

77535**High-Ti Mare Basalt****577.8 g, 10.5 x 8.5 x 3.5 cm****INTRODUCTION**

Sample 77535 is a rake sample from soil 77530 at Station 7. It is a coarse-grained, high-Ti mare basalt that is similar to other Apollo 17 basalts (Fig. 1).

PETROGRAPHY

Warner et al. (1978) classify 77535 as it coarse-grained, plagioclase-poikilitic ilmenite basalt (Fig. 2). They give the mode, as 48% plagioclase, 31% pyroxene, 17% ilmenite, with only trace olivine. They report ~3% silica and trace zirconolite and armalcolite.

77535 has about 1% vugs and cavities with projecting pyroxene and opaque crystals. It has zap pits on all surfaces.

MINERAL CHEMISTRY

The; compositions of the minerals in 77535 are given in Fig. 3 (from Warren et al., 1978).

WHOLE-ROCK CHEMISTRY

Rhodes et al. (1976) and Laul et al. (1975b) have determined the chemical composition of 77535 (Table 1 and Fig. 4). Gibson et al. (1976) determined the sulfur content of 77535.

Classification of Apollo 17 basalts has been discussed by Rhodes et al. (1976), Lindstrom and Haskin (1978), and Pratt et al. (1978) (see appendix). Lindstrom and Haskin designate 77535 as a Type U basalt, while Pratt et al. call it a Type B3.

RADIOGENIC ISOTOPES

Nyquist et al. (1976) have reported Rb-Sr data for the whole rock (Table 2).



Figure 1: Photograph of 77535. Cube is 1 cm. S73-19122.

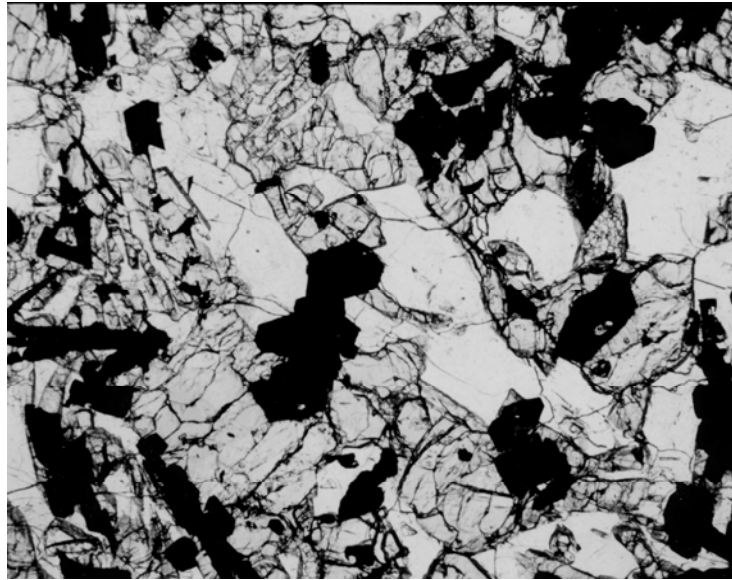


Figure 2: Photomicrograph of thin section 77535,11. Field of view is 3 x 4 mm.

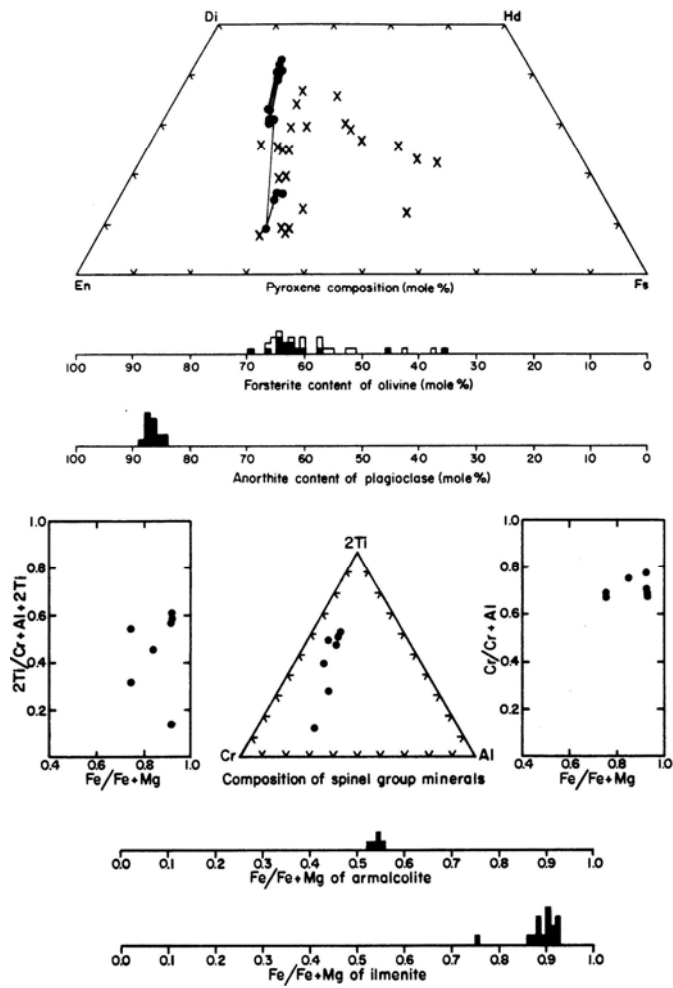


Figure 3: Compositions of minerals in 77535. From Warner et al. (1978).

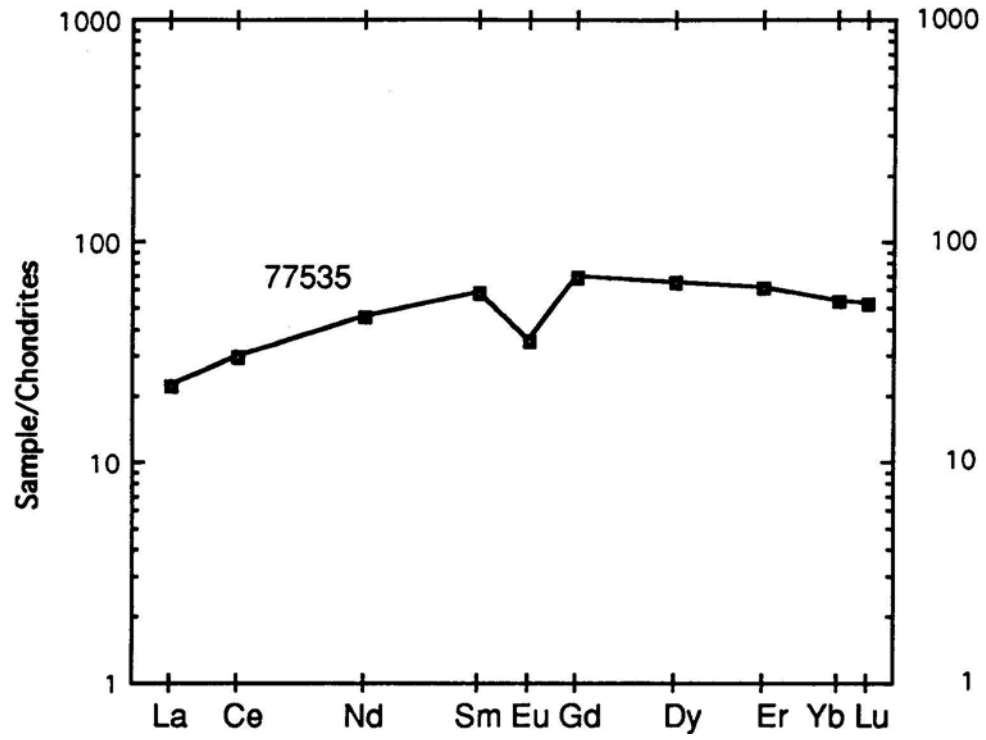


Figure 4: Normalized rare earth element diagram for 77535. Data from Rhodes et al. (1976).

Table 1: Whole-rock chemistry of 77535.

a) Laul et al. (1975); b) Rhodes et al. (1976)

Split Technique	,1 (a) INAA	,6 (b) XRF, IDMS, INAA
SiO ₂ (wt%)	–	38.57
TiO ₂	12.1	12.39
Al ₂ O ₃	8.6	8.95
Cr ₂ O ₃	0.485	0.43
FeO	19.5	18.53
MnO	0.239	0.27
MgO	8.7	8.85
CaO	9.8	10.66
Na ₂ O	0.36	0.39
K ₂ O	0.066	0.05
P ₂ O ₅		0.04
S		0.16
Nb (ppm)		
Hf	8.6	8.6
Ta	1.6	
Sr		184
Rb		0.55
Li		9.7
Ba		70.7
Co	20.5	20.4
Sc	79	80
La	5.7	5.24
Ce	23	18.3
Nd	22	20.7
Sm	8.8	8.7
Eu	1.94	1.98
Gd		13.6
Tb	2.4	
Dy	15	15.8
Er		9.84
Yb	8.1	8.91
Lu	1.3	1.29
Ge (ppb)		
Ir		
Au		

Table 2: Rb-Sr composition of 77535.
Data from Nyquist et al. (1976).

Sample	77535,6
wt (mg)	51
Rb (ppm)	0.547
Sr (ppm)	184
$^{87}\text{Rb}/^{86}\text{Sr}$	0.0086 ± 3
$^{87}\text{Sr}/^{86}\text{Sr}$	0.69961 ± 8
T _B	4.14 ± 0.80
T _L	4.70 ± 0.80

B = Model age assuming I = 0.69910 (BABI + JSC bias)

L = Model age assuming I = 0.69903 (Apollo 16 anorthosites for T = 4.6 b.y.)