

**77545****Poikilitic Impact Melt Breccia****29.5g, 3.5 x 3 x 2.5 cm****INTRODUCTION**

Sample 77545 is a rake sample from soil 77530 at Station 7 (Fig. 1). It is a vesicular impact melt breccia similar in texture and composition to the boulder sample 77135.

**PETROGRAPHY**

The texture of 77545 is poikiloblastic, with irregular pigeonite oikocrysts enclosing abundant euhedral plagioclase laths and tablets and minor rounded olivine grains (Fig. 2). Ilmenite is also poikilitic. Mineral clasts are abundant (mostly plagioclase), but lithic clasts are rare. Warner et al. (1977) give the mineral mode of the matrix of 77545 as 53.2% plagioclase, 44% pyroxene/olivine, and 1.6% ilmenite.

Pigeonite oikocrysts in the matrix of 77545 are large (up to 1 mm) and form an interlocking network throughout the matrix.

**MINERAL CHEMISTRY**

The composition of pyroxene, olivine, ilmenite, and plagioclase is given in Warner et al. (1978) (Fig. 3). Engelhardt (1979) has also studied the ilmenite in 77545.

**WHOLE-ROCK CHEMISTRY**

Laul and Schmitt (1975c) have reported the composition of 77545 (Table 1). The major element analyses of the sample studied by Laul and Schmitt do not agree with those of Warner et al. (1977) for the

matrix. Wasson et al. (1977) repeated the analyses and found that 77545 was typical of the Apollo 17 impact melt rocks (Fig. 4).

**SIGNIFICANT CLASTS**

Warner et al. (1977) studied a large (6 x 6 mm) angular dunite clast in 77545. The clast has a coarse granoblastic texture, with 0.5 to 1 mm size olivine grains intersecting at near 120 deg triple junctions. The clast has been shocked, resulting in undulous extinction of the olivine grains and minor recrystallization along fractures. The olivine is Fo89 with minor amounts of chromite located along the olivine-olivine grain boundaries. This clast has not been analyzed.

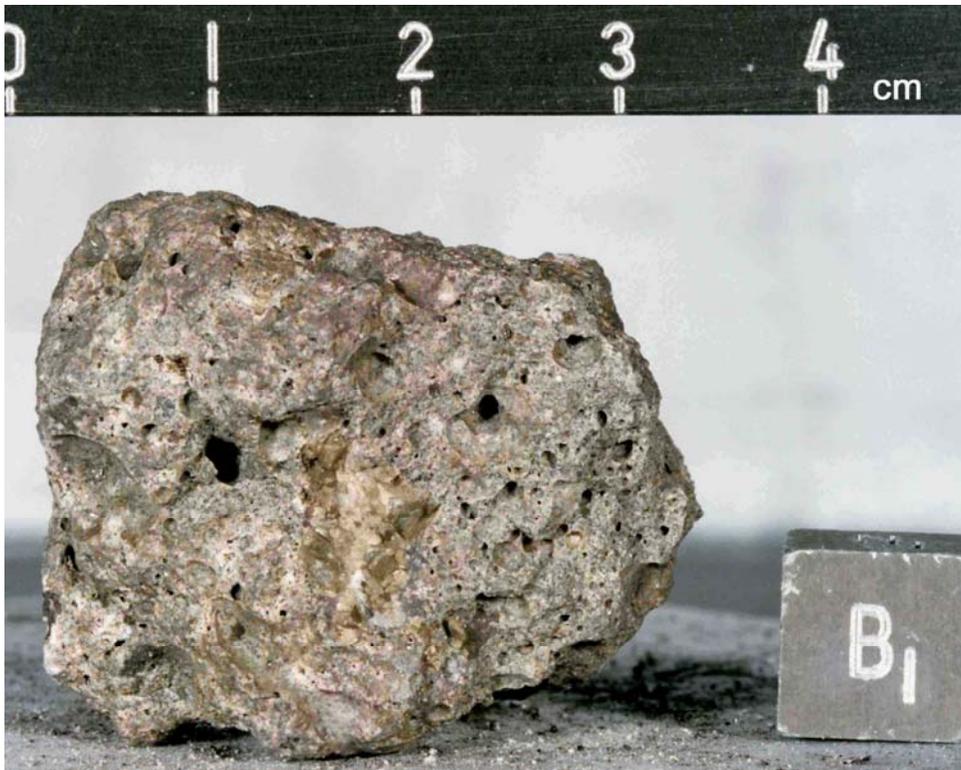


Figure 1: Photograph of 77545. Cube is 1 mm. S73-19128.

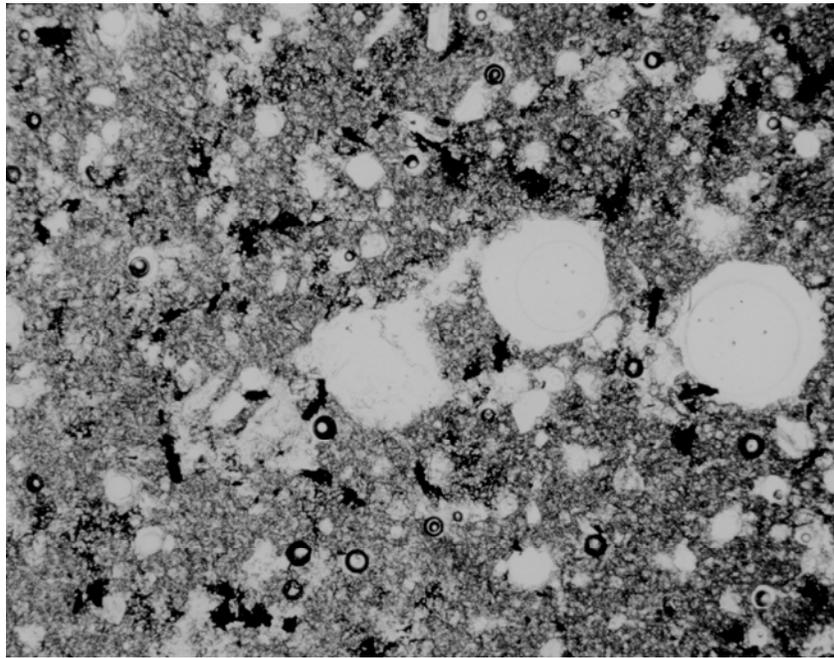


Figure 2: Photomicrograph of thin section 77545,8, showing poikilitic matrix and large vesicles. Field of view is 3 x 4 mm.

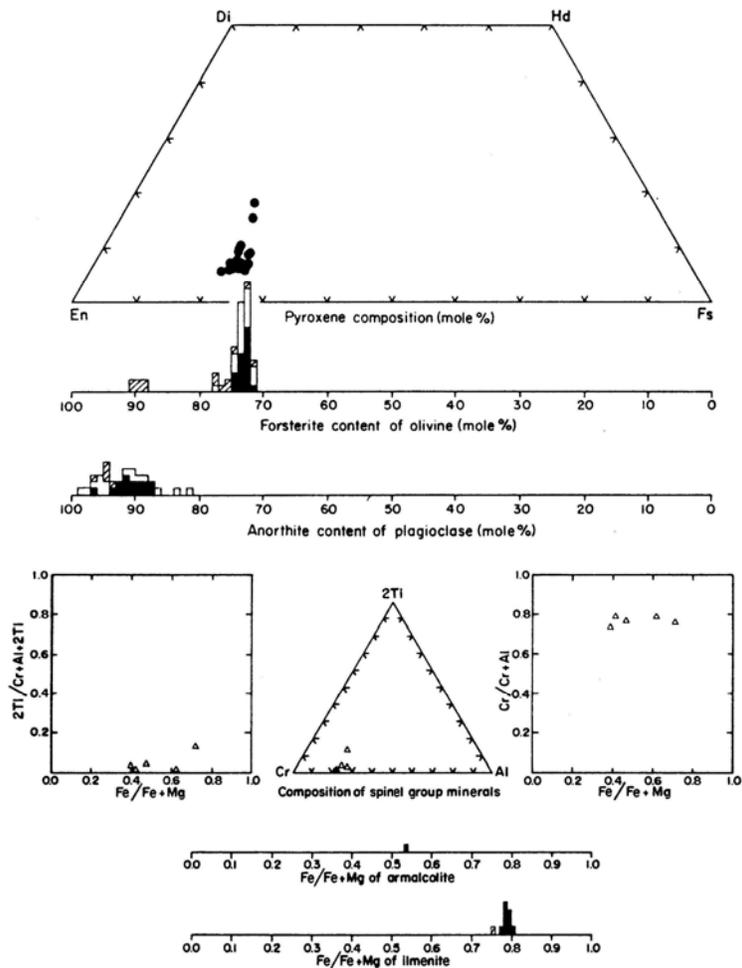


Figure 3: Compositions of minerals in 77545. From Warner et al. (1978).

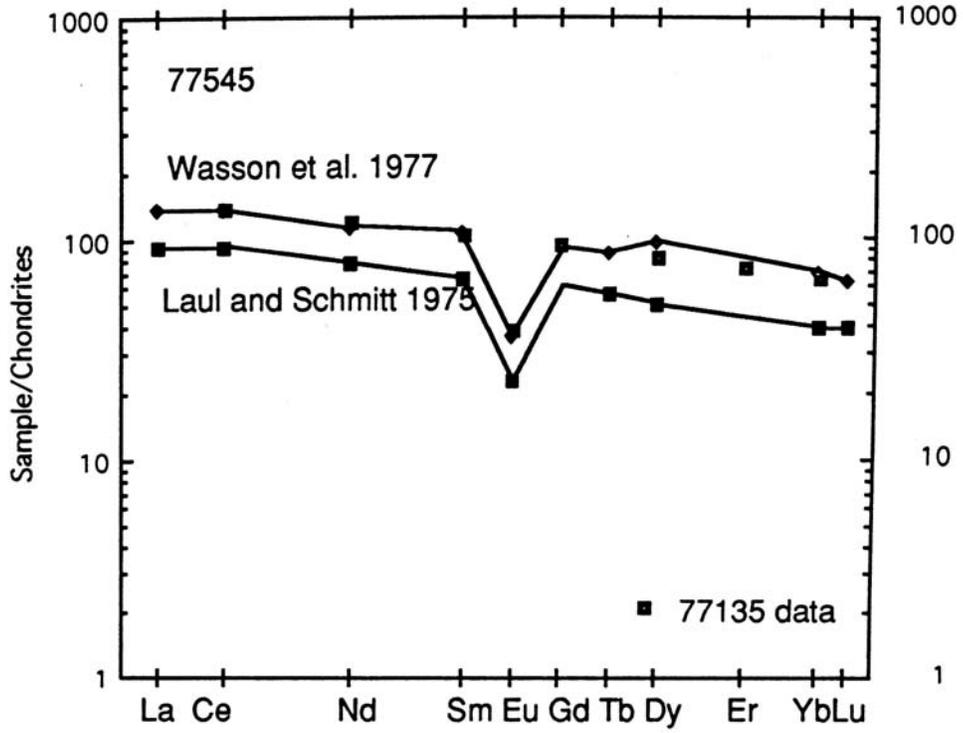


Figure 4: Normalized rare earth element diagram for 77545 with 77135 data for comparison. The data of Laul and Schmitt (1975) do not agree with those of Wasson et al. (1977).

**Table 1: Whole-rock chemistry of 77545.**

a) Laul and Schmitt (1975); b) Warner et al. (1977); c) Wasson et al. (1977)

<b>Split Technique</b>	<b>,1 (a) INAA</b>	<b>matrix (b) BB e-probe</b>	<b>,3 (c) INAA</b>
SiO <sub>2</sub> (wt%)	–	49.6	–
TiO <sub>2</sub>	1.2	0.77	1.52
Al <sub>2</sub> O <sub>3</sub>	10.9	17.7	18.7
Cr <sub>2</sub> O <sub>3</sub>	0.52	0.19	0.20
FeO	10.3	7.4	8.89
MnO	0.11	0.11	–
MgO	10	11.5	12.9
CaO	6.6	11.4	11.06
Na <sub>2</sub> O	0.47	0.72	0.71
K <sub>2</sub> O	0.14	0.21	0.24
Nb (ppm)			
Zr	240		560
Hf	8.2		11.8
Ta	1		1.4
U	0.9		1.4
Th	3.2		5.4
Ba	220		340
Ni	600		60
Co	67		13.5
Sc	11		17
La	21.5		32.2
Ce	55		82
Nd	35		51
Sm	9.8		15.4
Eu	1.3		2.00
Gd			
Tb	2		3.1
Dy	12		23
Er			
Yb	6.3		11
Lu	0.94		1.52
Ge (ppb)			
Ir	7		1.0
Au	2		0.8