

Using gem garnets for U-Pb (ID-TIMS) dating of metamorphic reworking of ultramafic rocks

**MARIA STIFEEVA¹, EKATERINA SALNIKOVA²,
ALEXANDER MAKEEV³ AND ALEXANDER KOTOV²**

¹Institute of Precambrian Geology and Geochronology

²Institute of Precambrian Geology and Geochronology, Russian Academy of Sciences

³IGEM RAS

Demantoid and topazolite are gem variety of andradite garnet. Over the last decade, andradite has proven its high potential of as a mineral-geochronometers for U-Pb dating of magmatic and metasomatic processes. Gem varieties of andradite garnet (demantoid, topazolite and tsavorite) is a typical mineral for mélange zone in ultramafic rocks. They hold the key to give new insights into the formation process of gem-quality minerals. For our research, we are using demantoid-topazolite garnet from the unique Karkodino Deposit (Middle Ural, Russia). These garnets form color-zoning crystals and display a wide variety of colours (green, brown, yellow). The uranium concentration varies from 1.4 to 2.9 ppm. The U-Pb (ID-TIMS) age of the garnet sample from Karkodino is at 307 ± 13 Ma (MSWD = 0.71). Results of U-Pb (ID-TIMS) dating of the demantoid-topazolite garnet from the Karkodino Deposit definitely shows that gem andradite also can be used for geochronological studies.

This work was supported financially by the Russian Science Foundation (projects nos. 22–17–00211)