

15119
Basalt (breccia attached)
14.1 grams



Figure 1: Rake sample 15119 (basalt fragment breaking free of sil breccia). Cube is 1 inch. S71-48776.

Introduction

Lunar sample 15119 is a rake sample from station 2 (Swann et al. 1972). Photos show it was partly a soil breccia and partly a basalt fragment (figure 1).

Petrography

Ryder (1985) gives the only description, describing a “microporphyrict texture” with small phenocrysts of olivine set in a “groundmass of granular-looking pyroxene enclosed in plagioclase” (figure 2). No mode is given.

Chemistry

Analyses by Fruchter et al. (1973) and Chappell and Green (1973) were repeated by Ryder et al. (2001) and

Neal (2001). The composition indicates that it is an olivine-normative basalt.

Other Studies

Gose et al. (1972) and Pearce et al. (1973) determined the intensity of remanant magnetization.

Processing

The basaltic portion (about half) broke free from the breccia.

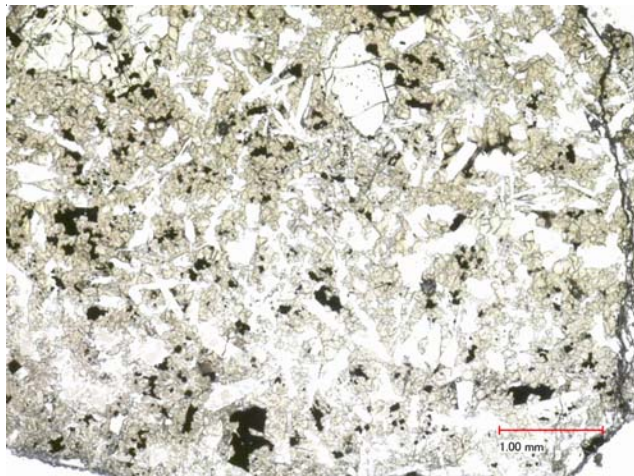


Figure 2a: Photomicrographs of 15119,3 by C Meyer @ 50x.

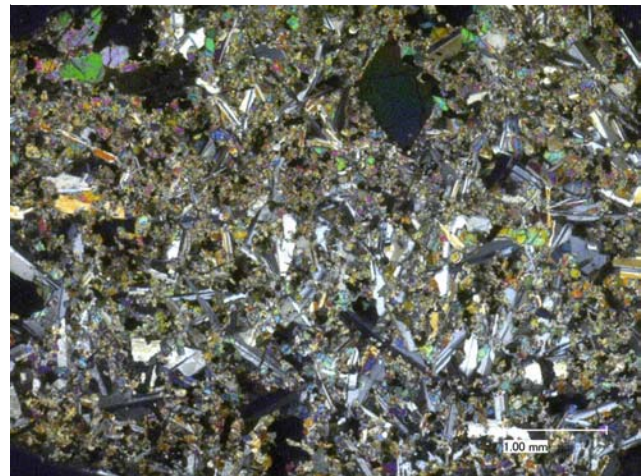


Figure 2a: Photomicrographs of 15119,3 by C Meyer @ 50x.

References for 15119

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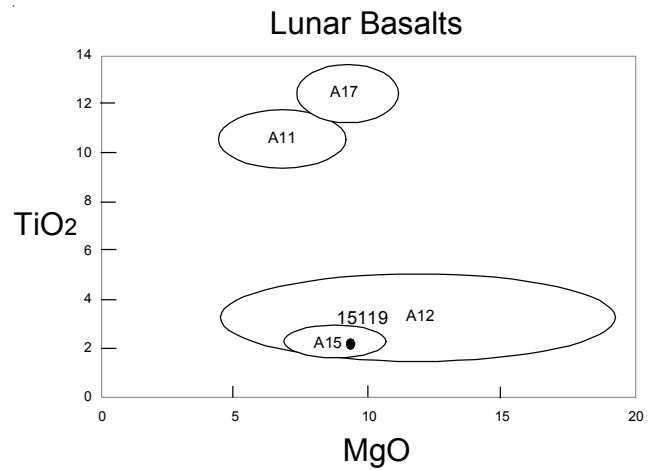


Figure 3: Chemical composition of 15119 compared with other Apollo basalts.

E.W., Reed V.S. and Sutton R.L. (1971b) Preliminary description of Apollo 15 sample environments. U.S.G.S. Interagency report: 36. pp219 with maps

Swann G.A., Bailey N.G., Batson R.M., Freeman V.L., Hait M.H., Head J.W., Holt H.E., Howard K.A., Irwin J.B., Larson K.B., Muehlberger W.R., Reed V.S., Rennilson J.J., Schaber G.C., Scott D.R., Silver L.T., Sutton R.L., Ulrich G.E., Wilshire H.G. and Wolfe E.W. (1972) 5. Preliminary Geologic Investigation of the Apollo 15 landing site. In Apollo 15 Preliminary Science Rpt. NASA SP-289. pages 5-1-112.

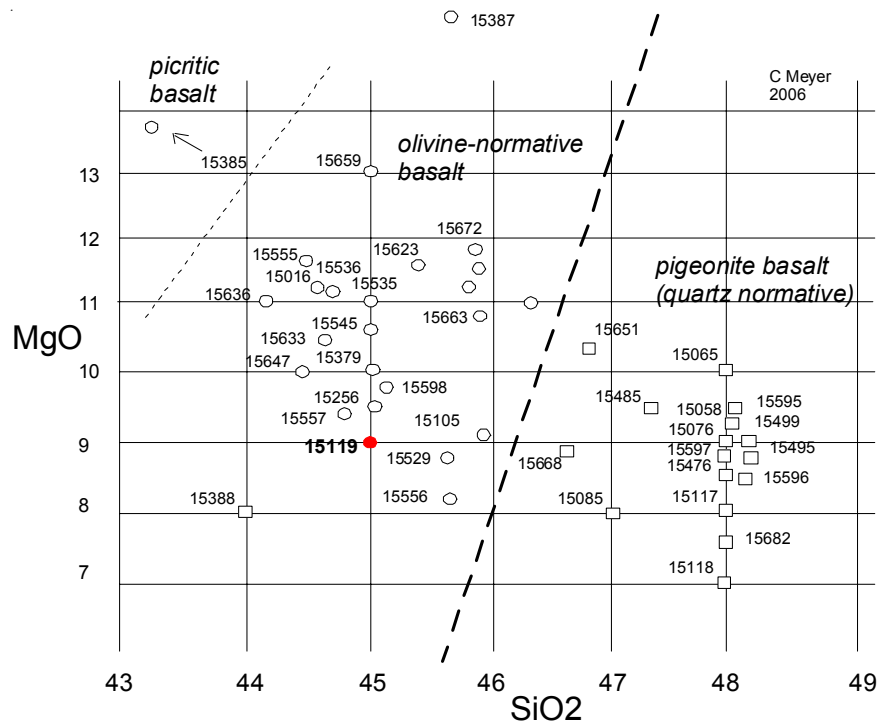


Table 1. Chemical composition of 15119.

reference weight	Ryder2001		Neal2001	Chappel73	Fruchter78
SiO ₂ %	44.9 (d)			45.23 (c)	
TiO ₂	2.57 (d)			2.64 (c)	2.85 (a)
Al ₂ O ₃	8.96 (d)			9.24 (c)	8.94 (a)
FeO	22.23 (d)	22.1 (a)		22.25 (c)	22 (a)
MnO	0.28 (d)			0.31 (c)	
MgO	9.38 (d)			8.93 (c)	
CaO	10.04 (d)			10.55 (c)	
Na ₂ O	0.264 (d)	0.27 (a)		0.3 (c)	0.29 (a)
K ₂ O	0.048 (d)			0.05 (c)	
P ₂ O ₅	0.072 (d)			0.09 (c)	
S %				0.05 (c)	
sum					
Sc ppm	44 (a)	58 (b)		45 (a)	
V		(a) 447 (b)			
Cr	4022	3840 (a)	6251 (b)		3400 (a)
Co		49.6 (a)	65.2 (b)		47 (a)
Ni	108	59 (a)	64.4 (b)		
Cu	19		20 (b)		
Zn			22 (b)		
Ga			4.5 (b)		
Ge ppb					
As					
Se					
Rb	4		1.24 (b)		
Sr	99	112 (a)	123 (b)		
Y	23		37 (b)		
Zr	95		154 (b)		
Nb	8		7.5 (b)		
Mo			0.03 (b)		
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb					
In ppb					
Sn ppb					
Sb ppb			10 (b)		
Te ppb					
Cs ppm			0.02 (b)		
Ba	44	(a) 60.6 (b)			
La	5.36	(a) 5.86 (b)		5.7 (a)	
Ce	15.9	(a) 16.9 (b)			
Pr		2.54 (b)			
Nd		11.9 (b)			
Sm	15	(a) 4.03 (b)		4.3 (a)	
Eu	3.82	(a) 0.98 (b)		1.05 (a)	
Gd	0.94	(a) 5.59 (b)			
Tb	0.83	(a) 0.88 (b)		0.9 (a)	
Dy		5.72 (b)			
Ho		1.07 (b)			
Er		3 (b)			
Tm		0.4 (b)			
Yb	2.36	(a) 2.5 (b)		2.1 (a)	
Lu	0.32	(a) 0.34 (b)		0.38 (a)	
Hf	2.89	(a) 3.35 (b)		2.8 (a)	
Ta	0.41	(a) 0.56 (b)			
W ppb		80 (b)			
Re ppb					
Os ppb					
Ir ppb					
Pt ppb					
Au ppb					
Th ppm	0.49	(a)			
U ppm					

technique (a) INAA, (b) ICP-MS, (c) XRF, (d) fused bead, elec. probe

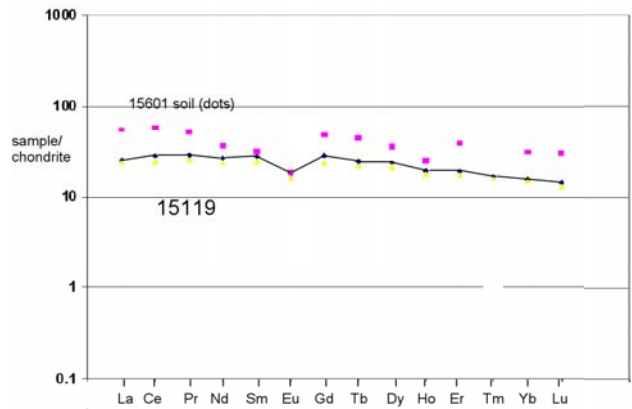


Figure 4: Normalized rare-earth-element diagram for 15119.

