Vaughanite  

Crystal Data:  Triclinic  
Point Group:  T or 1.  
Anhedral grains, to 200 µm.

Physical Properties:  Cleavage: A weak parting was observed.  
Fracture: Even, may be arcuate.  
Tenacity: Brittle.  Hardness = 3–3.5  
VHN = 100–115, 104 average (25 g load).  
D(meas.) = n.d.  D(calc.) = 5.56

Optical Properties:  Opaque.  
Color: Pale gray in reflected light; rare blood-red internal reflections.  
Streak: Black.  Luster: Metallic.  
Pleochroism: Weak; greenish gray to bluish gray.  
Anisotropism: Moderate to strong; purple, purplish brown-gray, brownish yellow, greenish yellow, sage-green, bluish green, dark blue-bottle-green.  
Bireflectance: Weak to moderate.

Cell Data:  Space Group:  P_1 or P 1.  
a = 9.012(3)  
b = 13.223(3)  
c = 5.906(2)  
α = 93.27(3)°  
β = 95.05(4)°  
γ = 109.16(3)°  
Z = 2

X-ray Powder Pattern:  
Hemlo deposit, Canada.  
4.204 (100), 3.313 (60), 2.749 (40), 4.343 (30), 2.315 (30)

Chemistry: 

<table>
<thead>
<tr>
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<th>(2)</th>
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<tbody>
<tr>
<td>Tl</td>
<td>18.3</td>
<td>18.31</td>
</tr>
<tr>
<td>Hg</td>
<td>17.5</td>
<td>17.97</td>
</tr>
<tr>
<td>Sb</td>
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<td>43.62</td>
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<td>As</td>
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<tr>
<td>S</td>
<td>20.5</td>
<td>20.10</td>
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<tr>
<td>Total</td>
<td>100.8</td>
<td>100.00</td>
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</table>

(1) Hemlo deposit, Canada; by electron microprobe, average of five analyses; corresponds to 

Tl_{0.98}Hg_{0.95}(Sb_{4.90}As_{0.17})S_{7-0.07}.  

(2) TlHgSb_4S_7

Occurrence:  A very rare primary mineral found in drill core from an epithermal-hydrothermal gold deposit.

Association:  Pääkkönene, stibarsen, realgar, arsenic, chalcostibite, quartz, calcite.

Distribution:  From the Golden Giant orebody, Hemlo gold deposit, 35 km east of Marathon, Ontario, Canada [TL].

Name:  To honor Professor David John Vaughan (1946– ), Manchester University, Manchester, England, for his contributions to ore mineralogy.


References:  