

First results of U-Pb dating zircon of Tugan Zr-Ti placer deposit (West Siberia)

ALEXANDRA KORNEVA, EKATERINA AGASHEVA AND
ALEXEY SEMIRYAKOV

Tomsk State University

Presenting Author: korneva@mail.tsu.ru

Tugan Zr-Ti placer deposit is located near the northeastern margin of Kolyvan-Tomsk folded zone, where Paleozoic basement rocks go under the Mesozoic and Cenozoic sediments of West Siberian plain. It's a coastal-marine placer located within Late Eocene – Early Oligocene Kuskovskaya suite rocks, which overly either Early Cretaceous sedimentary rocks or weathering crust of Paleozoic rocks. The source of the zircons is not really well known. It's usually supposed that the sources of Tugan zircons are Paleozoic formations, but there is no information on their absolute ages.

In the Laboratory of Geochronology and Geodynamics of Tomsk State University, Tugan detrital zircons were studied by means of LA-Q-ICP-MS analysis with use of Analyte Excite (Teledyne) laser ablation system and Agilent 7900 mass spectrometer. U-Pb dating results show a great variety of absolute ages but the vast majority of studied zircons are Paleozoic with predominance of Silurian, Devonian and Permian zircons. Precambrian and Mesozoic zircons are rarely met.

Figure 1. KDE plot showing detrital zircon age distribution for South-Aleksandrovsky area of the Tugan deposit

There are two types of REE distribution in studied zircons: either it's typical for magmatic zircons or hydrothermal ones, but there is no relation between REE composition types and ages observed for Tugan zircons. Finding the sources of Tugan zircons is a complicated issue since we observe a great variety of absolute ages with no relation to REE contents as well as grains morphology studied by means of scanning electron microscopy and cathodoluminescence. Different areas with widely spread Paleozoic rocks (including Kolyvan-Tomsk folded zone) could be a source. Further study is needed.

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