

**79265****High-Ti Mare Basalt  
2.60 g, 1.3 x 1 x 1 cm****INTRODUCTION**

79265 was described as a medium gray to medium dark gray, intergranular (tough) basalt, with an angular (blocky) shape and containing no fractures (Apollo 17 Lunar Sample Information Catalog, 1973 and Fig. 1). Adhering dust is present on all surfaces. No cavities or zap pits were noted. Minerals present are brown pyroxene, white plagioclase, and black opaques. Grain size of the original sample was ~0.2 mm. In the dust, 0.1-0.2 mm fragments

of pyroxene and feldspar can be seen, along with a small proportion of dark glass droplets.

**PETROGRAPHY AND  
MINERAL CHEMISTRY**

Thin section 79265,4 is composed of a fine-grained subvolcanic to subophitic basalt containing anhedral plagioclase (up to 0.8 mm), anhedral pink-brown pyroxene (up to 0.8 mm), and anhedral ilmenite (0.02-0.80 mm).

Ilmenite is concentrated around the pyroxene and contains spinel and rutile exsolution features. Ilmenite often exhibits "sawtooth" margins. Small (0.04-0.10 mm) olivines form the cores to the larger pyroxenes. Small (< 0.1 mm) chromiteulvospinel grains are inclusions in olivine. No armalcolite was observed. Interstitial phases are anhedral silica (0.1-0.15 mm), anhedral troilite (0.009-0.03 mm), and anhedral FeNi metal (0.002-0.004 mm). FeNi metal blebs are present in some troilite grains. This thin section is

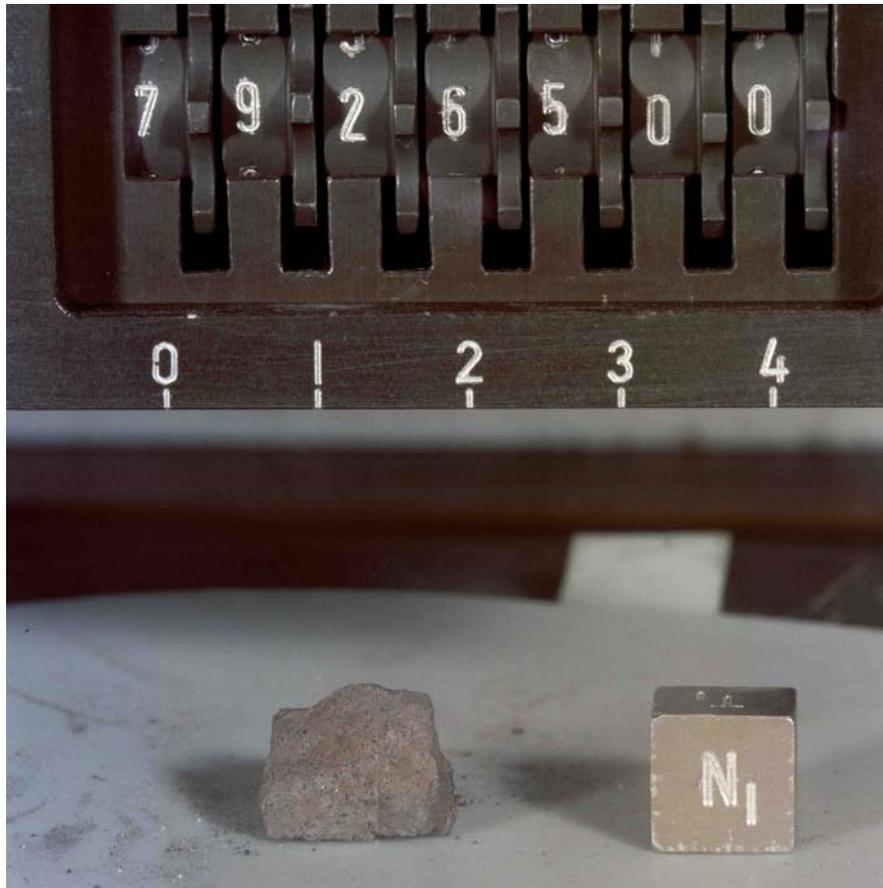


Figure 1: Hand specimen photograph of 79265,0.

made up of 49.7% pyroxene, 28.1% plagioclase, 17.2% ilmenite, 2.1% FeNi metal, 1.4% silica, 1.0% olivine, 0.4% chromite-ulvöspinel, and 0.1% glass (Neal et al., 1989).

The mineral chemistry of 79265 has been reported by Neal et al. (1989, 1990). Olivine exhibits a wide range in composition, both within and between grains (<sup>F0</sup>68-51). Plagioclase compositional variations are mostly accounted for by core-to-rim zonation from An88 to An80. Pyroxene compositions range from augite to pigeonite with a moderate degree of Fe-

enrichment. Core-to-rim zonation from Ca-rich cores to more pigeonitic and Fe-rich rims is observed. Chromiteulvöspinel compositions are restricted [100\*(Cr/(Cr±AD)) 74-75; MG# = 3-11], as are ilmenite compositions (MG# = 2-8). Most of the slight variation in ilmenite is between, rather than within, grains.

**WHOLE-ROCK CHEMISTRY**

Neal et al. (1990) described 79265 as a Type A Apollo L7 high-Ti mare basalt. It has a MG# of 43.0 and a TiO<sub>2</sub> content

of 11.8 wt% (Table 1). The REE pattern (Fig. 2) is LREE-depleted and exhibits a flattening of the pattern for the HREE at approximately 45 x chondrites. The maximum is in the middle REE and a negative Eu anomaly is evident [(Eu/Eu\*)<sub>N</sub> = 0.581].

**PROCESSING**

Of the original 2.60g of 79265,0, approximately 2.1g remains. 0.385g was used for INAA and 0.01g used in the making of thin section, 4.

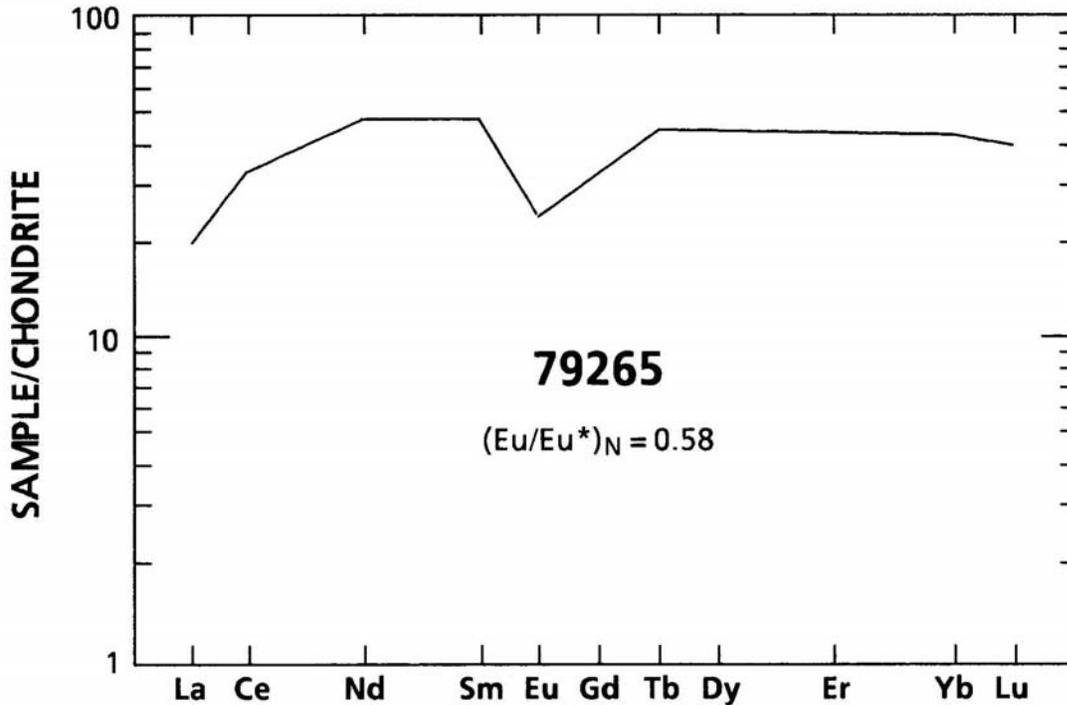


Figure 2: Chondrite-normalized rare earth element profiles of 79265. Data from Neal et al. (1990).

**Table 1: Whole-rock chemistry of 79265.**  
Data from Neal et al. (1990).

Sample 79265,5 Method N		Sample 79265,5 Method N	
SiO <sub>2</sub>		V	102
TiO <sub>2</sub>	11.8	Sc	81.5
Al <sub>2</sub> O <sub>3</sub>	8.77	Cr	2760
Cr <sub>2</sub> O <sub>3</sub>		La	6.59
FeO	18.9	Ce	29
MnO	0.253	Nd	30
MgO	8.0	Sm	9.68
CaO	10.3	Eu	2.04
Na <sub>2</sub> O	0.42	Gd	
K <sub>2</sub> O	0.06	Tb	2.59
P <sub>2</sub> O <sub>5</sub>		Dy	18.6
S		Er	
Nb (ppm)		Yb	9.67
Zr	240	Lu	1.36
Hf	8.41	Ga	
Ta	1.64	F	
U	0.23	Cl	
Th	0.26	C	
W		N	
Y		H	
Sr	200	He	
Rb		Ge (ppb)	
Li		Te	
Ba	56	Ag	
Cs	0.04	Sb	
Be		Ir	
Zn		As	
Pb		Au	
Cu		Ru	
Ni	19	Os	
Co	18.5		

Analysis by: N = INAA.