Fairbankite PbTe$_{4+}O_3$

Crystal Data: Triclinic. **Point Group:** 1 or 1. Crystals nearly equant, to 0.5 mm; typically as thin crusts.

Physical Properties: **Tenacity:** Brittle. Hardness = 2 D(meas.) = n.d. D(calc.) = 7.45

Optical Properties: **Color:** Colorless. **Luster:** Resinous to adamantine. **Optical Class:** Biaxial (−) or (+). **Dispersion:** Weak. $\alpha = 2.29$, $\beta = 2.31$, $\gamma = 2.33$

Cell Data: **Space Group:** $P\overline{1}$ or $P\overline{1}$. $a = 7.81$, $b = 7.11$, $c = 6.96$, $\alpha = 117^\circ12'$ $\beta = 93^\circ47'$ $\gamma = 93^\circ24'$ $Z = 4$

X-ray Powder Pattern: Grand Central mine, Arizona, USA.

Chemistry:

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>TeO$_2$</td>
<td>41.70</td>
<td>41.69</td>
</tr>
<tr>
<td>PbO</td>
<td>58.30</td>
<td>58.31</td>
</tr>
<tr>
<td>Total</td>
<td>[100.00]</td>
<td>100.00</td>
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(1) Grand Central mine, Arizona, USA; recalculated to 100% from an original total of 100.3%, after deduction of PbCO$_3$ 13.0% due to cerussite impurity. (2) PbTeO$_3$.

Polymorphism & Series: Dimorphous with plumbotellurate.

Occurrence: Very rare on the mine dump from a hydrothermal Au–Te-bearing ore deposit.

Association: Oboyerite, cerussite, “opal”.

Distribution: From the Grand Central mine, Tombstone, Cochise Co., Arizona, USA.

Name: Honors Nathaniel Kellogg Fairbank (1829–1903), who organized the company that developed the Grand Central lode, Tombstone, Arizona, USA.
