**Paděraite**  \( \text{Cu}_7[(\text{Cu}, \text{Ag})_{0.33}\text{Pb}_{1.33}\text{Bi}_{11.33}]\text{S}_{22} \)

**Crystal Data:** Monoclinic.  
Point Group: 2/m.  
Platy fragments, in granular to parallel fibrous aggregates, to several mm.

**Physical Properties:** 
Fracture: Uneven.  
Hardness = n.d.  
D(meas.) = n.d.  
D(calc.) = 6.69-6.91

**Optical Properties:** 
Opaque.  
Color: Steel-gray on fresh fractures, turning brown to black; in polished section, creamy white.  
Anisotropism: Moderate.

**Cell Data:** 
Space Group: \( \text{P}_{2}/\text{m} \).  

\( a = 17.573(2) \)  
\( b = 3.9426(4) \)  
\( c = 28.423(3) \)  
\( \beta = 105.525(2)^{\circ} \)  
\( Z = 2 \)  
\( (\text{silver free}) \)

\( a = 17.585(4) \)  
\( b = 3.9386(9) \)  
\( c = 28.453(7) \)  
\( \beta = 105.41(1)^{\circ} \)  
\( Z = 2 \)  
\( (0.51 \text{ wt\% Ag}) \)

**X-ray Powder Pattern:** Calculated from structure.  
3.06 (100), 3.63 (74), 3.21 (61), 2.85 (43), 2.66 (38), 3.18 (34), 2.19 (30)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
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</thead>
<tbody>
<tr>
<td>Ag</td>
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<td>1.00</td>
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<tr>
<td>Pb</td>
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<td>6.47</td>
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<tr>
<td>Cu</td>
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<td>11.74</td>
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<td>9.76</td>
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<tr>
<td>Cd</td>
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<tr>
<td>Bi</td>
<td>61.40</td>
<td>61.24</td>
<td>61.71</td>
<td>58.83</td>
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<tr>
<td>S</td>
<td>18.90</td>
<td>18.35</td>
<td>18.33</td>
<td>18.05</td>
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<tr>
<td>Total</td>
<td>99.72</td>
<td>98.81</td>
<td>99.46</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Băiţa, Romania; by electron microprobe, average of six analyses; corresponds to \( \text{Cu}_{5.55}\text{Ag}_{1.13}\text{Pb}_{1.21}\text{Bi}_{0.97}\text{S}_{22.00} \).  
(2) Ocna de Fier, Romania; by electron microprobe, average of 37 analyses; corresponds to \( \text{Ag}_{0.36}\text{Pb}_{1.20}\text{Cu}_{7.11}\text{Bi}_{11.28}\text{S}_{22.05} \).  
(3) Swartberg, northern Cape Province, South Africa; by electron microprobe, average of six analyses; corresponds to \( \text{Cu}_{7.30}\text{Pb}_{1.34}\text{Bi}_{11.35}\text{Sb}_{0.03}\text{S}_{21.96}\text{Te}_{0.07} \).  
(4) \( \text{AgPb}_2\text{Cu}_6\text{Bi}_1\text{S}_{22} \).

**Occurrence:** Intimately intergrown with other Pb-Bi sulfosalts, particularly, members of the cuprobismutite series and the bismuthinite-aikinite homologous series.

**Association:** Hammarite, pekoite, bismuthinite, cuprobismutite, hodrushite, chalcopyrite, grossular, andradite.

**Distribution:** In Romania, from Băiţa (Rézbánya) [TL], and in the Paulus mine, Ocna de Fier (Morávica, Vaskö). At Banská Stiavnica (Schemnitz), Slovakia. From Swartberg, northern Cape Province, South Africa.

**Name:** Honors Dr. Karel Paděra (b. 1923), Czech mineralogist, Charles University, Prague, Czech Republic, who first worked on the mineral.

**Type Material:** Charles University, Prague, Czech Republic, 11329; National Museum of Natural History, Washington, D.C., USA, 164244.

**References:**  
(3) Topa, E. and D. Makovicky (2006) The crystal structure of paděraite, \( \text{Cu}_7\text{(X}_{0.33}\text{Pb}_{1.33}\text{Bi}_{11.33}\text{S}_{22} \), with \( X = \text{Cu} \) or \( \text{Ag} \): new data and interpretation. Can. Mineral., 44, 481-495.  