

## LUNAR ASTROLOGY: U-Th DISTRIBUTIONS AND FISSION TRACK

### DATING OF LUNAR SAMPLES

D. Burnett, M. Monnin, M. Seitz, R. Walker, and D. Yuhas  
Lab. for Space Physics, Washington University, St. Louis, Mo.

Using fission star maps and a microprobe we have measured the distribution of U in rocks 12013, 12040, and in anorthositic fragments. The U in rock 12013 occurs in clustered grains of apatite, whitlockite, and zircon, with some grains containing  $> 1200$  ppm. In the coarse grained rock 12040 the U occurs in phosphate and in baddeleyite. These minerals are clustered in finely textured regions of high potassium content having an average of  $\sim 7$  ppm of U with individual grains to 2000 ppm. Fission stars, which are relatively rare in the anorthosites, are generally associated with phosphates. In all samples fission stars were found associated with an unidentified mineral containing high Zr and Ti and up to 2000 ppm U. Ratios of Th/U determined by  $\alpha$ -particle irradiation varied from 0.2 to 20 with an average of 3.9 in fifteen grains of 12013. Some of the calcium phosphates in these samples give tracks suitable for dating, with those in 12040 being superior to those in 12013. The apatite ages in 12013 are  $\sim 1.4 \times 10^9$  yrs. while those in 12040 are much older. Preliminary results on dating of buried inclusions in feldspar and pyroxene will also be presented.