

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). $D(\text{meas.}) = 4.44$ $D(\text{calc.}) = [4.58]$

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 (–). $n = 2.29\text{--}2.30$ $2V(\text{meas.}) = 46^\circ\text{--}90^\circ$ *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		100.00
				18.91		

(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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