Babefphite  
BaBe(PO$_4$)F

Crystal Data: Triclinic, pseudotetragonal.  
Point Group: 1.  
As anhedral, equant to flattened grains, to 1.5 mm; may be in aggregates.

Physical Properties:  
Tenacity: Very brittle.  
Hardness = [3.5]  
VHN = 140–200  
D(meas.) = 4.31  
D(calc.) = 4.325

Optical Properties:  
Transparent.  
Color: White.  
Luster: Vitreous to greasy.  
Optical Class: Biaxial; pseudouniaxial (+).  
Orientation: Negative elongation.  
$\omega = 1.629(2)$  
$\epsilon = 1.632(2)$

Cell Data:  
Space Group: $P1$.  
$a = 6.889(3)$  
$b = 16.814(7)$  
$c = 6.902(3)$  
$\alpha = 90.01(3)^\circ$  
$\beta = 89.99(3)^\circ$  
$\gamma = 90.32(3)^\circ$  
Z = 8

X-ray Powder Pattern:  
Aunik deposit, Russia.  
3.190 (10), 2.163 (10), 1.516 (10), 2.760 (8), 2.440 (7), 2.033 (7), 1.135 (7b)

Chemistry:  

<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P$_2$O$_5$</td>
<td>26.55</td>
<td>27.26</td>
</tr>
<tr>
<td>Fe$_2$O$_3$</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>BeO</td>
<td>11.63</td>
<td>9.61</td>
</tr>
<tr>
<td>CaO</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>BaO</td>
<td>56.50</td>
<td>58.90</td>
</tr>
<tr>
<td>F</td>
<td>7.27</td>
<td>7.30</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>[0.64]</td>
<td></td>
</tr>
<tr>
<td>$\bar{O} = F_2$</td>
<td>3.05</td>
<td>3.07</td>
</tr>
<tr>
<td>Total</td>
<td>[99.84]</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Aunik deposit, Russia; by microchemical analysis, with (OH)$^{1-}$ for charge balance, corresponds to Ba$_{0.99}$Be$_{1.20}$(PO$_4$)$_{1.00}$[F$_{1.02}$(OH)$_{0.36}$]$_{\Sigma=1.38}$.  
(2) BaBe(PO$_4$)F.

Occurrence: In eluvium directly above rare-metal skarn deposits associated with alkaline intrusions.

Association: Zircon, ilmenorutile, fluorite, phenakite, scheelite, bertrandite, albite, microcline, quartz.

Distribution: Occurs in the Aunik fluorite-rare metals deposit, Buryatia, Siberia, Russia.

Name: For BArium, BEryllium, Fluorine, and PHosphorous in the composition.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72021.

References:  
(2) (1966) Amer. Mineral., 51, 1547 (abs. ref. 1).  