

## **High-Ti mafic intrusions in the central part of the East European Craton: Petrology, geochronology and tectonic application**

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New data for the metamorphosed gabbro and diorite intrusions from the Early Precambrian basement of the East European Platform (the Tver' and Yaroslavl' areas) will be presented. Archaean gneisses that host the intrusions are regarded as southern margin of the Fennoscandia megablock.

The gabbros and diorites are similar in geochemistry and have high concentrations of Ti, Fe, P, Zr, Hf, Nb, Ta and REE with  $[La/Sm]_N = 1.5-3.2$ ,  $[Gd/Yb]_N = 1.6-2.2$  that is typical for intraplate magmatism. Zircon extracted from diorites give U-Pb age  $2496 \pm 9$  Ma (ID TIMS), and  $2513 \pm 16$  Ma (SIMS). Strong geochemical similarity of gabbros and diorites allow us to suggest their simultaneously crystallization. Difference of initial Nd isotope composition of gabbro ( $\epsilon Nd_{2500} = +2.0$ ,  $T_{DM} = 2.57$  Ga) and diorite ( $\epsilon Nd_{2500} = -4.2$ ,  $T_{DM} = 3.02$  Ga) is probably caused by a large input of Paleoarchaean crustal rocks into the dioritic melt.

The gabbro primary melts of high-Ti affinity were originated from a DM-type mantle garnet bearing source followed by differentiation with minor crustal contamination. Dioritic melts probably originated via crystal fractionation of a high-Ti mafic melt strongly contaminated by crustal rocks.

Studied ca. 2.50 Ga high-Ti mafic intrusions are probably a component of the Sumian (2.51-2.45 Ga) LIP of the Fennoscandia that mainly consists of low-Ti gabbro-norites and diorites. Lateral variations in melts composition of the LIP could be caused by lithospheric architecture, since studied high-Ti mafic igneous rocks located in the southern passive margin of the Fennoscandia.

*The work was supported by RFFI, grant 14-05-00933.*