12076

Olivine Basalt

54.5 grams

Figure 1: Photo of 12076 illustrating vugs on one side. Sample is 4 cm across. NASA # S69-61717.

Introduction

12076 is a vuggy porphyritic olivine basalt similar to 12075. Although the composition has been determined, it has not been studied petrographically. There are a few micrometeorite craters on one face.

Petrography

Champness et al. (1971) give a brief description of 12076 and compare it with 12075. These rocks are said to be similar, but 12076 has a finer-grained groundmass than 12076 (figure 3).

Large crystals (pyroxene?) define the inner surfaces of large vugs.

Chemistry

Rhodes et al. (1977) and Neal et al. (1994) have determined the chemical composition.

Other Studies

Bogard et al. (1971) reported the content and isotopic composition of rare gases in 12076.

There are 6 thin sections

List of Photo #s for 12076

S69-61692 – 61739	B & W mug
S70-16776 – 16777	TS color
S70-49825 – 49826	TS
S70-49955 – 49956	TS
S70-49264 – 49265	TS

Mineralogical Mode for 12076

	Neal et al. 1994
Olivine	26.2
Pyroxene	46.8
Plagioclase	14.4
Ilmenite	4
Chromite +Usp	4
mesostasis	3.7
“silica”	0.1

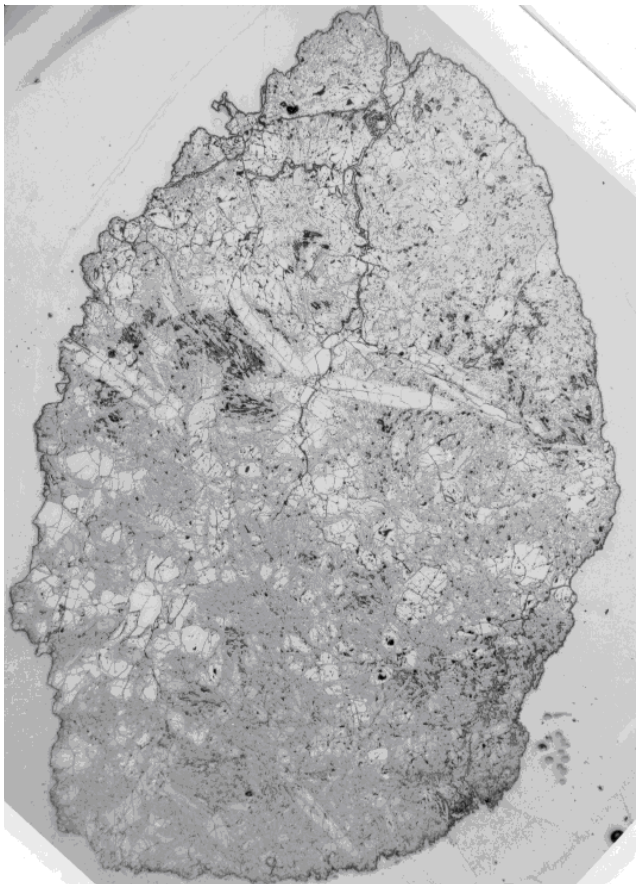

Figure 2: Reflected light photo of 12076,12 showing open spaces (vugs) between crystals. NASA # S70-49412. Length about 2 cm.

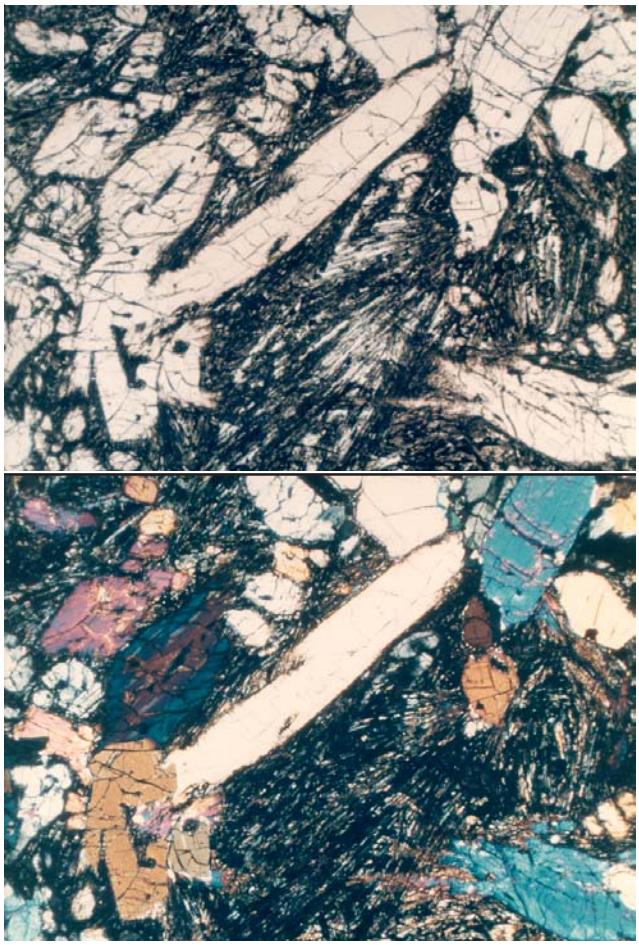

Figure 3: Photomicrographs of thin section 12076,12 (plane-polarized, crossed nicols). Field of view is 2.6 mm. NASA # S70-49264-265.

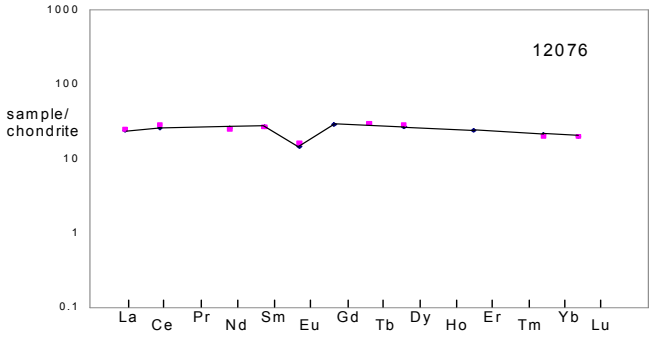

Figure 4: Normalized rare-earth-element diagram for 12076 (IDMS data by Wiesmann et al. 1975 connectted by lines).

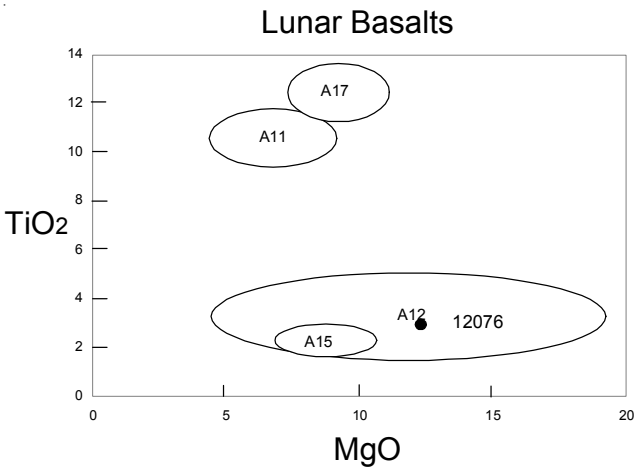

Figure 5: Composition of 12076 compared with that of other lunar basalts.

References for 12076

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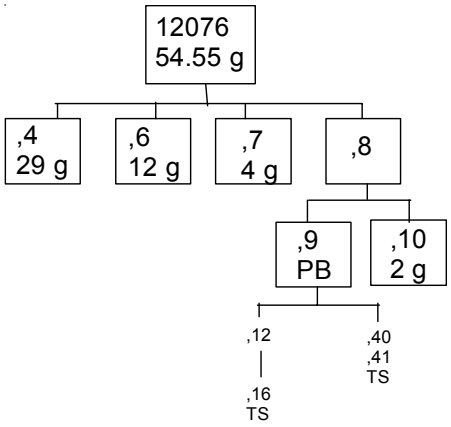
Table 1. Chemical composition of 12076.

reference	Neal94		Rhodes77		Wiesmann75	
weight	.561 g				56 mg	
SiO2 %			44.87	(c)		
TiO2	2.8	(a)	2.76	(c)		
Al2O3	8.5	(a)	8.1	(c)		
FeO	21.2	(a)	20.66	(c)		
MnO	0.257	(a)	0.3	(c)		
MgO	14.6	(a)	12.26	(c)		
CaO	9	(a)	9.03	(c)		
Na2O	0.222	(a)	0.21	(a)		
K2O	0.056	(a)	0.06	(c)	0.056	(d)
P2O5			0.03	(c)		
S %						
sum						
Sc ppm	47.2	(a)	46.4	(a)		
V	167	(a)				
Cr	4130	(a)	4640	(a)		
Co	54	(a)	54	(a)		
Ni	73	(a)				
Cu						
Zn						
Ga						
Ge ppb						
As						
Se						
Rb					1.022	(d)
Sr	94	(a)	94	(c)	93.6	(d)
Y						
Zr					108	(d)
Nb						
Mo						
Ru						
Rh						
Pd ppb						
Ag ppb						
Cd ppb						
In ppb						
Sn ppb						
Sb ppb						
Te ppb						
Cs ppm						
Ba	70	(a)	59	(b)	59.4	(d)
La	5.9	(a)			5.68	(d)
Ce	17.5	(a)			15.9	(d)
Pr						
Nd	11.4	(a)			12	(d)
Sm	4	(a)	4.03	(a)	4.03	(d)
Eu	0.92	(a)			0.825	(d)
Gd					5.67	(d)
Tb	1.08	(a)				
Dy	7	(a)			6.52	(d)
Ho						
Er					3.85	(d)
Tm						
Yb	3.3	(a)	3.4	(a)	3.39	(d)
Lu	0.49	(a)	0.51	(a)	0.492	(d)
Hf	3.2	(a)				
Ta	0.53	(a)				
W ppb						
Re ppb						
Os ppb						
Ir ppb						
Pt ppb						
Au ppb						
Th ppm	0.9	(a)			0.87	(d)
U ppm					0.23	(d)
technique	*(a) INAA, (b) IDMS, (c) XRF, (d) IDMS*					



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