

**71587****High-Ti Mare Basalt****41.27 g****INTRODUCTION**

See "Rake Sample Descriptions" and "Table of Rake Samples", as well as Fig. 1.

**PETROGRAPHY AND MINERAL CHEMISTRY**

Warner et al. (1975bc, 1976ab, 1978) reported the petrography and mineral chemistry of 71587. Warner et al. (1975c) described 71587 as a microporphyrritic ilmenite basalt, but only described it in general terms within the context of this petrographic group. During the preparation of this catalog, we

examined thin section 71587,6 and found it to be a fine- to medium-grained (0.1-0.4mm), microporphyrritic basalt. It contains olivine and ilmenite microphenocrysts (both up to 0.7mm). Olivines are corroded, and some have minor pink pyroxene overgrowths. Rare euhedral chromite inclusions (~0.005mm) are seen in these olivines. Commonly, the ilmenites contain armalcolite cores (Fig. 2a), as well as rutile and chromite exsolution features. "Bow-tie" intergrowths of plagioclase and pyroxene form the groundmass of this basalt, along with minor ilmenite. Discrete Cr-

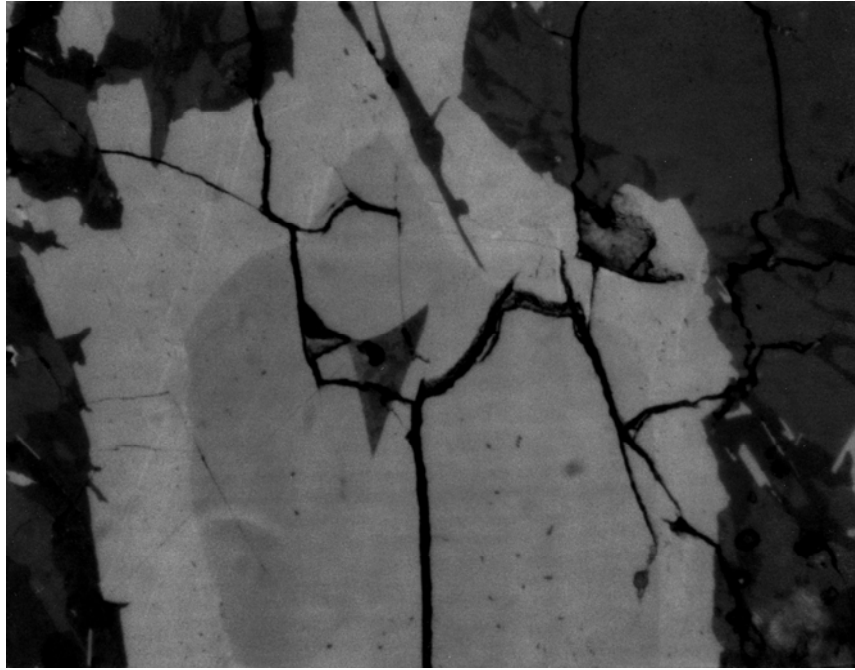
ulvospinelns are also present (up to 0.3mm) in the groundmass. These contain exsolution blebs of ilmenite (Fig. 2b) and native Fe. Very little native Fe and troilite was observed.

**WHOLE-ROCK CHEMISTRY**

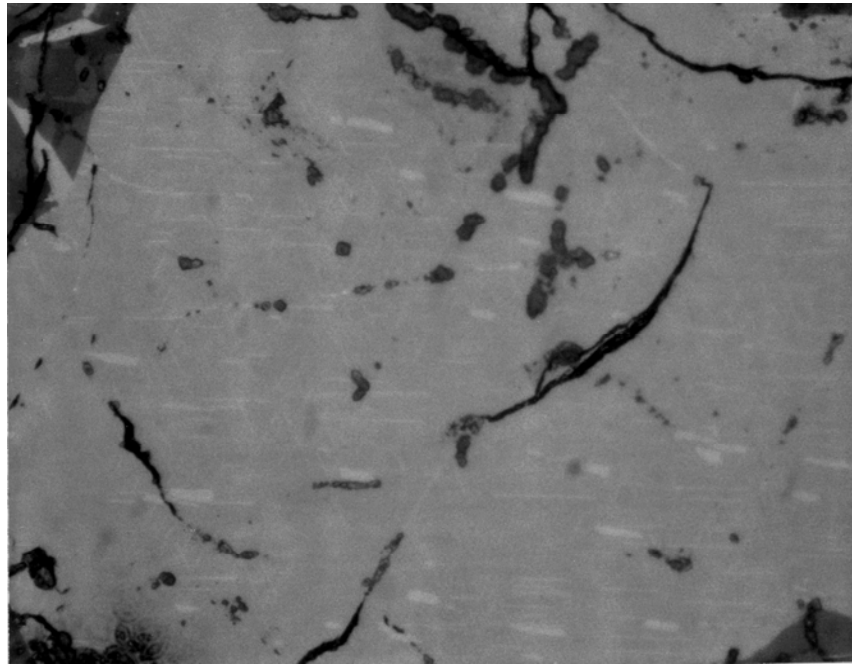
Laul et al. (1975) and Warner et al. (1975) reported the same whole-rock analysis of 71587,1 in a study of Apollo 17 rake samples (Table 1). This sample is classified as a Type B2 Apollo 17 high-Ti basalt, based on the whole-rock classification of Rhodes et al. (1976) and Warner et al. (1979), plus the



Figure 1: Hand specimen photograph of 71587,0. Small divisions on scale are in millimeters.



2a: Armalcolite core rimmed by ilmenite exhibiting rutile exsolution - field of view= 0.625 mm.



2b: Ilmenite exsolution in ulvöspinel - field of view = 0.625 mm.

Figure 2: Photomicrographs of 71587,6.

criteria of Neal et al. (1990). Laul et al. (1975) and Warner et al. (1975) reported a TiO<sub>2</sub> content of 12.7 wt%, with a SIG# of 41.4. The REE profile (Fig. 3) is LREE depleted with a maximum at Sm. The HREE are approximately constant at 33 times chondritic abundances.

A negative Eu anomaly is present  $[(Eu/Eu^*)_N = 0.52]$

#### PROCESSING

Of the original 41.27g of 71587, 0, approximately 39.728 remains. 71587, 1 was used for

INAA, and has since been renumbered to, 9001. Thin section, 6 was taken from this irradiated sample.

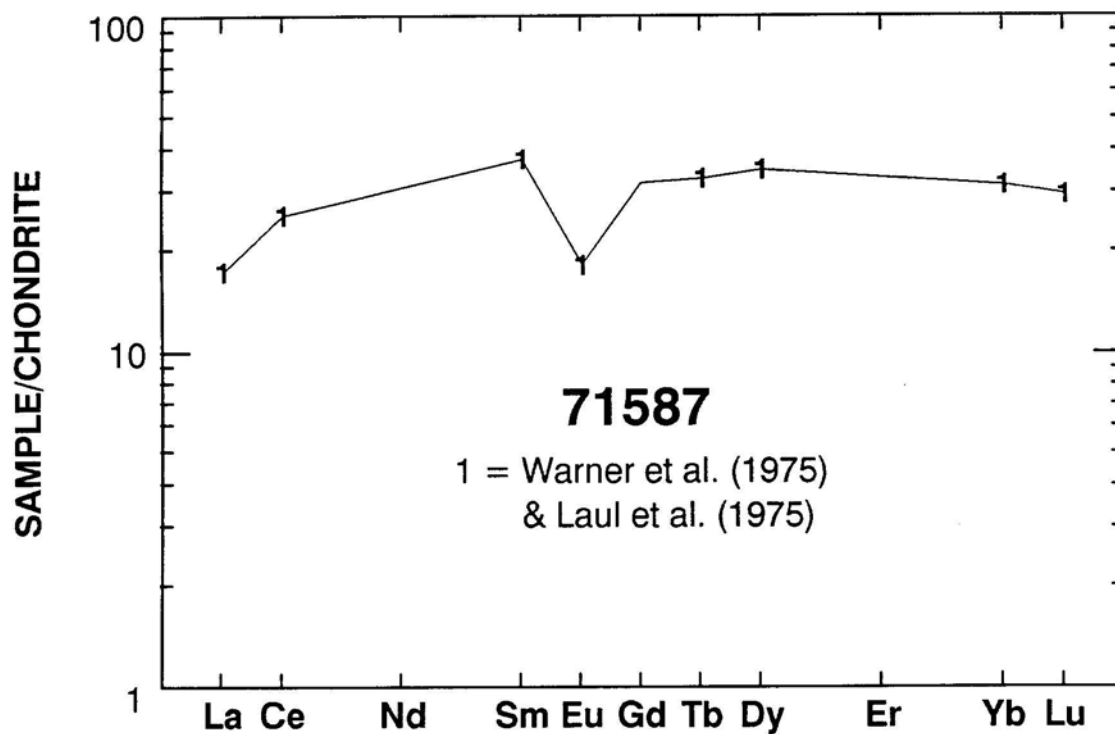


Figure 3: Chondrite -normalized rare-earth element profile of 71587. The same analysis was reported by Warner et al. (1975) and Laul et al. (1975).

**Table 1: Whole-rock chemistry of 71587.**  
 Data from Laul et al. (1975) and Warner et al. (1975) (same analysis).

Sample 71587,1 Method N		Sample 71587,1 Method N	
SiO <sub>2</sub> (wt %)		Cu	
TiO <sub>2</sub>	12.7	Ni	
Al <sub>2</sub> O <sub>3</sub>	8.7	Co	20.8
Cr <sub>2</sub> O <sub>3</sub>	0.405	V	100
FeO	19.2	Sc	80
MnO	0.240	La	5.7
MgO	7.6	Ce	22
CaO	10.3	Nd	
Na <sub>2</sub> O	0.39	Sm	7.6
K <sub>2</sub> O	0.050	Eu	1.40
P <sub>2</sub> O <sub>5</sub>		Gd	
S		Tb	1.9
K (ppm)		Dy	12
Nb		Er	
Zr		Yb	6.9
Hf	6.2	Lu	1.0
Ta	5.4	Ga	
U		F	
Th		Cl	
W		C	
Y		N	
Sr		H	
Rb		He	
Li		Ge (ppb)	
Ba		Ir	
Cs		Au	
Be		Ru	
Zn		Os	
Pb			

Analysis by: N = INAA.