

67637
Anorthositic Breccia
2.34 grams



Figure 1: Photo of 67637. Scale in mm. S72-51053.

Introduction

67637 was collected as a rake sample from the SE rim of North Ray Crater in the vicinity of the White Breccia Boulders (67415 etc). It is mildly shocked, yet chemically “pristine”, and appears to be a piece of 67635.

Petrography

67637 is a subrounded, chalky-white, homogeneous sample with apparent cataclastic texture. Small (1 mm) clear transparent grains of plagioclase are embedded in fine-grained clasts of plagioclase which appears chalky white and granular because of severe cataclasis. Rare yellow transparent and light tan transparent grains can be seen which are about 0.5 mm in size. Very rare opaque flakes were observed. One surface has zap pits.

Mineralogical Mode for 67637

Olivine + Pyroxene	4.6 %
Plagioclase	95.2
Opagues	0.2

Mineralogy

The composition of pyroxene and olivine has been reported in Bersch et al. (1991) and Warren and Wasson (1980). Smith et al. (1980) determined the trace element content of olivine.

Plagioclase (An_{95}) in 67937 is slightly crushed, but there are grains up to 1.5 mm in size (Ryder and Norman 1980). Trace elements in plagioclase from 67637 were reported by Hanson et al. (1979) and Steele et al. (1980).

Chemistry

67635, 67636 and 67637 have the composition of ferroan anorthosite (figure 4) and are chemically “pristine” (Warren and Wasson 1980).

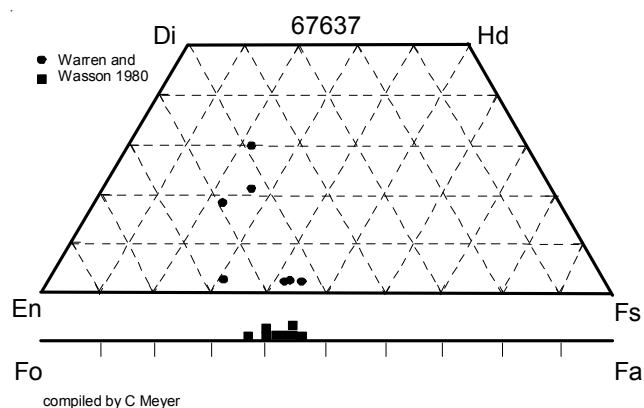


Figure 2: Composition of pyroxene and olivine in 67637 (from Warren and Wasson 1980).

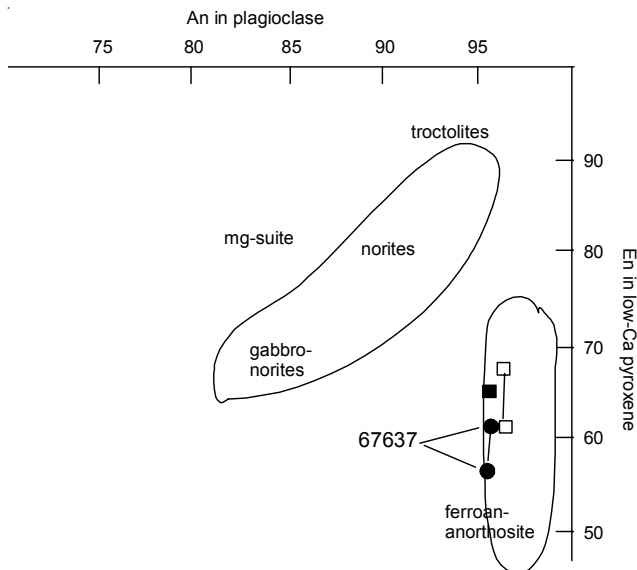


Figure 3: Composition of plagioclase and pyroxene in 67637 (Warren and Wasson 1980).

Radiogenic age dating

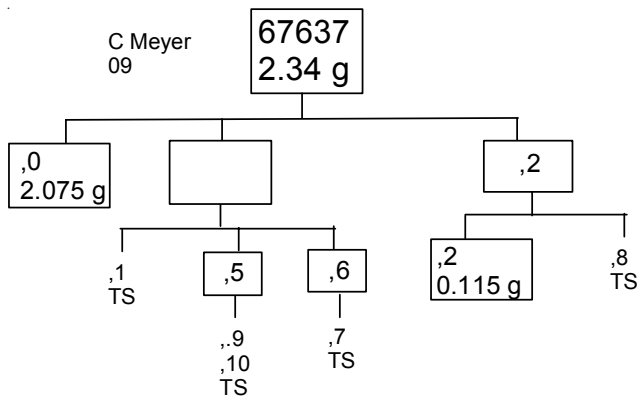
None

Other Studies

The samples of North Ray Crater were the subject of a consortium led by Dieter Stoffler.

Processing

There are 5 thin sections of 67367.



References for 67637

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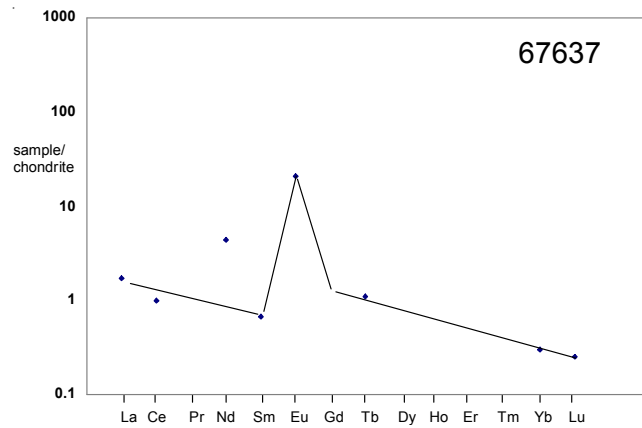


Figure 4: Normalized rare-earth-element diagram (data from Warren and Wasson 1980).

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Table 1. Chemical composition of 67637.

reference weight	Warren80	
SiO ₂ %	44.3	(a)
TiO ₂	0.035	(a)
Al ₂ O ₃	34.4	(a)
FeO	0.7	(a)
MnO	0.01	(a)
MgO	0.56	(a)
CaO	18.8	(a)
Na ₂ O	0.65	(a)
K ₂ O	0.02	(a)
P ₂ O ₅		
S %		
sum		
Sc ppm	0.96	(a)
V		
Cr	34.8	(a)
Co	3.8	(a)
Ni	1.6	(a)
Cu		
Zn	1.34	(a)
Ga	4.4	(a)
Ge ppb	1.7	(a)
As		
Se		
Rb		
Sr	220	
Y		
Zr	140	(a)
Nb		
Mo		
Ru		
Rh		
Pd ppb		
Ag ppb		
Cd ppb	1.8	(a)
In ppb	1.5	(a)
Sn ppb		
Sb ppb		
Te ppb		
Cs ppm		
Ba	17	(a)
La	0.4	(a)
Ce	0.87	(a)
Pr		
Nd	3	(a)
Sm	0.135	(a)
Eu	1.18	(a)
Gd		
Tb	0.1	(a)
Dy		
Ho		
Er		
Tm		
Yb	0.099	(a)
Lu	0.0134	(a)
Hf	0.124	(a)
Ta	0.074	(a)
W ppb		
Re ppb	0.032	(a)
Os ppb		
Ir ppb	1.2	(a)
Pt ppb		
Au ppb	0.02	(a)
Th ppm	0.14	(a)
U ppm	0.2	(a)

technique: (a) INAA

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