

65779
Impact melt Breccia
12.7 grams



Figure 1: Photo of 65779. Scale marked in mm. S72-48819

Introduction

65779 is a rake sample from station 5 near Stone Mountain – see section on 65701. It is relatively similar to 65777 and 65778, but it has a texture described as basaltic, rather than poikilitic. It contains clasts of plagioclase, so it was a breccia before it crystallized.

There is rust around iron grains (Ryder and Norman 1980 and Hunter and Taylor 1981).

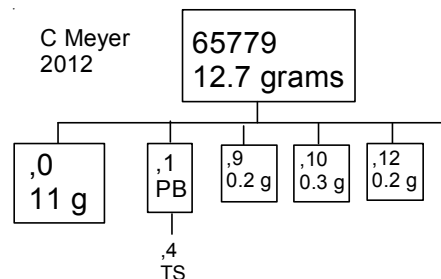
Compositional variation of Apollo 16 impact-melt rocks is discussed by Korotev (1994).

Petrography

Dowty et al. (1974) and Warner et al. (1976) describe 65779 as follows: “The melt part of this rock contains plagioclase needles about 0.05 mm long. Olivine and some pyroxene subophitically enclose plagioclase, and there is abundant dark mesostasis. About 8% distinct plagioclase relicts are present, with perhaps a few very small olivine relicts. Plagioclase is An_{95} , olivine is Fo_{78} and pyroxene seems to be limited to magnesian pigeonite (figure). Accessories are ilmenite, Cr-Zr-REE armalcolite, metallic nickel-iron, troilite and schreibersite.”

Chemistry

65779 is trace-element-rich (table).



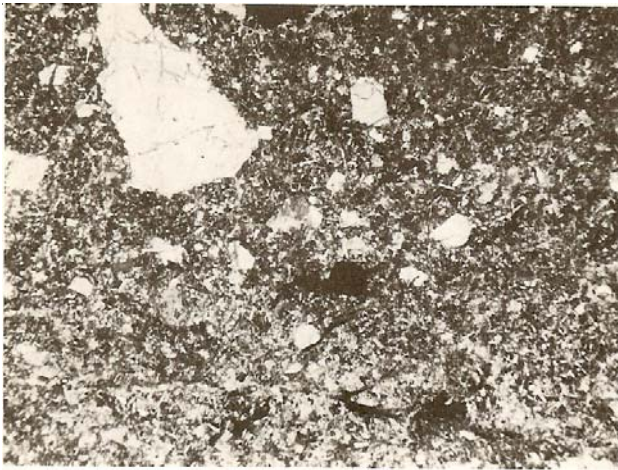


Figure 2: Thin section photomicrograph of 65779 (Warner et al. 1976).

Radiogenic age dating

Not dated

Processing

There is only one thin section.

References for 65779

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

Dowty E., Keil K. and Prinz M. (1974a) Igneous rocks from Apollo 16 rake samples. *Proc. 5th Lunar Sci. Conf.* 431-445.

Hunter R.H. and Taylor L.A. (1981) Rust and schreibersite in Apollo 16 highland rocks: Manifestations of volatile-element mobility. *Proc. 12th Lunar Planet. Sci. Conf.* 253-259.

Keil K., Dowty E., Prinz M. and Bunch T.E. (1972) Description, classification and inventory of 151 Apollo 16 rake samples from the LM area and station 5. Curator's Catalog, JSC.

Korotev R.L. (1994) Compositional variation in Apollo 16 impact melt breccias and inferences for the geology and bombardment history of the central highlands of the Moon. *Geochim. Cosmochim. Acta* **58**, 3931-3969.

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

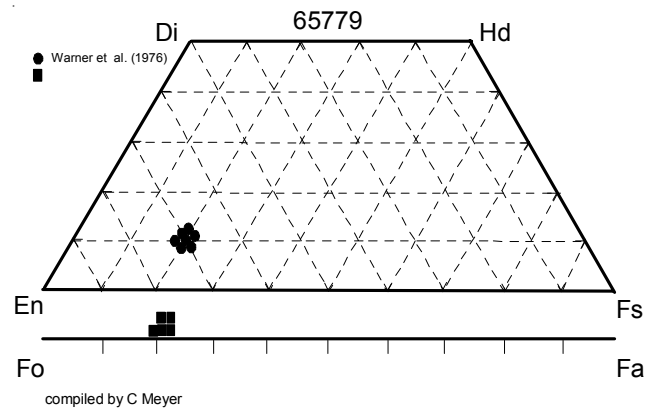


Figure 3: Pyroxene and olivine in 65779 (Warner et al. 1976).

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

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

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.

Warner R.D., Dowty E., Prinz M., Conrad G.H., Nehru C.E. and Keil K. (1976c) Catalog of Apollo 16 rake samples from the LM area and station 5. Spec. Publ. #13, UNM Institute of Meteoritics, Albuquerque. 87 pp.

Wasson J.T., Warren P.H., Kallemeyn G.W., McEwing C.E., Mittlefehldt D.W. and Boynton W.V. (1977) SCCRV, a major component of highlands rocks. *Proc. 8th Lunar Sci. Conf.* 2237-2252.

Figure 4: Photomicrographs of thin section 65779,4 by C Meyer. 2 mm across

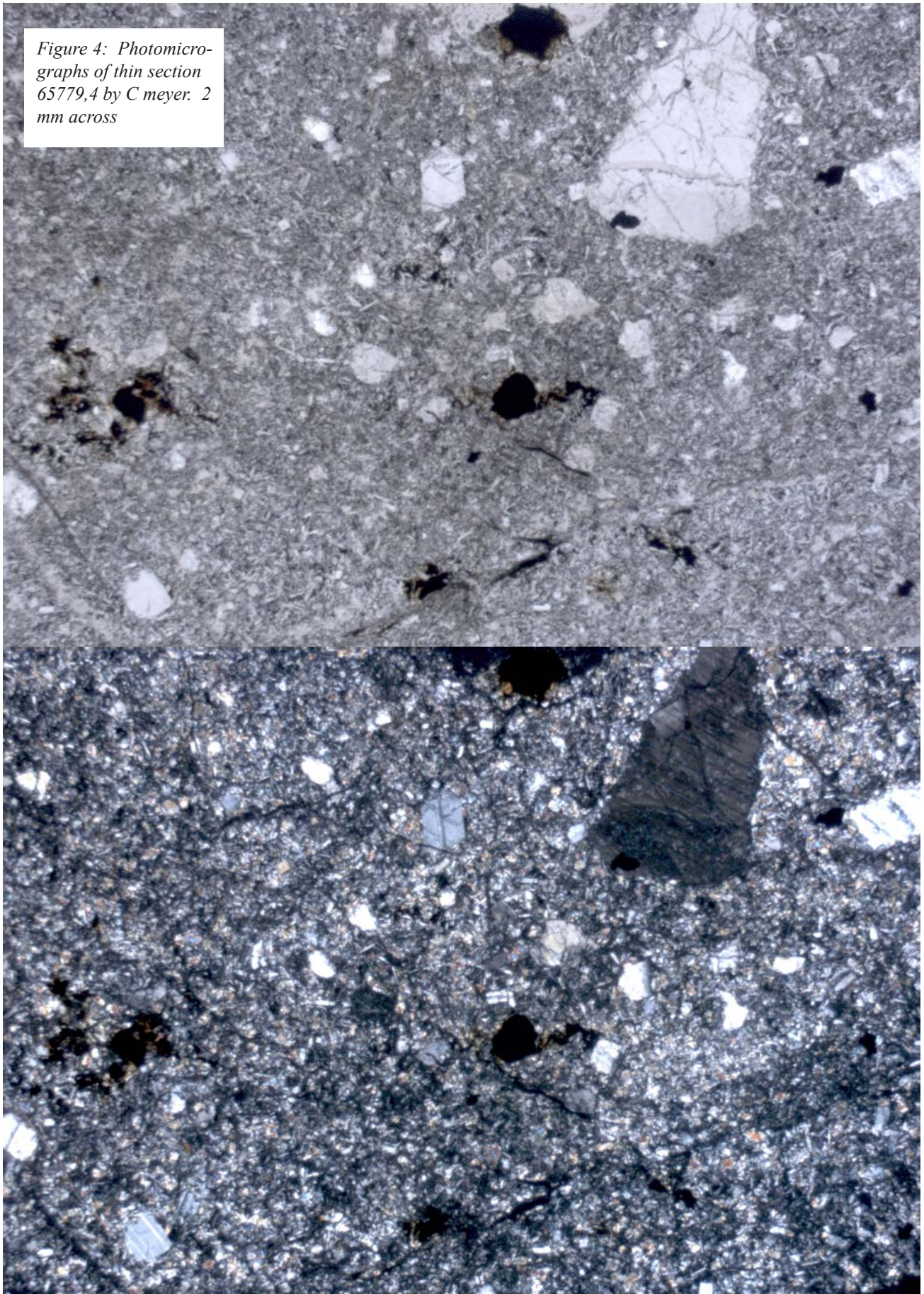


Table 1. Chemical composition of 65779.

<i>reference weight</i>	Dowty74	Wasson77	
SiO ₂ %	45.6	(a)	
TiO ₂	0.77	(a)	0.95 (b)
Al ₂ O ₃	22.8	(a)	23.6 (b)
FeO	6.1	(a)	8.3 (b)
MnO	0.06	(a)	0.088 (b)
MgO	10.1	(a)	9.95 (b)
CaO	13.3	(a)	12.7 (b)
Na ₂ O	0.58	(a)	0.5 (b)
K ₂ O	0.27	(a)	0.2 (b)
P ₂ O ₅	0.19	(a)	
S %			
<i>sum</i>			
Sc ppm			
V		38	(b)
Cr		1160	(b)
Co		69	(b)
Ni		1080	(b)
Cu			
Zn		9	(b)
Ga		4.3	(b)
Ge ppb		2800	(b)
As			
Se			
Rb			
Sr			
Y			
Zr		459	(b)
Nb			
Mo			
Ru		70	(b)
Rh			
Pd ppb			
Ag ppb			
Cd ppb		53	(b)
In ppb		50	(b)
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba		300	(b)
La		29.5	(b)
Ce		70	(b)
Pr			
Nd		50	(b)
Sm		12.7	(b)
Eu		1.6	(b)
Gd			
Tb		2.5	(b)
Dy		16	(b)
Ho			
Er			
Tm			
Yb		9.1	(b)
Lu		1.25	(b)
Hf		9.2	(b)
Ta		1	(b)
W ppb			
Re ppb			
Os ppb			
Ir ppb		26	(b)
Pt ppb			
Au ppb		24	(b)
Th ppm		4.3	(b)
U ppm		1.3	(b)
<i>technique: (a) e. probe, (b) INAA, RNAA</i>			