

74115 - 74119
Regolith Breccia
 37 grams

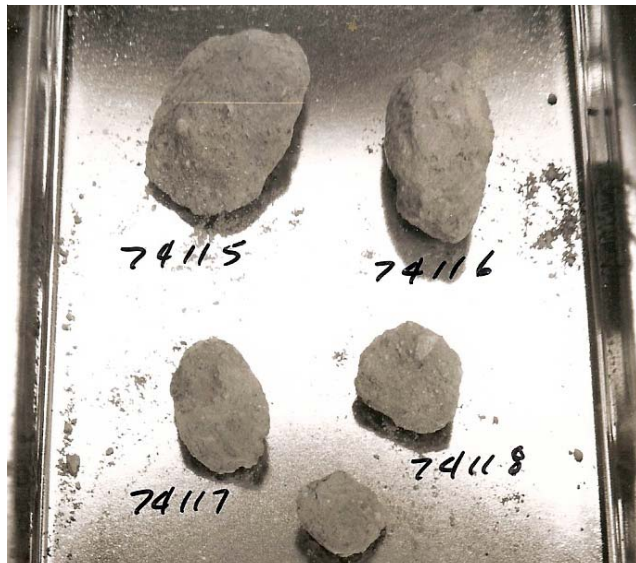


Figure 1: Photo of 74115 during PET.



Figure 3: Photomicrograph of thin section 74115,14 - about 1 cm.



Figure 2: Photo of 74115,0 - from data pack.

Petrography

Fruland (1983) and Simon et al. (1990) included 74115 in their study of regolith breccia. Ryder (1993) and Neal and Taylor (1993) termed these particles “light gray breccias”, but they are nothing other than soil clods. They are very friable and porous. They contain both highland and mare regolith materials, mixed together.

Introduction

74115 is instant rock made by compaction of soil. These samples were collected from the blocky rim of a 15 meter crater along the rover traverse across the “light mantle”. These soil clods were collected with 74110 (see also sections on 74111). They are very friable and broke apart during storage and processing.

Mineralogical Mode for 74115

(Simon et al. 1990)

Matrix	65.3 %	
	20-90 micron	90-100 micron
Mare Basalt	0.5	1
KREEP Basalt		
Feld. Basalt		
Plutonic	0.4	1.5
Granulitic	0.2	1
Breccia	0.8	4.2
Olivine	1.5	0.4
Pyroxene	3.7	1.1
Plagioclase	3.8	1.1
Opakes	0.4	
Glass	4.3	2.4
Agglutinate	3.4	2.8

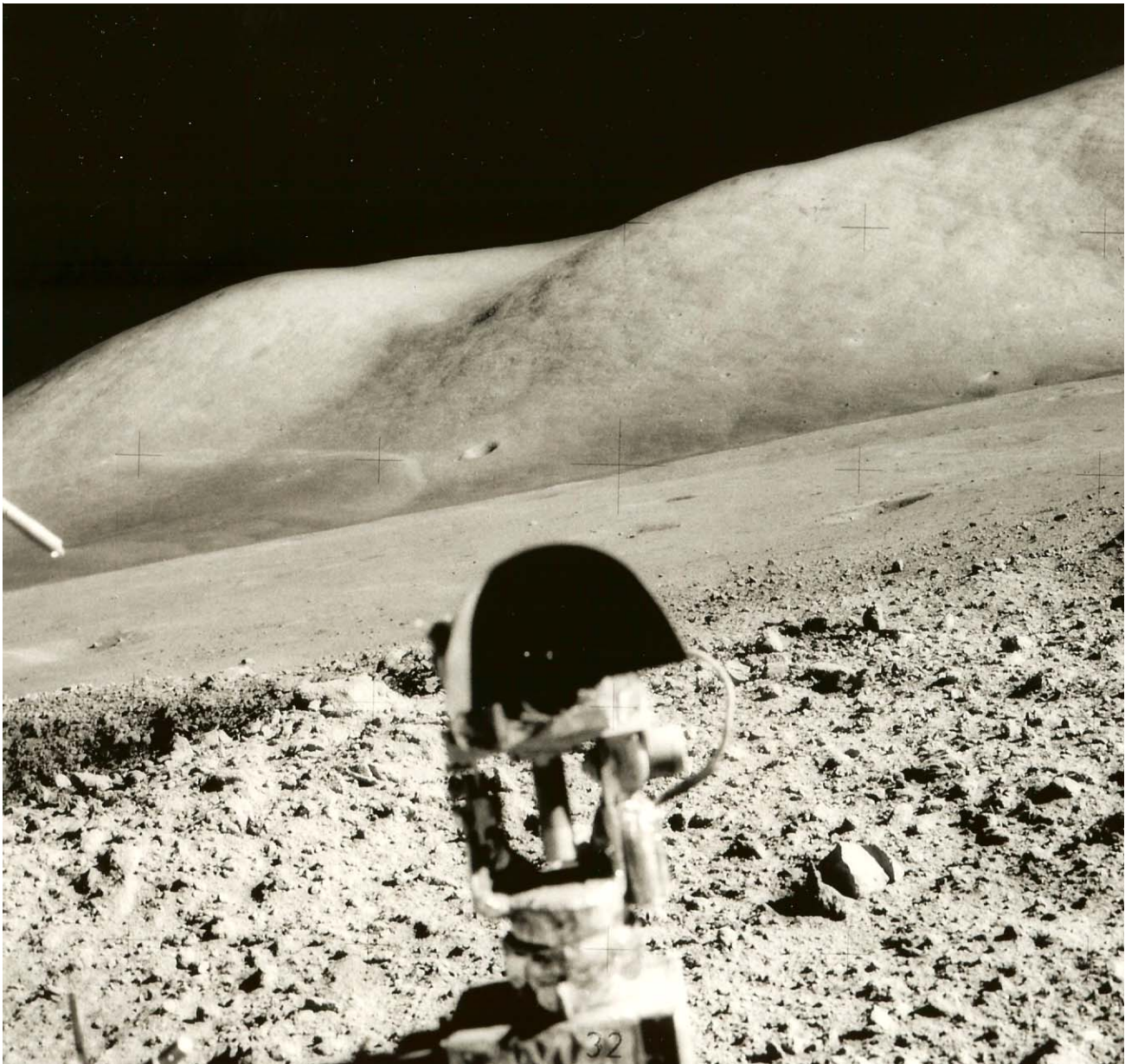


Figure 4: Rough ride on way to Shorty Crater.

Chemistry

Simon et al. (1980) determined the chemical composition. The sample has a rather high content of Al_2O_3 – proof that this is light mantle material.

Processing

74110 and 74115-74119 were collected and returned in the same bag and are probably all the same material. There are currently 11 thin sections of these particles.

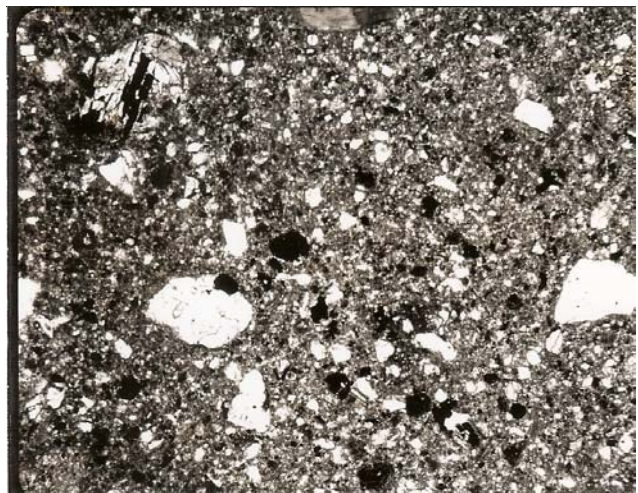
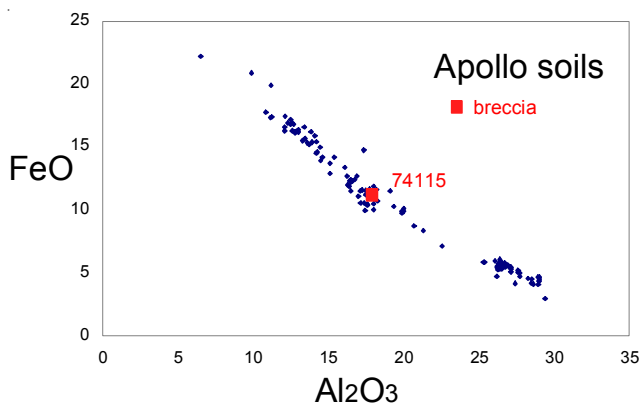


Figure 5: Photomicrograph of thin section of 74115,6. Field of view about 2 mm.

Table 1. Chemical composition of 74115.

reference	Simon90	
<i>weight</i>		
SiO ₂ %		
TiO ₂	2.65	(a)
Al ₂ O ₃	18.4	(a)
FeO	10.5	(a)
MnO	0.133	(a)
MgO	9.4	(a)
CaO	13.3	(a)
Na ₂ O	0.46	(a)
K ₂ O	0.15	(a)
P ₂ O ₅		
S %		
<i>sum</i>		
Sc ppm	27.2	(a)
V	55	(a)
Cr	1840	(a)
Co	31.5	(a)
Ni	220	(a)
Cu		
Zn	30	(a)
Ga		
Ge ppb		
As		
Se		
Rb	10.6	(a)
Sr	160	(a)
Y		
Zr	140	(a)
Nb		
Mo		
Ru		
Rh		
Pd ppb		
Ag ppb		
Cd ppb		
In ppb		
Sn ppb		
Sb ppb		
Te ppb		
Cs ppm	0.15	(a)
Ba	165	(a)
La	14.9	(a)
Ce	37	(a)
Pr		
Nd	26	(a)
Sm	7.53	(a)
Eu	1.35	(a)
Gd	8.8	(a)
Tb	1.66	(a)
Dy	10.1	(a)
Ho		
Er		
Tm	0.86	(a)
Yb	5.88	(a)
Lu	0.81	(a)
Hf	6.1	(a)
Ta	0.93	(a)
W ppb		
Re ppb		
Os ppb		
Ir ppb	5.7	(a)
Pt ppb	7.2	(a)
Au ppb		
Th ppm	2.1	(a)
U ppm	0.62	(a)
<i>technique: (a) INAA</i>		



References for 74115

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

Fruiland R.M. (1983) Regolith Breccia Workbook. Curatorial Branch Publication # 66. JSC 19045.

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

LSPET (1973) Preliminary Examination of lunar samples. Apollo 17 Preliminary Science Rpt. NASA SP-330. 7-1 – 7-46.

Muehlberger et al. (1973) Documentation and environment of the Apollo 17 samples: A preliminary report. *Astrogeology* 71 322 pp superceded by *Astrogeology* 73 (1975) and by Wolfe et al. (1981)

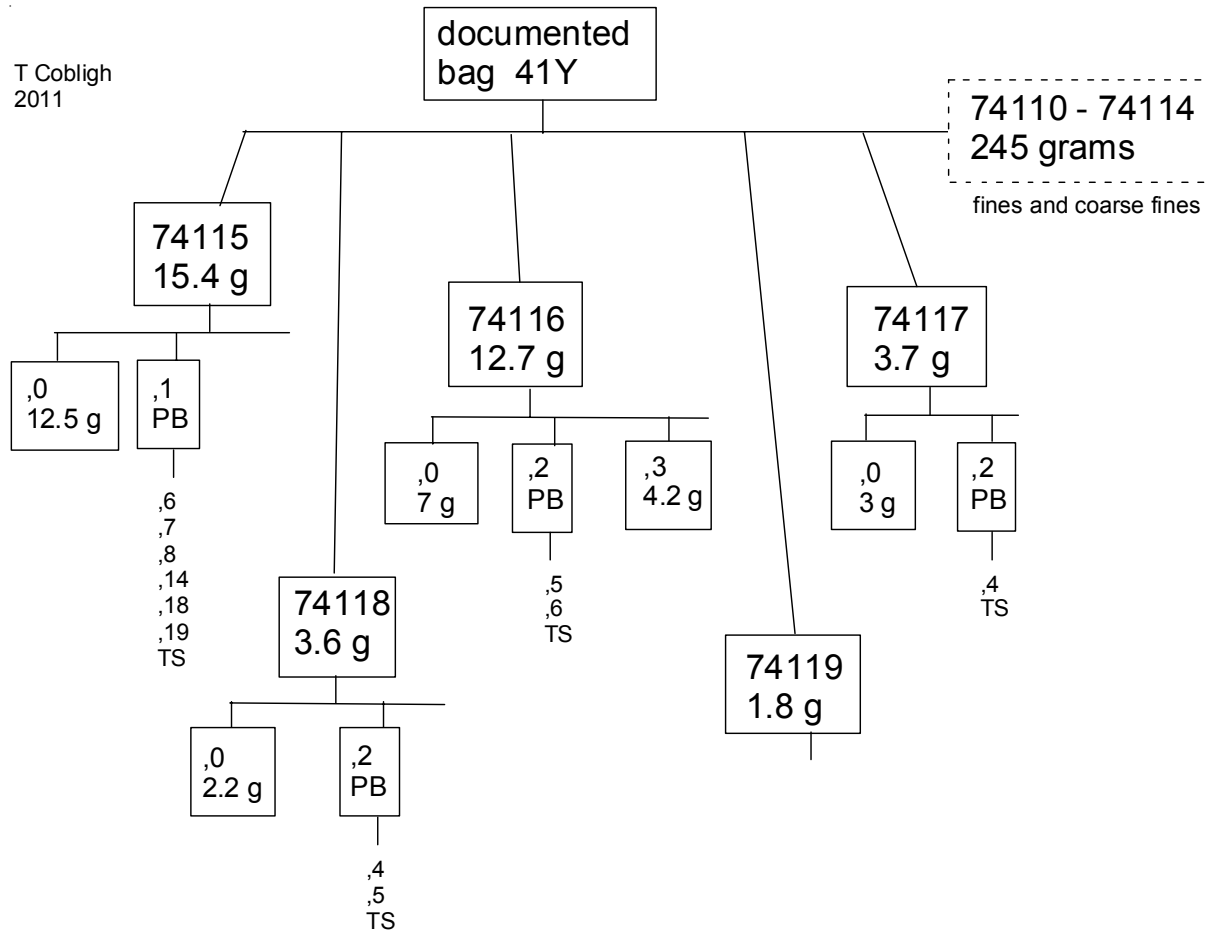
Muehlberger W.R. and many others (1973) Preliminary Geological Investigation of the Apollo 17 Landing Site. *In Apollo 17 Preliminary Science Report*. NASA SP-330.

Neal C.R. and Taylor L.A. (1993) **Catalog of Apollo 17 rocks**, central valley. Volumes 2 and 3. Curators Office #26088 JSC, Houston.

Ryder G. (1993) **Catalog of Apollo 17 rocks**. Vol. 1 South Massif

Shearer C.K., Papike J.J., Galbreath K.C. and Shimizu N. (1991) Exploring the lunar mantle with secondary ion mass spectrometry: A comparison of lunar picritic glass beads from the Apollo 14 and Apollo 17 sites. *Earth Planet. Sci. Lett.* **102**, 134-147.

T Cobligh
2011



Simon S.B., Papike J.J., Gosselin D.C., Laul J.C., Hughes S.S. and Schmitt R.A. (1990) Petrology and chemistry of Apollo 17 regolith breccias: A history of mixing of highland and mare regolith. *Proc. 20th Lunar Planet. Sci.* 219-230. Lunar Planetary Institute, Houston.

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.