

70136**High-Ti Mare Basalt****10.65 g, 1.5 x 2 x 2.5 cm****INTRODUCTION**

70136 has been described as a brownish-gray, medium-grained, high-Ti mare basalt, with one slickensided face and containing ~5% vugs (Apollo 17 Lunar Sample Information Catalog, 1973) (Fig. 1). No zap pits are present. This sample was collected from the "Geophone Rock", 50 m south of the ALSEP central station, the same site as 70135.

PETROGRAPHY AND MINERAL CHEMISTRY

70136 was described by Warner et al. (1979) as a coarse-grained, plagioclase-poikilitic, high-Ti mare basalt. This corresponds to the Type 1B of Brown et al. (1975). 70136 contains abundant blocky, euhedral, and interstitial ilmenites (up to 1 mm) and clinopyroxenes exhibiting the "bow-tie" texture (Fig. 2). Ilmenite contains rutile exsolution lamellae

<0.005 mm wide). Minor amounts of opaque glass are associated with the ilmenite. Plagioclase (up to 4 mm) poikilitically encloses these minerals. Olivine is rare, usually found in the cores of pyroxenes. Rare armalcolites (~0.1 mm) and Cr-ulvospinel are present only as poikilitic inclusions in pyroxene. Native Fe and troilite form interstitial phases. Mineral chemistry is similar to 70135, but was not specifically reported by Warner et al. (1979).

WHOLE-ROCK CHEMISTRY

The whole-rock composition (major and trace elements) of 70136 was analyzed by Ma et al. (1979) and reported by Warner et al. (1979), both quoting the same analysis (Table 1). The REE pattern (Fig. 3) is typical of Apollo 17 high-Ti basalts, inasmuch as it is LREE-depleted with a negative Eu anomaly. However, both MREE and

HREE reach only ~30 times chondritic values, and the magnitude of the negative Eu anomaly is diminished ($[\text{Eu}/\text{Eu}^*]_{\text{N}} = 0.78$). Warner et al. (1979) and Ma et al. (1979) used the whole-rock analysis of 70136 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 this basalt was too coarse-grained to yield a representative analysis, and consequently assigned 70136 to Class U (Unclassifiable).

PROCESSING

There remains 8.7 g of 70136,0 and 1.02 g of 70136,2. 70136,1 was irradiated (for analysis of Ma et al., 1979), and the thin section 70136,5 was made from this irradiated sample.

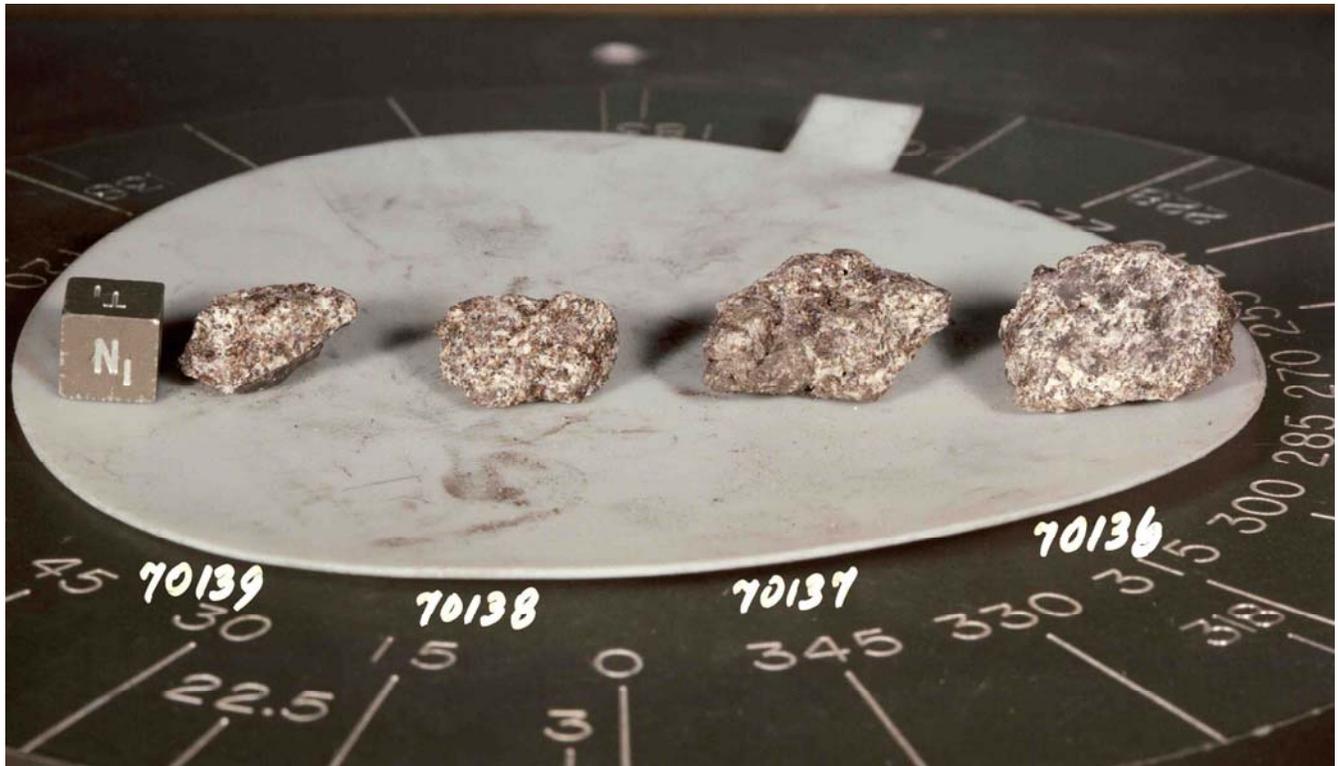


Figure 1: Hand specimen photograph of 70136, 70137, 70138, and 70139.



Figure 2: Photomicrograph of 70136,5. Field of view = 2.5 mm.

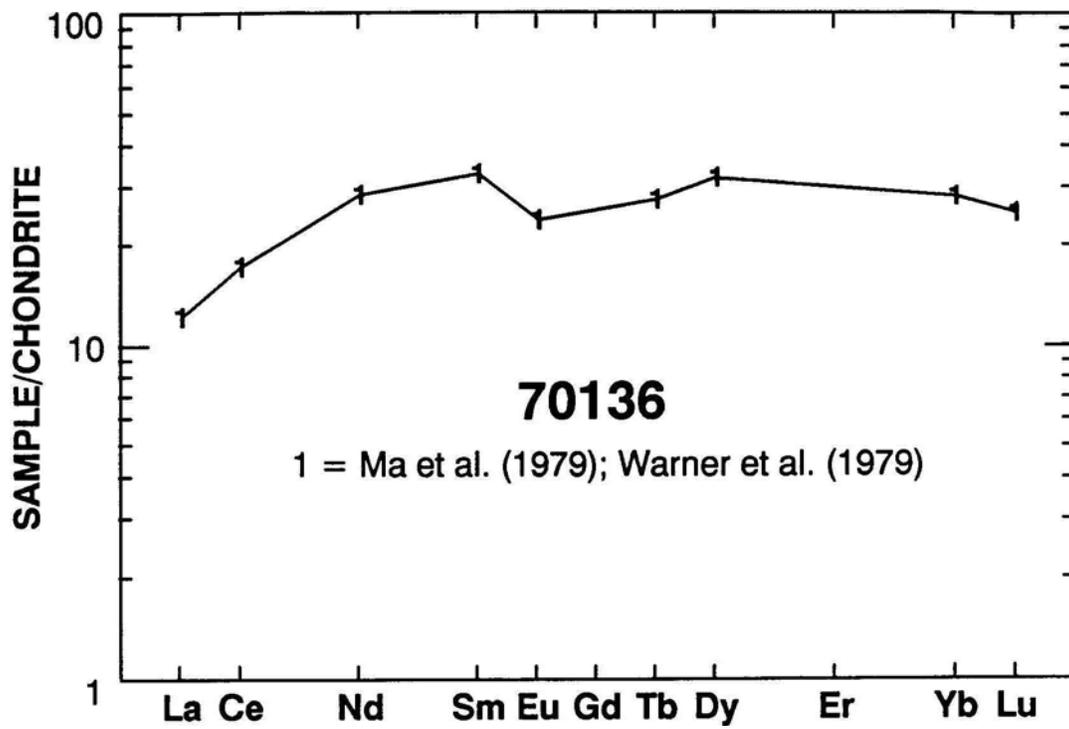


Figure 3: Chondrite -normalized rare-earth element profile of 70136.

Table 1: Whole-rock composition of 70136, 1.
 Data from Ma et al. (1979) and reported by Warner et al. (1979).

70136,1		70136,1	
SiO ₂ (wt%)		Cu	
TiO ₂	11.3	Ni	
Al ₂ O ₃	11.1	Co	18
Cr ₂ O ₃	0.492	V	128
FeO	17.2	Sc	72
MnO	0.218	La	4.0
MgO	9	Ce	15
CaO	10.1	Nd	18
Na ₂ O	0.486	Sm	6.7
K ₂ O	0.045	Eu	1.85
P ₂ O ₅		Gd	
S		Tb	1.6
Nb (ppm)		Dy	11
Zr		Er	
Hf	6.7	Yb	6.2
Ta	1.4	Lu	0.85
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.