

74245
Aphanitic Ilmenite Basalt
63.34 grams



Figure 1: Photo of 74245. S73-17966. Sample is 5 cm long

Introduction

74245 was found in the soil sample (74240) collected from the end of the trench dug at Shorty Crater (see section on 74220). It is an aphanitic basalt.

Petrography

Brown et al. (1975) reported the mineral mode for 74245 finding a high percentage of “opaque” glass. Small phenocrysts of olivine are Fo₇₉. Phenocrysts of armalcolite are present. The overall texture is that of a basaltic vitrophyre (figure 4)

Usselman et al. (1975) determined the cooling rate (15-25 deg./hr.).

Chemistry

Neal (2001), Rhodes et al. (1975) and Warner et al. (1975) all reported chemical analyses. The Rb content is relatively high (type C?).

Radiogenic age dating

Apollo 17 mare basalts are generally considered 3.72 ± 0.04 b.y. old (see Paces et al. 1991). Nyquist et al. (1975) determined Rb, Sr and Sr^{87/86}.

Processing

74245 was cut by band saw and there are 5 thin sections.

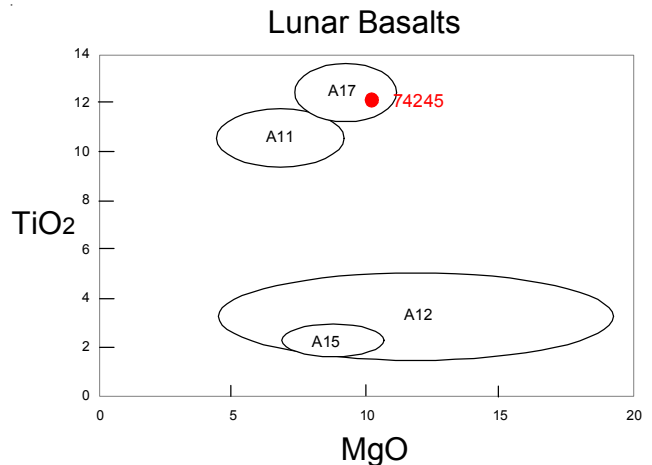


Figure 2: Composition of Apollo basalts.

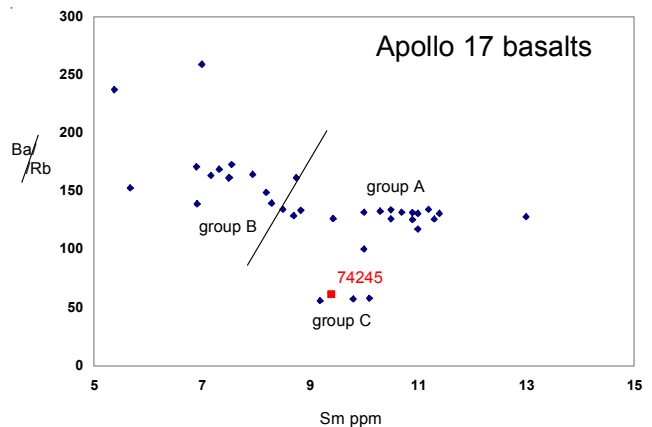


Figure 3: Trace element analysis of Apollo 17 basalts showing that 74245 is type C.

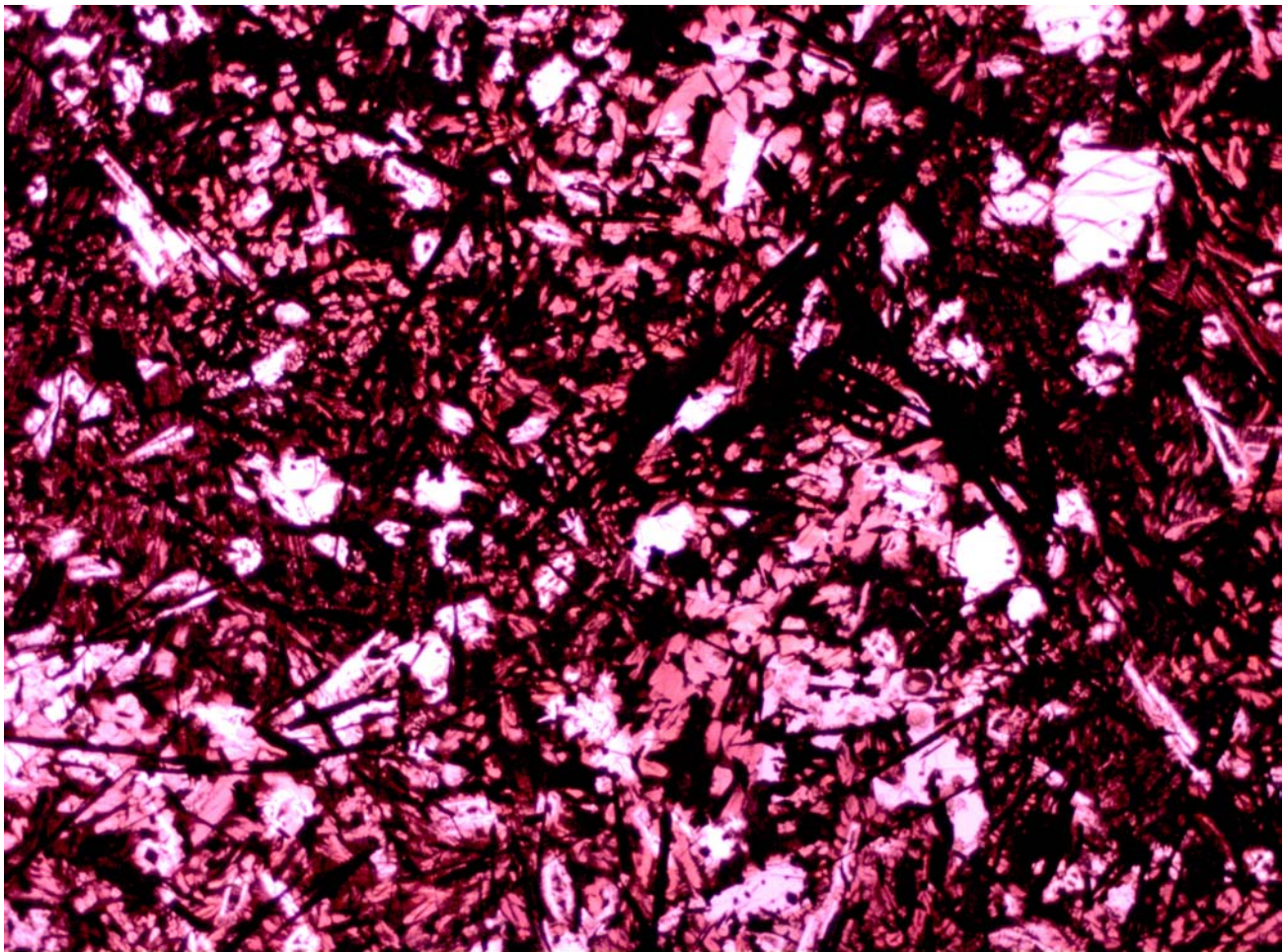
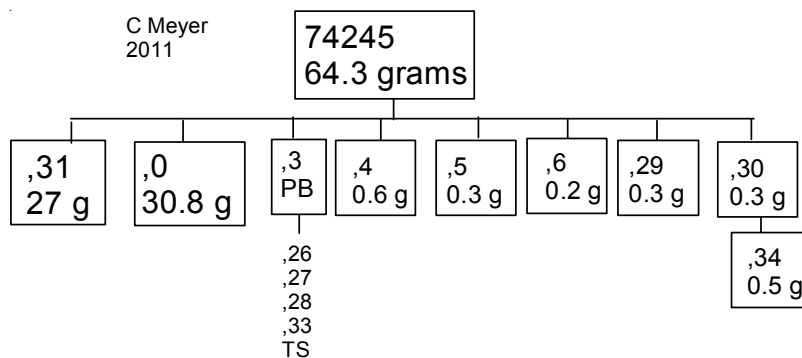


Figure 4: False color image of thin section of 74245.. 2.8 mm across.



References for 74245

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Table 1. Chemical composition of 74245.

reference weight	Neal2001	Rhodes76	Nyquist76	Warner75
SiO ₂ %		38.59	(b)	
TiO ₂		11.92	(b)	11.9 (c)
Al ₂ O ₃		8.72	(b)	8.7 (c)
FeO		18.06	(b)	18.4 (c)
MnO		0.27	(b)	0.227 (c)
MgO		9.65	(b)	11.2 (c)
CaO		10.59	(b)	10.2 (c)
Na ₂ O		0.36	(b)	0.355 (c)
K ₂ O		0.06	(b)	0.085 (c)
P ₂ O ₅		0.04	(b)	
S %		0.14	(b)	
sum				

Sc ppm	74	(a) 77	(c) 77	(c)
V	139	(a)	123	(c)
Cr	3399	(a) 3700	(b) 3578	(c)
Co	28	(a) 23.6	(c) 23	(c)
Ni	8.9	(a)		
Cu	51.6	(a)		
Zn	111	(a)		
Ga	3.46	(a)		
Ge ppb				
As				
Se				
Rb	1.08	(a) 1.17	(d)	
Sr	159	(a) 159	(d)	
Y	84	(a)		
Zr	218	(a)		
Nb	21	(a)		
Mo	0.4	(a)		
Ru				
Rh				
Pd ppb				
Ag ppb				
Cd ppb				
In ppb				
Sn ppb				
Sb ppb				
Te ppb				
Cs ppm	0.04	(a)		
Ba	65	(a) 67	(d)	
La	5.83	(a) 6.24	(d)	6.1 (c)
Ce	23.3	(a) 22.2	(d)	
Pr	3.77	(a)		
Nd	22.7	(a) 24.9	(d)	
Sm	9.44	(a) 9.8	(d)	9.4 (c)
Eu	1.73	(a) 1.77	(d)	1.76 (c)
Gd	13.3	(a)		
Tb	2.56	(a)		
Dy	16	(a) 17.5	(d)	15 (c)
Ho	3.3	(a)		
Er	9.32	(a) 9.68	(d)	
Tm	1.28	(a)		
Yb	8.47	(a) 9.13	(d)	8.6 (c)
Lu	1.12	(a) 1.25	(c)	
Hf	7.65	(a) 8.7	(c)	
Ta	1.47	(a)		
W ppb	40	(a)		
Re ppb				
Os ppb				
Ir ppb				
Pt ppb				
Au ppb				
Th ppm	0.38	(a)		
U ppm	0.12	(a)		

technique: (a) ICP-MS, (b) XRF, (c) INAA, (d) IDMS

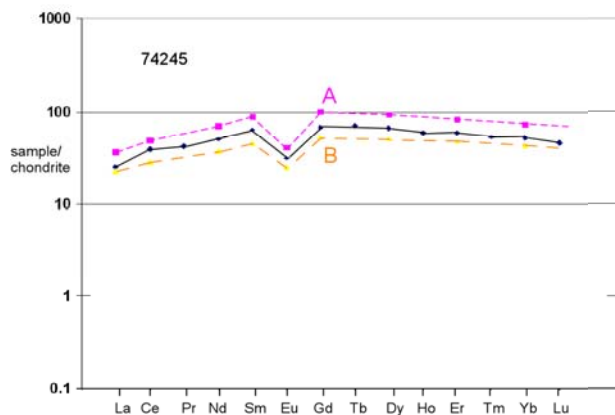


Figure 5: Normalized rare-earth-element diagram for 74245 compared with A and B types of Apollo 17 basalt.

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