72549

Micropoikilitic Impact Melt Breccia
St. 2, 21.0 g

INTRODUCTION

72549 is a fine-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.

72549 was one of several green-gray breccias (LSIC 17, 1973) collected in the first rake sample from Station 2, adjacent to Boulder 2. It is 2.8 x 2.5 x 2.4 cm and medium dark gray (N4) (Keil et al., 1974). It is subrounded and coherent, with no fractures (Fig. 1). It has 1 % vugs and a few zap pits. Matrix material (mainly less than 100 microns grain size) was estimated to compose 91 % of the rock (Kell et al., 1974). More than half of the clast material in the 1 to 2 mm range is feldspathic, the remainder consists of reddish brown and yellow-green mafic minerals.

PETROGRAPHY

72549 is a crystallized impact melt containing mineral clasts (Fig. 2); lithic clasts are rare. Warner et al. (1977b,c; 19780 described 72549 as a microgranular-micropoikilitic matrix breccia. It has a coarser grain size than the microsubophitic melts represented by 72535. While it is similar to 72548, the mafic minerals and opaque grains are coarser-grained. The modal data (Table 1) shows a high proportion of melt groundmass (84.3%) and a

Figure 1: Sample 72549. Smallest scale divisions in millimeters. S-74-19628.

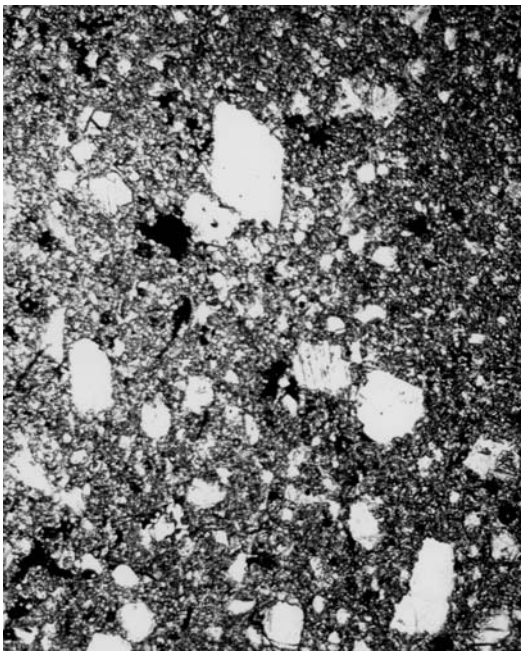

Figure 2: Photomicrograph of 72549, 7, showing general groundmass and mineral clasts. Plane light; width of field about l mm.

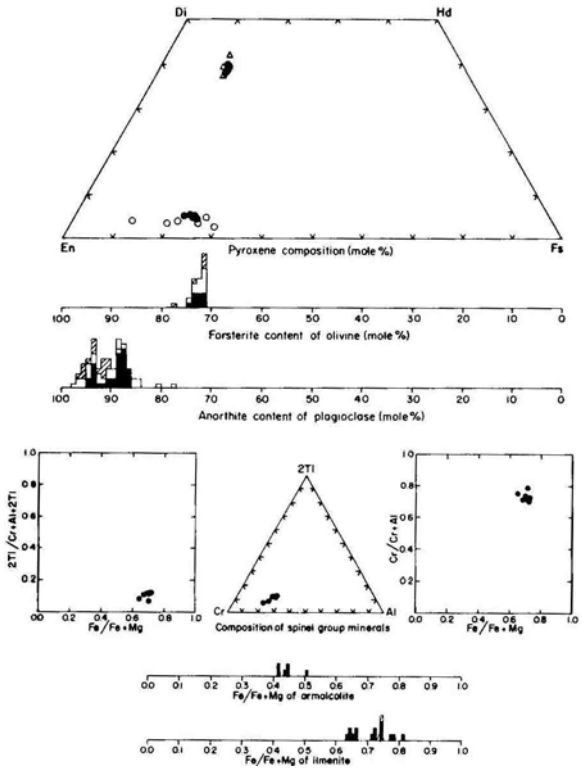

Figure 3: Microprobe analyses of minerals in 72549 (Warner et al., 1978D. Filled symbols = matrix phases. In histograms, open symbols = mineral clasts and cross-hatched = minerals in lithic clasts. In other diagrams, open circles = mineral clasts and open triangles = minerals in lithic clasts.

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. Armalcolite is present. 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 (Fo71-75)• The opaque mineral grains are larger than those in 72548. 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 rare lithic clasts are mostly recrystallized feldspathic 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, and falls on the plagioclase-pyroxene cotectic in the 01-Si-An system.

PROCESSING

The sample was broken into several documented pieces during chipping in 1974. The only allocation was the two fragments ,2 which were made into two thin sections.

Table 1: Modal analysis of 72549,7 (Warner et al., 1977b).

	72549
Points counted	2464
Matrix	84.3
Mineral clasts	14.2
Lithic clasts	1.5
Mineral clasts	
Plagioclase	10.1
Olivine/pyroxene	4.1
Opaque oxide	—
Metal/troilite	tr
Other	—
Total	14.2
Lithic clasts	
ANT	1.0
Devitrified anorthosite	0.2
Breccia	0.3
Other	—
Total	1.5
Percent of matrix (normalized to 100)	
Plagioclase	53.7
Olivine/pyroxene	43.7
Opaque oxide	1.4
Metal/troilite	0.4
Other	0.8

Table 2: Microprobe defocused beam analysis of matrix of 72549 (from Warner et al., 1977b).

wt %	
SiO_2	48.8
TiO_2	0.95
Al_2O_3	19.1
Cr_2O_3	0.17
FeO	7.8
MnO	0.11
MgO	11.2
CaO	12.0
Na_2O	0.58
K_2O	0.27
P2O5	0.35
Sum	101.4