

67747
Highland Basalt
 6.3 grams



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



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

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.

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

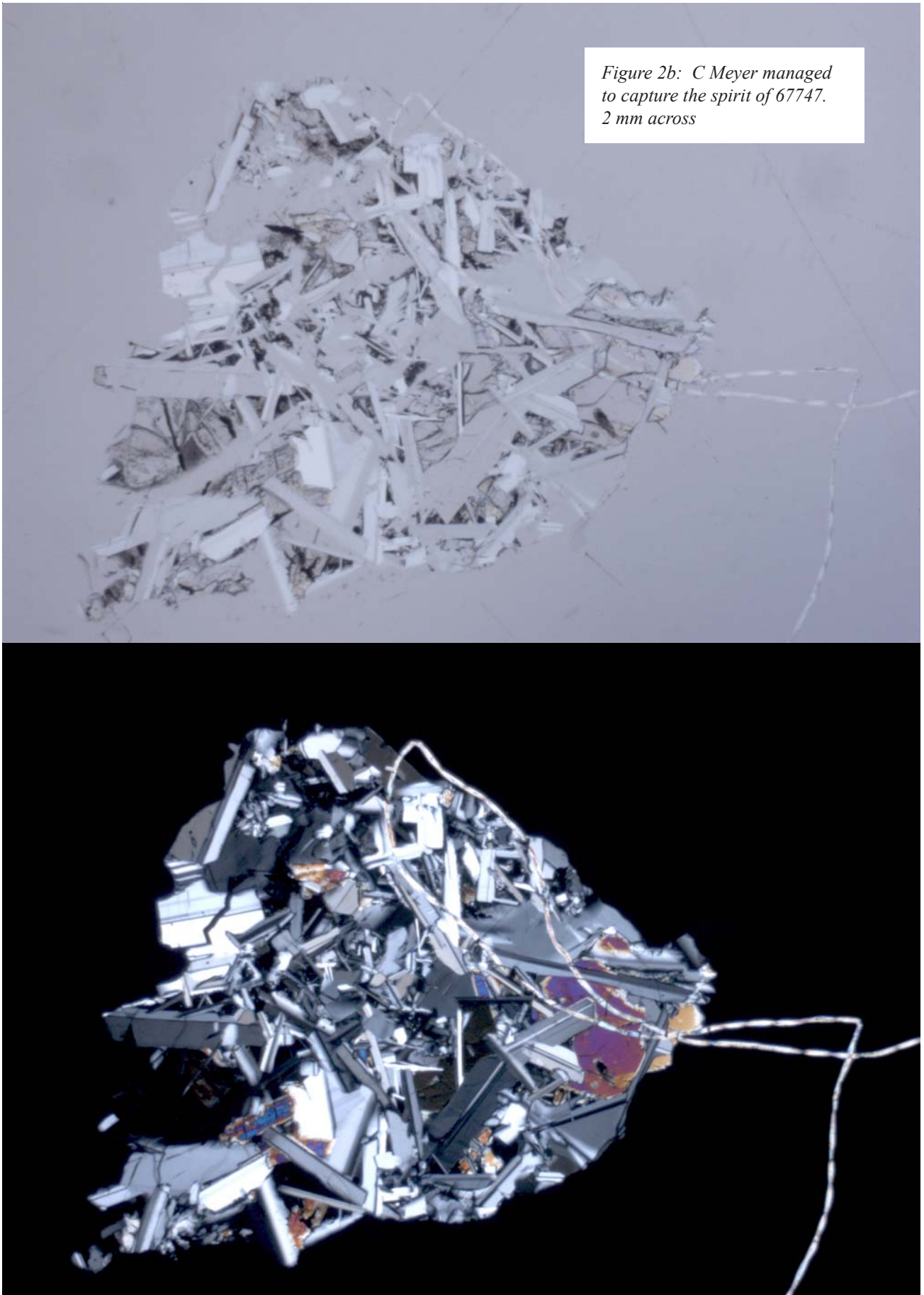
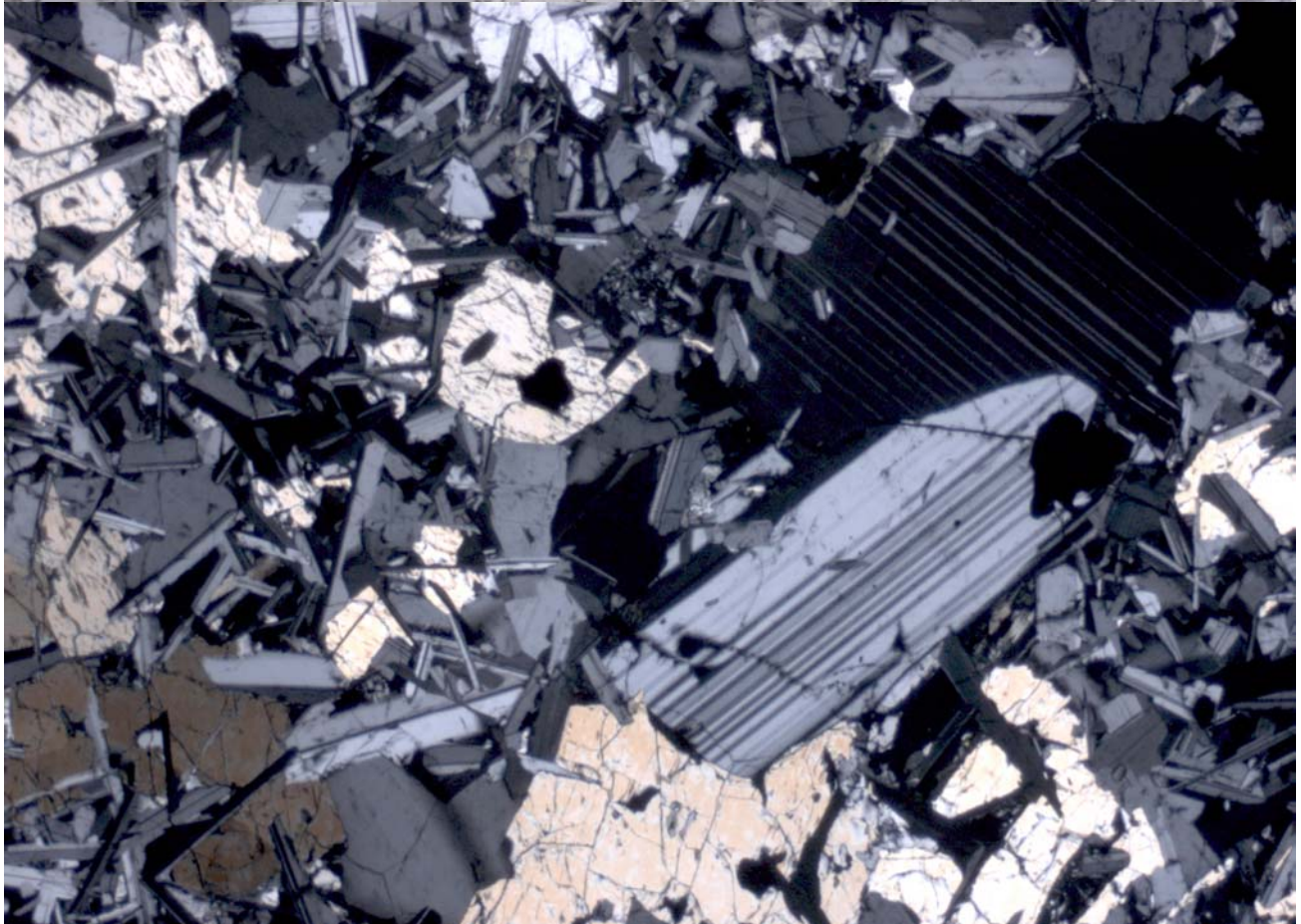
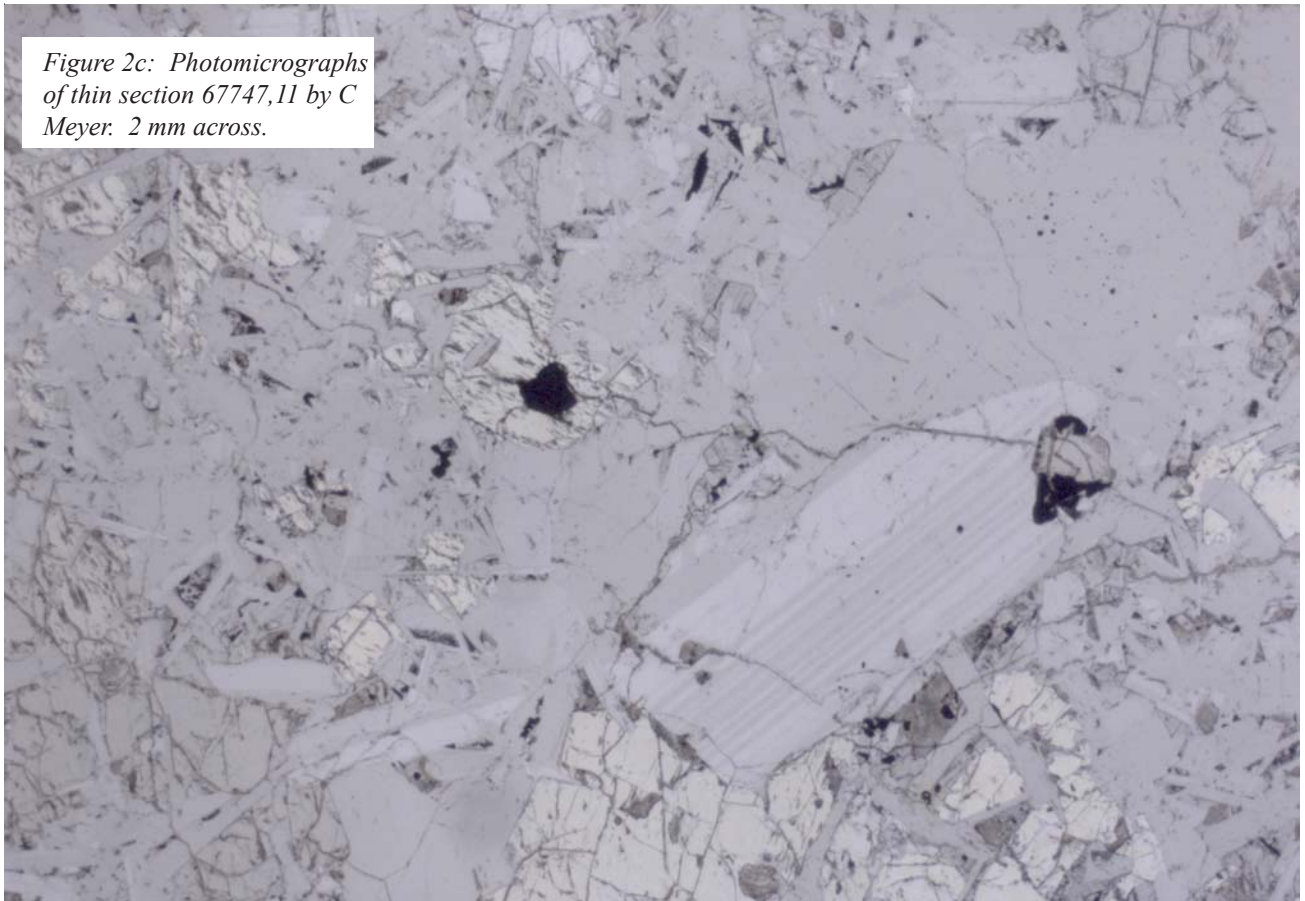


Figure 2c: Photomicrographs of thin section 67747,11 by C Meyer. 2 mm across.



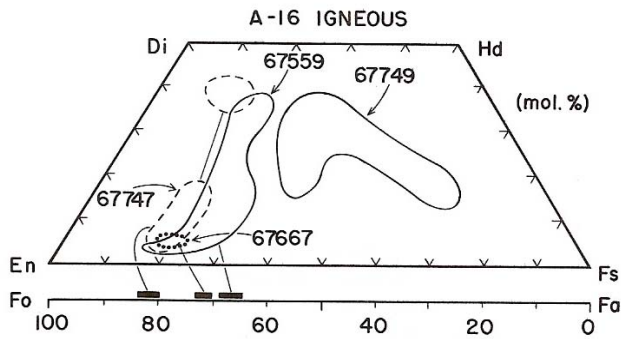


Figure 3: Composition of pyroxene and olivine in 67747 and other rake samples (Steele and Smith 1973).

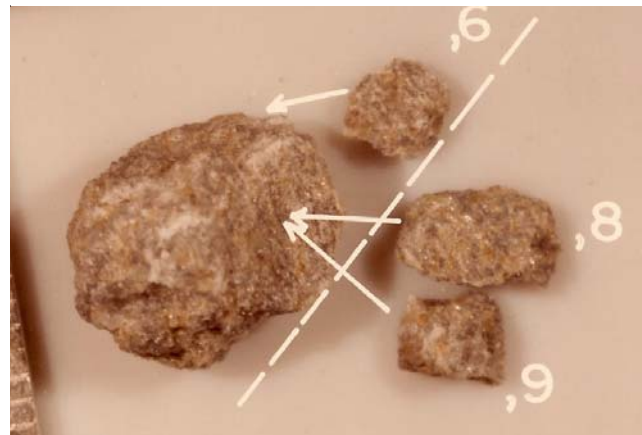


Figure 6: Processing photo of 67747.

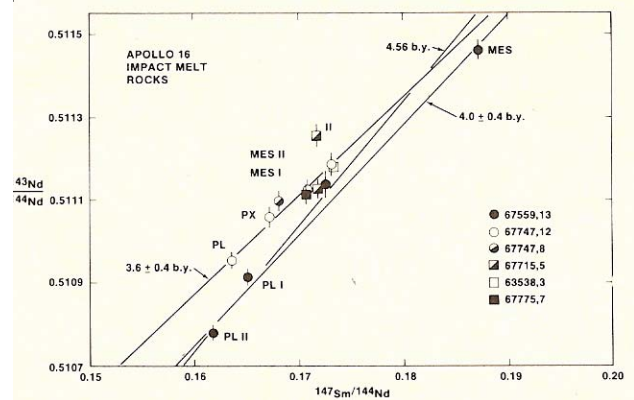
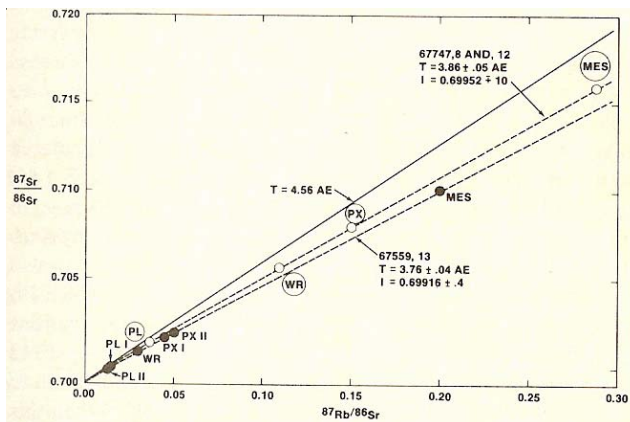


Figure 4 a, b: Rb/Sr and Sm/Nd internal isochrons for 67747 (Reimold et al. 1985).

References for 67747

Butler P. (1972a) Lunar Sample Information Catalog Apollo 16. Lunar Receiving Laboratory. MSC 03210 Curator's Catalog. pp. 370.

LSPET (1973b) The Apollo 16 lunar samples: Petrographic and chemical description. *Science* **179**, 23-34.

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

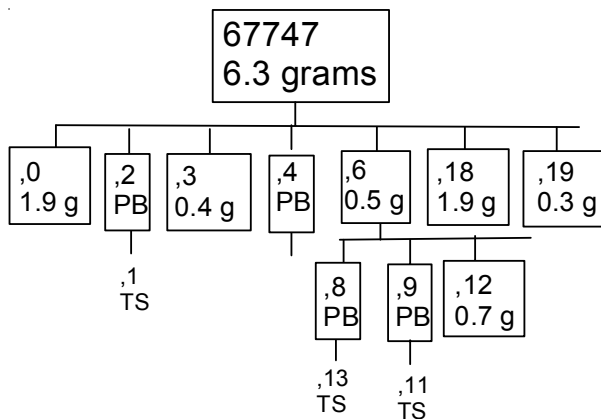


Table 1. Chemical composition of 67747.

reference weight	Stoffler85	
SiO2 %	46	46.5 (a)
TiO2	0.37	0.31 (a)
Al2O3	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)
Na2O	0.58	0.69 (a)
K2O	0.39	0.36 (a)
P2O5	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

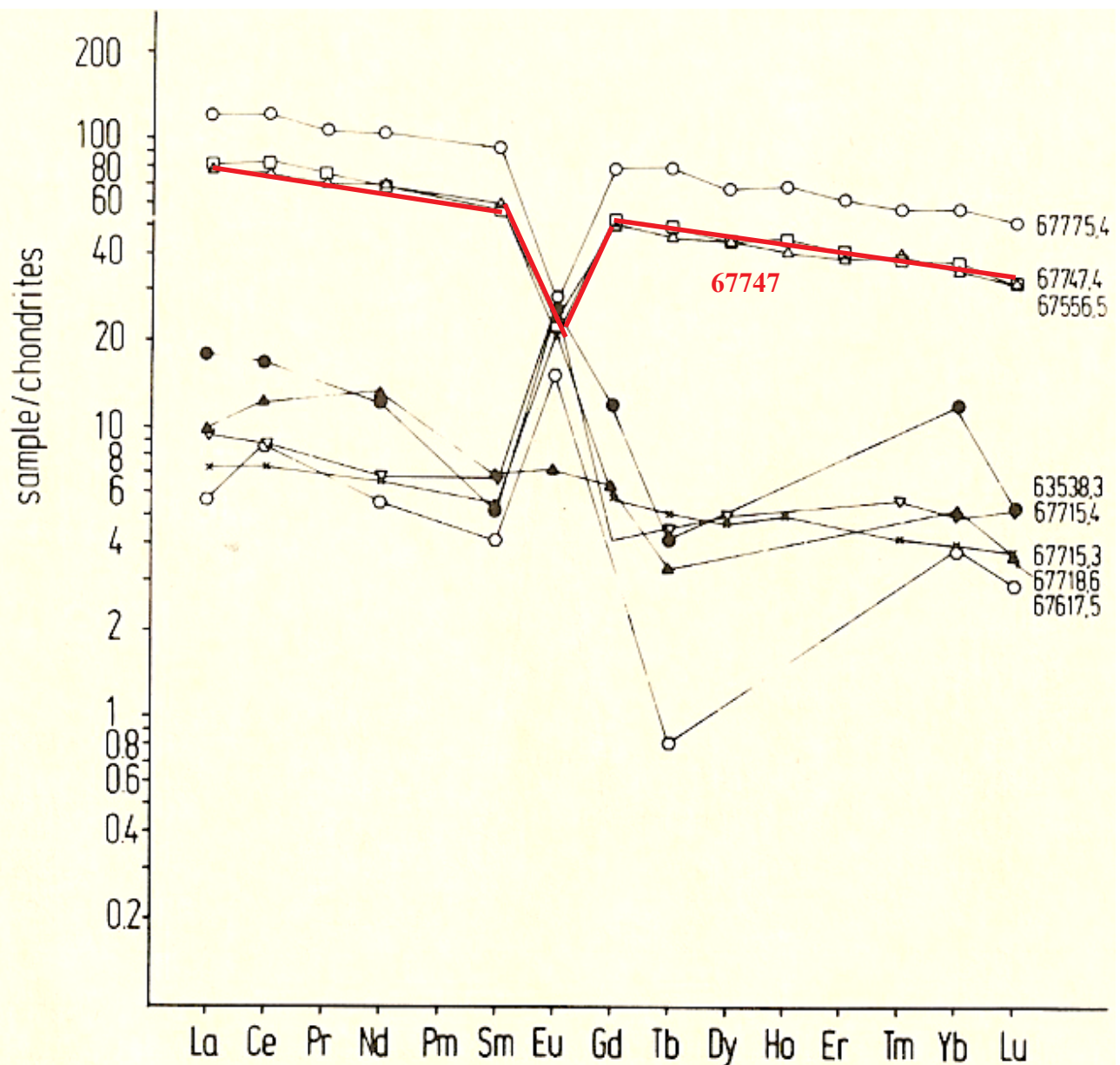


Figure 5: Normalized rare-earth-element diagram for 67747 (Stoffler et al. 1985).

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. 15th 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

Smith J.V. and Steele I.M. (1972c) Apollo 16 rake samples 67515 to 68537: Sample classification, description and inventory. Curator Catalog, JSC

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. 4th Lunar Sci. Conf.* 519-536.

Stöffler D., Bischoff A., Borchardt R., Burghelle A., Deutsch A., Jessberger E.K., Ostertag R., Palme H., Spettel B., Reimold W.U., Wacker K. and Wanke H. (1985) Composition and evolution of the lunar crust in the Descartes highlands. *Proc. 15th Lunar Planet. Sci. Conf.* in *J. Geophys. Res.* 90, C449-C506.

Sutton R.L. (1981) Documentation of Apollo 16 samples. In *Geology of the Apollo 16 area, central lunar highlands.* (Ulrich et al.) U.S.G.S. Prof. Paper 1048.