

71506**High-Ti Mare Basalt
12.11 g, 3 x 2 x 1.5 cm****INTRODUCTION**

71506 was described as a medium gray, intergranular, microporphyritic to porphyritic basalt (Apollo 17 Lunar Sample Information Catalog, 1973). It contains many zap pits which are glass lined on all surfaces except B which is a fresh fracture (Fig. 1a). Approximately 1% of small, irregular cavities are present, some containing small groundmass crystal terminations, but none with euhedral crystals. The fresh fracture face is in part a shallow vuggy depression. A few small, thin veinlets of light yellow to greenish glass cut across the fresh surface. 71506 has a rounded appearance (Fig. 1 b) with no fractures. It was collected from Station 1A.

**PETROGRAPHY AND
MINERAL CHEMISTRY**

The petrography and mineral chemistry of 71506 has been

described only in general terms by Warner et al. (1979); compositions and textures were not specifically mentioned. Ma et al. (1979) classified 71506 as an olivine-microporphyritic ilmenite basalt. During the preparation of this catalog, we examined thin section 71506,4. 71506 is a fine-grained (0.1-0.3mm) basalt with a groundmass dominated by poorly crystallized "bow-tie" structures of plagioclase and pyroxene (Fig. 2). Corroded olivine phenocrysts (up to 2mm) are present and contain euhedral chromite inclusions (~0.01mm). Ilmenite forms a microphenocryst/phenocryst phase (up to 2mm) as well as a groundmass phase. It is interstitial with the plagioclasepyroxene "bow-tie" structures and olivine phenocrysts (Fig. 2). No rutile or chromite exsolution was observed in the ilmenite and no armalcolite or SiO₂ was present. Native Fe and troilite are either associated with ilmenite or form interstitial phases. 71506 is distinguished

from 71505 by the presence of an opaque interstitial glass.

WHOLE-ROCK CHEMISTRY

Both Ma et al. (1979) and Warner et al. (1979) reported the same INA whole-rock analysis for 71506,1. Warner et al. (1979) described 71506 as a Type B Apollo 17 basalt containing 10.7 wt% TiO₂ (Table 1) with a MG# of 39. It is further classified as a Type B2 Apollo 17 basalt using the criteria of Neal et al. (1990). The REE profile (Fig. 3) is LREE-depleted with a negative Eu anomaly [(Eu/Eu*)_N = 0.57]. There is a slight decrease in the HREE abundances (relative to chondrites) compared to the MREE (Fig. 3).

PROCESSING

Of the original 12.11 g of 71506,0, a total of 11.7g remains. 71506,1 was irradiated for INAA and thin section,4 was taken from this sample.

SAMPLE 71506-274



1a: Bottom surface.



1b: Top surface.

Figure 1: Hand specimen photograph of 71506. Cubic scale = 1 cm³.

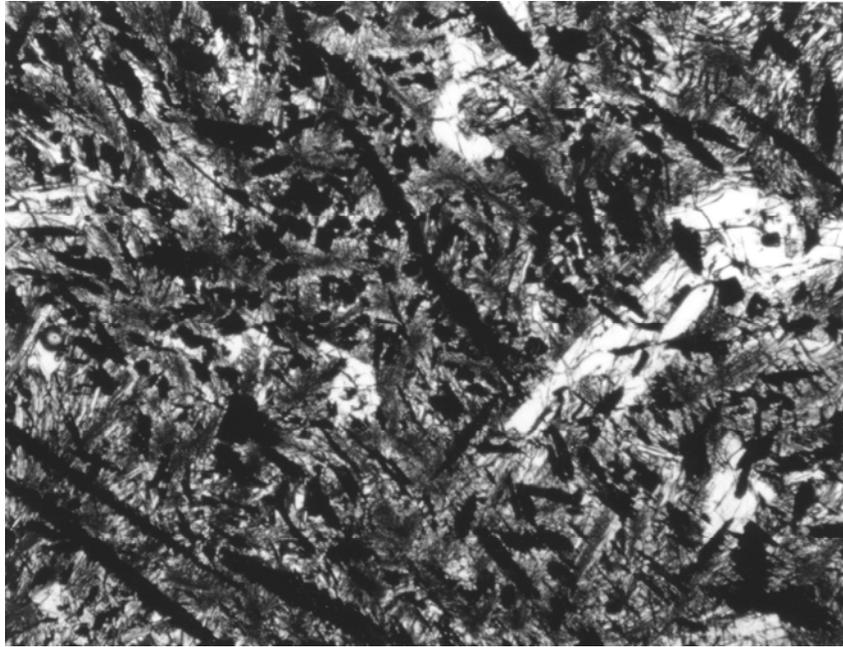


Figure 2: Photomicrograph of 71506,4 demonstrating subhedral olivine phenocrysts and ilmenite with sawtooth margins. An overall sub-variolitic texture predominates. Field of view = 2.5 mm.

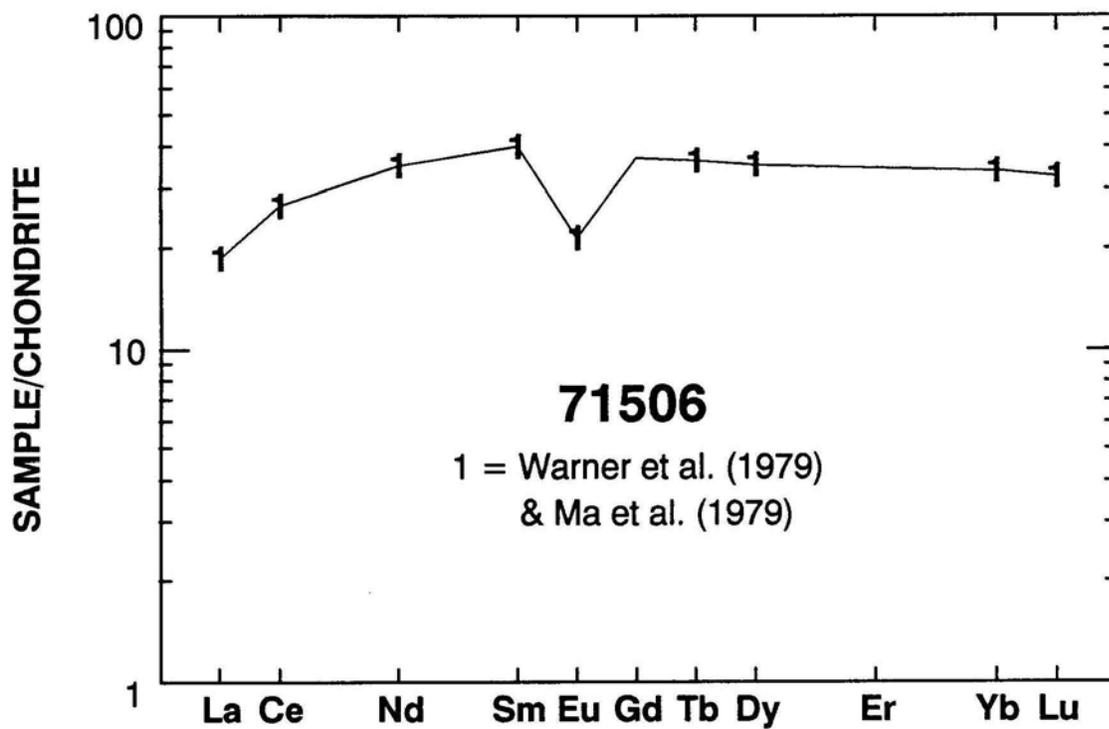


Figure 3: Chondrite -normalized rare-earth element plot for 71506. The same analysis was reported by Ma et al. (1979) and Warner et al. (1979).

Table 1: Whole-rock chemistry of 71506.
 Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

Sample 71506,1 Method N		Sample 71506,1 Method N	
SiO ₂ (wt %)		Cu	
TiO ₂	10.7	Ni	
Al ₂ O ₃	10.0	Co	19
Cr ₂ O ₃	0.353	V	106
FeO	19.5	Sc	85
MnO	0.266	La	6.1
MgO	7	Ce	23
CaO	11.6	Nd	22
Na ₂ O	0.376	Sm	8.1
K ₂ O	0.052	Eu	1.64
P ₂ O ₅		Gd	
S		Tb	2.1
Nb (ppm)		Dy	14
Zr		Er	
Hf	7.2	Yb	7.4
Ta	1.9	Lu	1.10
U		Ga	
Th		F	
W		Cl	
Y		C	
Sr		N	
Rb		H	
Li		He	
Ba		Ge (ppb)	
Cs		Ir	
Be		Au	
Zn		Ru	
Pb		Os	

Analysis by: N = INAA.