72355

Impact melt Breccia

367.4 grams

Figure 1: Photo of boulder "2" on the landslide from the South Massiff, Apollo 17, showing location of 72355. AS17-137-20912.

Figure 2: Photo of 72355 with numerous zap pits. Cube is 1 cm. S73-15355.

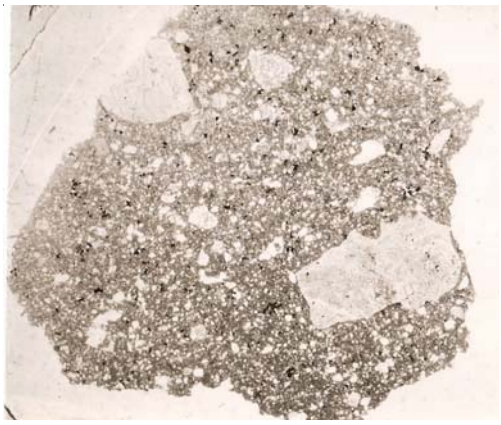

Figure 3: Thin section 72355,4 showing clasts. About 2 cm across.

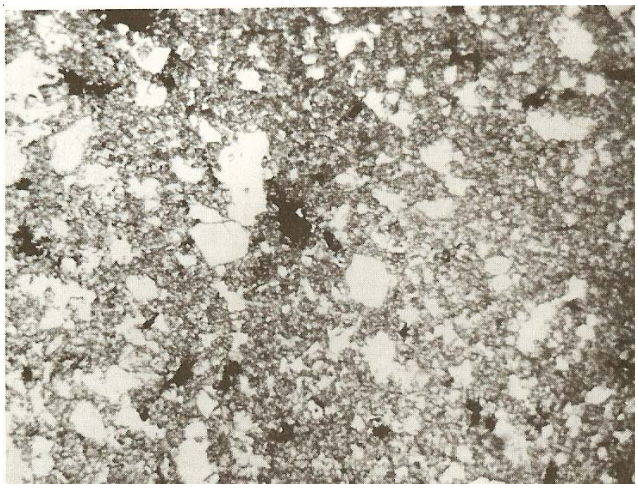

Figure 4: Thin section photomicrograph of 72355 matrix. Field of view is 1.5 mm.

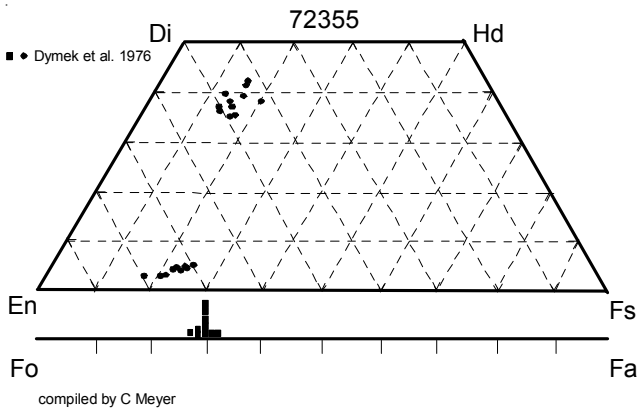

Figure 5: Pyroxene and olivine composition of 72355 (from Dymek et al. 1976).

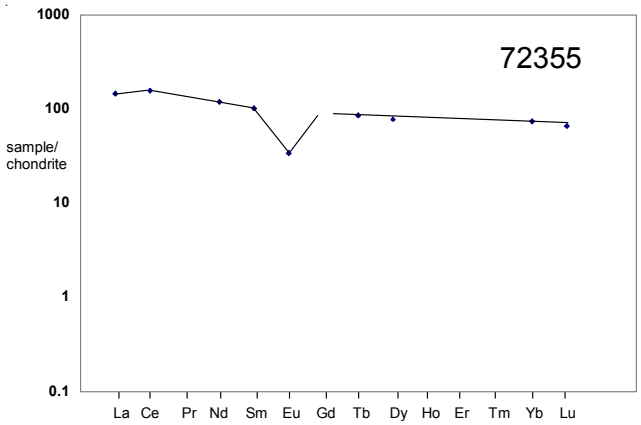

Figure 6: Normalized rare-earth-element diagram for 72355.

Introduction

72355 was collected from the side of boulder #2 at station 2 on the landslide off of the South massif (figure 1). It proved to be the same material as 72395 and the other samples of this boulder (i.e. impact melt breccia). (see transcript for this boulder under 72335)

Petrography

Dymek et al. (1976) and Ryder (1993) found tha the texture and mineralogy of this sample was the same as for 72315 and 72395. The exterior surface has a thick patina, with prominent zap pits (figure 2). The interior (figure 7) reveals about 5 % vugs and void space. There are no prominant lithic clasts.

Mineralogy

Olivine: The compositon of olivine grains is tightly grouped at $Fo_{70\pm2}$.

Pink Spinel: Pink spinel grains are Mg- and Al-rich in the center and zone to more Cr-rich at the edge.

Pyroxene: The composition of pyroxene is depicted in figure 5.

Plagioclase: Plagioclase in 72315 often has undulatory extinction, and is sometimes feathery (maskelynite devitrification). Large grains have overgrowth rims with olivine "necklaces". Plagioclase ranges in composition from $Or_{0.2}Ab_2An_{98}$ to about $Or_3Ab_{22}An_{75}$ (Dymek et al. 1976).

Ilmenite: Ilmenite in 72355 is evenly dispersed in the matrix, has a seive-like texture and is Mg-rich.

Metallic Iron: Metallic iron is meteoritic in origin (see figure 7 in section on 72395).

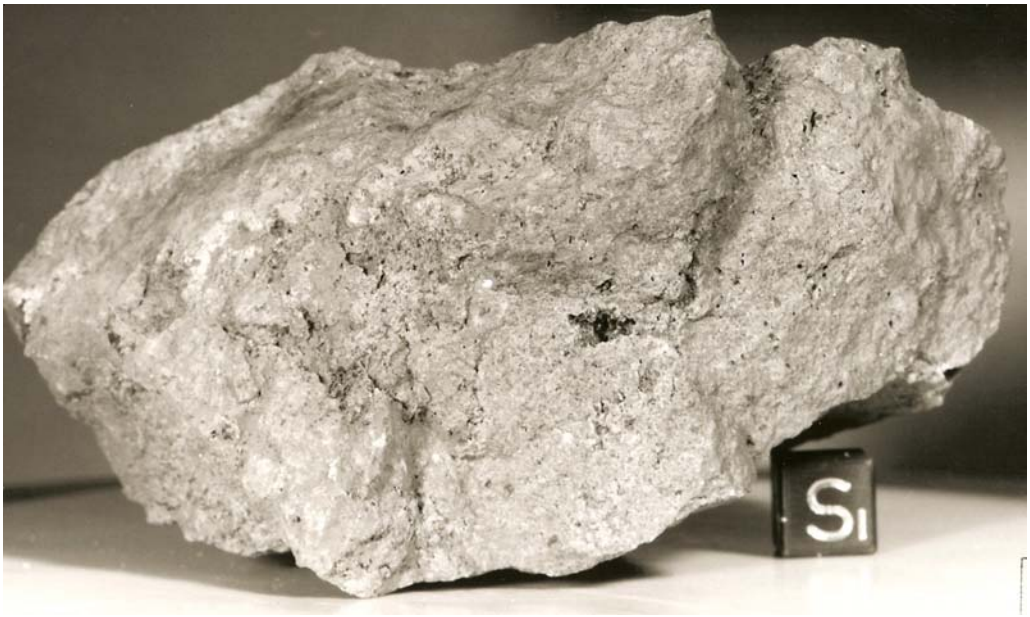

Figure 7: Photo of freshly broken surface of 72355. Cube is 1 cm. S73-17273.

Chemistry

The chemical composition of 72355 is found to be identical to that of other samples of this boulder (see 73215).

Radiogenic age dating

The age of 72355 is ~ 3.9 b.y. as measured for 72395. Tera et al. (1974) determined a Rb-Sr model age of 4.38 b.y.

Cosmogenic isotopes and exposure ages

Keith et al. (1974) determined the cosmic-ray-induced activity of ^{26}Al = 84 dpm/kg., ^{22}Na = 87 dpm/kg, ^{54}Mn = 66 dpm/kg, ^{56}Co = 58 dpm/kg and ^{48}V = 12 dpm/kg.

Processing

Boulder 2 was a "Wasserburg consortium". Ryder (1993) included this sample in his catalog. In 2004 is was broken in half to get a fresh sample (figure 8).

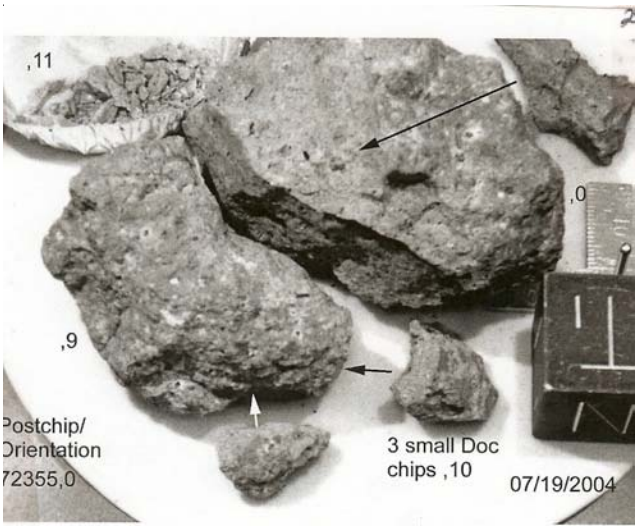

Figure 8: Processing photo of 72355.

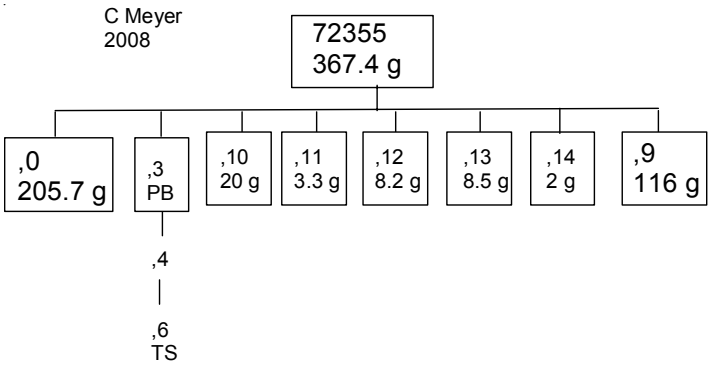

Table 1. Chemical composition of 72355.

reference	Laul74		Keith74		Tera 74	
weight						
SiO2 %						
TiO2	1.6	(a)				
Al2O3	18.8	(a)				
FeO	8.7	(a)				
MnO	0.114	(a)				
MgO	12	(a)				
CaO	11.1	(a)				
Na2O	0.7	(a)				
K2O	0.33	(a)	0.305	(b)	0.38	(c)
P2O5						
S %						
sum						
Sc ppm	16	(a)				
V	50	(a)				
Cr	1320	(a)				
Co	34	(a)				
Ni	310	(a)				
Cu						
Zn	2.4	(a)				
Ga						
Ge ppb						
As						
Se	75	(a)				
Rb	8	(a)			8.65	(c)
Sr	157	(a)			165	(c)
Y						
Zr	500	(a)				
Nb						
Mo						
Ru						
Rh						
Pd ppb						
Ag ppb	0.87	(a)				
Cd ppb	5.1	(a)				
In ppb	0.2	(a)				
Sn ppb						
Sb ppb	2.2	(a)				
Te ppb						
Cs ppm	0.28	(a)				
Ba	280	(a)				
La	34	(a)				
Ce	95	(a)				
Pr						
Nd	54	(a)				
Sm	15	(a)				
Eu	1.92	(a)				
Gd						
Tb	3.1	(a)				
Dy	19	(a)				
Ho						
Er						
Tm						
Yb	12	(a)				
Lu	1.6	(a)				
Hf	12	(a)				
Ta	1.6	(a)				
W ppb						
Re ppb	0.73	(a)				
Os ppb						
Ir ppb	7.3	(a)				
Pt ppb						
Au ppb	4.9	(a)				
Th ppm	6.1	(a)	5.3	(b)		
U ppm	2	(a)	1.39	(b)		

technique: (a) INAA, RNAA, (b) radiaion counting, (c) IDMS

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