Bonazziite

\( \beta-\text{As}_4\text{S}_4 \)

**Crystal Data:** Monoclinic.  \textit{Point Group}: 2/m.  As crystals to 0.1 mm.

**Physical Properties:**  \textit{Cleavage}: None.  \textit{Fracture}: Irregular.  \textit{Tenacity}: Brittle.  Hardness = \( \sim 2.5 \) VHN = 70 (15 g load).  \( D(\text{meas.}) = \text{n.d.} \)  \( D(\text{calc.}) = 3.542 \)


\( R_1-R_2: \) (471.1) 19.9-22.2, (548.3) 19.1-21.3, (586.6) 18.8-19.7, (652.3) 17.8-18.9

**Cell Data:**  \textit{Space Group}: C2/c.  \( a = 9.956(1) \) \( b = 9.308(1) \) \( c = 8.869(1) \)  \( \beta = 102.55(2)^\circ \)  \( Z = 4 \)

**X-ray Powder Pattern:**  Khaidarkan Sb-Hg deposit, Osh Oblast, Kyrgyzstan.

5.74 (100), 2.86 (80), 4.10 (60), 3.12 (60), 3.92 (50), 2.95 (50), 4.86 (30)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>As</td>
<td>68.94</td>
<td>70.03</td>
</tr>
<tr>
<td>S</td>
<td>30.20</td>
<td>29.97</td>
</tr>
<tr>
<td>Total</td>
<td>99.14</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Khaidarkan Sb-Hg deposit, Osh Oblast, Kyrgyzstan; average of 6 electron microprobe analyses supplemented by Raman spectroscopy; corresponding to \( \text{As}_{3.95}\text{S}_{4.05} \).  (2) \( \text{As}_4\text{S}_4 \).

**Polymorphism & Series:** Polymorph of realgar and pararealgar.

**Occurrence:** Low-temperature hydrothermal mineral probably formed while the system had direct involvement of magmatic volatiles.

**Association:** Realgar, sulfur, wakabayashilite, alacránite, non-stoichiometric \( \text{As}_4\text{S}_{4+x} \) sulfides, stibnite, calcite.

**Distribution:** From the Khaidarkan Sb-Hg deposit, south of Fergana Valley, Alai Range, Osh Oblast, Kyrgyzstan.

**Name:** Honors Paola Bonazzi (b. 1960), Professor in Mineralogy, University of Florence, Italy, in recognition of her seminal contributions to the study of arsenic sulfides and their alteration by light.

**Type Material:** Mineralogical Collection, Museum of Natural History, University of Florence, Italy (3143/1).