

**Crystal Data:** Tetragonal; may be metamict. *Point Group:*  $4/m\ 2/m\ 2/m$ . As poorly-formed pyramidal crystals, to 1 cm, striated || [100], showing {101}, {110}, {001}, and {100}; as clusters of grains; rounded massive.

**Physical Properties:** *Cleavage:* Distinct on {101}, indistinct on {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 4.5–5 D(meas.) = 2.95–3.28 D(calc.) = 3.36 Emits  $\alpha$ ,  $\beta$ , and  $\gamma$  radiation.

**Optical Properties:** Transparent to turbidly translucent. *Color:* Colorless, light to dark green, yellow-green to yellowish brown, straw-yellow, red from inclusions; in thin section, dark brown. *Streak:* White. *Luster:* Vitreous.

*Optical Class:* Uniaxial (-), may be biaxial (-).  $n = 1.595\text{--}1.597$  (metamict).  $\omega = 1.580(3)$   $\epsilon = 1.568(3)$   $2V(\text{meas.}) = 10^\circ\text{--}15^\circ$

**Cell Data:** *Space Group:*  $I422$ .  $a = 7.483(3)$   $c = 14.893(6)$   $Z = 2$

**X-ray Powder Pattern:** Tombstone Mountains, Canada.

4.14 (100), 3.343 (96), 3.265 (65), 6.70 (61), 7.45 (58), 2.642 (54), 1.796 (26)

**Chemistry:**

	(1)	(2)	(3)
SiO <sub>2</sub>	55.6	47.6	56.10
ThO <sub>2</sub>	27.6	37.8	30.81
UO <sub>2</sub>	2.1	1.1	
Al <sub>2</sub> O <sub>3</sub>	trace	0.8	
Fe <sub>2</sub> O <sub>3</sub>	0.5		
FeO		0.4	
MnO	trace	0.2	
PbO	0.8		
MgO	trace		
CaO	13.7	9.6	13.09
Total	100.3	97.5	100.00

(1) Eheliyagoda district, Sri Lanka. (2) Tombstone Mountains, Canada; by electron microprobe, heated specimen; separate wet chemical analysis gives F 3.4% and H<sub>2</sub>O 7.8%; corresponds to (Ca<sub>1.91</sub>Fe<sub>0.06</sub>Mn<sub>0.03</sub>)<sub>Σ=2.00</sub>(Th<sub>0.90</sub>U<sub>0.05</sub>)<sub>Σ=0.95</sub>Si<sub>8</sub>O<sub>20</sub>. (3) Ca<sub>2</sub>ThSi<sub>8</sub>O<sub>20</sub>.

**Occurrence:** Detrital (Sri Lanka); in a glacial erratic syenitic boulder (Tombstone Mountains, Canada); in volcanic ejecta (Case Collina, Italy).

**Association:** Fluorite, garnet, quartz, microcline, clinopyroxene, apatite, sodic plagioclase, hematite, thorogummite, zircon, titanite (Tombstone Mountains, Canada); quartz, feldspar, pyroxene (Case Collina, Italy).

**Distribution:** From the Eheliyagoda and Okkampitiya districts, near Ratnapura, Sri Lanka. In the Tombstone Mountains, Yukon Territory, Canada. At Case Collina, Pitigliano, near Grossetto, Tuscany, and on the Vico volcano, near Vetralla, Lazio, Italy. From the Murun massif, southwest of Olekminsk, Yakutia, Russia.

**Name:** In honor of the mineral's discoverer, F.L.D. Ekanayake, of Colombo, Sri Lanka.

**Type Material:** Canadian Geological Survey, Ottawa, Canada, 62722; The Natural History Museum, London, England, 1961,472; National Museum of Natural History, Washington, D.C., USA, 148771.

**References:** (1) Anderson, B.W., G.F. Claringbull, R.J. Davis, and D.K. Hill (1961) Ekanite, a new metamict mineral from Ceylon. *Nature*, 190, 997. (2) (1961) *Amer. Mineral.*, 46, 1516 (abs. ref. 1). (3) Gübelin, E.J. (1962) Ekanite. *The Gemmologist*, 31, 142–152, 165–169. (4) Szymański, J.T., D.R. Owens, A.C. Roberts, H.G. Ansell, and G.Y. Chao (1982) A mineralogical study and crystal-structure determination of nonmetamict ekanite, ThCa<sub>2</sub>Si<sub>8</sub>O<sub>20</sub>. *Can. Mineral.*, 20, 65–75.

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