

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$, $mm2$, or 222 . In euhedral crystals, to 30 μm , tabular and prismatic, with well-developed prisms and pinacoids, perhaps with fluted terminations; may be hollow tubular, capped at one end, and curved; commonly granular, or as coatings.

Physical Properties: *Cleavage:* $\{010\}$, perfect; $\{001\}$, $\{100\}$, very good; $\{0kl\}$, $\{h0l\}$, and $\{hk0\}$, good (synthetic). *Fracture:* Splintery, hackly, conchoidal (synthetic). Hardness = 2–3 (synthetic). VHN = 65–75 D(meas.) = 7.0(1) (synthetic). D(calc.) = 7.05(1)

Optical Properties: Opaque to translucent. *Color:* Bright yellow-orange to dull orange; on exposure to light immediately darkens through yellow-brown to black; pale gray with yellowish tint in reflected light, with abundant canary-yellow internal reflections. *Streak:* Yellow-orange, blackening on exposure to light. *Luster:* Nearly adamantine (synthetic). *Optical Class:* Biaxial (+). *Pleochroism:* Bright orange, orange with a rosy tint, or orange with a green tint. $\alpha = > 2.0$ $\beta = > 2.0$ $\gamma = > 2.0$ $2V(\text{meas.}) = \sim 35^\circ$

Cell Data: *Space Group:* $Fmmm$, $Fmm2$, or $F222$ (synthetic). $a = 16.92(2)$
 $b = 20.25(2)$ $c = 9.110(3)$ $Z = 16$

X-ray Powder Pattern: McDermitt mine, Nevada, USA.
2.64 (100), 2.71 (44), 3.90 (41), 2.58 (29), 2.53 (28), 2.281 (26), 2.96 (24)

Chemistry:	(1)	(2)
Hg	73.4	72.66
Cl	3.6	4.28
Br	0.0	
I	14.8	15.32
S	8.2	7.74
Total	100.0	100.00

(1) McDermitt mine, Nevada, USA; by electron microprobe, average of ten analyses; corresponds to Hg₃S_{2.10}Cl_{0.82}I_{0.96}. (2) Hg₃S₂ClI.

Occurrence: In tuffaceous rhyolitic lake-bed sediments, formed as a reaction product between halide-bearing hydrothermal solutions and cinnabar or corderoite.

Association: Cinnabar, corderoite, quartz, gypsum.

Distribution: In the McDermitt mercury mine, Opalite district, Humboldt Co., Nevada, USA.

Name: For Arthur S. Radtke (1936–), American mineralogist and geochemist, U.S. Geological Survey, Palo Alto, California, USA.

Type Material: Mackay School of Mines, University of Nevada, Reno, Nevada; National Museum of Natural History, Washington, D.C., USA, 168450.

References: (1) McCormack, J.K., F.W. Dickson, and M.P. Leshendok (1991) Radtkeite, Hg₃S₂ClI, a new mineral from the McDermitt mercury deposit, Humboldt County, Nevada. Amer. Mineral., 76, 1715–1721.