

77545
Poikilitic Impact Melt Breccia
29.5 grams



Figure 1: Photo of 77545 showing large vesicles. S73-31348. Sample is 3 cm. across.

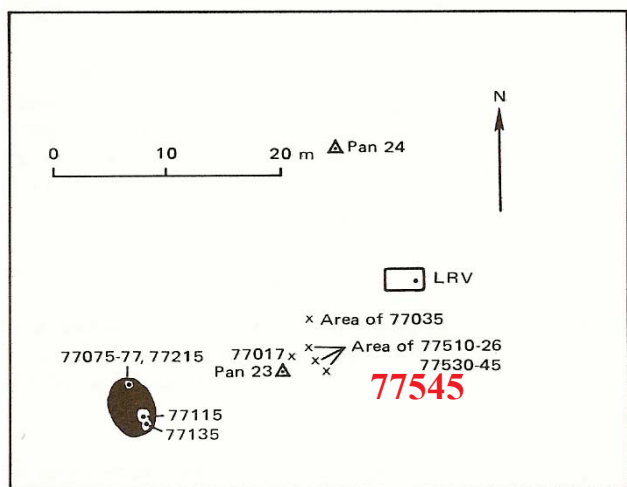


Figure 2: Map of station 7, Apollo 17.

Introduction

Sample 77545 was collected as a rake sample from the soil at station 7 (figure 2). It is a vesicular impact melt breccia similar in texture and composition to 77135, collected from the large boulder nearby. This sample of impact melt has large vesicles (figure 1).

Petrography

The texture of 77545 is poikiloblastic with interlocking irregular pigeonite oikocrysts enclosing laths and tablets of plagioclase and minor olivine (figure 3). Ilmenite is also poikilitic. Mineral clasts are abundant (mostly plagioclase), but lithic clasts are rare. Warner et al. (1977) give the mineral mode of the matrix of 77545 as 53.2% plagioclase, 44% mafic and 1.6% ilmenite.

The composition of pyroxene and olivine is given in figure 4. Plagioclase is An_{82-98} . Warner et al. (1978)

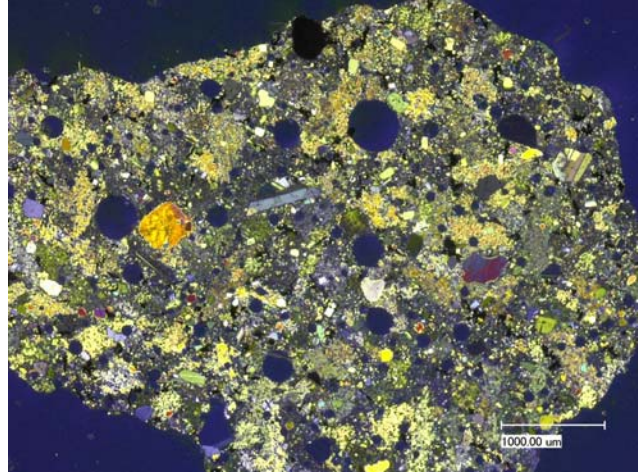
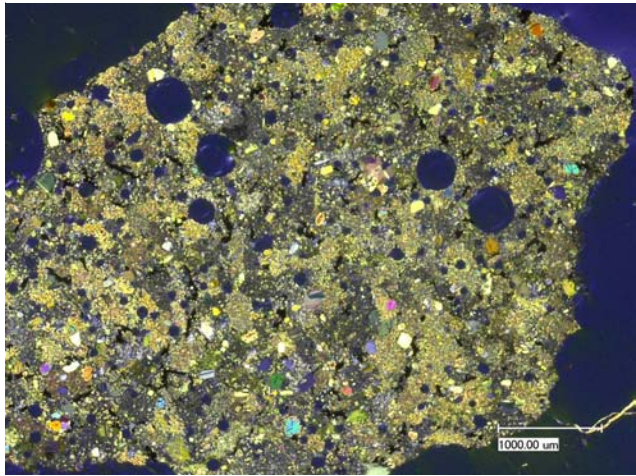
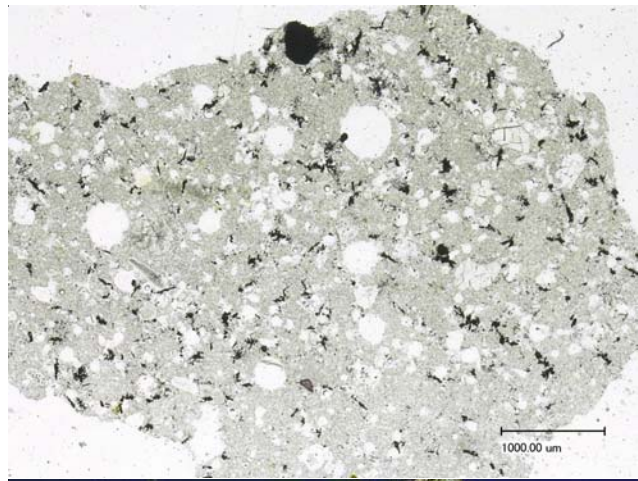
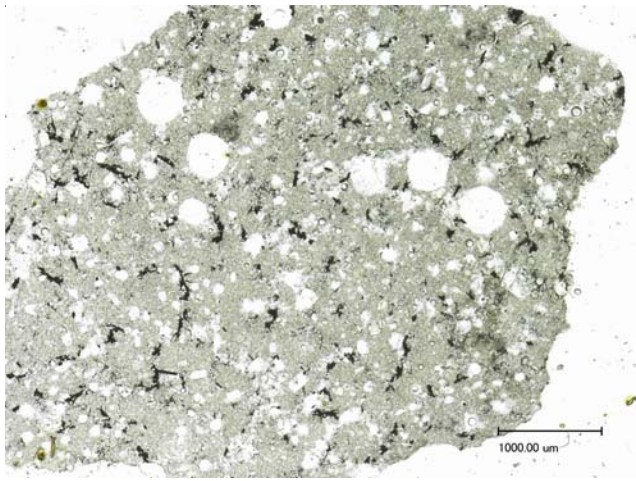


Figure 3a: Photomicrographs of thin section 77545,6 by C Meyer @50x.

Figure 3b: Photomicrographs of thin section 77545,7 by C Meyer @50x.

also report the composition of ilmenite, chromite and armalcolite.

Significant clast

A large angular clast of olivine was studied by Warner et al. (1977). The clast has a granoblastic texture, with mm size olivine grains intersecting at near 120 deg triple junctions. The olivine in the clast is Fo₈₉ and there are chromite grains located along the olivine grain boundaries.

Chemistry

The analysis by Wasson et al. (1977) is similar to that for 77135 (figure 5).

Processing

77545 has been chipped, not sawn. There are 6 thin sections.

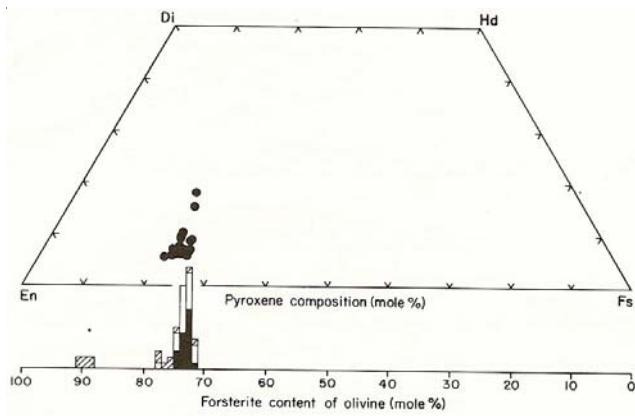


Figure 4: Pyroxene and olivine composition of matrix of 77545 (Warner et al. 1977).

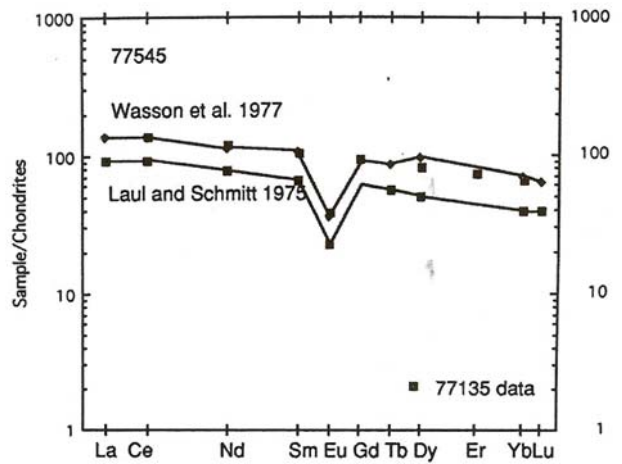


Figure 5: Normalized rare-earth-element diagram for 77545.

Mineral Mode (Warner et al. 1977)

	Vol. %
Matrix	74.6
Mineral clasts	9.4
Lithic clasts	16
Mineral clasts	
Plagioclase	6.7
Olivine/Pyroxene	2.7
Opaque	
Metal/troilite	
Other	
Lithic Clasts	
ANT	14.9
Devit. Anorthosite	0.9
Breccia	
Other	0.2
Percent of matrix	
Plagioclase	53.2
Olivine/pyroxene	44
Opaque	1.6
Metal/troilite	0.2
Other	1

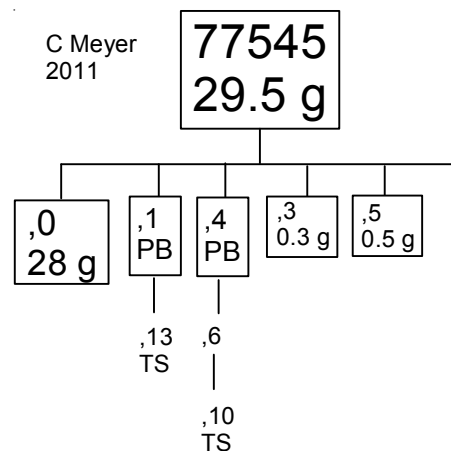


Table 1. Chemical composition of 77545.

reference weight	Laul75	Warner77	Wasson77		
SiO ₂ %					
TiO ₂	1.2	(a) 1.2	1.5	1.8	(a)
Al ₂ O ₃	10.9	(a) 10.9	18.7	19.8	(a)
FeO	10.3	(a) 10.3	8.9	9.7	(a)
MnO	0.11	(a) 0.11		0.12	(a)
MgO	10	(a) 10	12.93	13.8	(a)
CaO	6.6	(a) 6.6	11	11.9	(a)
Na ₂ O	0.47	(a) 0.47	0.71	0.7	(a)
K ₂ O	0.14	(a) 0.14	0.24	0.29	(a)
P ₂ O ₅					
S %					
sum					
Sc ppm	11	(a)	17	17.6	(a)
V	70	(a)		49	(a)
Cr		3558	1400	1440	(a)
Co	67	(a)	13.5	17.5	(a)
Ni	600	(a)	60	60	(a)
Cu					
Zn			1.9		
Ga			5.5	5.3	
Ge ppb			50	120	
As					
Se					
Rb					
Sr					
Y					
Zr	240	(a)	560	590	(a)
Nb					
Mo					
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb			2.8	10	
In ppb			0.35	0.32	
Sn ppb					
Sb ppb					
Te ppb					
Cs ppm					
Ba	220	(a)	340	380	(a)
La	21.5	(a)	32.2	35.7	(a)
Ce	55	(a)	82	85	(a)
Pr					
Nd	35	(a)	51	59	(a)
Sm	9.8	(a)	15.4	15.3	(a)
Eu	1.3	(a)	2	2.15	(a)
Gd					
Tb	2	(a)	3.1	3.2	(a)
Dy	12	(a)	23	19	(a)
Ho					
Er					
Tm					
Yb	6.3	(a)	11	11.6	(a)
Lu	0.94	(a)	1.52	1.62	(a)
Hf	8.2	(a)	11.8	12.1	(a)
Ta	1	(a)	1.4	1.5	(a)
W ppb					
Re ppb					
Os ppb					
Ir ppb	7	(a)	1		(a)
Pt ppb					
Au ppb	2	(a)	0.8	1.5	(a)
Th ppm	3.2	(a)	5.4	5.3	(a)
U ppm	0.9	(a)	1.4	1.4	(a)
technique	(a) INAA				

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