72355

Micropoikilitic Impact Melt Breccia
St. 2, 367.4 g

INTRODUCTION

72355 is a fine-grained, clast-bearing impact melt with a poikilitic texture. It was collected to sample the matrix of Boulder 2, Station 2 (see section on Boulder 2, Station 2). It is identical in all analyzed respects with all other samples from Boulder 2. Although no definitive geochronological data exist, a general assumption is that 72355 crystallized at the same time as other melts of similar petrography and chemistry at the Apollo 17 site, i.e. 3.86 Ga ago. The sample, 10 x 6.5 x 6.5 cm, is blocky/angular and light olive gray (5Y 6/1) (Fig. 1). It is tough, homogeneous (although apparently less so than other Boulder 2 samples) and has a few non-penetrative fractures. Clasts larger than 1 mm compose less than about 10% of the rock. The exposed surface (mainly N) of 72355 has a patina and many zap pits. Vugs form 3-4% of the rock, with some as large as several millimeters. All have crystal linings, and the larger vugs have larger crystals.

72355 is so similar to other samples from Boulder 2 that it will not be described here in detail, but specific studies are referenced. It was studied mainly under a consortium led by the Caltech group (Dymek *et al*., 1976a), but not in as much detail as 72395. The description of 72395 can be assumed as a description of 72355. Only a few chips were taken from the sample for allocation and it was never sawn.

PETROGRAPHY

All five samples from Boulder 2 are very similar in petrography. Dymek et al. (1976a) gave descriptions of the petrography subsequent to a briefer description by Albee et al. (1974b) and Dymek et al. 0976b). They did not give individual

Figure 1: B face of sample 72355. The exposed surface (at the top) has a darker-colored patina; the lower right area is broken surface. Scale in centimeters. S-73-17285.

descriptions of the petrography, and that practice is for the most part followed here; thus, for a description and mineral diagrams of 72355 matrix see sample 72395.

Dymek et al. (1976a,c) described the sample, following a briefer description by Albee et al. (1974b), noting that the matrix was similar to the other Boulder 2 samples (Fig. 2). Simonds et al. (1974) described the sample as clast-rich ophitic, with feldspars 10 to 50 microns and mafic grains 10 to 100 microns, showing a photomicrograph. Engelhardt (1979) tabulated the paragenesis as one with ilmenite crystallizing later than pyroxene.

CHEMISTRY

Chemical analyses of the bulk matrix are given in Table 1, with the rare earth elements plotted in Figure 3. The chip analyzed by Laul and Schmitt (1974a,b,c) was an exterior chip, but is in any case similar in chemistry to the other Boulder 2 matrix samples. The siderophiles (equivalent to 2.4% chondritic contamination) are assigned to Group 2, correlated with Serenitatis.

RADIOGENIC ISOTOPES AND CHRONOLOGY

Tera et al. (1974a) reported Rb and Sr isotopic data for a matrix split without specific discussion. $^{87}Rb/^{86}Sr$ (0.1523) and $^{87}Sr/^{86}Sr$ (0.70855+1-6) are similar to those of the matrix of the other Boulder 2 samples, and correspond with $_{TBABI}$ of 4.29 Ga.

EXPOSURE

Keith et al. (1974a,b) tabulated cosmogenic nuclide gamma ray count rate data, without specific discussion.

PROCESSING

A few small chips were taken for allocations, but the sample was never sawn or extensively subdivided.

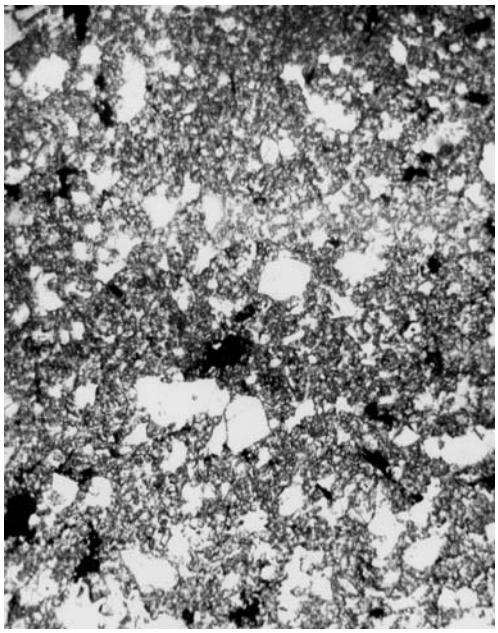

Figure 2: Photomicrograph of 72355,4, showing poikilitic impact melt matrix Plane transmitted light. Field of view about 1 mm wide.

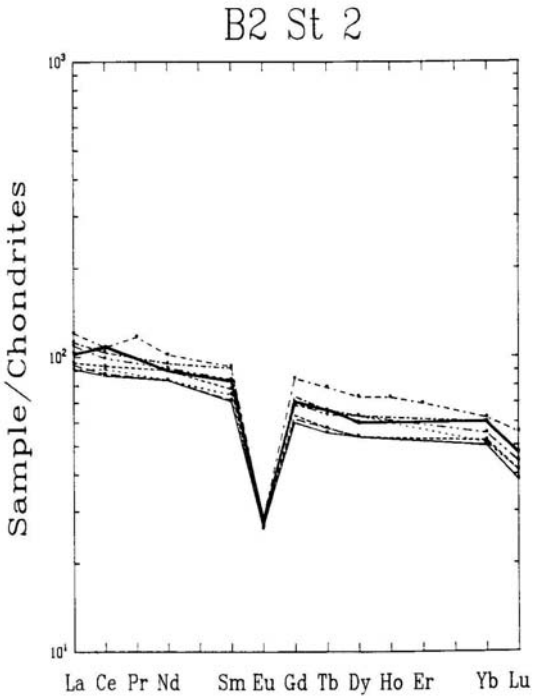

Figure 3: Rare earth element abundances of matrix samples in 72355 (bold line) with other Boulder 2 data for comparison.

Table 1: Chemical analyses of bulk rock/matrix of 72355.

Split	,7	.7	.0	,5	Split
wt %					wt %
SiO_2					SiO_2
TiO_2	1.6				TiO_2
Al_2O_3	18.8				Al_2O_3
Cr_2O_3	0.193				Cr_2O_3
FeO	8.7				FeO
MnO	0.114				MnO
MgO	12				MgO
CaO	11.1				CaO
Na_2O	0.70				Na_2O
K_2O	0.33		0.304	0.3828	K_2O
P_2O_5					P_2O_5
ppm					ppm
Sc	16				Sc
V	50				V
Co	37	34			Co
Ni	340	310			Ni
Rb		8.0		8.65	Rb
Sr		157		164.7	Sr
Y					Y
Zr	500				Zr
Nb					Nb
Hf	12				Hf
Ba	280	(a)380			Ba
Th	6.1		5.3		Th
U	1.8	2.00	1.39		U
Cs		0.280			Cs
Ta	1.6				Ta
Pb					Pb
La	34				La
Ce	95				Ce
Pr					Pr
Nd	54				Nd
Sm	15.0				Sm
Eu	1.92				Eu
Gd					Gd
Tb	3.1				Tb
Dy	19				Dy
Ho					Ho
Er					Er
Tm					Tm
Yb	12				Yb
Lu	1.6				Lu
Li					Li
Be					Be
B					B
C					C
N					N
S					S
F					F
Cl					Cl
Br					Br
Cu					Cu
Zn		2.4			Zn
ppb					ppb
Au	3	4.9			Au
Ir	10	7.3			Ir
I					I
At					At
Ga					Ga
Ge					Ge
As					As
Se		75			Se
Mo					Mo
Tc					Tc
Ru					Ru
Rh					Rh
Pd					Pd
Ag		0.87			Ag
Cd		5.1			Cd
In		0.2			In
Sn					Sn
Sb		2.2			Sb
Te					Te
W					W
Re		0.73			Re
Os					Os
Pt					Pt
Hg					Hg
Tl		0.24			Tl
Bi					Bi
	(1)	(1)	(2)	(3)	

References and methods:
(1) Laul and Schmitt (1974a,b,c); INAA/RNAA
(2) Keith et al. (1974a,b); Gamma ray spectroscopy
3) Tera et al. (1974a); ID/MS

Notes:
(a) listed as Bd in original reference.