

**Crystal Data:** Orthorhombic. *Point Group:*  $mm2$ . As sprays of acicular crystals striated parallel to [100] and tabular on {001}, to 0.1 mm.

**Physical Properties:** *Cleavage:* Good on {001} and {100}. *Tenacity:* Brittle. *Fracture:* Irregular. Hardness = n.d.  $D(\text{meas.}) = 3.00(2)$   $D(\text{calc.}) = 2.946$

**Optical Properties:** Transparent. *Color:* Blue. *Streak:* Light blue. *Luster:* Vitreous. *Optical Class:* Biaxial (-).  $\alpha = 1.599(2)$   $\beta = 1.633(2)$   $\gamma = 1.647(2)$   $2V(\text{meas.}) = 63.6(5)^\circ$   $2V(\text{calc.}) = 64.2^\circ$  *Dispersion:* Moderate,  $r > v$ . *Orientation:*  $X = b$ ,  $Y = c$ ,  $Z = a$ . *Pleochroism:*  $X = \text{light blue}$ ,  $Y = \text{blue}$ ,  $Z = \text{blue}$ . *Absorption:*  $X \ll Z < Y$ .

**Cell Data:** *Space Group:*  $Pmn2_1$ .  $a = 6.807(1)$   $b = 5.897(1)$   $c = 20.653(4)$   $Z = 2$

**X-Ray Diffraction Pattern:** Lagoscuro mine, Ceranesi, Genoa Province, Liguria, Italy. 4.84 (vs), 10.3 (s), 2.708 (s), 6.4 (m), 2.225 (m), 5.67 (mw), 3.400 (mw)

Chemistry:	(1)	(2)
SO <sub>3</sub>	11.45	10.86
MgO	0.31	
CoO	1.07	
NiO	9.41	
CuO	51.29	64.71
ZnO	1.10	
H <sub>2</sub> O	[24.21]	24.43
Total	98.84	100.00

(1) Lagoscuro mine, Ceranesi, Genoa Province, Liguria, Italy; average electron microprobe and micro-Raman spectroscopic analyses, H<sub>2</sub>O calculated; corresponds to  $(\text{Cu}_{4.80}\text{Ni}_{0.94}\text{Co}_{0.11}\text{Zn}_{0.10}\text{Mg}_{0.06})_{\Sigma=6.00}(\text{S}_{1.06}\text{O}_{4.19})(\text{OH})_{10} \cdot 5\text{H}_2\text{O}$ . (2)  $\text{Cu}_6(\text{SO}_4)(\text{OH})_{10}(\text{H}_2\text{O})_4 \cdot \text{H}_2\text{O}$ .

**Occurrence:** A late-stage, secondary phase in a Fe-Ni-Co sulfide deposit.

**Association:** Brochantite, posnjakite, pyrrhotite, pentlandite, allophane, chrysocolla, langite.

**Distribution:** From the Lagoscuro mine, Ceranesi, Genoa Province, Liguria, Italy.

**Name:** Honors Arturo Issel (1842-1922) for his work on the geology, paleontology, and mineralogy of Italy, especially Liguria. He was professor of Geology and Mineralogy, University of Genoa beginning in 1866 and Director of the Institute of Geology and the Geological Museum until 1917.

**Type Material:** Museum of Natural History, University of Pisa, Italy (19904 holotype), the Earth Science Department, University of Genoa, Italy (MO484 holotype), and the Natural History Museum of Los Angeles County, Los Angeles, California, USA (67195 cotype).

**References:** (1) Biagioni, C., D. Belmonte, C. Carbone, R. Cabella, N. Demitri, N. Perchiazzi, A.R. Kampf, and F. Bosi (2020) Isselite,  $\text{Cu}_6(\text{SO}_4)(\text{OH})_{10}(\text{H}_2\text{O})_4 \cdot \text{H}_2\text{O}$ , a new mineral species from Eastern Liguria, Italy. *Mineral. Mag.*, 84, 653-661.