

## **CORONA FORMATION DURING PROGRADE METAMORPHISM: DIFFUSION PROCESSES**

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Different types of corona textures were studied in metamorphosed early PR labrodorite and lervolite-gabbroanorites in N.Karelia (the Baltic Shield). There were found the following corona sequences: Ol/Opx/Hbl+Spl/Grt/Hbl/Pl; Ol/Opx/Cpx+Hbl+Spl/Pl; Mt/Cpx/Grt+Qtz/Pl; Opx/Cpx+Hbl+Qtz/Grt+Qtz/Pl. The Grt porphyroblasts show particularly pronounced prograde zonation. Formation of all corona types started on the prograde stage of the metamorphic event (approximately at 670°C and 6 kbar). During the later retrograde amphibolization coronites were transformed into Grt amphibolites. Corona growth took place by mechanism of diffusional bimetasomatism at the participation of the fluid. The zonations of all Grt coronas have similar features: one or two peaks of Ca content in the central parts of the Grt layer. Phenomenological diffusion coefficients were calculated according to Joesten-Fisher-Sheplev steady-state diffusion model. The most important factors in the corona formation are the relative diffusion rates of Al and Ca. The ratio  $LA_{Al}/LCa_{Ca}$  in the studied coronas are the following: 12.52, 3.09, 1.17, and 0.46, respectively. So in the similar P-T conditions the differences in mineral composition and layer sequence of the coronas depend on the diffusion rates of the components which are described by the relative phenomenological diffusion coefficients.