Oxynatromicrolite  
\((\text{Na}, \text{Ca}, \text{U})_2\text{Ta}_2\text{O}_6(\text{O}, \text{F})\)

**Crystal Data:** Cubic.  
*Point group:* 4/m 3 2/m.  
Crystals are octahedra, rhombohedral dodecahedra, cubes, or their combinations, to 0.20 mm.

**Physical Properties:**  
*Geanage:* None.  
*Tenacity:* Brittle.  
*Fracture:* Conchoidal.  
*Hardness:* ~ 5  
VHN = 374.5-562.9, 466.3 average (100 g load).  
D(meas.) = 6.580(4)  
D(calc.) = 6.506  
Metamict.

**Optical Properties:**  
*Opaqueness:* Translucent on thin edges.  
*Color:* Brown or yellowish brown.  
*Streak:* Yellowish brown.  
*Luster:* Greasy to waxy.  
*Optical Class:* Isotropic (recrystallized).  
*n(meas.) = 1.999(5)
  

**Cell Data:**  
*Space Group:* Fd3 m.  
*a = 10.420(6)  
Z = 8

**X-ray Powder Pattern:**  
Guanpo, Lushi county, Henan Province, China. (Heated and recrystallized) 3.0257 (100), 6.1489 (40), 1.8441 (35), 1.5705 (30), 2.6165 (25), 1.1960 (15), 2.0089 (10)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>(1)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na₂O</td>
<td></td>
<td>5.41</td>
<td>0.23</td>
</tr>
<tr>
<td>CaO</td>
<td></td>
<td>4.56</td>
<td>0.05</td>
</tr>
<tr>
<td>UO₂</td>
<td></td>
<td>14.60</td>
<td>0.56</td>
</tr>
<tr>
<td>La₂O₃</td>
<td></td>
<td>0.16</td>
<td>0.29</td>
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<tr>
<td>Ce₂O₅</td>
<td></td>
<td>0.11</td>
<td>1.04</td>
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<tr>
<td>Nd₂O₃</td>
<td></td>
<td>0.13</td>
<td>[1.50]</td>
</tr>
<tr>
<td>PbO</td>
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<td>0.62</td>
<td>0.44</td>
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<tr>
<td>Ta₂O₅</td>
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<td>61.52</td>
<td>Total 98.53</td>
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<tr>
<td>Nb₂O₅</td>
<td></td>
<td>8.21</td>
<td></td>
</tr>
</tbody>
</table>

(1) Guanpo, Lushi county, Henan Province, China; average of 18 electron microprobe analyses supplemented by IR spectroscopy and DTA, H₂O calculated from stoichiometry; corresponds to [Na₀.₉₀Ca₀.₄₆U₀.₃₁Pb₀.₀₂La₀.₀₁(H₂O)₀.₂₁]₁₋₂.₀₀(Ta₁.₅₈Nb₀.₃₅Si₀.₀₅Sn₀.₀₁Sb₀.₀₁)₂₋₂.₀₀O₆[O₀.₄₃F₀.₃₁(H₂O)₀.₂₆][Si₀.₀₁].

**Mineral Group:**  
Pyrochlore supergroup (general formula - A₂B₂XₙY); microlite group (B = Ta⁵⁺).

**Occurrence:**  
In a rare-element granitic pegmatite, crystallized from a highly evolved felsic magma or transitional magmatic-hydrothermal fluids enriched in volatile, flux and lithophile elements.

**Association:**  
Quartz, albite, potassium feldspar, muscovite, kaolinite, tantalite-Mn, stibiotantalite, pollucite, spodumene, montebrasite, Hf-rich zircon, tourmaline, polylithionite, trilithionite, luanshiweite-2M₁.

**Distribution:**  
From the No. 309 rare-element granitic pegmatite vein, Guanpo, Lushi county, Henan Province, China.

**Name:**  
For a member of the *microlite* group with prefixes to indicate essential oxygen (oxy) in the Y site and dominant sodium (natro) in the A site.

**Type Material:**  
Geological Museum of China, Beijing, China (M11940).