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Behoite from Høgtuva, Nordland, Norway

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The Høgtuva granitic gneiss is exposed as a tectonic window around 16 km NW of Mo i Rana, Nordland, Norway It is of Early Proterozoic age (1700 – 1800 Ma), but underwent a Caledonian metamorphic event (at 434 ± 14 Ma), which made the primary phenakite react with other rock-forming minerals to form beryl and høgtuvaite (Schilling *et al*. 2015). Høgtuvaite occurs in two different settings: as black prismatic poikiloblastic crystals in a white matrix of quartz, feldspar and phenakite, and as a constituent of small, mafic pegmatites (Grauch *et al*. 1994). Behoite was found in thin cracks in samples from a small lens of a mafic pegmatite. It forms colourless, pseudo-octahedral crystals to 60 µm (Fig. 1) and globular intergrowths of several individual crystals to 100 µm. The latter form appears as concentrically zoned (white to colourless) aggregates if the crack is very narrow (Fig. 2).

Both crystals and globular aggregates may form continuous crusts covering several cm^2. The macroscopically, dark matrix consists mainly of biotite, dark pinkish to pink-orange danalite, dark greenish black gadolinite-(Y), galena, black høgtuvaite, brown to yellow thorite, pale brown to yellowish titanite, brownish grey zircon and an unidentified, colourless mineral (probably phenakite). Behoite was identified by a combination of SEM-EDS (NHM Oslo), giving O as the only detectable element, and single-crystal X-ray diffraction (pseudo-octahedral crystals) and digital Gandolfi-like powder X-ray diffraction (globular aggregates) using a Nonius KappaCCD single-crystal X-ray diffractometer at the Institut für Mineralogie und Kristallographie, Universität Wien. Danalite, gadolinite-(Y), thorite and titanite were identified by SEM-EDS (NHM Oslo), danalite and titanite also by additional single-crystal X-ray diffraction.

The behoite from Høgtuva is clearly the result of low-temperature mobilisation of Be from primary Be minerals and subsequent deposition as beryllium hydroxide in narrow cracks. Other mineral species formed in these cracks are currently under study. The pseudo-octahedral habit of behoite is known from other localities, like Nakalak, Ilímaussaq, Greenland (Friis 2015) and the type locality at the Rode Ranch pegmatite, Texas, USA, where the forms {011} and {110} were identified (Ehlmann & Mitchell 1970). In Norway, behoite was previously only known form a number of nepheline syenite pegmatites in the Langesundsfjord area.

We thank Harald Schillhammer for the excellent colour microphotography.

Fig. 1. *Tiny, colourless, pseudo-octahedral crystals of behoite, with reddish brown limonite on crack surface. FOV: 0.9 mm. Photo: H. Schillhammer, NHM Wien.*

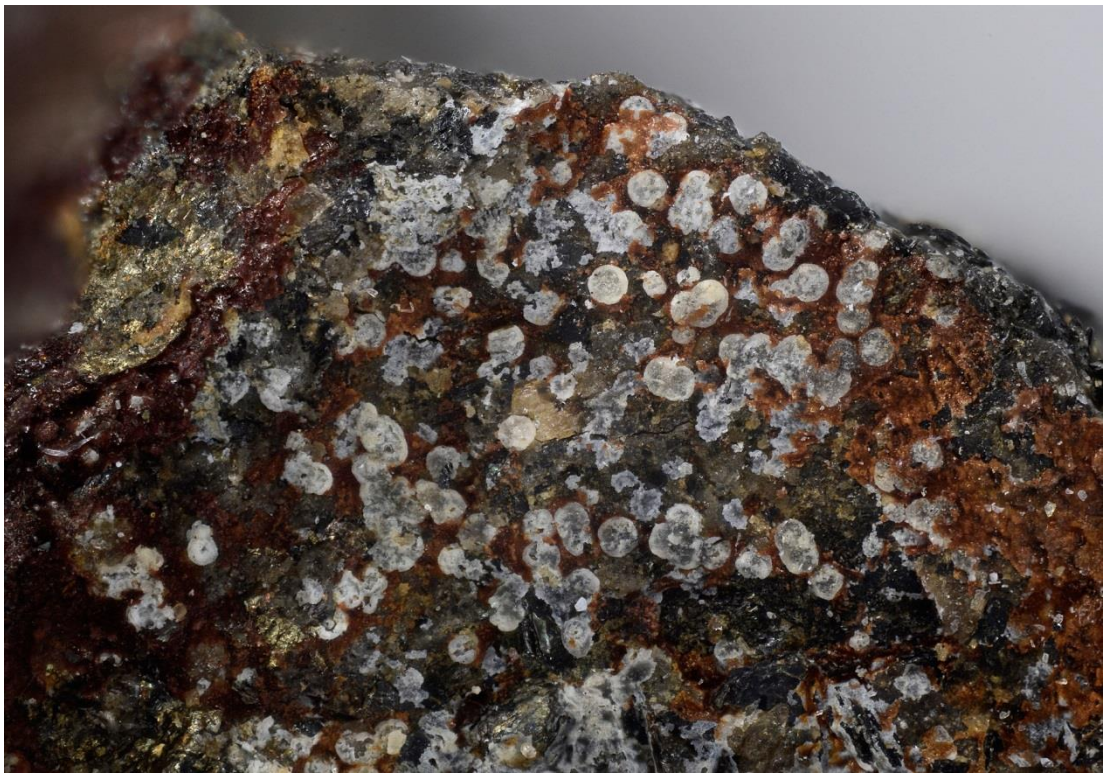

Fig. 2. *Colourless to white, concentrically zoned aggregates of behoite fomed in a narrow crack. FOV: 2.8 mm. Photo: H. Schillhammer, NHM Wien.*

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