

**71505****High-Ti Mare Basalt****29.45 g, 3.2 x 2.5 x 2.5 cm****INTRODUCTION**

71505 has been described as a dense, ilmenite-rich basalt with a very fine-grained groundmass (Fig. 1) containing acicular plagioclase. It is a dark gray, subangular-blocky, intergranular, microporphyritic basalt (Apollo 17 Lunar Sample Information Catalog, 1973). 71505 contains a few zap pits on all faces, the fewest being on B, and a few small vesicles are present. The surface is partially coated with reddish soil and small patches of dark glass. It contains a few nonpenetrative

fractures and was collected from Station 1A.

**PETROGRAPHY AND MINERAL CHEMISTRY**

The petrography and mineral chemistry of 71505 has been described only within general terms by Warner et al. (1979); compositions and textures were not specifically mentioned, Ma et al. (1979) classified 71505 as an olivine-microporphyritic ilmenite basalt. During the preparation of this catalog, we examined thin section 71505,5

and found it to be a fine-grained (0.1-0.3mm) basalt dominated by interlocking, poorly crystallized "sheaves" of plagioclase and pyroxene (Fig. 2). Corroded skeletal olivine microphenocrysts (up to 2mm) are abundant and contain small (~0.005mm) euhedral chromite inclusions. Occasional acicular plagioclase laths attain 1mm. Ilmenite is interstitial to the plagioclase and pyroxene "bow-tie" structures as well as the olivine microphenocrysts. These ilmenites reach up to 2mm long and have "sawtooth" margins (Fig. 2). Ilmenite is also



Figure 1: Hand specimen photograph of 71505,0 showing the north surface. Cubic scale = 1 cm<sup>3</sup>.

SAMPLE 71505-270

a groundmass phase. No rutile or chromite exsolution is witnessed in these ilmenites and no armalcolite or interstitial  $\text{SiO}_2$  was found. Native Fe and troilite ( $< 0.1\text{mm}$ ) are either associated with ilmenite or are interstitial phases.

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### WHOLE-ROCK CHEMISTRY

Ma et al. (1979) and Warner et al. (1979) reported the same INA whole-rock analysis for 71505.

Warner et al. (1979) classified 71505 as a Type B Apollo 17 high-Ti basalt. Using the criteria of Neal et al. (1990), 71505 is further classified as a Type B2 Apollo 17 basalt. It contains 10.5 wt%  $\text{TiO}_2$  (Table 1) with a MG# of 39.4. 71505 is a LREE-depleted basalt containing a negative Eu anomaly  $[(\text{Eu}/\text{Eu}^*)_{\text{N}} = 0.571]$ . The HREE are constant at -33 times chondritic abundances (Fig\_ 3).

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### PROCESSING

Of the original 29.458 of 71505,0, approximately 26.918 remains. 71505,1 weighs 2g and ,2 was irradiated for INAA and thin section 71505,5 was taken from this sample.



Figure 2: Photomicrograph of 71505,5 demonstrating a uariolitic to sub-uariolitic texture, with a large skeletal olivine phenocryst at the top. Field of view = 2.5 mm.

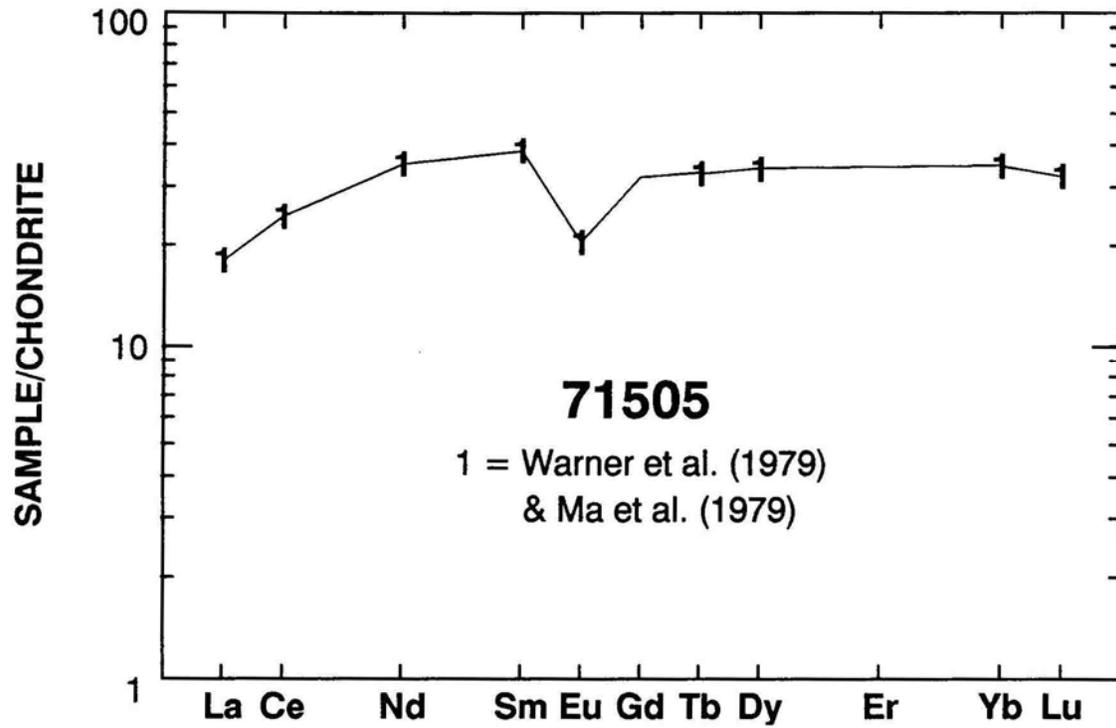


Figure 3: Chondrite-normalized rare-earth element plot for 71505. The same analysis was reported by Ma et al. (1979) and Warner et al. (1979).

**Table 1: Whole-rock chemistry of 71505.**  
Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

Sample 71505,2 Method N		Sample 71505,2 Method N	
SiO <sub>2</sub> (wt %)		Cu	
TiO <sub>2</sub>	10.5	Ni	
Al <sub>2</sub> O <sub>3</sub>	9.6	Co	18
Cr <sub>2</sub> O <sub>3</sub>	0.306	V	87
FeO	19.2	Sc	86
MnO	0.252	La	5.9
MgO	7	Ce	21
CaO	10.3	Nd	22
Na <sub>2</sub> O	0.367	Sm	7.8
K <sub>2</sub> O	0.048	Eu	1.57
P <sub>2</sub> O <sub>5</sub>		Gd	
S		Tb	1.9
Nb (ppm)		Dy	13
Zr		Er	
Hf	6.9	Yb	7.6
Ta	1.6	Lu	1.09
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.