

**71588****High-Ti Mare Basalt****48.98 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 71588. Warner et al. (1975c) described 71588 as a microporphyrritic ilmenite basalt, but only described it in general terms within the context of this petrographic group. However, Warner et al. (1975) did report pyroxene compositions (Fig. 2). These range from titanite, to pigeonite, toward pyroxferroite. During the preparation of this catalog, we examined thin

section 71588,6 and found it to be a medium-grained (0.2-0.4mm), equigranular basalt. It is comprised of blocky, pink pyroxene and plagioclase, although rare "bow-tie" inter-growths of these two minerals are also present. Olivine (0.8-1mm) and ilmenite (up to 1mm) phenocrysts are also present, and ilmenite is also present in the groundmass. One ilmenite reaches ~3mm, but this is unusual. Ilmenite phenocrysts exhibit "sawtooth" margins. Rutile and chromite exsolution lamellae (c 0.002mm wide) are present in both phenocryst and groundmass ilmenite. Euhedral chromite inclusions (~0.005mm) are seen in the olivine phenocrysts. Interstitial SiO<sub>2</sub> is conspicuous, forming masses up to 0.15mm. Native Fe and troilite (~0.005mm) are

disseminated throughout. No armalcolite was identified.

**WHOLE-ROCK CHEMISTRY**

Laul et al. (1975) and Warner et al. (1975) reported the same whole-rock analysis of 71588,2 in a study of Apollo 17 rake samples (Table 1). 71588 is classified as a Type B2 Apollo 17 high-Ti basalt, based on the classification of Rhodes et al. (1976) and Warner et al. (1979), plus the criteria of Neal et al. (1990). Laul et al. (1975) and Warner et al. (1975) reported a TiO<sub>2</sub> content of 12.0 wt%, with a MG# of 41.7. The REE profile (Fig. 3) is LREE depleted. The HREE show a decrease from Dy at ~26-28 times chondritic levels. A negative Eu anomaly is present [(Eu/Eu\*)<sub>N</sub> = 0.56].

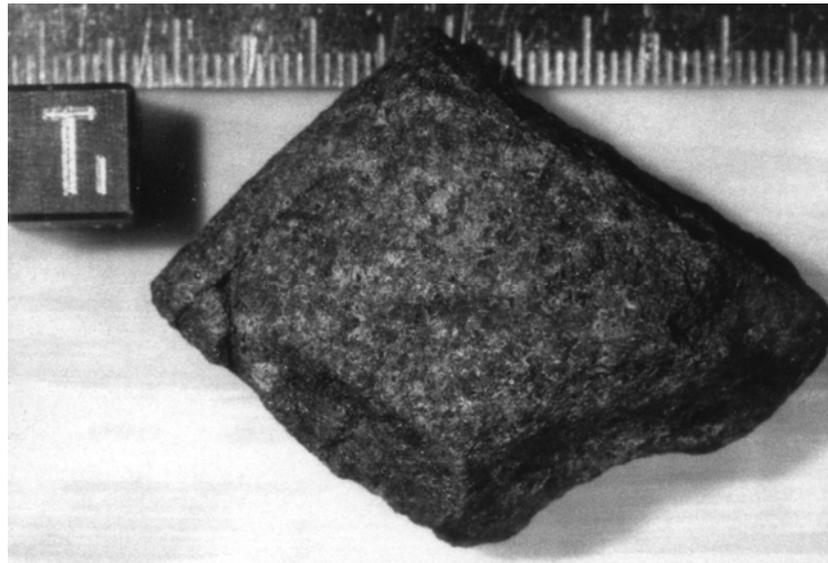


Figure 1: Hand specimen photograph of 71588,0. Small divisions on scale are in millimeters.

**PROCESSING**

Of the original 48.988 of 71588,0, a total of 47.92g remains. 71588,2 was used for INAA and has since been renumbered to,9001. Thin section ,6 was taken from this irradiated sample.

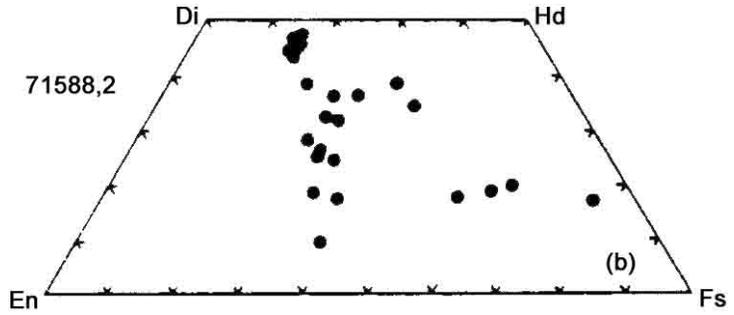


Figure 2: Pyroxene compositions from 71588,2 represented on a pyroxene quadrilateral.

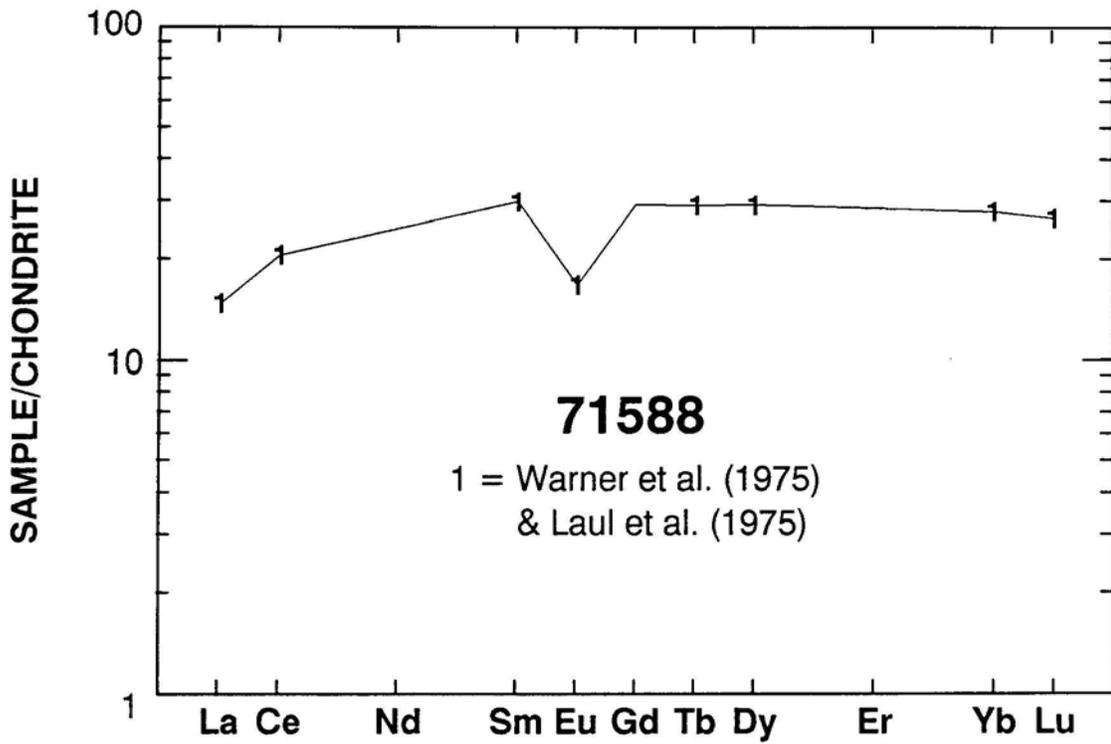


Figure 3: Chondrite-normalized rare-earth element profile of 71588. The same analysis was reported by Warner et al. (1975) and Laul et al. (1975).

**Table 1: Whole-rock chemistry of 71588.**  
 Data from Laul et al. (1975) and Warner et al. (1975) (same analysis).

Sample 71588,2 Method N		Sample 71588,2 Method N	
SiO <sub>2</sub> (wt %)		Cu	
TiO <sub>2</sub>	12.0	Ni	
Al <sub>2</sub> O <sub>3</sub>	8.4	Co	23.1
Cr <sub>2</sub> O <sub>3</sub>	0.419	V	110
FeO	19.9	Sc	79
MnO	0.244	La	4.9
MgO	8.0	Ce	18
CaO	10.1	Nd	
Na <sub>2</sub> O	0.35	Sm	6.1
K <sub>2</sub> O	0.040	Eu	1.30
P <sub>2</sub> O <sub>5</sub>		Gd	
S		Tb	1.7
K (ppm)		Dy	11
Nb		Er	
Zr		Yb	6.2
Hf	6.0	Lu	0.91
Ta	1.4	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.