

**67747**  
**Highland Basalt**  
 6.3 grams



Figure 1: Photo of 67747. mm scale. S72-49576

**Mineralogical Mode 67747**

	Reimold et al. 1985
Plagioclase	67.2
Pyroxene	8
Olivine	16.3
Opaque	1.5

**Introduction**

67747 is a rake sample collected from the rim of North Ray Crater – see section on 67701. It is a small aluminous basalt with measured age of 3.86 b.y. (Imbrium ?). It has a KREEP-like REE pattern. Vesicles and zap pits can be seen in figure 1.

**Petrography**

Reimold et al. (1985) and Stoffler et al. (1985) studied this small basalt. Elongate plagioclase and pyroxene laths are poikilitically enclosed in large olivine. Glassy mesostasis is found adjacent to pyroxene. Mineral analyses were reported by Steele and Smith (1973).

**Chemistry**

Stoffler et al. (1985) reported a major element analysis and the REE diagram for 67747 (figure 5). Reimold et al. (1986) also reported Rb, Sr, Sm and Nd.



Figure 2a: Thin section photo (crossed-nicols) of 67747,1,

**Summary of Age Data for 67747**

	Rb/Sr	Sm-Nd
Reimold et al. 1985	3.86 ± 0.05 b.y.	3.6 +/- 0.4

**Caution: Changing decay constants.**

**Radiogenic age dating**

Reimold et al. (1985) determined an age of 3.86 ± 0.05 b.y. by Rb-Sr internal isochron, but were unable to date it precisely by Sm-Nd (figure 4 a,b).

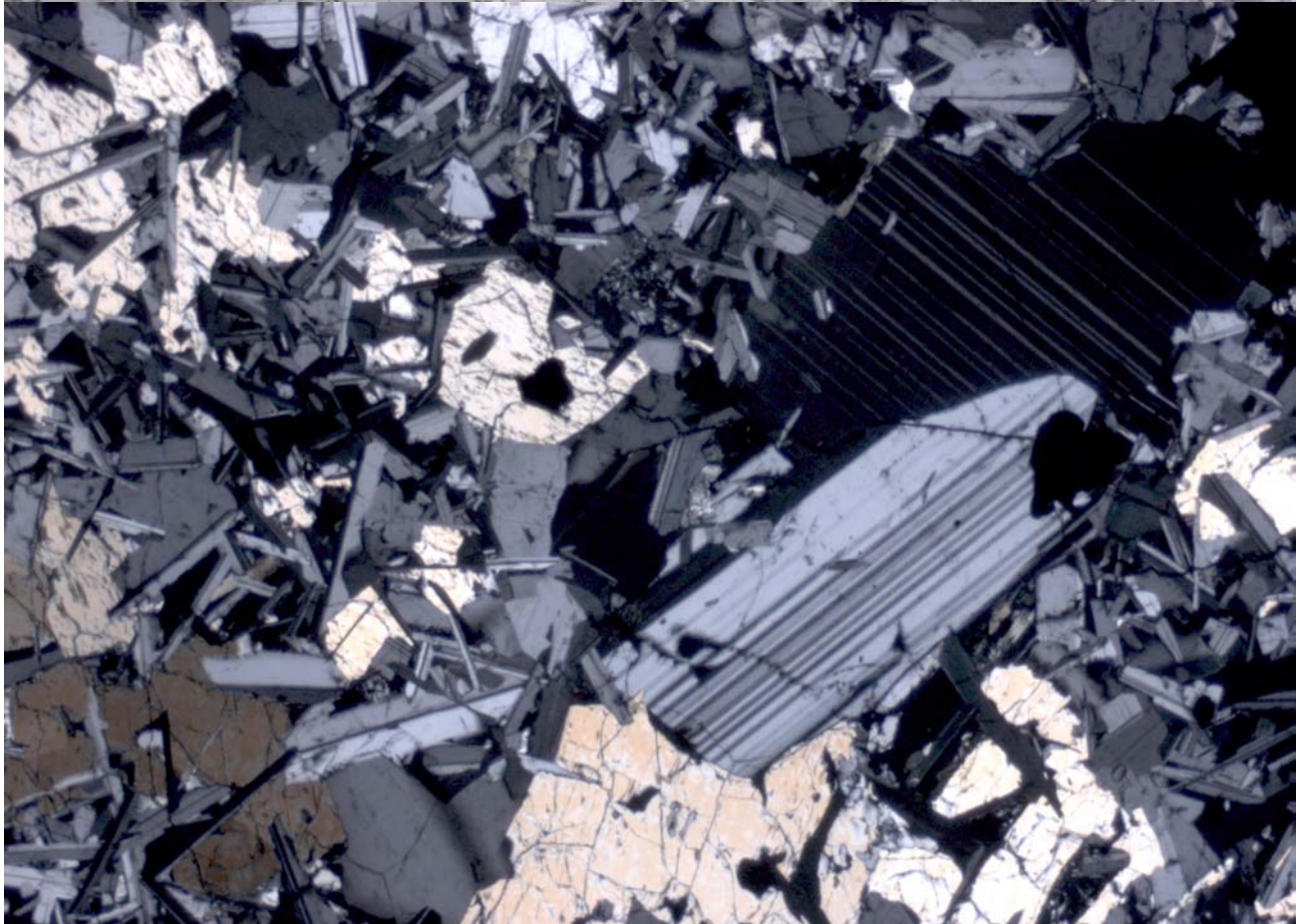
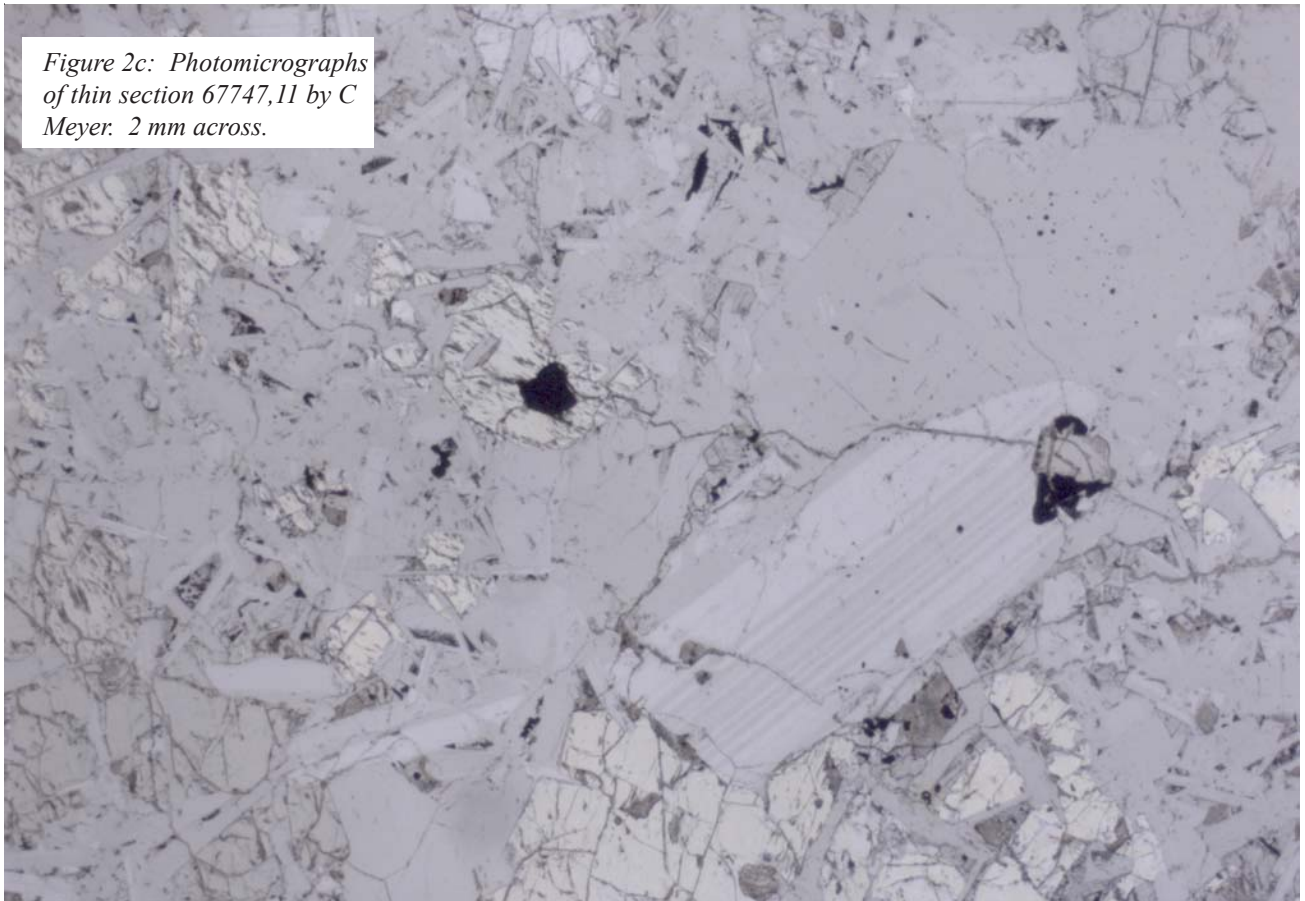
**Processing**

There are 3 thin sections.

*Figure 2b: C Meyer managed to capture the spirit of 67747. 2 mm across*



*Figure 2c: Photomicrographs of thin section 67747,11 by C Meyer. 2 mm across.*



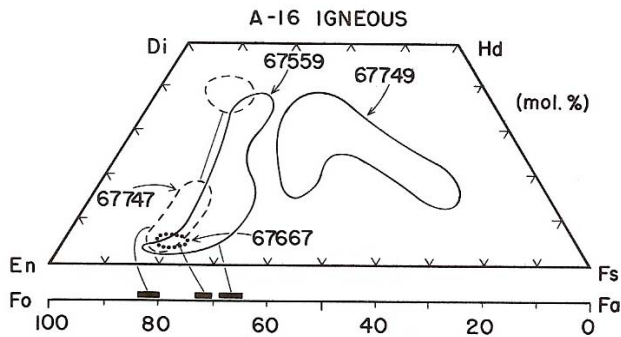


Figure 3: Composition of pyroxene and olivine in 67747 and other rake samples (Steele and Smith 1973).

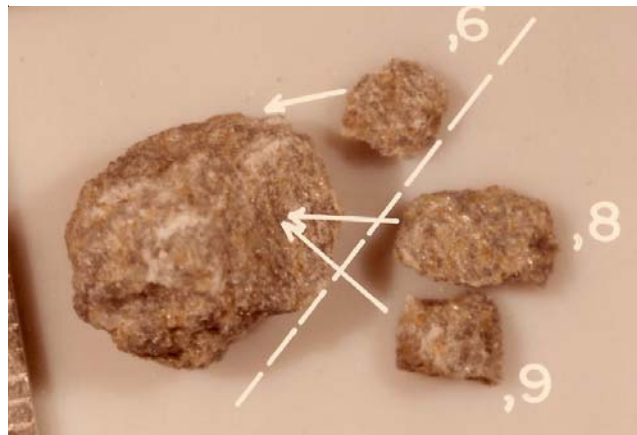


Figure 6: Processing photo of 67747.

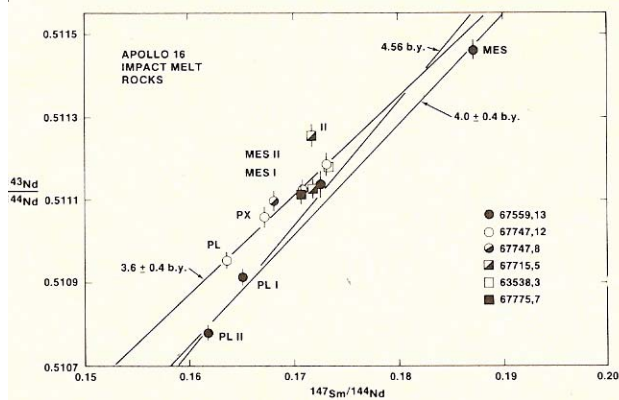
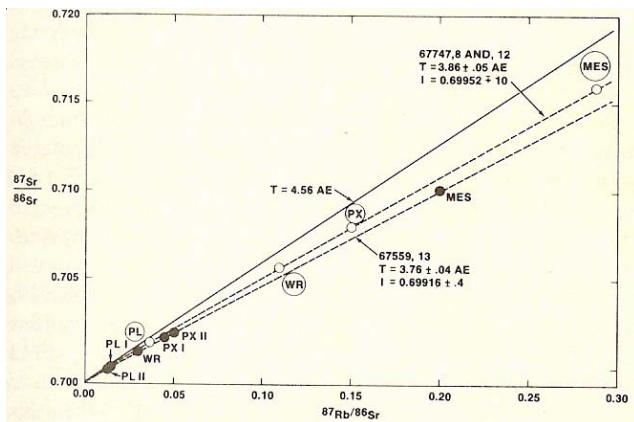


Figure 4 a, b: Rb/Sr and Sm/Nd internal isochrons for 67747 (Reimold et al. 1985).

### References for 67747

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LSPET (1972c) Preliminary examination of lunar samples. In Apollo 16 Preliminary Science Report. NASA SP-315, 7-1—7-58.

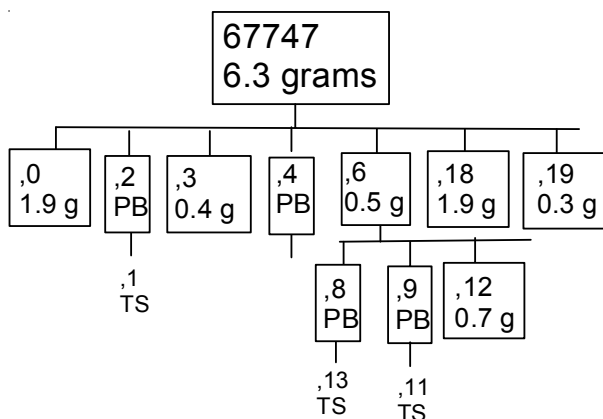


Table 1. Chemical composition of 67747.

reference weight	Stoffler85	
SiO <sub>2</sub> %	46	46.5 (a)
TiO <sub>2</sub>	0.37	0.31 (a)
Al <sub>2</sub> O <sub>3</sub>	25.9	23.2 (a)
FeO	2.78	3.6 (a)
MnO	0.04	0.04 (a)
MgO	7.9	10.6 (a)
CaO	16	14.4 (a)
Na <sub>2</sub> O	0.58	0.69 (a)
K <sub>2</sub> O	0.39	0.36 (a)
P <sub>2</sub> O <sub>5</sub>	0.13	0.16 (a)
Sc ppm	7.79	(b)
Co	17.3	(b)
Ni	237	(b)
Ba	168	(b)
Sm	8.36	(b)
Yb	5.52	(b)

technique: (a) DBA, (b) INAA

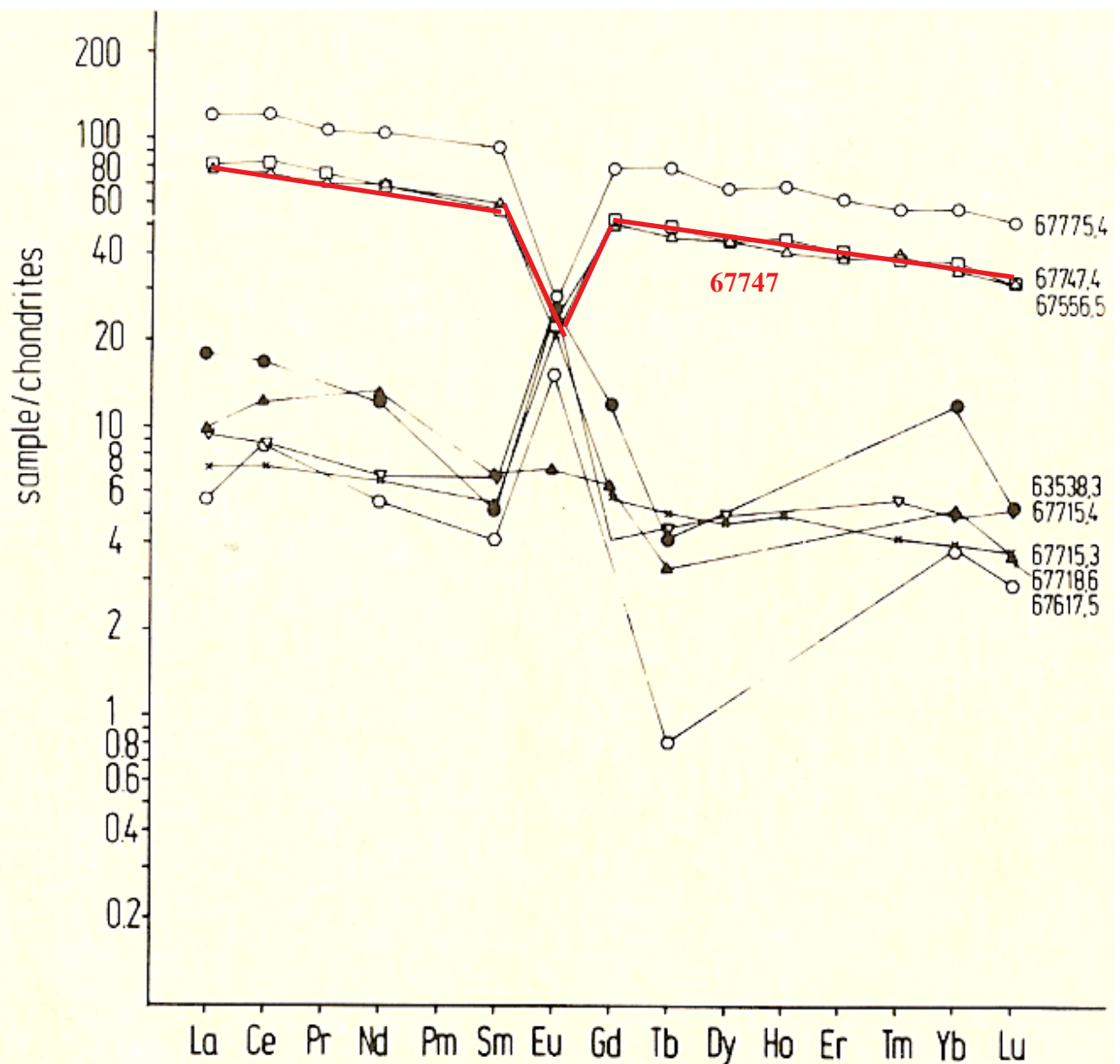


Figure 5: Normalized rare-earth-element diagram for 67747 (Stoffler et al. 1985).

Reimold W.U., Nyquist L.E., Bansal B.M., Wooden J.L., Shih C.-Y., Wiesmann H. and Mackinnon I.D.R. (1985) Isotope analysis of crystalline impact-melt rocks from Apollo 16 stations 11 and 13. North Ray Crater. *Proc. 15<sup>th</sup> Lunar Planet. Sci. Conf.* in *J. Geophys. Res.* 90, C431-C448.

Ryder G. and Norman M.D. (1980) Catalog of Apollo 16 rocks (3 vol.). Curator's Office pub. #52, JSC #16904

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Steele I.M. and Smith J.V. (1973) Mineralogy and petrology of some Apollo 16 rocks and fines: General petrologic model of the moon. *Proc. 4<sup>th</sup> Lunar Sci. Conf.* 519-536.

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