

73219**High-Ti Mare Basalt
St. 3, 2.88 g****INTRODUCTION**

73219 is a medium dark gray (N4), small blocky sample (Fig. 1) that is a high-titanium mare basalt, the only mare basalt as an individual rock fragment from the South Massif or landslide. It is olivine microporphyritic. The sample is coherent and measures 1.5 x 1.3 x 1.0 cm. It is holocrystalline (macroscopically microporphyritic, with obvious peridotite-green olivine), homogeneous, and with a hackly surface on a very fine scale. It has many zap pits on two surfaces, with few to none on others. There is about 1 % of tiny drusy cavities, with the largest 0.2 mm. Small (2-4 mm) patches of dark glass suggest that 73219 might be locally vitrophyric. Five chips were taken (four from a single location) for one allocation.

PETROGRAPHY

Sample 73219 is a fine-grained olivine-bearing high-titanium mare basalt (Fig. 2). It was described with microprobe analyses of its mineral phases by Warner et al. (1975 b, c, 1976 a,b, 1978 f). The microprobe analyses are diagrammed as Figure 3. Warner et al. (1976a) reported a mode of 3.5% olivine, 42.1% pyroxene, 30.5% plagioclase, 2.5% silica, 19.6% ilmenite, 1.0% armalcolite, and 0.6% of other (mainly opaque) phases. They described the groundmass as consisting of irregular titanite crystals separated by intrafasciculate pyroxene-plagioclase intergrowths, with the olivines being subequant and hollow or skeletal. The oxides include common prismatic, ilmenite-mantled armalcolite, and ilmenite microphenocrysts with an armalcolite morphology.

CHEMISTRY

A bulk analysis by neutron activation techniques was reported by Warner et al. (1975b, c, 1976x) and by Laul et al. (1975b). It is reproduced here as Table 1 and the rare earth elements are plotted as Figure 3. The sample is unexceptional, and its slightly high alumina (compared with other Apollo 17 basalts) might merely reflect unrepresentative sampling in that the analyzed mass was only 258 mg.

PROCESSING

Five chips, four from a single location, were combined for the single allocation in 1974 from which a thin section and the chemical analyses were produced.



Figure 1: 73219, pre-processing. Cube and scale divisions are 1 centimeter. S-73-16963.

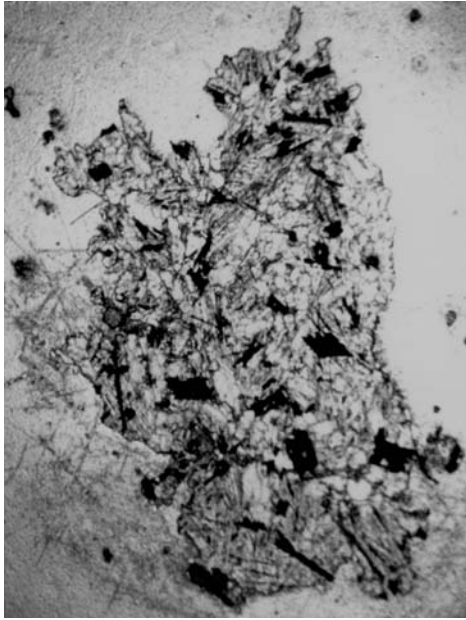


Figure 2: Photomicrograph of typical groundmass in 73219, 26. Clasts are seriate, and dominantly plagioclases. Plane transmitted light, field of view about 2 mm wide.

Table 1: Chemical analysis of 73219, 258 mg whole-rock sample.
(Warner et al., 1976a; Laul et al., 1976b)

| | |
|--------------------------------|-------|
| Split | ,1 |
| wt % | |
| SiO ₂ | 12.4 |
| TiO ₂ | 10.0 |
| Al ₂ O ₃ | 0.360 |
| Cr ₂ O ₃ | 19.3 |
| FeO | 0.244 |
| MnO | 7.0 |
| MgO | 11.2 |
| CaO | 0.33 |
| Na ₂ O | 0.04 |
| K ₂ O | |
| P ₂ O ₅ | |
| ppm | |
| Sc | 80 |
| V | 90 |
| Co | 16.6 |
| Ni | |
| Rb | |
| Sr | |
| Y | |
| Zr | |
| Nb | |
| Hf | 7.2 |
| Ba | |
| Th | |
| U | |
| Cs | |
| Ta | 1.4 |
| Pb | |
| La | 4.7 |
| Ce | 20 |
| Pr | |
| Nd | 20 |
| Sm | 7.8 |
| Eu | 1.66 |
| Gd | |
| Tb | 2.1 |
| Dy | 13 |
| Ho | |
| Er | |
| Tm | |
| Yb | 7.5 |
| Lu | 1.1 |
| | (1) |

References and methods:
(1) Laul et al. (1975b);
Warner et al.,(1975b);INAA

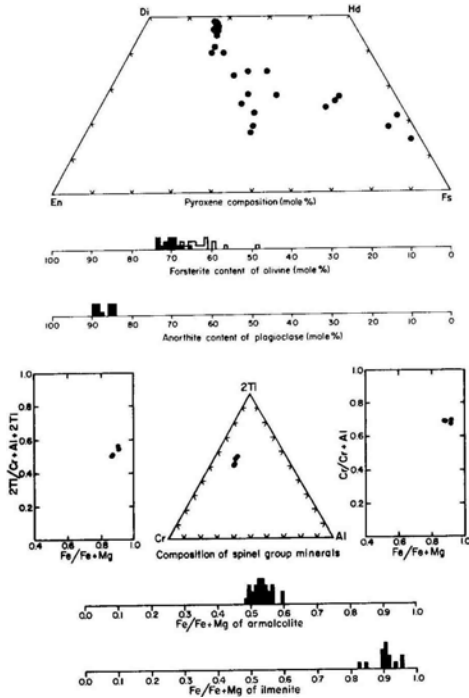


Figure 3: Rare earth elements in 73219; data of Warner et al. (1976a) and Laul et al. (1976b).