



## Geological and geochemical criteria for the continental nature of the Mendeleev Rise (the Arctic Ocean) from the data of drilling and dredging of seabed rock material

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The results are presented of geological and geophysical studies on the Mendeleev Rise at 10 test sites at 79°N to 83°N (expedition “Arktika-2012” in August-September 2012). During the expedition, for the first time, three boreholes were drilled in the bedrocks of the Mendeleev Rise basement at a depth of 1700-2600 m, and more than 20 thousand fragments of seabed rock material were dredged. Among them carbonate-bearing rocks including dolomite with relicts of trilobites and ostracoderms (D3-C) constitute up 65 %. Up to 20% are terrigenous rocks with a predominance of quartz sandstones. Magmatic rocks constitute 10-15% of the samples (including 8% of gabbro-dolerite and 2 % of granite) with 5% of metamorphic rocks.

The boreholes revealed magmatic mafic rocks of basalt to basaltic andesite to trachyandesite series ( $\text{SiO}_2$ -48-58%  $\text{K}_2\text{O}+\text{Na}_2\text{O}$ -3,4-9,2%) including epigenetically altered volcanic breccias. All fragments of magmatic mafic rocks have a similar mineral and chemical composition and are grouped with gabbro dolerite ( $\text{SiO}_2$ -49-51%,  $\text{K}_2\text{O}+\text{Na}_2\text{O}$ -2,5-3,0%).

Preliminary results of mineralogic, geochemical and of isotopic geochemical (ICP-OEC, ICP-MS, RFA, Sm-Nd, Rb-Sr, EPMA and others) analyses suggest the continental nature of the studied rocks and show a distinct difference from rocks of the Gakkel Ridge in the Eurasian part of the ocean, which are of the oceanic origin.

U-Pb dating of zircons from the core rocks and seabed rock material (SIMS SHRIMP II) indicate a wide range of their formation age: 2940-995, 639-385 and 303-203 Ma and thus suggest that they belong to volcanogenic terrigenous carbonate-bearing bed of the ancient platform composing the floor of Amerasian part of the Arctic Ocean.