72736

Micropoikilitic Impact Melt Breccia
St. 2, 28.7 g

INTRODUCTION

72736 is a fore-grained clastbearing impact melt with a microgranular to micropoikilitic groundmass texture. Its chemistry is similar to the common low-K Fra Mauro melts that dominate the Apollo 17 highlands samples.

72736 was one of two tan breccias (LSIC 17, 1973) collected in the second rake sample from Station 2. It is 5.0 x 2.6 x 1.8 cm and medium dark gray (N4) (Keil et al., 1974). It is subangular and coherent, with few, non-penetrative, fractures, although the sample broke in half (Fig. 1). It has 1% vugs, and many zap pits. Matrix material (mainly less than 100 microns grain size) was estimated to compose 95% of the rock (Keil et al., 1974). Nearly all of the clast material in the 1 to 2 mm range is feldspathic.

PETROGRAPHY

72736 is a crystallized impact melt containing mineral clasts (Fig. 2) similar to 72549 but slightly finer-grained. The texture is somewhat blotchy, with finer-grained areas such as are apparent in Fig. 2a; these areas are not clasts. Lithic clasts are rare, although two larger ones (2 mm) constitute much of the thin section ,9. Warner et al. (1977 b, c; 1978f) described 72736 as a microgranular-micropoikilitic matrix breccia. It has a coarser grain size than the microsubophitic melts represented by 72535. The modal data (Table 1) shows a lower proportion of melt groundmass (72.2%) than other melt samples because of the two large clasts. The mineral clast population is dominated by plagioclase, similar to many other impact melt samples at the Apollo 17 site; two pink spinels with reaction coronas are in the thin section.

The groundmass plagioclase occurs as laths or stubby grains, many with rounded corners; mafic and opaque grains are equant to subequant. Microprobe analyses (Warner et al., 1978f) are shown in Figure 3. The groundmass olivine, which is prominent and euhedral, has a narrow range of compositions (Fo_{71-75}). Engelhardt (1979) tabulated ilmenite paragenetic features, inferring that ilmenite crystallization post-dated pyroxene.

The clasts are more rounded with more evidence of reaction (e.g. coronas) than in the finer-grained, subophitic melts. Plagioclase clasts dominate the mineral fragment population. The two larger lithic clasts are a flame-textured devitrified anorthosite (Fig 2b) and a microgranular breccia.

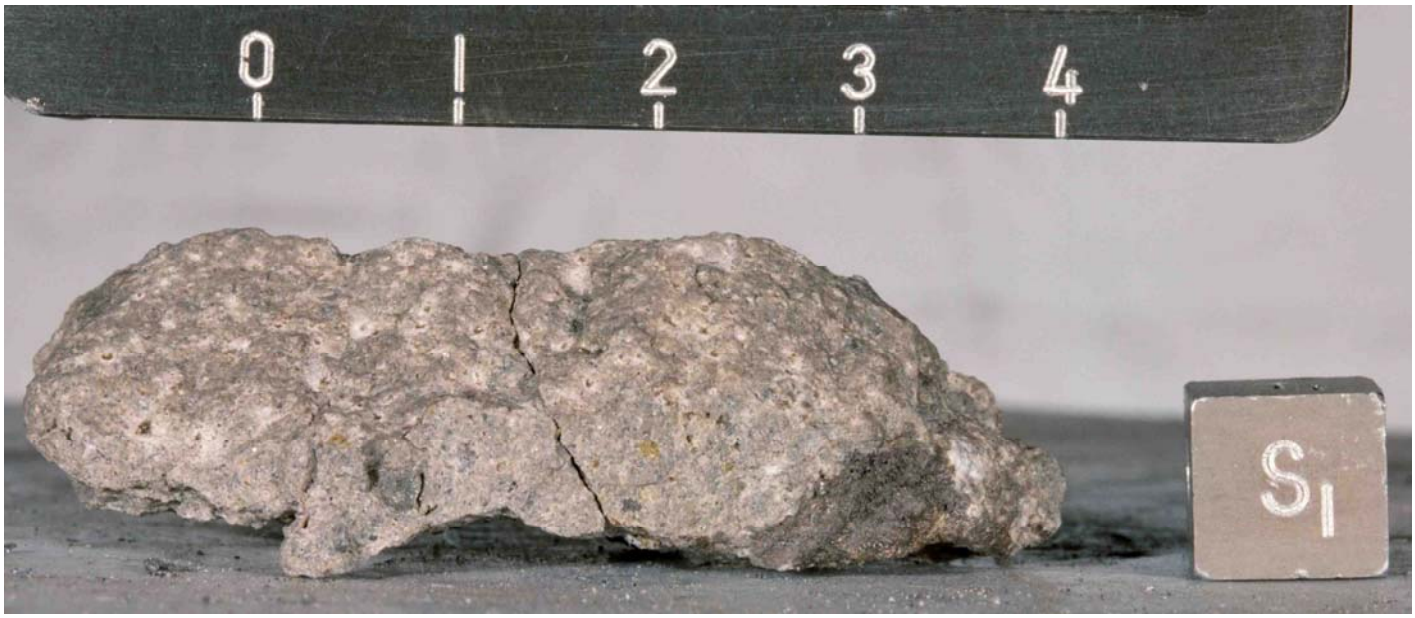
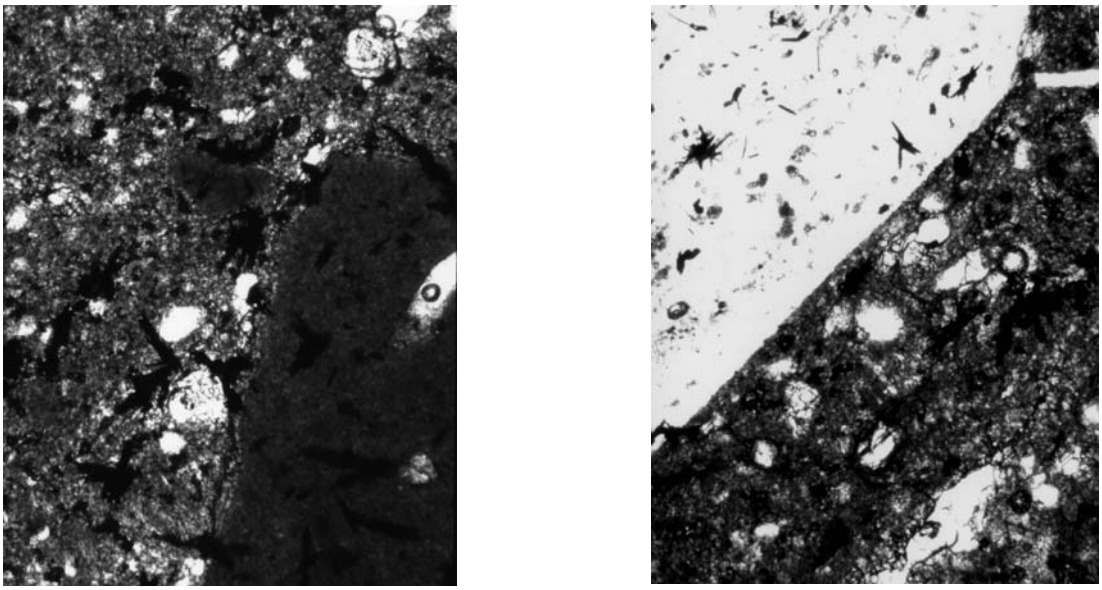


Figure 1: Sample 72736. Scale divisions in centimeters. S-73-19436.



a **b**

Figure 2: Photomicrographs of 72736, 9, showing general groundmass and mineral clasts Plane light, width of field about 1 mm a) shows blotchy groundmass, with ilmenite needles growing across apparent boundaries. b) shows sharp contact of flame-textured anorthositic clast with the groundmass.

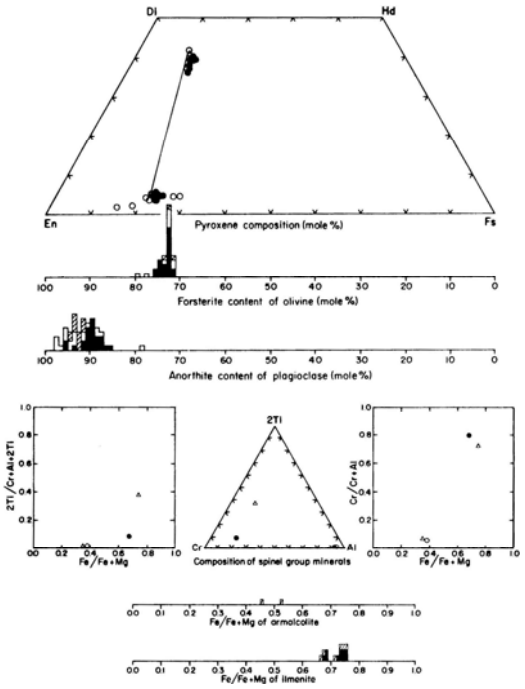


Figure 3: Microprobe analyses of minerals in 72736 (Warner et al., 197f). Filled symbols = matrix phases. In histograms, open symbols = mineral clasts and cross hatched = minerals in lithic clasts In other diagrams, open circles = mineral clasts and open triangles = minerals in lithic clasts.

CHEMISTRY

The only analysis is a defocused beam analysis for the major elements (Table 2). The analysis is similar to that of many other Apollo 17 impact melts (although apparently lower in TiO_2), and falls on the plagioclase-pyroxene cotectic in the 01-Si-An system.

PROCESSING

The sample broke into two pieces (, 5 and, 6) before chipping in 1974. Chips, 2 and, 3 (each consisting of two fragments) were taken from, 5. Only, 2 was used, producing thin sections, 9 and, 10.

Table 1: Modal analysis of 72736, 7 (Warner et al., 1977b).

	72736
Points counted	3097
Matrix	72.2
Mineral clasts	12.0
Lithic clasts	15.8
Mineral clasts	
Plagioclase	8.1
Olivine/pyroxene	3.8
Opaque oxide	tr
Metal/troilite	0.1
Other	—
Total	12.0
Lithic clasts	
ANT	0.9
Devitrified anorthosite	7.8
Breccia	7.1
Other	tr
Total	15.8
Percent of matrix (normalized to 100)	
Plagioclase	50.3
Olivine/pyroxene	46.2
Opaque oxide	2.1
Metal/troilite	0.6
Other	0.8

Table 2: Microprobe defocused beam analysis of matrix of 72736 (from Warner et al., 1977b).

wt %	
SiO_2	47.5
TiO_2	0.67
Al_2O_3	19.3
Cr_2O_3	0.16
FeO	7.7
MnO	0.13
MgO	11.6
CaO	11.9
Na_2O	0.72
K_2O	0.26
P2O5	0.27
Sum	100.2