15648 BRECCIATED/MELTED MEDIUM-GRAINED OLIVINE-NORMATIVE MARE BASALT ST. 9A 9.10 g

INTRODUCTION: 15648 is an olivine-bearing, medium-grained mare basalt which has been brecciated and partly melted. It is not vesicular and has few vugs (Fig. 1). In chemistry, it is an average member of the Apollo 15 olivine-normative mare basalt group. The sample is moderately friable and fractured, and pale-colored with chalky (shocked) feldspars. The surfaces tend to be rounded but zap pits are not obvious. One side is dusty and there are some possible welded-dust/glassy patches. 15648 was collected as part of the rake sample from Station 9A.

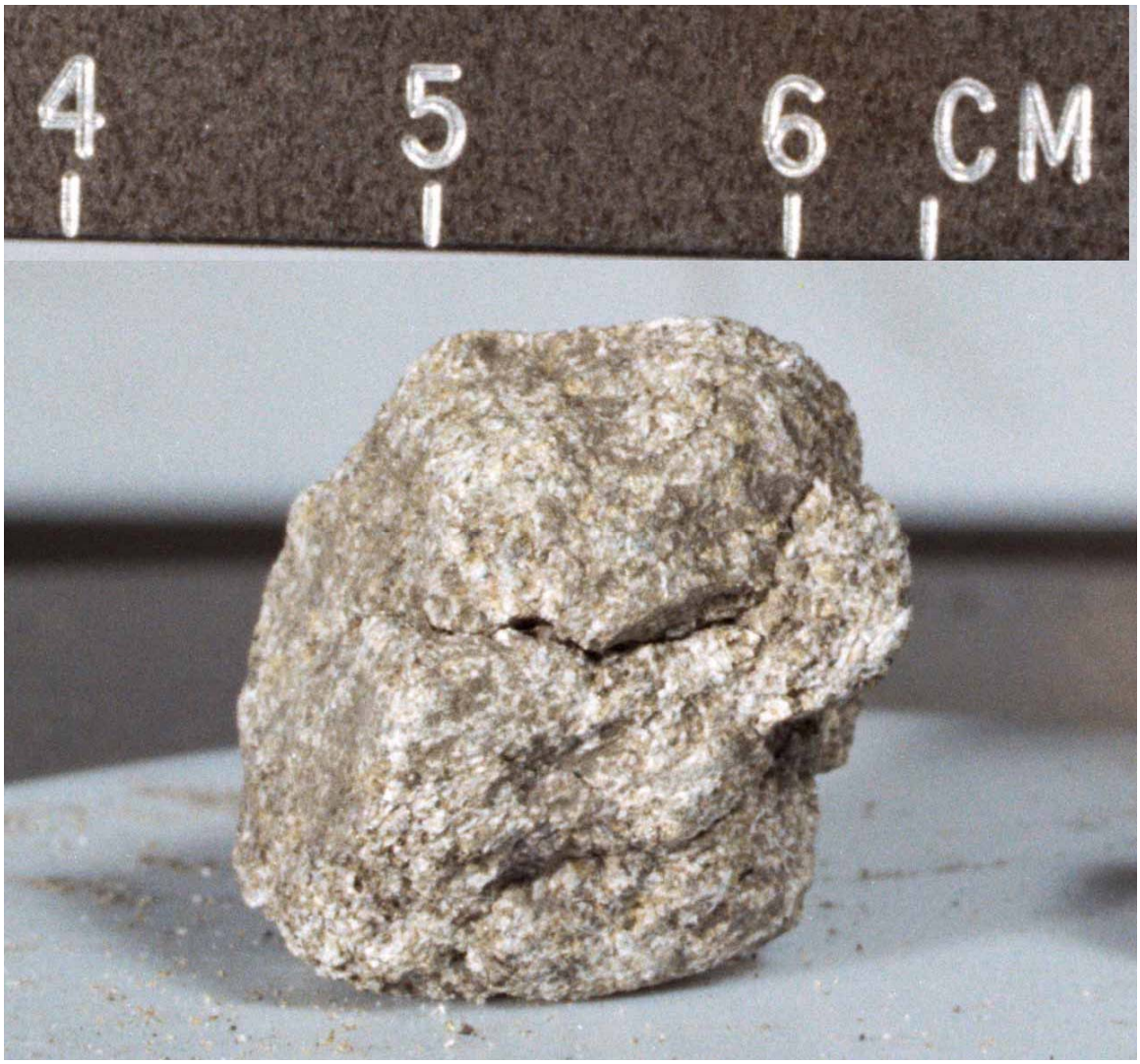

Figure 1. Pre-chip view of 15648. S-71-49773

PETROLOGY: 15648 is a brecciated basalt (Fig. 2). A brief description was given by Ma et al. (1978). The sample has been partly melted. Most has been severely deformed and consists of crushed mineral debris surrounded by dark-brown glassy mesostasis. Larger, relatively undeformed crystals (mainly pyroxene) are interspersed in the matrix. Other parts are less severely deformed and retain the original micro-gabbroic texture.

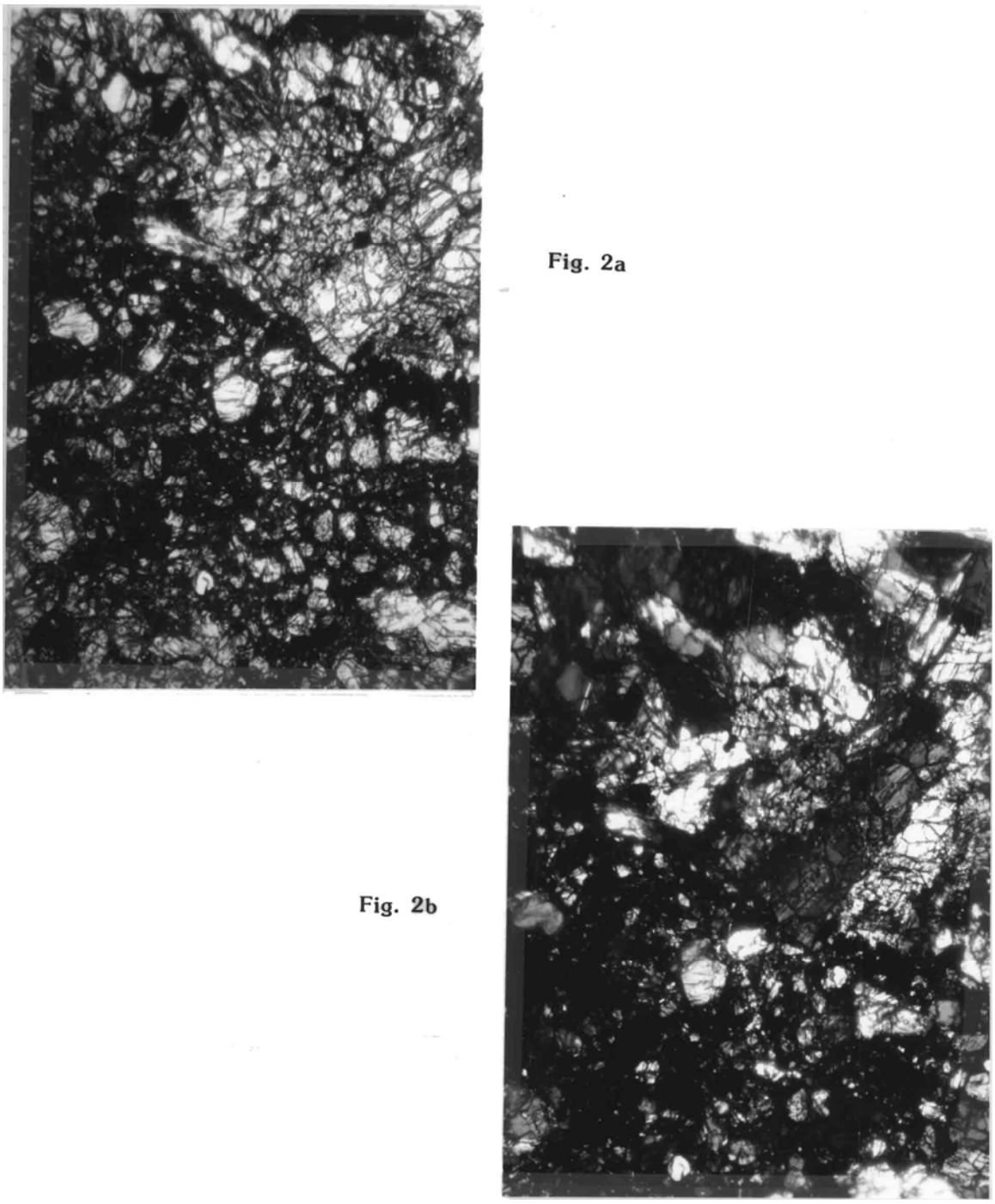

Fig. 2a

Fig. 2b

Figure 2. Photomicrographs of 15648,5.
Widths about 3 mm. a) transmitted light; b) crossed polarizers.

CHEMISTRY: A bulk chemical analysis (Table 1, Fig. 3) shows 15648 to be a fairly average member of the Apollo 15 olivine-normative mare basalt group, although the FeO is low. Neither Ni nor Co appear to have been increased by any meteoritic contamination.

PHYSICAL PROPERTIES: Gose et al. (1972) and Pearce et al. (1973) measured a natural magnetic intensity (NRM) of 2.5 x 10^{-6} emu/g for the total sample. This value is typical for Apollo 15 mare basalts.

PROCESSING AND SUBDIVISIONS: In 1977, a single chip (,1) was taken and used for chemical analysis and to make thin section ,5. ,0 is now 8.40 g.

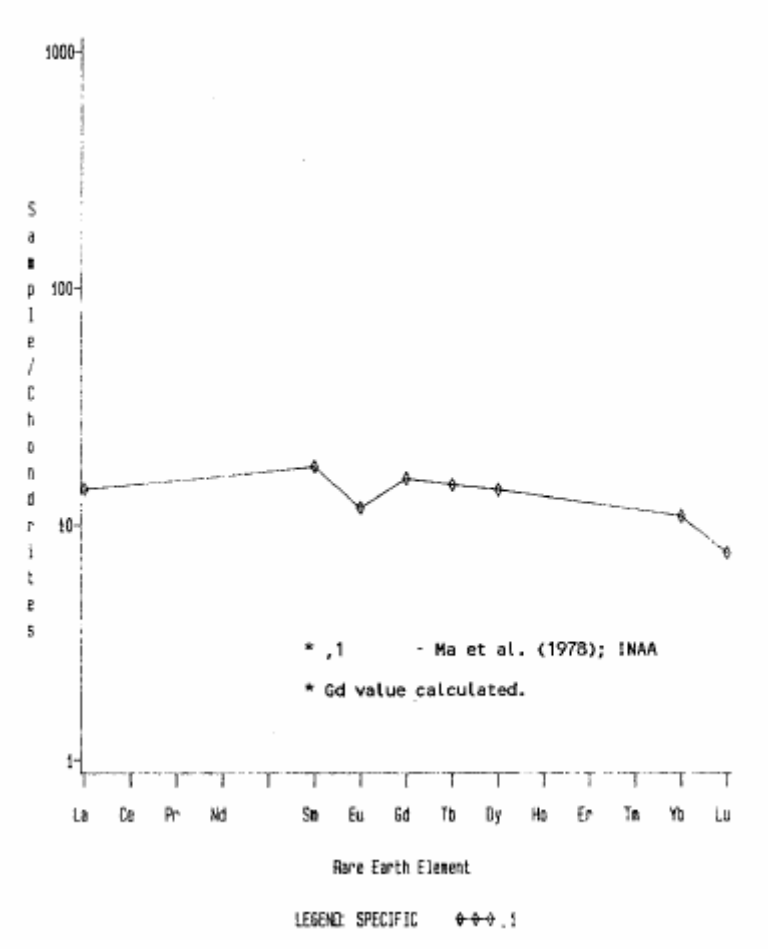

Figure 3. Rare earths in 15648.

Table 15648-1. Bulk rock chemical analysis

		,1
Wt%	SiO2	
	TiO2	2.2
	Al2O3	9.9
	FeO	20.1
	MgO	11
	CaO	9.7
	Na2O	0.284
	K2O	0.041
	P2O5	
(ppm)	Sc	44
	V	196
	Cr	3480
	Mn	2000
	Co	43
	Ni	20(a)
	Rb	
	Sr	
	Y	
	Zr	
	Nb	
	Hf	2.1
	Ba	
	Th	
	U	
	Pb	
	La	4.7
	Ce	
	Pr	
	Nd	
	Sm	3.2
	Eu	0.82
	Gd	
	Tb	0.7
	Dy	4.5
	Ho	
	Er	
	Tm	
	Yb	2.2
	Lu	0.26
	Li	
	Be	
	B	
	C	
	N	
	S	
	F	
	Cl	
	Br	
	Cu	
	Zn	
(ppb)	I	
	At	
	Ga	
	Ge	
	As	
	Se	
	Mo	
	Tc	
	Ru	
	Rh	
	Pd	
	Ag	
	Cd	
	In	
	Sn	
	Sb	
	Te	
	Cs	
	Ta	390
	W	
	Re	
	Os	
	Ir	
	Pt	
	Au	
	Hg	
	Tl	
	Bi	
		(1)

References and methods:
(1) Ma et al. (1978); INAA

Notes:

(a) ±15 ppm