

NOTES AND NEWS

NIOCALITE—A NEW CALCIUM NIOBIUM SILICATE MINERAL¹

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A new mineral species, for which the name "niocalite" is here proposed, has been identified in rock from the Oka district, 20 miles west of Montreal, Quebec. It has a vitreous luster, is light yellow in color, and occurs as prismatic crystals up to 10 mm. in length and 1 mm. in width in coarse white crystalline calcite. Other associated minerals are apatite, diopside, biotite, pyrochlore, and niobian perovskite. The lithology of the area has been described by R. B. Rowe (1955).²

A preliminary partial chemical analysis reveals that it is essentially a calcium niobium silicate with a formula approximating $\text{Ca}_4\text{Nb Si}_2\text{O}_{10}(\text{O}, \text{F})$. The analysis, performed by Dr. J. A. Maxwell³ is as follows:

CaO	46.8%
Na ₂ O	0.7
Nb ₂ O ₅	16.8
R ₂ O ₃	2.0
SiO ₂	26.8
H ₂ O	0.2
F	1.7
	<hr style="width: 50px; margin: 0 auto;"/>
	95.0%

The R₂O₃ includes rare earths and alumina. In addition, a semi-quantitative spectrographic analysis indicates appreciable amounts of manganese, iron, and strontium. The proposed name, niocalite (nio-cal'-ite, was chosen to indicate two of the principal components—niobium and calcium.

Debye-Scherrer x-ray patterns, taken with iron-filtered cobalt radiation, have the following strongest lines:

	$d(\text{\AA})$	$I(\text{meas.})$
1.	3.01	10
2.	2.89	6
3.	2.85	6
4.	3.24	5
5.	1.84	4

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² Rowe, R. B. (1955), Notes on columbium mineralization, Oka District, Two Mountains County, Quebec: *Geological Survey of Canada*, paper 54-22.

³ *Geological Survey, Department of Mines and Technical Surveys.*

A characteristic feature of niocalite appears to be its twinning and in the search for a crystal suitable for single crystal x-ray determinations, no untwinned crystal has so far been found. The twinning takes place about a twinning axis which coincides with the acute bisectrix X which is presumably also a crystallographic direction. If the mineral is monoclinic, as it appears to be, this would be the b -axis. Other properties of niocalite are:

OPTICAL PROPERTIES:

Biaxial negative

$-2V = 56^\circ$

$\alpha = 1.700$; $\beta = 1.721$; $\gamma = 1.730$

Birefringence $\gamma - \alpha = 0.030$

Specific gravity: 3.32

Hardness: approximately 6 (Mohs scale).

There is a distinct similarity between the optical and physical properties of niocalite and wöhlerite. The latter, however, has a much higher sodium and zirconium content than niocalite.

A NEW TECHNIQUE FOR MICROMETRIC ANALYSIS OF THIN-SECTIONS*

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The method of thin-section analysis described in this note is based on the fact that, if a microscope objective is uncentered, a circular succession of grain images will pass through the intersection of the cross-hairs when the stage is rotated. In effect, the rotation axis of the thin-section has been shifted from a point at the center of the field to a point near or beyond the edge of the field. The method may be used for either Rosiwal or point count analyses.

Comparison with Linear Rosiwal Method

To compare the results obtained from a circular analysis with those obtained from a conventional Rosiwal analysis, a large "synthetic thin-section" was constructed on paper. This "thin-section" consisted of seven constituents. The position of each grain was determined by using a random number table. These numbers corresponded to grid points on the thin-section. Shapes and sizes of grains were varied to approximate those of minerals actually seen in thin-sections of rocks possessing hypautomorphic-granular texture. After the thin-section was completed, the planimetric percentages of the constituents were determined by measuring the areas of all the grains with a planimeter.

* Contribution No. 198 from the Department of Mineralogy, University of Michigan.