

76536**Crushed Troctolite****14.26 g, 3.5 x 1.9 x 1 cm****INTRODUCTION**

Lunar sample 76536 is a pristine troctolite that has been shocked and crushed-without contamination by other lunar or meteorite materials. Sample 76536 was collected as a rake sample from the soil at Station 6 (Phinney et al., 1974).

PETROGRAPHY

Sample 76535 is white or very light grey with a hackly surface. It has a granulated texture and is relatively coherent (Fig. 1). There are occasional large grains of plagioclase (2 mm) with striations (Fig. 2).

The mineral assemblage in 76536 has been crushed in place. There appear to be about equal amounts of olivine and plagioclase (Fig. 3).

MINERAL CHEMISTRY

Precise mineral compositions for olivine and low-Ca pyroxene are given in Bersch et al. (1991). Both olivine and pyroxene seem to have a slightly lower Mg/Fe ratio in 76536 than in 76535. The composition of plagioclase has not been reported (Warren et al., 1993). Ryder and Norman (1979) observe that 76536 contains symplectite intergrowths that are similar to those reported in 76535.

WHOLE-ROCK CHEMISTRY

Simonds and Warner (1981) report electron probe analysis of fused glass bead by Roy Brown (unpublished), Ryder and Norman (1979) report a REE analysis by Blanchard

(unpublished), and Warren and Wasson (1979) have determined trace elements by RNAA for 76536 (Table 1). The unpublished analysis by Blanchard indicates a higher trace element content than the analysis by Warren and Wasson and is not plotted in Fig. 4. The analysis by Warren and Wasson is in complete agreement with that of 76535, which is plotted as a reference. Ebihara et al. (1992) have reported the trace siderophile and volatile element content of 76536 (Table 2).



Figure 1: Photograph of 76536, 1. Scale bar is marked in mm. S73-19600.



Figure 2: Photograph of 76536,4. Scale bar is marked in mm. S73-19604.

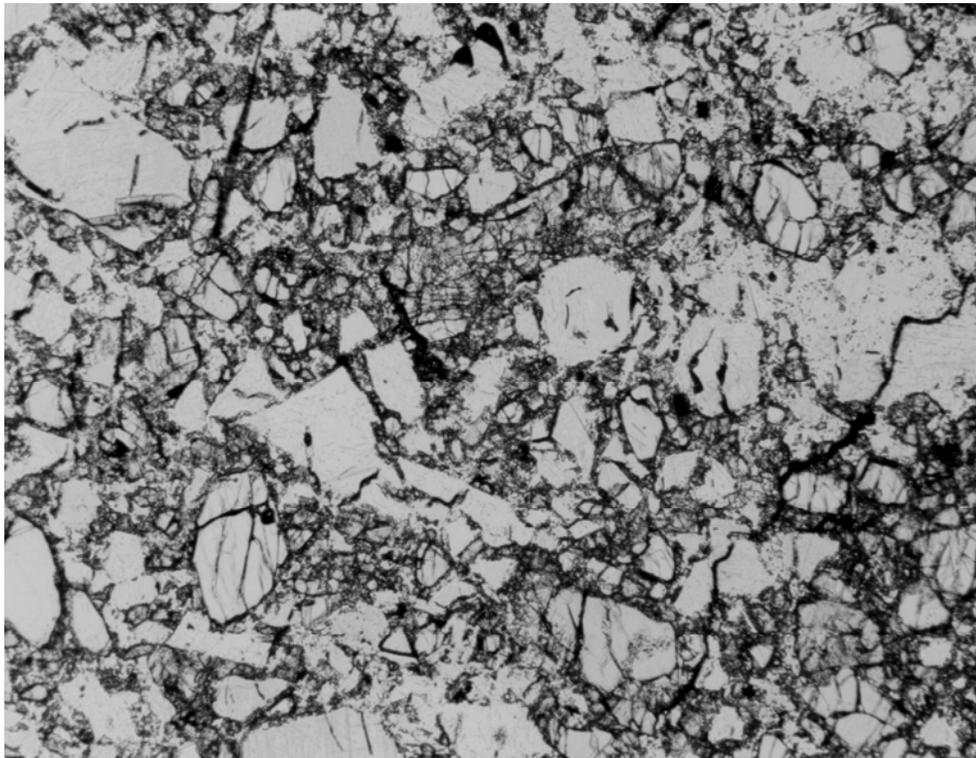


Figure 3: Photomicrograph of thin section 76536,15. There are about equal amounts of olivine and plagioclase. Both minerals are crushed in place. Field of view is 2 x 3 mm.

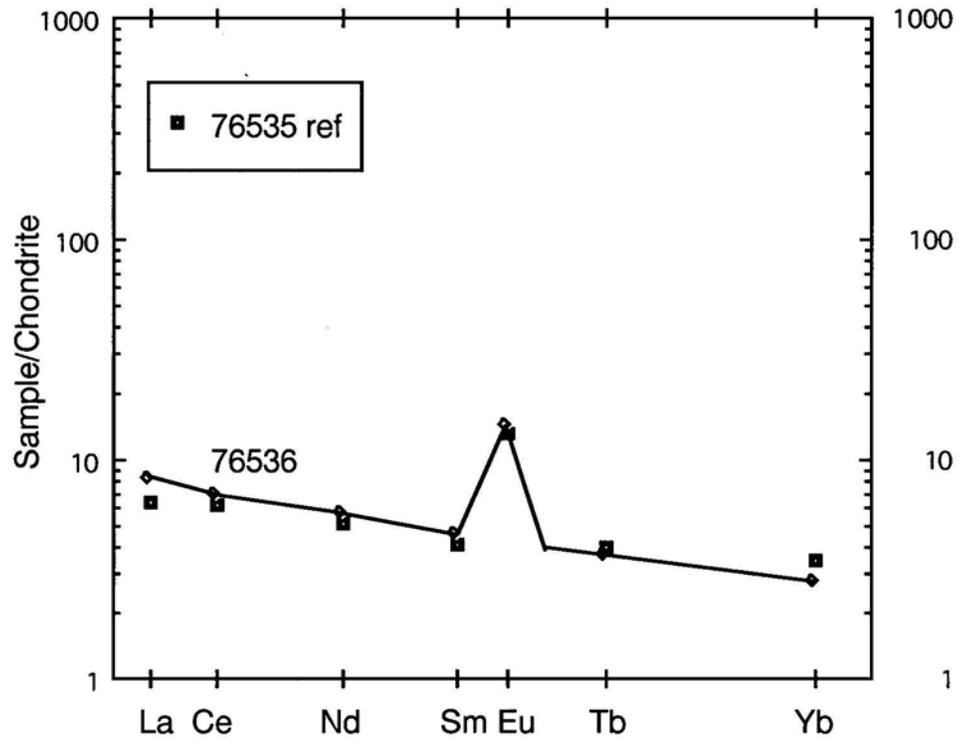


Figure 4: Normalized rare earth element diagram for 76536. Reference data from troctolite 76535 are plotted as squares on the diagram. Data from Warren and Wasson (1979).

Table 1: Whole-rock chemistry of 76536.

a) Simonds and Warner (1981 - unpublished emp analyses by Roy Brown); b) Ryder and Norman (1979 - unpublished REE analysis by Blanchard); c) Warren and Wasson (1979)

*(Cautionary note: These preliminary analyses were made by fused bead electron microprobe analyses, R. Brown, analyst.)

Split Technique	,9 (a, b) EMP, INAA	,16 (c) INAA
SiO ₂ (wt%)	43.54*	42.4
TiO ₂	0.07*	–
Al ₂ O ₃	21.01*	26.2
Cr ₂ O ₃	0.12*	0.08
FeO	4.94*	3.6
MnO		0.04
MgO	17.42*	13.6
CaO	11.76*	13.3
Na ₂ O	0.28*	0.29
K ₂ O	0.06*	0.04
Nb (ppm)		
Hf	1.04	0.36
Ta	0.13	0.031
U		–
Th	4.2	0.20
Zn	12	1.13
Ni	32	5
Co	25.6	20
Sc	2.42	1.8
Ba		49
La	11.0	1.9
Ce	31.9	4.1
Nd		2.5
Sm	6.03	0.65
Eu	0.745	0.78
Tb	1.13	0.13
Yb	2.67	0.44
Lu	0.341	0.062
Ge (ppb)		2.4
Ir		0.051
Au		0.02

Table 2: Trace element data for 76536. Concentrations in ppb.

From Ebihara et al. (1992).

	Sample 76536,19
Ir	0.026
Os	<0.19
Re	<0.004
Au	0.011
Pd	<1.9
Ni (ppm)	55.3
Sb	0.37
Ge	2.73
Se	4.56
Te	<0.97
Ag	0.179
Br	
In	1.41
Bi	0.6
Zn (ppm)	0.42
Cd	<3.3
Tl	0.005
Rb (ppm)	0.724
Cs	456
U	52