

INTRODUCTION: 63545 is a vesicular, dark, coherent, basaltic impact melt (Fig. 1). It is a rake sample with abundant zap pits.

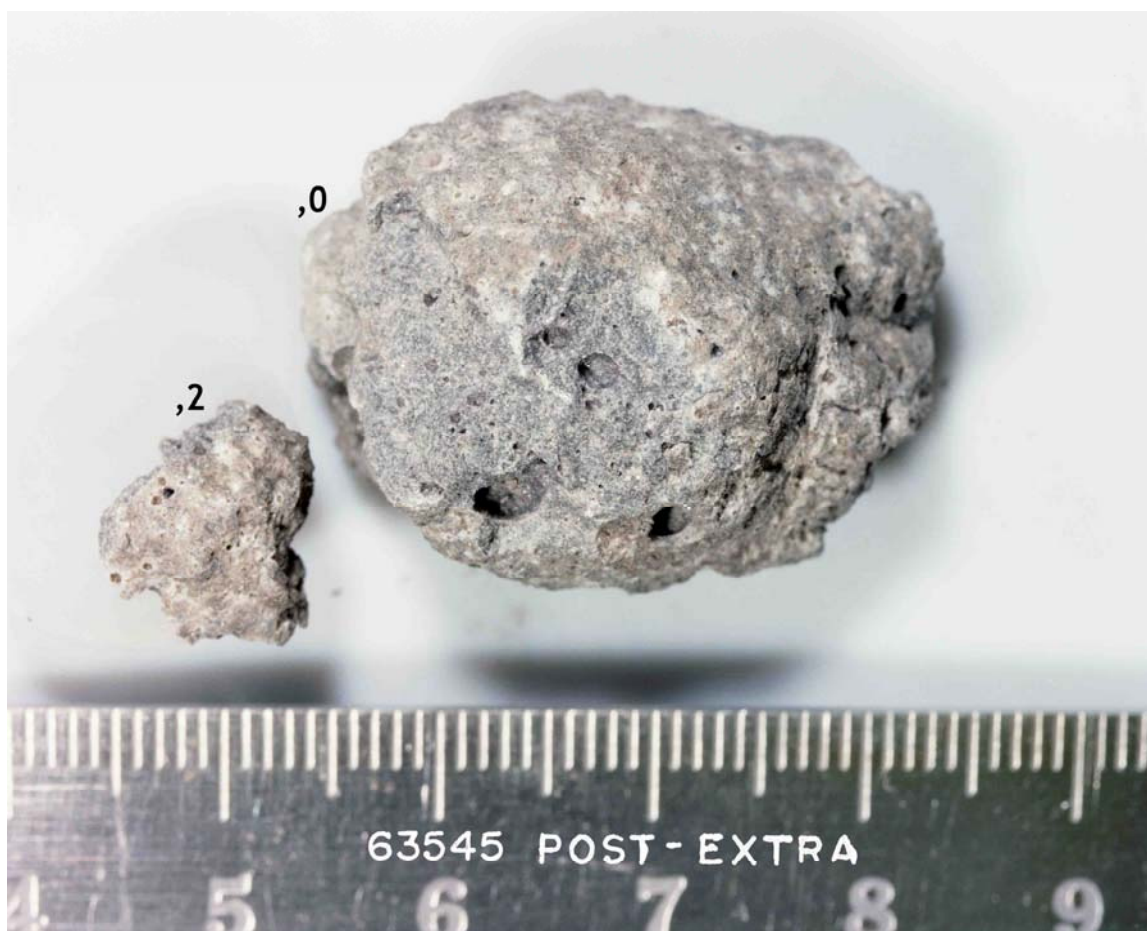


FIGURE 1. Smallest scale division in mm. S-72-55402.

PETROLOGY: Warner et al. (1973) classify 63545 as a porphyritic basalt. Delano (1977) provides a brief petrographic description. No microprobe data have been published.

63545 is a fine-grained, subophitic impact melt (Fig. 2) containing small olivine phenocrysts, a network of plagioclase laths, pyroxene, and interstitial glass. Opaque phases include chromite, armalcolite (?), ilmenite and ulvospinel. Colorless spinel (pink spinel of Delano, 1977) is present. Most clasts are small plagioclases.

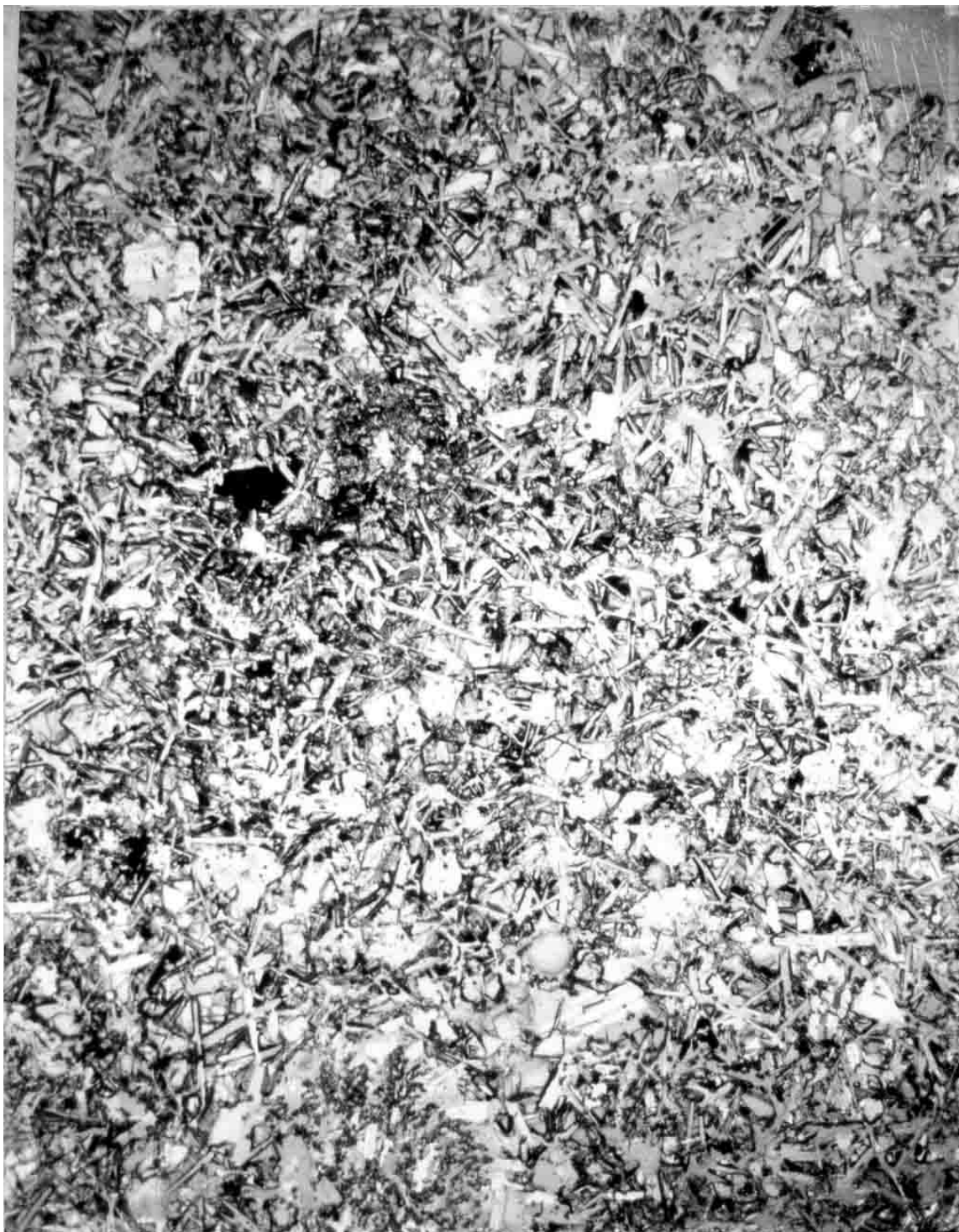


FIGURE 2. 63545,6, general view, ppl. Width 2 mm.

EXPERIMENTAL PETROLOGY: Delano (1977) determined the liquidus phase relations from 0 to 30 kbar on a synthetic analog of 63545. The results are shown in Figure 3. Spinel is the liquidus phase throughout, followed at low pressures by

plagioclase. Spinel eventually reacts out. The results indicate that 63545 is an impact produced mixture rather than a partial melt of the lunar interior (whether differentiated or not) in that no significant multiple saturation point is present at any pressure.

CHEMISTRY: Hubbard et al. (1973) provide analyses of major and trace elements and Nyquist et al. (1973) provide Rb and Sr abundances. These are summarized in Table 1 and Figure 4.

RADIOGENIC ISOTOPES: Nyquist et al. (1973) provide whole rock Rb and Sr isotopic data. $^{87}\text{Rb}/^{86}\text{Sr} = 0.0539 \pm 6$ and $^{87}\text{Sr}/^{86}\text{Sr} = 0.70258 \pm 12$. Hodel ages of 4.50 ± 0.20 b.y. (T_{BABI}) and 4.62 ± 0.20 b.y. (T_{LUNI}) were calculated.

PHYSICAL PROPERTIES: Pearce and Simonds (1974) measured magnetic parameters of 63545. The saturation remanence to saturation magnetization ratio is 0.0015.

PROCESSING AND SUBDIVISIONS: A small typical chip (,1) was taken to make thin sections ,4 and ,6. The potted butt was used for the magnetic measurements. Chip ,2 (Fig. 1) was allocated for the chemical and isotopic studies.

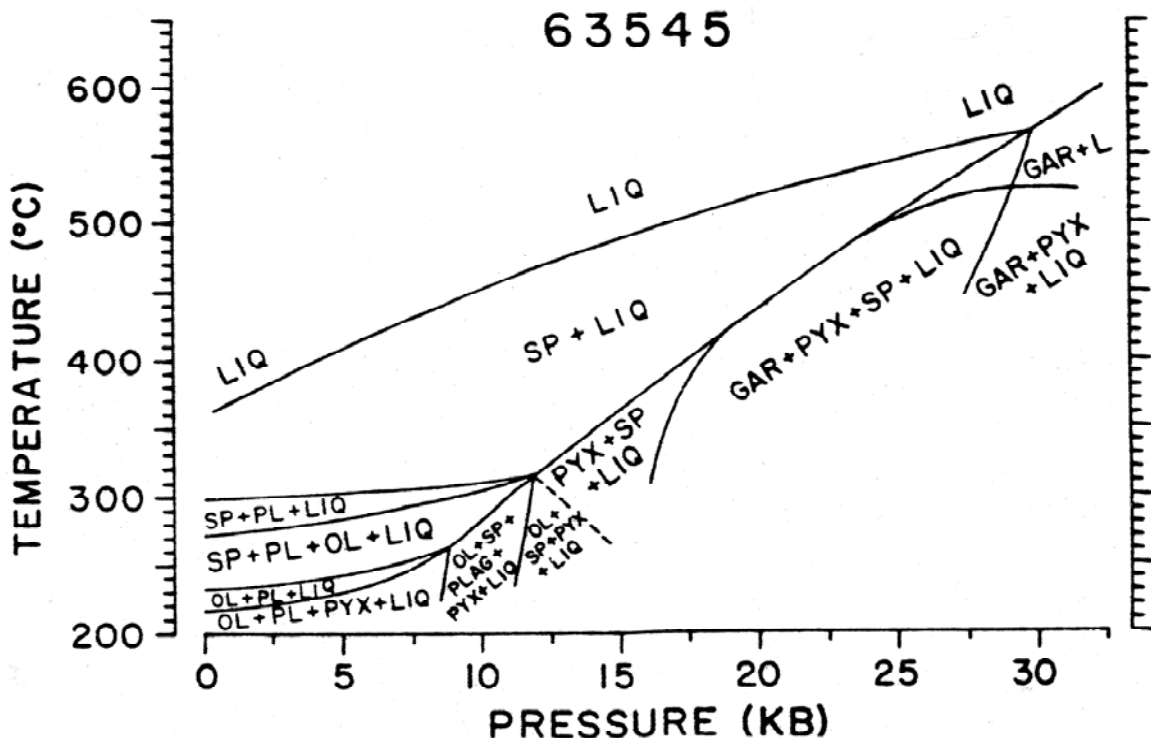


FIGURE 3. Melting relations, from Delano (1977).

TABLE 1. Summary chemistry of 63545, from Hubbard et al, 1973; Nyquist et al., 1973.

SiO ₂	43
TiO ₂	0.96
Al ₂ O ₃	22.2
Cr ₂ O ₃	0.11
FeO	16.8
MnO	0.07
MgO	12.3
CaO	13.0
Na ₂ O	0.38
K ₂ O	0.12
P ₂ O ₅	0.17
Sr	169.8
La	19.7
Lu	0.888
Rb	3.16
Sc	
Ni	
Co	
Ir ppb	
Au ppb	
C	
N	
S	800
Zn	
Cu	

Oxides in wt%; others in ppm except as noted

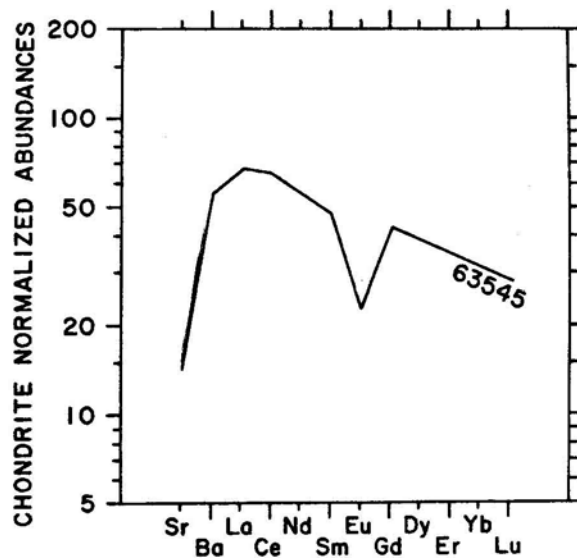


FIGURE 4. Rare earths, from Delano (1977), data of Hubbard et al. (1973).