

## PETROLOGY OF MANTLE XENOLITHS FROM CENTRAL AND SOUTH VIETNAM

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Neogene volcanism with mainly tholeiitic and alkali basalt affinity is widespread in the southern China and Indochina regions. Mantle xenoliths are commonly found in alkali basalts in south-central Vietnam and consist of refractory spinel lherzolites and subordinate amounts of spinel harzburgites and pyroxenites. Several samples from different localities between the cities of Ban Me Thuot and Saigon were recovered in 2011. The mineral assemblage in most samples consists of the simple lherzolitic mineral assemblage Ol–Opx–Cpx–Sp. In addition to xenoliths, clinopyroxene, zircon and sapphire xenocrysts are commonly observed in the weathered volcanic soil. The Ol, Cpx and Opx crystals are usually equigranular while Sp occurs usually as smaller sized interstitial phase or as partly oriented inclusions in Cpx. Cpx II occurs in some samples as recrystallized “rim” around Cpx I. Cpx I has a very uniform composition between different samples with a typical  $X_{Mg}$  ( $=Mg/(Mg+Fe^{2+})$ ) of 0.92 to 0.98, a  $X_{Na}$  ( $=Na/(Na+Ca)$ ) of 0.10 to 0.16, a  $Cr_2O_3$  content of 0.6–0.9 wt. % and  $Al_2O_3$  values of c. 6 to 8 wt.%. Cpx II has a lower  $X_{Na}$  and Al content as well as higher  $X_{Mg}$  and Cr content compared to Cpx I. Orthopyroxene typically has a  $X_{Mg}$  of c. 0.90 to 0.93. The  $X_{Mg}$  values for Ol differ slightly between different samples but are within 0.84 to 0.94. Spinel grains have a variable composition with  $X_{Mg}$  from 0.65 to 0.92 and  $X_{Cr}$  ( $Cr/(Cr+Al+Fe^{3+})$ ) of 0.08 to 0.25. The use of the Cpx–Opx thermometer (BREY & KOEHLER, 1990), Cpx–Ol thermometer (POWELL & POWELL, 1974) and the Al and Cr in Ol thermometer (DE HOOG et al., 2010) allowed constraining the temperature with 900 to 1100 °C. Pressure was calculated with the Ca in Ol barometer (KOEHLER & BREY, 1990) which gave 1.4 to 2.3 GPa.

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