76545

Dark Matrix Regolith Breccia
51.21 g; 76545 = 7.676 g, 76546 = 24.31 g, 76547 = 10.45 g, 76549 = 9.175 g (4 pieces)

INTRODUCTION

Phinney et al. (1974) mated these fragments into a common group on the basis of their common appearance (Figs. 1-4).

PETROGRAPHY

Sample 76545 is a dark matrix regolith breccia with seriate distribution of mineral clasts (Fig. 5). The matrix has a high proportion of brown glass, and the fragments are veined and splattered with black agglutinated glass.

Phinney et al. (1976) have studied 76545 by SEM petrography. The pieces of this sample are described as vitric matrix breccias by Simonds et al. (1975), who noted the occurrence of orange glass in the matrix. Phinney et al, suggest that the origin of these breccias is by hot glass quenched by cold clastic debris in an impact (Simonds, 1974).

76545, 14 contains "radial-arcuate lapillar structures that are compressed and deformed" and are interpreted by Nagle (1982) as being "ejects that was modified by subcrater processes." This interesting alternative model is more consistent with the fact that these fragments have the exact same composition as the soil (76501).

WHOLE-ROCK CHEMISTRY

A piece of sample 76545 has been analyzed by XRF and isotope dilution mass spectroscopy (Table 1) (Wiesmann and Hubbard, 1975). It has exactly the same composition as the 76541 soil from which it was collected (Fig. 6).

Figure 1: Photograph of 76545. Scale bar is marked in mm. S73-19611.

Figure 2. Photograph of 76546. Scale bar is marked in mm. S73-19621.

Figure 3: Photograph of 76547. Scale bar is marked in mm. S73-19616.

Figure 4: Photograph of 76549. Scale bar is marked in mm. S73-19623.

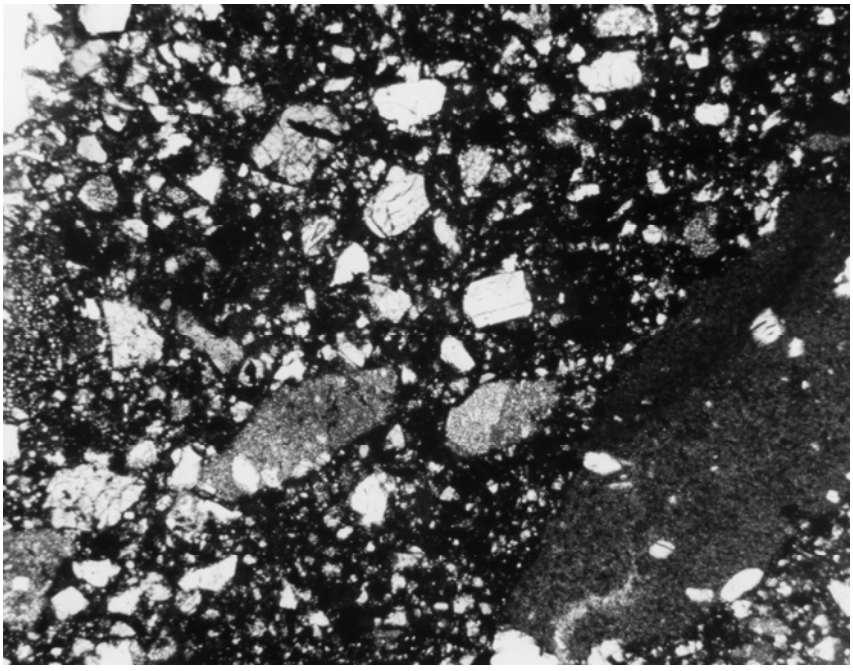

Figure 5: Photomicrograph of thin section 76545.14. Field of view is 2 x 3 mm.

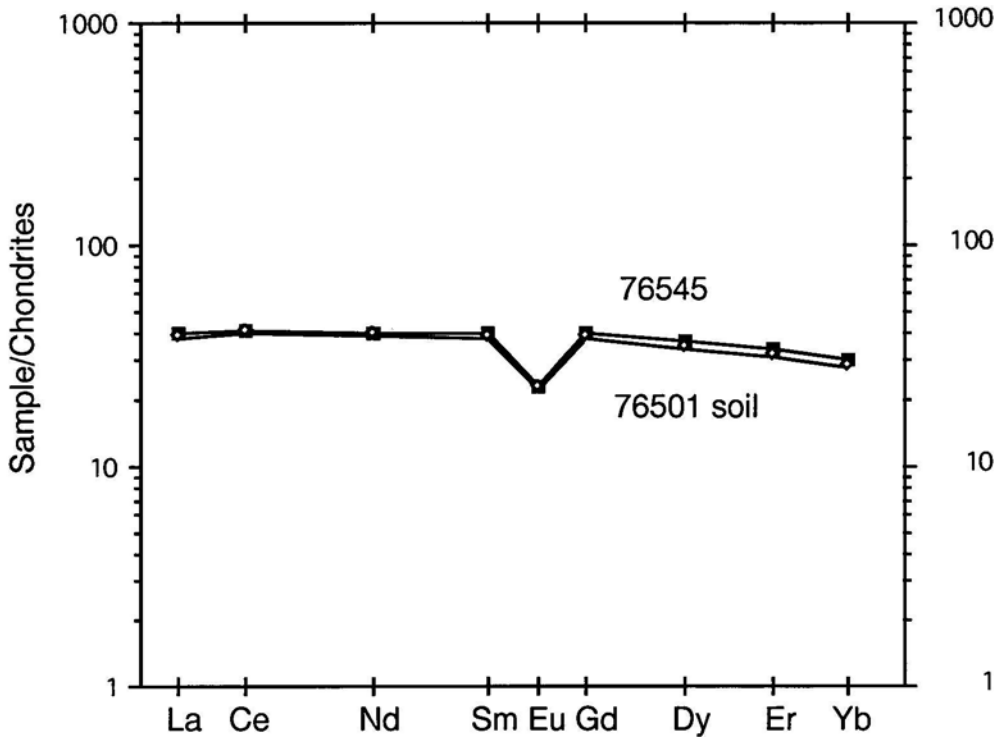

Figure 6: Normalized rare earth element diagram comparing composition of 76545 with 76501 reference soil. Data from Wiesmann and Hubbard (1975).

Table 1: Whole-rock chemistry of 76545.
From Simonds and Warner (1981); Wiesmann and Hubbard (1975).

Split	,3 ,5
Technique	XRF, IDMS
SiO_2 (wt%)	43.45
TiO_2	3.69
Al_2O_3	17.89
Cr_2O_3	0.26
FeO	10.94
MnO	0.15
MgO	10.51
CaO	12.21
Na_2O	0.40
K_2O	0.13
P_2O_5	0.09
S	0.07
Nb (ppm)	
Zr	191
U	0.43
Th	1.56
Sr	–
Rb	2.43
Li	8.9
Ba	114
La	9.36
Ce	25
Nd	17.9
Sm	5.87
Eu	1.29
Gd	7.96
Dy	8.89
Er	5.33
Yb	4.88