Geophysical Research Abstracts
Vol. 18, EGU2016-15935, 2016
EGU General Assembly 2016

Petrology of ultramafic, mafic, and felsic xenoliths from Ruddon's Point basanite, Fife, Scotland, UK – preliminary results.

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Numerous dykes of Carboniferous alkaline volcanic rocks occur in the county of Fife, Scotland, United Kingdom. Basanitic dyke from Ruddon's Point encloses mafic, ultramafic, and felsic xenoliths as well as megacryts of alkali feldspar and xenoliths of felsic rocks.

The studied set of rocks comprises wehrlite, clinopyroxenites, gabbro, anorthosite, and anorthoclasite. Wehrlite contains pseudomorphs after biotite, the Mg# of clinopyroxene varies from 0.78 to 0.81, the Fo content in olivine is 0.68-0.71. Clinopyroxenites have cumulative textures and are typically olivine$\pm$ sulfides bearing. Most of them contained biotite which is now replaced by brownish aggregates formed of chlorite with scarce biotite intergrowths. The Mg# of clinopyroxene (Al, Ti – augite) varies from 0.77 to 0.84. The Fo content in olivine is 0.81-0.85 in plagioclase-free clinopyroxenites, but in xenolith where minor amounts of plagioclase (Ab48-51An47-48) occur, the Fo content is 0.70 – 0.72. Biotite's Mg# is $\sim$70%. Gabbro is titanite-bearing and contains trace amounts of amphibole. Diopside forming the gabbro is characterized by Mg#=0.56-0.64, plagioclase is potassium-free (Ab14-22An77-86). Anorthosite also encloses brownish post-biotitic aggregates. Plagioclase has composition of Ab35-43An54-64. Anorthoclasite (Or65-72 Ab65-72) is characterized by unusual mineral composition – it contains corundum, zircon, apatite, and niobates.

Previous study on the felsic xenoliths from Scotland showed their lower crustal origin, but with possible ultramafic affinity (e.g. Upton et al., 2009, Min.Mag., 73, 943-956). Crystallization from met- and peraluminous melts was also suggested. Mantle-derived xenoliths from Scotland are from almost primitive to strongly depleted (Upton et al.; 2010, J. Geol. Soc. London, 168, 873-886), but more data from individual localities are necessary for precise description and interpretation of mantle and lower crustal processes beneath Scotland.

This study was possible thanks to project NCN UMO-2014/15/B/ST10/00095 of Polish National Centre for Science.