

INTRODUCTION: 61516 is a friable, light gray, clastic breccia (Fig. 1). It is a rake sample collected ,445 m northeast of Plum Crater. Zap pits are present.

PETROLOGY: Warner et al. (1973) include 61516 in a general petrographic discussion of Apollo 16 rake samples and provide a photomicrograph. Phinney et al. (1976) studied the matrix characteristics using SEM techniques.



FIGURE 1. Smallest scale division in mm. S-72-55331.

Abundant mineral and lithic clasts rest in a porous, unequilibrated matrix (Fig. 2). Plagioclase fragments are the dominant clast type. A few large (up to ~0.5 mm) grains of mafic silicate are present. Lithic clasts include granoblastic anorthosite, basaltic impact melt, coarse-grained poikilitic impact melt, and recrystallized, granoblastic breccia. Phinney et al. (1976) find that the matrix contains 2-3% glass with traces of sintering and ~35% porosity.

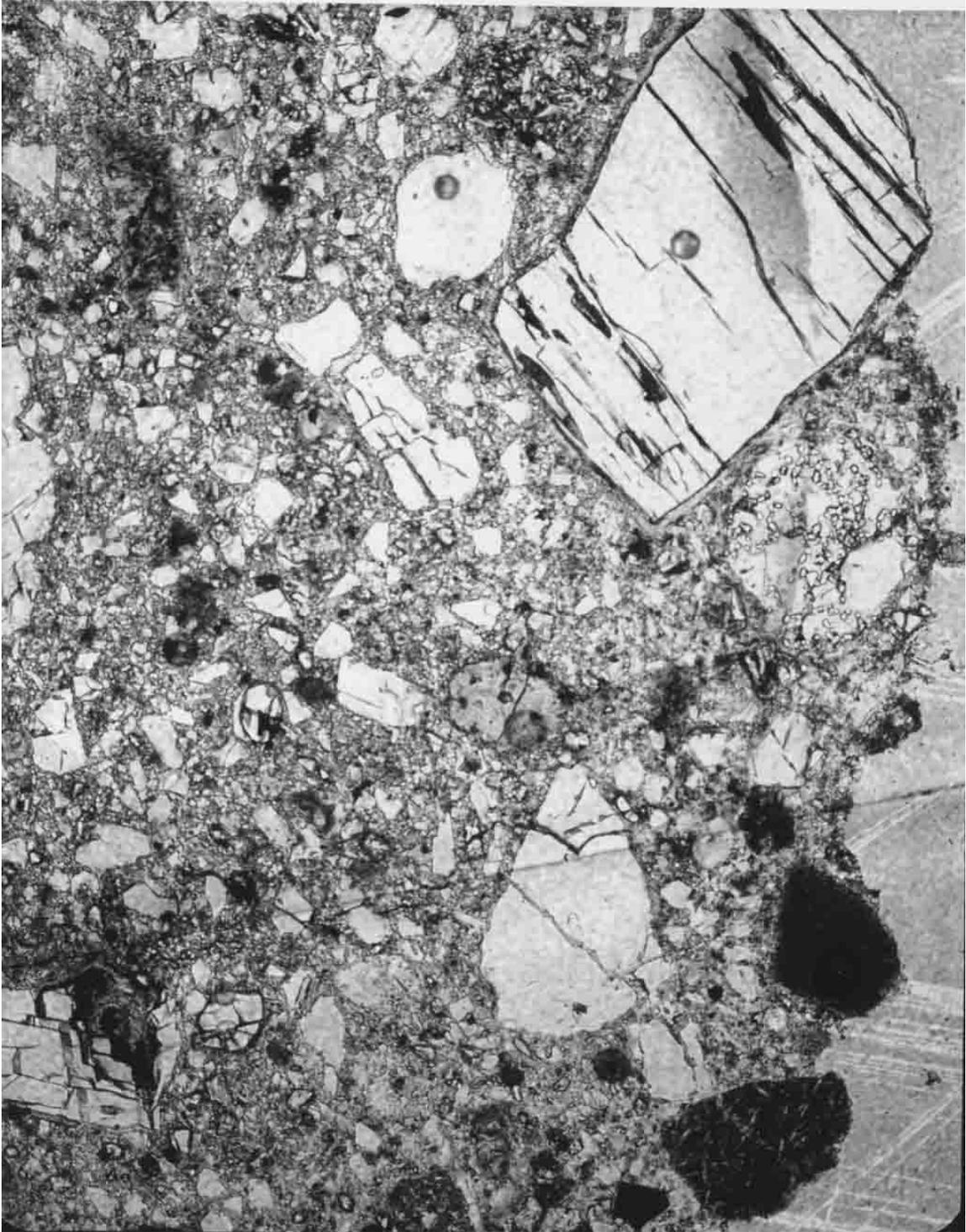


FIGURE 2. 61516,4, general view, ppl. Width 1 mm.

CHEMISTRY: Floran et al. (1976) present major element data obtained by electron microprobe analysis of natural rock powder fused to a glass (except FeO and Na₂O, by instrumental neutron activation). Blanchard (unpublished data) provides a trace element analysis and the FeO and Na₂O data quoted by Floran et al. (1976).

These data show that 61516 is similar in its major element chemistry to the local mature soils, but contains slightly lower levels of rare earth elements as compared to the soils (Table 1, Fig. 3).

TABLE 1. Summary chemistry of 61516.

SiO ₂	45.58
TiO ₂	0.42
Al ₂ O ₃	27.24
Cr ₂ O ₃	0.102
FeO	4.61
MnO	
MgO	6.05
CaO	15.35
Na ₂ O	0.538
K ₂ O	0.12
P ₂ O ₅	
Sr	
La	10.4
Lu	0.52
Rb	
Sc	7.16
Ni	195
Co	18.1
Ir ppb	
Au ppb	
C	
N	
S	
Zn	29
Cu	

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

PHYSICAL PROPERTIES: Pearce and Simonds (1974) report the results of a room temperature hysteresis curve determination on 61516. The very small saturation remanence to saturation magnetization ratio ($J_{RS}/J_S = 0.005$) indicates that virtually all of the ferromagnetic phases in this sample are multidomain particles. Fe^0/Fe^{2+} is 0.0949 and total Fe^0 is 0.24 wt%.

PROCESSING AND SUBDIVISIONS: During processing in 1972 the rock broke into many pieces. One of these (,1) was allocated to Phinney for thin sectioning and petrography. In 1975 a set of eleven small chips (,2) was allocated for chemistry; the analyses of Floran et al. (1976) and Blanchard (unpublished) are both of portions of this split. The magnetic studies were done on the potted butt of ,1. The rest of the rock remains at JSC as ,0 (2.09 g).

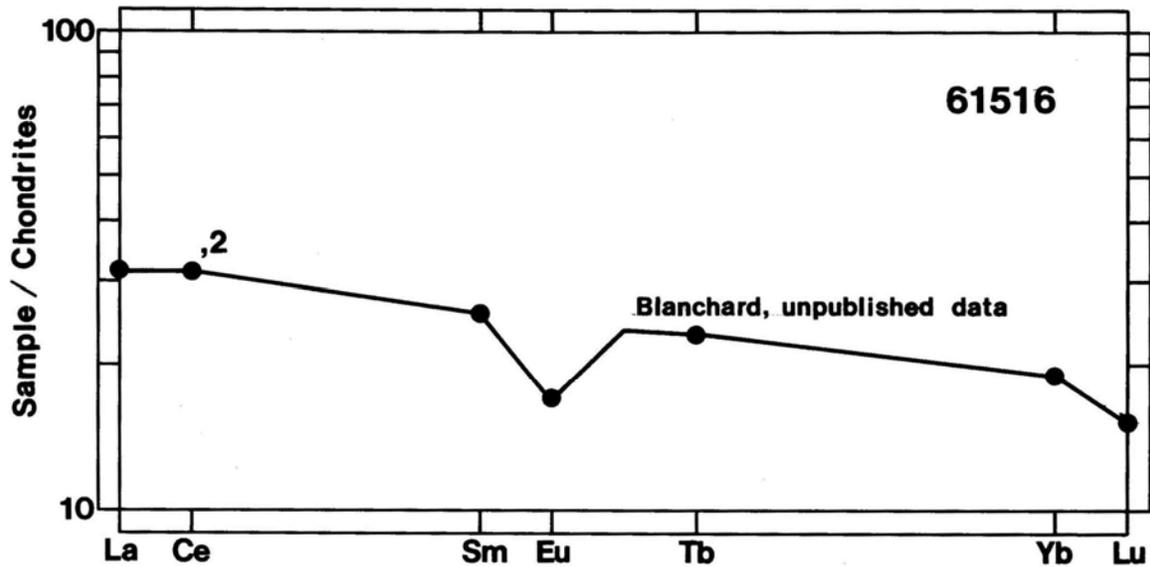


FIGURE 3. Rare earths.