Megawite $CaSnO_3$

Crystal Data: Orthorhombic. *Point Group: 2/m 2/m 2/m.* Crystals pseudo-cubic and pseudo-cuboctahedral, to 0.015 mm, as inclusions in spurrite or as rims on lakargiite. Twinning observed.

Physical Properties: *Cleavage:* Good on {110} and {001}. *Fracture:* n.d. *Tenacity:* n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 5.06

Optical Properties: Transparent. *Color:* Pale yellow or colorless. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (+) [Synthetic]. $n = 1.89$ *Orientation*: $X = b$; $Y = a$; $Z = c$.

Cell Data: *Space Group: Pbnm.* $a = 5.555(3)$ $b = 5.708(2)$ $c = 7.939(5)$ $Z = 4$

X-ray Powder Pattern: Upper Chegem caldera, Kabardino-Balkaria, Northern Caucasus, Russia. 2.812 (100), 3.984 (52), 2.855 (43), 3.970 (19), 2.780 (19), 1.992 (13), 1.985 (13)

Chemistry:	(1)		(1)
UO_3	0.30	Cr_2O_3	0.39
Nb_2O_5	0.15	Fe_2O_3	0.85
SiO_2	0.22	La_2O_3	0.23
TiO_2	2.87	Ce_2O_3	0.21
ZrO_2	19.89	MgO	0.03
SnO_2	44.24	CaO	29.80
HfO_2	0.62	SrO	0.14
ThO_2	0.32	Total	100.58
Al_2O_3	0.04		
Sc_2O_3	0.28		

(1) Upper Chegem caldera, Kabardino-Balkaria, Northern Caucasus, Russia; average of 9 electron microprobe analyses; corresponding to molecular ratios $(CaSnO_3)_{56}(CaZnO_3)_{31}(CaTiO_3)_7$.

Polymorphism & Series: Forms series with perovskite, $CaTiO_3$, and lakargiite, $CaZrO_3$.

Mineral Group: Perovskite group.

Occurrence: Occurs as minute inclusions in rock-forming minerals in altered ignimbrite xenoliths in a caldera. Probably formed by contact metamorphism at low pressure and >800ºC.

Association: Spurrite, reinhardbraunsite, rondorfite, wadalite, srebrodolskite, lakargiite, perovskite, kerimasite, elbrusite-(Zr), periclase, hydroxylellestadite, hydrogrossular, ettringite-group minerals, afwillite, hydrocalumite, brucite.

Distribution: Upper Chegem caldera, Kabardino-Balkaria, Northern Caucasus, Russia.

Name: Honors British crystallographer Helen Dick Megaw (1907-2002) for significant contributions to our understanding of the perovskites.

Type Material: Mineralogical Museum of Wrocław University, Poland (MMUWr II16717), and in the A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4021/1).

References: (1) Galuskin, E.V., I.O. Galuskina, V.M. Gazeev, P. Dzierżanowski, K. Prusik, N.N. Pertsev, A.E. Zadov, R. Bailau, and A.G. Gurbanov (2011) Megawite, $CaSnO_3$: a new perovskite-group mineral from skarns of the Upper Chegem caldera, Kabardino-Balkaria, Northern Caucasus, Russia. Mineral. Mag., 75(5), 2563-2572. (2) (2013) Amer. Mineral., 98, 1081 (abs. ref. 1).