PYROPES AND ILMENITES FROM KIMBERLITE PIPE (MINAS GERAIS) BRAZIL.

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Pyropes (80) and Ilmenites (70) from the concentrate (0.2-0.5cm) kimberlite pipe from river Inasio valley. The garnets plots within the lherzolitic field in Cr2O3-CaO diagram (1,4-5.7% and 4.2-5.7%). Content of Fe (8.5-10.5%), TiO2(0.05-0.4%) V2O5 increase and NiO decreases with calculated pressure (17-34 kbar) (Ryan et al., 1996). These coarse grained garnets probably originated from relatively fertile mica-bearing lherzolites. The maximum frequency corresponds to the pressure ~20kbars with the hyperbolic frequency fall to more deep seated garnets accompanied with the decrease of grain sizes what may means dissolution of xenoliths and garnets. More Cr- rich varieties were fine grained completely dissolved in kimberlite magma. More deep level with Cr-rich pyropes corresponds to more depleted (7.4%FeO, 0.15%TiO2, Olmg-0.925) layer judging on metasomatized Phl-Gar wehrlite xenolith from Indaia pipe with primary association equilibrated near 1030oC–37kbar (Krogh88(GarCpx)-Ryan96(Cr-in-Gar)) and HT Cpx formed at 1250. Megacrystic pyropes are nearly absent in concentrate. Ilmenites represent at least 4 groups different in Cr2O3, Al2O3, MgO, TiO2. Cr-rich (2.5-4.5%) are less frequent then 3groups of magnesial and Cr-poor (2.5-0.5%), Al2O3-rich(0.3-0.9%) ilmenites (GrI) with inclination of Mg-Cr, Mg-Ti trendsdue to coprecipitated cromite, Cpx, mica, garnet. Cr-rich varieties were originated from HT (deep-seated) magma portions while others were derived in more shallow magmatic veins/chambers. Xenocrysts evidences that kimberlite magmas had an intermediate level of differentiation where main part of relatively fertile peridotite xenoliths were captured while more deep material from the productive metasomatic depleted peridotites was intensively disintegrated and partly dissolved.