# NOTES AND NEWS

## NIOCALITE—A NEW CALCIUM NIOBIUM SILICATE MINERAL[1]

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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 $Ca_4Nb\ Si_2O_{10}(O, F)$. The analysis, performed by Dr. J. A. Maxwell[3] is as follows:

| | |
|---|---|
| CaO | 46.8% |
| $Na_2O$ | 0.7 |
| $Nb_2O_5$ | 16.8 |
| $R_2O_3$ | 2.0 |
| $SiO_2$ | 26.8 |
| $H_2O$ | 0.2 |
| F | 1.7 |
| | 95.0% |

The $R_2O_3$ 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*(Å) | *I*(meas.) |
|---|---|---|
| 1. | 3.01 | 10 |
| 2. | 2.89 | 6 |
| 3. | 2.85 | 6 |
| 4. | 3.24 | 5 |
| 5. | 1.84 | 4 |

[1] Published by permission of the Deputy Minister, Department of Mines and Technical Surveys, Ottawa, Canada.

[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
$-2V=56°$
$\alpha=1.700$; $\beta=1.721$; $\gamma=1.730$
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 crosshairs 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.