

MINERALOGICAL NOTES

MINERALOGICAL MAGAZINE, SEPTEMBER 1989, VOL. 53, P. 511

Mineral nomenclature: fernandinite

SCHALLER (1915) stated as a complete description of a new mineral: "Fernandinite is a green hydrous calcium vanadyl vanadate from Minasragra, Peru. The analysis yields the formula $\text{CaO} \cdot \text{V}_2\text{O}_4 \cdot 5\text{V}_2\text{O}_5 \cdot 14\text{H}_2\text{O}$, which may be written, as a metavanadate as follows: $[\text{H}_4\text{Ca}(\text{V}_2\text{O}_2)][\text{VO}_3]_{10} \cdot 12\text{H}_2\text{O}$ ". The chemical analysis recorded in Palache *et al.* (1951) accounts for 84.76%, but excludes 12.18% insolubles, 1.38% MoO_3 , 0.79% Fe_2O_3 , 0.52% K_2O and 0.06% MgO . The mean refractive index of about 2.05 was recorded by Larsen (1921). Ross (1959) obtained flattened flakes {001} from the fernandinite type-specimen (NMNH R-5706) and by electron diffraction partially measured the unit-cell dimensions as a 11.69(4), b 3.674(4) Å, γ 90°, and $h + k = 2n$, which indicates C-centering; however, no chemical data are given.

Fernandinite (ROM M39501) from Minasragra, Peru, was examined by a 114.6 mm Gandolfi camera (Fe radiation/Mn filter) and scanning electron microscope with a KEVEX solid-state detector. The specimen was a mixture sorted by hand, and identified as gypsum (yellow-green grain with Ca and S), roscoelite (black mica with K, Al, V and Si), and a probable trace of pyrrhotite (Fe, Ti?).

Fernandinite (Harvard University 101702) from Minasragra, Peru, was identified by a 114.6 mm Gandolfi camera (Fe radiation/Mn filter) as a mixture of roscoelite and gypsum. The chemical composition was confirmed with a KEVEX solid state detector with V, Si, S, Ca, Al, and minor K.

A microscopic examination of NMNH R-5706 (fernandinite type-specimen) showed a dark green massive fibrous mineral with angular plates or flakes as described by Schaller (1915) and Ross (1959), and a yellow-green mineral. Results from the KEVEX solid state detector showed $\text{V} \gg \text{Ca} > \text{Si} \gg \text{Al}, \text{Fe}, \text{K}, \text{S}$. A 114.6 mm Guinier camera photograph (Cu radiation/Ni filter) of the yellow-green mineral was identified as gypsum. A 114.6 mm Gandolfi photograph (Fe radiation/Mn filter) of the dark green mineral was identified as a fine grained mixture of roscoelite (vanadian mica), and bariandite, $\text{V}_2^{4+}\text{V}_8^{5+}\text{O}_{24} \cdot 12\text{H}_2\text{O}$.

Bariandite, which was approved by the International Mineralogical Association CNMMN in 1970 (Cesbron and Vachey, 1971), has unit-cell dimensions of a 11.70,

b 3.63, c 29.06 Å, β 101.5°, and Cc or $C2/c$ with a perfect {001} cleavage and is practically opaque with refractive indices greater than 1.85. The chemical analysis of Schaller (1915) represents a mixture of 80% bariandite, 10% roscoelite, and 10% gypsum. The Ca in the chemical analysis occurs in gypsum, and the insolubles (Si and Al) and the K, Mg and Fe in the chemical analysis occur in roscoelite. The flattened flakes described by Ross (1959) are bariandite.

In 1988 the International Mineralogical Association Commission on New Minerals and Mineral Names (CNMMN) voted to discredit fernandinite as a mixture of bariandite, roscoelite and gypsum.

Acknowledgements. The National Scientific and Engineering Research Council of Canada provided financial support. Dr E. H. Nickel, vice-chairman of the CNMMN, provided advice.

References

- Cesbron, F. and Vachey, H. (1971) *Bull. Soc. fr. Mineral. Cristallogr.* **94**, 49–54.
Larsen, E. S. (1921) *U.S. Geol. Surv. Bull.* **679**, 74.
Palache, C., Berman, H. and Frondel, C. (1951) *Dana's System of Mineralogy* **2**, 1062.
Ross, M. (1959) *Am. Mineral.* **44**, 322–41.
Schaller, W. T. (1915) *J. Wash. Acad. Sci.* **5**, 7.

KEYWORDS: fernandinite, bariandite, vanadium, discredit.

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[Manuscript received 27 October 1988;
revised 25 November 1988]

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