

**72558**  
Micropoikilitic Impact Melt Breccia  
5.71 grams



Figure 1: Photo of 72558. Scale is marked in mm. S73-19640

**Introduction**

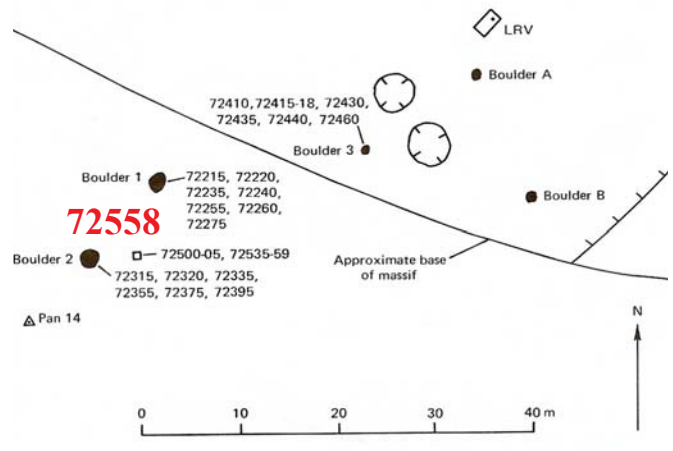
72558 is a clast-bearing impact melt breccia with high trace element content. It has a crystalline matrix with microgranular-micropoikilitic texture, not unlike other rake samples from station 2 on the South Massif (figure 2).

**Petrography**

The mineral mode and mineral compositions have been reported by Warner et al. (1977). Mineral and lithic clasts are abundant and are of highland material, rather than mare. One plagioclase grain poikilitically encloses several pink spinels.

**Chemistry**

The trace element content of 72558 is high.



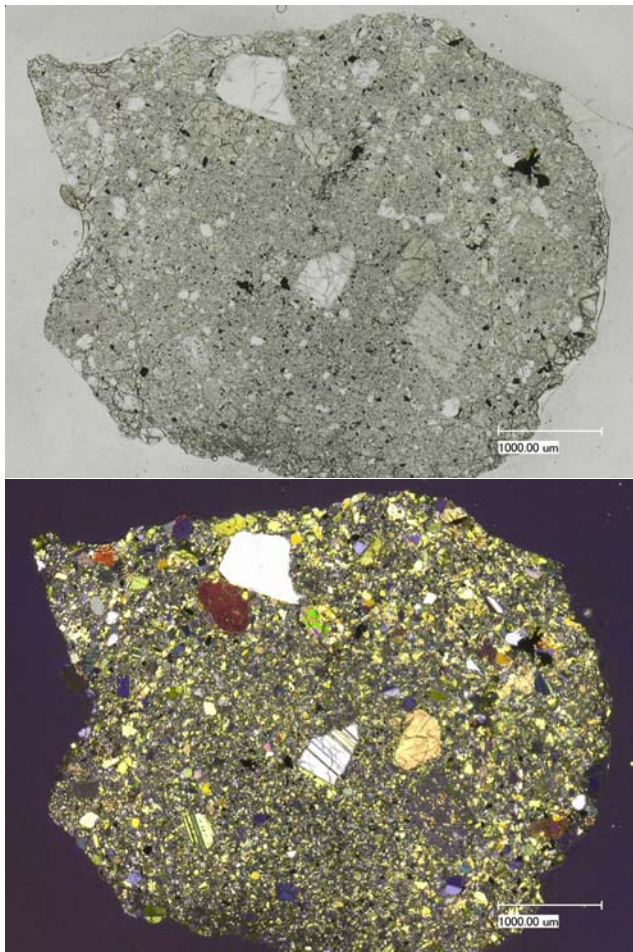


Figure 2a: Photomicrographs of thin section 72558,5 by C Meyer @50x.

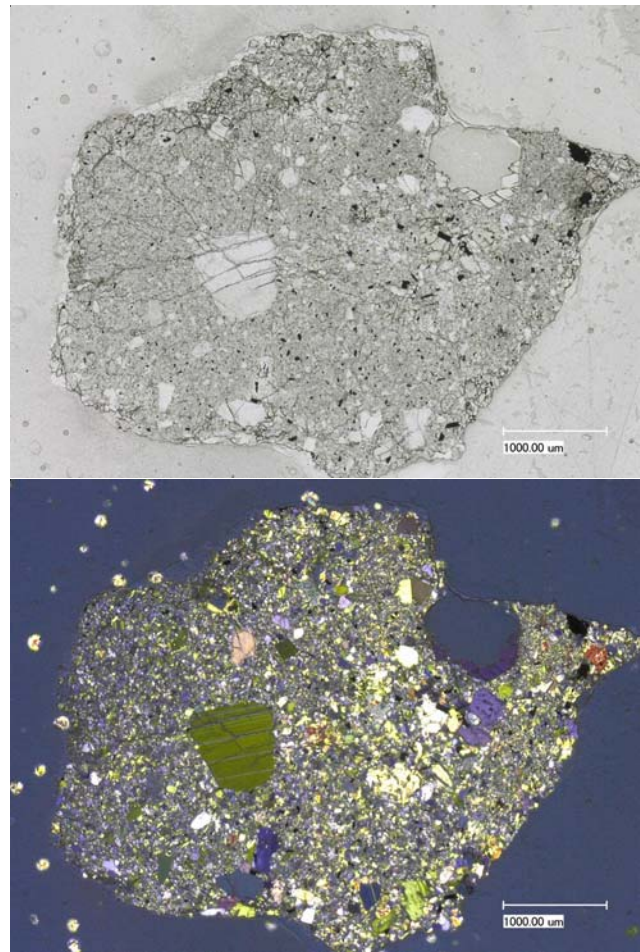


Figure 2b: Photomicrographs of thin section 72558,6 by C Meyer @50x.

### Radiogenic age dating

72558 has a poorly defined Ar/Ar plateau as determined by Dalrymple and Ryder (1996)(figure 4).

### Processing

There are only two thin sections of this important sample. They should be searched for stray zircons.

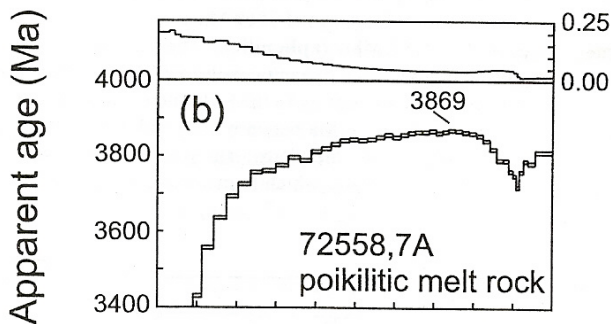


Figure 4: Attempted age measurement by Dalrymple and Ryder (1996).

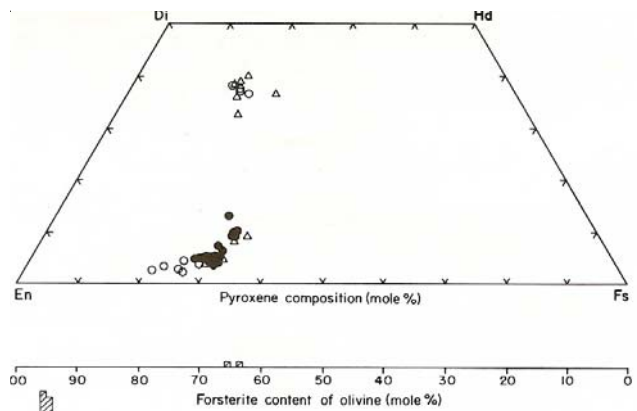


Figure 3: Pyroxene and a few olivine analyses (Warner et al. 1977).

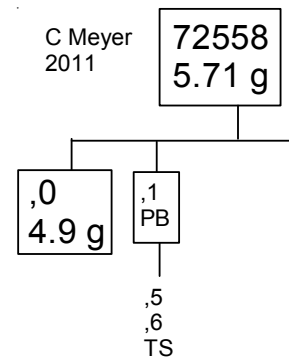
**Table 1. Chemical composition of 72558**

reference weight	Dalrymple96	Warner77
SiO2 %	47.2	(c ) 50.2 (b)
TiO2	1.6	(c ) 0.76 (b)
Al2O3	17.4	(c ) 19.4 (b)
FeO	10.6	(a) 8.5 (b)
MnO	0.13	(c ) 0.16 (b)
MgO	10.7	(c ) 8.7 (b)
CaO	10.7	(c ) 11.3 (b)
Na2O	0.68	(a) 0.85 (b)
K2O	0.25	(a) 0.57 (b)
P2O5		0.25 (b)
S %		
sum		
Sc ppm	18.9	(a)
V		
Cr	1642	(a) 1095
Co	38	(a)
Ni	314	(a)
Cu		
Zn		
Ga		
Ge ppb		
As		
Se		
Rb	10	(a)
Sr	176	(a)
Y		
Zr	530	(a)
Nb		
Mo		
Ru		
Rh		
Pd ppb		
Ag ppb		
Cd ppb		
In ppb		
Sn ppb		
Sb ppb		
Te ppb		
Cs ppm	0.36	(a)
Ba	434	(a)
La	40.4	(a)
Ce	104.2	(a)
Pr		
Nd	69	(a)
Sm	18.3	(a)
Eu	1.89	(a)
Gd		
Tb	3.8	(a)
Dy		
Ho		
Er		
Tm		
Yb	13.4	(a)
Lu	1.9	(a)
Hf	14.5	(a)
Ta	1.77	(a)
W ppb		
Re ppb		
Os ppb		
Ir ppb	8.8	(a)
Pt ppb	9.8	(a)
Au ppb		
Th ppm	7.1	(a)
U ppm	1.88	(a)

technique: (a) INAA, (b) broad beam e. probe, (c ) fused bead e. probe

**Mineral Mode ( Warner et al. 1977)**

	Vol. %
Matrix	51.9
Mineral clasts	9
Lithic clasts	39.1
Mineral clasts	
Plagioclase	4.8
Olivine/Pyroxene	4.1
Opaque	
Metal/troilite	0.1
Other	
Lithic Clasts	
ANT	38.8
Devit. Anorthosite	0.1
Breccia	
Other	0.2
Percent of matrix	
Plagioclase	53.9
Olivine/pyroxene	40.9
Opaque	1.7
Metal/troilite	0.5
Other	3



## References for 72558

Butler P. (1973) Lunar Sample Information Catalog Apollo 17. Lunar Receiving Laboratory. MSC 03211 Curator's Catalog. pp. 447.

Dalrymple G.B. and Ryder G. (1996) Argon-40/argon-39 age spectra of Apollo 17 highlands breccia samples by laser step heating and the age of the Serenitatis basin. *J. Geophys. Res.* **101**, 26069-26084.

Keil K., Dowty E. and Prinz M. (1974) Description, classification and inventory of 113 Apollo 17 rake samples from stations 1A, 2, 7 and 8. Curator's Catalog, pp. 149.

LSPET (1973) Apollo 17 lunar samples: Chemical and petrographic description. *Science* **182**, 659-672.

Ryder G. (1993c) Catalog of Apollo 17 rocks: Stations 2 and 3. Curators Office JSC#26088.

Warner R.D., Taylor G.J. and Keil K. (1977b) Petrology of crystalline matrix breccias from Apollo 17 rake samples. *Proc. 8<sup>th</sup> Lunar Sci. Conf.* 1987-2006.

Warner R.D., Keil K., Nehru C.E. and Taylor G.J. (1978) Catalogue of Apollo 17 rake samples from Stations 1a, 2, 7, and 8. Spec. Publ. #18, UNM Institute of Meteoritics, Albuquerque. 88 pp.

Wolfe E.W., Bailey N.G., Lucchitta B.K., Muehlberger W.R., Scott D.H., Sutton R.L. and Wilshire H.G. (1981) The geologic investigation of the Taurus-Littrow Valley: Apollo 17 Landing Site. US Geol. Survey Prof. Paper, 1080, pp. 280.