

71595**High-Ti Mare Basalt****25.21 g****INTRODUCTION**

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

PETROGRAPHY AND MINERAL CHEMISTRY

Warner et al. (1978) reported the petrography and mineral chemistry of 71595. During the preparation of this catalog, we examined thin section 71595,5 and found it to be a fine- to medium-grained (0.1-0.3mm) basalt. It is comprised of interlocking plagioclasepyroxene "bow-tie"

intergrowths. Areas of blocky, pink pyroxene and plagioclase are present. There is much opaque, quench glass present (Fig. 2a). Ilmenite is also present in the groundmass, overlayng the plagioclasepyroxene "bow-tie" structures (Fig. 2a). Ilmenite (up to 1mm) and olivine (up to 1mm) phenocrysts are present (Fig. 2a). Olivine contains small (~0.005mm) euhedral chromite inclusions and is often corroded with reaction rims of pink pyroxene. Embayed armalcolites commonly form the cores of larger ilmenite phenocrysts (Fig. 2b). Both groundmass and phenocrystic

ilmenite contain rutile and chromite exsolution lamellae (<0.005mm wide). Native Fe and troilite (< 0.05mm) are disseminated throughout the thin section as interstitial phases.

WHOLE-ROCK CHEMISTRY

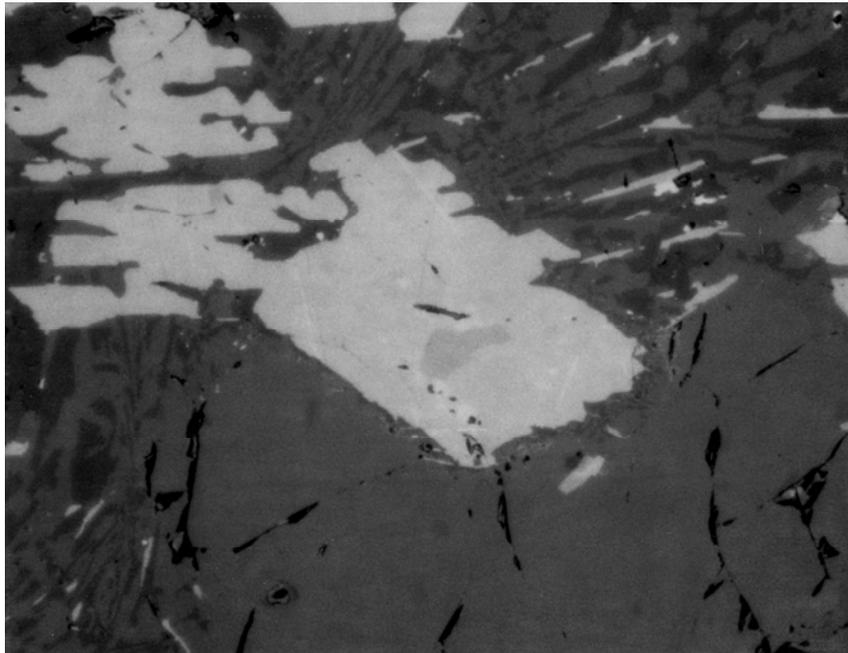
Murali et al. (1977) reported the whole-rock composition of 71595,1 in a study of Apollo 17 rake samples (Table 1). 71595 is classified as a Type B2 Apollo 17 high-Ti basalt using the classification of Rhodes et al. (1976) and Warner et al. (1979), plus the criteria of Neal et al. (1990).



Figure 1: Hand specimen photograph of 71595,0.



2a: Illustration of the glassy variolitic and blocky interlocking portions of the basalt field of view = 2.5 mm.



2b: Armalcolite core in ilmenite phenocryst-field of view= 0.625 mm.

Figure 2: Photomicrographs of 71595,0.

Table 1: Whole-rock chemistry of 71595.

Data from Murali et al. (1977).

Sample 71595,1 Method N		Sample 71595,1 Method N	
SiO ₂ (wt %)		Cu	
TiO ₂	10.4	Ni	
Al ₂ O ₃	9.3	Co	18.4
Cr ₂ O ₃	0.416	V	100
FeO	19.6	Sc	78
MnO	0.247	La	6.4
MgO	7.4	Ce	29
CaO	10.6	Nd	
Na ₂ O	0.39	Sm	6.9
K ₂ O	0.044	Eu	1.43
P ₂ O ₅		Gd	
S		Tb	1.8
Nb (ppm)		Dy	12
Zr		Er	
Hf	6.5	Yb	7.5
Ta	1.5	Lu	1.11
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.

This sample contains 10.4 wt% TiO_2 , with a MG# of 40.2. The REE profile (Fig. 3) is flat, except for La. As in the other INA analyses of Apollo 17 high-Ti basalts reported by Murali et al. (1977), we consider Ce to be spurious, or at best the reported 29 ppm Ce in 71595,1 is a maximum. The high

uncertainties associated with analyzing Ce by INA, coupled with the overall LREE-depleted nature of Apollo 17 high-Ti basalts, suggests that 71595 is probably LREE-depleted. The HREE are generally flat at 32-35 times chondritic levels (Fig. 3). A negative Eu anomaly is present [(Eu/Eu*)N = 0.56].

PROCESSING

Of the original 25.21g of 71595,0, approximately 24.338 remains. 71595,1 was used for INAA, and thin section,5 was taken from this irradiated sample.

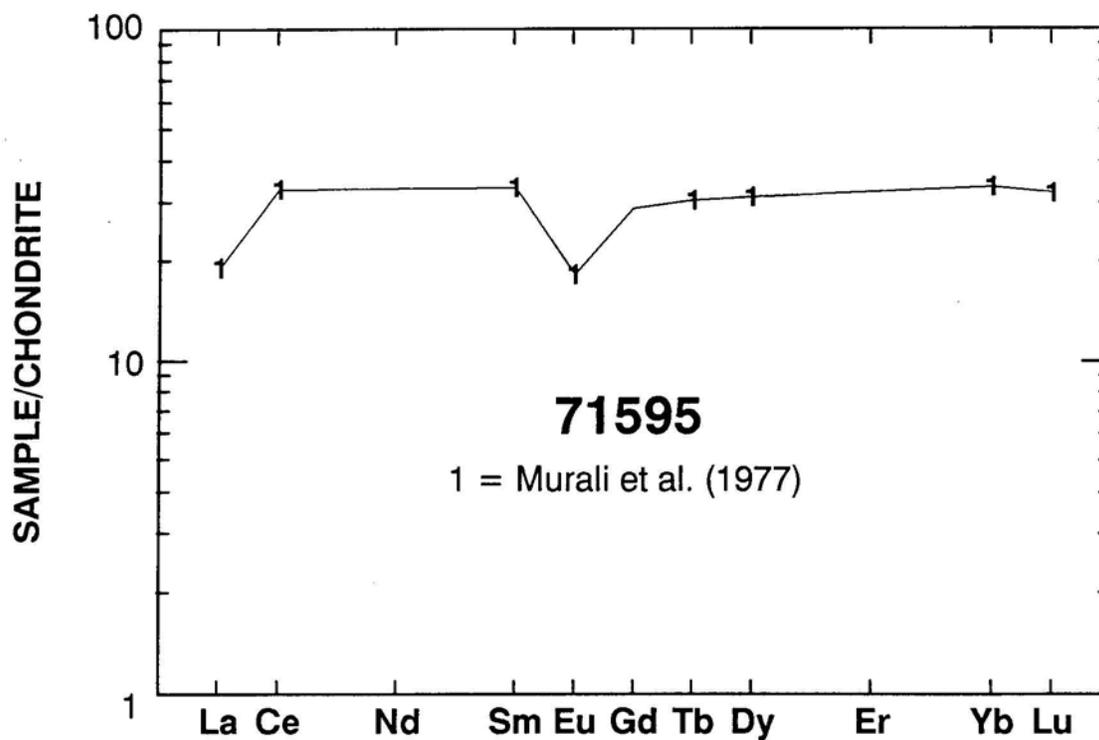


Figure 3: Chondrite -normalized rare-earth element profile of 71595. Data From Murali et al. (1977).