Berlinite  
Al(PO₄)

**Crystal Data:** Hexagonal.  
*Point Group:* 32.  
Granular, to 6 mm, massive.  
*Twinning:* Subparallel twinning lamellae by rotation around [00*1].

**Physical Properties:**  
*Fracture:* Conchoidal.  
*Hardness:* $\sim$6.5  
*D(meas.):* 2.64-2.66  
*D(calc.):* 2.618  
May fluoresce dark red under UV.

**Optical Properties:**  
*Color:* Colorless, pale gray, may be pale rose; colorless in transmitted light.  
*Luster:* Vitreous.  
*Optical Class:* Uniaxial (+).  
$\omega = 1.524(1)$  
$\epsilon = 1.532(1)$

**Cell Data:**  
*Space Group:* $P\overline{3}121$.  
*a = 4.9458(10)*  
*c = 10.9526(20)*  
*Z = 3*

**X-ray Powder Pattern:** Synthetic.  
3.369 (100), 4.28 (25), 1.835 (16), 2.471 (12), 2.306 (12), 1.393 (12), 1.389 (12)

**Chemistry:**

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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</thead>
<tbody>
<tr>
<td>P₂O₅</td>
<td>58.43</td>
<td>58.20</td>
</tr>
<tr>
<td>SiO₂</td>
<td>0.13</td>
<td></td>
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<tr>
<td>Al₂O₃</td>
<td>41.88</td>
<td>41.80</td>
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<tr>
<td>Fe₂O₃</td>
<td>0.04</td>
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<tr>
<td>Total</td>
<td>100.48</td>
<td>100.00</td>
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</tbody>
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(1) Mt. Perry, Australia; by electron microprobe, total Fe as Fe₂O₃.  
(2) AlPO₄.

**Occurrence:**  
A rare high-temperature hydrothermal or metasomatic mineral; also in a cave in heavily compacted phosphate-bearing clay sediments that underwent heating, probably by in situ combustion of guano.

**Association:**  
Augelite, attakolite, kyanite, pyrophylite, scorzalite, lazulite, gatumbaita, burangaite, ambylygonite, phosphosiderite, purpurite, apatite, muscovite, quartz, hematite (granite pegmatites); alunite, aragonite, collophane, crandallite, francoanellite, gypsum, huntite, hydromagnesite, leucophosphate, nesquehonite, niter, nitrocalcite (Paddy’s River mine, Australia).

**Distribution:**  
In the Västanå mine, near Näså, Skåne, and at Hälsjöberg, Värmland, Sweden. In Rwanda, in the Buranga and Rusoro pegmatites, Gatumba district. In Australia, on Mt. Perry, 75 km southwest of Bundaber, Queensland, and at Paddy’s River mine, Australian Capital Territory. From the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, Minas Gerais, Brazil. From Cioclovina Cave, Sureanu Mountains, Romania.

**Name:**  
Honors Professor Nils Johan Berlin (1812-1891), pharmacologist, University of Lund, Lund, Sweden.

**Type Material:**  
Wroclaw University, Wroclaw, Poland, II-9574; Harvard University, Cambridge, Massachusetts, USA, 101252.

**References:**  
(5) (1960) NBS Circ. 539, 10, 3.  