78535 – 103.4 grams
78536 – 8.67 grams
78537 – 11.76 grams
78538 - 5.82 grams
78539 – 3.73 grams
78545 – 8.6 grams
78568 – 3.6 grams
Speckeled Regolith Breccia

Figure 1: Photo of 78535. Cube is 1 cm. S73-21390

Introduction

78535 and related samples are coherent regolith breccias with numerous small plagioclase inclusions set in a dark brown (glassy) matrix.

See also section on 78546, which was well studied by Simon et al. (1990) and seems to be the same type of breccia.

Petrography

Butler (1973), Keil et al. (1974), Warner et al (1978) and Meyer (1994) briefly describe 78535 in their catalogs. "The breccia matrix consists of abundant small mineral clasts together with dark brown glass that firmly cements the rock. Porosity is low. There are small clasts of mare basalt, breccias of various type, glass with various color and numerous mineral clasts."

78568 has a thin white coating on one side (figure 9), but is otherwise similar to 78535 it also has a large white clast, possibly shocked anorthosite (Meyer 1994)..

Warner et al. (1979) reported glass analyses for 78535, and other rocks.

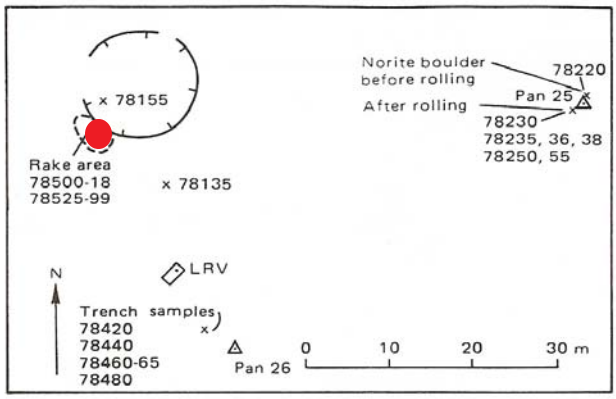


Figure 2: Map of station 8, Apollo A17.

Figure3a: Closeup of 78535 showing classic speckeled lithology of dark matrix regolith breccias found on North Massif. S73-32349.

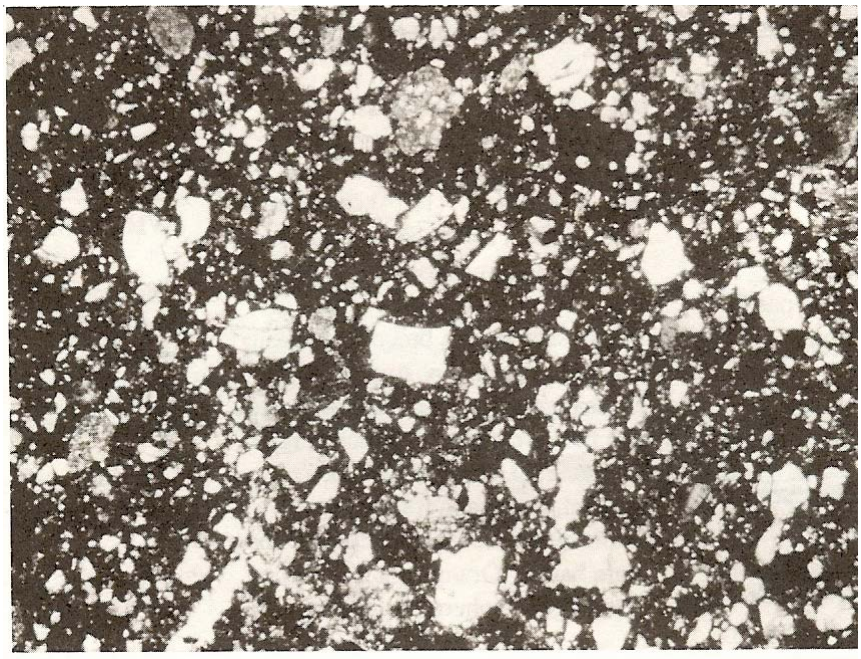


Figure 3b: Photomicrograph of thin section of 78535,7. Field of view is 3 x 4 mm.

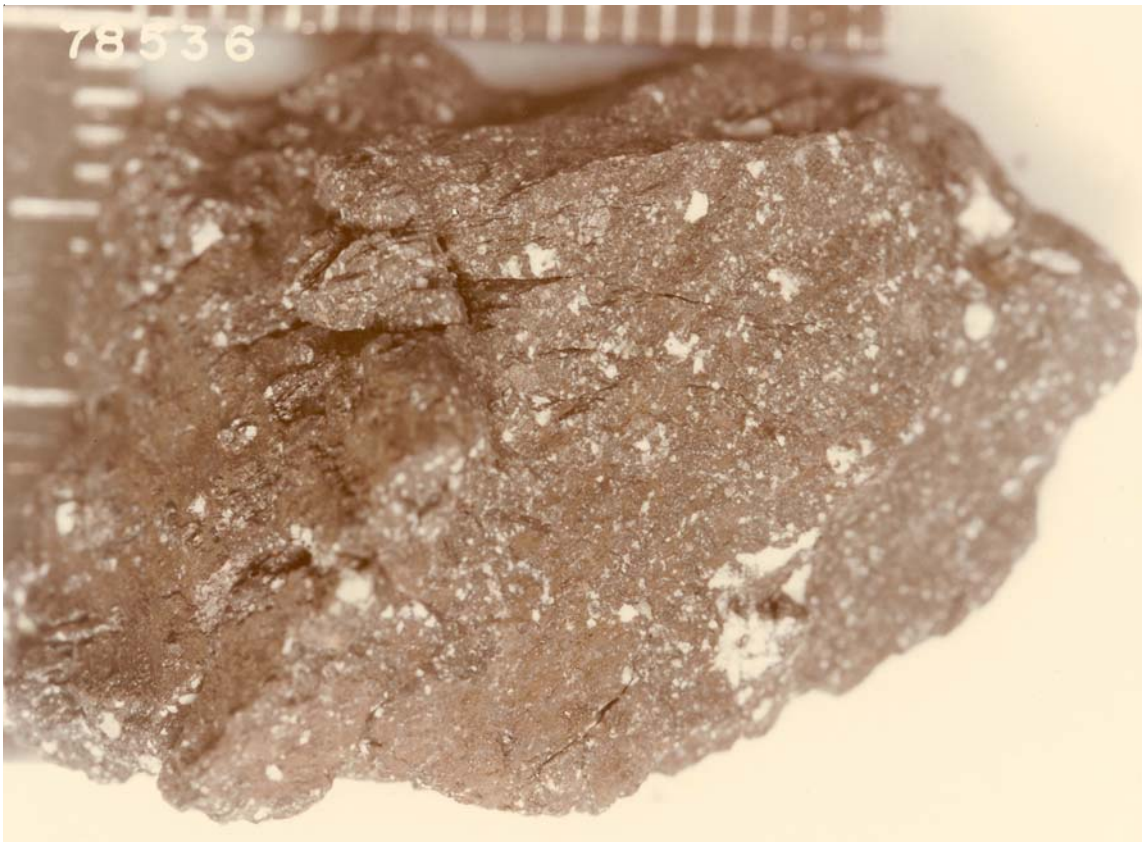


Figure 4: Photo of 78536. Scale in mm. S73-33419

Chemistry

The chemical analysis of 78535 by Laul and Schmitt (1975) seems to be more aluminous than 78546, which otherwise seems similar (figure 10), but the REE analyses are similar to the local soil (figure 11).

Processing

There are a couple thin sections each for 78535,78537 and 78568.

Figure 5a: Photo of 78537. Scale in mm. S73-21009

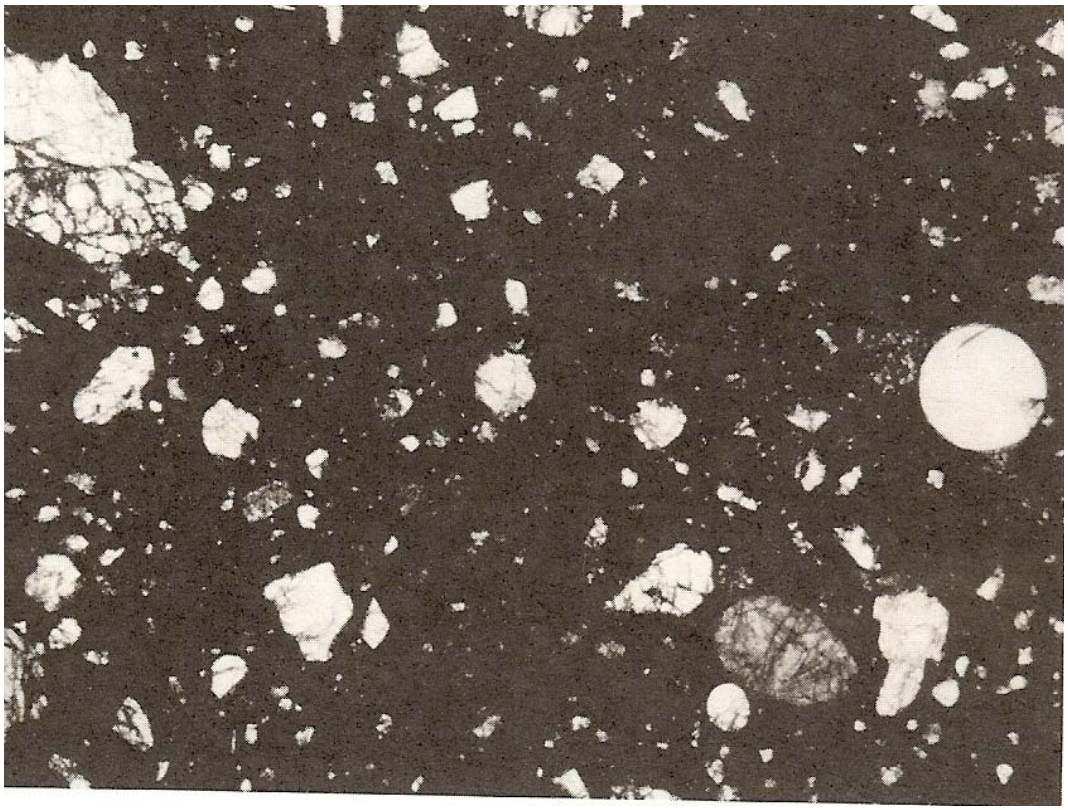


Figure 5b: Photomicrograph of thin section 78537,17. Field of view is 3 x 4 mm.

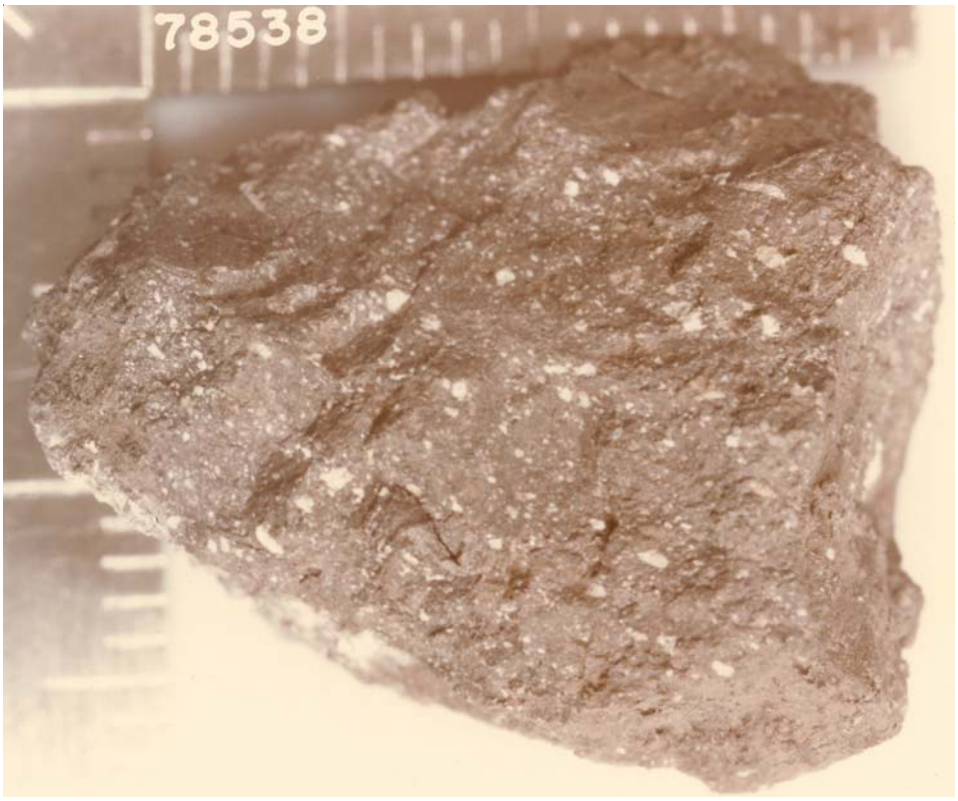


Figure 6: Photo of 78538. Scale in mm. S73-33411

Figure 7: Photo of 78539. Scale in mm. S73-21018

Figure 8: Photo of 78545. Scale in mm and cm. S73-33398

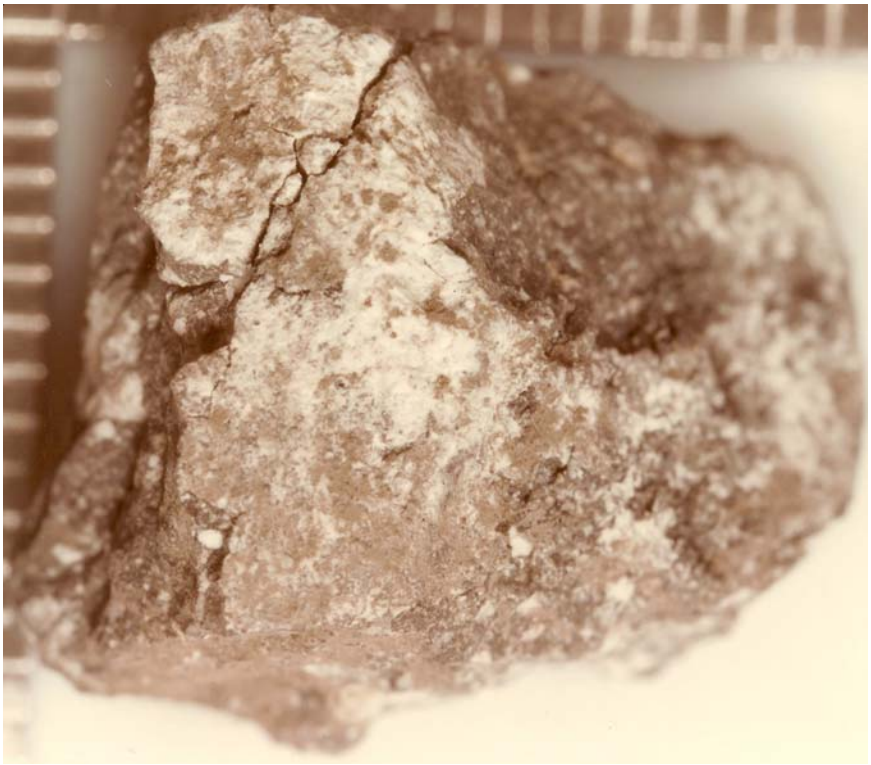


Figure 9. Photo of 78568. Scale in mm. S73-33413.

Table 1. Chemical composition of 78535.

	78535	
reference	Laul75	
weight		
SiO2 %		
TiO2	3.9	(a)
Al2O3	17.2	(a)
FeO	11.3	(a)
MnO	0.14	(a)
MgO	9.7	(a)
CaO	11.6	(a)
Na2O	0.38	(a)
K2O	0.09	(a)
P2O5		
S %		
sum		
Sc ppm	32	(a)
V	70	(a)
Cr	2053	(a)
Co	30.7	(a)
Ni	200	(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		
La	8.3	(a)
Ce	24	(a)
Pr		
Nd		
Sm	5.9	(a)
Eu	1.2	(a)
Gd		
Tb	1.2	(a)
Dy	7.2	(a)
Ho		
Er		
Tm		
Yb	4.7	(a)
Lu	0.72	(a)
Hf	4.4	(a)
Ta	0.75	(a)
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm	1	(a)
U ppm		

technique: *(a) INAA*

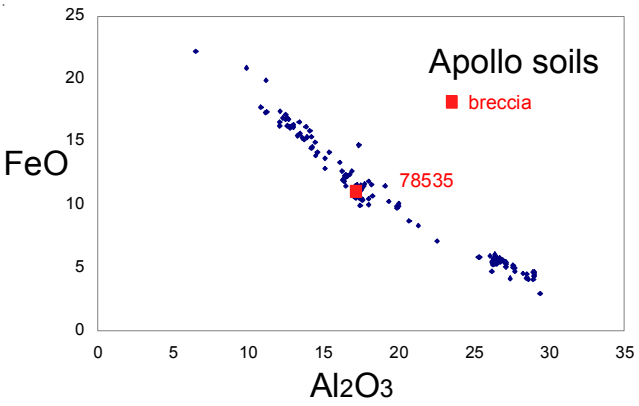


Figure 10: Composition of 78535, compared with lunar soils.

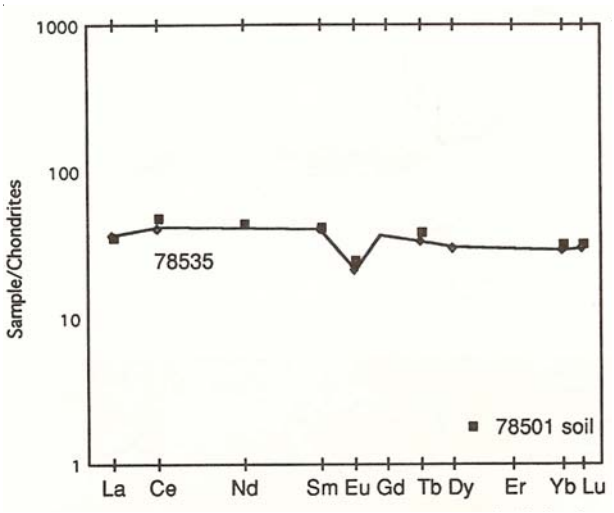
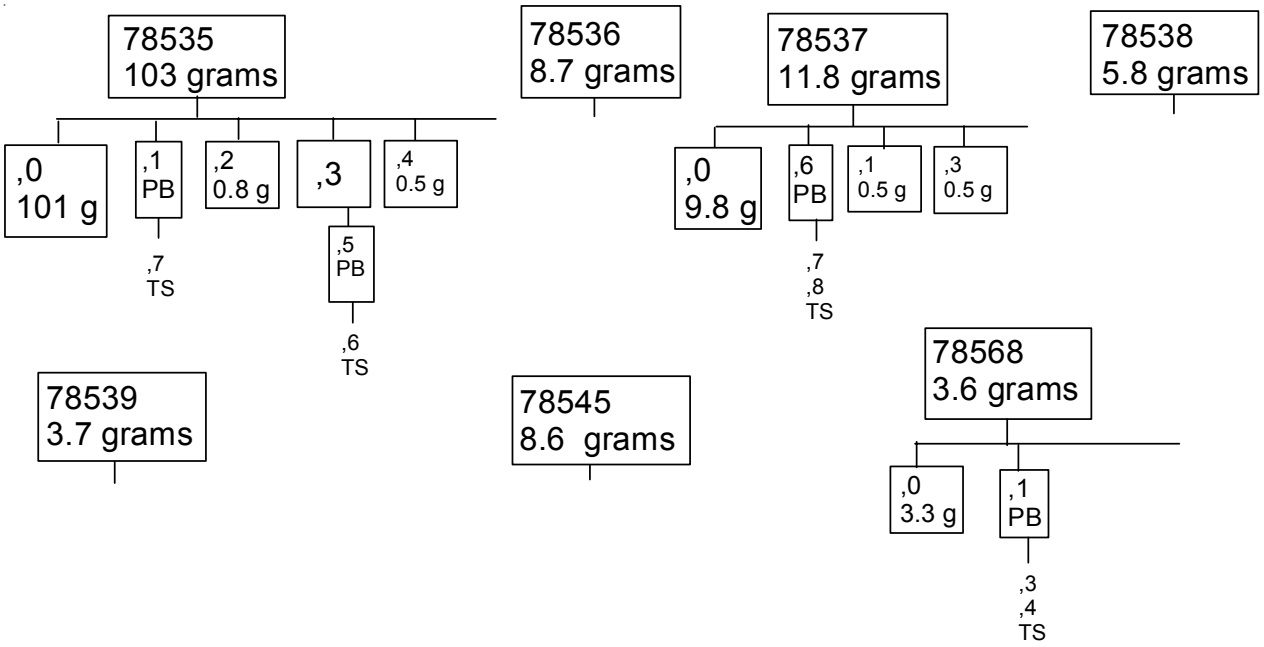


Figure 11: Normalized rare-earth-element diagram for 78535.



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