

**71066****High-Ti Mare Basalt****19.96 g, 3.5 x 1.5 x 2.2 cm****INTRODUCTION**

71066 was described as a medium dark gray, fine-grained, microporphyritic basalt (Apollo 17 Lunar Sample Information Catalog, 1973). This sample contains no zap pits, but does contain a line of small (0.1 mm) vugs on one side and a 2mm vug on the opposite side, containing a felty inter-growth of ilmenite crystals. 71066 has an angular, wedge-shaped appearance (Fig. 1). This basalt was collected from Station 1A.

**PETROGRAPHY AND MINERAL CHEMISTRY**

Warner et al. (1979) reported the petrography and mineral chemistry of 71065, but only within the general confines of their Type B basalts. This sample was not specifically mentioned. We examined thin section 71066,5 during the preparation of this catalog and found it to be very fine-grained (- 0.1-0.3mm), with armalcolite, euhedral olivine, and ilmenite phenocrysts-(0.4mm, 0.6mm, and 0.7mm,

resp. -Fig. 2). Rare Cr-ulvospinel are also present. Ilmenite contains occasional exsolution lamellae (<0.005mm) of chromite and rutile. Olivines exhibit little sign of reaction with the groundmass, but armalcolite commonly has an overgrowth of ilmenite (Fig. 3) which is usually continuous. Ilmenites exhibit "sawtooth" margins. Occasional inclusions of Cr-ulvospinel (<0.1mm) are found in olivine phenocrysts, Groundmass phases included pink pyroxene, plagioclase,



Figure 1: Hand specimen photograph of 71066,0.

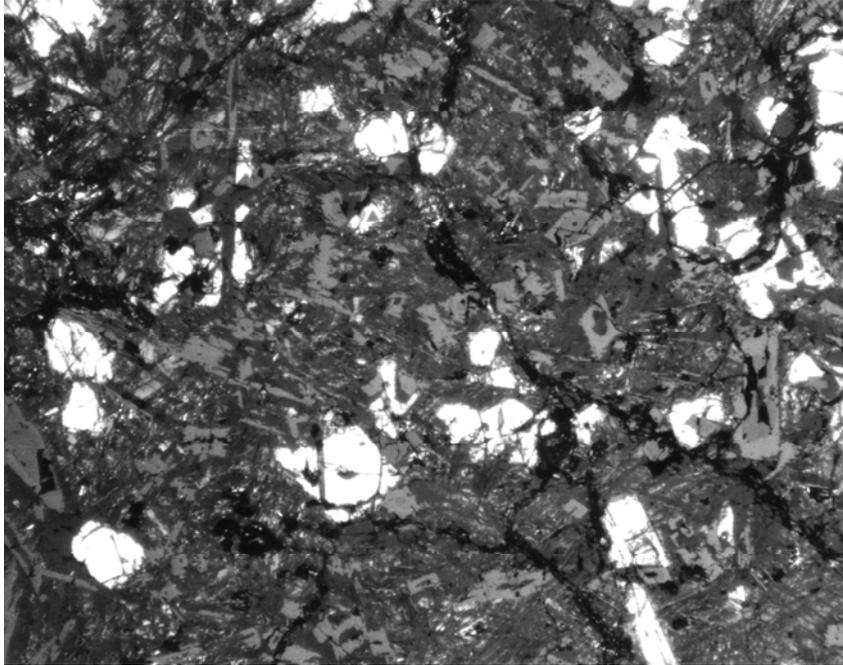


Figure 2: Photomicrograph of 71066,5 depicting ilmenite and olivine phenocrysts set in a glassy matrix.  
Field of view is 2.5 mm.

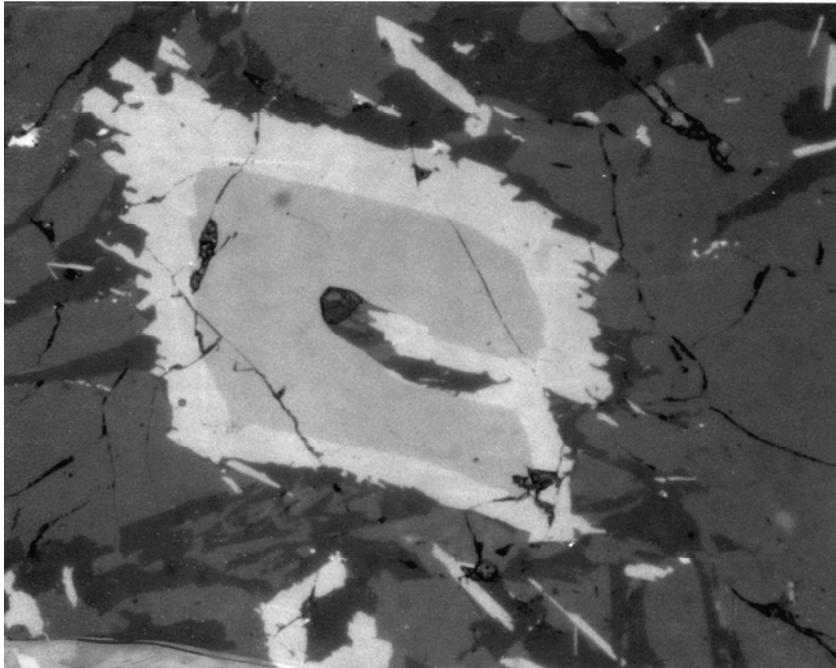


Figure 3: Photomicrograph in reflected light of 71066,5 depicting armalcolite rimmed with ilmenite.  
Field of view is 0.625 mm.

native Fe, troilite, and opaque glass.

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### WHOLE-ROCK CHEMISTRY

Ma et al. (1979) and Warner et al. (1979) reported the same whole-rock analysis for 71066 (Table 1). 71066 contains 14.2 wt% TiO<sub>2</sub> with a MG# of

43.9 and was described as a Type B Apollo 17 high-Ti basalt by Warner et al. (1979). This sample is further classified as a Type B2 basalt using the criteria of Neal et al. (1990). The REE profile is LREE-depleted, with approximately constant middle and heavy REE abundances at approximately 30 times chondritic abundances (Fig. 4). A

negative Eu anomaly is present ( $[\text{Eu}/\text{Eu}^*]_{\text{N}} = 0.56$ ).

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### PROCESSING

Of the original 19.96g of 71066,0, 19.288 remains. 71066,2 was irradiated and thin section 71066,5 taken from this irradiated sample.

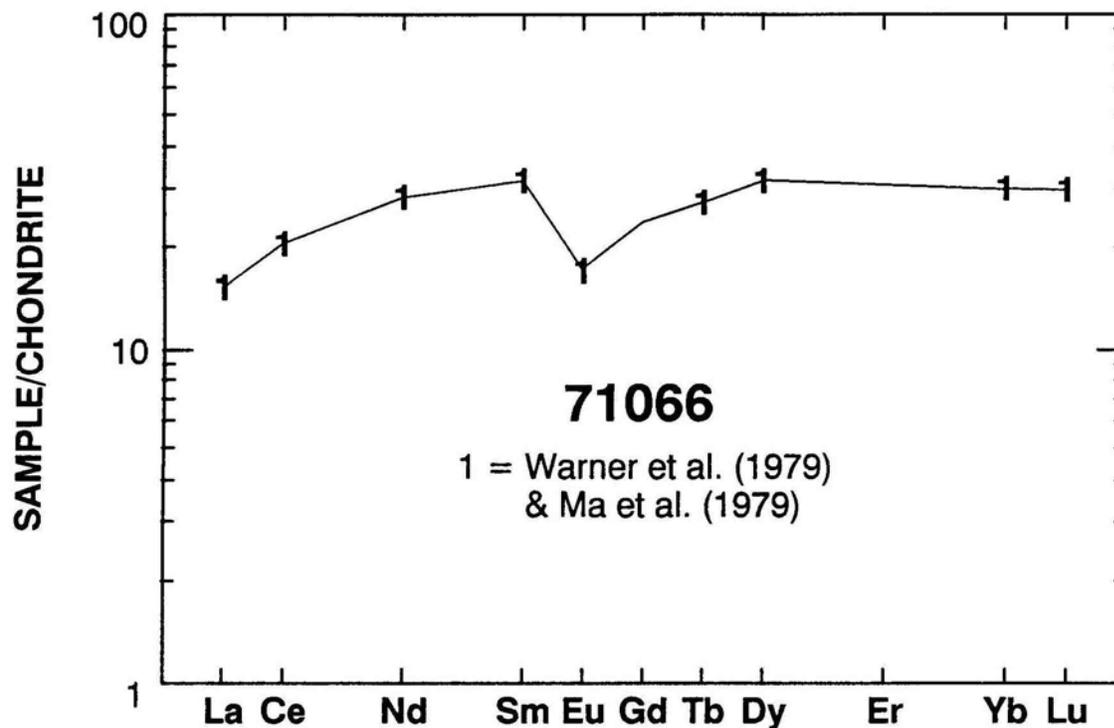


Figure 4: Chondrite -normalized rare-earth element profile of 71066.

**Table 1: Whole-rock chemistry of 71066.**  
Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

	71066,2 I		71066,2 I
SiO <sub>2</sub> (wt %)		Cu	
TiO <sub>2</sub>	14.2	Ni	
Al <sub>2</sub> O <sub>3</sub>	8.9	Co	27
Cr <sub>2</sub> O <sub>3</sub>	0.486	V	133
FeO	20.5	Sc	89
MnO	0.259	La	5.1
MgO	9	Ce	18
CaO	9.4	Nd	18
Na <sub>2</sub> O	0.406	Sm	6.5
K <sub>2</sub> O	0.041	Eu	1.33
P <sub>2</sub> O <sub>5</sub>		Gd	
S		Tb	1.6
Nb (ppm)		Dy	11
Zr		Er	
Hf	6.4	Yb	6.7
Ta	1.8	Lu	1.02
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	

I = analysis by INAA.