

78255**Shocked Norite****48.31 g, 4 x 3 x 2 cm (2 pieces)****INTRODUCTION**

Sample 78255 was chipped off the "bottom" of the Station 8 Boulder and collected from the soil (*see section on the Station 8 Boulder*). Sample 78256 was combined with 78255. The bag in which they were returned included 50.57 g of dirt that may include additional fragments of 78255. The glass coating on 78255 has been pitted by micrometeorites.

PETROGRAPHY

Sample 78255 is a heavily shocked, coarse-grained, plutonic norite of cumulate origin. It also has a glass coating and penetrating veins of glass including vesicles (Fig. 1). It is the same rock as 78235 (*see section of 78235 for petrographic description*). Fig. 2 illustrates shocked plagioclase and glass veinlets.

MINERAL CHEMISTRY

Bersch et al. (1991) have precisely determined the composition of pyroxene in 78255.

WHOLE-ROCK CHEMISTRY

Warren and Wasson (1978) provided an analysis of 78255 (Table 1 and

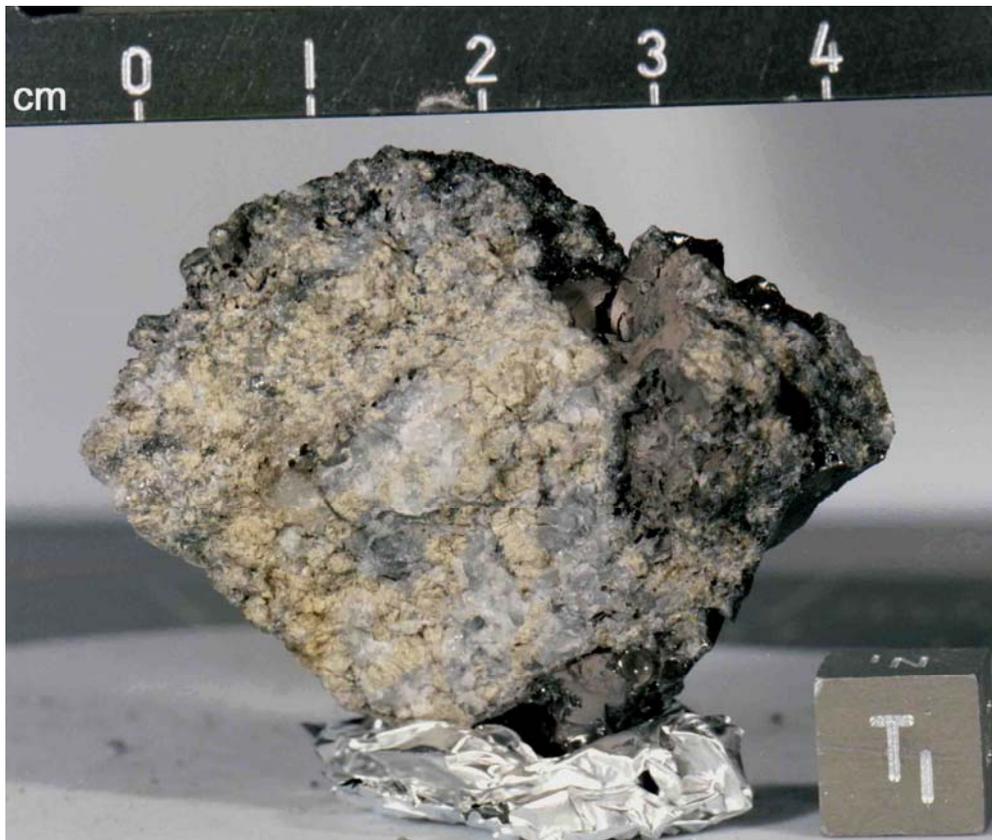


Figure 1: Photograph of 78255. Scale is 1 cm. S73-15189.

Fig. 3). This analysis was very high in Al_2O_3 (27.4%), indicating that their sample split may have had excess plagioclase. Note that the Eu is also high. Photos of the hand specimen indicate that the sample may have a higher content plagioclase than 78235. This is consistent with plutonic layering observed by Jackson et al. (1975). The Ir content is slightly elevated, but low enough to conclude that this sample is a pristine lunar rock.

Keith et al. (1974) determined K, U, and Th (see table in section on 78235). These data should be representative of the rock as a whole, and it is interesting to note that they are slightly different from those of 78235.

RADIOGENIC ISOTOPES

Although sample 78255 has not been dated, it should give an age identical to that of 78235-78236.

COSMOGENIC RADIOISOTOPES AND EXPOSURE AGES

Keith et al. (1974) have determined the amount of ^{56}Co , ^{46}Sc , and ^{54}Mn in 78255 (see table in 78235 section).

SURFACE STUDIES

The glass coating on 78255 is reported to have numerous micro-meteorite craters (Butler, 1973) which is an interesting observation, because 78255 was from the "bottom" of the boulder, which means it had rolled around on the surface-even before the astronauts got there.

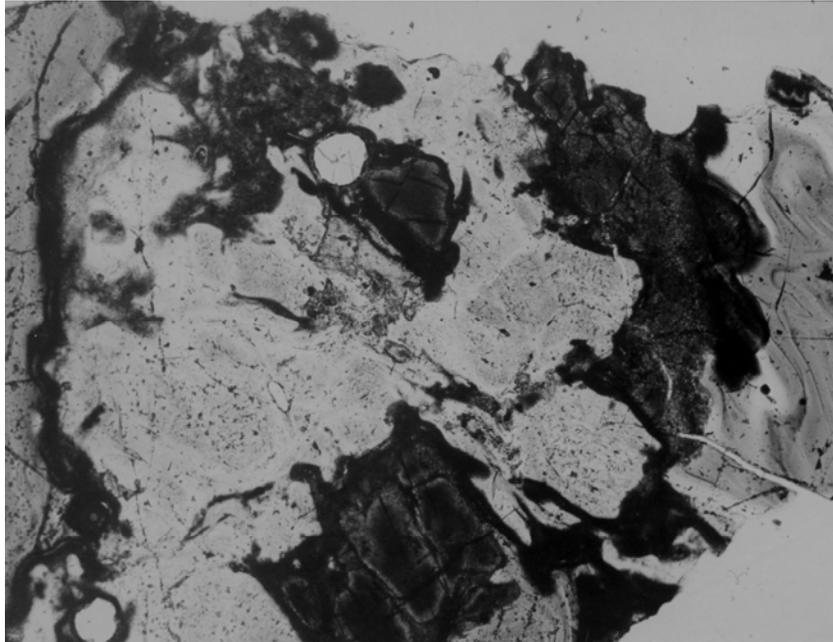


Figure 2: Photomicrograph of thin section 78255. Field of view is 4 x 5 mm.

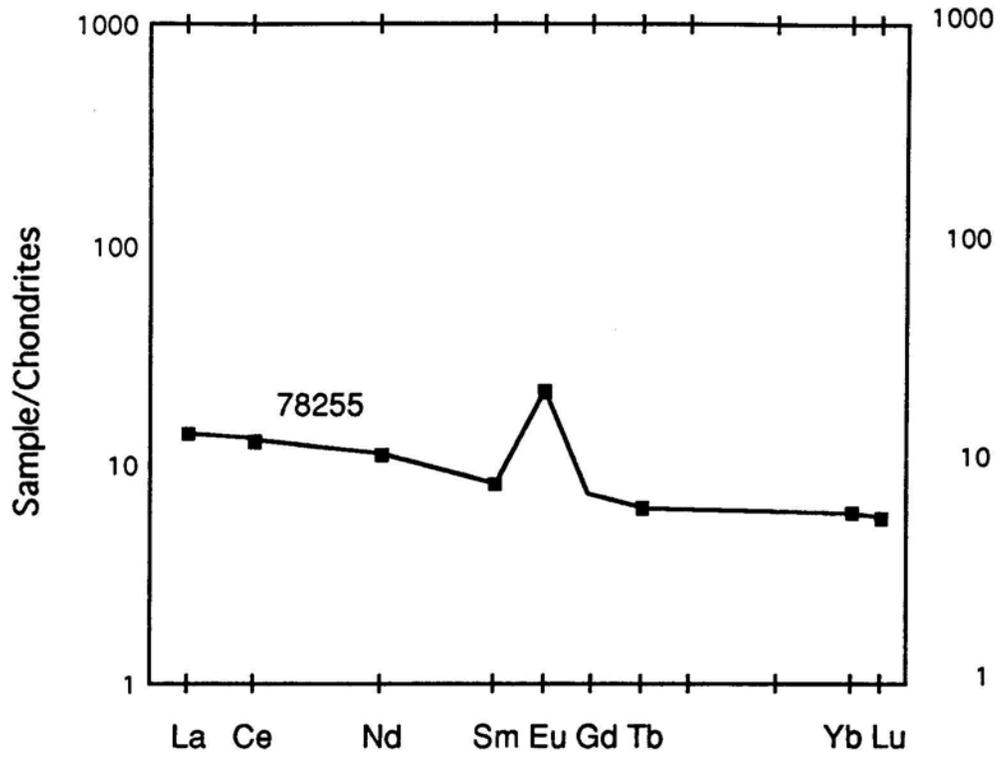


Figure 3: Normalized rare earth element diagram for 78255. From Warren and Wasson (1978).

Table 1: Whole-rock chemistry of 78255.
From Warren and Wasson (1978).

Split Technique	,4 INAA, RNAA
SiO ₂ (wt%)	47.29
TiO ₂	0.068
Al ₂ O ₃	27.40
Cr ₂ O ₃	0.145
FeO	2.64
MnO	0.046
MgO	5.98
CaO	14.98
Na ₂ O	0.446
K ₂ O	0.084
Nb (ppm)	.
Zr	49
Hf	0.67
Ta	0.086
U	0.19
Th	0.44
Ba	86
Zn	0.95
Ni	21.7
Co	22.6
Sc	4.6
La	3.3
Ce	7.8
Nd	5
Sm	1.2
Eu	1.21
Tb	0.23
Dy	
Er	
Yb	0.98
Lu	0.14
Ga	5.1
Ge (ppb)	58.3
Ir	0.43
Au	0.107