Geophysical Research Abstracts, Vol. 9, 01139, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-01139

Signs of mantle diapirism beneath the Siberian carton and surrounding area.

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Zonation of the minerals found in mantle xenoliths from the Siberian kimberlites (Shimizu et al ., 1997) is common for several types of mantle peridotites including deformed and porhyroclastic polymict and several granular varieties, usually interpreted as a result of the melt interaction with the mantle peridotites (Kuligin et al., 2003), appeared in growth of Fe, Na, Al, Ti. But growth of he Fe is not always pronounced. Most of such varieties reveal the signs of the plastic motion including and high deformation (Boyd et al., 1997). The structure of deformed peridotites was interpreted as the result of the asthenospheric movement (Nixon, Boyd, 1973), but geochemical features demonstrate of the influence of the magmas which may result in magma fracturing. Occurring together of pieces of different lithologies in the deformed polymict varieties may be interpreted not only as magmatic breccias but also as the mechanical mixtures in flowing peridotites.

In Udachnaya and some other pipes the signs of the high deformation are found not only in garnet but also for Ga- free dunites-harzburgites. Calculated TP values for zonal minerals show not only ToC but also changes of pressures which not always may be interpreted as the uncertainness in thermobarometry but may be resulted from the mantle diapirism. The TP trajectories in on the TP diagram of the individual pipes

sometimes reveal the sub adiabatic gradients which may be not only the of the heating near the veins and feeding systems but also due to vertical movement of ,mantle diapirs. The beginning of adiabatic trends is in the basement or in the 40 kbar horizons interpreted as a pyroxenite lens.

The mantle diapers are likely appeared as a result of the high concentration of the melts in the basement of lithosphere or in pyroxenite lens appeared due to the intrusion of hi-ToC plum melts from lower mantle. It brings to the submelting and decrease of viscosity and rising of the peridotites forming he roof of the magmatic system joint rising of the veins forming the feeding for magma and submelted heated peridotites bring to the creation of the Ti-enriched association? polymict peridotites. This melt – crystal moving mush is a favorable place for the growth of the some diamonds capturing polymict inclusions. The TP conditions for deformed peridotites from Udachnaya show at least 15 km rising gradients, for the other pipes the Ti –rich associations reveal trends from basement to the pyroxenite lens or upper.

The diapirs starting from pyroxenite lens from the heating in the upper asthenospheric layer- 40-60 km. Some of kimberlitic xenoliths from the kimberlites and most of the xenoliths of the alkali basalts from this area reveal the SEA geotherm joining with the 40 kbar horizons by subadiabatic type TP trajectories close to those of the basalts. Vitim and Khamar-Daban xenoliths show the pyroxene-spinel clusters after the deep garnets. Most of them are close to primitive mantle.

RFBR grants 99-05-65688, 03-05-64146, 05-05-64718 and projects 2-05; 65-03; 77-02 of joint projects UIGGIM SD RAS and ALROSA Company.