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Geochemistry and some genetic aspects of Devonian alkaline igneous rocks from the Pripyat rift (southwestern part of the East European Craton)

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Devonian igneous rocks are widespread within the Pripyat rift in southwestern part of the East European Craton. This rift is classic sample of the continental rift structure and consists of several parts: rift marginal zone (the Zhlobin saddle), intermediate part (the North Pripyat Shoulder), axial rift zone (the Gomel Structural Dam and the Pripyat Graben). There are wide spectrum of magmatites - from middle (trachytes) and basic (basalts, picrobasalts) to alkaline rocks.

According to geochemical data, the studied rocks can be divided into several groups. Alkaline ultramafic lamprophyres by rift margin with low SiO_2, K20, Na2O, $Al2O_3$ and high MgO and $Fe2O_3$ are first group. The rocks from intermediate and axial rift parts included two groups: high-Na and high-K. All of the rocks enriched in trace elements. The most enriched rocks are located at intermediate part of the rift. The rift margin magmatites show the lower degrees of enrichment. The axial rift zone rocks are intermediate position by the degrees of trace elements enrichment. Values of Gd/Yb and La/Yb ratios for most studied rocks show that its sources were in the melting zone of garnet peridotites. We can see that these sources were on different depths and have varied degrees of enrichment. Also, the LREE enrichment as well as the presence of crustal xenoliths (previously in (Marckwick et al., 2001) and current author data) in the many magmatites indicate to crustal contamination of primary melts.

The possible sources of Pripyat rift rocks were previously discussed (Pervov et al., 2004, Mikhailov et al., 2011). Authors showed that these volcanics have several types of sources: EM1-type, DM and PREMA. According to our data, there is little variety of rocks compositions at the rift margin. More varied magmatites compositions are observed in intermediate and axial parts of the rift. The zoning of sources by depth within one territory can be explained by they were formed here during several evolution stages of the rift. Perhaps, alkaline ultramafic rocks from intermediate and axial rift parts were formed during the pre-rift and/or initial rift stage when lithospheric thickness was big enough. Basalts and other similar volcanic rocks from the same parts could have formed from more depleted sources during later stages of the rift evolution. The asthenosphere has already ascend thereat. The lithospheric thickness decreased. Therefore, rocks sources was less deep and have geochemical parameters like as depleted mantle.

Thus, we trace lateral and depth geochemical zoning for the Pripyat rift rocks with a change in the enrichment degrees of them mantle sources, and see the influence of lithospheric metasomatism and crustal contamination.

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