Henrymeyerite $BaFeTi_7O_{16}$

Crystal Data: Tetragonal. *Point Group*: 4/*m*. Crystals, prismatic acicular, to 0.2 mm, exhibiting {100}, {110} and {101}.

Physical Properties: *Cleavage*: none reported. *Fracture*: Splintery.
Tenacity: Very brittle. Hardness = 5-6 (estimated) D(meas.) = 4.0(1) D(calc.) = 4.20(1)

Optical Properties: Opaque. *Color*: Black; in reflected light grayish brown.
Streak: Reddish brown. *Luster*: Adamantine. *Bireflectance*: weak; brownish to grayish white.
Optical Class: n.d.
R_1-R_2: (420) 13.0-14.2, (440) 12.2-13.4, (460) 12.0-13.0, (480) 11.9-12.8, (500) 11.8-12.7, (520) 11.8-12.6, (540) 11.6-12.6, (560) 11.5-12.6, (580) 11.4-12.7, (600) 11.4-12.9, (620) 11.4-13.2, (640) 11.4-13.5, (660) 11.3-13.8, (680) 11.3-14.1, (700) 11.2-14.4 , (720) 11.2-14.5

Cell Data: *Space Group*: *I*4/*m*. $a = 10.219(3)$ $c = 2.963(1)$ $Z = 1$

X-ray Powder Pattern: Calculated from structure refinement.
3.232 (100), 2.236 (40), 2.486 (34), 1.598 (33), 1.901 (31), 1.405 (26), 1.703 (22)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	0.37	1.84	Na_2O	0.40	0.4
Al_2O_3	-	0.14	K_2O	0.05	0.2
TiO_2	67.78	66.43	La_2O_3	0.50	0
CaO	0.02	0.19	Ce_2O_3	0.56	0
FeO	9.20	8.06	Nb_2O_5	1.00	0.49
MgO	-	0.86	Total	98.13	96.77
BaO	18.25	18.16			

(1) Kovodor, Kola Peninsula, Russia; average of 8 electron microprobe analyses, total iron as Fe^{2+}, corresponding to $(Ba_{0.96}Na_{0.10}K_{0.01}REE_{0.05})_{\sum= 1.12}(Fe^{2+}{}_{1.03}Ti_{6.82}Nb_{0.06}Si_{0.04})_{\sum=7.95}O_{16}$.
(2) Oasis Dzetti, Prince Charles Mountains, eastern Antarctica; total iron as Fe^{2+}, corresponding to $(Ba_{0.95}Ca_{0.03}K_{0.03}Na_{0.10})_{\sum=1.11}(Fe_{0.90}\ Mg_{0.17})_{\sum=1.07}(Ti_{6.65}Nb_{0.03}Si_{0.24}Al_{0.02})_{\sum=6.94}O_{16}$.

Mineral Group: Cryptomelane group.

Occurrence: In late-stage veins associated with metasomatized phoscorite-carbonatite rocks of an alkaline ultramafic complex (Kovodor, Russia); in carbonate-metasomatized lherzolitic and harzburgitic mantle xenoliths (Prince Charles Mountains, Antarctica).

Association: Dolomite, fluorapatite, niobian anatase (?), tetra-ferriphlogopite, rimkorolgite, catapleiite, collinsite, pyrite (Kovodor, Russia); ferroan magnesite, clinohumite, mica, calcite, dolomite, chlorapatite (Prince Charles Mountains, Antarctica).

Distribution: From the Kovodor and Seblyavr Complexes, Kola Peninsula, Russia; near Oasis Dzetti, Prince Charles Mountains, Eastern Antarctica.

Name: Honors Professor Henry O.A. Meyer (1937–1995) for his contributions to the petrology and mineralogy of mantle-derived xenoliths and kimberlitic rocks.

Type Material: Geological Museum of the Kola Science Center, Apatity, Russia.

References: (1) Mitchell, R.H., V.N. Yakovenchuk, A.R. Chakhmouradian, P.C. Burns and Y.A. Pakhomovsky (2000) Henrymeyerite, a new hollandite-type Ba-Fe titanate from the Kovodor Complex, Russia. Can. Mineral., 38, 617-626. (2) Kogarko L.N., G. Kurat and T. Ntaflos (2007) Henrymeyerite in the metasomatized upper mantle of eastern Antarctica, Can. Mineral., 45, 497-501. (3) (2001) Amer. Mineral., 86, 197–198 (abs. ref. 1).