

**68535** – 8 grams  
**68536** – 1.8 grams  
Impact Melt Breccia with glass



*Figure 1: Photo of 68535 with mm scale. S72-49572*



*Figure 2: Photo of 68536 with mm scale. S72-51253*

### **Introduction**

68535 and 68536 are rake samples collected from station 8 soil in an area thought of have disturbance from South Ray Crater – see section on 68501. They are a collection of impact melt fragments cemented by a black glass. The impact melt is aphanitic with abundant feldspar laths. The glass is more aluminous

then the lithic fragments. There are two thin sections of 68536, but none for 68535.

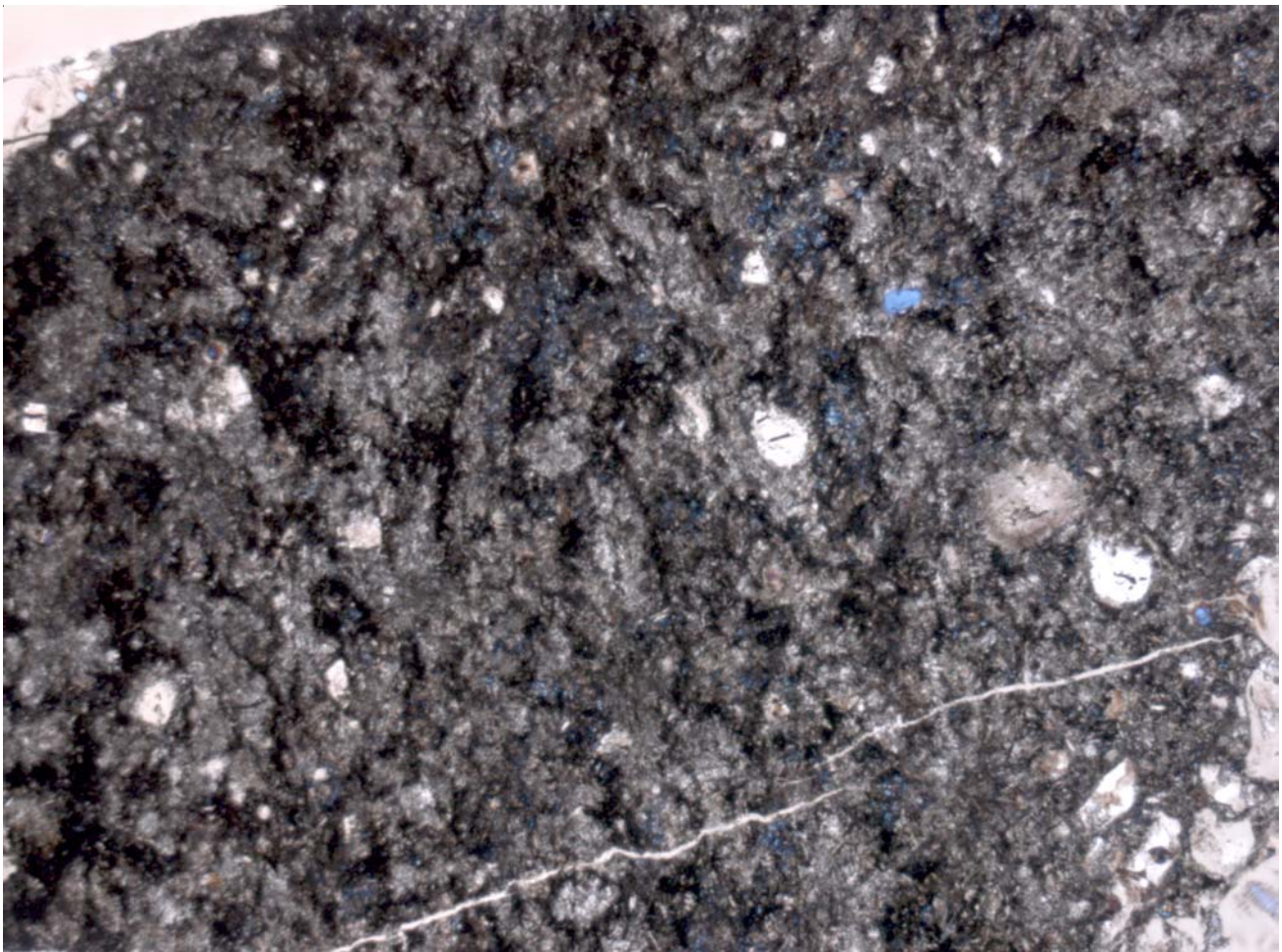
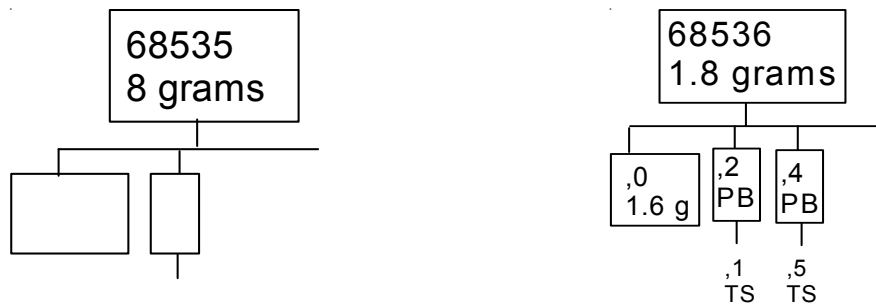


Figure 3: Photomicrograph of thin section of 68536. 2 mm across



**Table 1. Chemical composition of 78536**

reference	i-melt See86	glass Morris86	i-melt Ryder82	
<i>weight</i>				
SiO <sub>2</sub> %	45.38	(a) 44.73	(b)	
TiO <sub>2</sub>	0.24	(a) 0.14	(b)	
Al <sub>2</sub> O <sub>3</sub>	26.62	(a) 31.61	(b)	
FeO	4.39	(a) ~3	(b) 11.2	(b)
MnO	0.06	(a)		
MgO	7.89	(a) 2.29	(b)	
CaO	14.95	(a) 17.7	(b)	
Na <sub>2</sub> O	1.26	(a) 0.4	(b) 0.51	(b)
K <sub>2</sub> O	0.06	(a) 0.08	(b)	
P <sub>2</sub> O <sub>5</sub>				
S %				
<i>sum</i>				
Sc ppm		6.74	(b) 9.3	(b)
V				
Cr		501	(b)	
Co		19	(b) 210	(b)
Ni		291	(b)	
Cu				
Zn				
Ga				
Ge ppb				
As				
Se				
Rb				
Sr				
Y				
Zr				
Nb				
Mo				
Ru				
Rh				
Pd ppb				
Ag ppb				
Cd ppb				
In ppb				
Sn ppb				
Sb ppb				
Te ppb				
Cs ppm				
Ba		123	(b)	
La		11.05	(b) 23.6	(b)
Ce		33	(b)	
Pr				
Nd				
Sm		5.2	(b) 10.9	(b)
Eu		1.04	(b) 1.4	(b)
Gd				
Tb		0.9	(b)	
Dy				
Ho				
Er				
Tm				
Yb		3.35	(b)	
Lu		0.46	(b) 1.1	(b)
Hf		2.96	(b)	
Ta		0.4	(b)	
W ppb				
Re ppb				
Os ppb				
Ir ppb				
Pt ppb				
Au ppb				
Th ppm		1.45	(b)	
U ppm		0.39	(b)	
<i>technique: (a) DBA, (b) INAA</i>				

**References for 68535 and 536**

Butler P. (1972a) Lunar Sample Information Catalog Apollo 16. Lunar Receiving Laboratory. MSC 03210 Curator's Catalog. pp. 370.

Hunter R.H. and Taylor L.A. (1981) Rust and schreibersite in Apollo 16 highland rocks: Manifestations of volatile-element mobility. *Proc. 12<sup>th</sup> Lunar Planet. Sci. Conf.* 253-259.

Korotev R.L. (1994) Compositional variation in Apollo 16 impact melt breccias and inferences for the geology and bombardment history of the central highlands of the Moon. *Geochim. Cosmochim. Acta* **58**, 3931-3969.

LSPET (1973b) The Apollo 16 lunar samples: Petrographic and chemical description. *Science* **179**, 23-34.

LSPET (1972c) Preliminary examination of lunar samples. In Apollo 16 Preliminary Science Report. NASA SP-315, 7-1—7-58.

Morris R.V., See T.H. and Horz F. (1986) Composition of the Cayley Formation at Apollo 16 as inferred from impact melt splashes. *Proc. 17<sup>th</sup> Lunar Planet. Sci. Conf.* in J. Geophys. Res. **90**, E21-E42.

Ryder G. and Norman M.D. (1980) Catalog of Apollo 16 rocks (3 vol.). Curator's Office pub. #52, JSC #16904

Ryder G. and Seymour R. (1982) Chemistry of Apollo 16 impact melts: Numerous melt sheets, lunar cratering history and the Cayley-Descartes distinction (abs). *Lunar Planet. Sci.* **XIII**, 673-674. Lunny Institute in Houston.

See T.H., Horz F. and Morris R.V. (1986) Apollo 16 impact-melt splashes: Petrography and major-element composition. *Proc. 17<sup>th</sup> Lunar Planet. Sci. Conf.* in J. Geophys. Res. **91**, E3-E20.

Smith J.V. and Steele I.M. (1972c) Apollo 16 rake samples 67515 to 68537: Sample classification, description and inventory. Curator Catalog, JSC

Steele I.M. and Smith J.V. (1973) Mineralogy and petrology of some Apollo 16 rocks and fines: General petrologic model of the moon. *Proc. 4<sup>th</sup> Lunar Sci. Conf.* 519-536.

Sutton R.L. (1981) Documentation of Apollo 16 samples. In Geology of the Apollo 16 area, central lunar highlands. (Ulrich et al. ) U.S.G.S. Prof. Paper 1048.