78586

High-Ti Mare Basalt
10.73 g, 2.6 x 1.8 x 1.5 cm

INTRODUCTION

Sample 78586 is a dark black, aphanitic mare basalt from the large rake sample at Station 8 (Fig. 1).

PETROGRAPHY

Keil et al. (1974) and Warner et al. (1978f) describe the texture of 78586 as vitrophyric (Fig. 2). Skeletal olivine and acicular ilmenite crystals exist in a groundmass of arcuate, feathery pyroxene crystals and glassy mesostasis. Minor armalcolite phenocrysts are reported by Warner et al. (1978f).

MINERAL CHEMISTRY

Warner et al. (1978f) have determined the compositions of minerals in 78586 (Fig. 3).

WHOLE-ROCK CHEMISTRY

Laul et al. (1975b) and Warner et al. (1975b) have reported the chemical composition of 78586 (Table 1 and Fig. 4).

The low Hf indicates that 78586 is a Type B basalt (see appendix).

RADIOGENIC ISOTOPES

Paces et al. (1991) have studied the Rb-Sr and Sm-Nd for whole-rock samples of 78586 (Table 2) and classify it as a Type B2 Apollo 17 mare basalt because the Sr and Nd isotopes do not fall on the whole - rock isochrons for other Apollo 17 mare basalt samples. This may indicate a different source region.

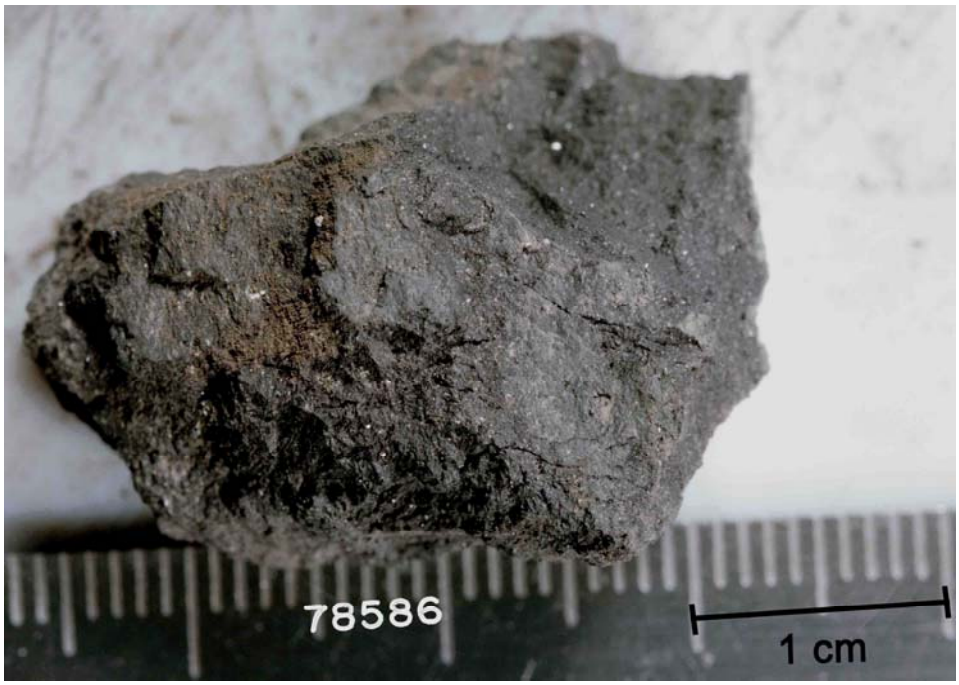

Figure 1: Photograph of 78586. Scale is 1 cm. S73-21029.

Figure 2: Photomicrograph of thin section 78586,5. Field of view is 3 x 4 mm.

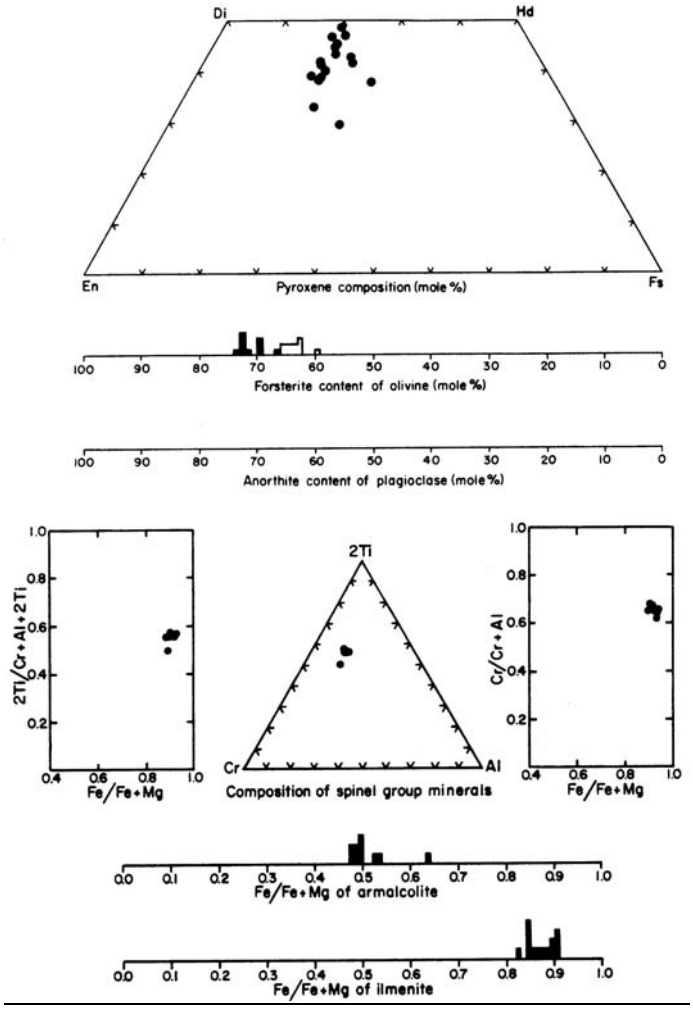

Figure 3: Mineral compositions for 78586. From Warner et al. (1978f).

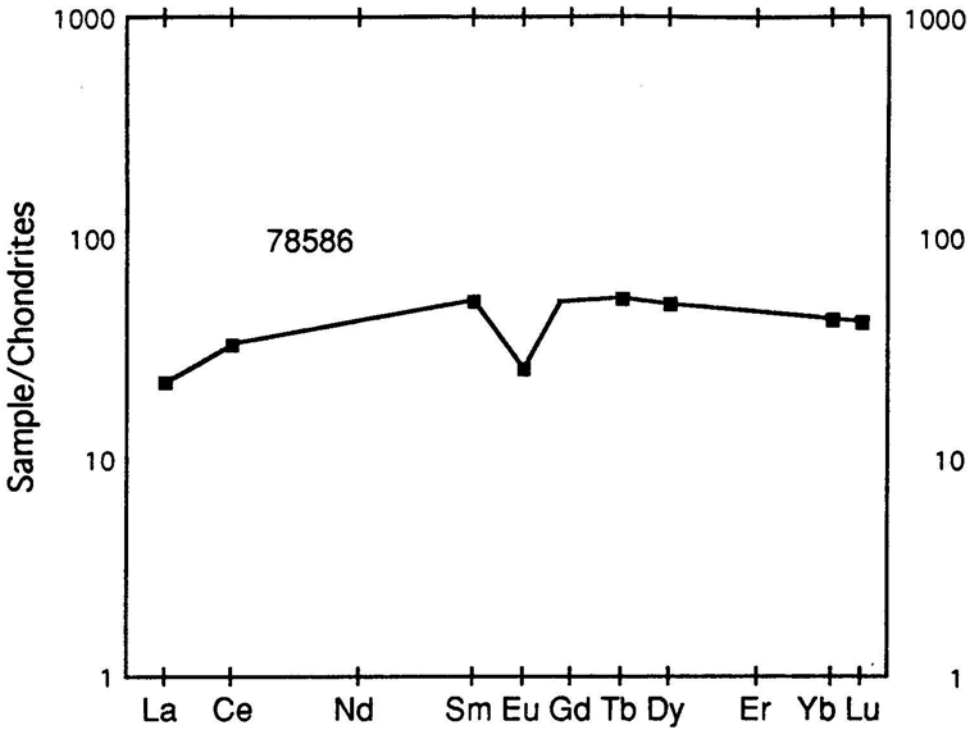

Figure 4: Normalized rare earth element diagram of 78586. Data from Warner et al. (1975b).

Table 1: Whole-rock chemistry of 78586.
From Warner et al. (1975b).

Split Technique	,3 INAA	Split Technique	,3 INAA
SiO_2 (wt%)	–	La	5.2
TiO_2	12.5	Ce	20
Al_2O_3	8.7	Nd	
Cr_2O_3	0.37	Sm	7.5
FeO	19.4	Eu	1.44
MnO	0.25	Gd	
MgO	7.4	Tb	1.9
CaO	10.3	Dy	12
Na_2O	0.41	Er	
K_2O	0.055	Yb	6.9
Nb (ppm)		Lu	1.0
Hf	6.2	Ge (ppb)	
Ta	1.6	Ir	
Co	20.8	Au	
Sc	82		

Table 2: Rb-Sr and Sm-Nd composition of 78586.
Data from Paces et al. (1991).

Sample	78586,7
wt (mg)	46.81
Rb (ppm)	0.389
Sr (ppm)	129
$^{87}Rb/^{86}Sr$	0.008637 ± 86
$^{87}Sr/^{86}Sr$	0.699704 ± 18
Sm (ppm)	7.58
Nd (ppm)	18.6
$^{147}Sm/^{144}Nd$	0.24637 ± 49
$^{143}Nd/^{144}Nd$	0.513989 ± 10