

**Crystal Data:** Tetragonal. *Point Group:* 422. As thin tabular crystals to 4 mm and invariably bent; as massive nodules to 5 cm, as rosette-shaped aggregates of subparallel, strongly bent lamellar crystals to 0.3 mm, or as aggregates of acicular crystal clusters to 0.8 mm.

**Physical Properties:** *Cleavage:* Excellent on {001}. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = ~ 2.5 D(meas.) = 3.78(1) D(calc.) = 3.863(5)

**Optical Properties:** Translucent. *Color:* Dark sky-blue. *Streak:* Light blue. *Luster:* Vitreous. *Optical Class:* Uniaxial (-).  $\omega = 1.749(2)$   $\varepsilon = 1.647(2)$  *Pleochroism:* Strong, *O* = dark green-blue, *E* = light blue-green (light turquoise). *Orientation:*  $E = c$ ,  $O \perp c$ .

**Cell Data:** *Space Group:* P4<sub>1</sub>22 (or P4<sub>3</sub>22).  $a = 9.9758(4)$   $c = 36.714(1)$   $Z = 8$

**X-ray Powder Pattern:** Abundancia gold mine, Antofagasta Province, Chile. 9.177 (100), 4.588 (32), 3.059 (15), 4.167 (10), 9.600 (9), 2.606 (6), 2.924 (5)

Chemistry:	(1)	(2)
Na <sub>2</sub> O	3.04	2.92
CaO	5.33	5.28
CuO	37.76	37.45
As <sub>2</sub> O <sub>5</sub>	43.53	43.28
Cl	3.23	3.34
H <sub>2</sub> O	8.50	8.48
-O = Cl	0.73	0.75
Total	100.66	100.00

(1) Abundancia gold mine, Antofagasta Province, Chile; average of 15 electron microprobe analyses supplemented by IR spectroscopy, TGA and CHN analyses, corresponds to Na<sub>1.04</sub>Ca<sub>1.00</sub>Cu<sub>5.01</sub>(AsO<sub>4</sub>)<sub>4.00</sub>[Cl<sub>0.96</sub>(OH)<sub>0.11</sub>]<sub>Σ=1.07</sub>•4.93 H<sub>2</sub>O. (2) NaCaCu<sub>5</sub>(AsO<sub>4</sub>)<sub>4</sub>Cl•5H<sub>2</sub>O.

**Occurrence:** A secondary mineral, as nodules or veinlets in gold-bearing quartz veins of a hydrothermal deposit.

**Association:** Lammerite, olivenite, mansfieldite, senarmontite, a mineral of the crandallite group, rutile, anatase, talc. Lavendulan transforms easily to lemanskiite.

**Distribution:** From the Abundancia gold mine, El Guanaco mining district, south of Cerro La Estrella, ~ 95 km east of Taltal, Region II, Antofagasta Province, Chile.

**Name:** Honors Chester S. Lemanski, Jr. (b. 1947), New Jersey, USA, a mineral collector who first recognized this new mineral.

**Type Material:** National Museum, Prague, Czech Republic (P1p14/99).

**References:** (1) Ondruš, P., F. Veselovský, R. Skála, J. Sejkora, R. Pažout, J. Frýda, A. Gabašová, and J. Vajdak (2006) Lemanskiite, NaCaCu<sub>5</sub>(AsO<sub>4</sub>)<sub>4</sub>Cl•5H<sub>2</sub>O, a new mineral species from the Abundancia Mine, Chile. *Can. Mineral.*, 44, 523-531. (2) (2006) *Amer. Mineral.*, 91, 1947-1948 (abs. ref. 1).