Surinamite $(Mg, Fe^{2+})_3Al_4BeSi_3O_{16}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As small crystals, platy ∥ {010}, to 0.2 mm.

Physical Properties: *Cleavage:* One well-developed ⊥ {010}. Hardness = n.d.
D(meas.) = > 3.3 D(calc.) = 3.58

Optical Properties: Transparent. *Color:* Dark blue, blue-green.
Optical Class: Biaxial (–). *Pleochroism:* Y = violet; ∥ to cleavage = bright blue-green; ⊥ to cleavage = very light greenish brown to colorless. *Orientation:* $Y = b$. *Dispersion:* Very strong.
$\alpha = 1.738$ $\beta = 1.743$ $\gamma = 1.746$ 2V(meas.) = 67°–68°

Cell Data: *Space Group:* $P2/n$. $a = 9.916(1)$ $b = 11.384(1)$ $c = 9.631(1)$
$\beta = 109.30(1)°$ Z = 4

X-ray Powder Pattern: Bakhuis Mountains, Surinam; closely resembles sapphirine.
2.435 (100), 1.99 (100), 1.420 (80), 7.05 (60), 2.91 (60), 1.432 (60), 1.411 (60)

Chemistry:

	(1)	(2)
SiO_2	33.1	32.3
TiO_2	0.05	
Al_2O_3	34.9	34.3
FeO	12.25	10.8
MnO	1.05	0.7
ZnO	0.05	
BeO	n.d.	[4.5]
MgO	16.45	17.3
CaO	0.05	0.0
F	0.05	
Total	[97.95]	[99.9]

(1) Bakhuis Mountains, Surinam; by electron microprobe, original total given as 97.85%; BeO ∼4% inferred from later analyses. (2) Chimwala area, Zambia; BeO assumed, then corresponding to $(Mg_{2.39}Fe_{0.55}Mn_{0.06})_{\Sigma=3.00}(Al_{3.74}Fe_{0.28})_{\Sigma=4.02}Be_{1.00}Si_{2.99}O_{16}$.

Occurrence: In mylonitic mesoperthite gneiss, probably formed during high-pressure granulite facies metamorphism of aluminous rocks (Bakhuis Mountains, Surinam); in sillimanite-rich segregations in pegmatites (Casey Bay, Antarctica); as pseudomorphs after cordierite (Chimwala area, Zambia).

Association: Biotite, kyanite, sillimanite, spinel (Bakhuis Mountains, Surinam); quartz, sillimanite, sapphirine, taaffeite (Casey Bay, Antarctica); cordierite (Chimwala area, Zambia).

Distribution: From the Bakhuis Mountains, Surinam. In the Woolanga Bore area, Strangways Range, Northern Territory, Australia. From Casey Bay, Enderby Land, Antarctica. In the Chimwala area, Eastern Province, Zambia.

Name: For Surinam, the country of first occurrence.

Type Material: Geological & Mining Service, Paramaribo, Surinam, EW 1115.

References: (1) de Roever, E.W.F., C. Kieft, E. Murray, E. Klein, and W.H. Drucker (1976) Surinamite, a new Mg-Al silicate from the Bakhuis Mountains, western Surinam. I. Description, occurrence, and conditions of formation. Amer. Mineral., 61, 193–199. (2) de Roever, E.W.F., D. Lattard, and W. Schreyer (1981) Surinamite: a beryllium-bearing mineral. Contr. Mineral. Petrol., 76, 472–473. (3) Moore, P.B. and T. Araki (1983) Surinamite, *ca.* $Mg_3Al_4Si_3BeO_{16}$: its crystal structure and relation to sapphirine, *ca.* $Mg_{2.8}Al_{7.2}Si_{1.2}O_{16}$. Amer. Mineral., 68, 804–810. (4) de Roever, E.W.F. and S. Vrána (1985) Surinamite in pseudomorphs after cordierite in polymetamorphic granulites from Zambia. Amer. Mineral., 70, 710–713.