

LATE ARCHEAN TECTONIC EVOLUTION AND RELATED METALLOGENY OF THE KOLA-KARELIAN REGION IN THE EASTERN BALTIC SHIELD

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The Kola-Karelian region includes a number of fragments of Archean lithosphere framed by the Paleoproterozoic sutures: Karelian craton (typical granite-greenstone area); Kola megaterrain formed by interrelated granite-greenstone areas and granulite-gneiss belts; Belomorian structural unit that includes fragments of greenstone and granulitic gneisses intensively reworked during Paleoproterozoic. Karelian craton is considered to be the Late Archean orogen developed as a result of accretion of oceanic and island arc terrains 3.1-2.6 Ga ago to the ancient Vodlozero microcontinent formed by assemblages of 3.2-3.1 Ga age with inclusions dated in range 3.6-3.5 Ga. Karelian greenstone belts host a range of mineral deposits: economic class Fe ores originated at passive margins and back arc basins; Cu-Ni sulphides in ultramafic intrusive bodies and komatiitic lavas formed in oceanic environments; sulphide deposits with Cu (Pb, Zn, Au) of Cyprus type; small Zn-Pb ore bodies with insignificant Ag and Au mineralization chained with island arc assemblages; deposits of Mo porphyry ores in suprasubduction settings and some Au localities corresponded to late stage evolution of greenstone belts. The Kola megaterrain includes fragmented Svaranger-Kola granite-greenstone area with a number of economic Fe deposits and small Cu-Ni ore bodies. Kolmozero-Voronia greenstone belt along the boundary of Kola-Norwegian and Murmansk terrains considered as slightly deformed Late Archean linear suture zone, hosts Mo porphyry ores and several large Li-Cs-Rb-Ta-Nb bearing pegmatite bodies. According to suggested model based on geochemical-isotopic data, rare metal pegmatites were originated as a result of partial melting of assemblages containing specific sediments deposited in hydrothermal volcanic lakes at active continental margin. High-Al gneisses of Belomorian unit and felsic alkaline volcanics of Keivy active margin occurred suitable substratum for Paleoproterozoic mica (Belomorian) and Ta-Nb (Keivy) pegmatites.