

Crystal Data: Orthorhombic. *Point Group:* *mm*2. As imperfect, thick tabular to equant crystals, to 0.15 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Sectile. *Tenacity:* n.d. Hardness = ≤ 2
D(meas.) = n.d. D(calc.) = 1.92 Dissolves in water.

Optical Properties: Translucent. *Color:* Deep violet-blue. *Streak:* Violet-blue (changes to light blue with decomposition). *Luster:* Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.527(2)$ $\beta = 1.545(5)$ $\gamma = 1.610(2)$ $2V(\text{meas.}) = 40\text{-}50^\circ$
 $2V(\text{calc.}) = 57^\circ$

Cell Data: *Space Group:* *Pnn*2. $a = 23.6585(9)$ $b = 10.8238(4)$ $c = 6.9054(3)$ $Z = 8$

X-ray Powder Pattern: Pabellón de Pica Mountain, Iquique Province, Tarapacá Region, Chile. 5.841 (100), 4.162 (88), 4.005 (62), 3.462 (50), 5.208 (47), 5.931 (41), 2.811 (40)

Chemistry:	(1)	(2)
Cu	26.04	24.85
Fe	0.31	
N	30.80	32.87
O	35.95	37.54
H	[4.74]	4.74
Total	97.84	100.00

(1) Pabellón de Pica Mountain, near Chanabaya, Iquique Province, Tarapacá Region, Chile; average of 3 electron microprobe analyses supplemented by IR spectroscopy, H calculated; corresponding to (Cu_{1.09}Fe_{0.01})H_{12.56}N_{5.87}O_{6.00}. (2) Cu(NH₃)₄(NO₃)₂.

Occurrence: In a guano deposit developed on chalcopyrite-bearing gabbro in a desert climate.

Association: Halite, ammineite, atacamite (a product of ammineite alteration), thénardite.

Distribution: From Pabellón de Pica Mountain, near Chanabaya, Iquique Province, Tarapacá Region, Chile.

Name: Honors Alexander Evgen'evich Shilov (1930-2014), Russian chemist and Academician of the Russian Academy of Sciences, a specialist in biomimetics and the chemistry of nitrogen.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4542/1).

References: (1) Chukanov, N.V., S.N. Britvin, G. Möhn, I.V. Pekov, N.V. Zubkova, F. Nestola, A.V. Kasatkin, and M. Dini (2015) Shilovite, natural copper(II) tetrammine nitrate, a new mineral species. *Mineral. Mag.*, 79(3), 613-623. (2) (2016) *Amer. Mineral.*, 101, 2359 (abs. ref. 1).