

71555**High-Ti Mare Basalt
4.55 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 71555. During the preparation of this catalog, we examined thin section 71555,4 and found it to be a medium-grained (0.2-0.6mm) basalt. It is comprised of areas of pink,

blocky pyroxene and swirling "bow-tie" intergrowths of plagioclase and pyroxene (Fig. 2). Minor rounded olivine (~0.1-0.2mm) is present at the center of the larger pyroxenes (Fig. 2) and rarely at the center of the "bow-tie" intergrowths. Ilmenite phenocrysts reach up to 1mm long with "sawtooth" margins. Blocky ilmenite is an interstitial groundmass phase. Opaque glass is associated with ilmenite. Ilmenite also contains rutile and chromite exsolution features. Native Fe and troilite (< 0.1 mm) is disseminated throughout. Interstitial SiO₂ is

conspicuous. No armalcolite was observed.

WHOLE-ROCK CHEMISTRY

Murali et al. (1977) reported the whole-rock composition of 71555,1 in a study of Apollo 17 rake samples (Table 1). 71555 is classified as a Type A Apollo 17 high-Ti basalt, based on the whole-rock classification of Rhodes et al. (1976) and Warner et al. (1979). This sample contains 13.0 wt% TiO₂, with a MG# of 46.3. The REE profile (Fig. 3) is relatively flat, except



Figure 1: Hand specimen photograph of 71555,0. Small divisions on scale are in millimeters.

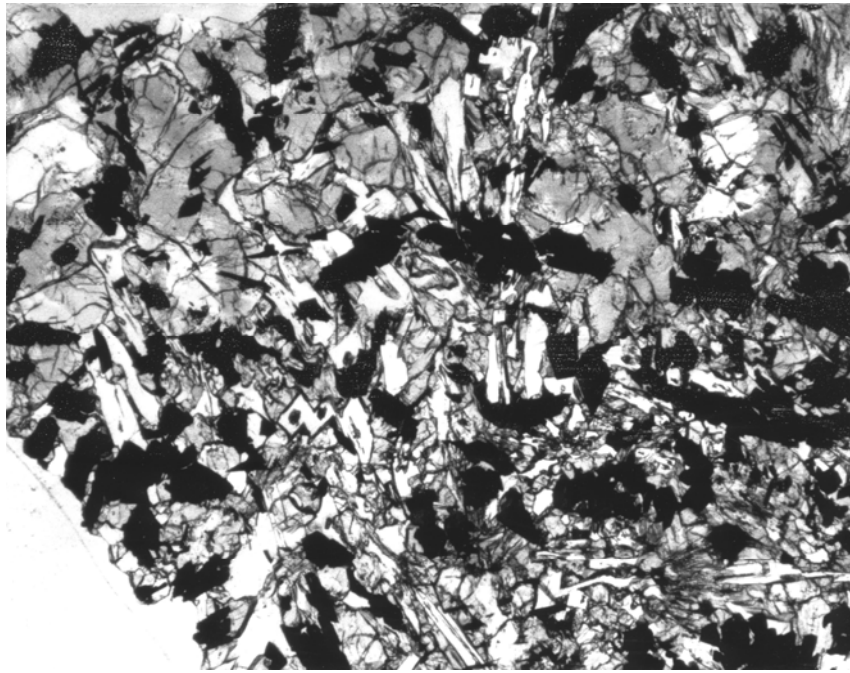


Figure 2: Photomicrograph of 71555,4. A fine-grained, blocky, interlocking texture predominates, with olivine forming cores to pyroxenes. Field of view is 2.5 mm.

for La. However, the Ce analyses of Murali et al. (1977) tend to be higher than expected, probably due to the large uncertainties associated with the analysis of Ce by INA. The LREE-depleted nature of Apollo 17 basalts indicates that the quoted Ce abundance in

Table 1 is a maximum and that in reality, Ce is probably present in lower quantities than 40 ppm. The HREE are flat at an abundance of ~45 times chondritic abundances (Fig. 3) A negative Eu anomaly is present $[(Eu/Eu^*)_N = 0.59]$.

PROCESSING

Of the original 4.558 of 71555,0, a total of 4.11g remains. 71555,1 was used for INAA, and thin section ,4 was taken from this irradiated sample.

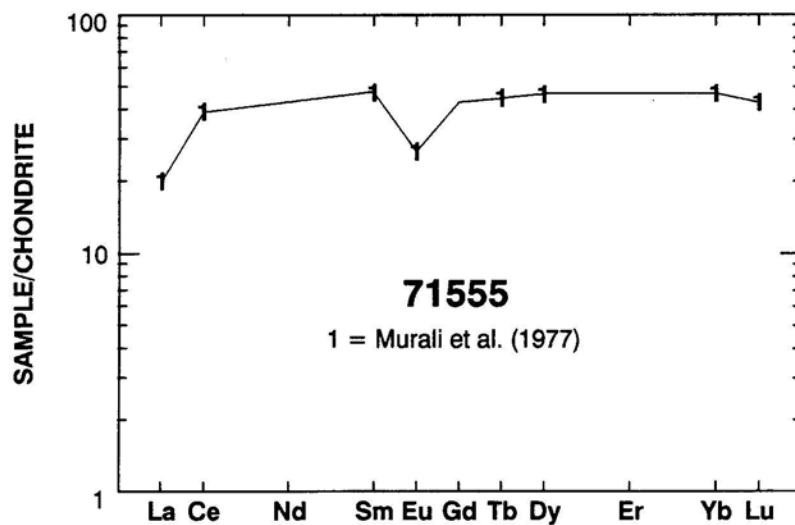


Figure 3: Chondrite-normalized rare-earth element plot of 71555. Data from Murali et al. (1977).

Table 1: Whole-rock chemistry of 71555.
Data from Murali et al. (1977).

Sample 71555,1 Method N		Sample 71555,1 Method N	
SiO ₂ (wt %)		Cu	
TiO ₂	13.0	Ni	
Al ₂ O ₃	8.9	Co	18.0
Cr ₂ O ₃	0.440	V	119
FeO	19.6	Sc	78
MnO	0.243	La	6.6
MgO	9.5	Ce	40
CaO	10.0	Nd	
Na ₂ O	0.42	Sm	9.6
K ₂ O	0.066	Eu	2.06
P ₂ O ₅		Gd	
S		Tb	2.6
Nb (ppm)		Dy	16
Zr		Er	
Hf	9.4	Yb	10.3
Ta	1.8	Lu	1.46
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.