NOTISER

Notes

Note on Powellite ($CaMoO_4$), a new mineral for Norway

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In southern Norway, scheelite has been found to occur in hydrothermal veins of both Precambrian and Permian age and also in contact-metasomatic deposits (ADAMSON and NEUMANN 1952). Recently, the mines and claims within the quadrangle map Kviteseid were described by DONS (1963). Scheelite was detected in four mines, three of them being hydrothermal molybdenite deposits of Precambrian age.

In the summer of 1965, the present author was collecting molybdenite specimens on the dumps of one of the Kviteseid deposits, viz. Lindtjern mine. One sample contained masses of a pale yellow mineral with resinous luster, intermingled with unaltered molybdenite in a matrix of pure quartz. Optical determinations indicated the presence of either scheelite or powellite, the mineral being uniaxial positive with very high indices of refraction. It showed a strong yellow fluorescence under short-wave UV light (2537 Å), an indication of a high Mo content. However, an equally strong yellow fluorescence was also obtained with long-wave UV light (3668 Å). Normally, both scheelite and powellite respond to short-wave UV radiation only; the upper limit of fluorescence for scheelite is given at 3000 Å (GLEASON 1960).

Optical spectrochemical determinations carried out by Professor I. Oftedal showed large amounts of Ca and Mo, with minor W. An X-ray powder pattern confirmed the presence of powellite. Most likely, this mineral is of primary origin in the Lindtjern deposit.

Powellite, in microscopic amounts only, has previously been found (1961) by cand. real. P. Chr. Sæbö in the Mörkvassheia molybdenum mine, Drangedal, Telemark county (personal communication). The

molybdenite of this deposit occurs in Precambrian pegmatite veins (BUGGE 1963). Fibrous powellite was observed in extremely small amounts on molybdenite crystals as an alteration product, together with large amounts of ferrimolybdite, malachite, and traces of azurite. This powellite clearly belongs to the weathering zone of the deposit. No fluorescence was observed under short-wave UV light, the response to long-wave radiation was not tested. The identification was done by means of the X-ray powder method.

Closer inspections of Norwegian molybdenum deposits will probably lead to additional finds of powellite.

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A new Norwegian occurrence of Milarite

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Milarite, $K_2Ca_4Al_2Be_4(Si_{12}O_{30})_2.H_2O$, was described from nordmarkite druses in the Grorud district, near Oslo (OFTEDAL and SÆBÖ 1965).

The present note reports the second find of this rare mineral in Norway. It was observed in a beryl sample from the granite pegmatite at Nedre Lapplægret, Drag in Tysfjord, Nordland county (SVERDRUP and SÆBÖ 1958). The material examined was collected by the author during a short visit to Drag in the summer of 1965. Milarite must be considered very rare in this locality, as only one beryl specimen out of twenty was found to contain it.

The beryl forms anhedral, fractured masses in white albite which has a granular texture. It looks quite unaltered and has a green colour, changing to yellow near the border. In rare cases, the beryl is composed of small crystals. Milarite occurs as white clusters of microscopic prisms in interstices between such beryl crystals. No milarite crystal measured was longer than 0.2 mm, generally only 0.1 mm. The thickness does not exceed 0.01 mm, most crystals being 0.003 mm thick.

Other minerals are present in small amounts: quartz, fluorite, pyrite, molybdenite, biotite, chlorite, euxenite, alvite. Very small aggregates of calcite occur sparingly together with milarite. The individual crystals are developed as unusually thin plates parallel to (0001). They immediately dissolve in dilute hydrochloric acid with effervescence.

Milarite was identified by optical examinations (performed by cand. real. P. Chr. Sæbö). The crystals are prismatic with the base always developed, sometimes also pyramidal faces. They often form groups of three or four crystals. The mineral shows parallel extinction. The refractive indices were measured in daylight: $N_O = 1.555 \pm 0.004$, $N_E = 1.551 \pm 0.004$, $N_O - N_E = 0.004$. The crystals are clear and colourless with no inclusions. Traces of zoning were observed in a few cases.

Most likely, this milarite originated by low temperature hydrothermal alteration of beryl. The first observation of milarite as an alteration product of beryl was made by ČERNÝ (1963). Milarite was found disseminated in fissures of albite adjacent to altered beryl crystals in a pegmatite vein in Czechoslovakia. The milarite together with epididymite was formed 'in a late hydrothermal stage by the action of sodium-rich solutions on beryl'.

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