



## **A New Occurrence of Alkaline Magmatism on the Kola Peninsula: An Agpaitic Dyke in the Kandalaksha Region.**

Mariya Akimenko (1), Lia Kogarko (1), Natalia Sorokhtina (1), Natalia Kononkova (1), and Vladimir Mamontov (2)

(1) Vernadsky Institute of Geochemistry and Analytical Chemistry, Russian Academy of Sciences, Laboratory of Geochemistry and ore-bearing alkaline magmatism, Moscow, Russian Federation (makimm@mail.ru), (2) Murmansk Geological Prospecting Expedition, Apatity, Murmansk region, Russian Federation

A new occurrence of alkaline dyke magmatism was discovered in 2010 during the geological works performed by the Murmansk Geological Prospecting Expedition in the “Mokhnatye Roga” area located 55 km to the southeast of the Kovdor massif (67°15' N, 31°30' E). The “Mokhnatye Roga” area is located in the Ensk segment of the northwestern part of the Belomorian mobile belt. We performed a complete petrological and geochemical description of the sections in Holes 19 and 24, which reveal one of the largest dykes in the area. The dyke, with a length of  $\approx 4$  km and a width of  $\approx 160$  m, has an eastern orientation with steep dipping ( $60^\circ$ – $90^\circ$ ) to the north. The thickness of Quaternary deposits ranges from 0.8 to 4.0 m; alkaline rocks occur in the range of 4.0–93.9 m being followed by host amphibole–biotite gneiss with interbeds of plagioclase (AR2 mt) along the section. Among the major minerals of the dyke are the minerals of the lamprophyllite group (20–25 vol %), aegirine–augite (10–15 vol %), enigmatite (10–15 vol %), nepheline (10–15 vol %), orthoclase (15–20 vol %), alkaline amphibole (5–10 vol %), and astrophyllite (up to 5 vol %). The minor minerals are represented by shcherbakovite, sodalite, natrolite, barite, Mn carbonate, ilmenite, rutile, sphalerite, and goethite. The texture of the rock is porphyritic: the groundmass is composed of finegranular nepheline and orthoclase, which are observed as individual large euhedral crystals as well. In addition, large phenocrysts are represented by the minerals of the lamprophyllite, enigmatite, pyroxene, and alkaline amphibole groups. Based on the generally accepted classifications [1], the studied agpaitic rock may be related to nepheline syenite; according to the mineral and chemical compositions, it is close to syenite of the Niva massif [2] located 35 km to the northeast from the “Mokhnatye Roga” area. Agpaitic syenite of the “Mokhnatye Roga” area is extremely enriched in dispersed and rare lithophile elements. The high concentrations of Zr, Sr, Ba, and REEs in the agpaitic dyke of the “Mokhnatye Roga” area provide evidence for the restitic character of this rock. It was previously demonstrated that differentiation of nepheline syenite magma of the Lovozero massif resulted in significant accumulation of these elements at the latest stages of evolution of alkaline magma [3].

### REFERENCES

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