

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As felty to radial, hemispherical aggregates to 1 mm composed of acicular, lath-like crystals.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* n.d. *Tenacity:* Brittle. Hardness = “Exceedingly soft”. $D(\text{meas.}) = \text{n.d.}$ $D(\text{calc.}) = 3.591$

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.700(5)$ $\beta = 1.741(5)$, $\gamma = 1.792(5)$ $2V(\text{meas.}) \approx 90^\circ$ $2V(\text{calc.}) = 86^\circ$ *Orientation:* $X \approx c$, $Z \wedge$ elongation = 16° . *Dispersion:* Strong, $r < v$.

Cell Data: *Space Group:* $P\bar{1}$. $a = 5.0528(10)$ $b = 5.7671(6)$ $c = 14.617(3)$
 $\alpha = 85.656(14)^\circ$ $\beta = 82.029(17)^\circ$ $\gamma = 88.728(13)^\circ$ $Z = 1$

X-ray Powder Pattern: Långban mine, Filipstad district, Värmland County, Sweden.
 14.48 (100), 3.571 (54), 2.857 (45), 7.21 (43), 4.969 (34), 2.800 (34), 4.798 (28)

Chemistry:	(1)	(2)
PbO	44.71	44.53
MgO	3.79	4.02
MnO	13.34	14.15
FeO	1.89	
P ₂ O ₅	0.65	
As ₂ O ₅	22.90	22.93
H ₂ O	14.4	14.38
Total	101.68	100.00

(1) Långban mine, Filipstad district, Värmland County, Sweden; average of 5 electron microprobe analyses, H₂O by gas chromatography, absence of CO₂ confirmed by IR spectroscopy; corresponding to $\text{Pb}_{1.97}\text{Mn}_{1.85}\text{Mg}_{0.93}\text{Fe}_{0.26}(\text{AsO}_4)_{1.96}(\text{PO}_4)_{0.09}(\text{OH})_{3.87} \cdot 5.93\text{H}_2\text{O}$.
 (2) $\text{Pb}_2\text{Mn}_2\text{Mg}(\text{AsO}_4)_2(\text{OH})_4 \cdot 6\text{H}_2\text{O}$.

Occurrence: A last-stage hydrothermal mineral (likely below 70 °C), in fractures and corrosion-veinlets that postdate regional metamorphism of the volcanic-hydrothermal ores and their host rocks.

Association: Calcite, antigorite, trigonite.

Distribution: From the Långban mine, Filipstad district, Värmland County, Bergslagen ore province, Sweden.

Name: From “Långbanshyttan”, the old name for the mine that produced the first specimens, the mining village, and smelter that in more recent times have been known as “Långban”. “Långbanshyttan” means “Långban’s smelter” or “Långban’s furnace.”

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (# 4032/1) and at the Swedish Museum of Natural History, Stockholm, Sweden (NRM 20100076).

References: (1) Chukanov, N.V., I.V. Pekov, E. Jonsson, N.V. Zubkova, Y.E. Filinchuk, D.I. Belakovskiy, and D.Yu. Pushcharovsky (2011) Långbanshyttanite, a new low-temperature arsenate mineral with a novel structure from Långban, Sweden. *Eur. J. Mineral*, 23, 675-681.
 (2) (2012) *Amer. Mineral.*, 97, 759-760 (abs. ref. 1).