

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 = ~6.5 D(meas.) = 2.64-2.66 D(calc.) = 2.618 May fluoresce dark red under UV.

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

Cell Data: *Space Group:* P3₁21. $a = 4.9458(10)$ $c = 10.9526(20)$ $Z = 3$

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:	(1)	(2)
P ₂ O ₅	58.43	58.20
SiO ₂	0.13	
Al ₂ O ₃	41.88	41.80
Fe ₂ O ₃	0.04	
Total	100.48	100.00

(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, pyrophyllite, scorzalite, lazulite, gatumbaite, burangaite, amblygonite, phosphosiderite, purpurite, apatite, muscovite, quartz, hematite (granite pegmatites); alunite, aragonite, colophonite, crandallite, francoanellite, gypsum, huntite, hydromagnesite, leucophosphite, nesquehonite, niter, nitrocalcite (Paddy's River mine, Australia).

Distribution: In the Västana mine, near Näsrum, Skåne, and at Hålsjöberg, Värmland, Sweden. In Rwanda, in the Buranga and Rusororo pegmatites, Gatumba district. In Australia, on Mt. Perry, 75 km southwest of Bundaberg, 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: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 696-697. (2) Gallagher, M.J. and J.F. Gerards (1962) Berlinite from Rwanda. *Mineral. Mag.*, 33, 613-615. (3) Duggan, M.B., M.T. Jones, D.N.G. Richards, and J.L. Kamprad (1990) Phosphate minerals in altered andesite from Mount Perry, Queensland, Australia. *Can. Mineral.*, 28, 125-131. (4) Sowa, H., J. Macavei, and H. Schultz (1990) The crystal structure of berlinite AlPO₄ at high pressure. *Zeits. Krist.*, 192, 119-136. (5) (1960) NBS Circ. 539, 10, 3. (6) Onac, B.P. and W.B. White (2003) First reported sedimentary occurrence of berlinite (AlPO₄) in phosphate-bearing sediments from Cioclovina Cave, Romania. *Amer. Mineral.*, 88, 1395-1397. (7) Onac, B.P. and H.S. Effenberger (2007) Re-examination of berlinite (AlPO₄) from the Cioclovina Cave, Romania. *Amer. Mineral.*, 92, 1998-2001.