

Crystal Data: Tetragonal; may be metamict. *Point Group:* $4/m\ 2/m\ 2/m$. Most commonly as tabular to prismatic crystals, with square cross sections, terminated by {111}, to 30 cm; as irregular grains, massive. *Twining:* On {101}, geniculated.

Physical Properties: *Cleavage:* Indistinct on {110} and {111}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 7.5 $D(\text{meas.}) = 4.6\text{--}4.7$ $D(\text{calc.}) = 4.714$ Radioactive when metamict; thermoluminescent, cathodoluminescent, may fluoresce under UV.

Optical Properties: Transparent to opaque. *Color:* Reddish brown, yellow, green, blue, gray, colorless; in thin section, colorless to pale brown. *Streak:* White. *Luster:* Vitreous to adamantine; greasy when metamict.

Optical Class: Uniaxial (+); isotropic when metamict. *Pleochroism:* Very weak. *Absorption:* In thick sections; $E > O$. *Dispersion:* Very strong. $\omega = 1.925\text{--}1.961$
 $\epsilon = 1.980\text{--}2.015$

Cell Data: *Space Group:* $I4_1/amd$. $a = 6.607(1)$ $c = 5.982(1)$ $Z = 4$

X-ray Powder Pattern: Locality unspecified; nearly indistinguishable from hafnon. 3.302 (100), 4.434 (45), 2.518 (45), 1.712 (40), 2.066 (20), 1.908 (14), 1.651 (14)

Chemistry:

	(1)
SiO ₂	32.86
ZrO ₂	66.72
HfO ₂	1.15
ThO ₂	0.01
U ₃ O ₈	0.027
Total	100.767

(1) Sitarampuram, India; corresponds to $(\text{Zr}_{0.99}\text{Hf}_{0.01})_{\Sigma=1.00}\text{Si}_{1.00}\text{O}_4$.

Occurrence: An accessory mineral in igneous and metamorphic rocks, with crystals reaching large size in mafic pegmatites and carbonatites; in sedimentary rocks and alluvial heavy-mineral sands.

Association: Feldspars, amphiboles, mica, quartz.

Distribution: An unusually common and widely distributed mineral, but fine crystals are rare. In Norway, at Larvik and Hakedal; on Seiland Island, Alta River, Finnmark. At Sillinjärvi, Finland. From Sibnitz, Saxony, Germany. At Miass, Ilmen Mountains, Southern Ural Mountains, Russia. In the USA, at Deer Hill, Orange Co., and Fine, St. Lawrence Co., New York; from near Franklin, Sussex Co., New Jersey; near Green River, Henderson Co., North Carolina; at Tigerville, Greenville Co., South Carolina; and from Cheyenne Mountain and St. Peters Dome, near Pikes Peak, El Paso Co., Colorado. On Turner's Island, in Lake Clear, and at Kuehl Lake, Renfrew Co., Ontario, Canada. In the Matura and Saffragam districts, Sri Lanka. From Mt. Ampanobe, near Fianarantsoa, and Itrongahy, near Betroka, Madagascar. At Teete, Mozambique. Large crystals from Mud Tank, Valley Bore, Northern Territory, Australia.

Name: Thought to be derived from the Persian *zar*, for *gold*, and *gun*, for *color*, through the Arabic *zarqun*.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 482–488. (2) Deer, W.A., R.A. Howie, and J. Zussman (1982) Rock-forming minerals, (2nd edition), v. 1A, orthosilicates, 418–442. (3) Robinson, K., G.V. Gibbs, and P.H. Ribbe (1971) The structure of zircon: a comparison with garnet. *Amer. Mineral.*, 56, 782–790. (4) (1955) NBS Circ. 539, 4, 68–71.

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