

RAMSAYITE AS AN ALTERATION PRODUCT OF MOSANDRITE

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Ramsayite was first reported in Norway from nepheline syenite pegmatites intersecting a foyaite dike at Bratthagen, Lågendalen, near Larvik (OFTEDAL & SÆBÖ 1963). Subsequently it was found in miarolitic cavities in elpidite-bearing ekerite from near Gjerdingen, Nordmarka, north of Oslo (SÆBÖ 1966).

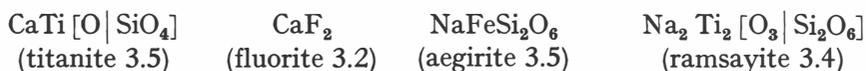
During a University excursion in 1965, I collected material of mosandrite from the nepheline syenite pegmatite on Låven Island in the Langesundsfjord. In most specimens mosandrite was heavily altered; sometimes there were only traces left of the original substance. BRÖGGER (1890, p. 79) found that these pseudomorphs are essentially composed of fluorite, partly colourless, partly of deep violet colour, with minor amounts of aegirite, calcite, and a brownish powdery substance.

The present investigation shows that ramsayite is an important constituent of the mosandrite pseudomorphs. Ramsayite forms vertically striated prisms on the cleavage {100} of the replaced mosandrite. As a rarity, star-shaped clusters of crystals, which appear to be composed of a sintered mass of microscopic grains, were observed in a thin section. The crystals range in length from about 0.1 mm to 1.5 mm. They are colourless to greyish, the bigger ones being slightly reddish brown. The mineral shows—like the Lågendalen ramsayite—a strong yellow fluorescence under short-wave ultraviolet radiation ($\lambda_{\max}=2537\text{\AA}$). It is thus easily detected. The majority of the mosandrite specimens contain ramsayite, although usually in small amounts. The results of optical examinations are consistent with earlier reported data (BARTH & BERMAN 1930). Distinct parting {001} was observed. The mineral is non-pleochroic, $2V(-) \approx 40^\circ$.

So far, the following minerals have been detected in the pseudomorphs. Chief constituent: fluorite. Fairly common: aegirite, titanite, and ramsayite. Titanite occurs partly in very fine-grained masses, partly in lamellar aggregates strongly resembling a mica. The lamellar type is colourless to slightly yellow, non-pleochroic, $2V (+) \approx 10^\circ$. The identity was confirmed by X-ray diffractometer methods. Aegirite formed nearly simultaneously with fluorite, as seen from the fact that euhedral prisms sometimes contain inclusions of fluorite. In small amounts: pyrochlore, calcite, magnetite, and pyrophanite; the last was detected by means of the X-ray diffractometer.

The alteration of mosandrite is assumed to have taken place in a late hydrothermal stage of the pegmatite formation, probably by the action of fluorine-bearing volatiles, as the fluorine content of the unaltered mosandrite seems too low to account for the large amounts of fluorite in the pseudomorphs. Again, the high densities of the alteration products, as compared with that of mosandrite (see figures below), would suggest that the pseudomorphism involves fluorine addition.

The decomposition of mosandrite is shown schematically below:



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