

Niocalite**Ca₇Nb(Si₂O₇)₂O₃F**

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Crystal Data: Monoclinic. *Point Group:* *m*. Crystals prismatic, to 1 cm, with square cross sections and curved faces; larger crystals are tapered at both ends. *Twining:* Finely twinned with {001} as composition plane.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 6
D(meas.) = 3.32 D(calc.) = 3.29

Optical Properties: Transparent. *Color:* Lemon-yellow; colorless in thin section.
Luster: Vitreous.
Optical Class: Biaxial (-). *Orientation:* $X = b$; $Z \wedge c = 12^\circ$. $\alpha = 1.701$ $\beta = 1.714$ $\gamma = 1.720$
 $2V(\text{meas.}) = 56^\circ$

Cell Data: *Space Group:* *Pa*. $a = 10.863(3)$ $b = 10.431(3)$ $c = 7.370(2)$ $\beta = 110.1(1)^\circ$
 $Z = 2$

X-ray Powder Pattern: Oka, Canada.
3.012 (10), 2.891 (6), 2.852 (6), 3.240 (5), 1.844 (4), 7.31 (3), 2.557 (3)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	29.70	29.48	MgO	0.28	0.32
TiO ₂	0.22	0.11	CaO	47.50	46.58
ZrO ₂		0.27	Na ₂ O	0.78	0.57
Al ₂ O ₃	1.31		K ₂ O	0.02	
Y ₂ O ₃		0.00	F	1.7	2.14
Fe ₂ O ₃	0.54	0.48	H ₂ O	0.16	
Nb ₂ O ₅	16.56	15.19	P ₂ O ₅	0.60	
Ta ₂ O ₅		[3.5]	-O = F ₂	0.71	0.90
MnO	1.28	0.93	<hr/>	<hr/>	<hr/>
			Total	99.94	[98.67]

(1) Oka, Canada; CaO includes some SrO, Nb₂O₅ includes some Ta₂O₅, Al₂O₃ includes some RE and Zr; corresponds to (Ca_{6.54}Na_{0.16})_{Σ=6.70}(Nb_{1.06}Mg_{0.12}Mn_{0.12}Fe_{0.06}Ti_{0.02})_{Σ=1.38}(Si_{3.88}Al_{0.08})_{Σ=3.96}O₁₄[O_{3.16}F_{0.70}(OH)_{0.08}]_{Σ=3.94}. (2) Do.; by electron microprobe, partial analysis; corresponds to (Ca_{6.77}Na_{0.15})_{Σ=6.92}(Nb_{0.93}Mn_{0.10}Mg_{0.06}Fe_{0.05}Zr_{0.02}Ti_{0.01})_{Σ=1.17}Si₄O₁₄[O_{3.02}F_{0.92}]_{Σ=3.94}.

Occurrence: In coarse-grained strontian carbonatite.

Association: Calcite, magnetite, apatite, diopside, biotite, pyrochlore, niobian perovskite.

Distribution: At Oka, Quebec, Canada.

Name: For NIObium and CALcium in the composition.

Type Material: n.d.

References: (1) Nickel, E.H. (1956) Niocalite—a new calcium niobium silicate mineral. *Amer. Mineral.*, 41, 785–786. (2) Nickel, E.H., J.F. Rowland, and J.A. Maxwell (1958) The composition and crystallography of niocalite. *Can. Mineral.*, 6, 264–272. (3) Mellini, M. (1982) Niocalite revised: twinning and crystal structure. *Tschermaks Mineral. Petrog. Mitt.*, 30, 249–266.