Parkerite $Ni_3(Bi,Pb)_2S_2$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As grains, to < 1 mm, the rhombic shape of which is controlled by intersecting parting and cleavage planes. *Twinning:* Lamellar twinning on {111}.

Physical Properties: *Cleavage:* {001}, perfect; parting on {111}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3 VHN = n.d. D(meas.) = 8.50 D(calc.) = 8.53

Optical Properties: Opaque. *Color:* Bright bronze, tarnishing darker and duller; pale cream in polished section. *Streak:* Black, shining. *Luster:* Metallic. *Pleochroism:* Perceptible. *Anisotropism:* Strong; greenish gray to yellowish brown.
R_1–R_2: (400) 43.1–45.0, (420) 44.2–46.0, (440) 45.1–47.0, (460) 45.9–47.8, (480) 46.6–48.4, (500) 47.1–49.0, (520) 47.6–49.5, (540) 48.0–49.9, (560) 48.4–50.4, (580) 48.8–50.7, (600) 49.2–51.1, (620) 49.6–51.5, (640) 50.0–51.9, (660) 50.4–52.3, (680) 50.7–52.7, (700) 51.0–53.0

Cell Data: *Space Group:* $C2/m$ (probable). $a = 11.066(1)$ $b = 8.085(1)$ $c = 7.965(1)$ $\beta = 134.0°$ Z = 4

X-ray Powder Pattern: Synthetic $Ni_3Bi_2S_2$.
2.836 (100), 2.864 (65), 2.336 (55), 3.98 (30), 4.04 (25), 1.989 (25), 1.648 (25)

Chemistry:

	(1)	(2)	(3)	(4)
Ni	30.3	26.8	29.7	26.76
Bi	60.1	63.6	50.8	63.50
Pb		trace	9.5	
S	9.1	9.2	9.6	9.74
Total	99.5	99.6	99.6	100.00

(1) Langis mine, Canada; by electron microprobe; corresponds to $Ni_{3.64}Bi_{2.03}S_{2.00}$. (2) Sudbury, Canada; corresponds to $Ni_{3.18}Bi_{2.12}S_{2.00}$. (3) Insizwa, South Africa; by electron microprobe; corresponds to $Ni_{3.28}(Bi_{1.62}Pb_{0.31})_{\Sigma=1.93}S_{2.00}$. (4) $Ni_3Bi_2S_2$.

Occurrence: As grains in other hydrothermal sulfide and arsenide minerals.

Association: Galena, bismuth, bismuthinite, tetradymite, hessite, cubanite, maucherite, nickeline, sperrylite, gold, chalcopyrite, pyrrhotite, pentlandite, siegenite, bravoite.

Distribution: In South Africa, from the Insizwa Cu–Ni deposit, Waterfall Gorge, Eastern Cape, South Africa [TL], and in the Loolekop carbonatite, Phalaborwa, Transvaal. In Canada, at the Strathcona mine, Sudbury, and from the Langis mine, Casey Township, Cobalt-Gowganda area, Ontario; in the Gaspe copper mine, Quebec; and at the Gros Cap area, near Great Slave Lake, Northwest Territories. In the Noril'sk region, western Siberia; from the Karik'yavr Cu–Ni deposit, Kola Peninsula; and in the Allarechensk region, Murmansk, Russia. At the Zinkwand mine, Schladminger, Styria, Austria. From Nebral, Málaga Province, Spain. In the Rakha copper deposit, Bihar, India. From the Ban Phuc Ni–Cu–PGE deposit, northwest Vietnam. At Kambalda, 56 km south of Kalgoorlie, Western Australia.

Name: After Professor Robert Lüling Parker (1893–1973), Swiss Federal Institute of Technology, Zurich, Switzerland.

Type Material: n.d.

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