

15118
Pigeonite Basalt
27.6 grams



Figure 1: Two sides of 15118. NASA S71-48760 and 48763.

Introduction

Lunar sample 15118 was collected by rake as part of a comprehensive sample taken at station 2, Apollo 15 (near St. George Crater and the Hadley Rille). Chemically it is a quartz-normative basalt with pyroxene phenocrysts set in a fine groundmass. It has not been dated.

Petrography

Dowty et al. (1973) and Ryder (1985) described 15118 as a pyroxene-phyric mare basalt. It has large chemically-zoned, skeletal pyroxene phenocrysts set in a finer-grained pyroxene-plagioclase crystalline groundmass (figure 2). Opaques include ilmenite, ulvospinel and metallic iron (~2% Ni). Lofgren et al. (1975) have compared the texture with that of controlled crystallization experiments to obtain the cooling rate (1-5 deg./hr.).

The surface of 15118 has numerous micrometeorite craters and the sample has been used for solar flare track studies (Bhandari et al. 1973).

Chemistry

The chemical composition of 15118 was reported by Rhodes and Hubbard (1973) and Ma et al. (1976).

Radiogenic age dating

Not dated.

Processing

There are three thin section of 15118.

Mineralogical Mode of 15118

	Sample Catalog Butler 1971	Dowty et al. 1973
Olivine		--
Pyroxene	50-60	61
Plagioclase	40	29
Ilmenite	1	4
Silica		3

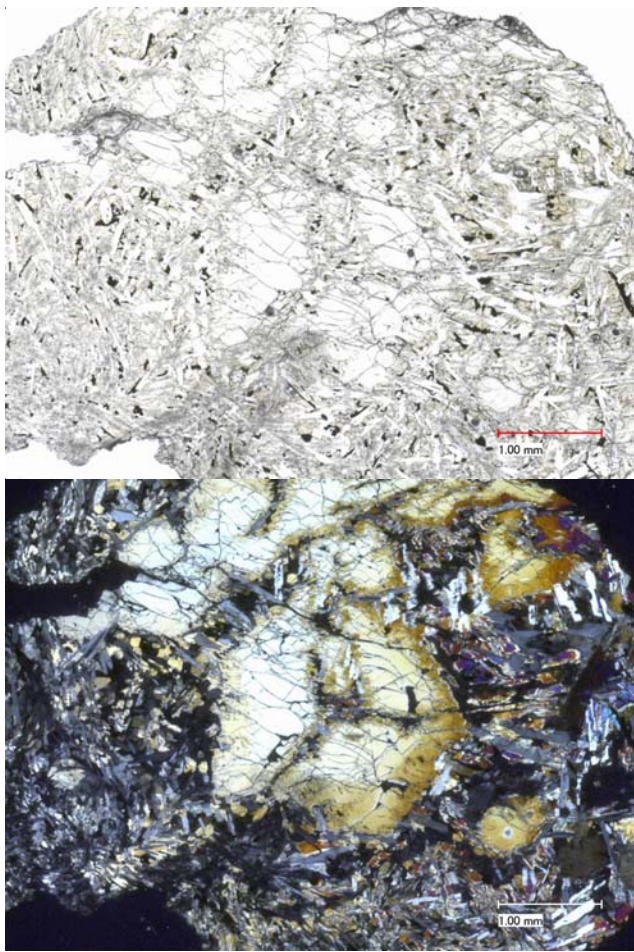


Figure 2a: Thin section photomicrographs of 15118,9 by C Meyer @ 50x (bottom is with x-nicols).

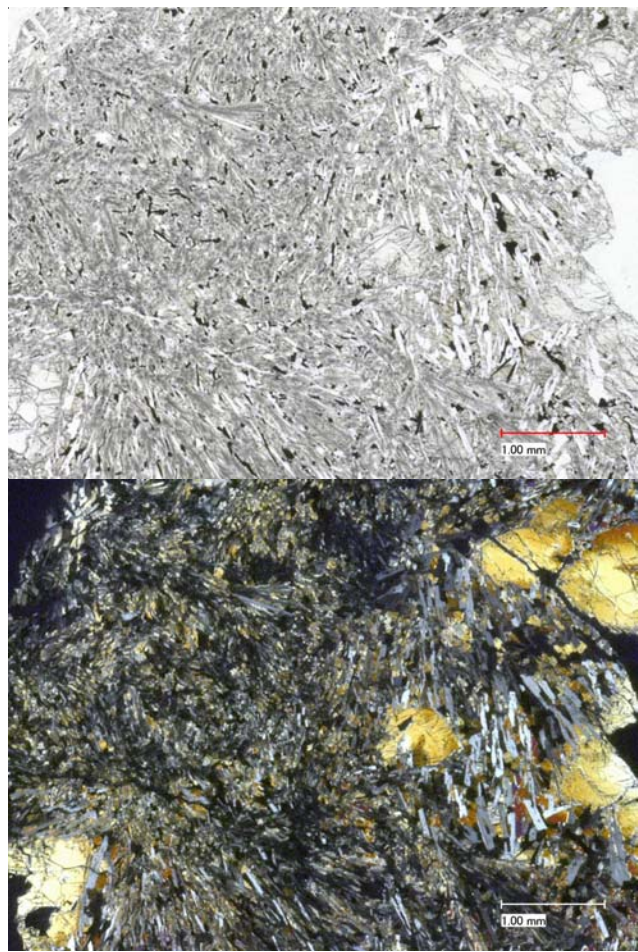


Figure 2b: Thin section photomicrographs of 15118,18 by C Meyer @ 50x (bottom is with x-nicols).

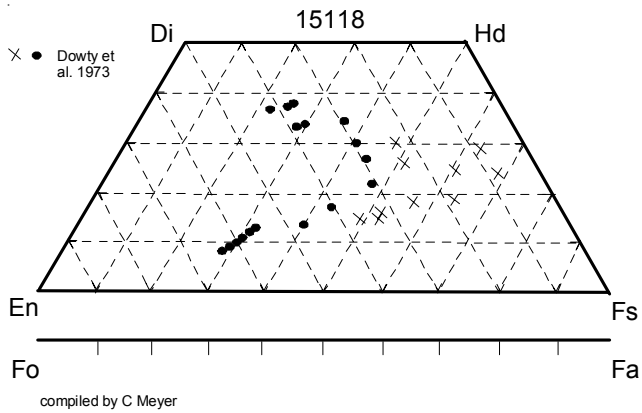


Figure 3: Pyroxene composition for 15118.

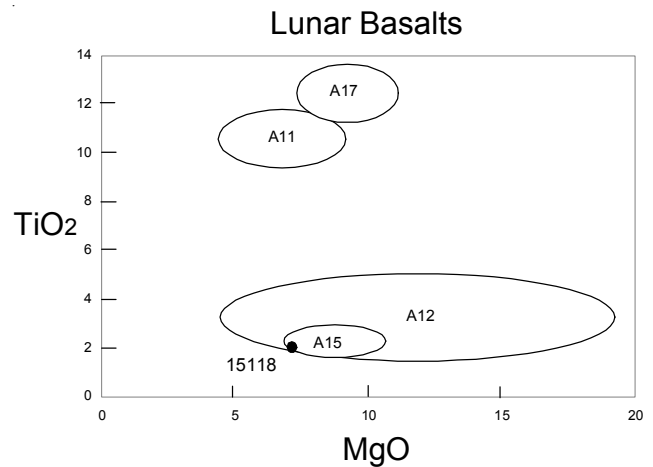


Figure 4: Chemical composition of 15118 compared with other lunar basalts.

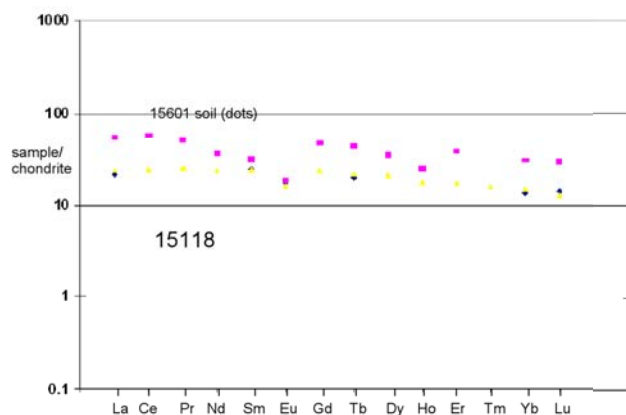
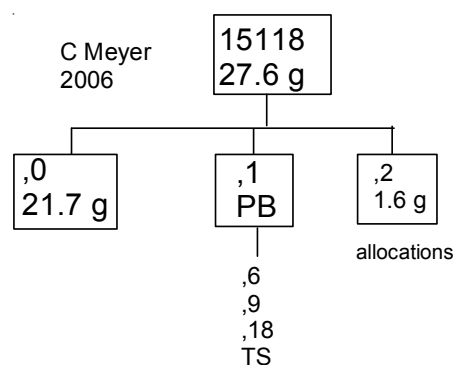


Figure 5: Normalized rare-earth element composition for 15118 (data from Fruchter et al. 1973)..



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Table 1. Chemical composition of 15118.

reference	Dowty73	Rhodes73	Wiesmann75	Ma 76	
<i>weight</i>					
SiO ₂ %	48.7	(a) 47.6	(b)		
TiO ₂	2.1	(a) 2.05	(b) 2.05	(c) 2	(d)
Al ₂ O ₃	9.7	(a) 10.72	(b)	10.6	(d)
FeO	21.1	(a) 20.39	(b)	24	(d)
MnO	0.27	(a) 0.28	(b)	0.25	(d)
MgO	7	(a) 6.49	(b)	7.7	(d)
CaO	9.9	(a) 11.65	(b)	10.1	(d)
Na ₂ O	0.39	(a) 0.32	(b) 0.31	(c) 0.35	(d)
K ₂ O	0.08	(a) 0.06	(b) 0.077	(c) 0.065	(d)
P ₂ O ₅	0.09	(a) 0.1	(b)		
<i>S %</i>					
<i>sum</i>					
Sc ppm				42	(d)
V				204	(d)
Cr	1780	(a)	2266	(c) 3970	(d)
Co				44	(d)
Ni				<66	(d)
Cu					
Zn					
Ga					
<i>Ge ppb</i>					
As					
Se					
Rb			1.32	(c)	
Sr			131	(c)	
Y					
Zr					
Nb					
Mo					
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb					
In ppb					
Sn ppb					
Sb ppb					
Te ppb					
<i>Cs ppm</i>					
Ba			83.8	(c) 80	(d)
La			8.39	(c) 5	(d)
Ce			23.4	(c)	
Pr					
Nd			17.3	(c)	
Sm			5.4	(c) 3.6	(d)
Eu			1.2	(c) 0.97	(d)
Gd			7.25	(c)	
Tb				0.71	(d)
Dy			7.33	(c) 4.9	(d)
Ho					
Er			3.99	(c)	
Tm					
Yb			3.4	(c) 2.2	(d)
Lu			0.49	(c) 0.34	(d)
Hf				3.1	(d)
Ta					
W ppb				450	(d)
Re ppb					
Os ppb					
Ir ppb					
Pt ppb					
Au ppb					
Th ppm			0.79	(c)	
U ppm			0.21	(c)	
<i>technique: (a) elec. Probe, (b) XRF, (c) IDMS, (d) INAA</i>					