71046

High-Ti Mare Basalt
3.037 g, 2 x 1.5 x 0.5 cm

INTRODUCTION

71046 is a medium dark gray (with a brownish tint) basalt possessing a subangular, slabby shape and an equigranular fabric (Apollo 17 Lunar Sample Information Catalog, 1973) (Fig. 1). Zap pits are present on all faces, in variable numbers. 71046 also contains 2-3% vugs 1-2 mm in diameter. It was collected from Station 1A.

PETROGRAPHY AND MINERAL CHEMISTRY

Ma et al. (1979) described 71046 as an olivine-microporphyritic basalt. During the preparation of this catalog, thin section . 71046,5 was examined. 71046,5 is a fine- to medium-grained (0.2-0.4 mm) interlocking basalt with minor "bow-tie" intergrowths of plagioclase and pyroxene. It-is dominated by pink, blocky pyroxene (up to 0.6mm) with interstitial ilmenite phenocrysts (up to 1 mm) (Fig. 2). Occasional exsolution of chromite and rutile are seen in the larger ilmenites. Ragged olivines occasionally form cores to these pyroxenes, and rare corroded olivine phenocrysts (up to 0.8 mm) are present. No armalcolite or Crulvospinel was identified. Minor interstitial phases, SiO_2, native Fe, and troilite (< 0. l mm), are disseminated throughout. The Apollo 17 Lunar Sample Information Catalog (1973) stated that 71046 is comprised of < 1% olivine, 36% plagioclase, 45-50% pyroxene, 10-15% opaque minerals, a trace of silica, and < 5% "brown clots" of regular-shaped intergrown ilmenite and pyroxene. Although 71046 has been studied by Ma et al. (1979) and Warner et al. (1979), the mineral chemistry of this sample was not specifically presented.

Figure 1: Hand specimen photograph of 71046,0.

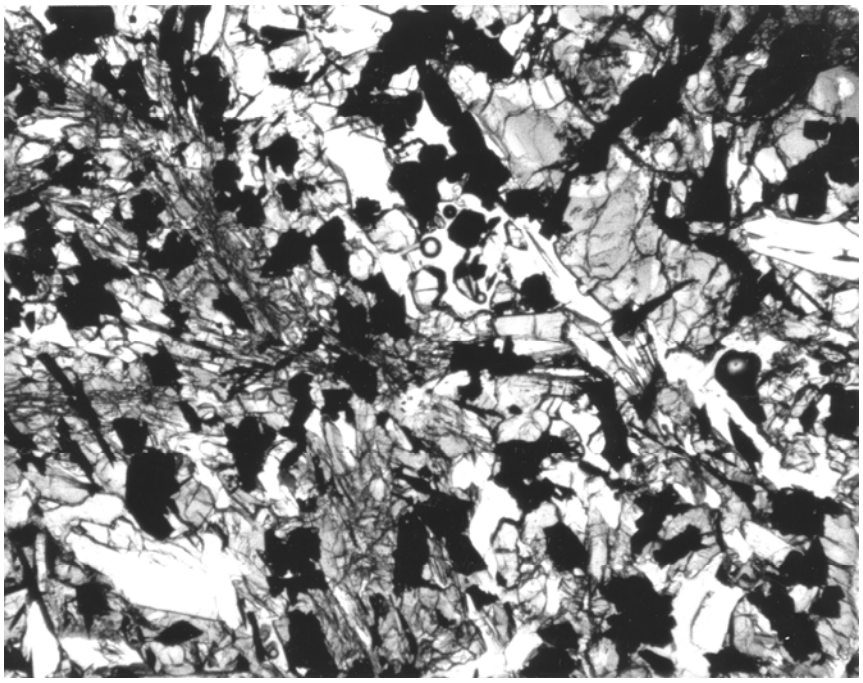

Figure 2: Photomicrograph of 71046, 5. Field of view.is 2.5 mm.

WHOLE-ROCK CHEMISTRY

Both Ma et al. (1979) and Warner et al. (1979) report the same whole-rock analysis for 71046 (Table 1). This sample is classified as a Type B1 Apollo 17 high-Ti basalt using the whole-rock classification of Rhodes et al. (1976) and Warner et al. (1979), plus the criteria of Neal et al. (1990). 71046 contains 11.6 wt% $Ti0_2$ with a MG# of 42.7 (Warner et al., 1979; Ma et al., 1979), The REE profile (Fig. 3) is LREE depleted with flat HREE at approximately 34 times chondritic abundances. A negative Eu anomaly is present ($[Eu/Eu^*]_N = 0.60$).

PROCESSING

Of the original 3.037g of 71046,0, 2.438 remains. 71046,1 was irradiated for INAA, and thin section 71046,5 was taken from this irradiated sample.

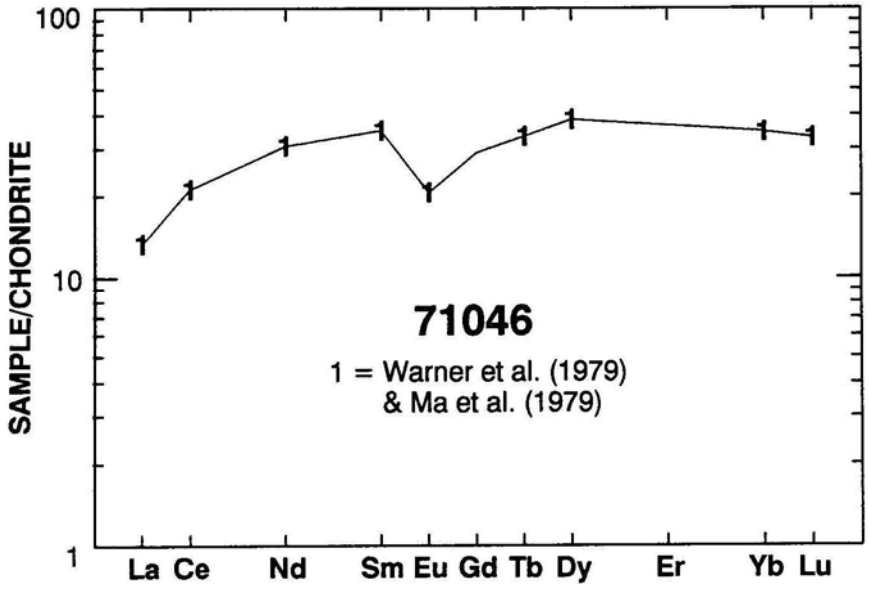

Figure 3: Chondrite-normalized rare-earth element profile of 71046.

Table 1: Whole-rock chemistry of 71046.
Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

	71046,1 I		71046,1 I
SiO_2 (wt %)		Cu	
TiO_2	11.6	Ni	
Al_2O_3	8.9	Co	19
Cr_2O_3	0.407	V	109
FeO	19.1	Sc	83
MnO	0.256	La	4.3
MgO	8	Ce	18
CaO	10.2	Nd	19
Na_2O	0.320	Sm	7.0
K_2O	0.04	Eu	1.56
P_2O_5		Gd	
S		Tb	1.9
Nb (ppm)		Dy	13
Zr		Er	
Hf	6.7	Yb	7.5
Ta	1.5	Lu	1.10
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	

I = analysis by INAA.