



Physico-chemical conditions of intrusive complexes forming in the Sierra-Leone Region (Central Atlantic)

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The detail research of rock collections, gathered in the Sierra-Leone Region (Central Atlantic) during 10-th cruise of the R/V «Academician Ioffe», have allowed to find and to analyze melt inclusions in chromspinelides from troctolites. As a result of inclusions study (with wide usage of ionic sonde) an information on physico-chemical parameters of the enriched magmatic systems, that form highferriferous and hightitaniferous intrusive complexes in the Sierra-Leone Region, for the first time was obtained. On an elemental composition melt inclusions in chromspinelides correspond to rocks of a normal alkalinity, and under the content SiO_2 (from 44 up to 62 wt. %) characterize series of rocks from gabbro to diorites and quartzy diorites. In this respect they differ from dominating gabbro of the Sierra-Leone Region. Analysis of composition of melt inclusions and rocks has shown, what the main part of gabbro in the Central Atlantic (Sierra-Leone Region and $15^\circ 20'$ Fracture Zone) was formed during cumulate processes of evolution of initial melts of N-MORB type, while differentiated Fe-Ti series represented crystallization of self-dependent melts. Heightened water contents (up to 1.24 of wt. %), data on trace and rare earth elements distribution, high values of the ratios $(\text{La}/\text{Sm})_N$ and $(\text{Ce}/\text{Yb})_N$ in inclusions, demonstrate the enriched nature of melts, from which one these Fe-Ti series were crystallized, and testify to possible influencing of mantle plume. The design simulation on the basis of inclusion compositions has shown, that the formation of highferriferous intrusives of the Sierra-Leone region was originated from water-saturated and low-temperature ($980-1100^\circ\text{N}$) magmas. As a whole, is clarified, that enriched Fe-Ti melts were generated irrespective of a magmatism, dominating in Central Atlantic (N-MORB type) under affecting of a plume and during the subsequent processes of evolution of magmatic systems result-

ing in formation of differentiated intrusive series (ferrogabbro-diorites-plagiogranites) in the Sierra-Leone Region. This work was supported by grant 05-05-64380 from the Russian Foundation for Basic Research.