**Simplotite**

\[
\text{CaV}^{4+}_4\text{O}_9\cdot5\text{H}_2\text{O}
\]

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**Crystal Data:** Monoclinic, pseudotetragonal.  
*Point Group:* \(2/m, m,\) or \(2\).  
Radiating books of pseudotetragonal plates, showing \{101\}, to 1 mm; in micaceous plates and hemispherical aggregates.

**Physical Properties:**  
*Cleavage:* \{010\}, perfect, micaceous.  
*Hardness = \sim 1*  
\(D(\text{meas.}) = 2.64(2)\)  
\(D(\text{calc.}) = 2.65\)

**Optical Properties:**  
*Semitransparent.*  
*Color:* Black, greenish black; yellow-green in thin flakes.  
*Streak:* Brownish black.  
*Luster:* Vitreous.  
*Optical Class:* Biaxial (-).  
*Pleochroism:* \(X = \text{yellow}; Y = Z = \text{green}.\)  
*Orientation:* \(X = b, Z \wedge c \sim -58^\circ\)  
*Dispersion:* \(r > v, \text{weak, crossed.}\)  
\(\alpha = 1.705(2)\)  
\(\beta = 1.767(2)\)  
\(\gamma = 1.769(2)\)  
\(2V(\text{meas.}) = \sim 25^\circ; \text{after several years dehydration}\)  
\(\alpha = 1.730(5)\)  
\(\beta = 1.781(3)\)  
\(\gamma = 1.807(3)\)  
\(2V(\text{meas.}) = 40^\circ\)

**Cell Data:**  
*Space Group:* \(A2/m, Am,\) or \(A2.\)  
\(a = 8.39(3)\)  
\(b = 17.02(5)\)  
\(c = 8.37(3)\)  
\(\beta = 90^\circ25(5)\)  
\(Z = 4\)

**X-ray Powder Pattern:** Colorado Plateau, USA; strong preferred orientation.  
8.51 (100), 2.62 (25), 3.14 (18), 4.26 (9), 2.84 (9), 3.42 (6), 2.52 (5)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{V}_2\text{O}_4)</td>
<td>69.0</td>
<td>69.42</td>
</tr>
<tr>
<td>(\text{V}_2\text{O}_5)</td>
<td>0.5</td>
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</tr>
<tr>
<td>(\text{CaO})</td>
<td>11.8</td>
<td>11.73</td>
</tr>
<tr>
<td>(\text{H}_2\text{O}^+)</td>
<td>4.0</td>
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<tr>
<td>(\text{H}_2\text{O}^-)</td>
<td>14.7</td>
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<tr>
<td>(\text{H}_2\text{O})</td>
<td>18.85</td>
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<tr>
<td><strong>Total</strong></td>
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<td>100.00</td>
</tr>
</tbody>
</table>

(1) Peanut mine, Colorado, USA; total V and \(\text{V}^{4+}\) determined directly, \(\text{V}^{5+}\) by difference, recalculated to 100% after deduction of insoluble 0.5%, mainly \(\text{SiO}_2\).  
(2) \(\text{CaV}_4\text{O}_9\cdot5\text{H}_2\text{O}\).

**Occurrence:** A secondary mineral on fracture surfaces and replacing fossil wood in Colorado Plateau-type U–V deposits.

**Association:** Montroseite, duttonite, melanovanadite, selenium, uraninite, coffinite, vanadiferous silicates.

**Distribution:** In the USA, in Colorado, from the Peanut mine, Bull Canyon, in the J.J. and Hummer mines, Paradox Valley, and at the Shattuck-Denn mine, Club Mesa, Uravan district, Montrose Co., and on the Sundown claim, Gypsum Valley, and the Burro mine, Slick Rock district, San Miguel Co.; from the Vanadium Queen mine, La Sal Creek, San Juan Co., Utah.

**Name:** For John Richard Simplot (1909–), Boise, Idaho, of the J.R. Simplot Mining Co., which owned the Peanut mine.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 115881.

**References:**  