

## Pb, Sr AND Nd ISOTOPES IN MINERALS FROM ULTRAMAFIC NODULES IN KIMBERLITES.

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The major minerals were separated from garnet lherzolite nodules in kimberlites (from Lesotho and South Africa) and were analysed for isotopic compositions of Sr, Nd and Pb and for concentrations of Rb, Sr, Sm, Nd and Pb. The clinopyroxene, garnet and the whole-rock sample of a sheared garnet lherzolite (W 397) from the Premier Pipe define an isochron of  $1.4 \pm 0.02$  b.y. with the initial  $\text{Sr}87/\text{Sr}86 = 0.70241 \pm 0.00006$ . Compared with the ages obtained by Barrett and Allsop (1973) for the Premier kimberlite pipe of 1.2-1.4 b.y., the present result suggests that these minerals had been in approximate isotopic equilibrium until pipe emplacement. This is consistent with the results of Erlank and Shimizu (1977) on a peridotite nodule in a Cretaceous pipe but diverges from those of Basu and Murthy (1977), who obtained a mineral isochron age of 3.4 b.y. for a peridotite nodule in a recent volcanic rock from San Quintin, Baja California.

The Rb (0.034 ppm) and Sr (96.4 ppm) concentrations of the clinopyroxene in W 397 lherzolite are very similar to those of the clinopyroxenes separated from sheared garnet lherzolites in Cretaceous pipes (Shimizu, 1975).

The isotopic composition and concentration of Pb were also determined in the clinopyroxene separate with a technique involving a chemical blank of 100 pg for Pb. The sample (40 mg) was washed four times with 0.5M HBr before HF decomposition. The first two steps of acid wash yielded significant amount of Pb (500 and 360 pg, respectively), while the third step showed only 30 pg, suggesting that most of the surface Pb was removed. The isotopic composition ( $206/204 = 17.42$ ,  $207/204 = 15.41$ ,  $208/204 = 36.85$ ) is similar to the least radiogenic diopside sample reported by Kramers (1977), and plots on a primary growth curve with  $\mu = 8.1$  and close to the meteoritic isochron (geochron).

## References

- Barrett, D. R. and Allsop, H. L. (1973) Extended Abstract, First Kimberlite Conference, Cape Town, 23.  
 Basu, A. R. and Murthy, V. R. (1977) EPSL, 35, 239.  
 Erlank, A. J. and Shimizu, N. (1977) This Volume.  
 Kramers, J. D. (1977) EPSL, 34, 419.  
 Shimizu, N. (1975) Phys. Chem. Earth, 9, 655.