

Origin of Mantle-Derived Peridotites: Consideration from Melting Experiments of KLB-1

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To search the origin of chemical and modal trends of mantle-derived peridotites, such as olivine-spinel mantle array (OSMA; Arai, 1987), batch melting experiments of model mantle lherzolite (KLB-1) were made at pressure between 0.5 to 2.5GPa, temperature between 1250 to 1600C and compared with natural peridotites. Spinel, which is common in any natural peridotite, has a narrow stability field in experiments. Cr# of chromian spinel when the coexisting cpx disappeared was lower than that of natural peridotites. The differences indicate that the modal and chemical trend of natural peridotites cannot be formed batch melting but are result of either fractional melting and fluid (water-bearing melt) influx melting.