

78587
Ilmenite Basalt
11.5 grams

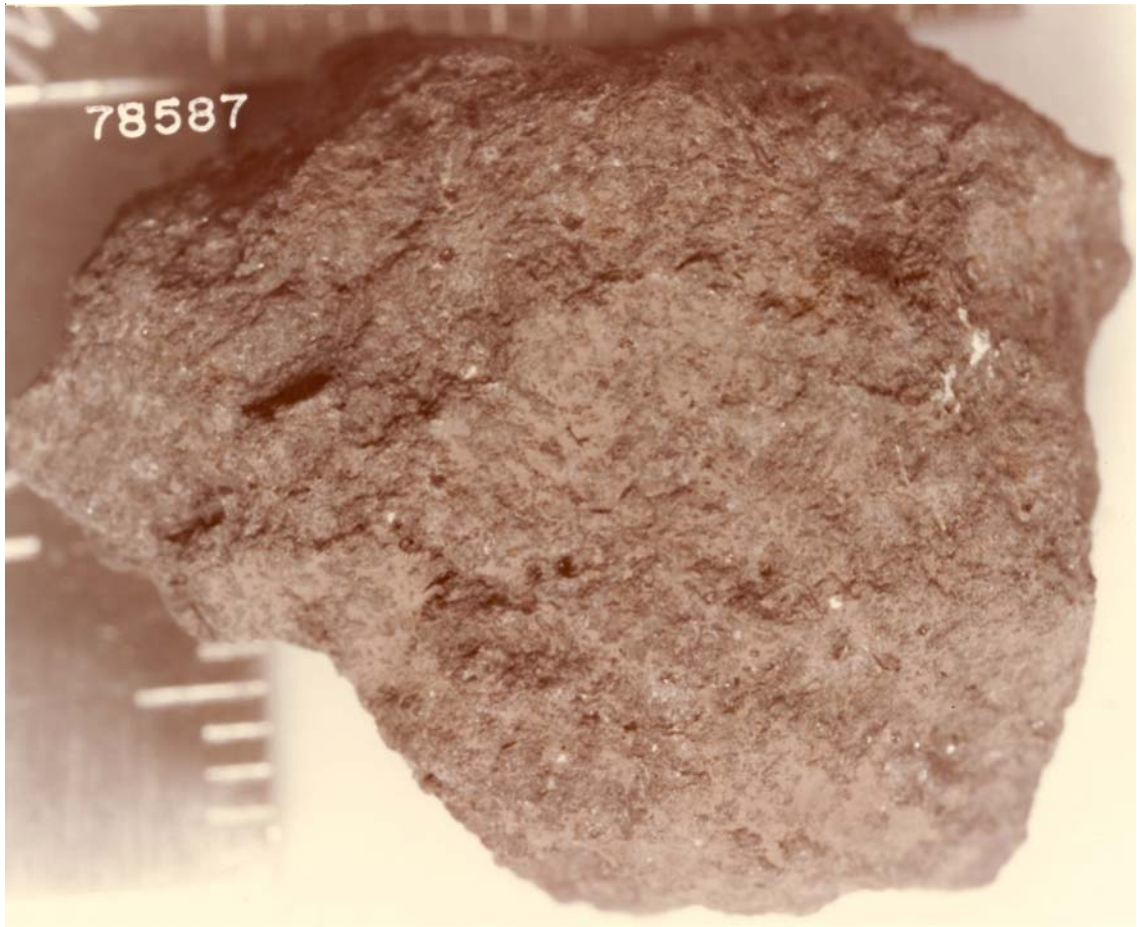


Figure 1: Photo of 78587. Mm ticks on scale. S73-33440

Introduction

78587 is an aphanitic basalt fragment picked up as a rake sample – see section on 78501.

Petrography

According to Warner et al. (1979), 78587 is a fine-grained type C, high-Ti basalt. It has skeletal ilmenite and olivine in an aphanitic groundmass (figure 2). Trace armalcolite and Cr-ulvospinel have also been reported (Warner et al. 1978).

The composition of pyroxene is unusual (figure 3).

Chemistry

Warner et al. (1975) reported an analysis (table and figure 4).

Radiogenic age dating

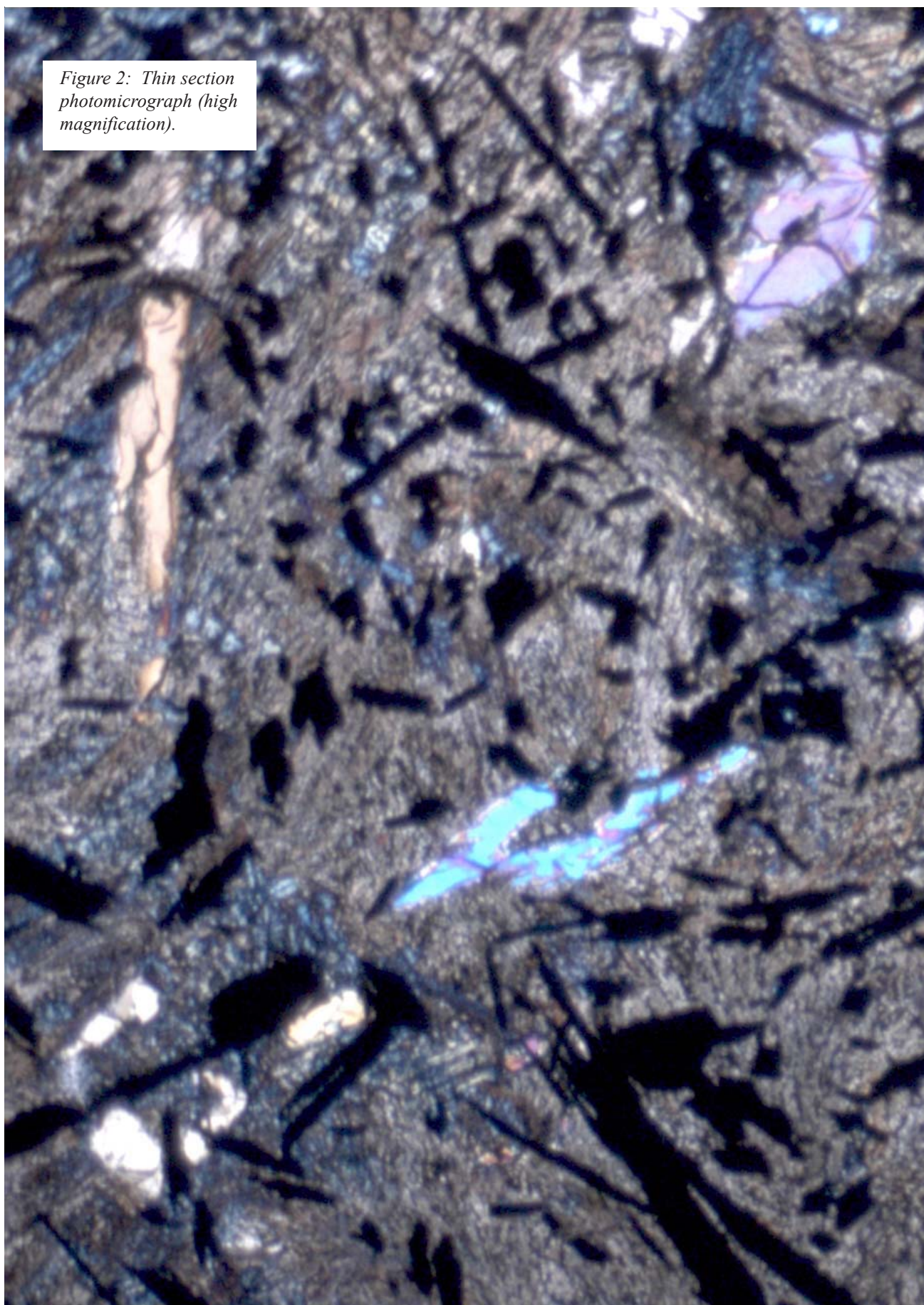
None

Mineralogical Mode

Warner et al. 1978

Olivine	8.1 %
Pyroxene	41.8
Plagioclase	27.6
Silica	4.8
Ilmenite	16.7
Metal	0.6

Figure 2: Thin section photomicrograph (high magnification).



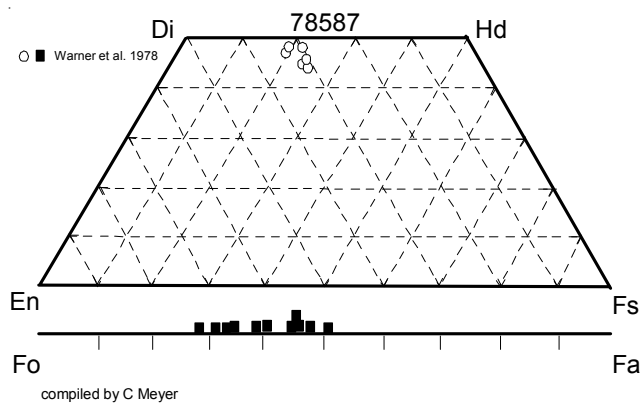


Figure 3: Composition of olivine and pyroxene phenocrysts in 78587.

Processing

There are 2 thin sections.

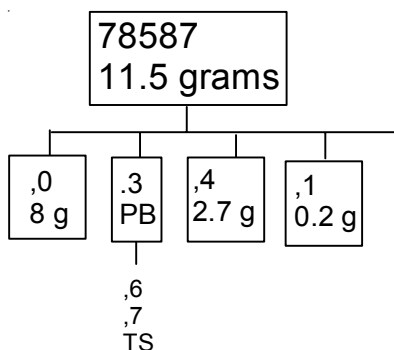


Figure 4: Normalized rare-earth-element diagram for 78587.

Warner R.D., Prinz M. and Keil K. (1975c) Mineralogy and petrology of mare basalts from Apollo 17 rake samples (abs). *Lunar Sci.* VI, 850-852. Lunar Planetary Institute, Houston.

Warner R.D., Warren R.G., Mansker W.L., Berkley J.L. and Keil K. (1976a) Electron microprobe analyses of olivine, pyroxene and plagioclase from Apollo 17 rake sample mare basalts. Spec. Publ. # 15, UNM Institute of Meteoritics, Albuquerque. 158 pp.

Warner R.D., Berkley J.L., Mansker W.L., Warren R.G. and Keil K. (1976b) Electron microprobe analyses of spinel, Fe-Ti oxides and metal from Apollo 17 rake sample mare basalts. Spec. Publ. #16, UNM Institute of Meteoritics, Albuquerque. 114 pp.

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.

References for 78587

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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.

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Warner R.D., Keil K., Prinz M., Laul J.C., Murali A.V. and Schmitt R.A. (1975b) Mineralogy, petrology, and chemistry of mare basalts from Apollo 17 rake samples. *Proc. 6th Lunar Sci. Conf.* 193-220.

Table 1. Chemical composition of 78587

<i>reference</i>	Warner78	
<i>weight</i>	Warner75	
SiO ₂ %		
TiO ₂	12.2	(a)
Al ₂ O ₃	8.8	(a)
FeO	19.4	(a)
MnO	0.24	(a)
MgO	7	(a)
CaO	10.3	(a)
Na ₂ O	0.37	(a)
K ₂ O	0.05	(a)
P ₂ O ₅		
S %		
<i>sum</i>		
Sc ppm	81	(a)
V	90	(a)
Cr	2566	(a)
Co	20.3	(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	5.7	(a)
Ce	23	(a)
Pr		
Nd		
Sm	6.6	(a)
Eu	1.41	(a)
Gd		
Tb	1.6	(a)
Dy	10	(a)
Ho		
Er		
Tm		
Yb	6.7	(a)
Lu	1	(a)
Hf	6	(a)
Ta	1.6	(a)
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm		
U ppm		
<i>technique: (a) INAA</i>		