

Crystal Data: Monoclinic, pseudo-hexagonal. *Point Group:* 2/m. As irregular to nearly rectangular grains, up to 3 mm.

Physical Properties: *Cleavage:* {010} and {012}, suspected. *Fracture:* Subconchoidal. Hardness = 7.5–8 D(meas.) = n.d. D(calc.) = 2.92

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Biaxial (+) (synthetic). *Orientation:* X = b; Z \wedge c = 4°–6°. *Dispersion:* r < v. $\alpha = 1.5940(5)$ $\beta = 1.5955(5)$ $\gamma = 1.5990(5)$ 2V(meas.) = 64° 2V(calc.) = 66°34'

Cell Data: *Space Group:* C2/c. a = 7.143(2) b = 12.383(3) c = 7.143(2) $\beta = 120.00(3)^\circ$ Z = 16

X-ray Powder Pattern: Synthetic. (ICDD 14-654). 3.09 (100), 3.43 (30), 1.71 (12), 1.345 (12), 2.69 (10), 1.70 (10), 1.545 (10)

Chemistry:	(1)
SiO ₂	99.56
TiO ₂	0.00
Al ₂ O ₃	0.05
FeO	0.03
MnO	0.00
MgO	0.00
Na ₂ O	0.04
K ₂ O	0.00
Total	99.68

(1) Roberts Victor mine, South Africa; by electron microprobe, average of four analyses.

Polymorphism & Series: Quartz, tridymite, cristobalite, and stishovite are polymorphs.

Occurrence: Formed at pressures in excess of 20 kbar, as fine-grained intergrowths with quartz and silica glass in impact metamorphosed rocks and tektites. A primary phase in groszpydite (kyanite-garnet-clinopyroxene) xenoliths in kimberlite, and intergrown with quartz as inclusions in garnet and clinopyroxene within eclogites of high-grade metamorphic terranes.

Association: Quartz, stishovite, silica glass, kyanite, omphacite, garnet, sanidine, muscovite, talc, rutile, dolomite.

Distribution: From Meteor Crater, Coconino Co., Arizona, USA. At the Nördlinger Ries crater, Bavaria, Germany. In the Kara structure, Pay-Khoy, Russia. In Italy, in the Dora-Maira massif, Parigi, near Martiniana Po, Piedmont. From Grytting, Selje district, Norway. In the Wabar craters, Rub' al Khali, Saudi Arabia. At Dabie Mountain, west of Qianshan, Anhwei Province, China. In the Roberts Victor diamond mine, near Kimberley, Cape Province, and near Boshoff, Orange Free State, South Africa.

Name: For Loring Coes, Jr. (1915–), American chemist, who synthesized the material prior to the discovery of a natural occurrence.

Type Material: n.d.

References: (1) Frondel, C. (1962) Dana's system of mineralogy, (7th edition), v. III, silica minerals, 310–316. (2) Sclar, C.B., L.C. Carrison, and C.M. Schwartz (1962) Optical crystallography of coesite. *Amer. Mineral.*, 47, 1292–1302. (3) Gibbs, G.V., C.T. Prewitt, and K.J. Baldwin (1977) A study of the structural chemistry of coesite. *Zeits. Krist.*, 145, 108–123. (4) Smyth, J.R. and C.J. Hatton (1977) A coesite-sanidine groszpydite from the Roberts Victor kimberlite. *Earth and Planetary Science Letters*, 34, 284–290.

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