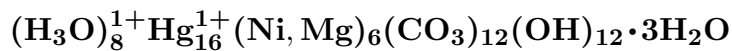


Szymańskiite

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Crystal Data: Hexagonal. *Point Group:* 6. As sprays of euhedral to subhedral prismatic crystals, elongated along [0001], with dominant $\{10\bar{1}0\}$ striated $\parallel$ [0001], and minor $\{0001\}$, to 0.4 mm.

Physical Properties: *Cleavage:* $\{10\bar{1}0\}$, poor. *Fracture:* Irregular to conchoidal. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.86 Slowly darkens on exposure to light.

Optical Properties: Transparent. *Color:* Blue-gray to blue-green, darkening to black on exposure to air. *Streak:* Pale blue. *Luster:* Vitreous. *Optical Class:* Uniaxial (-). *Pleochroism:* *O* = yellowish green; *E* = bluish green. *Absorption:* $O < E$. $\omega = 1.795(3)$ $\epsilon = 1.786(3)$

Cell Data: *Space Group:* $P6_3$. $a = 17.3984(7)$ $c = 6.0078(4)$ $Z = 1$

X-ray Powder Pattern: Clear Creek claim, California, USA.
14.9 (100), 5.60 (100), 3.299 (80), 2.704 (60), 2.665 (60), 3.201 (50), 2.476 (50)

Chemistry:	(1)	(2)
NiO	7.9	6.59
Hg ₂ O	75.8	72.14
MgO	2.0	1.67
CO ₂		11.42
H ₂ O		8.18
Total		100.00

(1) Clear Creek claim, California; by electron microprobe, average of three analyses, values high due to volatilization; IR confirms presence of CO_3^{2-} , $(\text{OH})^{1-}$, H_2O . (2) Do.; with H_2O and CO_3^{2-} determined by crystal-structure analysis, corresponds to $(\text{H}_3\text{O})_8\text{Hg}_{16}(\text{Ni}_{4.08}\text{Mg}_{1.92})_{\Sigma=6.00}(\text{CO}_3)_{12}(\text{OH})_{12} \cdot 3\text{H}_2\text{O}$.

Occurrence: A very rare secondary mineral in the oxidized zone of a mercury–nickel-bearing sulfide deposit in silicate–carbonate rock hydrothermally altered from serpentinite.

Association: Cinnabar, montroydite, mercury, edgarbaileyite, millerite, cinnabar, quartz.

Distribution: From the Clear Creek claim, near the Clear Creek mercury mine, New Idria district, San Benito Co., California, USA.

Name: Honors Dr. Jan T. Szymański (1938–), X-ray crystallographer, Canadian Centre for Mineral and Energy Technology (CANMET), Ottawa, Canada.

Type Material: Canadian Geological Survey, Ottawa, Canada, 65743.

References: (1) Roberts, A.C., T.S. Ercit, R.C. Erd, and R.L. Oscarson (1990) Szymańskiite, $\text{Hg}_{16}^{1+}(\text{Ni}, \text{Mg})_6(\text{CO}_3)_{12}(\text{OH})_{12}(\text{H}_3\text{O})_8^{1+} \cdot 3\text{H}_2\text{O}$, a new mineral species from the Clear Creek claim, San Benito County, California. *Can. Mineral.*, 28, 703–707. (2) Szymanski, J.T. and A.C. Roberts (1990) The crystal structure of szymańskiite, a partly ordered $(\text{Hg} - \text{Hg})^{2+}$, $(\text{Ni}, \text{Mg})^{2+}$ hydronium-carbonate-hydroxide-hydrate. *Can. Mineral.*, 28, 709–718. (3) (1991) *Amer. Mineral.*, 76, 1731 (abs. refs. 1–2).