Plattnerite PbO_2

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. Commonly as crystals, prismatic ‖ [001], showing {010}, {011}, {110}, {131}, {001}, to 5 mm; may be nodular or botryoidal, fibrous and concentrically zoned, massive. *Twinning:* On {011}, as contact and penetration twins, rarely polysynthetic.

Physical Properties: *Tenacity:* Brittle. Hardness = 5.5 D(meas.) = 9.564 D(calc.) = 9.563

Optical Properties: Opaque to slightly translucent. *Color:* Jet-black, iron-black, brownish black; yellowish in transmitted light; gray-white in reflected light, with red-brown internal reflections. *Streak:* Chestnut-brown. *Luster:* Bright metallic to adamantine; tarnishing dull on exposure.
Optical Class: Uniaxial. *Pleochroism:* Distinct. $n = 2.30(5)$ *Anisotropism:* Noticeable; midnight-blue.
R_1–R_2: (400) 18.5–21.3, (420) 18.4–21.9, (440) 18.5–21.5, (460) 18.5–20.2, (480) 18.5–19.8, (500) 18.4–19.4, (520) 18.2–18.9, (540) 17.9–18.4, (560) 17.5–18.0, (580) 17.0–17.4, (600) 16.5–16.9, (620) 16.0–16.4, (640) 15.5–15.9, (660) 15.0–15.4, (680) 14.4–15.0, (700) 14.0–14.5

Cell Data: *Space Group:* $P4_2/mnm$. $a = 4.9525(4)$ $c = 3.3863(4)$ $Z = 2$

X-ray Powder Pattern: Ojuela mine, Mexico.
3.500 (100), 2.793 (94), 1.855 (80), 2.469 (40), 1.524 (23), 0.823 (20), 1.568 (19)

Chemistry:

	(1)
PbO_2	99.6
CuO	0.1
Total	99.7

(1) Ojuela mine, Mexico; by electron microprobe.

Polymorphism & Series: Dimorphous with scrutinyite.

Mineral Group: Rutile group.

Occurrence: In weathered hydrothermal base-metal deposits, oxidized typically in arid climates.

Association: Cerussite, smithsonite, hemimorphite, leadhillite, hydrozincite, rosasite, aurichalcite, murdochite, pyromorphite, wulfenite, calcite, quartz.

Distribution: From Leadhills, Lanarkshire, and Wanlockhead, Dumfriesshire, Scotland. In the Tchah Milleh mine, near Anarak, and the Dareh Zandjir mine, near Anjireh, Iran. From Tsumeb, Namibia. In the USA, large masses from the Coeur d'Alene district, Shoshone Co., and in the Democrat mine, Gilmore district, Lemhi Co., Idaho; from the Goodsprings district, Clark Co., and the Diamond mine, near Eureka, Eureka Co., Nevada. In the 79 mine, Gila Co., the Defiance mine, Gleeson, Cochise Co., the Glove mine, Santa Cruz Co., and elsewhere in Arizona; at the Mex-Tex mine, near Bingham, Hansonburg district, Socorro Co., and Granite Gap, San Simon district, Hidalgo Co., New Mexico. From the Ojuela mine, Mapimí, Durango, and at Santa Eulalia, Chihuahua, Mexico. Other minor localities are known.

Name: To honor Carl Friedrich Plattner (1800–1858), Professor of Metallurgy and Assaying, Mining Academy, Freiberg, Germany.

Type Material: Mining Academy, Freiberg, Germany, 10045.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 581–583. (2) White, J.S., Jr. (1970) New data for plattnerite. Mineral. Record, 1, 75–80. (3) D'Antonio, P. and A. Santoro (1980) Powder neutron diffraction study of chemically prepared β–lead dioxide. Acta Cryst., 36, 2394–2397. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 442.