Ishiharaite (Cu,Ga,Fe,In,Zn)S

Crystal Data: Isometric. *Point Group*: $\bar{4}$ 3*m*. As equidimensional grains, to 50 μm, included in tennantite surrounded by discontinuous rims of chalcopyrite.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d.
Hardness = 'Greater than' tennantite. D(meas.) = n.d. D(calc.) = 4.343

Optical Properties: Opaque. *Color*: Dark gray; burgundy brown with a faint violet hue in reflected light. *Streak*: n.d. *Luster*: Metallic.
Optical Class: Isotropic.
R_1-R_2: (470) 6.77-18.27, (546) 7.91-20.10, (589) 8.96 -21.74, (650) 10.44-23.94

Cell Data: *Space Group*: $F\bar{4}$ 3*m*. *a* = 5.368(1) Z = 4

X-ray Powder Pattern: Synthetic (Cu,Fe,Ga,In,Zn)S.
3.096 (100), 1.897 (60), 1.620 (40), 2.684 (20), 1.097 (15), 1.344 (10), 1.231 (10)

Chemistry:	(1)
S	30.77
Cu	33.61
Ga	13.31
In	9.48
Zn	5.74
Fe	6.82
Ge	0.06
As	0.06
Sb	0.06
Total	99.91

(1) Nueva Esperanza vein, Capillitas mine, Farallón Negro district, northwestern Argentina; average of 22 electron microprobe analyses; corresponding to $(Cu_{0.55}Ga_{0.19}Fe_{0.13}In_{0.08}Zn_{0.08})_{\Sigma=1.03}S_{0.97}$.

Occurrence: In an epithermal precious- and base-metal vein deposit.

Association: Tennantite, chalcopyrite, sphalerite, pyrite, galena, quartz.

Distribution: From the Nueva Esperanza vein, Capillitas mine, Farallón Negro district, eastern slope of the Capillitas Range, Catamarca province, northwestern Argentina.

Name: Honors Dr. Shunso Ishihara (b. 1934), Emeritus Advisor of AIST (Advanced Industrial Science and Technology), Tsukuba, Japan, for his wide contributions to the geological sciences.

Type Material: 'Alfred Stelzner' Mineralogical Museum, Faculty of Exact, Physical and Natural Sciences, National University of Córdoba, Argentina (MS003280).

References: (1) Márquez-Zavalía, M.F., M.Á. Galliski, M. Drábek, A. Vymazalová, Y. Watanabe, H. Murakami, and H.-J. Bernhardt (2014) Ishiharaite, (Cu,Ga,Fe,In,Zn)S, a new mineral from the Capillitas Mine, Northwestern Argentina. Can. Mineral., 52(6), 969-980. (2) (2016) Amer. Mineral., 101, 1494 (abs. ref. 1).