

64559
Impact Melt Breccia
21.8 grams

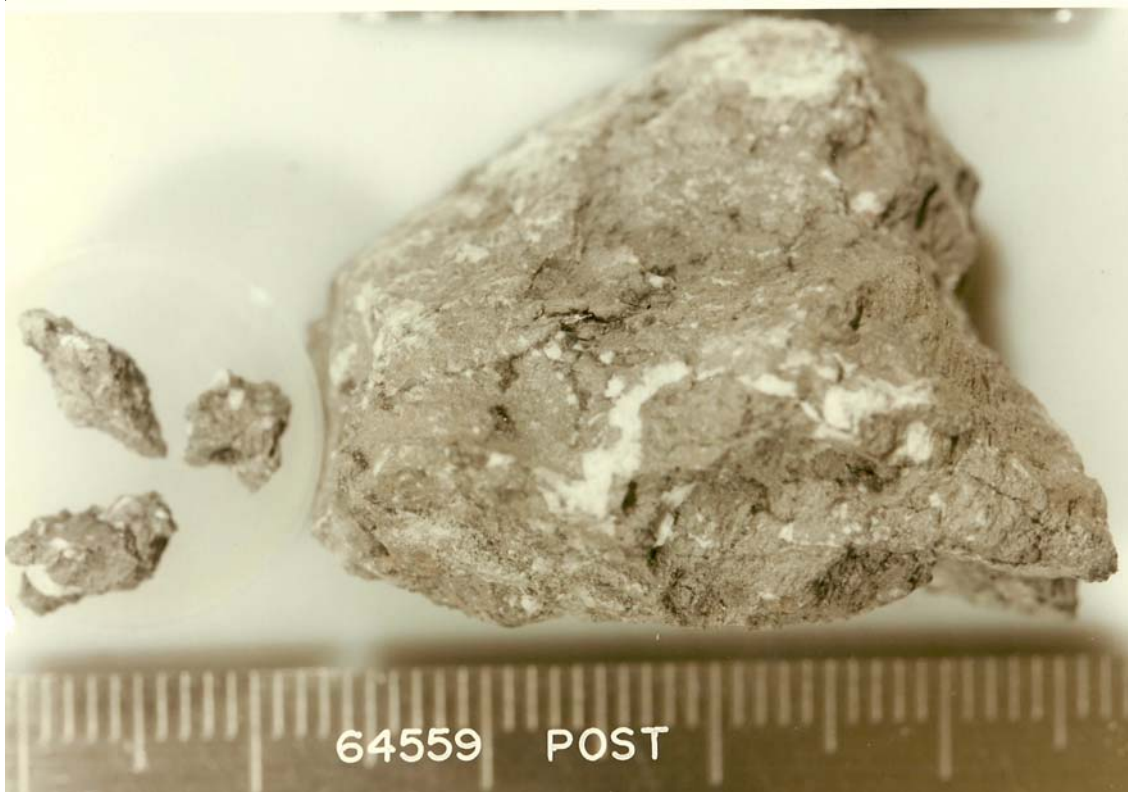


Figure 1: Photo of 64559. Cm/mm scale. S72-55387.

Introduction

64559 is a rake sample from Stone Mountain – see section on 64501. It appears to be a piece of the dark lithology that is part of the abundant dimict breccias from that location (64535 etc).

Petrography

The texture of 64559 is that of a basalt, but since it includes clasts of anorthite, it is an impact melt breccias (figure 2)

Chemistry

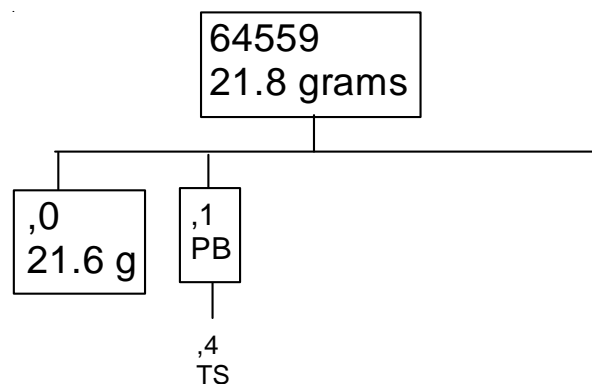
The composition of 64559 is similar to that of dark lithology of the dilithologic breccias from station 4 (table). It is trace element rich. Most important is that the Ni, Ir and Au are high indicating that it is an impact melt rock.

Other Studies

Pearce and Simonds 1974) studied the magnetic properties. Gooley et al. (1973) reported the Ni and Co in the metallic iron.

Processing

There is only one thin section.



*Figure 2: Photomicrograph
of thin section 64559,4.
Width of field is 2 mm.*

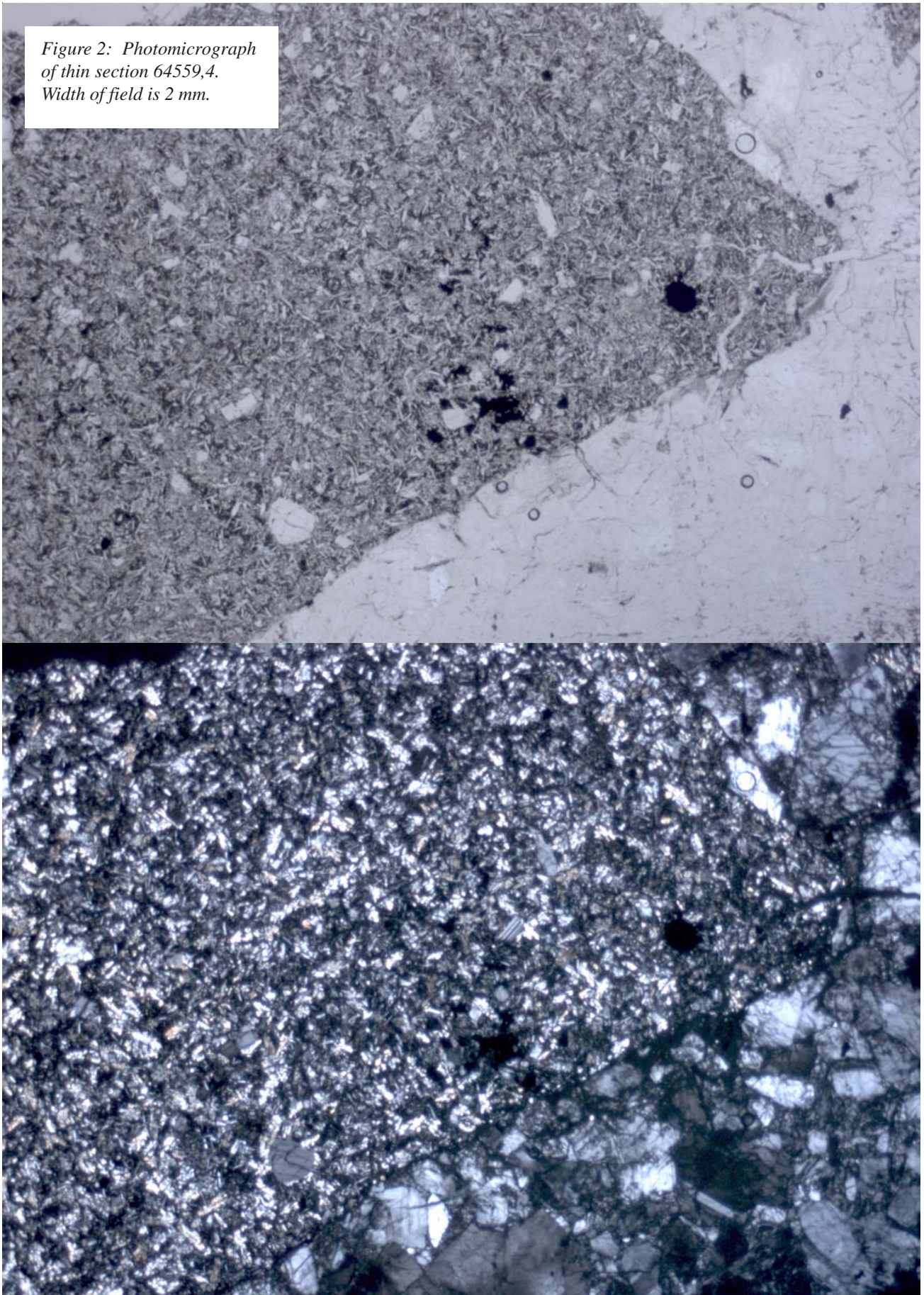


Table 1. Chemical composition of 64559

reference	McKinley83		
weight			
SiO ₂ %		47.6	(b)
TiO ₂	0.9	(a) 0.8	(b)
Al ₂ O ₃	20.7	(a) 21.6	(b)
FeO	9.4	(a) 5.68	(b)
MnO	0.085	(a) 0.08	(b)
MgO	11.6	(a) 10.4	(b)
CaO	12.1	(a) 12.7	(b)
Na ₂ O	0.506	(a) 0.54	(b)
K ₂ O	0.19	(a) 0.22	(b)
P ₂ O ₅			
S %			
sum			
Sc ppm	11.3	(a)	
V	32	(a)	
Cr		(a)	
Co	94	(a)	
Ni	1560	(a)	
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	300	(a)	
La	29.2	(a)	
Ce	75	(a)	
Pr			
Nd	47	(a)	
Sm	13.8	(a)	
Eu	1.67	(a)	
Gd			
Tb	2.63	(a)	
Dy	15.1	(a)	
Ho			
Er			
Tm			
Yb	8.96	(a)	
Lu	1.31	(a)	
Hf	9.3	(a)	
Ta	1.2	(a)	
W ppb			
Re ppb			
Os ppb			
Ir ppb	42	(a)	
Pt ppb			
Au ppb	36	(a)	
Th ppm	4.3	(a)	
U ppm	1.2	(a)	
technique:		(a) INAA, broad beam e probe	

References for 64559

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

Gooley R.C., Brett R. and Warner J.L. (1973) Crystallization history of metal particles in Apollo 16 rake samples. *Proc. 4th Lunar Sci. Conf.* 799-810.

Hunter R.H. and Taylor L.A. (1981) Rust and schreibersite in Apollo 16 highland rocks: Manifestations of volatile-element mobility. *Proc. 12th 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.

McKinley J.P., Taylor G.J., Keil K., Ma M.-S. and Schmitt R.A. (1984) Apollo 16: Impact sheets, contrasting nature of the Cayley Plains and Descartes Mountains, and geologic history. *Proc. 14th Lunar Planet. Sci. Conf.* in J. Geophys. Res. **89**, B513-B524.

Phinney W. and Lofgren G. (1973) Description, classification and inventory of Apollo 16 rake samples from stations 1, 4 and 13. Curators Office.

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

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.

Warner J.L., Simonds C.H. and Phinney W.C. (1973b) Apollo 16 rocks: Classification and petrogenetic model. *Proc. 4th Lunar Sci. Conf.* 481-504.