

71507**High-Ti Mare Basalt****3.962 g, 3.5 x 1.7x 1.5 cm****INTRODUCTION**

71507 was described as a light reddish-gray, intergranular, medium-grained microdiabasic basalt (Apollo 17 Lunar Sample Information Catalog, 1973). It contains a few zap pits on all surfaces, and the specimen is partially dust coated on all surfaces (Fig. 1), with fresh fractures on a small area of the N face. Small, smooth vesicles and irregular vugs (1-3mm) are present throughout. This basalt has an irregular shape (Fig. 1) and contains 1 or 2 penetrative fractures. It was collected from Station 1A.

PETROGRAPHY AND MINERAL CHEMISTRY

The petrography and mineral chemistry of 71507 has been described by Warner et al. (1978). During the preparation of this catalog, we examined thin section 71507,5 and found this to be a medium grained (0.2-0.8mm) basalt with blocky plagioclase and pink pyroxenes. Occasionally, plagioclase and pyroxene are intergrown into "bow-tie" structures (Fig. 2). Corroded olivines are present (~0.2mm) either forming the core to larger pyroxenes or just with

a small pyroxene rim. Ilmenite (up to 1 mm) overlays this texture (Fig. 2). Interstitial SiO_2 is conspicuous. Native Fe and troilite are either interstitial or associated with ilmenite. An interstitial opaque glass is also associated with ilmenite. No rutile or chromite exsolution was observed in the ilmenite, and no armalcolite was found.

WHOLE-ROCK CHEMISTRY

Murali et al. (1977) have reported the whole-rock composition of 71507,1 (Table 1). It contains 13.2 wt% TiO_2 with a



Figure 1: Hand specimen photograph of 71507,0. Small divisions on scale are in millimeters.

MG# of 44. Based on the whole-rock classification of Rhodes et al. (1976) and Warner et al. (1979), plus the criteria of Neal et al. (1990), 71507 is classified as a Type B2 Apollo 17 high-Ti basalt. The REE profile is LREE-depleted in that it

exhibits a $(La/Sm)_N$ ratio < 1 the Ce analysis must be considered suspect (Fig. 3). A negative Eu anomaly is present (Fig. 3) $[(Eu/Eu^*)_N = 0.561]$. The HREE exhibit a variation between 25 and 30 times chondritic values (Fig. 3).

PROCESSING

Of the original 3.962g of 71507, 0, only 3.3g remains. 71507,1 was irradiated for INAA, and thin section ,5 was taken from this sample.

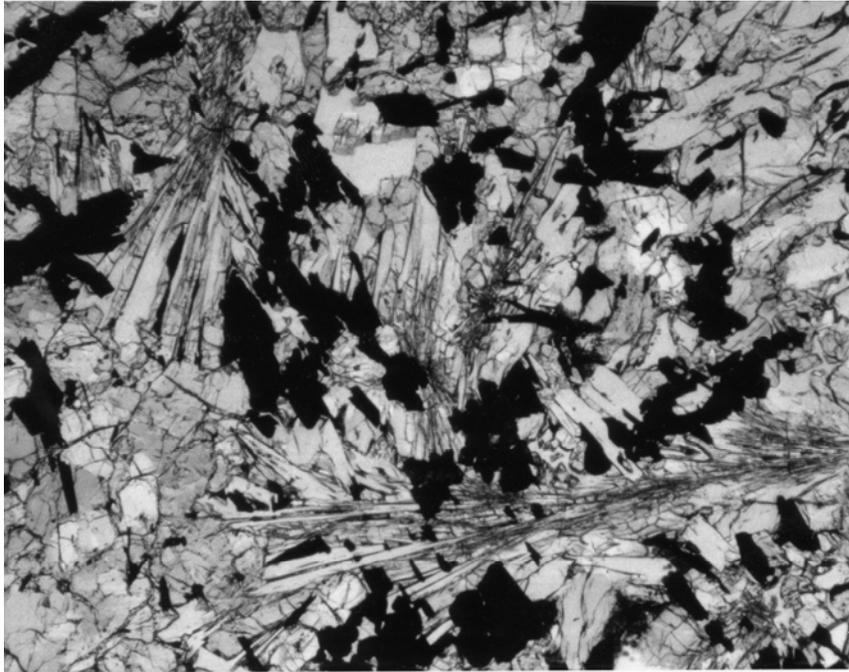


Figure 2: Photomicrograph of 71507,5 demonstrating a texture varying between blocky and well-crystallized to variolitic. Field of view = 2.5 mm.

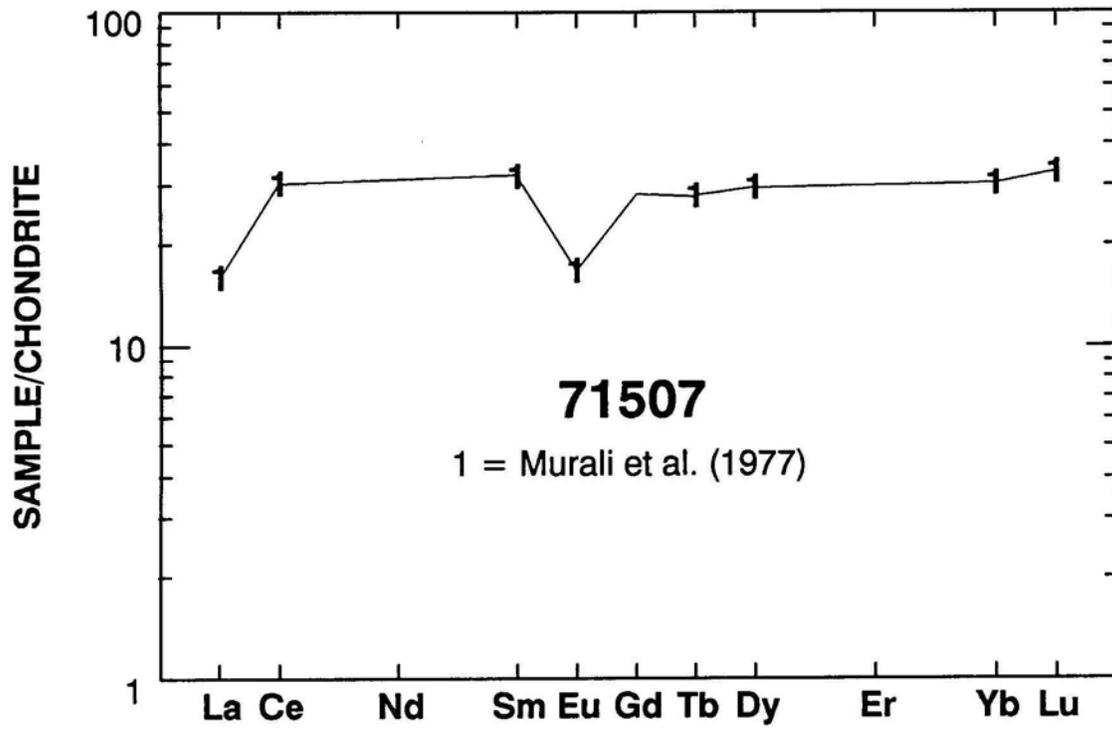


Figure 3: Chondrite-normalized rare-earth element profile of 71507. Data from Murali et al. (1977).

Table 1: Whole-rock chemistry of 71507
Data from Murali et al. (1977).

Sample 71507,1 Method N		Sample 71507,1 Method N	
SiO ₂ (wt %)		Cu	
TiO ₂	13.2	Ni	
Al ₂ O ₃	8.6	Co	17.8
Cr ₂ O ₃	0.435	V	113
FeO	20.6	Sc	81
MnO	0.253	La	5.2
MgO	9.1	Ce	26
CaO	10.3	Nd	
Na ₂ O	0.39	Sm	6.4
K ₂ O	0.061	Eu	1.27
P ₂ O ₅		Gd	
S		Tb	1.6
Nb (ppm)		Dy	10
Zr		Er	
Hf	6.1	Yb	6.6
Ta	1.5	Lu	1.1
U		Ga	
Th		F	
W		Cl	
Y		C	
Sr		N	
Rb		H	
Li		He	
Ba		Ge (ppb)	
Cs		Ir	
Be		Au	4 ± 1
Zn		Ru	
Pb		Os	

Analysis by: N = INAA.