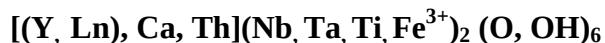


Nioboaeschnynite-(Y)

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As subhedral crystals, to 10 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.
Hardness = 5-6 VHN = 922 (100 g load). D(meas.) = 5.34 D(calc.) = 5.33 Metamict.

Optical Properties: Translucent. *Color:* Deep brownish-red to black. *Streak:* Grayish-brown.
Luster: Vitreous.

Optical Class: Isotropic.

R₁-R₂: (470) 3.4-14.6, (546) 3.3-14.1, (589) 3.2-13.8, (650) 3.2-13.7

Cell Data: *Space Group:* Pbnm. *a* = 5.279(3) *b* = 10.966 (5) *c* = 7.443(3) *Z* = 4

X-ray Powder Pattern: Bear Lake Diggings, Haliburton County, Ontario, Canada (after heating).
3.009 (100), 2.931 (69), 3.079 (20), 1.580 (16), 1.863 (14), 2.783 (12), 2.636 (12)

Chemistry:

	(1)		(1)
CaO	4.34	ThO ₂	12.10
MnO	0.11	UO ₂	0.59
Fe ₂ O ₃	2.16	TiO ₂	18.41
Y ₂ O ₃	5.34	Nb ₂ O ₅	31.46
La ₂ O ₃	0.84	Ta ₂ O ₅	3.97
Ce ₂ O ₃	4.50	H ₂ O	2.61
Pr ₂ O ₃	0.65	Total	95.41
Nd ₂ O ₃	4.47		
Sm ₂ O ₃	1.21		
Eu ₂ O ₃	0.10		
Gd ₂ O ₃	0.91		
Dy ₂ O ₃	0.60		
Er ₂ O ₃	0.42		
Tm ₂ O ₃	0.05		
Yb ₂ O ₃	0.57		

(1) Bear Lake Diggings, Haliburton County, Ontario, Canada; average of 10 EDS analyses, H₂O by TGA and not used to derive the empirical formula, corresponding to
[(Y_{0.19}RE_{0.34})Ca_{0.31}Th_{0.18}U_{0.009}Mn_{0.006}]_{Σ=1.04}(Nb_{0.94}Ti_{0.92}Ta_{0.07}Fe³⁺_{0.11})_{Σ=2.04}O₆.

Mineral Group: Aeschnynite group.

Occurrence: In calcite veins in regionally metamorphosed metasedimentary rocks that may have undergone fenitization-like metasomatism.

Association: Apatite-(CaF), amphibole, titanite, anorthite, microcline, annite, calcite, quartz, monazite, pyrite, uranian thorite.

Distribution: Bear Lake Diggings, Lot 9, concession X, Monmouth Township, Haliburton County, near Gooderham, Ontario, Canada.

Name: For the dominant B-site cation (Nb) and principal rare earth element (Y) in a member of the aeschnynite group.

Type Material: Croatian Natural History Museum, Zagreb, Croatia, no. 600:ZAG; 9613MP1.

References: (1) Bermanec, V., N. Tomašić, G. Kniewald, M.E. Back, and G. Zagler (2008) Nioboaeschnynite-(Y), a new member of the aeschnynite group from the Bear Lake diggings, Haliburton County, Ontario, Canada. *Can. Mineral.*, 46, 395–402. (2) (2008) *Amer. Mineral.*, 93, 1943-1944 (abs. ref. 1).