Pinnoite $MgB_2O(OH)_6$

Crystal Data: Tetragonal. *Point Group:* 4. Uncommon as short prismatic crystals, elongated along [001], showing {110}, {011}, {112}, {122}, to 1 mm; may be radial fibrous, typically crystalline granular.

Physical Properties: *Fracture:* Uneven. Hardness = 3.5 D(meas.) = 2.27 D(calc.) = 2.21 Soluble in boiling H_2O.

Optical Properties: Translucent. *Color:* Sulfur-yellow, straw-yellow, greenish yellow, pistachio-green; pale yellow in transmitted light. *Luster:* Vitreous.
Optical Class: Uniaxial (+). $\omega = 1.565$ $\epsilon = 1.575$

Cell Data: *Space Group:* $P4_2$. $a = 7.6140(13)$ $c = 8.1898(8)$ Z = 4

X-ray Powder Pattern: Stassfurt, Germany. (ICDD 25-1119).
5.39 (100), 2.309 (70), 2.045 (50), 3.61 (40), 3.14 (40), 2.252 (35), 1.905 (30)

Chemistry:

	(1)	(2)
B_2O_3	42.50	42.46
Fe	0.15	
MgO	24.45	24.58
Cl	0.18	
H_2O	32.85	32.96
Total	100.13	100.00

(1) Stassfurt, Germany; average of several analyses. (2) $MgB_2O(OH)_6$.

Occurrence: Typically in bedded marine salt deposits; an efflorescence around salt springs and lakes.

Association: Boracite, kaliborite.

Distribution: In Germany, in Saxony-Anhalt, from the Stassfurt-Leopoldshall district, at Schmidtmannshall, near Aschersleben. From the Inder borate deposit, Kazakhstan. At the Da Quidam saline lake, Qinghai-Xizang Plateau, Tibet, China. In the USA, from the Eagle Borax Spring, Furnace Creek district, Death Valley, Inyo Co., California. At Socacastro, Salta Province, Argentina.

Name: To honor Oberbergrat Pinno, Chief Councillor of Mines, Halle, Germany.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 334–335. (2) Genkina, E.A. and Y.A. Malinovskii (1983) Refinement of the structure of pinnoite: location of hydrogen atoms. Kristallografiya (Sov. Phys. Crystal.), 28, 803–805 (in Russian).