

78578
Ilmenite Basalt
17.1 grams

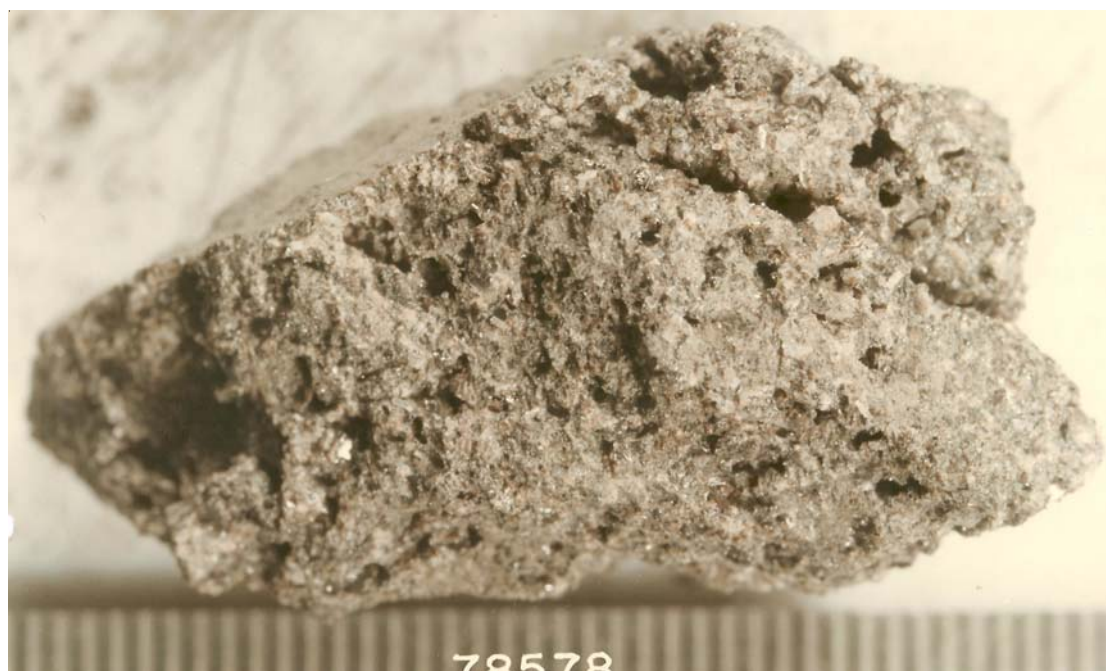


Figure 1: Photo of 68578 with scale bar marked in 1/2 mm intervals (why?). S73-21032

Introduction

78578 is a coarse-grained basalt fragment picked up as part of a large rake sample – see section on 78501.

Petrography

According to Warner et al. (1979), 78578 is a coarse-grained high-Ti basalt, somewhat similar to 71557. In addition to plagioclase, pyroxene, olivine and ilmenite, Cr-spinel, tranquillite, baddeleyite, armalcolite and silica are reported (figure 2). The mineral mode and mineral compositions are given in various catalogs and paper by Warner et al. (figure 3). It's a typical Apollo 17 basalt.

Chemistry

Laul et al. (1975) and Warner et al. (1975) determined the chemical composition (figure 4).

Processing

There is only one thin section.

Mineralogical Mode

Warner et al. 1978

Olivine	0.8 %
Pyroxene	51
Plagioclase	28.5
Silica	2.3
Ilmenite	16.1
Metal	0.7

References for 78578

Butler P. (1973) Lunar Sample Information Catalog Apollo 17. Lunar Receiving Laboratory. MSC 03211 Curator's Catalog. pp. 447.

Keil K., Dowty E. and Prinz M. (1974) Description, classification and inventory of 113 Apollo 17 rake samples from stations 1A, 2, 7 and 8. Curator's Catalog, pp. 149.

Laul J.C., Schmitt R.A., Robyn M. and Goles G.G. (1975b) Chemical composition of 18 Apollo 17 rake basalts and one basalt-breccia (abs). *Lunar Sci.* VI, 492-494. Lunar Planetary Institute, Houston.

Figure 2: Photos of thin section of 78578 - 2 mm across.

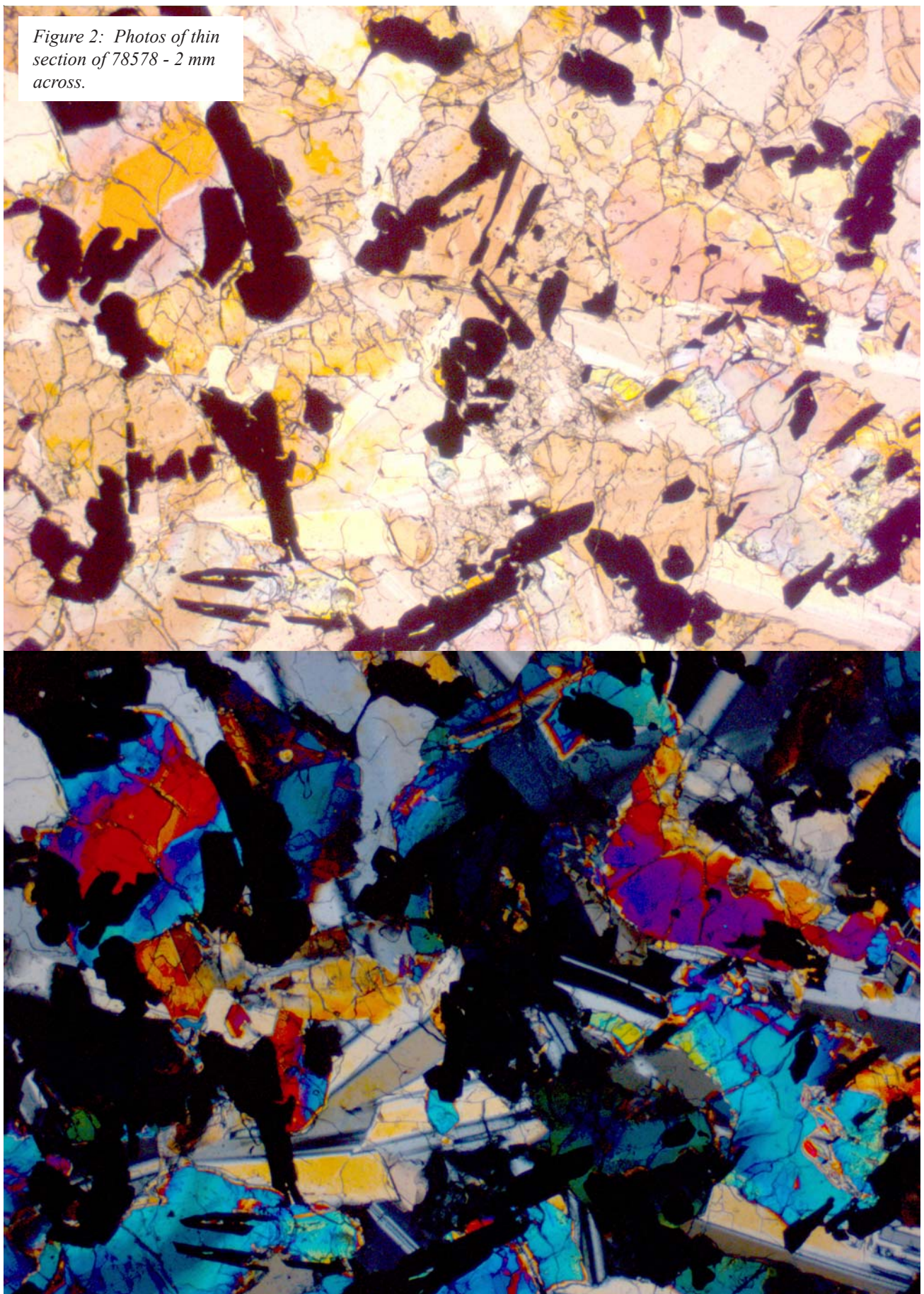


Table 1. Chemical composition of 78578.

reference	Warner78	
weight	Warner75	
SiO ₂ %	Laul75	
TiO ₂	11.2	(a)
Al ₂ O ₃	9	(a)
FeO	18.6	(a)
MnO	0.23	(a)
MgO	8.2	(a)
CaO	10	(a)
Na ₂ O	0.4	(a)
K ₂ O	0.07	(a)
P ₂ O ₅		
S %		
sum		
Sc ppm	75	(a)
V	90	(a)
Cr	2874	(a)
Co	19.4	(a)
Ni		
Cu		
Zn		
Ga		
Ge ppb		
As		
Se		
Rb		
Sr		
Y		
Zr		
Nb		
Mo		
Ru		
Rh		
Pd ppb		
Ag ppb		
Cd ppb		
In ppb		
Sn ppb		
Sb ppb		
Te ppb		
Cs ppm		
Ba		
La	5.4	(a)
Ce	25	(a)
Pr		
Nd	22	(a)
Sm	8.6	(a)
Eu	1.9	(a)
Gd		
Tb	2.2	(a)
Dy	14	(a)
Ho		
Er		
Tm		
Yb	7.8	(a)
Lu	1.1	(a)
Hf	7.7	(a)
Ta	1.5	(a)
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm		
U ppm		
technique:	(a) INAA	

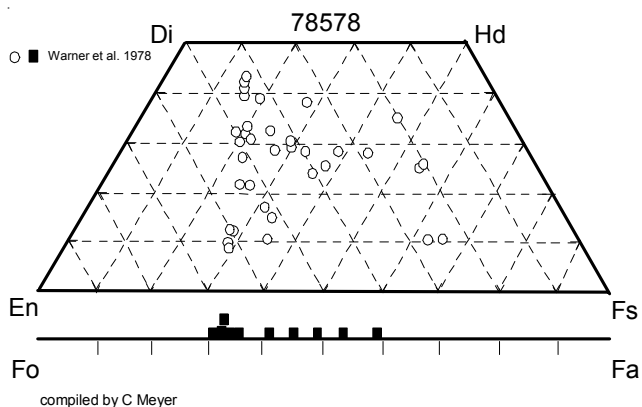


Figure 3: Composition of olivine and pyroxene in 78578.

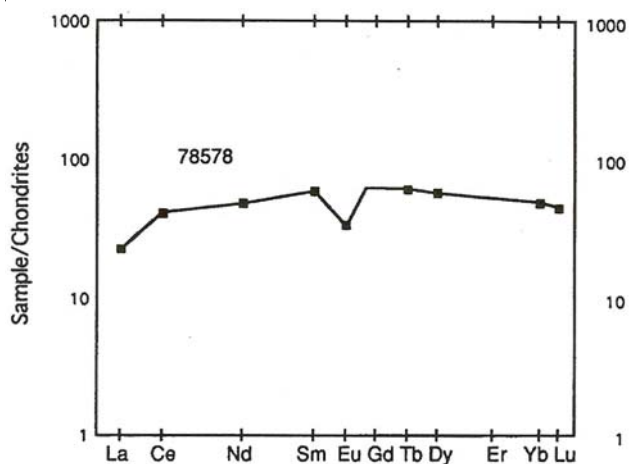


Figure 4: Normalized rare-earth-element diagram of 78578.

Meyer C. (1994) **Catalog of Apollo 17 rocks**: Volume 4. Curator's Office JSC 26088 pp. 644

Warner R.D., Taylor G.J., Conrad G.H., Northrop H.R., Barker S., Keil K., Ma M.-S. and Schmitt R. (1979a) Apollo 17 high-Ti mare basalts: New bulk compositional data, magma types, and petrogenesis. *Proc. 10th Lunar Planet. Sci. Conf.* 225-247.

Warner R.D., Taylor G.J., Wentworth S.J., Huss G.R., Mansker W.L., Planner H.N., Sayeed U.A. and Keil K. (1979d) Electron microprobe analyses of glasses from Apollo 17 rake sample breccias and Apollo 17 drill core. UNM Spec. Publ. #20, Albuquerque, 20 pp.

Wolfe E.W., Bailey N.G., Lucchitta B.K., Muehlberger W.R., Scott D.H., Sutton R.L and Wilshire H.G. (1981) The geologic investigation of the Taurus-Littrow Valley: Apollo 17 Landing Site. US Geol. Survey Prof. Paper, 1080, pp. 280.