

**Crystal Data:** Hexagonal. *Point Group:*  $6/m\ 2/m\ 2/m$ . Rare crystals are hexagonal tabular, to 3 mm; commonly as euhedral prismatic inclusions in Pt–Fe alloys.

**Physical Properties:** Hardness = n.d. VHN = 1206–1246 (25 g load).  $D(\text{meas.}) = 22.48$   
 $D(\text{calc.}) = 22.59$

**Optical Properties:** Opaque. *Color:* White with a bluish gray tinge in reflected light.

*Pleochroism:* Noticeable. *Anisotropism:* Strong, reddish orange.

$R_1$ – $R_2$ : (400) —, (420) 62.7–63.9, (440) 63.9–64.7, (460) 63.9–64.6, (480) 63.8–64.4, (500) 63.3–63.8, (520) 62.7–63.2, (540) 62.1–62.7, (560) 61.5–61.8, (580) 60.9–61.4, (600) 60.4–60.7, (620) 59.9–60.2, (640) 59.6–59.8, (660) 59.3–59.9, (680) 59.2–60.0, (700) 59.4–60.0

**Cell Data:** *Space Group:*  $P6_3/mmc$ .  $a = 2.7341$   $c = 4.3197$   $Z = 2$

**X-ray Powder Pattern:** Synthetic osmium.

2.076 (100), 2.367 (35), 2.160 (35), 1.3668 (20), 1.2300 (20), 1.1551 (20), 1.595 (18)

Chemistry:	(1)	(2)	(3)
Os	94.1	84.8	98.8
r	5.4	12.0	0.3
Ru	0.8	2.2	
Pt	0.1	1.7	
Rh		0.5	
Pd		0.1	0.2
Total	100.4	101.3	99.3

(1) Atlin, Canada; by electron microprobe. (2) Joubdo stream, Ethiopia; by electron microprobe. (3) Gusevogorskii pluton, Russia; by electron microprobe, average of four analyses.

**Occurrence:** With other platinum-group elements and alloys, in ultramafic rocks and placers derived therefrom.

**Association:** Rutheniridosmine, iridosmine, osmiridium (Ruby Creek, Canada); bowieite, platinum, Ir–Pt alloys, laurite, silicate inclusions (Salmon River, Alaska, USA); isoferroplatinum, cuprorhodsitite, malanite, cuproiridsite, iridosmine, laurite, erlichmanite, cooperite, sperrylite, chalcopyrite, bornite (Russia).

**Distribution:** From Ruby Creek, Atlin, British Columbia, Canada. In the USA, at Fox Gulch and the Salmon River, Goodnews Bay, Alaska. From Rio Pilpe, Colombia. In the Santiago River placers, Esmeraldas Province, Ecuador. In Russia, in the the Gusevogorskii pluton, and the Kytlym and Uktus complexes, Ural Mountains; from the Neozhidannyy Creek placers, Tuva; and in the Pustaya River placers, Kamchatka Peninsula. At the Harold's Grave and Cliff quarries, Baltasound-Haroldswick area, Unst, Shetland, Scotland. In Ethiopia, in the Joubdo stream, on the Birbir river. From the Witwatersrand, Transvaal, South Africa. At Anduo, Tibet, China. From the Sorashigawa placers, ?? Prefecture, Japan. Additional minor localities are known.

**Name:** From the Greek word for *odor*, in reference to the pungent and irritating odor when heated in air.

**References:** (1) Harris, D.C. and L.J. Cabri (1991) Nomenclature of platinum-group-element alloys: review and revision. *Can. Mineral.*, 29, 231–237. (2) (1992) *Amer. Mineral.*, 77, 212–213 (abs. ref. 1). (3) Begizov, V.D., L.F. Borisenko, and Y.D. Uskov (1975) Sulfides and natural solid solutions of platinum metals from ultramafic rocks of the Gusevogorskii pluton, Urals. *Doklady Acad. Nauk SSSR*, 225, 1408–1411 (in Russian). (4) Cabri, L.J., Ed. (1981) *Platinum group elements: mineralogy, geology, recovery*. *Can. Inst. Min. & Met.*, 124–125. (5) (1955) *NBS Circ.* 539, 4, 8. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 401.

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