SOME INTER-ELEMENT RELATIONSHIPS BETWEEN LUNAR ROCKS, FINES AND STONY METEORITES.

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A B S T R A C T

Analysis of Apollo 12 material confirms preliminary observations that there is a major compositional difference between rocks and fines which cannot be solely explained by simple addition or removal of major mineral phases.

A comparison of the composition of stony meteorites and lunar surface material indicates that correlations exist between the abundances of the so-called refractory elements. The lunar fines appear to be of particular interest in this respect. For example, the ratio of the two abundant lithophile refractory elements Ca and Al which is uniform in common stony meteorites (Ave. = 1.08) is very similar to that in the lunar fines. The value of Ca/Al in the two samples we have analysed (12032 and 12070) is 1.05 and 1.12, respectively.

The behaviour of the refractory elements in lunar materials and stony meteorites appears to be of considerable significance when considering the problem of the origin of these objects and their relationship.