

INTRODUCTION: 68516 consists of a dark vesicular glass containing large clasts of fine-grained or glassy impact melts (Fig. 1). The vesicular glass consists at least in part of maskelynite grains which have cores of relict shocked plagioclase. The sample is coherent and irregularly shaped. It is a rake sample and lacks zap pits.

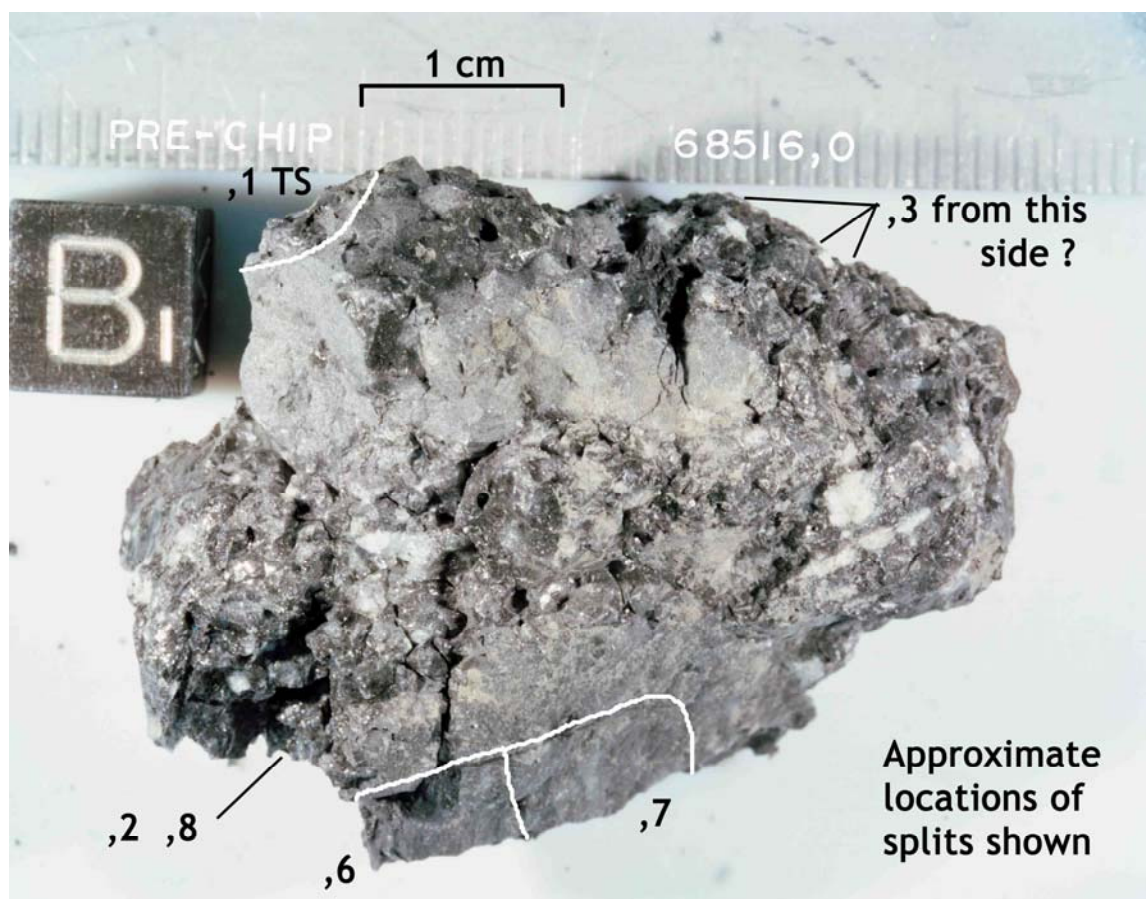


FIGURE 1. S-77-29898.

PETROLOGY: A single thin section covers a clast/glass boundary (Figs. 1 and 2). The clast is an impact melt with ~60% plagioclase crystallites set in ~40% opaque, brown glass. The glass is a heavily shocked material containing maskelynite grains, the larger ones having shocked plagioclase cores. Both the maskelynite and the cores have shock lamellae. These grains are set in a fine-grained material consisting of both maskelynite and cryptocrystalline material; the bulk glassy lithology is extremely plagioclase-rich. A few small basaltic clasts occur in this zone.

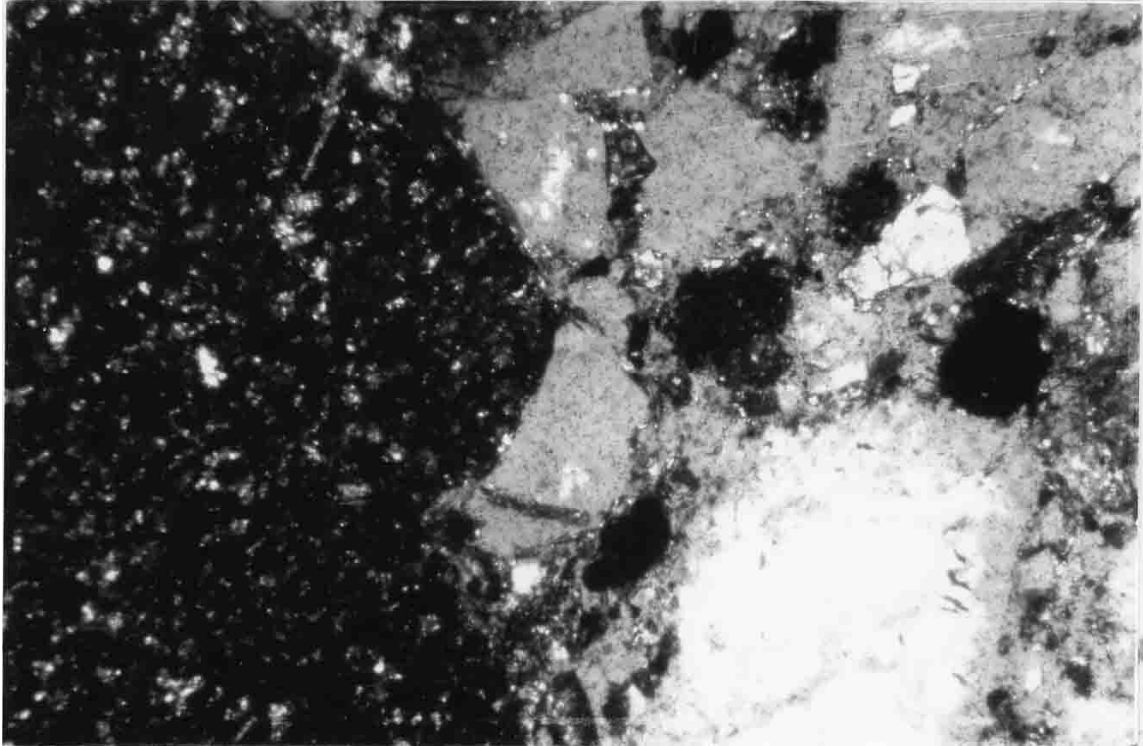


FIGURE 2. 68516,1. Basaltic melt (left) and shocked plagioclase (right), ppl. Width 3 mm.

CHEMISTRY: Laul and Schmitt (1973) report major and trace element abundances for some undocumented chips (,3) which include glass but are mainly gray clast material. Palme et al. (1978) report major and trace element analyses for a gray clast (,6). These are summarized in Table 1 and Figure 3. Schaeffer and Schaeffer (1977) report K and Ca abundances for mixed glass and clast chips. The analyses suggest that the gray clasts are fine-grained impact melts (contaminated with meteoritic material) and the glass is much more aluminous (and probably also contaminated with meteoritic material).

RADIOGENIC ISOTOPES: Schaeffer and Schaeffer (1977) report argon isotopic data for 68516,2, which is mainly shocked glass. The extractions (with two exceptions) between 1300°C and 1600°C give a plateau age of 3.80 ± 0.05 b.y. (Fig. 4).

RARE GAS AND EXPOSURE AGE: Schaeffer and Schaeffer (1977) report argon isotopic data for 68516,2, which is mainly shocked glass. An Ar cosmic ray exposure age of 50 m.y. is a minimum exposure age as the sample contains excess ^{38}Ar , probably from chlorine irradiation.

PROCESSING AND SUBDIVISIONS: The approximate locations of the main splits are shown in Figure 1.

TABLE 1. Summary chemistry of clasts from 68516.

	<u>mixed clasts and glass</u> <u>(Laul and Schmitt, 1973)</u>	<u>gray clast</u> <u>(Palme et al., 1978)</u>
SiO ₂		45.8
TiO ₂	0.35	
Al ₂ O ₃	28.1	22.6
Cr ₂ O ₃	0.09	
FeO	4.8	8.2
MnO	0.06	
MgO	7	10.5
CaO	15.9	13.0
Na ₂ O	0.43	0.49
K ₂ O	0.08	0.17
P ₂ O ₅		0.31
Sr		165
La	8.2	26.7
Lu	0.36	1.16
Rb		5.23
Sc	6.8	11.1
Ni	520	1385
Co	34	83.2
Ir ppb	10	35.0
Au ppb	11	32
C		
N		
S		1000
Zn		4.05
Cu		7.2

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

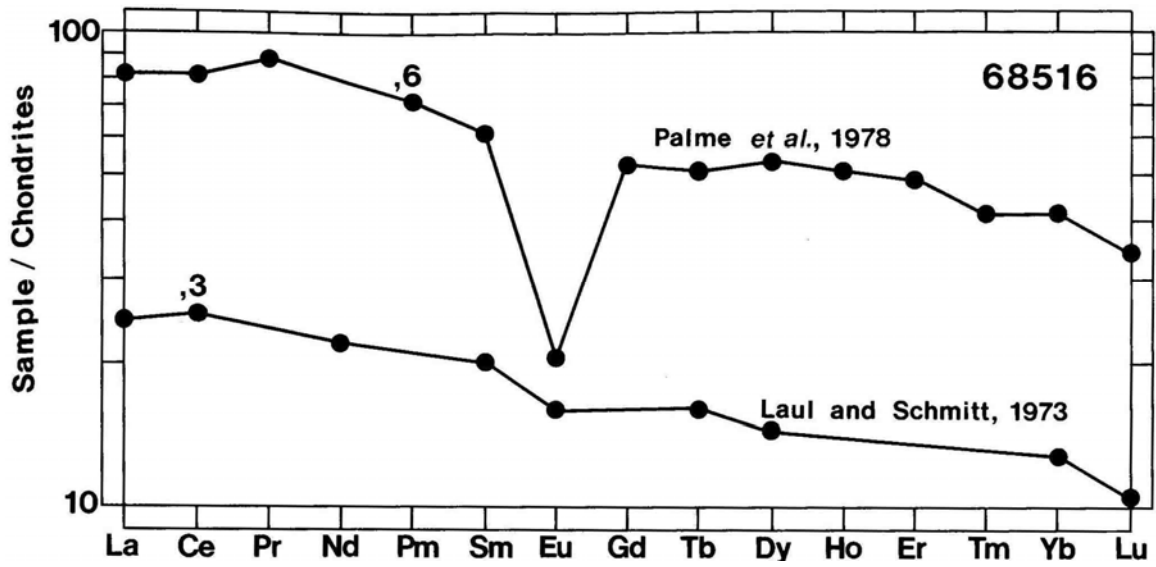


FIGURE 3. Rare earths.

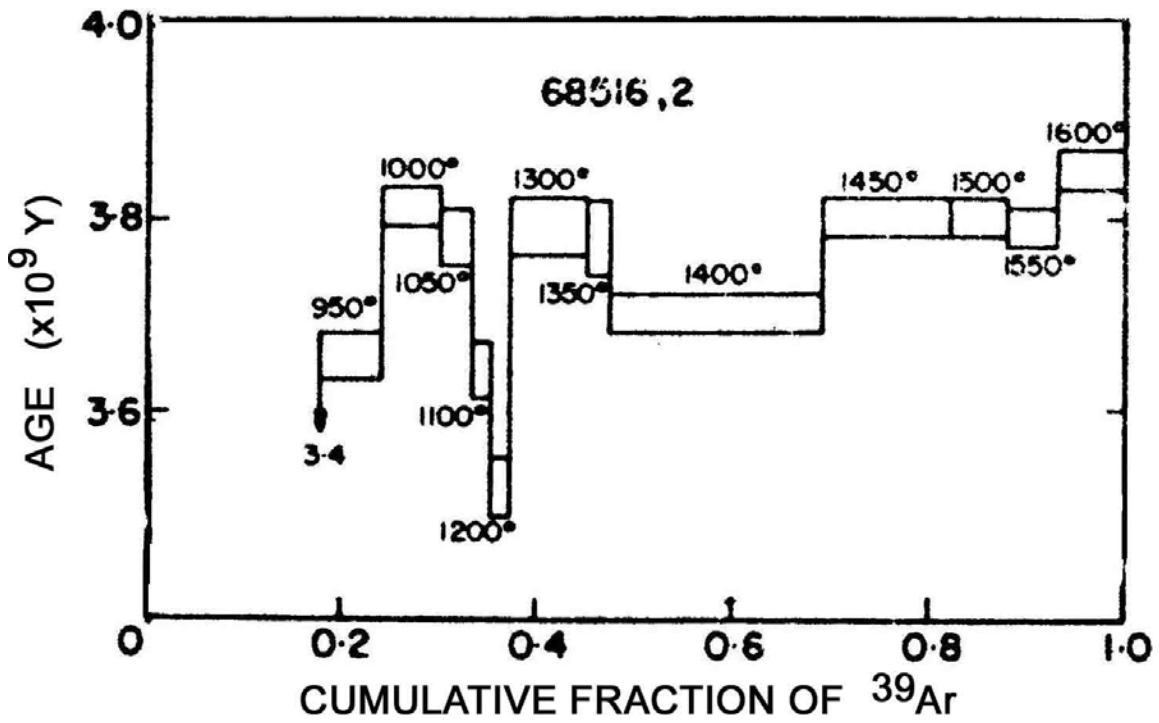


FIGURE 4. Ar release; from Schaeffer and Schaeffer (1977).