Alcantarillaite $[Fe^{3+}_{0.5}(H_2O)_4][CaAs^{3+}_2(Fe^{3+}_{2.5}W^{6+}_{0.5})(AsO_4)_2O_7]$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As rosettes lining vugs and as spheroids of ultrathin blades to 0.1 mm. Crystals are curved and show sub-parallel lamellae.

Physical Properties: Cleavage: Perfect on {100}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.06

Optical Properties: Transparent. *Color*: Lemon-yellow. *Streak*: Pale yellow. *Luster*: Vitreous. *Optical Class*: Biaxial (-). α = 1.703(calc.) β = 1.800(5) γ = 1.850(5) 2V(meas.) = 68(1)° *Dispersion*: Moderate, $r > v$. *Orientation*: $X = a$, $Y = c$, $Z = b$. Non-pleochroic.

Cell Data: *Space Group*: *Imma*. a = 24.038(8) b = 7.444(3) c = 10.387(3) Z = 4

X-ray Powder Pattern: Alcantarilla mine, Belalcázar, Córdoba, Andalusia, Spain.
12.02 (100), 3.016 (38), 6.025 (27), 6.343 (23), 4.257 (17), 3.148 (12), 2.927 (11)

Chemistry:

	(1)	(2)
Na_2O	0.17	
K_2O	0.62	
CaO	2.87	6.16
Al_2O_3	0.20	
Fe_2O_3	30.7	26.30
WO_3	11.7	12.72
P_2O_5	5.85	
As_2O_3	[21.1]	21.71
As_2O_5	[17.5]	25.22
H_2O	[9.3]	7.90
Total	100.0	100.00

(1) Alcantarilla mine, Belalcázar, Córdoba, Andalusia, Spain; average electron microprobe and Raman spectroscopic analyses, total arsenic as As_2O_5 = 42.0 reapportioned based on structure; corresponds to $[Fe^{3+}_{0.52}\square_{0.48}(H_2O)_4][(Ca_{0.44}K_{0.11}Na_{0.05}Fe^{2+}_{0.24}\square_{0.42})As^{3+}_{1.83}][(Fe^{3+}_{2.54}Al_{0.03}W^{6+}_{0.43})(\{As_{0.65}P_{0.35}\}O_4)_2O_{5.86}(OH)_{1.14}]$. (2) $[Fe^{3+}_{0.5}\square_{0.5}(H_2O)_4][CaAs^{3+}_2(Fe^{3+}_{2.5}W^{6+}_{0.5})(AsO_4)_2O_7]$.

Mineral Group: Walentaite group, walentaite subgroup.

Occurrence: Secondary in the oxidation zone of a wolframite deposit (ferberite, löllingite).

Association: Scorodite, pharmacosiderite, ferberite, schneiderhöhnite.

Distribution: From the Alcantarilla mine, Belalcázar, Córdoba, Andalusia, Spain.

Name: For the locality where the studied material was collected.

Type Material: Mineralogical State Collection, Munich, Germany (MSM37182 holotype), the Natural History Museum, University of Oslo, Norway (KNR44147 holotype), and the Natural History Museum of Los Angeles County, Los Angeles, California, USA (73568 cotype).

References: (1) Grey, I.E., R. Hochleitner, C. Rewitzer, A. Riboldi-Tunnicliffe, A.R. Kampf, C.M. MacRae, W.G. Mumme, M. Kaliwoda, H. Friis, and C.U. Martin (2020) The walentaite group and the description of a new member, alcantarillaite, from the Alcantarilla mine, Belalcázar, Córdoba, Andalusia, Spain. Mineral. Mag., 84, 412-419.