, near Easton, Northampton Co., Pennsylvania; at Branchville, Fairfield Co., Connecticut; and on the Hell Hole claims, Wheeler Basin, Grand Co., Colorado, USA. At Randboldal, northeastern Greenland. In the Corrego do Urumum pegmatite, near Galiléia, Minas Gerais, Brazil. From the Koongarra deposit, 225 km east of Darwin, Northern Territory, Australia.

**Name:** For the mineral’s first-noted occurrence at Wölsendorf, Germany.

**Type Material:** National School of Mines, Paris, France.

**References:**  
(2) (1957) Amer. Mineral., 42, 919 (abs. ref. 1).  

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