Geochemistry and mineralogy of the agpaitic dyke in the Kandalaksha Region (Kola Peninsula).

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An Agpaitic dyke was discovered in 2010. Dyke located in the Ensk segment of the northwestern part of the Belomorian mobile belt (67°15′ N, 31°30′ E). 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, goethite, barite, and sphalerite. The texture of the rock is porphyric: 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, the studied agpaitic rock may be related to nepheline syenite. Agpaitic syenite of the dyke is extremely enriched in dispersed and rare lithophile elements. The high concentrations of Zr, Sr, Ba, and REEs in the agpaitic dyke provide evidence for the restitic character of this rock.