

74249**High-Ti Basalt****4.183 g, 1.5 x 1.2 x 0.7 cm****INTRODUCTION**

74249 has been described as a dark gray, fine-grained, homogeneous basalt (Apollo 17 Lunar Sample Information Catalog, 1973). No zap pits are present, and only a few (< 5%) small (< 1mm) cavities are apparent (Fig. 1). The surface is coated with dust and the general shape is subangular with a penetrative fracture at one end. This sample was collected from Station 4.

PETROGRAPHY AND MINERAL CHEMISTRY

Warner et al. (1979) only described 74249 in general terms as a Type A high-Ti

basalt, combining mineral analyses of all Type A basalts into histograms.

During the preparation of this catalog, we examined thin section 74249,3 and found it to be a fine-grained, almost vitrophyric basalt. It is comprised of small prismatic pyroxenes (0.2-0.3mm long) and ilmenites (~ 0.1mm) set in an opaque quench glass with olivine and ilmenite phenocrysts (up to 0.5mm). The proportion of glass is smaller than seen in 74248. The larger ilmenites contain armalcolite cores (Fig. 2b), and pink pyroxene reaction rims are seen on some olivines. Euhedral chromite inclusions (~0.005mm) are present in the olivines. Very little native Fe

and troilite are present in this sample.

WHOLE-ROCK CHEMISTRY

Ma et al. (1979) and Warner et al. (1979) reported the same whole-rock analysis for 74249 (Table 1). Warner et al. (1979) described 74249 as a Type A Apollo 17 high-Ti basalt. These authors reported a TiO₂ content of 12.7 wt% with a MG# of 44.5. The REE profile is LREE depleted with a maximum in the MREE (Fig. 2). The profile from Tb to Lu exhibits a slight decrease (relative to chondrites). A negative Eu anomaly is present [(Eu/Eu*)N = 0.54].

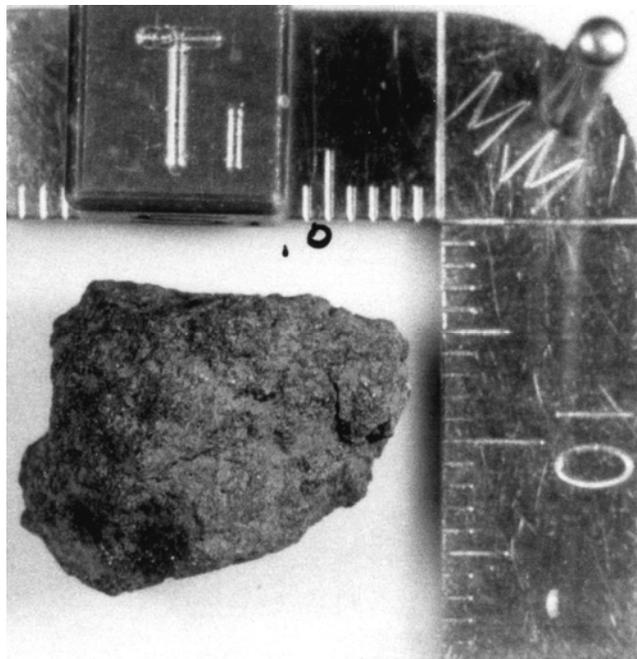


Figure 1: Hand specimen photographs of 74249,0.

PROCESSING

Of the original 4.183g of 74249,0, a total of 3.96g remains. 74249,1 was used for INAA, and thin section,3 was taken from this irradiated sample.

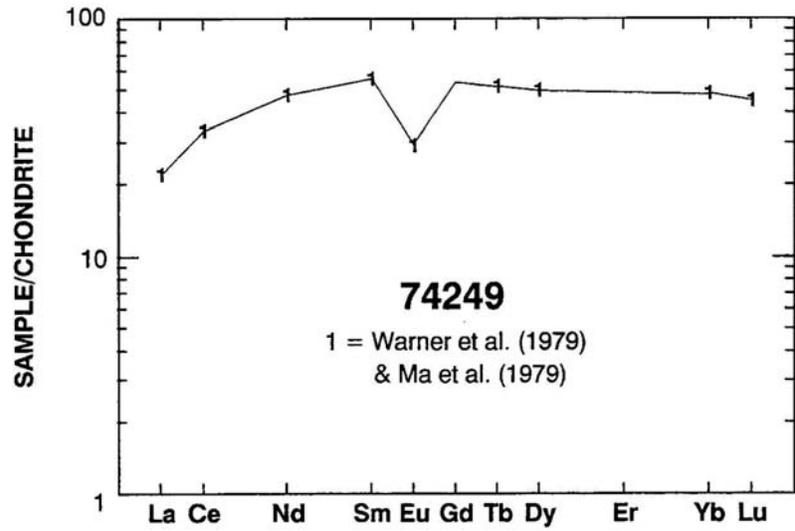


Figure 2: Chondrite-normalized rare-earth-element profile of 74249.

Table 1: Whole-rock chemistry of 74249.
 Data from Ma et al. (1979) and Warner et al. (1979) (same analysis).

Sample 74249,1 Method N		Sample 74249,1 Method N	
SiO ₂		Cu	
TiO ₂	12.7	Ni	
Al ₂ O ₃	9.1	Co	19
Cr ₂ O ₃	0.395	V	100
FeO	19.9	Sc	87
MnO	0.262	La	7.2
MgO	9	Ce	29
CaO	10.4	Nd	30
Na ₂ O	0.439	Sm	11.3
K ₂ O	0.074	Eu	2.25
P ₂ O ₅		Gd	
S		Tb	3.0
Nb (ppm)		Dy	19
Zr		Er	
Hf	10.0	Yb	10.6
Ta	2.3	Lu	1.52
U		Ga	
Th		F	
W		Cl	
Y		C	
Sr		N	
Rb		H	
Li		He	
Ba		Ge (ppb)	
Cs		Ir	
Be		Au	
Zn		Ru	
Pb		Os	

Analysis by: N = INAA.