Ovamboite  

Cu$_{20}$(Fe$_2$Cu$_{2}$Zn)$_6$W$_2$Ge$_6$S$_{32}$

**Crystal Data:** Isometric.  
**Point Group:** 4 3m.  
As round segregations, to 100 μm, as disseminated emulsion-texture grains in germanite, and as the outer zones of maikainite overgrowths on germanocolusite.

**Physical Properties:**  
**Cleavage:** None.  
**Fracture:** n.d.  
**Tenacity:** n.d.  
**Hardness = n.d.**  
VHN = 265-340 (30 g load).  
D(meas.) = n.d.  
D(calc.) = 4.736

**Optical Properties:**  
**Opaque.**  
**Color:** White to pale yellow; pinkish gray in reflected light.  
**Streak:** n.d.  
**Luster:** Metallic.  
**Optical Class:** Isotropic.

R: (460) 24.1, (546) 24.3, (589) 24.4, (650) 24.0

**Cell Data:**  
**Space Group:** P4 3n.  
By analogy with the germanite group.  
**a = 10.68**  
Z = 1

**X-ray Powder Pattern:** Tsumeb deposit, Namibia.  
3.08 (100), 1.887 (70), 1.612 (50), 2.67 (20), 1.225 (15), 1.543 (10), 1.333 (10)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Atomic %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu</td>
<td>39.85</td>
</tr>
<tr>
<td>Fe</td>
<td>4.75</td>
</tr>
<tr>
<td>Zn</td>
<td>3.34</td>
</tr>
<tr>
<td>Mo</td>
<td>1.01</td>
</tr>
<tr>
<td>W</td>
<td>9.83</td>
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<tr>
<td>Sn</td>
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<tr>
<td>V</td>
<td>0.09</td>
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<tr>
<td>Ge</td>
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<tr>
<td>Ga</td>
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<tr>
<td>As</td>
<td>2.58</td>
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<tr>
<td>S</td>
<td>29.65</td>
</tr>
<tr>
<td>Total</td>
<td>101.63</td>
</tr>
</tbody>
</table>

(1) Tsumeb deposit, Namibia; electron microprobe analysis; corresponding to (Cu$_{21.4}$Fe$_{2.9}$Zn$_{1.74}$)Z$_{20.06}$(W$_{1.83}$Mo$_{0.36}$V$_{0.06}$Sn$_{0.01}$)$_{2.26}$(Ge$_{4.70}$As$_{1.17}$Ga$_{0.24}$)$_{2.11}$S$_{31.57}$.

**Mineral Group:** Germanite group.

**Occurrence:** In a germanium-bearing, base-metal, massive-sulfide deposit (Tsumeb); in a gold-bearing, base-metal, massive-sulfide deposit (Maikain).

**Association:** Maikainite, germanite, germanocolusite (Tsumeb).

**Distribution:** From the Tsumeb deposit, Ovamboland, Namibia and the Maikain deposit, Kazakhstan.

**Name:** For the Ovamboland region of Namibia in which the first specimens were located.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, and in the Mining Museum, St. Petersburg, Russia.

**References:**  