Geochemical signature of rocks of the neo-archean ultramafite-mafite mass in the Dzhugdzhur-Stanovoy Superterrane (the South-Eastern rim of the North-Asian craton)

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The first geochemical and geochronological data were obtained for the Neoarchean rhythmically stratified ultramafite-mafite massif in the Dzhugdzhur-Stanovoy superterrane of the south-eastern rim of the North-Asian craton.

The main petrochemical peculiarities of ultramafites and pyroxenites of the mass are the moderate increase in TiO_2 and FeO* contents at practically constant Al_2O_3, at a decrease of magnesia content from the earliest occurrences to the later ones. At the same time an increase in SiO_2, Al_2O_3 is typical for gabbro-anorthosites in the process of crystallization at a decrease of Mg# which is characteristic of high aluminiferous basalts. The duality of the petrochemical trends and the results of modeling suggest that crystallization of the rhythmically stratified ultramafites and gabbro-anorthosites occurred from two different melts corresponding in composition to pyrites and high aluminiferous basalts, respectively.

The conformity of spectra of REE and minor elements distribution are present. This lets us to conclude that the fusion of the both melts occurred from a single source that was close to Al non-depleted pycritoid in the intermediate magmatic chamber. It may be assumed that this ultramafite-mafite massif is an example of Arcean pycritoid magmatism.

The age of this massif is preliminary estimated as ~2.6 Ma (LA-ICP-MS method).

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Age relations, mineral-chemical and isotopic investigations on basaltic gem stone zircons from Eastern Germany

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In alkali basaltic rocks scarcely appear accessory minerals such as zircon and corundum. The origin of these mostly gem stone like mega-crystals is unknown and discussed controversial. Host magmas of the zircon mega-crystals are normally SiO_2 undersaturated (basanites and nephelinites).

In several localities we could observe some zircon mega-crystals and in a quarry in Saxony (eastern Germany) we collected about 40 crystals up to 15 mm in size *in situ* from the basanitic rock [1]. Zircons occur in agglutinates of lower crater facies of a scoria cone. The related lava flows are almost free of zircons and their Zr contents reaches up to 900 ppm [2]. There is a good correlation between Ar/Ar data of the basanites (30 to 31 Ma) and the zircon U/Pb data which show ages about 30.5 Ma.

First investigations indicate two different alkaline sources for zircons which origin possibly from syenitic, phonolitic or trachytic melts. This is evidenced by zircon-typology, mineral chemistry and analyses of mineral inclusions [3]. Preliminary *in situ* Hf-isotopic analyses of zircons indicate an origin from the lithospheric mantle.

The crystals show an intensive magmatic corrosion in alkalibasaltic rocks (including nephelinites), whereas zircons out of phonolites are mostly euhedral. Zircons in basaltic rocks have more or less evolved reaction rims, composed mostly of baddeyleit. Zr-contents in the rims of clinopyroxene phenocrystals decreases rapidly with the distance from the zircon inclusions. This indicates late entrainment of zircon crystals into the basanitic melt.

The age data of the zircons in relation to that of the host rocks as well as the mineral chemical and isotopic data imply a cogenetic development of both.

[1] Tietz & Büchner (2007) *ZdGG* **158**, 201-206. [2] Büchner *et al.* (2006) *Z. geol. Wiss.* **34**, 121-141. [3] Seifert *et al.* (2008) *N. Jb. Mineral., Abh.* **184**, 299-313.