Crowningshieldite  

\((\text{Ni}_{0.9}\text{Fe}_{0.1})\text{S}\)

**Crystal Data:** Hexagonal.  
*Point Group:* 6/m 2/m 2/m.  
As irregular grains, to 20 μm.

**Physical Properties:**  
*Cleavage:* n.d.  
*Tenacity:* n.d.  
*Fracture:* n.d.  
Hardness = 3-3.5 (by analogy to millerite)  
*D(meas.)* = n.d.  
*D(calc.)* = 5.47(1)

**Optical Properties:**  
*Opaque.*  
*Color:* Bronze yellow.  
*Streak:* n.d.  
*Luster:* Metallic.  
*Optical Class:* n.d.

**Cell Data:**  
*Space Group:* P63/mmc.  
\(a = 3.44(1)\)  
\(c = 5.36(1)\)  
\(Z = 2\)

**X-ray Powder Pattern:**  
*Letseng diamond mine, Lesotho.*  
1.992 (100), 1.718 (55), 2.978 (53), 2.608 (35), 2.693 (17), 1.304 (17), 1.453 (7)

**Chemistry:**  

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>Ni</td>
<td>58.50</td>
<td>64.67</td>
</tr>
<tr>
<td>Fe</td>
<td>5.89</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>35.61</td>
<td>35.33</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
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</tbody>
</table>

(1) Letseng diamond mine, Lesotho; average semiquantitative EDS analysis; corresponds to \((\text{Ni}_{0.9}\text{Fe}_{0.1})\text{S}\).  
(2) NiS.

**Polymorphism & Series:** High-temperature polymorph of millerite (β-NiS), with an inversion temperature of 379 °C.

**Occurrence:** Part of a multiphase inclusion in a gem-quality, colorless, type IIa (containing less than ~5 ppm N) diamond from a kimberlite pipe.

**Association:** Diamond, magnetite-magnesioferrite, hematite, graphite.

**Distribution:** From the Letseng diamond mine, Lesotho.

**Name:** Honors G. Robert *Crowningshield* (1919-2006), who at the Gemological Institute of America (GIA) for more than 50 years, advocated for spectroscopy as a valuable tool in gemology and meticulously recorded the absorption patterns of many gems, ultimately publishing them as a key reference for gem mineral identification.

**Type Material:** Museum of Mineralogy, University of Padova, Italy (MMP 20501) and the Gemological Institute of America Museum, Carlsbad, California, USA (41800).

**References:**  