

61515 – 2 grams
61516 – 2.38 grams
61517 – 0.47 grams
61518 – 0.16 grams
61519 – 0.33 grams
Regolith Breccia



Figure 1: Photo of 61516. Particles is about 2 cm. S72-55331

Introduction

61515 - 61519 were collected as part of a rake sample from near Plum Crater (figure 2) – see section on 61500. They are all friable pieces of regolith breccia from that location. Only 61516 has been studied.

Petrography

Phinney and Lofgren (1973) cataloged these particles and described them as friable, clastic, seriate and “very light-grey”. McKay et al. (1986) and Joy et al. (2012) reported the maturity index $I_s/FeO = 0.5$ (immature) and rare gas content for 61516.

Warner et al. (1973) termed 61516 a light matrix breccia (figure 2), and Phinney et al. (1976) found that it was mostly plagioclase with about 35 % porosity.

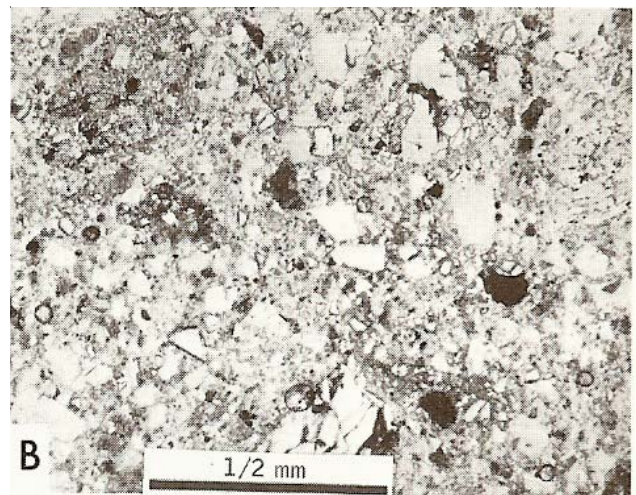


Figure 2: Thin section of 61516 showing porous, seriate clastic texture (Warner et al. 1973)..

Table 1. Chemical composition of 61516

reference weight	Floran76	McKay86	
SiO ₂ %	45.58	(a)	
TiO ₂	0.42	(a)	
Al ₂ O ₃	27.24	(a)	
FeO	4.61	(a)	4.22 (b)
MnO	6.05	(a)	
MgO	15.35	(a)	
CaO	0.54	(a)	15.9 (b)
Na ₂ O	0.12	(a)	0.509 (b)
K ₂ O			
P ₂ O ₅			
S %			
sum			
Sc ppm		6.22	(b)
V			
Cr		484	(b)
Co		22.7	(b)
Ni		382	(b)
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb			
Sr		212	(b)
Y			
Zr		150	(b)
Nb			
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm		0.11	(b)
Ba		114	(b)
La		10.4	(b)
Ce		27.6	(b)
Pr			
Nd		17	(b)
Sm		4.76	(b)
Eu		1.245	(b)
Gd			
Tb		0.93	(b)
Dy			
Ho			
Er			
Tm			
Yb		3.28	(b)
Lu		0.452	(b)
Hf		3.57	(b)
Ta		0.4	(b)
W ppb			
Re ppb			
Os ppb			
Ir ppb		5.3	(b)
Pt ppb			
Au ppb		6.8	(b)
Th ppm		1.86	(b)
U ppm		0.44	(b)

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

References for 61516

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Figure 3: Processing photo of 61516. S72-55333

Chemistry

Floran et al. (1974) and McKay et al. (1986) determined the composition which is similar to local soil.

Other Studies

McKay et al. (1986) concluded that 61516 had excess ^{40}Ar and argued that it was an ancient regolith breccia. Joy et al. (2012) calculate that the age may be 3.4 b.y.