

THE NEOARCHAEAN GRIDINO ECLOGITES-BEARING COMPLEX, BELOMORIAN MOBILE BELT (BMB), THE FENNOSCANDIAN SHIELD, RUSSIA

SLABUNOV, A.I.¹, VOLODICHEV, O.I.¹, BIBIKOVA, E.V.² & WHITEHOUSE, M.³

¹Institute of Geology, Karelian Research Centre, RAS, Pushkinskaj, 11, 185910 Petrozavodsk, Russia

²Vernadsky Institute of Geochemistry & Analytical Chemistry, RAS, Kosigina, 19, 117975, Moscow, Russia

³Swedish Museum of Natural History, Box 50007, SE-104 05, Stockholm, Sweden

e-mail: slabunov@krc.karelia.ru

The Neoproterozoic Gridino eclogites-bearing complex (GEC) have been found in the BMB (Fig. A) of the Fennoscandian Shield (VOLODICHEV et al., 2004). The eclogites together with amphibolites, epidiosites, kyanite-garnet-biotite gneisses, gabbroids, meta-ultramafites and marbles are the components of polygenic migmatized mélange (Fig. B). The migmatites and meta-matrix of this complex is represented by tonalites, trondjemites, Qu-diorites and Bi-Amph-gneisses.

Fig. A. Location of the GEC in the BMB. 1 – Paleo-proterozoic supracrustal rocks; 2–7 – Archaean complexes: 2 – greenstones; 3 – paragneisses; 4 – ophiolite-like; 5 – GEC; 6 – TTG and magmatites from BMB (2.9–2.7 Ga); 7 – TTG Karelian craton (3.2–2.7 Ga); 8 – assumed overthrusts

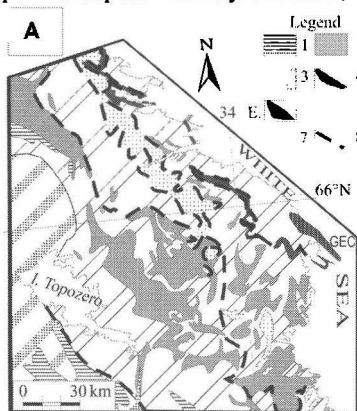
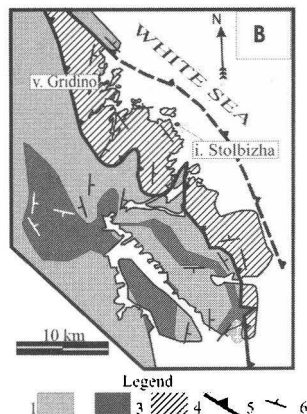


Fig. B. Location of the GEC: 1 – ca. 2.7 Ga granites; 2 – TTG; 3 – Archaean greenstone complex; 4 – Neoproterozoic GEC; 5 – assumed thrust fault; 6 – strikes of the gneissosity



The eclogite consists of omphacite with 27–31 % Jd, homogeneous garnet – 20–22 % Prp (F = 0.67–0.68) and accessory rutile, zircon. The eclogites were formed at T = 740–865°C and P = 14.0–17.5 kbar. Four stages are distinguished in the trend of retrograde decompressional transformations, leading to formation of symplectic apoeclgites and garnet-clinopyroxene amphibolites. The age of zircons from eclogites and symplectite eclogites was determined by U-Th-Pb isotopic method (WHITEHOUSE et al., 1999) on the NORDSIM. Zircons are represented by small, isometric, multifaceted grains, transparent, unzoned, colorless, are typical for growth under high-pressure conditions. To confirm their genesis in eclogites the distribution of REE in zircons was determined on the ion microprobe. The results have confirmed their growth on the eclogitic stage. Nearly concordant data have been obtained with the best estimate age in 2720 ± 8 Ma. The GEC is cut by post-tectonic trondjemite veins dated at 2701.3 ± 8.1 Ma and gabbrorite dykes (2.4 Ga). These results confirm the Neoproterozoic age of the studied eclogites.

The research was supported by RFBR, grants 03-05-64010 & 03-05-65051.

References

VOLODICHEV, O.I., SLABUNOV, A.I., BIBIKOVA, E.V., KONILOV, A.N. & KUZENKO, T.I. (2004): *Petrology*, 12, 540–560.
 WHITEHOUSE, M.J., KAMBER, B.S. & MOORBATH, S. (1999): *Chemical Geology*, 160, 201–224.