15017

Glass Sphere

9.8 grams

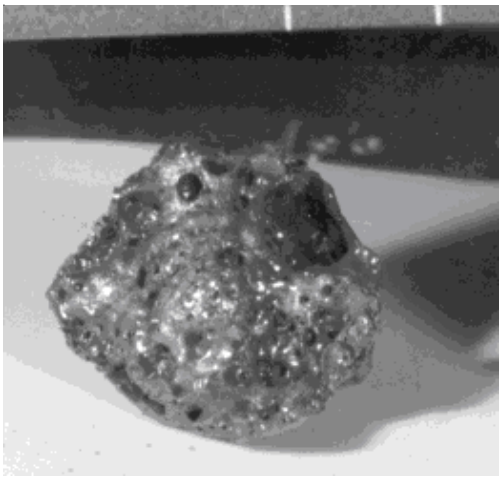

Figure 1: Sample 15017. NASA S71-43632. Scale is 1 cm.

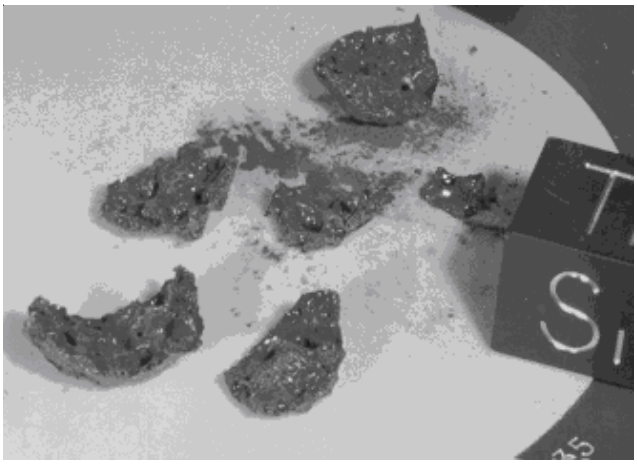

Figure 2: Sample 15017 after breaking. NASA S71-43662. Cube is 1 inch.

Figure 3: Photo of 15017. AS15-86-11604

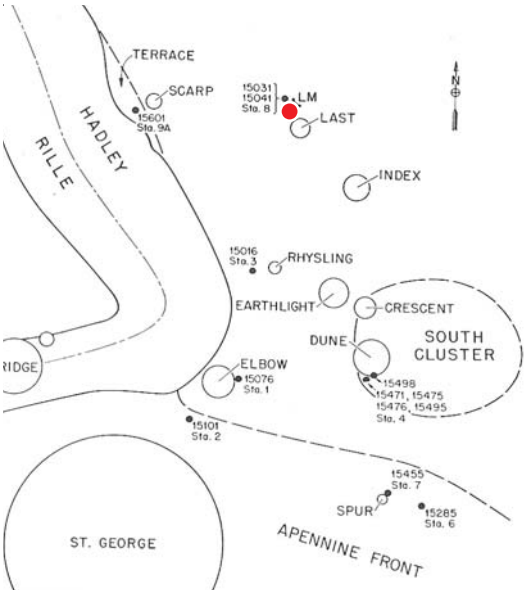

Figure 4: Location of 15017 on map of Apollo 15.

Introduction

15017 was seen from the Lunar Module and collected at beginning of second EVA. The astronauts called it a "little glass Aggie". However, it was hollow and broke apart on the return to Earth (figure 1).

Petrography

Ryder (1985) gives a description of 15017. It is a very vesicular glass with numerous included mineral grains. Only the outside surface was smooth and shiny. Some interior vesicles were open to the outside. There were a few zap pit on some of the surface, but little accretionary material.

In thin section the glass is pale green and banded.

Chemistry

15017 appears to be heterogeneous. Fabel et al. (1972) reported analyses for glass in 15017 with a range of composition (Al_2O_3 = 7.5 – 12.5). Wanke et al. (1976) and Ganapathy et al. (1973) have also reported bulk analyses (table 1).

Other Studies

Fleischer et al. (1973) determined the density of nuclear tracks as a function of depth. Hartung et al. (1973) and Morrison et all. (1973) reported the flux of microcrater impacts on glass surfaces of 15017 (figure 5).

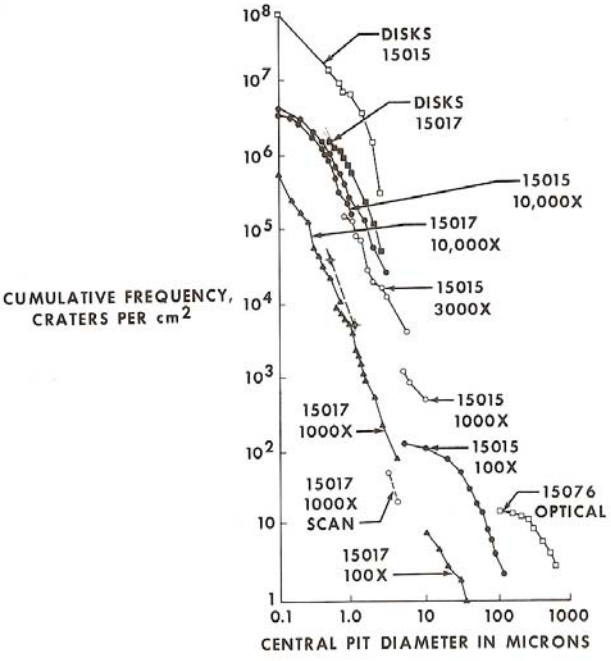

Figure 5: Density distribution of micrometeorite craters on fresh glass surface of 15017 (Morrison et al.1973).

References for 15017

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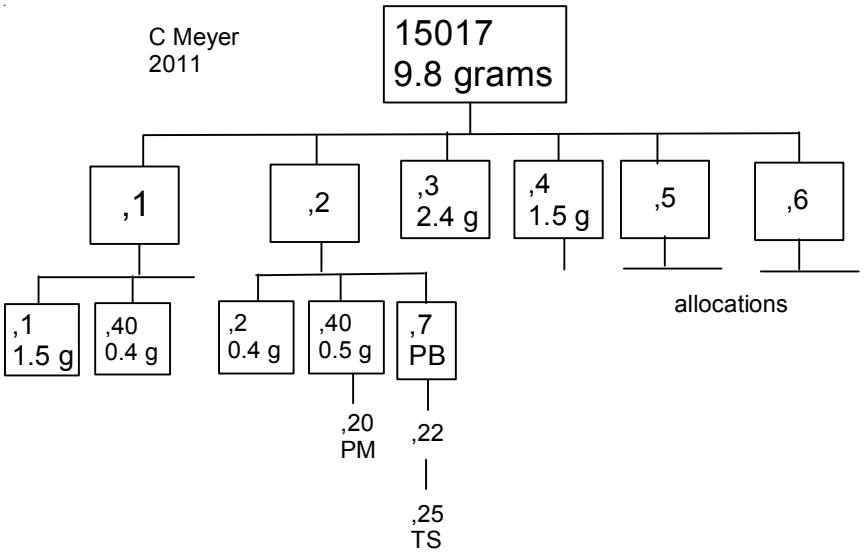

Table 1. Chemical composition of 15017.

reference	Ganapathy73		Wanke 76	
weight				
SiO2 %			49.9	(b)
TiO2				
Al2O3			14.9	(b)
FeO			14.3	(b)
MnO			0.2	(b)
MgO			10.7	(b)
CaO			9.74	(b)
Na2O			0.44	(b)
K2O			0.21	(b)
P2O5				
S %				
sum				
Sc ppm			29.9	(b)
V				
Cr			3000	(b)
Co	45	(a)	40.6	(b)
Ni			260	(b)
Cu				
Zn	5.8	(a)		
Ga				
Ge ppb	241	(a)		
As				
Se	363	(a)		
Rb	2.2	(a)		
Sr			135	(b)
Y				
Zr			437	(b)
Nb				
Mo				
Ru				
Rh				
Pd ppb				
Ag ppb	2.3	(a)		
Cd ppb	4.2	(a)		
In ppb	1.95	(a)		
Sn ppb				
Sb ppb	4.7	(a)		
Te ppb	20	(a)		
Cs ppm	0.273	(a)		
Ba			300	(b)
La			28.2	(b)
Ce			77.7	(b)
Pr				
Nd			56	(b)
Sm			12.7	(b)
Eu			1.42	(b)
Gd				
Tb			2.79	(b)
Dy			16.8	(b)
Ho			3.7	(b)
Er				
Tm				
Yb			9.49	(b)
Lu			1.32	(b)
Hf			10.3	(b)
Ta			1.26	(b)
W ppb				
Re ppb	0.87	(a)		
Os ppb				
Ir ppb	9.1	(a)	8	(b)
Pt ppb				
Au ppb	2.9	(a)		
Th ppm			3.93	(b)
U ppm	1.41	(a)		
technique:	*(a) RNAA, (b) various*			

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