COMUNICACIONES N° 52 (2001):77

MANTLE XENOLITHS FROM ÑEMBY, EASTERN PARAGUAY: O-Sr-Nd ISOTOPES AND TRACE ELEMENTS OF HOSTED CLINOPYROXENES

Comin-Chiaramonti, P.[1], Antonini, P.[1], Girardi, V.A.V.[2], Gomes, C.B.[2], Laurora, S.[3] and Zanetti, A.[4]

[1] *DICAMP, Piazzale Europa 1, I-34127 Trieste, Italy; comin@univ.trieste.it*
[2] *Instituto de Geociências, Universidade de São Paulo, Rua do Lago, 562, CEP 05506-900, São Paulo, Brazil*
[3] *Dipartimento di Scienze della Terra, Università di Modena, Piazza S. Eufemia 19, I-41100 Modena*
[4] *Dipartimento di Scienze della Terra, Università di Pavia and CNR-Centro di studio per la Cristallochimica e la Cristallografia, via Ferrata 1, I-27100 Pavia, Italy*

Clinopyroxenes from protogranular spinel-peridotite mantle xenoliths in Eocenic melanephelinite of Ñemby hill, central eastern Paraguay (Asunción-Sapucai-Villarrica graben), are studied for: (1) oxygen isotopes; (2) trace element behaviour; (3) Sr-Nd relationships between whole rock and hosted pyroxenes. The mantle xenoliths are distinguished into two main suites, i.e. LK (relatively low in K and incompatible elements, IE) and HK (high in K and IE), both ranging from lherzolite to dunite and showing trends of "melt extraction". Clinopyroxene crystal chemistry revealed the equilibration pressure over a range of 12-18 kb, in both the two suites. The hosted clinopyroxenes display extremely variable enrichment/depletion behaviours, mainly in LREE. The enriched components were mostly trapped in clinopyroxenes which previously crystallized from depleted to quasi-chondritic mantle sources. Oxygen isotopes (clinopyroxene-olivine pairs) suggest that equilibration temperatures were higher in the HK suite than in LK suite. On the whole, the isotopic Sr-Nd data seem to indicate that, prior to enrichment, the lithospheric mantle was dominated by a depleted component, isotopically resembling a MORB source or even more depleted. Model ages (Nd-T_{DM}) of clinopyroxenes and host rocks confine the main enrichment, metasomatic, events to the Brasiliano cycle (i.e. 900-460 Ma). In contrast, Rb-Sr isotope systematics may be related with fluids induced by melting episodes occurring in Early Cretaceous times, during the different phases of lithospheric thinning in the area.