79516

High-Ti Mare Basalt
23.92 g, 3 x 3 x 2 cm

INTRODUCTION

79516 was described as a brown-gray, inequigranular, homogeneous basalt, with a blocky, subrounded shape (Apollo 17 Lunar Sample Information Catalog, 1973) (Fig. 1). Approximately 5% of the surface is covered with 2-3 mm cavities containing projecting crystals. Grain size is much less than 1 mm, but pyroxene (?) forms acicular crystals. Zap pits are present on all sides.

PETROGRAPHY AND MINERAL CHEMISTRY

Warner et al. (1979) studied 79516, but only generally described the petrography and mineral chemistry within their whole-rock classification (A, B, C, etc.). During the preparation of this catalog, we examined thin section 79516,4. It is a fine-grained (< 0.2 mm) subophitic to ophitic basalt. The ground-mass consists of pink/brown pyroxene, ilmenite, and plagioclase. Ilmenite (up to 1.5 mm) and olivine phenocrysts (~0.5 mm) are present. Margins of the olivine phenocrysts are corroded. Ilmenites generally contain cores of armalcolite. An opaque interstitial glass is persistent throughout much of the thin section. Troilite and FeNi metal (< 0.05 mm) form anhedral interstitial phases.

Figure 1: Hand specimen photograph of 79516,0.

WHOLE-ROCK CHEMISTRY

The same analysis of 79516 was reported by Ma et al. (1979) and Warner et al. (1979) (Table 1). This basalt has a MG# of 41.7 and a $Ti0_2$ content of 12.3 wt%. Warner et al. (1979) classified this sample as a Type B Apollo 17 high-Ti mare basalt. 79516 is further classified as a B2 basalt using the criteria of Neal et al. (1990). The REE profile (Fig, 2) is LREE-depleted with a maximum at Sm. From Tb to Lu, the pattern is relatively flat at ~ 30 x chondritie abundances. A negative Eu anomaly is present [$(Eu/Eu^*)_N = 0.55$].

PROCESSING

Of the original 23.92g of 79516,0, 23.36g remains. 79516,1 was irradiated for INAA and,4 is the thin section number.

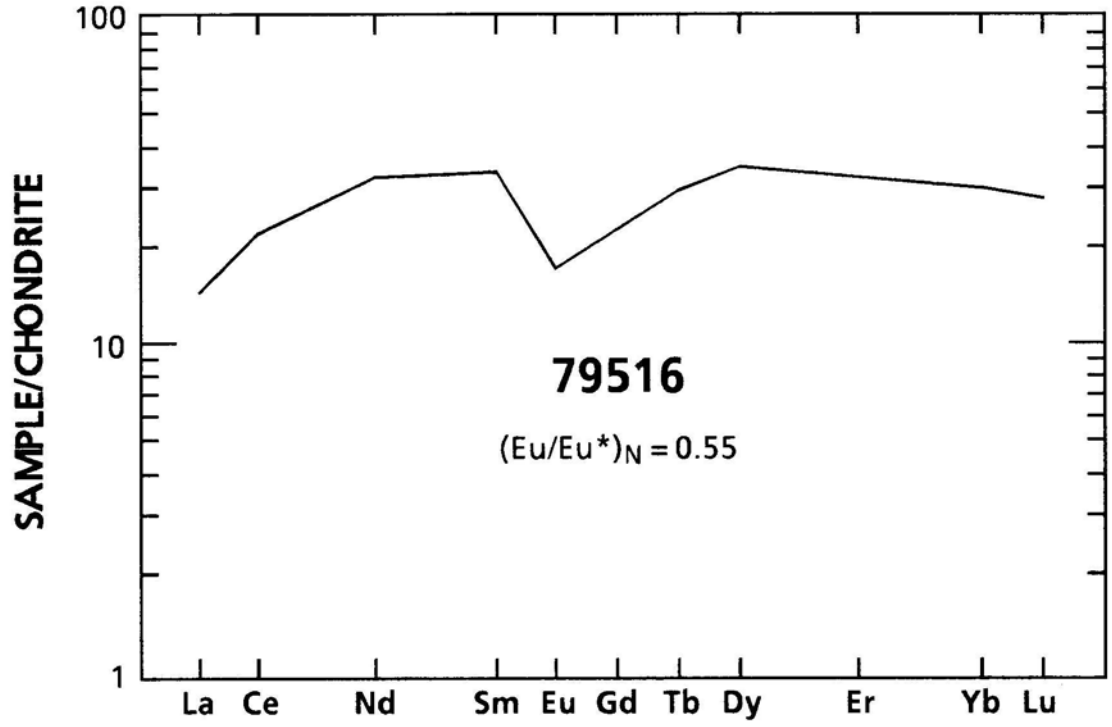

Figure 2: Chondrite-normalized rare earth element profiles of 79516, taken from Ma et al. (1979) and Warner et al. (1979).

Table 1: Whole-rock chemistry of 79516.
Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

	Sample 79516,1 Method N		Sample 79516,1 Method N
SiO_2		V	109
TiO_2	12.3	Sc	87
Al_2O_3	8.4	Cr	
Cr_2O_3	0.399	La	5.2
FeO	19.9	Ce	20
MnO	0.245	Nd	21
MgO	8	Sm	6.9
CaO	10.0	Eu	1.33
Na_2O	0.384	Gd	
K_2O	0.045	Tb	1.7
P_2O_5		Dy	12
S		Er	
Nb (ppm)		Yb	6.6
Zr		Lu	0.94
Hf	6.3	Ga	
Ta	1.6	F	
U		Cl	
Th		C	
W		N	
Y		H	
Sr		He	
Rb		Ge (ppb)	
Li		Te	
Ba		Ag	
Cs		Sb	
Be		Ir	
Zn		As	
Pb		Au	
Cu		Ru	
Ni		Os	
Co	22		

Analysis by: N = INAA.