**Chrisstanleyite**

**Ag₂Pd₃Se₄**

**Crystal Data:** Monoclinic. *Point Group: 2/m.* Anhedral crystals, to several hundred μm, aggregated in grains; in intimate intergrowths with jaguéite to 500 μm. *Twinning:* Fine polysynthetic and parquetlike, characteristic; twin law matrix [100/01.0/1.01.], (001) twin plane.

**Physical Properties:** *Tenacity:* Slightly brittle. VHN = 371-421, 395 average (100 g load). *Hardness = ~5* D(meas.) = n.d. D(calc.) = 8.38

**Optical Properties:** Opaque. *Color:* Silvery gray. *Streak:* Black. *Luster:* Metallic. *Optical Class:* Biaxial. *Bireflectance:* Weak to moderate. *Anisotropism:* Moderate; rose-brown, gray-green, pale bluish gray, dark steel-blue. *Pleochroism:* Slight; pale buff to gray-green buff. *R₁:* (100) 35.6-43.3, (240) 36.8-44.2, (440) 37.8-45.3, (640) 39.1-46.7, (480) 40.0-47.5, (500) 41.1-48.0, (520) 42.1-48.5, (540) 42.9-48.7, (560) 43.5-49.1, (580) 44.1-49.3, (600) 44.4-49.5, (620) 44.6-49.6, (640) 44.5-49.3, (660) 44.4-49.2, (680) 44.2-49.1, (700) 44.0-49.0

**Cell Data:** *Space Group* P2₁/c. a = 5.676(2) b = 10.342(4) c = 6.341(2) β = 114.996(4)° Z = 2

**X-ray Powder Pattern:** Hope's Nose, England. 2.742 (100), 1.956 (100), 2.688 (80), 2.868 (50b), 2.367 (50), 1.829 (30), 2.521 (20)

**Chemistry:**

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(1) Hope's Nose, England; by electron microprobe, average of 26 analyses; corresponding to (Ag₂₂Cu₀.₀₂Pd₃Se₃.₉₅). (2) Copper Hills prospect, Australia; by electron microprobe, corresponding to (Ag₁.₈₀Cu₀.₂₇Hg₀.₀₂Pd₁.₁₅Pt₀.₀₃)Se₂.₈₈Se₄.₀₆. (3) El Chire prospect, Argentina; electron microprobe analysis, corresponds to Ag₁.₄Cu₀.₉Pd₃Se₄. (4) Ag₂Pd₃Se₄.

**Polymorphism & Series:** Forms a limited solid-solution series with jaguéite.

**Occurrence:** In gold-bearing calcite veins in limestone (Hope's Nose, England); in a carbonate matrix (Tillerode, Germany); in malachite nodules (Copper Hills prospect, Australia). In a telethermal selenide vein deposit (El Chire prospect, Argentina).

**Association:** Gold, fischesserie, clausthalite, tiemannite, eucairite, verbeckite, umangite, cerussite, broman chlorargyrite (Hope's Nose, England); clausthalite, tischendorfite, tiemannite, stibiopalladinite, gold (Tillerode, Germany); oosterboschite, naumannite, berzelianite, umangite, tiemannite, chalcomenite, malachite, quartz (Copper Hills prospect, Australia). Jaguéite, clausthalite, naumannite, tiemannite, klockmannite, berzelianite, umangite, aguilarite, mercurian silver, native gold, calcite (El Chire prospect, Argentina).

**Distribution:** From Hope's Nose, Torquay, Devon, England [TL]. At Tillerode, Harz Mountains, Germany. In the Copper Hills prospect, East Pilbara region, Western Australia. From the El Chire prospect, 30 km northwest of the village of Vinchina, Los Llantenes mining district, La Rioja Province, Argentina.

**Name:** In honor of Dr. Chris J. Stanley (b. 1954), The Natural History Museum, London, England, for his contributions to ore mineralogy.
