



Trace elements and PT conditions of pycroilmenites and pyropes from Archangelsk region.

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In Archangelsk kimberlite province concentrate of pycroilmenite and pyropes from the Devonian sandstones served as the intermediate collector was analyzed by EPMA and LAM ICP MS.

TP conditions determined with the monomineral thermobarometry (Ashchepkov et al., 2005) for Ilm and Gar suggests that this material was captured mainly from the basement of the lithospheric mantle horizons heated up to 1400°C (45 mv/m² at 65-50kbar) where the most PT values for ilmenites are plotted. The middle part 35-50 kbar reconstructed with Chromite and Garnet show 35-40 mv/m² geotherm

Garnets of the Iherzolite field in Cr₂O₃-CaO diagram reveal S-type for 40% of all population or more rarely flattened typical for the melt percolation processes. La/Yb_n and Sm/Er_n (high for S-type) are rising with the calculating pressures as well as Zr/Y_n, Zr/Hf_n, detecting the rise of Gar/Cpx ratio and metasomatism degree.

Most of ilmenites reveal the Cr₂O₃ rising with the decreasing pressure and refer to the HT metasomatites. And those with small amount of Cr admixture reflecting the differentiation in the close system with 70-55 kbar range while the vened metasomatites (Cr bearing) are developing in upper levels also. High La/Yb_n and Pb minima are detected mainly lower 60 kbar. The inclination and HREE are fluctuating showing the variation of Gar in the process of mantle melting and differentiation what differ from the majority of the pycroilmenites in Siberian platform and other World localities/

Good agreement of the geothermal conditions and geochemical features obtained by different methods for the different minerals suggest the same source for the minerals in the intermediate collector. High degree of the heating at the basement may be caused by the intrusions of the protokimberlite melts

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