

INTRODUCTION: 67415 is an extremely friable, cataclastic noritic anorthosite that was removed from its documented bag in many pieces (Fig. 1). It appears to be nearly monomict, but is not chemically pristine.

This sample was collected from the south rim of North Ray Crater, near the large, White Breccia boulders that yielded 67455, and 67475. The lunar orientation of 67415 could not be determined. Due to its friable nature, no lunar exterior surfaces could be recognized.

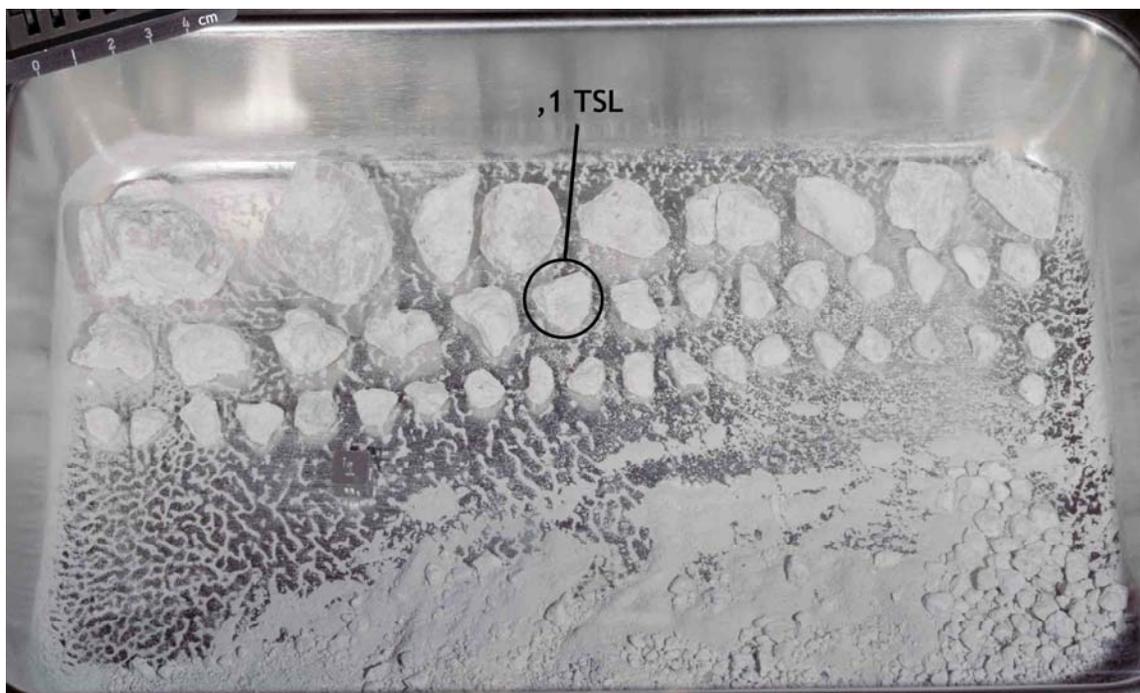


FIGURE 1. S-72-39039.

PETROLOGY: 67415 is a clastic rock apparently formed by simple crushing of a granoblastic noritic anorthosite. It is composed predominantly of angular grains of plagioclase with lesser amounts of mafic minerals (mostly orthopyroxene), granoblastic lithic fragments, minor metal (some rusty), troilite, ilmenite and very rare symplectites. Pre-cataclasis texture of the rock is preserved only in small (up to 3 mm) lithic fragments (Fig. 2).

Minor elements in plagioclase as determined by ion probe are given by Meyer (1979) (Table 1).

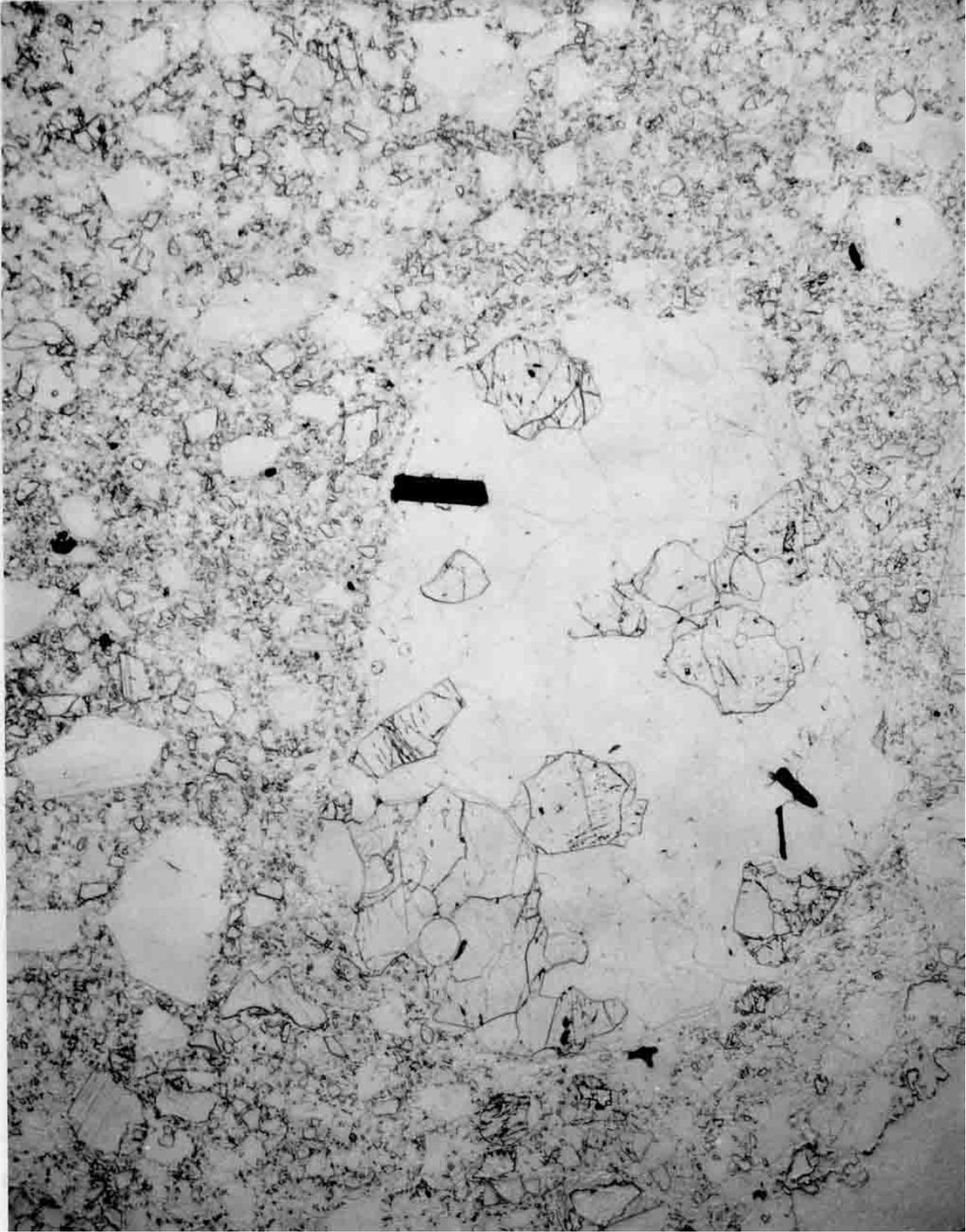


FIGURE 2. 67415,14. General view, ppl. Width 2 mm.

CHEMISTRY: Major and trace element analyses are given by Wanke et al. (1976, 1977) and Lindstrom et al. (1977). Hertogen et al. (1977) report meteoritic siderophile and volatile abundances. Cripe and Moore (1975) and Moore and Lewis (1975) provide total C, N and S data.

67415 is compositionally distinct from the local mature soils, being less aluminous and somewhat more magnesian (Table 2). The rare-earth element abundances for this rock are fairly low (Fig. 3), about a factor of 3 less than in the soils. 67415 is not chemically pristine: siderophiles indicate a significant meteoritic component (Table 2). The low total C and S indicate the lack of a significant solar wind component in this breccia. Although 67415 was collected near the White Breccia boulders, it is not similar to the known sample of light matrix from these boulders, 67455 (Lindstrom et al., 1977).

TABLE 1. Minor elements in plagioclase (ppm) (Meyer, 1979).

	<u>Li</u>	<u>Mg</u>	<u>Ti</u>	<u>Sr</u>	<u>Ba</u>
a.	6	650			100
b.	6	637	203	300	103

TABLE 2. Summary chemistry of 67415.

SiO ₂	45.2	Sr	168
TiO ₂	0.38	La	5.0
Al ₂ O ₃	25.4	Lu	0.27
Cr ₂ O ₃	0.10	Rb	0.8
FeO	4.9	Sc	8.3
MnO	0.07	Ni	90
MgO	7.9	Co	12
CaO	14.9	Ir ppb	3.0
Na ₂ O	0.53	Au ppb	1.0
K ₂ O	0.05	C	13
P ₂ O ₅	0.03	N	99
		S	<17
		Zn	5.8
		Cu	

Oxides in wt%; others in ppm except as noted.

PROCESSING AND SUBDIVISIONS: Although 67415 was collected as a single piece, it broke up during transport and was removed from its documented bag as ~40 fragments > 1 g, the largest (,8) being ~3 cm across. Initial allocations in 1972 were filled largely by individual fragments. In 1974 several of the individual fragments were assigned split numbers and the largest fragment (,8) extensively subdivided for allocations. ,18 contains a 7 x 4 mm dark, coherent clast of unknown affinity.

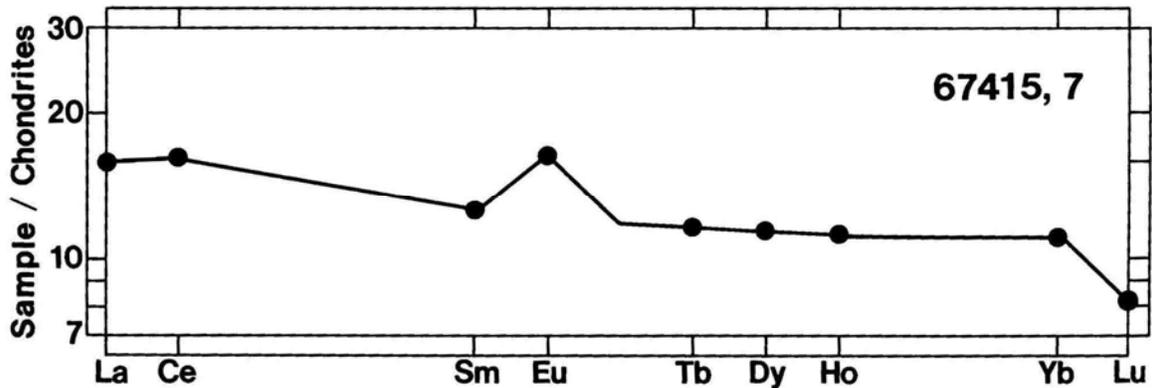


FIGURE 3. Rare earths, from Wanke et al. (1976).