Uchucchacuaite $AgMnPb_3Sb_5S_{12}$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Subhedral crystals, anhedral grains, to 200 μm.

Twinning: Polysynthetic by twin law (100/0$\bar{1}$ 0/00$\bar{1}$).

Physical Properties: Hardness = n.d. VHN = 168 (100 g load). D(meas.) = n.d. D(calc.) = 5.487

Optical Properties: Opaque. *Color*: Gray. *Luster*: Metallic.
R_1-R_2: (400) 36.2-44.3, (420) 36.3-44.2, (440) 35.8-44.2, (460) 35.2-43.8, (480) 35.0-43.9, (500) 34.7-43.7, (520) 34.5-43.4, (540) 34.1-43.3, (560) 33.8-43.0, (580) 33.5-42.6, (600) 33.2-42.4, (620) 33.0-42.0, (640) 32.7-41.8, (660) 32.3-41.2, (680) 31.8-40.6, (700) 31.2-39.9

Cell Data: *Space Group*: $P2_1/n$. $a = 19.3645(11)$ $b = 12.7287(8)$ $c = 8.7571(6)$ $\beta = 90.059(3)°$
$Z = 4$

X-ray Powder Pattern: Uchuc-Chacua deposit, Peru.
3.30 (100), 2.90 (80), 3.80 (30), 3.49 (30), 2.75 (30), 2.08 (30), 2.29 (10)

Chemistry:

	(1)	(2)
Ag	5.9	6.07
Pb	34.8	34.96
Mn	2.8	3.09
Fe	0.2	
Sb	34.4	34.24
Se	0.3	
S	21.1	21.64
Total	99.5	100.00

(1) Uchuc-Chacua deposit, Peru; by electron microprobe, corresponding to $Ag_{0.98}(Mn_{0.91}Fe_{0.06})_{\Sigma=0.97}Pb_{3.04}Sb_{5.09}(S_{11.93}Se_{0.07})_{\Sigma=12.00}$. (2) $AgMnPb_3Sb_5S_{12}$.

Polymorphism & Series: Andorite subgroup, lillianite homeotypic series.

Occurrence: In a telescoped polymetallic hydrothermal deposit (Peru).

Association: Alabandite, galena, benavidesite, sphalerite, pyrite, pyrrhotite, arsenopyrite.

Distribution: From the Uchuc-Chacua deposit, Cajatambo Province, Peru [TL]. From Hokkaido, Japan.

Name: For the *Uchuc-Chacua* deposit in Peru.

Type Material: National School of Mines, Paris, France.

References: (1) Moëlo, Y., E. Oudin, P. Picot, and R. Caye (1984) L'uchucchacuaïte, $AgMnPb_3Sb_5S_{12}$, une nouvelle espèce minérale de la sèrie de l'andorite. Bull. Minéral., 107, 597-604 (in French with English abs.). (2) (1985) Amer. Mineral., 70, 1332-1333 (abs. ref. 1).
(3) Yang, H., R.T. Downs, S.H. Evans, M.N. Feinglos, and K.T. Tait (2011) Crystal structure of uchucchacuaite, $AgMnPb_3Sb_5S_{12}$, and its relationship with ramdohrite and fizélyite. Amer. Mineral., 96, 1186-1189. (4) Matsubara, S. and R. Miyawaki (2006) Catalogue of Japanese Minerals. National Science Museum Book Series no. 5, 152 pp. Tokai University Press, Tokyo.