

Crystal Data: Orthorhombic, pseudocubic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals resemble cubes, to 1.5 cm, and irregular octahedra, with lightly striated, rough, or etched faces. *Twinning:* Complex penetration twins, common.

Physical Properties: *Cleavage:* {001}, imperfect. *Hardness* = 5–5.5 *VHN* = 446–572; 642–673 (100 g load). *D*(meas.) = 4.44 *D*(calc.) = [4.58]

Optical Properties: Opaque, translucent on thin edges. *Color:* Black, reddish brown on thin edges; violet-brown in thin section; light gray in reflected light. *Streak:* Gray. *Luster:* Submetallic.

Optical Class: Biaxial (–). *n* = 2.29–2.30 *2V*(meas.) = 46°–90° *Anisotropism:* Weak. *Birefractance:* Weak; pale blue.

Cell Data: *Space Group:* *Pbma*. *a* = 5.569(1) *b* = 15.519(1) *c* = 5.505(1) *Z* = 8

X-ray Powder Pattern: Lueshe, Congo.

3.91 (100), 2.77 (69), 1.955 (43), 1.96 (34), 1.596 (30), 1.748 (19), 1.382 (12)

Chemistry:	(1)	(2)	(1)	(2)	(1)	(2)
Nb ₂ O ₅	79.74	81.09	Fe ₂ O ₃	1.27	K ₂ O	trace
Ta ₂ O ₅	trace		MgO	0.62	LOI	0.49
SiO ₂	[0.73]		CaO	0.76	Total [99.46]	
TiO ₂	3.62		Na ₂ O	12.23	18.91	100.00

(1) Lueshe, Congo; Fe₂O₃ and TiO₂ on a separate sample, SiO₂ then by difference, original total given as 100.46%; corresponding to (Na_{0.66}Ca_{0.02})_{Σ=0.68}(Nb_{1.00}Ti_{0.08})_{Σ=1.08}O₃. (2) NaNbO₃.

Polymorphism & Series: Dimorphous with isolueshite and natroniobite.

Mineral Group: Perovskite group: Na_A > 0.5; Nb_B > 0.5.

Occurrence: Incrusting a vermiculitelike mica, at the contact of cancrinite syenite with carbonatite (Lueshe, Congo); in sodalite xenoliths associated with an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada); a common accessory mineral formed during fenetization of pyroxenite and gabbro (Gem Park, Colorado, USA); in veins cutting nepheline syenites (Ilímaussaq intrusion, Greenland).

Association: Mica (Lueshe, Congo); sodalite, ussingite, villiaumite, steenstrupine, griceite, eudialyte, lovozerite (Mont Saint-Hilaire, Canada); vermiculite, ilmenite, pyrochlore, thorianite, perovskite, fersmite, dolomite (Gem Park, Colorado, USA).

Distribution: From the Lueshe carbonatite, 150 km north of Goma, Kivu Province, Congo (Zaire). At Gem Park, about six km east of Hillside, Fremont Co., Colorado, USA. From Mont Saint-Hilaire and near Saint-Amable, Quebec, Canada. At Igdlunguaq, in the Ilímaussaq intrusion, Greenland. In Russia, from the Kovdor, Sallanlatvi, Lesnaya Varaka, and Lovozero massifs, Kola Peninsula, and unidentified carbonatites in Siberia.

Name: For the occurrence at Lueshe, Congo.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RGM8269; The Natural History Museum, London, England, 1960,440.

References: (1) Safiannikoff, A. (1959) Un nouveau minéral de niobium. *Bull. Acad. Sci. d'Outre-mer (Bruxelles)*, 5, 1251–1255 (in French). (2) (1961) *Amer. Mineral.*, 46, 1004 (abs. ref. 1). (3) Parker, R.L., J.W. Adams, and F.A. Hildebrand (1962) A rare sodium niobate mineral from Colorado. *U.S. Geol. Surv. Prof. Paper* 450C, 4–6. (4) Kummert, P. (1968) Propriétés optiques de la lueshite. *Bull. Soc. Belg. Geol.*, 77, 269–273 (in French). (5) Seidel, P. and W. Hoffmann (1976) Verfeinerung der Kristallstruktur von NaNbO₃. N. Bestimmung der absoluten Konfiguration und des Zwillingsgesetzes. *Zeits. Krist.*, 143, 444–459 (in German with English abs.). (6) Horváth, L. and R.A. Gault (1990) The mineralogy of Mont Saint-Hilaire, Quebec. *Mineral. Record*, 21, 284–359, esp. 321.

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