

71578**High-Ti Mare Basalt****353.9 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 71578. Warner et al. (1975c) described 71578 as a microporphyritic 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 71578,5 and found it to be a medium-grained (0.2-0.5mm) basalt (Fig. 2). 71578, 5 contains two textural domains: 1) "bow-tie" intergrowths of plagioclase and pyroxene and 2) blocky areas dominated by pink pyroxene (up to 0.5mm), some containing rounded olivine cores (<0.1mm). Olivine is also present as microphenocrysts (up to 0.7mm) (Fig. 2). Ilmenite is present in the groundmass, but phenocrysts reach up to 1mm with "sawtooth" margins (Fig. 2). Minor exsolution of rutile and chromite was observed. Native Fe and troilite (<0.05mm) are disseminated

throughout. No armalcolite was observed.

WHOLE-ROCK CHEMISTRY

Laul et al. (1975) and Warner et al. (1975) reported the same whole-rock analysis of 71578,1 in a study of Apollo 17 rake samples (Table 1). Based on the whole-rock classification of Rhodes et al. (1976) and Warner et al. (1979), 71578 is classified as a Type A Apollo 17 high-Ti basalt. These authors reported a TiO₂ content of 11.7 wt%, with a MG# of 43.7. The REE profile (Fig. 3) is LREE depleted with a maximum in the MREE. A



Figure 1: Hand specimen photograph of 71578, 0. Cubic scale = 1 cm³.

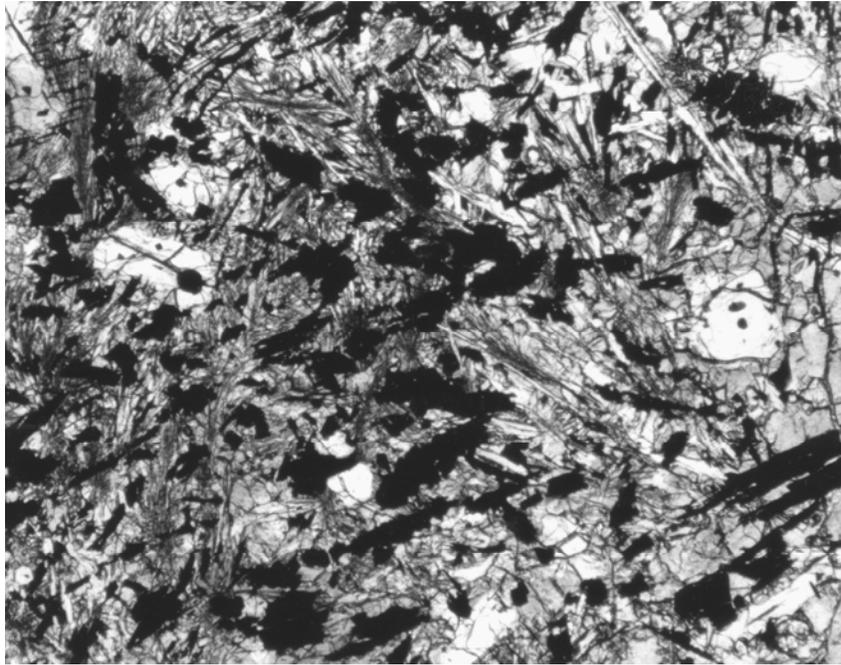


Figure 2: Photomicrograph of 71578,5. Olivine and ilmenite microphenocrysts are set in a sub-variolitic to variolitic groundmass. Blocky areas are dominated by pyroxene. Field of view = 2.5

negative Eu anomaly is present
 $[(Eu/Eu^*)_N = 0.56]$.

PROCESSING

Of the original 353.9g of 71578,0, a total of 352.7g remains. 71578,1 was used for INAA and has since been renumbered to,9001. Thin section ,5 was taken from this irradiated sample.

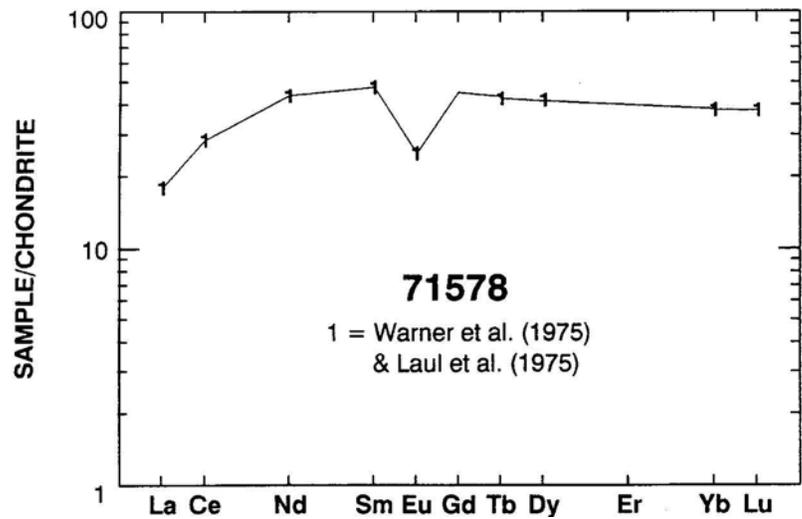


Figure 3: Chondrite-normalized rare-earth element profile of 71578. The same analysis was reported by Warner et al. (1975) and Laul et al. (1975).

Table 1; Whole-rock chemistry of 71578.
 Data from Laul et al. (1975) and Warner et al. (1975) (same analysis).

	Sample ,1 Method N		Sample ,1 Method N
SiO ₂ (wt %)		Cu	
TiO ₂	11.7	Ni	
Al ₂ O ₃	8.4	Co	18.5
Cr ₂ O ₃	0.420	V	100
FeO	18.6	Sc	74
MnO	0.240	La	6.0
MgO	8.1	Ce	25
CaO	9.5	Nd	28
Na ₂ O	0.42	Sm	9.8
K ₂ O	0.070	Eu	1.96
P ₂ O ₅		Gd	
S		Tb	2.5
K (ppm)		Dy	17
Nb		Er	
Zr		Yb	8.5
Hf	8.9	Lu	1.3
Ta	1.6	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.