

V. R. VETRIN,* E. A. BELOUSOVA,** A. A. KREMENETSKIY.*** Lu-Hf ISOTOPE
SYSTEMATICS OF ZIRCON FROM XENOLITHS OF THE LOWER CRUST
OF THE BELOMORIAN MOBILE BELT

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Structure, geochemistry, U-Pb age and Lu-Hf isotopic composition of zircon crystals from xenoliths of garnet granulites of the lower crust of the Belomorian mobile belt have been studied. There was revealed the primary magmatic protolithic origin of Early Palaeoproterozoic zircon (2.47 billion years), formed during crystallization of mafic rocks in the lower crust has been established. Zircon of

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Meso- and Neoproterozoic is represented by xenogenic crystals trapped by basic melts during their contamination with the more ancient sialic crust material. Metamorphogenic zircon grains yielded Late Palaeoproterozoic age (1.75 billion years). Paleozoic age has been revealed for magmatic crystals with well-manifested oscillatory zoning, formed during xenolith injection by alkaline ultrabasic melts which have brought xenoliths to the surface. On the basis of U-Pb dating and Lu-Hf systematics of crystals, stages of formation and transformation of the lower crust in the region were defined.

Key words: xenoliths, lower crust, zircon, Lu-Hf isotopic system, consistency of Lu-Hf and Sm-Nd isotopic systems, stages of the lower crust formation, Kola Peninsula.