

71539
Ilmenite Basalt
10.9 grams

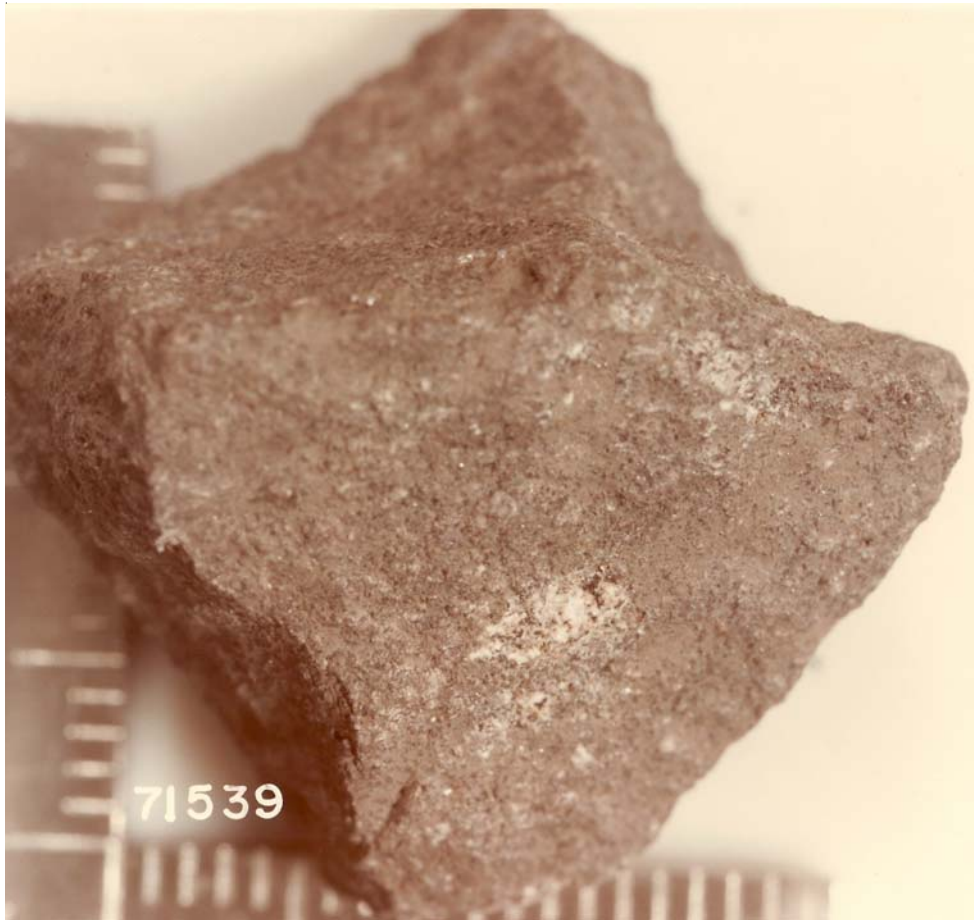


Figure 1: Photo of 71539 with mm scale. S73-33461

Introduction

71539 is a rake sample from the comprehensive sample taken near Steno Crater – see section on 71500. It is a high-Ti mare basalt with a measured age of 3.75 b.y., but is somewhat different from most Apollo 17 basalts.

Petrography

According to Warner et al. (1979), 71539 has a subophitic-granular texture with interlocking pyroxene and plagioclase (figure 3). It has a lower content of ilmenite than other Apollo 17 basalts.

71539 has some similarity to Apollo 11 basalts from a thousand miles away.

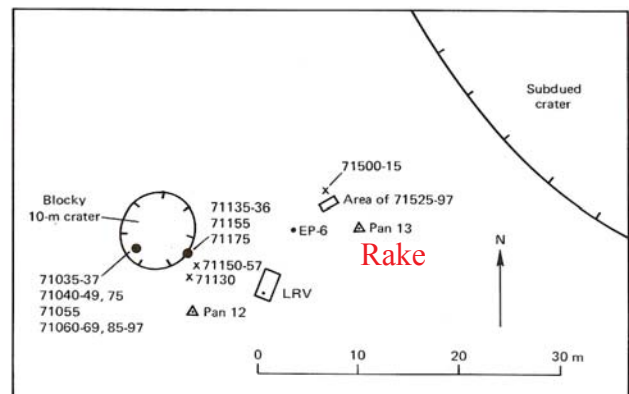


Figure 2: Map of station 1 where large rake sample 715XX was taken.



Figure 3: Thin section photos of texture of 71539.
Field of view 2.5 mm

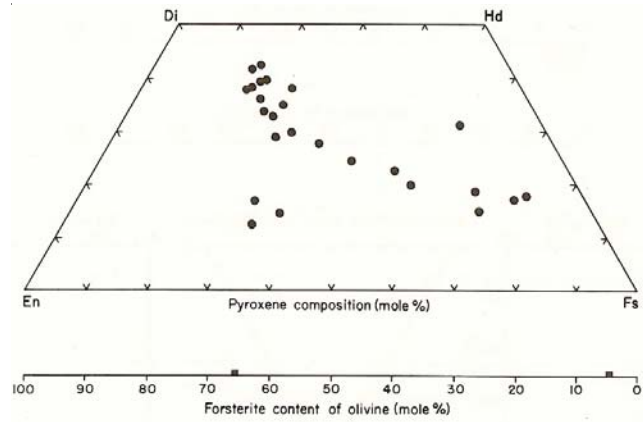


Figure 4: Pyroxene and olivine composition for 71539 (Warner et al. 1978).

Mineralogical Mode

Olivine	tr.
Pyroxene	50.2
Plagioclase	32.2
Opagues	12.2
Silica	4.5
Meostasis	0.8

Chemistry

Murali et al. (1977) found that 71539 had lower Ti than other Apollo 17 basalts, but had a REE pattern similar to type A Apollo 17 basalt (figure 6). Paces et al. (1991) found high Rb.

Radiogenic age dating

Paces et al. (1991) dated 71539 at 3670 ± 98 m.y. by Rb/Sr internal isochron and 3750 ± 67 m.y. by the more reliable Sm/Nd method.

Processing

There is only one thin section of 71539.

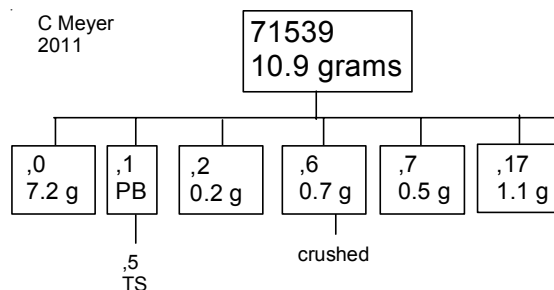


Table 1. Chemical composition of 71539.

reference weight	Murali77	Paces91	
SiO ₂ %			
TiO ₂	8.6	(a)	
Al ₂ O ₃	9.8	(a)	
FeO	19.1	(a)	
MnO	0.26	(a)	
MgO	5.4	(a)	
CaO	12.1	(a)	
Na ₂ O	0.47	(a)	
K ₂ O	0.081	(a)	
P ₂ O ₅			
S %			
sum			
Sc ppm	73	(a)	
V	36	(a)	
Cr	1273	(a)	
Co	13.5	(a)	
Ni			
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb		0.787	(b)
Sr		229	(b)
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	(a)	
Ce	30	(a)	
Pr			
Nd		32.5	(b)
Sm	12.1	(a) 13.4	(b)
Eu	2.44	(a)	
Gd			
Tb	3.3	(a)	
Dy	21	(a)	
Ho			
Er			
Tm			
Yb	11.5	(a)	
Lu	1.52	(a)	
Hf	9.9	(a)	
Ta	1.8	(a)	
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm			
U ppm			

technique: (a) INAA, (b) IDMS

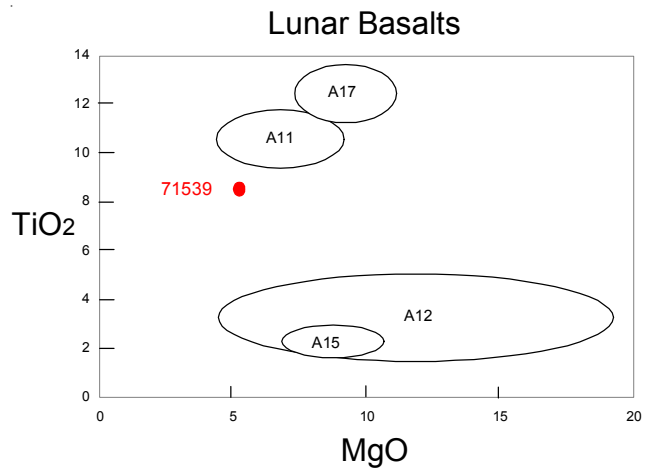


Figure 5: Composition of 71539 compared with that of other Apollo basalts.

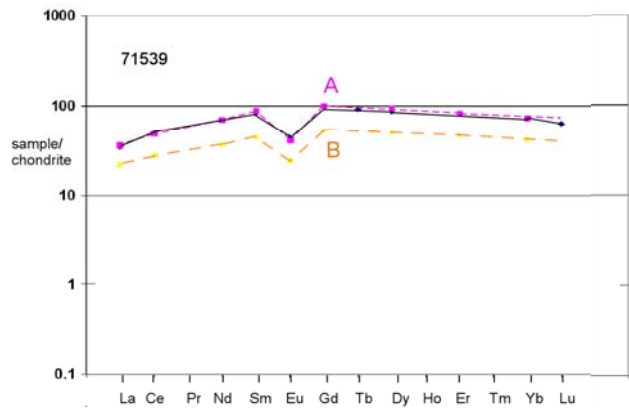


Figure 6: Normalized rare-earth-element diagram for 71539 and type A and B Apollo 17 basalts.

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