

# 15634 and 15639

## Coarse Olivine-normative Basalt

5.2 and 7 grams



Figure 1; Photo of 15634. Scale in cm. S71-49287.



Figure 2: Photo of 15639. Cube is 1 cm. S71-49551.

### Introduction

Lunar samples 15634 and 15639 are rake samples from the edge of Hadley Rille (see section on 15614). They are more coarse grained than others, and apparently have abnormally low trace element contents. They have not been adequately described.

### Petrography

Ryder (1985) provides the only description these particles. Although he calls them “coarse grained”, the grain size is still less than 1 mm (figures 5 and 6).

### Chemistry

Ma et al. (1978) finds these two basalts “way low in trace elements”. But they have high Ni !

### Other Studies

Gose et al. (1972) and Pearce et al. (1973) determined the magnetic properties of these two particles. Nothing unusual.

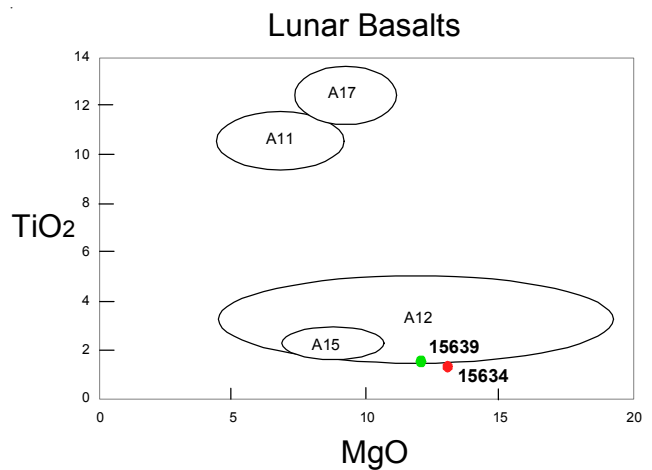


Figure 3: Chemical composition of 15634 and 15639 compared with other Apollo basalts.

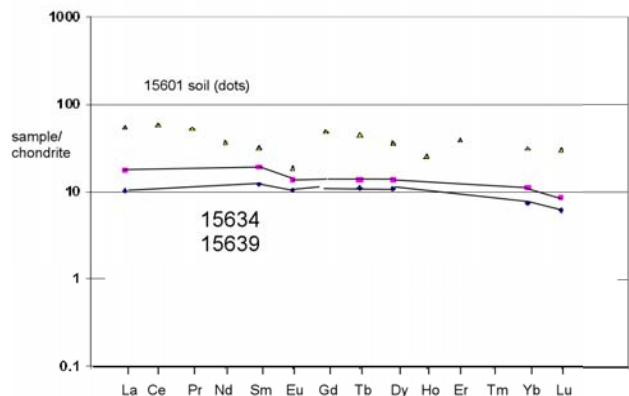


Figure 4: Normalized rare-earth-element diagram for 15634 and 15639.

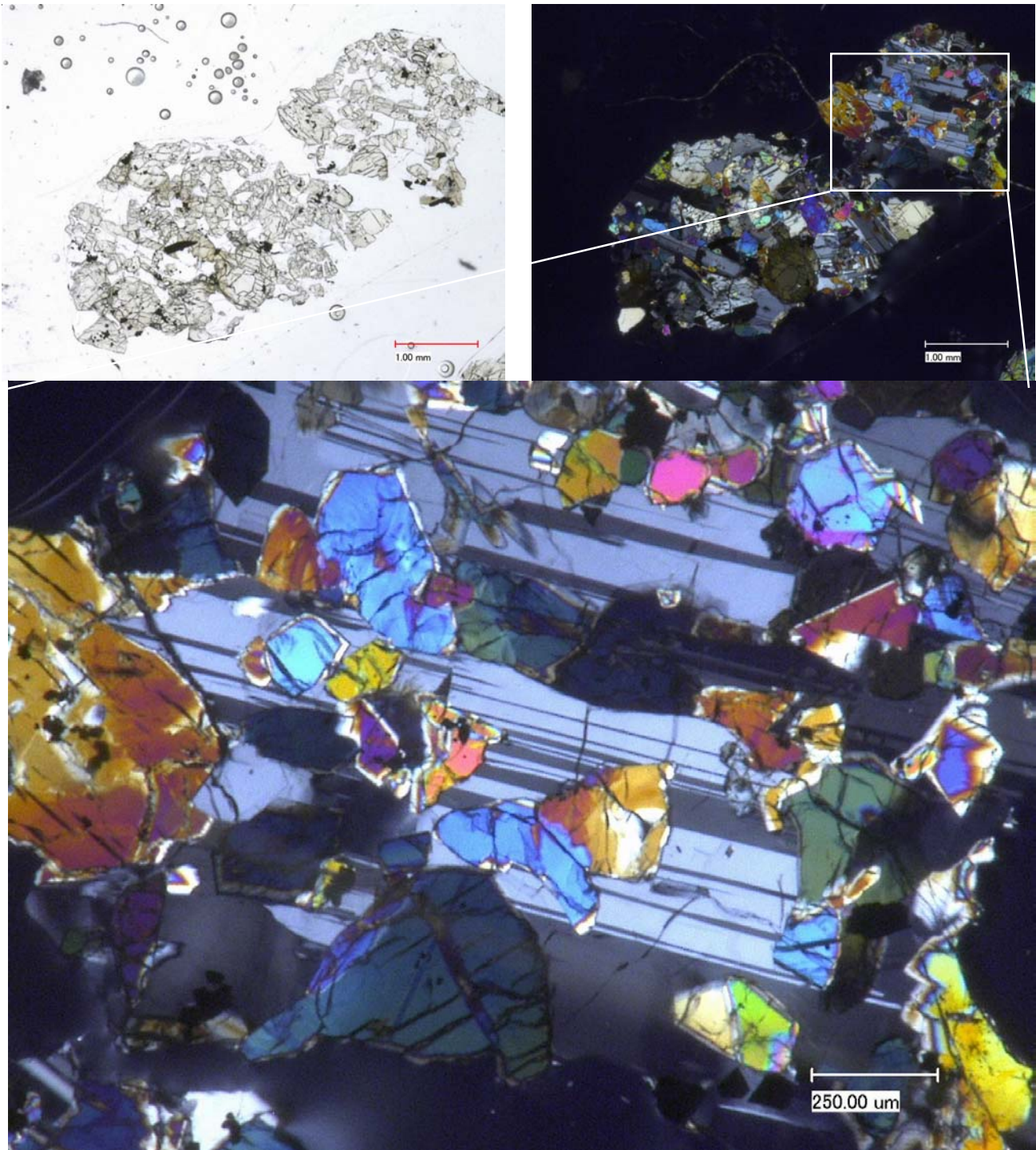
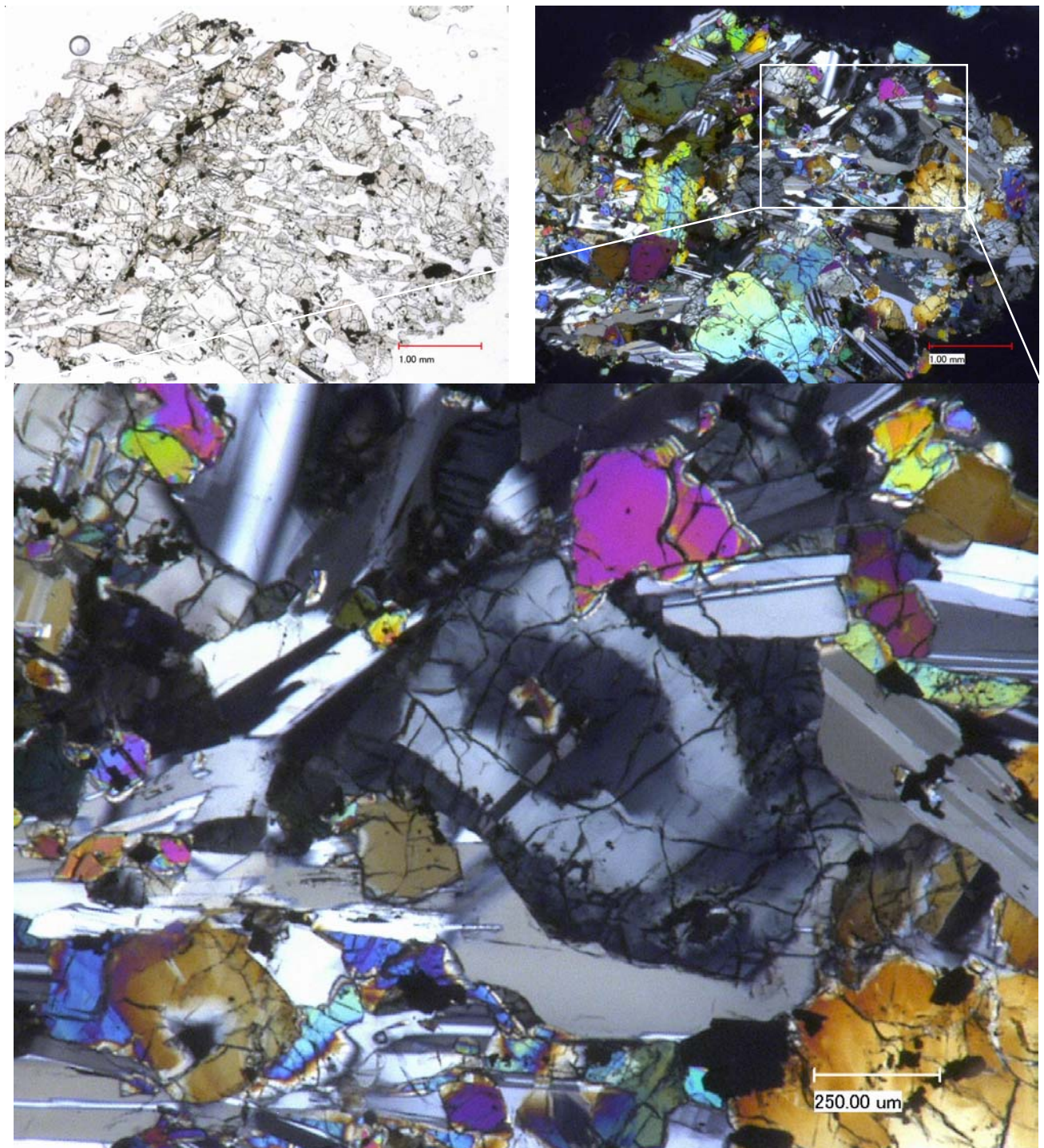


Figure 5: Photomicrographs of thin section 15634,4 by C Meyer at 50 and 150x. Pretty, huh?





*Figure 6: Photomicrographs of thin section 15639,4 by C Meyer at 50 and 150x. Note that I caught this pyroxene "end on"!*

**Table 1. Chemical composition of 15634 and 15639.**

	15634	15639	
reference	Ma78	Ma78	
weight			
SiO <sub>2</sub> %			
TiO <sub>2</sub>	1.5	(a) 1.8	(a)
Al <sub>2</sub> O <sub>3</sub>	9.8	(a) 9.4	(a)
FeO	19.9	(a) 21.9	(a)
MnO	0.25	(a) 0.26	(a)
MgO	13	(a) 12	(a)
CaO	9.1	(a) 8.9	(a)
Na <sub>2</sub> O	0.27	(a) 0.28	(a)
K <sub>2</sub> O	0.02	(a) 0.038	(a)
P <sub>2</sub> O <sub>5</sub>			
S %			
sum			
Sc ppm	38	(a) 39	(a)
V	223	(a) 194	(a)
Cr	4358	(a) 4447	(a)
Co	55	(a) 54	(a)
Ni	100	(a) 75	(a)
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb			
Sr			
Y			
Zr			
Nb			
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba	20	(a) 60	(a)
La	2.4	(a) 4.1	(a)
Ce			
Pr			
Nd			
Sm	1.8	(a) 2.8	(a)
Eu	0.58	(a) 0.76	(a)
Gd			
Tb	0.4	(a) 0.5	(a)
Dy	2.6	(a) 3.3	(a)
Ho			
Er			
Tm			
Yb	1.2	(a) 1.8	(a)
Lu	0.15	(a) 0.21	(a)
Hf	1.1	(a) 2.1	(a)
Ta	0.15	(a) 0.35	(a)
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm			
U ppm			
technique:	(a) INAA		

**References for 15634.**

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