77515

Micropoikilitic Impact Melt Breccia

337.6 grams

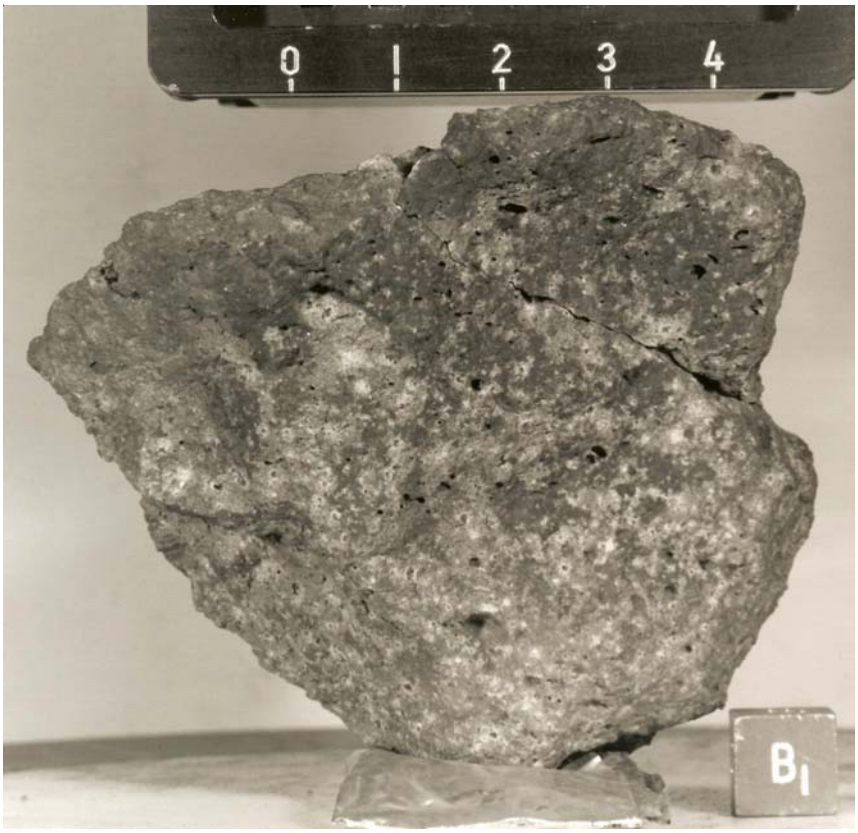

Figure 1: Photo of bottom surface of 77515 showing thick patina and numerous zap pits. S73-23496. Scale and cube are 1 cm.

Introduction

77515 was collected from the lunar surface a few meters from the station 7 boulder (figure 2). It is an impact melt breccia apparently similar to 77135. There is a patina with micrometeoite craters on all surfaces (figure 1). Numerous small vesicles are also apparent.

This large sample deserves more study and should be dated by someone.

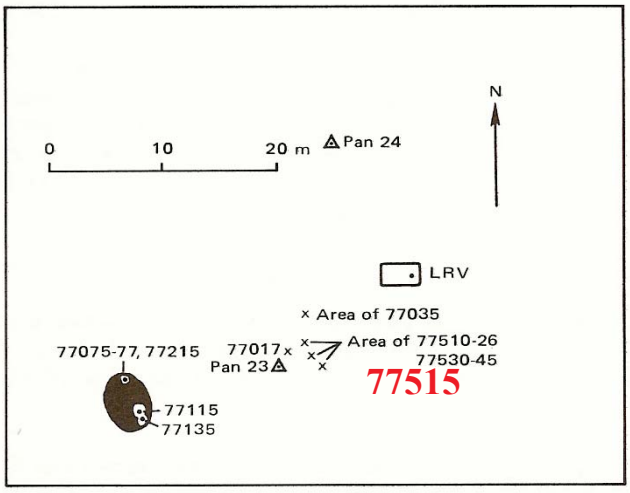

Figure 2: Map of station 7, Apollo 17.

Petrography

The texture of 77515 is poikiloblastic with irregular pigenoite oikocrysts enclosing abundant euhedral plagioclase laths and tablets and minor rounded olivine grains (figure 3). Ilmenite is dispersed throughout and is also poikilitic. Warner et al (1977) found the mineral mode to be 52.7% plagioclase, 44.5% pyroxene and

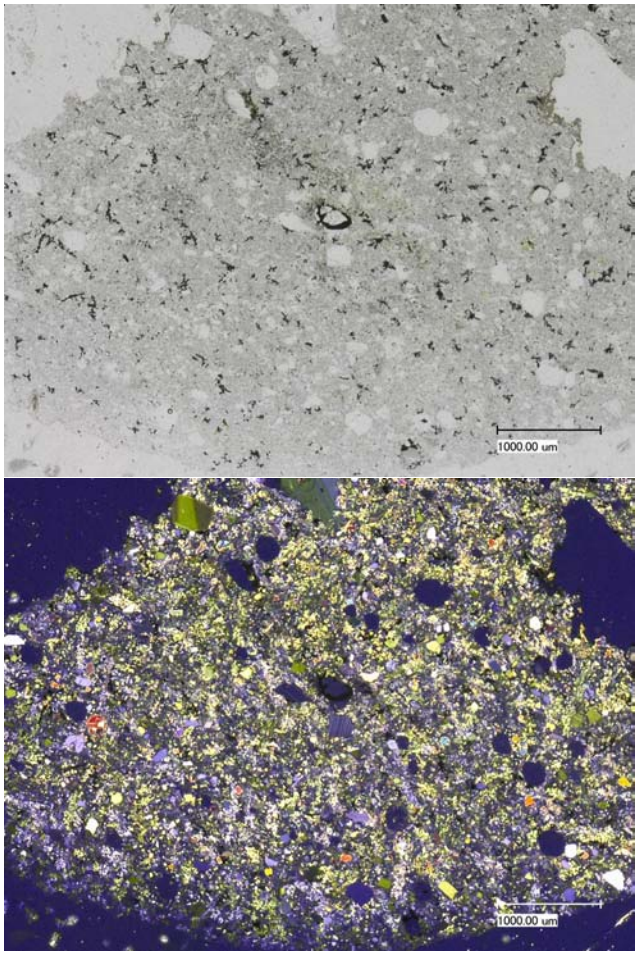

Figure 3a: Photomicrographs of thin section 77515,11 by C Meyer @50x.

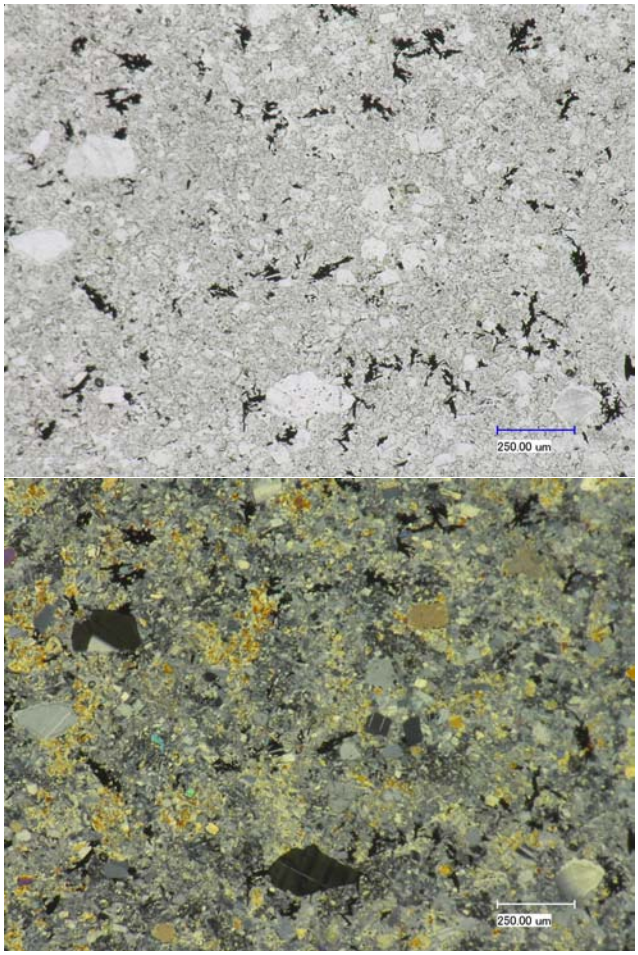

Figure 3b: Micropoikilitic texture of 77515 (from Meyer 1994). Partially crossed nicols.

2% ilmenite. Mineral compositions are given in figure 4.

Chemistry

Laul and Schmitt (1975) reported the chemical composition, finding that it was the same as for 77135 (figure 5).

Processing

77515 was chipped, not sawn. There are only two thin sections.

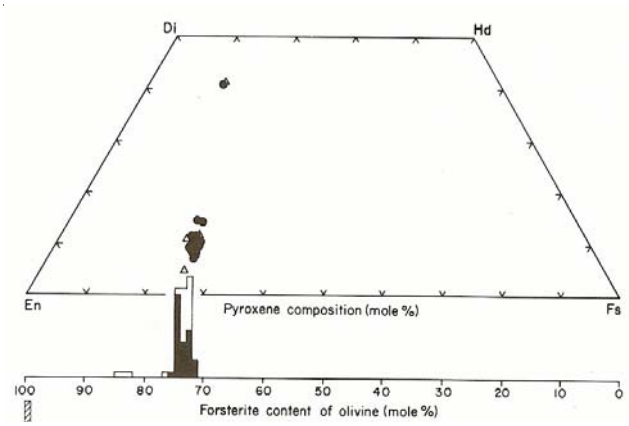

Figure 4: Composition of pyroxene and olivine in 77515 (Warner et al. 1977).

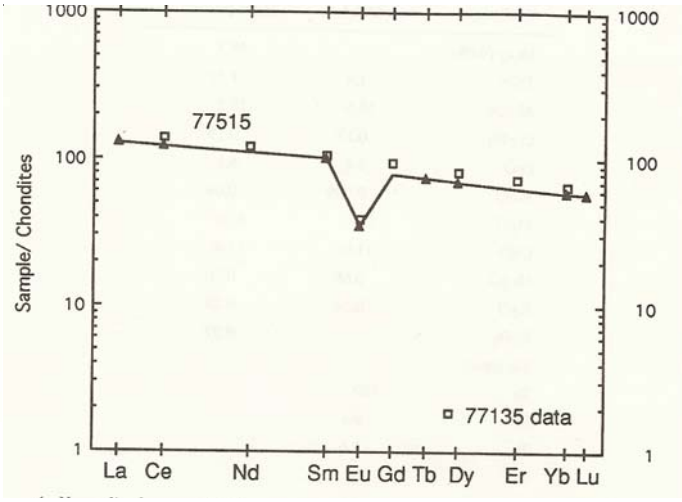

Figure 5: Normalized rare-earth-element diagram for 77515 compared with nearby breccia 77135.

Mineral Mode (Warner et al. 1977)

	Vol. %
Matrix	87
Mineral clasts	10.9
Lithic clasts	2.1
Mineral clasts	
Plagioclase	7.7
Olivine/Pyroxene	3
Opaque	
Metal/troilite	0..2
Other	
Lithic Clasts	
ANT	0.4
Devit. Anorthosite	0.8
Breccia	0.4
Other	0.5
Percent of matrix	
Plagioclase	52.7
Olivine/pyroxene	44.5
Opaque	2
Metal/troilite	0.2
Other	0.7

Table 1. Chemical composition of 77515.

reference	Laul 1975		Warner77	
weight				
SiO2 %			48.3	(b)
TiO2	1.4	(a)	1.51	(b)
Al2O3	18.6	(a)	18.2	(b)
FeO	8.4	(a)	8.1	(b)
MnO	0.1	(a)	0.9	(b)
MgO	11	(a)	11	(b)
CaO	11	(a)	11.4	(b)
Na2O	0.68	(a)	0.7	(b)
K2O	0.24	(a)	0.28	(b)
P2O5			0.27	(b)
S %				
sum				
Sc ppm	14	(a)		
V	30	(a)		
Cr	1163		1300	(b)
Co	38.6	(a)		
Ni	450	(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	350	(a)		
La	29.8	(a)		
Ce	73	(a)		
Pr				
Nd				
Sm	14.7	(a)		
Eu	1.93	(a)		
Gd				
Tb	2.7	(a)		
Dy	17	(a)		
Ho				
Er				
Tm				
Yb	9.6	(a)		
Lu	1.4	(a)		
Hf	9.8	(a)		
Ta	1.4	(a)		
W ppb				
Re ppb				
Os ppb				
Ir ppb				
Pt ppb				
Au ppb				
Th ppm	4.1	(a)		
U ppm				

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

References for 77515

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