Niocalite

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. Twinning: Finely twinned with (001) as composition plane.

D(meas.) = 3.32 D(calc.) = 3.29

Luster: Vitreous. Optical Class: Biaxial (-). Orientation: X = b, Z \& c = 12°. \( \alpha = 1.701 \) \( \beta = 1.714 \) \( \gamma = 1.720 \)

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

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:

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\begin{align*}
\text{SiO}_2 & \quad 29.70 & 29.48 & \text{MgO} & \quad 0.28 & 0.32 \\
\text{TiO}_2 & \quad 0.22 & 0.11 & \text{CaO} & \quad 47.50 & 46.58 \\
\text{ZrO}_2 & \quad 0.27 & & \text{Na}_2\text{O} & \quad 0.78 & 0.57 \\
\text{Al}_2\text{O}_3 & \quad 1.31 & & \text{K}_2\text{O} & \quad 0.02 \\
\text{Y}_2\text{O}_3 & \quad 0.00 & & \text{F} & \quad 1.7 & 2.14 \\
\text{Fe}_2\text{O}_3 & \quad 0.54 & 0.48 & \text{H}_2\text{O} & \quad 0.16 \\
\text{Nb}_2\text{O}_5 & \quad 16.56 & 15.19 & \text{F}_2\text{O}_5 & \quad 0.60 \\
\text{Ta}_2\text{O}_5 & \quad [3.5] & & -\text{O} = \text{F}_2 & \quad 0.71 & 0.90 \\
\text{MnO} & \quad 1.28 & 0.93 & \text{Total} & \quad 99.94 & [98.67] \\
\end{align*}
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(1) Oka, Canada; CaO includes some SrO, Nb_2O_5 includes some Ta_2O_5, Al_2O_3 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 O_{14}(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_{0.16}Mg_{0.06}Fe_{0.05}Zr_{0.02}Ti_{0.01})_Σ=1.17 Si_4O_{14}(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.