



## Garnet and chromite- bearing mantle peridotite xenoliths from Komsomolskaya pipe, Alakit field, Yakutia

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Fresh xenoliths in Alakit field in Siberian platform are rare. In the xenoliths from Komsomolskaya pipe there were found 30 xenoliths with fresh Cpx, Gar as well as chromites, phlogopites and ilmenites which allows to construct the Cpx - based geotherm which was before constructed for the Yubileynaya pipe (Ashchepkov et al., 2004).

The comparison of the garnets from the breccias and porphyric kimberlites show more depleted and Cr- rich varieties of garnets as it is common for the other pipes.

Only relatively fresh material from the dark - grey breccia good relatively fresh xenoliths could be used for the mineral thermobarometry.

Large xenoliths from the Komsomolskaya pipe belong mainly to the Gar harzburgite or refertilized lherzolite types as also detected on the  $\text{Cr}_2\text{O}_3$  -  $\text{CaO}$  diagram where they belong mainly to the 5-11%  $\text{Cr}_2\text{O}_3$  interval. The low Cr varieties are mainly referring to the Fe- enriched pyroxenites or to Phl metasomatites.

In SCLM beneath Komsomolskaya pipe is essentially more heated then those beneath Yubileynaya and Sytykanskaya pipes and in lower part they are close to the  $\text{PTXFO}_2$  are closer in conditions to the ilmenites which determined the . Peridotites from the lithosphere base (7-6GPa) are enriched in Fe and belong to the porphyroclastic or deformed type by chemistry  $\text{Fe}^{\#} = 0.14-0.15$ . the relatively HT conditions were determined also for the peridotites from the 5.0-4. GPa.

The most of the Cpx- refertilized varieties give the conditions of the middle part of the mantle section. Their garnets are enriched in  $\text{CaO}$  probably reflection reactions with the Ca- rich protokimberlites. The Na- richterite bearing xenoliths are from the same PT interval

The cold clot in the 60-5.5 GPa (34 mm-2) are represented by the peridotites of low  $\text{Fe}^{\#}$  7-9 Fe- low peridotites with the garnets of sub-Ca types.

But there are also varieties of reduced Cr and the Fe-enriched which are closer to the pyroxenites or Phl metasomatites which in Pt are from the upper part of mantle sections.

The picroilmenites from the Komsomolskaya pipe belong to the two pressure intervals 6.5 to 5.0 and 5.0 to 4.0 GPa. They are forming two differentiations branches in the lower part of the mantle section. In the upper part the Cr- content is continuously rising together with Fedue to the AFC differentiation. But the typical metasomatic sporadic ilmenites are close in low  $\text{Fe}^{\#}$  7-9 to the mantle peridotites. they are essentially higher in  $\text{Cr}_2\text{O}_3$  to 4-6%. But ilmenites from refertilized peridotites have only 2-3  $\text{Cr}_2\text{O}_3$ .

The trace elements for the Cpx of mantle peridotites of refertilized type reveal high inclination of the REE patterns. they reveal Nb-Ta , Zr depression and varying peak in Pb but enrichment in U. Many of garnet show the slightly S- type REE pattern.

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