Aurivilliusite $Hg^{2+}Hg^{1+}OI$

Crystal Data: Monoclinic. *Point Group:* 2/*m*. As irregular patchy coatings, to 0.5 mm. Twinning noted in quantitative reflectance study.

Physical Properties: *Cleavage:* Distinct on{100}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness < 5 D(meas.) = n.d. D(calc.) = 8.96

Optical Properties: Opaque. *Color:* Dark gray-black, exhibits an unusual 'red light' coalescing phenomenon in reflected light. *Streak:* Dark red-brown. *Luster:* Metallic. Extremely light-sensitive.
Optical Class: n.d. n = 2.35-2.38

Cell Data: *Space Group: C*2/*c* (synthetic analog). a = 17.580(6) b = 6.979(1) c = 6.693(3) β = 101.71(4)° Z = 8

X-ray Powder Pattern: New Idria district, San Benito County, California, USA.
3.275 (100), 2.993 (80), 2.873 (80), 8.547 (70), 2.404 (50b), 1.878 (50), 4.796 (30)

Chemistry:

	(1)	(2)
HgO	40.10	39.81
Hg_2O	38.62	38.34
I	22.76	23.32
Br	0.22	
Cl	0.06	
-O = I,Br,Cl	1.46	1.47
Total	100.30	100.00

(1) New Idria district, San Benito County, California, USA; average of 5 electron microprobe analyses, Hg^{2+} and Hg^{1+} partitioned as in the synthetic analog; corresponding to $Hg^{2+}_{1.00}Hg^{1+}_{1.00}O_{1.01}(I_{0.97}Br_{0.01}Cl_{0.01})_{\Sigma=0.99}$. (2) $Hg^{2+}Hg^{1+}OI$.

Occurrence: A rare mineral of uncertain paragenesis in a suite of Hg-bearing oxy-halide phases.

Association: Native mercury, cinnabar, edgarbaileyite.

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

Name: Honors Dr. Karin Aurivillius (1920–1982) University of Lund, Sweden, who synthesized and determined the crystal structures of many Hg compounds.

Type Material: Systematic Reference Series, Geological Survey of Canada, Ottawa, Canada; NMC 68087.

References: (1) Roberts, A.C., J.A.R. Stirling, A.J. Criddle, G.E. Dunning, and J. Spratt (2004) Aurivilliusite, $Hg^{2+}Hg^{1+}OI$, a new mineral species from the Clear Creek claim, San Benito County, California, USA. Mineral. Mag., 68, 241-245. (2) (2005) Amer. Mineral., 90, 518 (abs. ref. 1).