Hastite $CoSe_2$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As radiating starlike aggregates of crystals; small idiomorphic grains. *Twinning:* Common.

Physical Properties: Hardness = ∼6 VHN = n.d. D(meas.) = n.d. D(calc.) = 7.22

Optical Properties: Opaque. *Color:* Pale brownish red to dark reddish violet; yellowish red in radiating aggregates. *Pleochroism:* Strong, especially in oil. *Anisotropism:* Strong.
R_1–R_2: (400) 46.6–47.2, (420) 46.4–47.7, (440) 46.2–48.2, (460) 46.1–48.8, (480) 46.0–49.6, (500) 46.2–50.4, (520) 46.6–51.2, (540) 46.9–52.2, (560) 47.4–53.3, (580) 47.9–54.2, (600) 48.5–55.4, (620) 49.1–56.4, (640) 49.7–57.2, (660) 50.4–58.0, (680) 51.0–58.6, (700) 51.4–59.0

Cell Data: *Space Group: Pmnn.* $a = 3.60$ $b = 4.84$ $c = 5.72$ Z = 2

X-ray Powder Pattern: Trogtal quarry, Germany.
2.58 (10), 2.47 (10), 1.90 (10), 1.021 (10), 2.9 (3), 1.61 (3), 1.44 (3)

Chemistry: Composition inferred by similarity of X-ray pattern with marcasite.

Polymorphism & Series: Dimorphous with trogtalite.

Mineral Group: Marcasite group.

Occurrence: In hydrothermal veins.

Association: Trogtalite, bornhardtite, gold, clausthalite, selenium (Trogtal quarry, Germany).

Distribution: In Germany, from the Trogtal quarry, near Lautenthal, Harz Mountains [TL]. In the USA, at the La Sal mine, Beaver Mesa, Montrose Co., Colorado. From the San Francisco mine, La Rioja Province, Argentina.

Name: In honor of Dr. P.F. Hast, mining engineer.

Type Material: National Museum of Natural History, Washington, D.C., USA, 112811.

References: (1) Ramdohr, P. and M. Schmitt (1955) Vier neue natürliche Kobaltselenide vom Steinbruch Trogtal bei Lautenthal im Harz. Neues Jahrb. Mineral., Monatsh., 133–142 (in German). (2) (1956) Amer. Mineral., 41, 164 (abs. ref. 1).