

**Crystal Data:** Monoclinic. *Point Group:* 2/m. Crystals are equant to thin tabular, elongated [010], and commonly heavily striated || [010], to 1 mm. *Twinning:* Irregular lamellae seen in polished section.

**Physical Properties:** *Cleavage:* Perfect on {001}. Hardness = n.d. VHN = 175 (50 g load). D(meas.) = n.d. D(calc.) = 5.52

**Optical Properties:** Opaque. *Color:* Lead-gray; in polished section, white. *Streak:* Black. *Luster:* Metallic. *Pleochroism:* Strong. *Anisotropism:* Strong.

R<sub>1</sub>–R<sub>2</sub>: n.d.

**Cell Data:** *Space Group:* C2/m. *a* = 45.15 *b* = 8.28 *c* = 26.53  $\beta$  = 113.4° *Z* = 4

**X-ray Powder Pattern:** Madoc, Canada.

3.44 (100), 3.38 (90), 4.13 (60), 2.96 (60), 2.099 (50), 4.02 (40), 3.04 (40)

**Chemistry:**

|       | (1)   | (2)   |
|-------|-------|-------|
| Pb    | 46.6  | 46.9  |
| Cu    | 1.2   |       |
| Ag    | 0.17  |       |
| Sb    | 26.3  | 25.8  |
| As    | 3.5   | 5.7   |
| S     | 20.7  | 22.1  |
| Total | 98.47 | 100.5 |

(1) Madoc, Canada; by electron microprobe, corresponds to (Pb<sub>17.07</sub>Cu<sub>1.43</sub>Ag<sub>0.15</sub>)<sub>Σ=18.65</sub>(Sb<sub>16.40</sub>As<sub>3.55</sub>)<sub>Σ=19.95</sub>S<sub>49.00</sub>. (2) Novoye, Kyrgyzstan; by electron microprobe; corresponds to (Pb<sub>16.09</sub>(Sb<sub>15.07</sub>As<sub>5.41</sub>)<sub>Σ=20.48</sub>S<sub>49.00</sub>).

**Occurrence:** Of hydrothermal origin, in a deposit in marble (Madoc, Canada); in a hydrothermal deposit in limestone, replacing pyrite and sphalerite, with other Pb–As–Sb sulfides (Novoye, Kyrgyzstan).

**Association:** Boulangerite, jamesonite, antimonian baumhauerite, zinkenite, semseyite, geconronite, robinsonite (Madoc, Canada); sphalerite, pyrite, galena, playfairite, twinnite, guettardite, baumhauerite, realgar, orpiment, cinnabar, fluorite, quartz (Novoye, Kyrgyzstan).

**Distribution:** In Canada, from near Madoc, Ontario [TL]. In the USA, from the Northern Belle and Lucky Strike mines, Candelaria district, Mineral Co., Nevada. From Novoye, Khaydarkan, Fergana Valley, Alai Range, Kyrgyzstan.

**Name:** To honor Henry Clifton Sorby (1826–1908), English chemist and the founder of metallography.

**Type Material:** Canadian Geological Survey, Ottawa; Royal Ontario Museum, Toronto, Canada, 35802.

**References:** (1) Jambor, J.L. (1967) New lead sulfantimonides from Madoc, Ontario, Part 2, mineral descriptions. *Can. Mineral.*, 9, 191–207. (2) (1968) *Amer. Mineral.*, 53, 1425 (abs. ref. 1). (3) Mozgova, N.N., N.S. Bortnikov, Y.S. Borodaev, and A.I. Tzépine (1982) Sur la non-stoechiométrie des sulfosels antimonieux arséniques de plomb. *Bull. Minéral.*, 105, 3–10 (in French with English abs.). (4) Jambor, J.L., J.H.G. Laflamme, and D.A. Walker (1982) A re-examination of the Madoc sulfosalts. *Mineral. Record*, 93–100.