

14270
Impact melt Breccia
25.59 grams

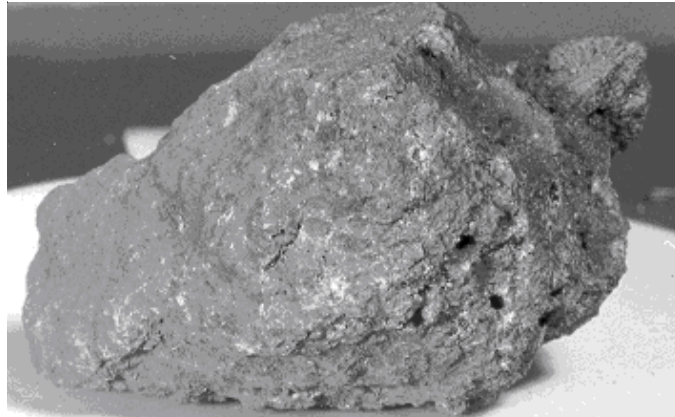


Figure 1: Photo of 14270. Sample is 4 cm across. NASA S71-26615.

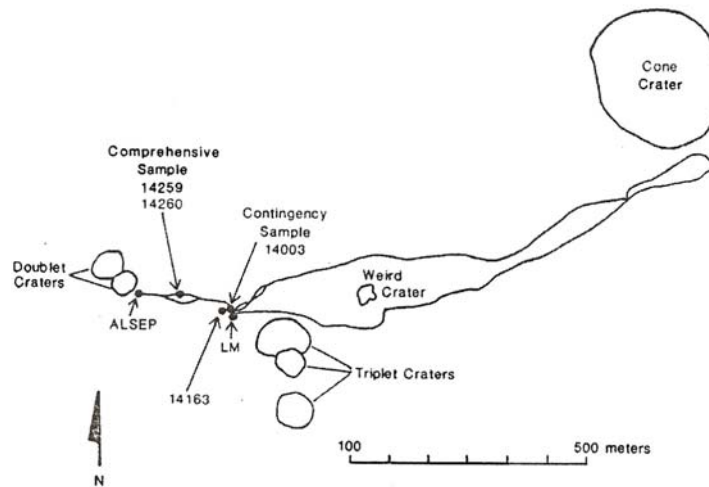


Figure 2: Location of comprehensive sample at Apollo 14.

Introduction

14270 was collected as part of the “comprehensive sample” taken near the ALSEP station (figure 2). It has glass-lined zap pits on all surfaces (Carlson and Walton 1977). It has been dated at 3.89 b.y., and has an exposure age longer than the samples from Cone Crater.

Petrography

Phinney et al. (1975) and Simonds et al. (1977) describe 14270 as a crystalline-matrix breccia. It is coherent, vuggy, and has a seriate grain size distribution. It is relatively clast-free (figure 3).

Anderson et al. (1972) pictured clasts of rhyolite in 14270 and found reaction halos around mineral grains indicating high temperature.

Chemistry

Lindstrom et al. (1972) analyzed 5 randomly (?) selected regions of 14270 (table 1).

Radiogenic age dating

Alexander and Kahl (1972) obtained an age of 3.89 ± 0.05 b.y. by the Ar³⁹-40 plateau technique (figure 4).

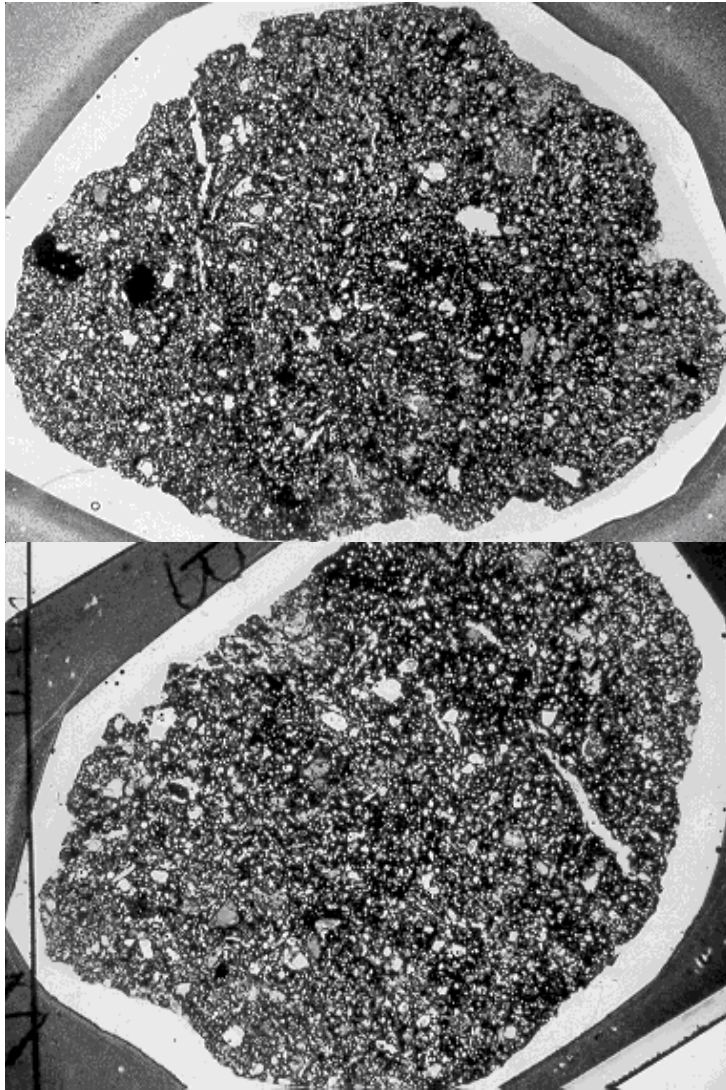


Figure 3: Photomicrographs of a) thin section 14270,10, b) 14270,9, each about 1.2 cm across.

Cosmogenic isotopes and exposure ages

Alexander and Kahl (1972) determined a cosmic-ray exposure age of 244 m.y. by the ^{38}Ar technique (figure 5). This is a great deal longer than that of the samples from Cone Crater.

Other Studies

Hart et al. (1972) determined the density of cosmic-ray tracks.

Processing

14270 was returned in weigh bag 1039, in ALSRC 1007. It was the subject of a consortium study by Gordy Goles.

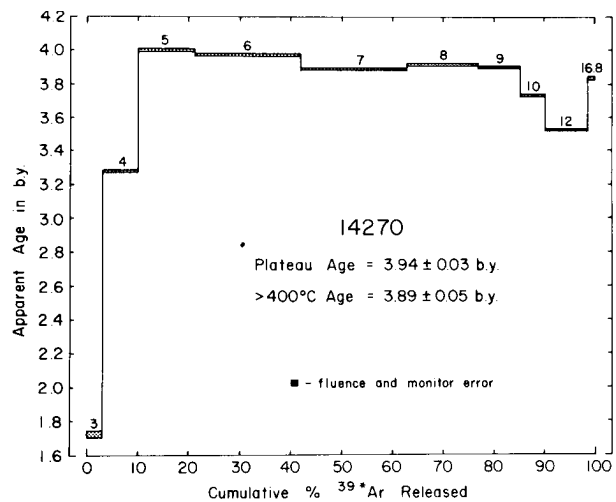


Figure 4: Ar³⁹-40 plateau diagram for 14270 (Alexander and Kahl 1974).

Table 1. Chemical composition of 14270.

reference	Lindstrom72					
weight	540	497	306	168	296	
SiO ₂ %						
TiO ₂						
Al ₂ O ₃						
FeO	10.4	11.5	11.9	11.6	11.6	(a)
MnO						
MgO						
CaO						
Na ₂ O	0.88	0.82	0.73	0.79	0.8	(a)
K ₂ O	0.6	0.43		0.4	0.55	(a)
P ₂ O ₅						
S %						
sum						
Sc ppm	19.9	26.5	25.8	26.2	26.3	(a)
V						
Cr	1090	1570	1750	1690	1570	(a)
Co	32.4	37.3	38.6	36.4	36.8	(a)
Ni						
Cu						
Zn						
Ga						
Ge ppb						
As						
Se						
Rb						
Sr						
Y						
Zr	1200	760	850	680	960	(a)
Nb						
Mo						
Ru						
Rh						
Pd ppb						
Ag ppb						
Cd ppb						
In ppb						
Sn ppb						
Sb ppb						
Te ppb						
Cs ppm						
Ba	970	800	750	770	820	(a)
La	101.6	65.5	64.8	62.5	69.2	(a)
Ce	265	169	181	175	199	(a)
Pr						
Nd	158	101	93	115	114	(a)
Sm	48.1	31.1	30.3	29.3	32.2	(a)
Eu	3.5	2.71	3.04	3.27	2.8	(a)
Gd						
Tb	9.9	6.2	5.3	6.6	6.6	(a)
Dy						
Ho						
Er						
Tm						
Yb	32	22	22.9	22.9	23.8	(a)
Lu	4.6	3.12	3.38	3.3	3.5	(a)
Hf	35.7	22	24	21	22.4	(a)
Ta	5.9	4.5	4.6	4.2	4.8	(a)
W ppb						
Re ppb						
Os ppb						
Ir ppb						
Pt ppb						
Au ppb						
Th ppm						
U ppm	4.4	2.56				(a)

technique: (a) INAA

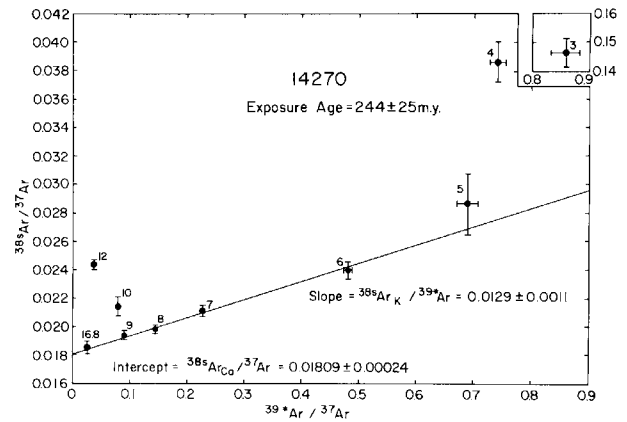
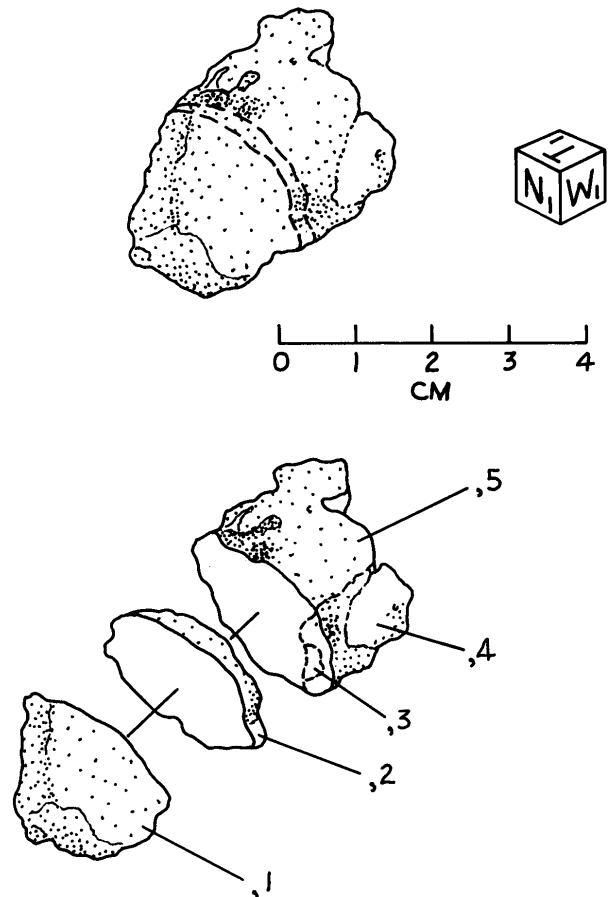
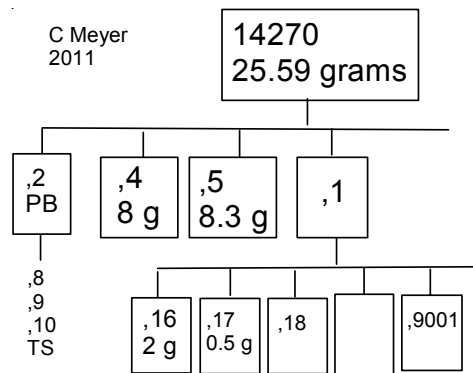


Fig. 2. ³⁸Ar/³⁷Ar versus ³⁹Ar/³⁷Ar for data from 14270,1-7. Error bars are shown where they are larger than the points.

Figure 5: Method used to determine exposure age of 14270 (Alexander and Kahl (1974).





References for 14270

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