LITHIUM, BORON, AND MAGNESIUM ISOTOPES IN LUNAR SAMPLES

O. EUGSTER, E. GRADSZTAJN and R. BERNAS
Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse du
C. N. R. S. - 91 ORSAY - France.

Three crystalline rocks, one breccia, and fines returned
by Apollo 11 and 12 have been analyzed by means of a sputtering ion source
mass spectrometer. Li, B and Mg isotopic abundances were obtained by
direct bombardment of surface and interior parts of rocks with a very low
intensity 10 keV Cs beam. The Li and B distribution at the surface of a
breccia sample was studied and no isotopic variations caused by an admixture
of solar wind Li trapped at Li poor sites were found. Leaching experiments
for the possible extraction of solar wind trapped Li from the surface layers
of lunar dust grains yielded terrestrial Li isotopic ratios, indicating that
the proportion of solar Li is too low to be detected. Rock and dust samples
were dissolved and the elemental and the relative isotopic abundances
were measured without preceding chemical separation of the elements.
The possibilities of the application of the ion microprobe technique for
cosmochemical and cosmochronological studies are discussed.