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MINERAL CHEMISTRY OF GARNET AND CLINOPYROXENE OF SOME KIMBERLITE INTRUSIONS FROM THE COROMANDEL REGION, WESTERN MINAS GERAIS STATE, BRAZIL

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Kimberlites occur closely associated with kamafugite and other ultrabasic alkaline rocks in the Alto Paranaíba Igneous Province (APIP), located in western Minas Gerais State, Brazil (Gibson et al. 1995, *J. Petrol. 36, 189-229*). Chemical and isotopic signatures revealed that kimberlites are intermediate between the Groups I and II previously characterized by Smith (1983, *Nature 304, 51-54*) in the South African Province (Meyer et al. 1994, *Proc. 5th IKC, 1, 140-155*; Bizzi et al. 1994, *Proc. 5th IKC, 1, 156-171*). This paper presents preliminary results on the chemistry of some of the heavy minerals recovered from the yellow-ground of ten weathered kimberlite intrusions scattered around the municipality of Coromandel inside the APIP. Selected pipes are intruded in the Late Proterozoic Brasilia Folded Belt and distributed along a northwest-southeast remarkable trend stretching from Catalão (SE Goiás) to Carmo do Paranaíba (NW Minas Gerais).

Kimberlite mineral indicators were obtained by the washing of around 200 kg of yellow-ground in the field, followed by the routine sediment separation procedures including elutriation, eletromagnetic, heavy liquids and binocular picking. Garnet and ilmenite are the most conspicuous phases occurring in all the sampled intrusions. Clinopyroxene and zircon are rarer whereas spinel was recovered in one single target. At the present stage of our project only garnet and clinopyroxene have been analysed. The analysis including 266 garnets and 52 clinopyroxenes were carried out in a JEOL-8600S electron microprobe operating at 15 kV and 20 nA. Chemical analysis revealed that garnets are relatively homogeneous. Major element compositional range is (in wt. %): SiO_2 (40-42), Al_2O_3 (20-23), MgO (18-21), FeO (7-12), CaO (3.7-6) and Cr_2O_3 (0.5-6). A MgO-FeO-CaO plot (Dawson and Stephens 1975, *J. Geol. 83, 589-607*) show that most samples are lherzolitic plotting within fields 9, 1 and 2, with a small number in the field 3 of eclogite. This result is confirmed on the conventional Cr_2O_3-CaO diagram where all data plot on the G9 lherzolite side. As for clinopyroxene the chemical variations (in wt. %) are: SiO_2 (53-55), MgO (15-24), CaO (11-22), FeO (1.4-4.5), Al_2O_3 (1-4), Cr_2O_3 (1-4.5), Na_2O (0.9-3), with TiO_2 and MnO<0.5. On the pyroxene quadrilateral (Morimoto et al. 1988, *Amer. Mineral. 73, 1123-1133*), most analysis plot within the diopside field, whereas a small population are Mg-rich augites. Our preliminary data show that all analysed minerals are similar to their counterparts of kimberlites from other localities. A most remarkable point is the absence of G10 garnet in our data set.