64567 POIKILITIC IMPACT MELT 13.86 g

INTRODUCTION: 64567 is a coherent, medium gray, poikilitic impact melt (Fig. 1) collected as a rake sample. Zap pits are abundant on one surface, rare on the other surfaces. The face that is heavily pitted also shows a concentration of rusted metal (Phinney and Lofgren, 1973),

FIGURE 1. Smallest scale division in mm. S-72-55373.

PETROLOGY: A petrographic description is given by Simonds et al. (1973). 64567 differs from most other Apollo 16 poikilitic impact melts in having olivine as the sole oikocryst phase. Plagioclase laths (up to ~0.1 mm) are well developed and the texture approaches subophitic in places (Fig. 2). Simonds et al. (1973) give a mode of 69% plagioclase and mesostasis, 20% olivine, 10% pigeonite, and 1% opaques. Mineral compositions are shown in Figure 3. A single clast of "meta-breccia" is noted by Simonds et al. (1973). Compositions of Fe-metal and coexisting schreibersite are given by Gooley et al. (1973) and reproduced here as Table 1.

CHEMISTRY: Major and trace element data are presented by Hubbard et al. (1973) and summarized here as Table 2 and Figure 4. Other chemical data are given by geochronologists (referenced below).

FIGURE 2. 64567,9, general view, ppl. Width 1 mm.

TABLE 1. Compositions of metal and coexisting schreibersite (wt%).

	Ni	Co	Fe	P	S
metal (without schreibersite)	4.1-6.1	0.5	-	0.0-0.5	0.02
metal (with schreibersite)	4.4	0.6	94.3	0.05	0.01
schreibersite	15.0	0.2	69.7	15.0	0.1

RADIOGENIC ISOTOPES/GEOCHRONOLOGY: Nyquist et al. (1973) and Nyquist (1977) provide whole rock Rb-Sr data which are summarized here in Table 3. $^{87}Sr/^{86}Sr$ (at 4.6 b.y.) is corrected by Nyquist (1977) for interlaboratory bias.

Ar data are given by Turner and Cadogan (1975). The release pattern approaches a plateau (Fig. 5) and an age of 3.97 ± 0.04 b.y. is favored by Turner and Cadogan (1975). The sample has lost a moderate amount (~20%) of radiogenic Ar.

RARE GASES/EXPOSURE AGES: Ar data are given by Turner and Cadogan (1975). These authors calculate a nominal exposure age of 370 m.y. based on the intermediate temperature release pattern.

PHYSICAL PROPERTIES: Pearce and Simonds (1974) report the results of a room temperature hysteresis curve determination on 64567. The saturation remanence to saturation magnetization ratio is very small ($J_{RS}/J_S = 0.0012$) indicating that virtually all of the ferromagnetic phases in this rock are >300 Å, multidomain particles. Fe^0/Fe^{2+} is 0.053 and total Fe^0 is 0.28 wt% (Pearce and Simonds, 1974).

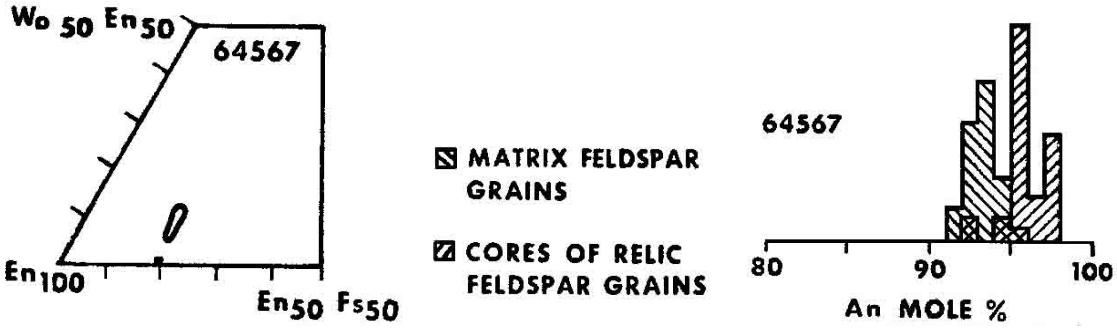

FIGURE 3. Mineral compositions, olivine plotted along base of pyroxene diagram, from Simonds et al. (1973).

TABLE 2. Summary chemistry of 64567.

SiO_2	45.7
TiO_2	0.71
Al_2O_3	21.3
Cr_2O_3	0.149
FeO	7.2
MnO	0.07
MgO	11.5
CaO	12.8
Na_2O	0.42
K_2O	0.18
P_2O_5	0.19
Sr	147
La	
Lu	
Rb	4.93
Sc	
Ni	
Co	
Ir ppb	
Au ppb	
C	
N	
S	
Zn	
Cu	

Oxides in wt%; others in ppm except as noted.

PROCESSING AND SUBDIVISIONS: In 1972 six small, homogeneous chips were removed. From these chips, allocations were made for thin sectioning and petrography (,3), chemistry and Rb-Sr isotopic analyses (,4) and Ar geochronology (,5).

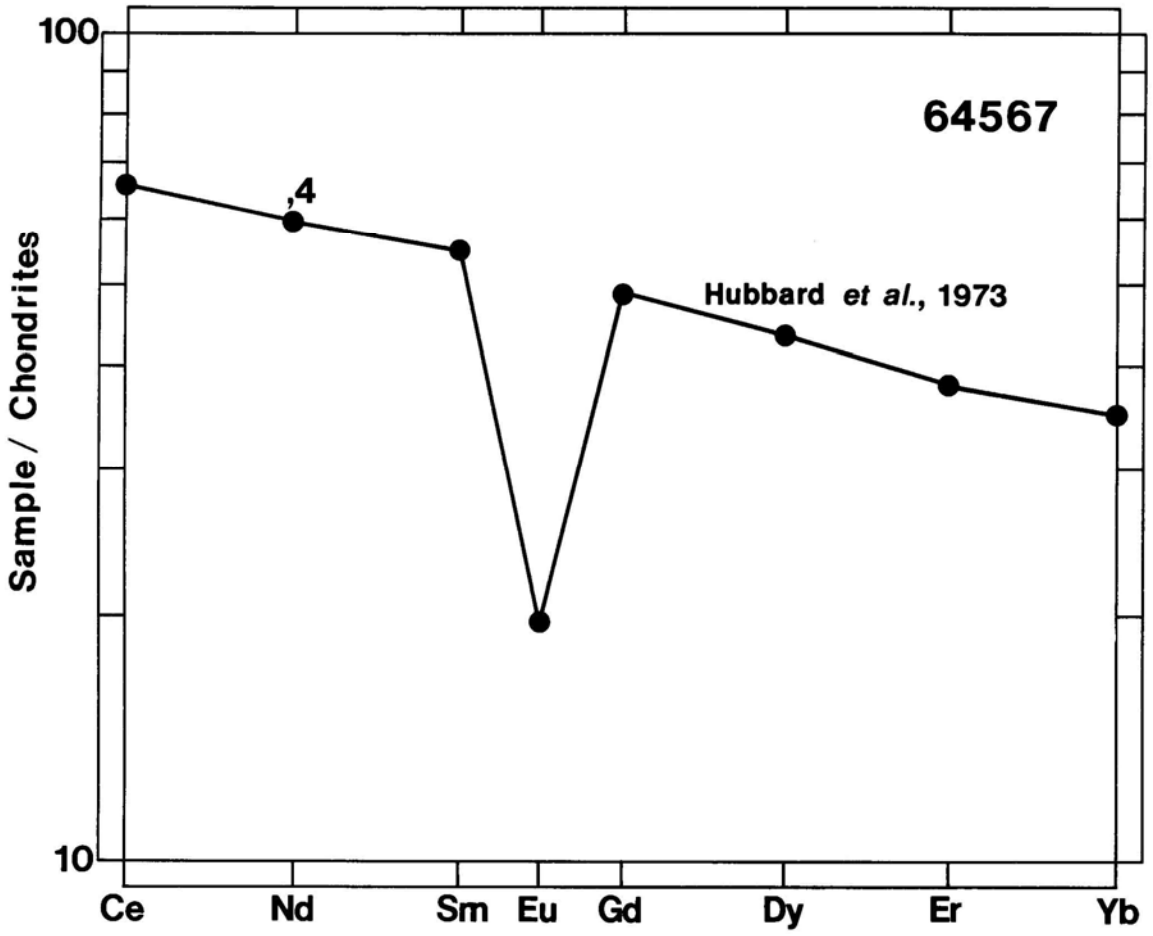

FIGURE 4. Rare earths.

TABLE 3. Rb-Sr data for 64567.

$^{87}Rb/^{86}Sr$	$^{87}Sr/^{86}Sr$ (measured)	$^{87}Sr/^{86}Sr$ (at 4.6 b.y.)	T_{BABI} (b.y.)	T_{LUNI} (b.y.)
0.0968±8	0.70503±7	0.69952	4.28±0.07	4.34±0.07

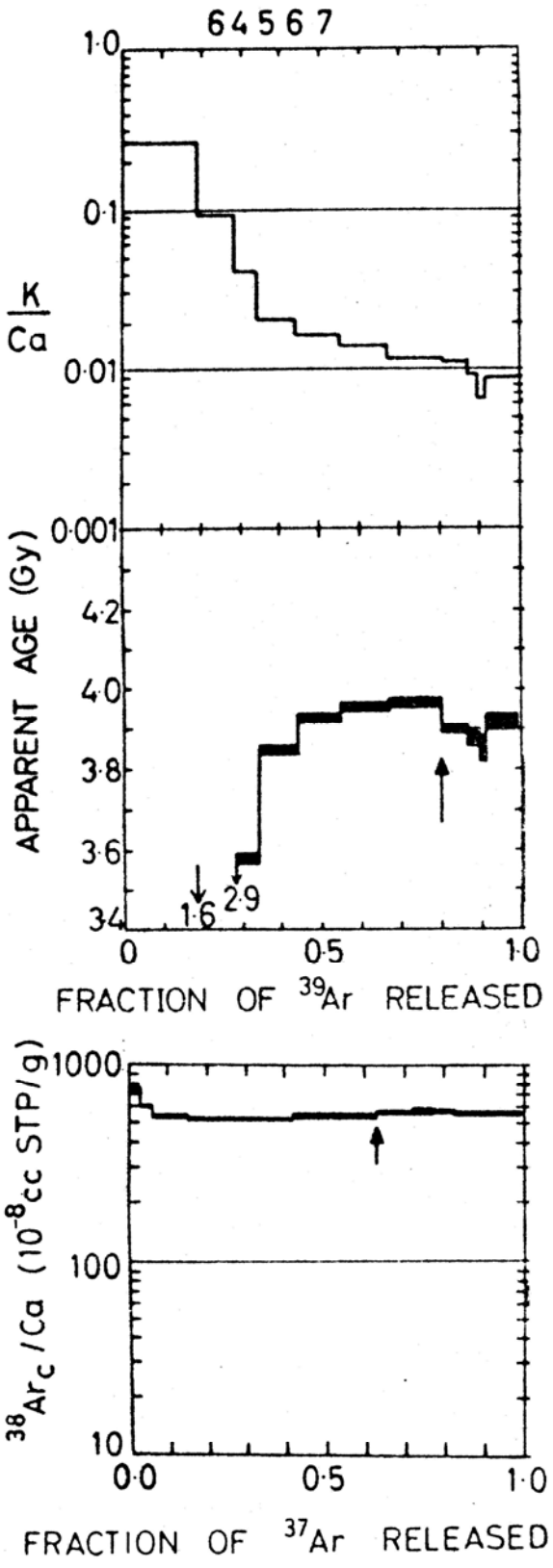

FIGURE 5. Ar releases, from Turner and Cadogan (1975).