

**Crystal Data:** Monoclinic, pseudo-orthorhombic. *Point Group:* 2/*m*. Crystals are typically short prismatic along [001], with prominent {110}, {011}, smaller {010}, {001}, {101}, {130}, to 4 mm; less commonly as platy crystals in radiating aggregates. *Twinning:* On {100}, common; may exhibit diagonal sutures on {001}.

**Physical Properties:** *Cleavage:* On {010}, distinct; on {100} and {001}, poor. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 3–5 D(meas.) = 2.36 D(calc.) = 2.35

**Optical Properties:** Transparent. *Color:* Colorless, pale yellow; Cyan-blue, blue-gray, apple-green when impure. *Luster:* Vitreous to pearly. *Optical Class:* Biaxial (–). *Pleochroism:* Strong in colored material. *Orientation:* Y = *b*; X ≈ *c*; Z ≈ *a*. *Dispersion:* *r* > *v*, very weak. α = 1.572–1.575 (α′) β = 1.590 γ = 1.598–1.601 (γ′) 2V(meas.) = 60(10)°

**Cell Data:** *Space Group:* P2<sub>1</sub>/*n*. *a* = 5.42–5.45 *b* = 10.08–10.26 *c* = 8.88–8.93 β = 90°40′–90°51′ Z = 4

**X-ray Powder Pattern:** Schlarbaum quarry, Austria. (ICDD 38–431). 4.78 (100), 4.44 (100), 2.878 (70), 2.614 (60), 2.849 (50), 3.708 (40), 5.1 (30)

Chemistry:	(1)	(2)	(3)
P <sub>2</sub> O <sub>5</sub>	40.10	40.5	40.33
V <sub>2</sub> O <sub>5</sub>		0.01	
SiO <sub>2</sub>		0.05	
Al <sub>2</sub> O <sub>3</sub>		0.4	
Sc <sub>2</sub> O <sub>3</sub>	39.07	41.3	39.19
Fe <sub>2</sub> O <sub>3</sub>		0.03	
H <sub>2</sub> O	20.36	[17.7]	20.48
Total	99.53	[100.0]	100.00

(1) Fairfield, Utah, USA; Sc<sub>2</sub>O<sub>3</sub> originally reported as Al<sub>2</sub>O<sub>3</sub>, later confirmed as Sc by X-ray fluorescence. (2) Do.; by electron microprobe, total Fe as Fe<sub>2</sub>O<sub>3</sub>, H<sub>2</sub>O by difference; corresponds to (Sc<sub>1.05</sub>Al<sub>0.01</sub>)<sub>Σ=1.06</sub>P<sub>1.00</sub>O<sub>4</sub>[(H<sub>2</sub>O)<sub>1.62</sub>(OH)<sub>0.18</sub>]<sub>Σ=1.80</sub>. (3) ScPO<sub>4</sub>•2H<sub>2</sub>O.

**Occurrence:** A very rare secondary mineral in some hydrothermal metallic veins and phosphate deposits.

**Association:** Chlorite, quartz (Sadisdorf mine, Germany); miargyrite, diaphorite (Baia Sprie, Romania); wardite, crandallite, variscite (Fairfield, Utah, USA); mahlmoodyite (Wilson Springs mine, Arkansas, USA); lithiophorite, vernadite, gypsum (Putty Beach, Australia).

**Distribution:** In Germany, at the Sadisdorf copper mine, near Schmiedeberg, Saxony. From Baia Sprie (Felsőbánya), Romania. In the Schlarbaum quarry, near Gleichenberg, Styria, Austria. In the USA, from the Little Green Monster mine, Clay Canyon, about nine km west of Fairfield, Utah Co., Utah; in Arkansas, in the Wilson Springs (Potash Sulphur Springs) mine, Garland Co., and as large crystals from the Christy Pit, Magnet Cove, Hot Spring Co.; at the Flambeau mine, southwest of Ladysmith, Rusk Co., Wisconsin. From Sakpur, Kathiawar Peninsula, Gujarat, India. At the Tigrinoe deposit, Sikhote-Alin Range, Primorskiy Kray, Russia. On Putty Beach, near Woy Woy, New South Wales, Australia.

**Name:** To honor Dr. Friedrich Ludwig Wilhelm Kolbeck (1860–1943), German mineralogist, Mining Academy, Freiberg, Germany.

**Type Material:** Mining Academy, Freiberg, Germany, 50268; National Museum of Natural History, Washington, D.C., USA, 10632.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 1015–1016; 965–966 [sterrettite = kolbeckite]. (2) Mrose, M.E. and B. Wappner (1959) New data on the hydrated scandium phosphate minerals: sterrettite, "eggonite", and kolbeckite. Bull. Geol. Soc. Amer., 70, 1648–1649 (abs.). (3) Hey, M.H., C. Milton, and E.J. Dwornik (1982) Eggonite (kolbeckite, sterrettite), ScPO<sub>4</sub>•2H<sub>2</sub>O. Mineral. Mag., 46, 493–497.

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