



## **Trace element study of the xenoliths study of the mantle xenoliths from Sytykanskaya pipe, Yakutua.**

Igor Ashchepkov (1), Theodoros Ntaflos (2), and Zdislav Spetsius (3)

(1) Institute of Geology and Mineralogy, Geodynamics, Novosibirsk, Russian Federation (igor.ashchepkov@igm.nsc.ru), (2) University of Vienna, Austria, (3) Alrosa Stock Company, Mirny, Russia

Detail study of the mantle xenoliths from Sytykan pipe were performed for the Cpx- Phl- Sp -Ilm associations (>30) commonly substituting garnets and rarely containing richterites, eclogites (3), and Ilm- Gar pyroxenites as well as for the Cr—Di bearing websterites and clinopyroxenites containing graphites (8).

Most of the metasomatites and pyroxenites belong to the middle part of the mantle section and refer to the straight line rather low temperature (1000 at 6.0GPa) geotherm.

Majority of the garnets in the show the semi circle patterns with the low Sr LREE and LILE but peak in Pb and U and small enrichments in some LILE. But Cpx substituting them sometimes vary in major element compositions and TRE also reveal Nb-Ta troughs and slightly lower in Zr-Hf but Rb-Ba enrichments. The Phl in such associations commonly have very low REE concentration but very high Ba, Rb, Cs but level of the Th-U-Nb-Ta nearly close to those from the CPx. The amphiboles have th TRE patterns close t those of Cr- diopsides but enrichment in Ta- Nb but much less in Zr-Hf.

He Low Cr Ilm-Gar pyroxenite show nearly flat TRE patterns for the Cpx and ilmenites and strong TRE depletion for garnets. The Cpx show enrichment in Th-U and smaller on in HFSE as well garnet reveal elevated U-Nb-Ta and all minerals shows slightly higher Rb-Cs but depletion in Ba.

One of the intergranular grains from eclogites show the composition derived from protokimberlite and show 700 enrichment in LREE relative to primitive mantle and very deep Nb-Ta and Zr-Hf troughs due to Ilm precipitation but slightly elevated Ba-Th-U.

The eclogites don't show very special distributions from Cat-Cpx showing slightly lower concentrations of the incompatible elements and small peaks in U, Pb and even Rb-Cs.

The Cr-diopside bearing websterites from garnet Cr-bearing pyroxenites show different enrichments in REE highly inclined and straight line patterns and deep troughs in Ba and varying enrichment in Nb-Ta-U which are lower than REE. Those with lower TRE levels reveal Zr-Hf dips.

Garnets from the pyroxenites show more straight line patterns than those from common lherzolites and pyroxenites from alkali basalts They are characterized by deep troughs of Ba, Sr, and small Pb, U, small dips in Zr and Hf and quite different levels of Ta, Nb with general enrichment.

Thus the metasomatic association and Cr- bearing pyroxenites probably were formed by the same probably agents enriched in LILE and U probably included the reactivated subducted related materials

RBRF grants 05-05-64718, 03-05-64146; 08-05-00524; 11-05-00060; 11-05-91060-PICS and joint research projects of IGM SB RAS and ALROSA Stock company 77-2, 65-03, 02-05.