72548

Micropoikilitic Impact Melt Breccia
St. 2, 29.3 g

INTRODUCTION

72548 is a fine-grained class bearing 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.

72548 was one of several blue-gray breccias (LSIC 17, 1973) collected in the fast rake sample from Station 2, adjacent to. Boulder 2. It is 4.1 x 2.5 x 2.0 cm and medium dark gray (N4) (Keil et al., 1974). It is subrounded and coherent, with a few non-penetrative fractures; it broke up during processing (Fig. 1). It lacks cavities, but has a few zap pits. Matrix material (mainly less than 100 micron grain size) was estimated to compose 94% of the rock (Keil et al., 1974). Most of the clast material is feldspathic.

PETROGRAPHY

72548 is a crystallized impact melt containing lithic and mineral clasts (Fig. 2). Warner et al. (1977b, c; 19780 described 72548 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 high proportion of melt groundmass (80%) and a clast population dominated by plagioclase, similar to many other impact melt samples at the Apollo 17 site. 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_{69-70}). Engelhardt (1979) tabulated ilmenite paragenetic

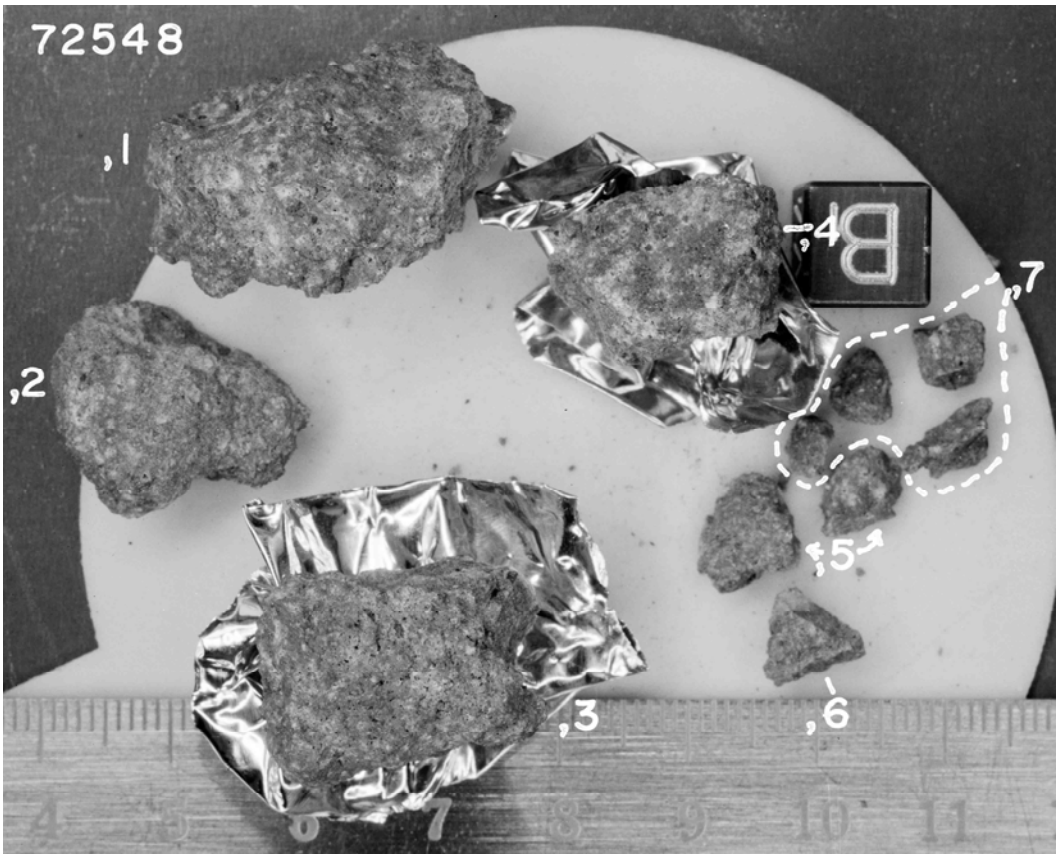

Figure 1: Sample 72548, showing post: processing subdivisions. Smallest scale divisions in millimeters. S-74-19023.

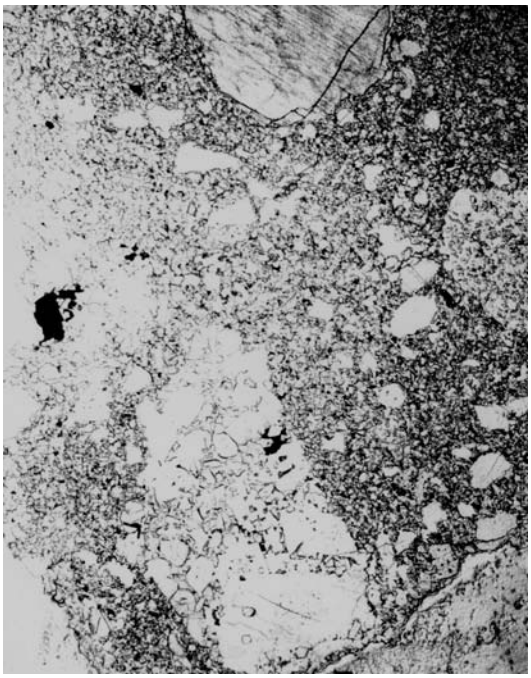

Figure 2: Photomicrograph of 72548, 11, showing general groundmass and some larger lithic and mineral clasts. Plane light, width of field about 1 mm.

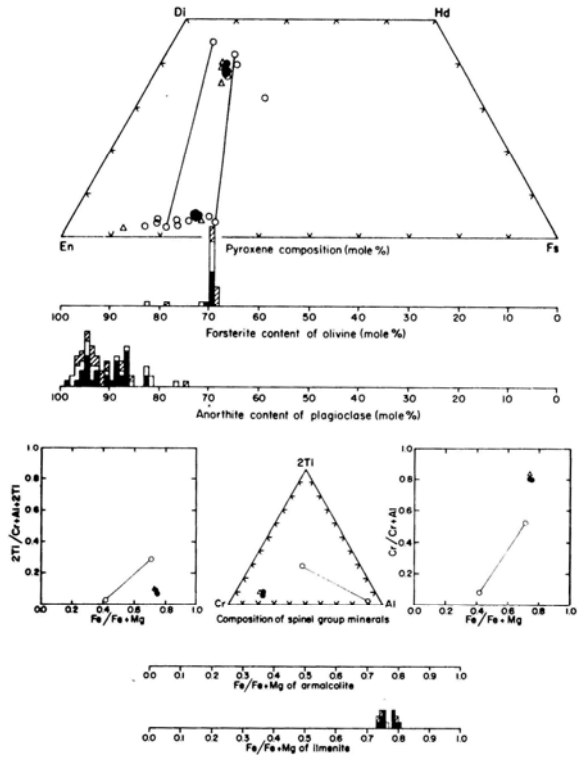

Figure 3: Microprobe analyses of minerals in 72548 (Warner et al., 1978f). Filled symbols = matrix phases. In histograms, open symbols = mineral clasts and cross-hatched = minerals in lithic clasts. In other diagrams, open circles = mineral clasts and open triangles = minerals in lithic clasts.

features, inferring that ilmenite crystallization was simultaneous with plagioclase and 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; pink spinets are present. A variety of feldspathic ithic clasts is present, including poikiloblastic norites and devitrified anorthositic fragments.

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, but is slightly more aluminous and thus falls of the plagioclase-pyroxene cotectic in the 01-Si-An system. However, this is probably a sampling effect.

PROCESSING

The sample was broken into several documented pieces during chipping in 1974 (Fig. 1). The only allocation was the two fragments, 5, which were made into two thin sections.

Table 1: Modal analysis of 72548,11 (Warner et al., 1977b).

	72548
Points counted	3595
Matrix	80.4
Mineral clasts	16.4
Lithic clasts	3.2
Mineral clasts	
Plagioclase	10.9
Olivine/pyroxene	5.4
Opaque oxide	tr
Metal/troilite	0.1
Other	—
Total	16.4
Lithic clasts	
ANT	2.3
Devitrified anorthosite	0.3
Breccia	0.4
Other	0.2
Total	3.2
Percent of matrix (normalized to 100)	
Plagioclase	54.4
Olivine/pyroxene	43.3
Opaque oxide	1.7
Metal/troilite	0.1
Other	0.5

Table 2: Microprobe defocused beam analysis of matrix of 72548
(from Warner et al., 1977b).

wt %	
SiO_2	48.1
TiO_2	1.47
Al_2O_3	20.3
Cr_2O_3	0.15
FeO	7.4
MnO	0.11
MgO	9.3
CaO	12.1
Na_2O	0.60
K_2O	0.27
P2O5	0.15
Sum	100.0*

*normalized.