



## **Chemostratigraphy of early Neoproterozoic sedimentary rocks of Yenisei ridge (Siberia, Russia)**

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One of the biggest Proterozoic sedimentary basins in Russia is around the Siberian platform. This study about little part of them - Neoproterozoic sedimentary rocks of Yenisei ridge (Southwestern margin of Siberian Platform). These geological structures are ancient and very difficult for research. It is a collage of different blocks: volcanic arcs, ophiolite complexes and sedimentary rocks of various ages and degrees of metamorphism.

Sedimentary complexes of the Siberian platform are outcropping along the Angara River and its tributary. Neoproterozoic ones are presented by terrigenous-carbonate rocks of the Tungusik and Oslyan groups. Despite the long study history of the area, it is still a controversial question of the time of formation of these rocks. As the determination of the age of Precambrian sedimentary rocks is very difficult, Sr isotopic chemostratigraphy appears to be the only approach to establish the age of carbonate sequences. All Rb-Sr data were investigated by the method of selective dissolution with the preliminary removal of epigenetic carbonate phases. The isotope dilution method with mixed  $^{87}\text{Rb} + ^{84}\text{Sr}$  spike was used to determine Rb and Sr concentrations in both fractions on the MI 1201AT mass spectrometer. Sr isotope ratios were measured on the Finnigan MAT-262 (BAC CU, Irkutsk, Russia) and Triton Plus (IGG UB RAS, Ekaterinburg, Russia). The C-O isotopic composition in carbon samples was measured on the Finnigan MAT-253 equipment.

The main criteria for integrity were correlations of impurity elements (Mn, Fe, Sr) and stable isotopes (C, O) with each other. The less altered rocks of the Tungusik Group are characterized by  $^{87}\text{Sr}/^{86}\text{Sr}$  ratio of 0.7055-0.7058, and wide variations in the  $\delta^{13}\text{C}_{PDB}$  values from 0 to +5‰ [1]. The primary  $^{87}\text{Sr}/^{86}\text{Sr}$  of the Dashka Formation (Oslyan Group) is 0.7057 - 0.7060 and  $\delta^{13}\text{C}_{PDB}$  value varies in the interval 3.7-4.3‰ like in the upper part of the Tungusik Group. High positive values of  $\delta^{13}\text{C}_{PDB}$  indicate that carbonates had accumulated in a warm sea, without a long period of cold weather.

Comparison of isotopic (Sr, C) characteristics of Dashka Formation carbonates shows identity of these indicators with Tungusik Group rocks. In addition, they can be compared with carbonate sequences of: Minyar Formation (Pb-Pb age of  $780 \pm 85$  dolomites Ma [2]) Karatav Group in the Southern Ural ( $^{87}\text{Sr}/^{86}\text{Sr}$  0.7055-0.7056,  $\delta^{13}\text{C}_{PDB} +2.4 + \dots + 3.0$  ‰), also the Reynolds Point Formation of the Shaler Group (about 840 million years; [3]) and the lower part of the Little Dal Formation in Canada (more than 780 million years [4]). Such agreement of chemostratigraphic characteristics of these formations is the basis for their correlation and allows to consider that carbonate rocks of the Oslyan and Tungusik groups had deposited in the first half of the Neoproterozoic (1000 - 800 million years ago).

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