

Crystal Data: Cubic. *Point Group:* $2/m\bar{3}$. As octahedral, cubic, and pyritohedral crystals, to 1 mm, and as rounded grains and inclusions in other minerals.

Physical Properties: *Cleavage:* Perfect on {111}. *Fracture:* Subconchoidal. *Tenacity:* Very brittle. Hardness = 7.5 VHN = 2760–2898, 2870 average (25 g load). D(meas.) = 6.43 D(calc.) = 6.39

Optical Properties: Opaque. *Color:* Iron-black, in polished section, white to gray, bluish. *Streak:* Dark gray. *Luster:* Metallic.
R: (400) 51.2, (420) 49.8, (440) 48.5, (460) 47.0, (480) 45.7, (500) 44.6, (520) 43.7, (540) 42.8, (560) 42.0, (580) 41.3, (600) 40.6, (620) 40.1, (640) 39.5, (660) 39.0, (680) 38.5, (700) 38.1

Cell Data: *Space Group:* $Pa\bar{3}$. $a = 5.6135$ $Z = 4$

X-ray Powder Pattern: Borneo.
2.81 (vs), 3.29 (vs), 3.24 (s), 1.982 (s), 1.082 (s), 1.287 (ms), 1.256 (ms)

Chemistry(1)	(2)	(3)	(4)				
Ru	65.18	61.0	46.1	61.18			
Os	[3.03]		12.7				
Ir		1.0	5.3				
Cu			0.1		Compt. Rendus Acad. Sci. ParisS	31.79	38.0
						35.4	38.82
Total	[100.00]	100.0	99.6	100.00			

(1) Borneo; placer material; Os by difference. (2) Goodnews Bay, Alaska, USA; by electron microprobe. (3) Rio Pilpe, Colombia; by electron microprobe. (4) RuS₂.

Polymorphism & Series: Forms a series with erlichmanite.

Mineral Group: Pyrite group.

Occurrence: In ultramafic complexes and in placer deposits.

Association: Cooperite, braggite, sperrylite, other minerals of the platinum-group elements, chromite.

Distribution: From placers in Borneo, as at Kalimantan (formerly Pontijn, Tanah Laut) [TL]. In South Africa, from the Merensky Reef of the Bushveld complex, at Potgietersrus; in the Rustenburg and Union mines; also the Driekop and Onverwacht mines. In the USA, in the Stillwater complex, Montana; on the Yuba River, Nevada Co., and from the Trinity River near Douglas City, Trinity Co., California; at Goodnews Bay, Alaska. In Canada, in the Tulameen area, British Columbia. In Sierra Leone, from placers at Guma Water, and the Senduma chrome mines. From the Konder massif, Aldan Shield, Sakha, Russia. In the Kapitanov chromite deposit, near Zvenyhorodka, Ukraine. At Maud Creek, Howard River, New Zealand. Known in small amounts from other localities.

Name: For Laura R. Joy, wife of Charles A. Joy, American chemist, Columbia University, New York City, USA.

Type Material: University of Göttingen, Göttingen, Germany, 24541.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 291–292. (2) Leonard, B.F. and G.A. Desborough (1969) Ore microscopy and chemical composition of some laurites. *Amer. Mineral.*, 54, 1330–1346. (3) Bowles, J.F.W., D. Atkin, J.L.M. Lambert, T. Deans, and R. Phillips (1983) The chemistry, reflectance, and cell size of the erlichmanite (OsS₂) – laurite (RuS₂) series. *Mineral. Mag.*, 47, 465–471. (4) Lutz, H.D., B. Müller, T. Schmidt, and T. Stingl (1990) Structure refinement of pyrite-type ruthenium disulfide, RuS₂, and ruthenium diselenide, RuSe₂. *Acta Cryst.*, C46, 2003–2005. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 315.

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