

71047**High-Ti Mare Basalt****2.78 g, 1.75 x 1 x 0.75 cm****INTRODUCTION**

71047 was described as a light brownish gray, poikilitic, equigranular basalt (Apollo 17 Lunar Sample Information Catalog, 1973), containing no vugs or zap pits (Fig. 1). The surfaces are hackly and the fabric equigranular to poikilitic. 71047 has a blocky/subangular shape. This sample was collected from Station 1A.

PETROGRAPHY AND MINERAL CHEMISTRY

Neal et al. (1989) described 71047 as a plagioclase poikilitic

basalt, with plagioclase reaching 3.4mm and pyroxene 2.2mm. Rare inclusions of ilmenite-free armalcolite and Cr-spinel (both ~0.1mm) can be found in pyroxene. Olivine (~0.1mm) forms cores to pyroxene. Ilmenite is blocky and interstitial, containing exsolution lamellae (< 0.005mm) of spinel chromite and rutile. Silica, native Fe, and troilite are interstitial phases. Point counting reveals that this basalt is comprised of 48.2% pyroxene; 26.3% plagioclase; 21.7% ilmenite; 1.8% native Fe and troilite; 0.9% silica; 0.4% Cr-spinel; and 0.2% armalcolite.

Olivine exhibits little core-to-rim variation, but large compositional variations are noted between grains (FO₄₉₋₇₃). Like-wise, plagioclase exhibits a relatively large overall composition-al range (An₇₄₋₈₉), but also some core-to-rim zonation (rims more sodic). Pyroxene compositions are titan-augite and pigeonite, both zoning to more Fe-rich, intermediate compositions (Fig. 2). Al/Ti ratios are constant at ~2 and Cr₂O₃ decreases with decreasing pyroxene MG#. Cr-spinels exhibit little compositional variability (Cr/(Cr+Al) = 66-68; MG# 24-25), as does armalcolite (MG# = 43-45). Ilmenite exhibits moderate core-to-rim

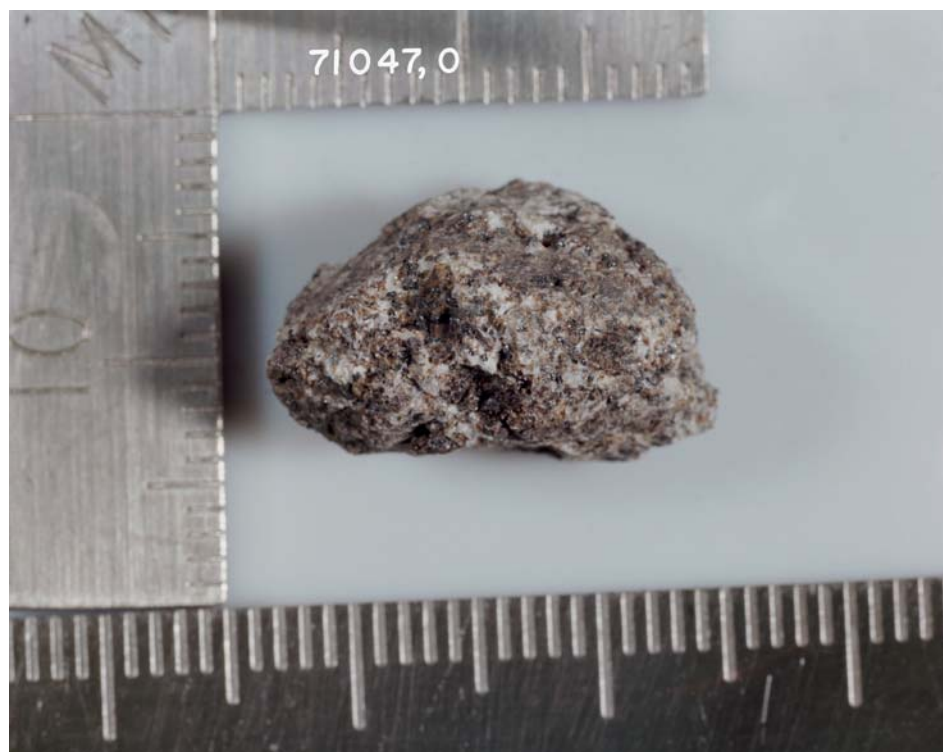


Figure 1: Hand specimen photograph of 71047,0

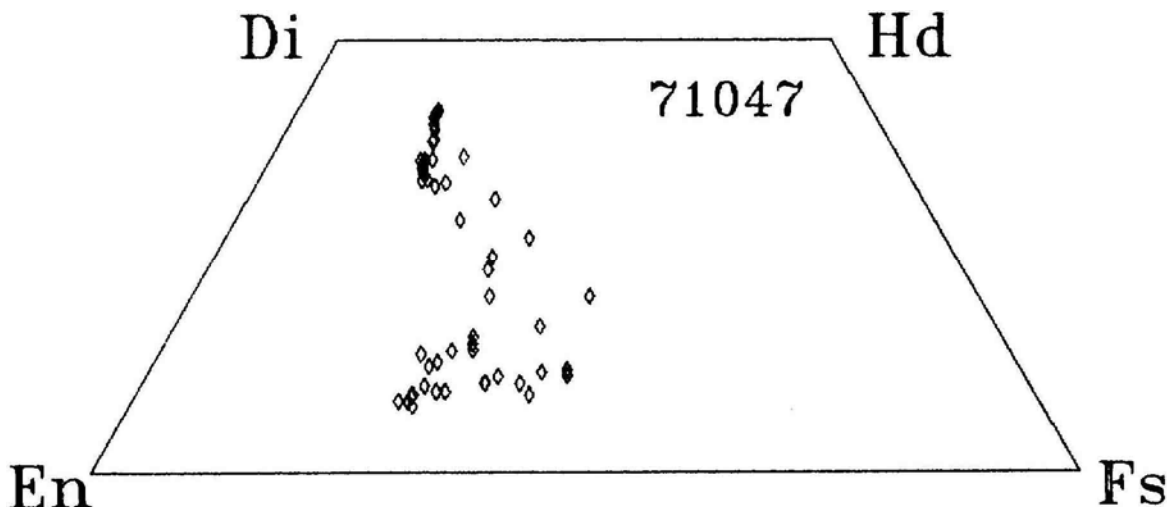


Figure 2: Pyroxene compositions of 71047 represented on a pyroxene quadrilateral.

and between-grain composition-
al variability (MG# = 7-29).

WHOLE-ROCK CHEMISTRY

Neal et al. (1990) classified
71047 as a Type B1 Apollo 17
high-Ti basalt. This basalt

contains 12.9 wt% TiO₂ with a
MG# of 46.7 (Table 1). The REE
profile (Fig. 3) is LREE-depleted
with a slight depletion of the
HREE over the MREE. MREE
attain 45 times chondritic values
and a negative Eu anomaly is
present ([Eu/Eu*]_N = 0.60).

PROCESSING

Of the original 2.78g of 71047,
0, approximately 2.018
remains. 0.698 was used for
INA analysis, and 0.01g was
used for thin section 71047, 3.

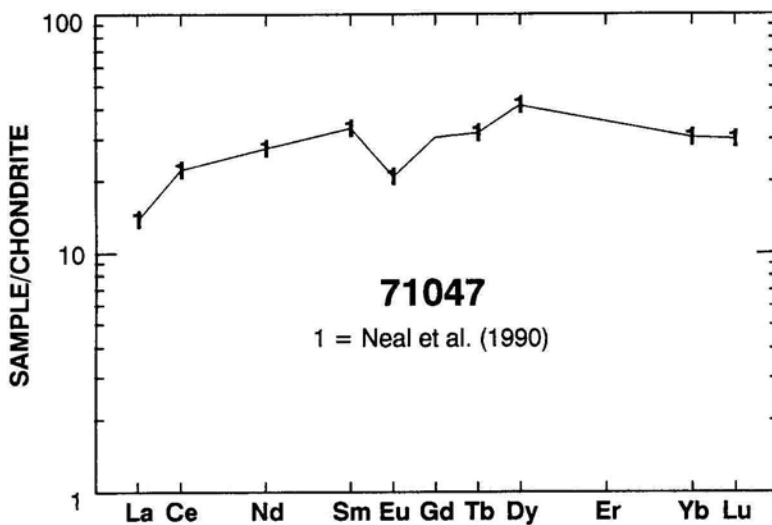


Figure 3: Chondrite- normalized rare-earth element profile of 71047.

Table 1: Whole-rock chemistry of 71047.
Data from Neal et al. (1990).

	71047,4 I		71047,4 I
SiO ₂ (wt %)		Cu	
TiO ₂	12.9	Ni	
Al ₂ O ₃	8.52	Co	25
Cr ₂ O ₃	0.258	V	132
FeO	17.8	Sc	76
MnO	0.238	La	4.46
MgO	8.8	Ce	19
CaO	9.8	Nd	17
Na ₂ O	0.39	Sm	6.65
K ₂ O	0.04	Eu	1.58
P ₂ O ₅		Gd	
S		Tb	1.82
Nb (ppm)		Dy	14.1
Zr	136	Er	
Hf	6.64	Yb	6.61
Ta	.73	Lu	1.00
U	0.20	Ga	
Th	0.19	F	
W		Cl	
Y		C	
Sr	61	N	
Rb		H	
Li		He	
Ba	53	Ge (ppb)	
Cs	0.19	Ir	
Be		Au	
Zn		Eu	
Pb		Os	

I = Analysis by INAA.