

Mantle xenoliths from Zapolyarnaya pipe, Yakutia, Russia

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Kimberlite pipe Zapolyarnaya pipe, Upper Muna field, Yakutia with good quality diamonds is mining first year. PT's for 50 xenoliths obtained with refertilized type Cpx give HT^o geotherm tracing convective branch to 8 GPa. Deeper part SCLM is more oxidized Cpx refer to the garnet trend (10-20%CO₃ in melt). Mantle section is layered with P-CaO jets traced by abundant sub-Ca garnets. Mg ilmenites (to 5% Cr₂O₃) ilmenites show three levels from 6 to 3 GPa where protokimberlite metasomatism take place in mantle column. Spectra REE (LA ICP MS) of Zapolyarnaya pipe show S type for 50% for garnets from xenoliths. They have HFSE enrichment (Zr>Hf and Nb, Ta vary) high LILE suggests hydrous Phl bearing metasomatism accompanied (and before) protokimberlites. Garnets from concentrate show less HFSE enrichments. Clinopyroxenes from xenolith are characterized by conform REE spectra divided into 3 groups by REE level (100 to 10/C1) and show protokimberlite influence. Half of TRE spectra have Zr, Hf, Nb maxima and often Pb, Ba peaks. Cpx was created in dunitic channels forming clusters with Gar, Amph and mica. In 4th group REE more inclined -Gar-dominated assemblage. Supported by RFBR grant 19-05-00788.

