Caswellsilverite

**NaCrS₂**

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**Crystal Data:** Hexagonal. *Point Group:* 32. As anhedral grains, to 1 mm.

**Twinning:** The lamellar twinning observed may be the result of pressure-induced deformation.

**Physical Properties:**
- **Hardness:** Very soft. VHN = 17–45 (15 g load) (synthetic).
- **Density:**
  - Measured: D(meas.) = 3.21 (synthetic).
  - Calculated: D(calc.) = [3.23]

**Optical Properties:**
- **Opacity:** Opaque.
- **Color:** Yellow-gray to pale gray in reflected light.
- **Luster:** Metallic.
- **Pleochroism:** Distinct, pale yellow to gray in air, pale yellow with a greenish tint to gray in oil.

**Cell Data:**
- **Space Group:** R̅3m.
- **Cell Parameters:** a = 3.55, c = 19.5, Z = 3

**X-ray Powder Pattern:** Norton County meteorite.

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Norton County</th>
<th>Qingzhen</th>
<th>NaCrS₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na</td>
<td>15.7</td>
<td>15.5</td>
<td>16.53</td>
</tr>
<tr>
<td>Cr</td>
<td>37.4</td>
<td>37.6</td>
<td>37.38</td>
</tr>
<tr>
<td>Fe</td>
<td>0.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zn</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ca</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mg</td>
<td>0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mn</td>
<td>0.08</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Ti</td>
<td>0.18</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>46.3</td>
<td>46.0</td>
<td>46.09</td>
</tr>
</tbody>
</table>

Total 99.66 100.29 100.00

(1) Norton County meteorite; by electron microprobe. (2) Qingzhen meteorite; by electron microprobe, average of three analyses. (3) NaCrS₂.

**Occurrence:**
- As inclusions in enstatite crystals and in the brecciated matrix of a meteorite (Norton County meteorite); between coarse pyroxene grains in chondrules in a meteorite (Qingzhen meteorite).

**Association:**
- Enstatite, cromusite, daubréélite, titanooan troilite, ferromagnesian alabandite, oldhamite, kamacite, perryite, schollhornite (Norton County meteorite); troilite, kamacite, oldhamite (Qingzhen meteorite).

**Distribution:**
- Found in the Norton County enstatite achondrite [TL] and the Qingzhen enstatite chondrite meteorites.

**Name:**
- To honor Dr. Caswell Silver (1916– ), American geologist associated with the University of New Mexico, Institute of Meteoritics, Albuquerque, New Mexico, USA.

**Type Material:**
- n.d.

**References:**

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