

Crystal Data: Monoclinic. *Point Group:* $2/m$. As crystals, prismatic, elongated along [001], with {110}, {010}, {310}, {130}, {021}, and many more forms, to 2 mm; in aggregates, shell-like or granular massive. *Twining:* About [001], contact twins on {100}, ubiquitous.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = < 5
D(meas.) = n.d. D(calc.) = 8.91

Optical Properties: Opaque, translucent on thin edges. *Color:* Dark reddish brown, black in aggregate; in reflected light, greenish white to darker lilac-gray, with bright deep red internal reflections. *Streak:* Dark brick-red. *Luster:* Submetallic.

Optical Class: Biaxial. *Anisotropism:* Strong; purple, dark blue, bottle-green, bottle-blue, turquoise-blue, dull greenish blue. *Birefractance:* Moderate.

R_1 – R_2 : (400) 19.6–16.0, (420) 21.6–18.1, (440) 22.3–20.4, (460) 21.9–22.0, (480) 21.5–23.9, (500) 21.0–25.9, (520) 20.4–26.7, (540) 19.9–26.0, (560) 19.5–24.5, (580) 18.9–23.1, (600) 18.5–21.9, (620) 18.1–21.0, (640) 17.9–20.4, (660) 17.6–19.8, (680) 17.4–19.4, (700) 17.2–19.1

Cell Data: *Space Group:* $C2/c$. $a = 11.274(2)$ $b = 11.669(2)$ $c = 6.603(1)$
 $\beta = 98.19(2)^\circ$ $Z = 4$

X-ray Powder Pattern: Near the Clear Creek mine, California, USA.

2.655 (100), 8.06 (80), 3.300 (60), 3.260 (60), 5.58 (50), 3.60 (50), 2.948 (50)

Chemistry:

	(1)	(2)
CrO ₃	8.7	8.69
HgO	18.7	18.82
Hg ₂ O	72.1	72.49
Total	99.5	100.00

(1) Near the Clear Creek mine, California, USA; by electron microprobe, $\text{Hg}_2^1\text{O}:\text{Hg}^2\text{O}$ from crystal-structure analysis; corresponds to $\text{Hg}_{3.98}^1\text{Hg}_{0.99}^2\text{Cr}_{1.01}^6\text{O}_6$. (2) $\text{Hg}_4^1\text{Hg}^2\text{Cr}^6\text{O}_6$.

Occurrence: A rare mineral in a mercury deposit in silicate–carbonate rock hydrothermally altered from serpentinite.

Association: Cinnabar, mercury.

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

Name: Honors Lu Watters (1911–1989), American mineral collector, musician, and environmentalist, specializing in the mineralogy of the California Coast Ranges.

Type Material: Canadian Geological Survey, Ottawa, Canada, 65141; National Museum of Natural History, Washington, D.C., USA, 165271.

References: (1) Roberts, A.C., M. Bonardi, R.C. Erd, A.J. Criddle, and Y. Le Page (1991) Wattersite, $\text{Hg}_4^1\text{Hg}^2\text{Cr}^6\text{O}_6$, a new mineral from the Clear Creek claim, San Benito County, California. *Mineral. Record*, 22, 269–272. (2) (1992) *Amer. Mineral.*, 77, 672 (abs. ref. 1). (3) Groat, L.A., A.C. Roberts, and Y. Le Page (1995) The crystal structure of wattersite, $\text{Hg}_4^1\text{Hg}^2\text{Cr}^6\text{O}_6$. *Can. Mineral.*, 33, 41–46.