

**70137****High-Ti Mare Basalt****6.16 g, 2.7 x 1.5 x 1 cm****INTRODUCTION**

70137 has been described as a brownish-gray, medium-grained, high-Ti mare basalt with a granular fabric, and containing ~5% vugs (Fig. 1) (Apollo 17 Lunar Sample Information Catalog, 1973). No zap pits are present. It was collected from the "Geophone Rock", 50 m south of the ALSEP central station.

**PETROGRAPHY AND MINERAL CHEMISTRY**

Warner et al. (1979) described 70137 as a coarse-grained, plagioclase-poikilitic, high-Ti mare basalt, corresponding to the Type 1B of Brown et al. (1975). Large (up to 1 mm) euhedral, blocky, and interstitial ilmenites occur "over-laying" large clinopyroxenes (up to 3 mm) and plagioclases (up to

3 mm) (Fig. 2). Ilmenite contains exsolution lamellae of chromite and rutile (< 0.005 mm). Olivines are rare, usually present as cores to the clinopyroxenes. Armalcolite and spinet minerals are also rare, present only as poikilitic inclusions in pyroxene. Native Fe and troilite form interstitial phases. Mineral chemistry is similar to 70135, but was not specifically mentioned by either Ma et al. (1979) or Warner et al. (1979).

**WHOLE-ROCK CHEMISTRY**

Ma et al. (1979) analyzed the whole-rock major- and trace-element composition of 70137,1 (Table 1). This analysis was also reported by Warner et al. (1979). The REE pattern (Fig. 3) is very similar to that of 70136 in absolute abundances. The magnitude of the negative Eu

anomaly is somewhat increased relative to 70136 ( $[Eu/Eu^*]_N = 0.72$  vs. 0.78). Warner et al. (1979) and Ma et al. (1979) used the whole-rock analysis of 70137 in a comprehensive study of Apollo 17 high-Ti basalt petrogenesis. These authors used the A, B, C, U (U = Unclassifiable) classification of Rhodes et al. (1976). Warner et al. (1979) suggested that 70137 was too coarse-grained to yield a representative whole-rock analysis, and classified this sample in Class U.

**PROCESSING**

There remains 4.57 g of 70137,0. 70137,1 was irradiated, and thin section 70137,4 was taken from this irradiated sample. Figure 4 shows the major divisions of this sample.

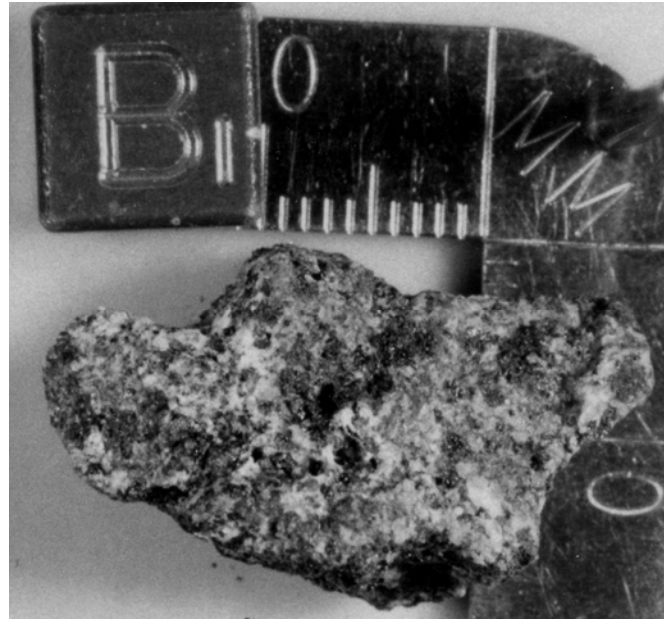


Figure 1: Hand specimen photograph of 70137,0.

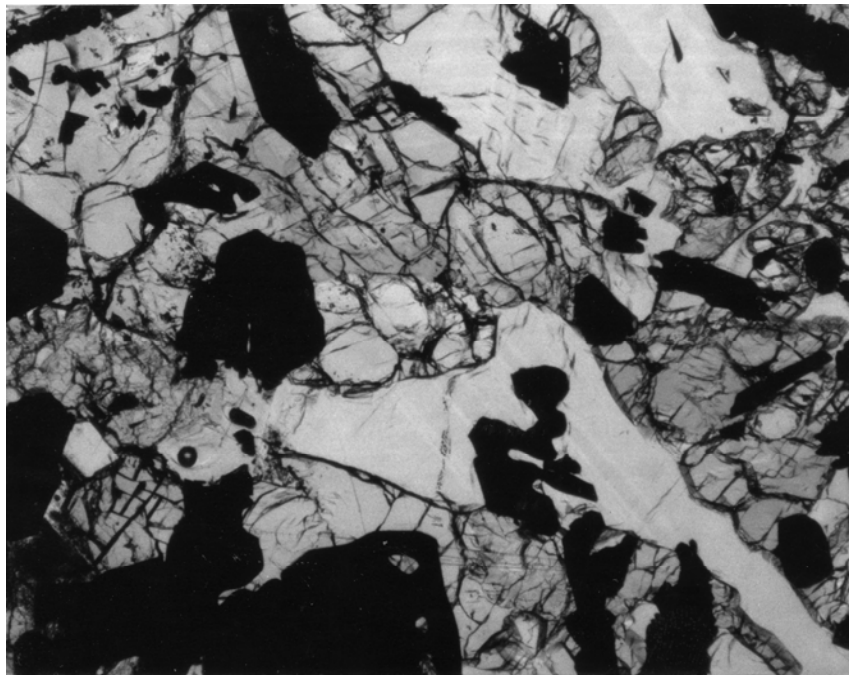


Figure 2: Photomicrograph of 70137,4. Field of view = 2.5 mm.

**Table 1: Whole-rock composition of 70137.**  
 Data from Ma et al. (1979) and reported by Warner et al. (1979).

70137,1		70137,1	
SiO <sub>2</sub> (wt%)		Cu	
TiO <sub>2</sub>	12.0	Ni	
Al <sub>2</sub> O <sub>3</sub>	9.2	Co	21
Cr <sub>2</sub> O <sub>3</sub>	0.534	V	132
FeO	18.0	Sc	77
MnO	0.226	La	4.0
MgO	10	Ce	17
CaO	10.3	Nd	19
Na <sub>2</sub> O	0.421	Sm	7.0
K <sub>2</sub> O	0.048	Eu	1.63
P <sub>2</sub> O <sub>5</sub>		Gd	
S		Tb	1.6
Nb (ppm)		Dy	11
Zr		Er	
Hf	6.7	Yb	6.6
Ta	1.5	Lu	0.93
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 INAA.

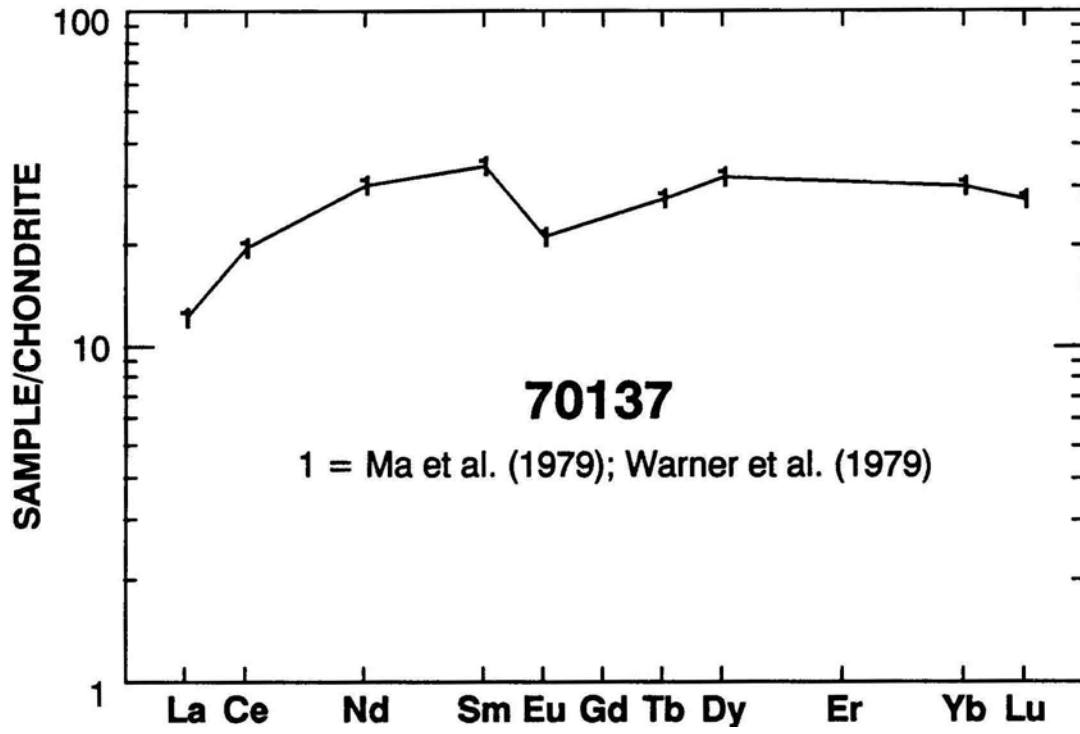


Figure 3: Chondrite-normalized rare-earth element profile of 70137.

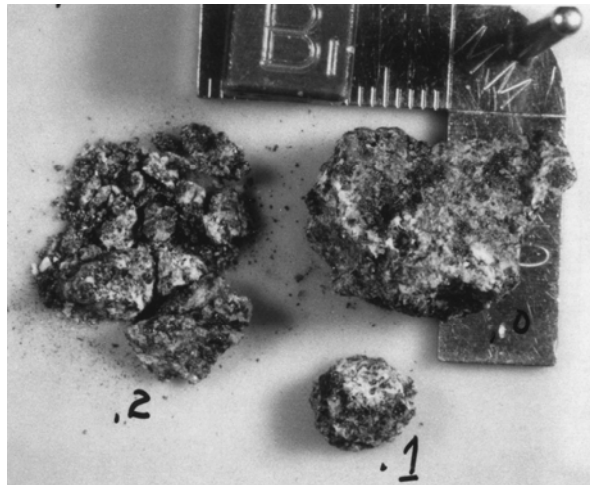


Figure 4: Major subdivisions of 70137,0.