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Magmatic Evolution of the Salmagora Ultramafic-Alkaline-Carbonatite-Complex, Kola Alkaline Province, NW Russia

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The Salmagora complex, located in the southern part of the Kola Peninsula, NW Russia, shows a typical concentric zonation. This pluton consists of the sequence of rocks (dunite - wehrlite - ultramelilitolite - turjaite - pyroxenite - melteigite - ijolite - urtite - carbonatite) from the margin to the center of the complex. The Salmagora pluton comprises predominantly olivine-, clinopyroxene- and melilite-dominant ultramafic cumulates in the margin, clinopyroxene- and nepheline-dominant alkaline rocks with subordinate carbonatite in the center of the complex. From the microscopic studies, dunite, wehrlite, ultramelilitolite, pyroxenite are cumulate facies, whereas the foidolites seem to have been formed from the residual magma of pyroxenite cumulates by crystal fractionation. Chemical compositions and mineral assemblages in the cumulate facies show a simple trend, whereas pyroxenite-foidolite series branched into two types that differ in mineral assemblages, REE patterns and chemical compositions of minerals. One type has phlogopite and perovskite and the other has garnet and sphene as their minor minerals. The second type shows HREE enrichment relative to the first one due to these mineral assemblages. These differences suggest that two types evolved from different sources. The spinel group minerals appear in all facies of the complex. The chemical compositions of spinel group minerals in the cumulate facies and the first type pyroxenite-foidolite series show a continuous variation from the spinel (*sensu stricto*) component to the pure magnetite component, respectively. Thus the cumulate facies and the first type pyroxenite-foidolite series represent a continuum from a common magma. However the second pyroxenite-foidolite series has only almost pure magnetite, that requires a different magma source which was derived from a lower-temperature regime of the source.

Key words: Salmagora complex, Ultramafic-alkaline-carbonatite-complex (UACC), Kola Alkaline Province, fractionation, accumulation