

MINERALOGY OF DIAMONDIFEROUS PALEOPLACER IN THE TIMAN, RUSSIA

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Diamond-bearing terrigenous rocks in the north-east borderland of the East-European platform are located in the Timan ridge. Diamonds have been established in the Pizhma series of the mid-Devonian in the Middle Timan. The Pizhma series includes the polymineral diamondiferous paleoplacer "Ichet'yu" being the largest in the Timan. The series is made of brownish-grey quartz sandstones interlaid by gritstones and greenish-grey clays. The thickness of the series within the paleoplacer is 30 m. Its productive bed is represented by quartz gritstones and pebbly conglomerates. In spite of the long mineralogical study of this stratigraphical subdivision, there is still no answer to two important questions: 1 – whether the productive formations are sedimentary rocks; 2 – if the productive deposits of the Pizhma series are secondary accumulation, as it was traditionally thought, where is the source rock of Timanian diamonds?

Detailed lithological-stratigraphical, mineralogical, and geochemical investigations can help to answer the questions. The mineral composition of the heavy fraction consists of garnet, zircon, rutile, ilmenite, leucocene, anatase, brookite, monazite, xenotime, ilmenorutile, columbite, chromite, tourmaline, staurolite,

monoclinic pyroxene, and amphibole. Based on mineralogical description of the accessory minerals (KATELYA, 2007) one can conclude that most of them are allothigenous. This conclusion confirms the traditional opinion which regards the Ichet'yu diamond-bearing rocks, as sedimentary formations, in contrast to new ideas about their tuffsite genesis. The heavy fraction is rich in different minerals, indicating mixed provenance. Pyroxene and amphibole possess weak roundness in respect to transportation, thus the paleoplacer Ichet'yu is relatively close to a mafic source area, a possible provenance of diamonds. Taking into account the fact that terrigenous material came to the paleoplacer from the south-west, it is likely that buried massifs of diamond-bearing rocks are located in the Chetlass Kamen.

Reference

KATELYA (GRAKOVA), O.V. (2007): Minerals of diamond-bearing rock of the Pizhma series of the Middle Timan. The Syktyvkar mineralogical collection. Syktyvkar, № 35, p. 81–88. (Institute of Geology, Komi Science Centre, Ural Branch of the Russian Academy of Sciences. V. 122).