71537

High-Ti Mare Basalt
12.25 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 71537. During the preparation of this catalog, we examined thin section 71537,5 and found it to be a fine- to medium-grained (0.05-0.4mm) basalt. It is comprised of interlocking "bow-tie" intergrowths of plagioclase and pyroxene (Fig. 2). Opaque glass is associated with these "bow-tie" structures. Ilmenite (up to 0.8mm) and corroded olivine (up to 0.7mm) are present. Ilmenite has "sawtooth" margins (Fig. 2) and is also a groundmass phase. Rutile and chromite exsolution is observed in these ilmenites. Olivine contains small (~0.005mm) euhedral chromite inclusions. There is minor interstitial SiO_2 present. Native Fe and troilite (< 0.1mm) are either associated with ilmenite or are interstitial phases. No armalcolite was observed.

WHOLE-ROCK CHEMISTRY

Muraii et al. (1977) reported the whole-rock composition of 71537,1 in a study of Apollo 17 rake samples (Table 1). 71537 is classified as a Type A Apollo 17 high-Ti basalt, based on the classification of Rhodes et al. (1978) and Warner et al. (1979). This sample contains 10.9 wt% TiO_2, with a MG# of 43.1. The REE profile (Fig. 3) is LREE-depleted with a maximum at Sm. The HREE exhibit a decrease from Dy to Lu, but are still more abundant (relative to chondrites) than the LREE. A negative Eu anomaly is present [(Eu/Eu*) N = 0.521.

PROCESSING

Of the original 12.25g of 71537,0, a total of 10.418 remains. 71537,2 weighs 1.37g, and, I was used for INAA. Thin section 71537,5 was taken from the irradiated sample.

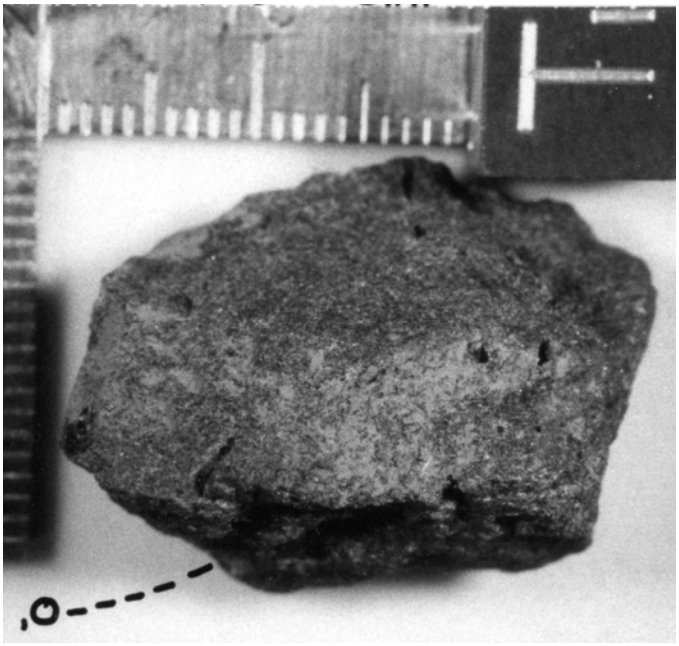

Figure 1: Hand specimen photograph of 71537. Small divisions on scale are in millimeters.

Table 1: Whole-rock chemistry of 71537.
Data from Murali et al. (1977).

	Sample 71537,1 Method N		Sample 71537,1 Method N
SiO_2 (wt %)		Cu	
TiO_2	10.9	Ni	
Al_2O_3	9.7	Co	17.0
Cr_2O_3	0.341	V	99
FeO	19.3	Sc	78
MnO	0.257	La	5.8
MgO	8.2	Ce	25
CaO	11.2	Nd	
Na_2O	0.37	Sm	7.9
K_2O	0.050	Eu	1.47
P_2O_5		Gd	
S		Tb	2.0
Nb (ppm)		Dy	13
Zr		Er	
Hf	6.8	Yb	7.4
Ta	1.4	Lu	0.94
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

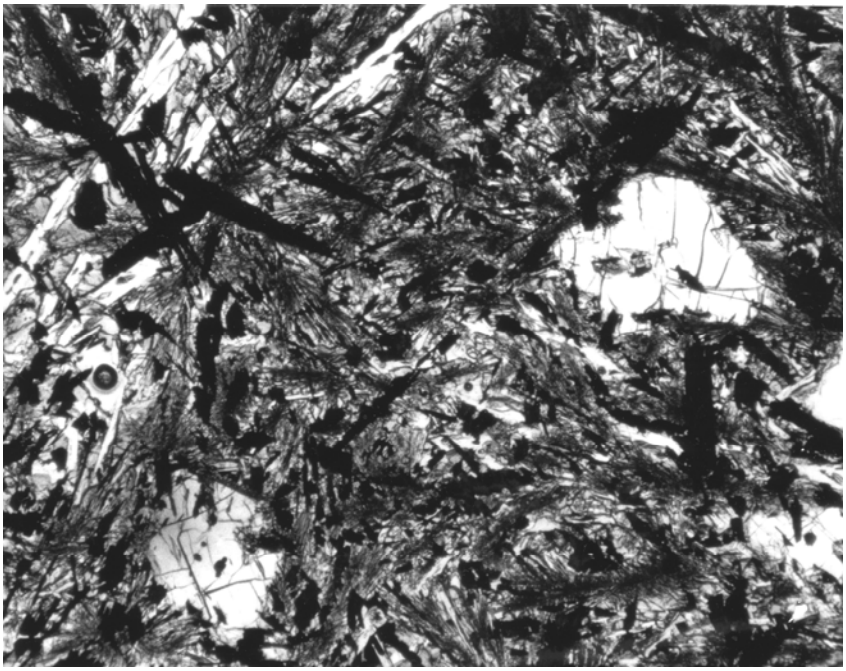

Figure 2: Photomicrograph of 71537,5 showing olivine and ilmenite phenocrysts set in a variolitic, glassy matrix. Field of view = 2.5 mm.

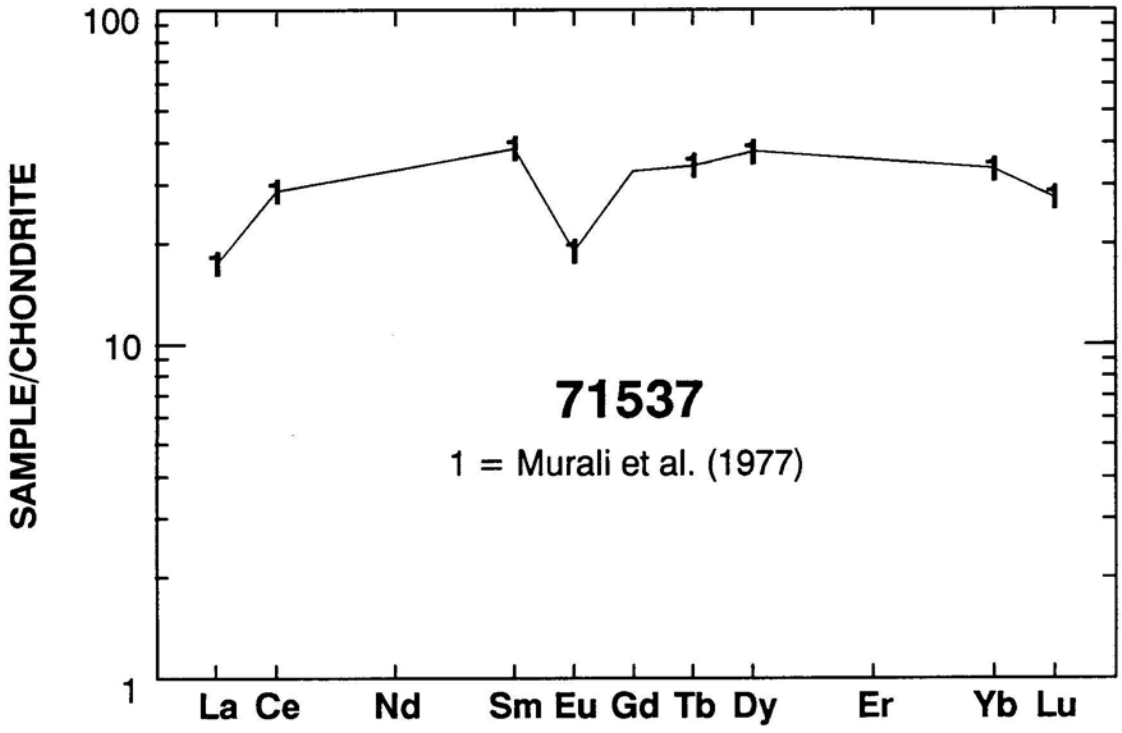

Figure 3: Cho ndrite -normalized rare-earth element plot of 71537. Data from Murali et al. (1977).