Murchisite

Crystal Data: Hexagonal.  
*Point Group*: 3 2/m.  
As subhedral crystals to 4 mm.

Physical Properties:  
*Cleavage*: n.d.  
*Fracture*: n.d.  
*Tenacity*: n.d.  
*Hardness*: n.d.  
*D(meas.)* = n.d.  
*D(calc.)* = 4.22

Optical Properties:  
Opaque.  
*Color*: Gray in reflected light.  
*Streak*: n.d.  
*Luster*: n.d.  
*Optical Class*: n.d.

Cell Data:  
*Space Group*: P3 1c.  
*a* = 5.982  
*c* = 11.509  
*Z* = 2

X-ray Powder Pattern:  
Murchison CM2 meteorite.  
2.074 (100), 2.654 (86), 1.727 (86), 2.991 (59), 1.105 (37), 4.724 (31), 1.327 (20)

Chemistry:

<table>
<thead>
<tr>
<th>Element</th>
<th>Mass % 1</th>
<th>Mass % 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>53.32</td>
<td>57.47</td>
</tr>
<tr>
<td>S</td>
<td>42.87</td>
<td>42.53</td>
</tr>
<tr>
<td>V</td>
<td>1.44</td>
<td></td>
</tr>
<tr>
<td>Fe</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Ni</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>98.97</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Murchison CM2 meteorite; average electron microprobe analysis; corresponds to (Cr4.60V0.13Fe0.09Ni0.01)Σ=4.83(S6.00P0.01)Σ=6.01.  
(2) Cr5S6.

Occurrence:  
A low-temperature phase (~327 °C in the Cr-S system), probably formed from higher temperature Cr1-xS exsolved or expelled from a Cr-S-bearing, metal-rich spherule included in forsteritic olivine grains that were probably derived from chondrule fragments.

Association:  
Low-Ni iron (“kamacite”), martensitic iron, schreibersite, Ca-Al-rich glass, forsteritic olivine (crystal 1); tochilinite, serpentine, chromite, eskolaite (crystal 2).

Distribution:  
From the Murchison CM2 meteorite.

Name:  
For the Murchison meteorite.

Type Material:  

References:  
Amer. Mineral., 96, 1905-1908.