Hydroxylhedyphane $Ca_2Pb_3(AsO_4)_3(OH)$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}$. As prismatic crystals to 2.5 cm in oriented intergrowth with a serpentine-subgroup mineral.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Sub-conchoidal. Hardness = 4-5 (by analogy to hedyphane). D(meas.) = n.d. D(calc.) = 6.205

Optical Properties: Transparent. *Color*: Colorless. *Streak*: n.d. *Luster*: Vitreous. *Optical Class*: Uniaxial (-). *n*(calc.) = 1.933

Cell Data: *Space Group: P*$\bar{3}$. *a* = 10.0414(3) *c* = 7.2752(2) Z = 2

X-Ray Diffraction Pattern: Långban deposit, Filipstad district, Värmland, Sweden. 2.997 (vs), 2.940 (s), 1.950 (s), 4.127 (m), 3.278 (m), 2.894 (m), 2.176 (m)

Chemistry:

	(1)	(2)
P_2O_5	0.96	
V_2O_5	0.07	
As_2O_5	25.36	30.36
SiO_2	0.91	
CaO	7.74	9.88
MnO	0.03	
BaO	2.95	
PbO	59.81	58.97
Na_2O	0.09	
F	0.06	
Cl	1.03	
H_2O	[0.46]	0.79
-O = (F + Cl)	0.26	.
Total	99.21	100.00

(1) Långban deposit, Filipstad district, Värmland, Sweden; average electron microprobe and FTIR and micro-Raman spectroscopic analyses, H_2O calculated; corresponds to $^{M(1)}(Ca_{1.56}Pb_{0.41}Mn_{0.01}Na_{0.03})_{\Sigma=2.01}{}^{M(2)}(Pb_{2.80}Ba_{0.24}Ca_{0.09})_{\Sigma=3.13}{}^{T}(As_{2.64}P_{0.16}V_{0.01}Si_{0.18})_{\Sigma=2.99}O_{12}{}^{X}[(OH)_{0.61}Cl_{0.35}F_{0.04}]$.
(2) $Ca_2Pb_3(AsO_4)_3(OH)$.

Mineral Group: Apatite supergroup, hedyphane group.

Occurrence: As fracture-fillings cutting braunite and hausmannite ore in a complexly deformed and metamorphosed submarine, volcanogenic, massive sulfide deposit.

Association: Calcite, barytocalcite.

Distribution: From the Långban Fe-Mn-(Ba-As-Pb-Sb) deposit, Filipstad district, Värmland, Sweden.

Name: The prefix indicates the (OH)-dominant analogue of *hedyphane*.

Type Material: Swedish Museum of Natural History, Stockholm, Sweden (NRM 19070258) and the Natural History Museum, University of Pisa, Italy (19903).

References: (1) Biagioni, C., U. Hålenius, M. Pasero, A. Karlsson, and F. Bosi (2019) Hydroxylhedyphane, $Ca_2Pb_3(AsO_4)_3(OH)$, a new member of the apatite supergroup from Långban, Sweden. Eur. J. Mineral., 31, 1015-1024.