

15651

Olivine-normative Basalt

1.6 grams



Figure 1: Photo of 15651. Cube is 1 cm. S71-49769.

Mineralogical Mode

Olivine	3 %
Pyroxene	62
Plagioclase	28
Opaques	5
Silica	0.3
Meostasis	1.7
Dowty et al. 1973	

Introduction

The large rake sample from station 9a, Apollo 15 included 15651 (figure 1). It is a medium-grained olivine-bearing mare basalt with microgabbroic texture (figure 2). In places the texture has been somewhat cataclasized by shock.

Petrography

Dowty et al. (1973) reported the mineral mode and determined the composition of the major minerals (figure 3). Pyroxene and olivine are chemically zoned and similar to that of olivine-normative basalts. Opaque minerals occur in clumps (Nehru et al. 1974).

Chemistry

Ryder and Steele (1981) determined the composition, finding that 15651 was an olivine-normative basalt (although silica was a bit high).

Processing

There are three thin section of 15651.

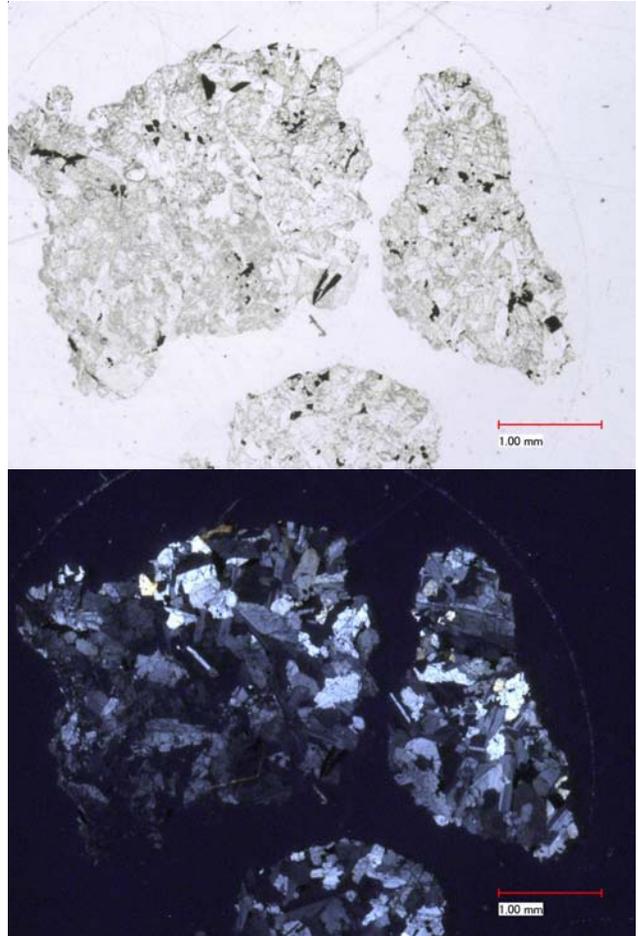


Figure 2: Photomicrograph of thin section 15651,7 by C Meyer @ 50x.

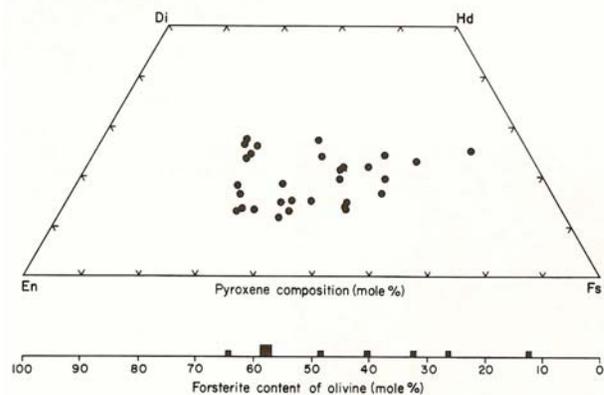


Figure 3: Composition of pyroxene and olivine in 15651 (Dowty et al. (1973)).

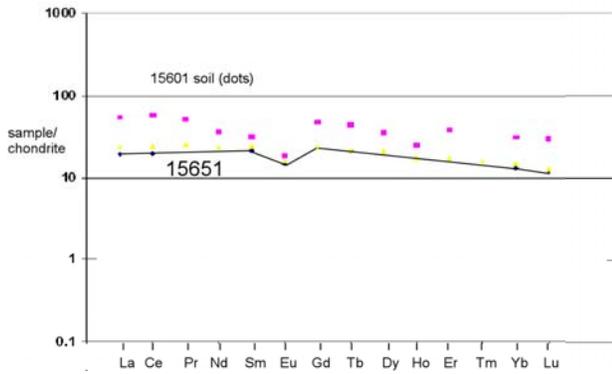


Figure 4: Normalized rare-earth-element diagram for 15651.

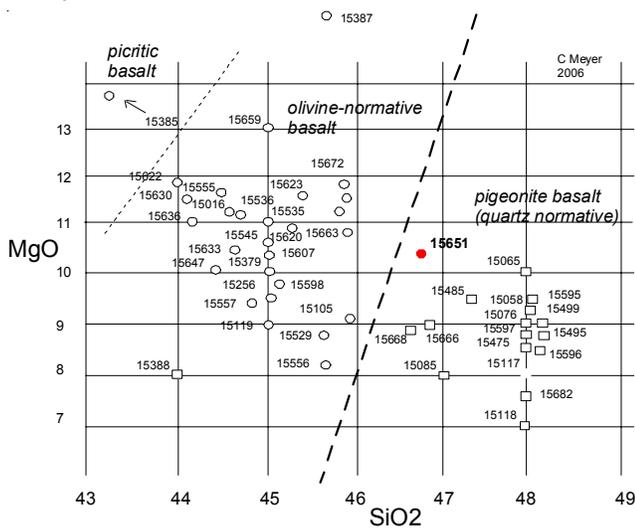


Figure 5: Comparison with other Apollo 15 basalts.

References for 15651.

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Table 1. Chemical composition of 15651.

<i>reference weight</i>	Ryder88	Dowty73
SiO ₂ %	46.8	(b) 43.7 (c)
TiO ₂	2.04	(b) 3.1 (c)
Al ₂ O ₃	9.9	(b) 8.9 (c)
FeO	20.3	(b) 23.9 (c)
MnO	0.37	(b) 0.25 (c)
MgO	10.3	(b) 10.9 (c)
CaO	10.3	(b) 9 (c)
Na ₂ O	0.33	(b) 0.25 (c)
K ₂ O		
P ₂ O ₅	0.11	(b) 0.04 (c)
S %		
<i>sum</i>		
Sc ppm	39.8	(a)
V		
Cr	3422	(a)
Co	46.2	(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	4.56	(a)
Ce	11.8	(a)
Pr		
Nd		
Sm	3.1	(a)
Eu	0.821	(a)
Gd		
Tb	0.77	(a)
Dy		
Ho		
Er		
Tm		
Yb	2.11	(a)
Lu	0.293	(a)
Hf	2.2	(a)
Ta		
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm	0.445	(a)
U ppm		

technique (a) INAA, (b) fused-bead e-probe, (c) broad-beam e-probe