

14267

Vitric-matrix Breccia

54.77 grams



Figure 1: Photo of 14267. Sample is 5 cm across. NASA S71-29246.



Figure 2: Large micrometeorite crater on exterior surface of 14267. S7125265.

Introduction

14276 is from the “comprehensive sample” taken near the ALSEP station at Apollo 14 (Sutton et al. 1971). It is a glass-coated soil breccia (figures 1 and 2).

14276 was studied by the “European Consortium” (Eglinton et al. 1974).

Petrography

Phinney et al. (1975) found that 14267 had a frothy glass coating on one surface, and micrometeorite pits on all sides. The interior is a vitric matrix breccia with numerous small light-colored clasts (figure 4). The grain size distribution is seriate.

14276 is a fine-grained, coherent, polymict breccias with a dark matrix of vitreous appearance (Eglinton et al. 1974). There are more lithic fragments than mineral or glass fragments (figure 4). There are minute vesicles and iron grains in the glassy matrix. Clasts include glass, basalts, metaclastic breccias and mineral grains. Shock features are prevalent (Eglinton et al.).

The majority of the vitric clasts show flow-banding. Numerous glass analyses are found in Eglinton et al.

Pyroxene and olivine analyses are presented in figure 5. Orthopyroxene and some olivine is quite mafic.

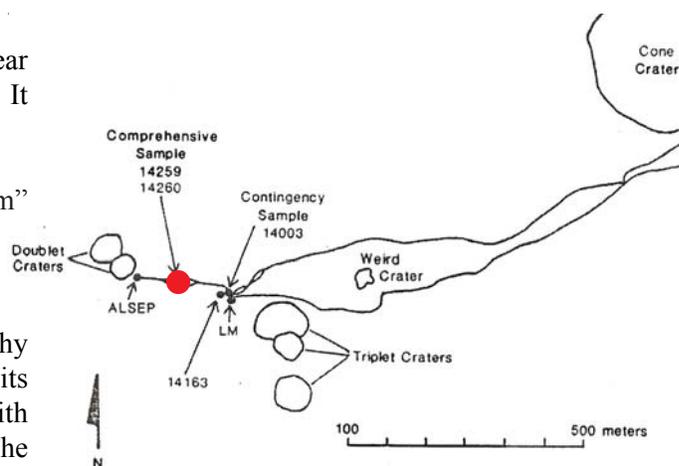


Figure 3: Location of comprehensive sample on map of Apollo 14 traverse.

Chemistry

Scoon (in Eglinton 1974) determined the chemical composition by classical techniques (table 1). The sample has the same composition as the Apollo 14 soil (figure 6).

Cosmogenic isotopes and exposure ages

Eglinton et al. (1974) calculate an exposure age of 60 m.y. based on ^{21}Ne .

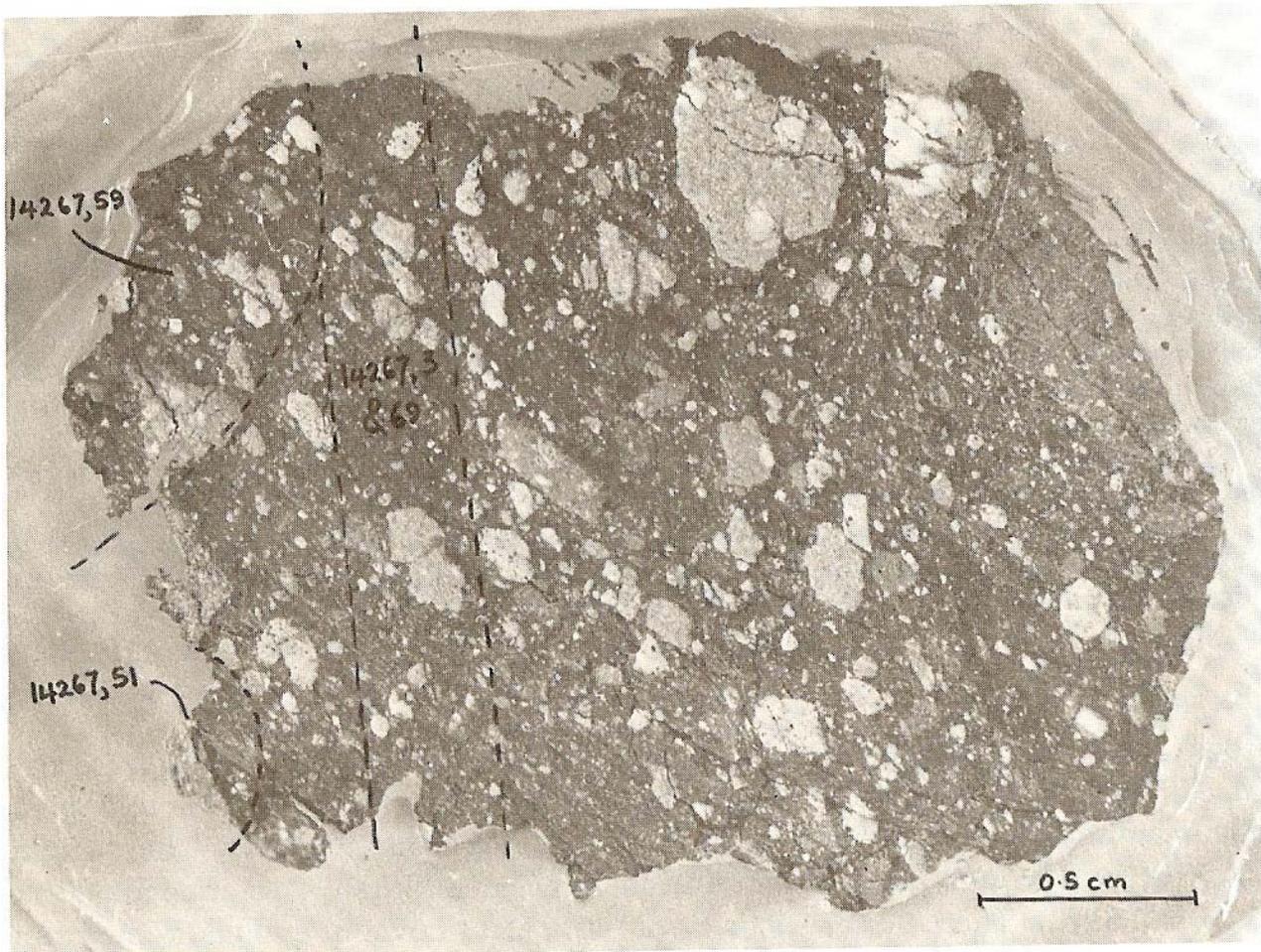


Figure 4: Interior of 14267 after saw cut in Bristol (Eglinton et al. 1974).

Other Studies

Eglinton et al. (1974) reported on cosmic-ray tracks (low), rare gas isotopes (abundant) and carbide content (low). They infer an age of 3.9 b.y. but caution that since this is obviously a soil breccias, it could be younger, with inherited ^{40}Ar .

Table 1. Chemical composition of 14267.

reference weight	Eglinton74	
SiO ₂ %	48.35	(a)
TiO ₂	2.11	(a)
Al ₂ O ₃	16.57	(a)
FeO	10.3	(a)
MnO	0.13	(a)
MgO	7.92	(a)
CaO	10.29	(a)
Na ₂ O	0.9	(a)
K ₂ O	0.78	(a)
P ₂ O ₅	0.57	(a)
S %	0.08	(a)
sum		
Sc ppm		
V		

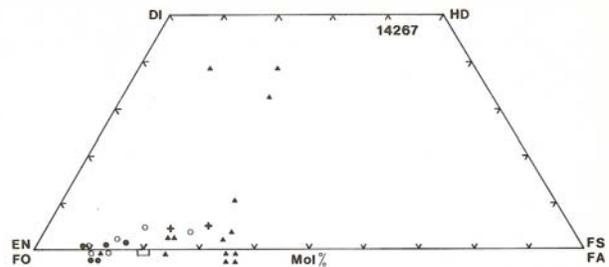


Figure 5: Composition of pyroxene and olivine in 14267 (from Eglinton et al. 1974)..

Processing

On the lunar surface, all rocks in a 14 meter circle were collected and put in weigh bag 1039, which was returned in ALSRC 1007. 14267 was one of these. It was studied by the "European Consortium" (Eglinton et al. 1974), where it was cut exactly in half in Bristol, England and half returned to Houston Texas. There are 5 thin sections. There is a copy of the sample handling report in the datapack (*sans* figures).

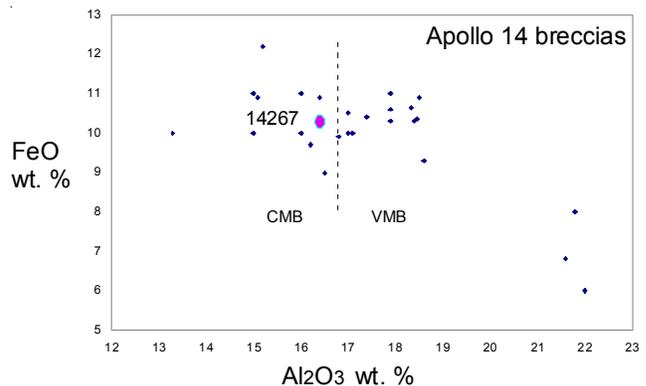
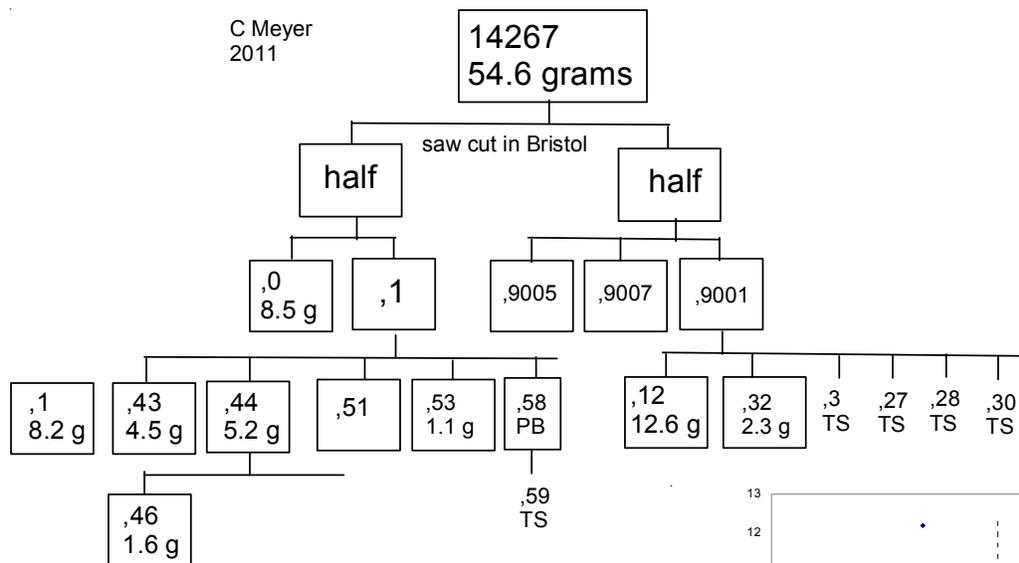


Figure 6: Composition of Apollo 14 breccias.

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