Asbecasite $\mathbf{Ca_3(Ti,Sn^{4+})As_6^{3+}Si_2Be_2O_{20}}$

Crystal Data: Hexagonal. *Point Group:* $3m$. As rhombohedral crystals, up to 5 mm, flattened on {0001}, with $\{01\bar{1}2\}$.

Physical Properties: *Cleavage:* Rhombohedral. Hardness = 6.5–7 D(meas.) = 3.70 D(calc.) = 3.71

Optical Properties: Transparent. *Color:* Lemon-yellow or citron-yellow. *Luster:* Vitreous. *Optical Class:* Uniaxial (–); anomalously biaxial. $\omega = 1.86$ $\epsilon = 1.83$ 2V(meas.) = 0°–17°

Cell Data: *Space Group:* $P3c1$. a = 8.36(2) $c = 15.30(3)$ Z = 2

X-ray Powder Pattern: Cherbadung, Switzerland.
3.231 (100), 2.404 (70), 1.929 (60), 1.571 (50), 1.154 (50), 1.746 (50), 4.030 (50)

Chemistry:

	(1)
SiO_2	12.3
TiO_2	6.3
SnO_2	2.1
Al_2O_3	1.2
As_2O_3	58.7
Tl_2O_3	1.0
BeO	2.3
CaO	15.4
Total	99.3

(1) Cherbadung, Switzerland; purity confirmed by electron microprobe; corresponds approximately to $Ca_{2.67}(Ti_{0.67}Sn_{0.13}Tl_{0.04})_{\Sigma=0.84}As^{3+}_{6.67}Si_{2.00}Al_{0.27}Be_{1.00}O_{20}$.

Occurrence: On cleft faces in orthogneiss (Cherbadung, Switzerland).

Association: Magnetite, hematite, titanite, apatite, anatase, malachite, azurite, tennantite, molybdenite (Cherbadung, Switzerland).

Distribution: On the east flank of Pizzo Cervandone, Alpe Devero, Val d'Aosta, Italy. On the west flank of Cherbadung [Pizzo Cervandone], Binntal, Valais, Switzerland.

Name: For elements in the composition, *As, Be, Ca, Si.*

Type Material: Natural History Museum, Basel, Switzerland, SG750; The Natural History Museum, London, England, 1966,222; National Museum of Natural History, Washington, D.C., USA, 143117.

References: (1) Graeser, S. (1966) Asbecasit und cafarsit, zwei neue Mineralien aus dem Binnatal (Kt. Wallis). Schweiz. Mineral. Petrog. Mitt., 46, 367–375 (in German with English abs.). (2) (1967) Amer. Mineral., 52, 1583–1584 (abs. ref. 1). (3) Cannillo, E., G. Giuseppetti, and C. Taadini (1970) The crystal structure of asbecasite. Atti Rend. Accad. Lincei, 46, 457–467. (4) (1970) Amer. Mineral., 55, 1818 (abs. ref. 3). (5) Graeser, S. and A.G. Roggiani (1976) Occurrence and genesis of rare arsenate and phosphate minerals around Pizzo Cervandone, Italy/Switzerland. Rend. Soc. Ital. Mineral. Petrol., 32, 279–288. (6) Downs, J.W. and G.V. Gibbs (1981) The role of the BeOSi bond in the structures of beryllosilicate minerals. Amer. Mineral., 66, 819–826.