

Pb-Nd-Sr ISOTOPIC CONSTRAINS ON THE ORIGIN OF THE
1. 35 Ga ANORTHOSITE - RAPAKIVI GRANITE - NEPHELINE
SYENITE BERDIAUSH MASSIF (SOUTH URALS, RUSSIA)

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Berdiaush massif (BM) is situated at the eastern marginal part of the East European Platform nearly the boundary with Paleozoic fold belt of the South Urals. BM (35 square km) cuts R2 sedimentary rocks of the Baskir pericratonic basin. U-Pb and Rb-Sr isochron ages of BM are 1350 ± 10 Ma (Krasnobaev et al., 1984). BM includes three main groups of the magmatic rocks: 1) gabbro-anorthosites; 2) rapakivi granites and quartz syenites; peralkaline granites; 3) alkali and nepheline syenites; lamprophyre dykes. Predominant rock type is represented by the rapakivi granites.

In the geological setting, character and order of the rocks, their textural-structural and mineralogical peculiarities, rocks of the BM are similar to those from the classical Proterozoic rapakivi massives of Baltic Shield. Geochemically, Berdiaush rapakivi is intra-plate A-type granite.

Pb-isotopic data were obtained for both acid-leached plagioclases and K-feldspars and Nd-Sr data for whole rocks from Berdiaush massif, they are shown in Table.

	ε Nd	T DM	$\frac{87\text{ Sr}}{86\text{ Sr}}$	$\frac{206\text{ Pb}}{204\text{ Pb}}$	$\frac{207\text{ Pb}}{204\text{ Pb}}$	$\frac{208\text{ Pb}}{204\text{ Pb}}$	μ2	K2
Rapakivi granites	- 5.3	2476	0.7027	15.983	15.481	36.476	10.05	4.27
	- 6.4	2581	0.7059	16.072	15.439	36.534	10.24	4.29
Gabbro	+0.1			16.498	15.466	37.578	9.88	4.23
Nepheline syenite	-1.0		0.7055	16.617	15.437	37.485	9.63	4.66
	-1.4		0.7101					

Three main groups of the BM (basic, silica and alkaline rocks) form single magmatic assemblage, but their sources are different. The parental magmas of rapakivi granites, quartz syenites and peralkaline granites were derived from old LREE - enriched crustal source with low time-integrated Sm/Nd, Rb/Sr and elevated U/Pb and Th/U ratios. This protolith was undergone with metamorphic affects in Early Proterozoic, which attended by loss of U and increase of Th/U ratios accordingly.

Gabbro-anorthosites were derived from source with chondrite-like characteristics. Nepheline syenite parental magma was derived from an isotopically anomalous old subcontinental mantle source with intermediate time-integrated Sm/Nd, Rb/Sr and U/Pb and elevated Th/U ratios.

The research described in this publication was made passable in part by ISF Grant № R1E000 and RFFI Grant № 94-05-17033.

This study was supported by ISF Grant № R1E000 and RFFI Grant № 94-05-17033.