

**71175**  
Ilmenite Basalt  
207.8 grams

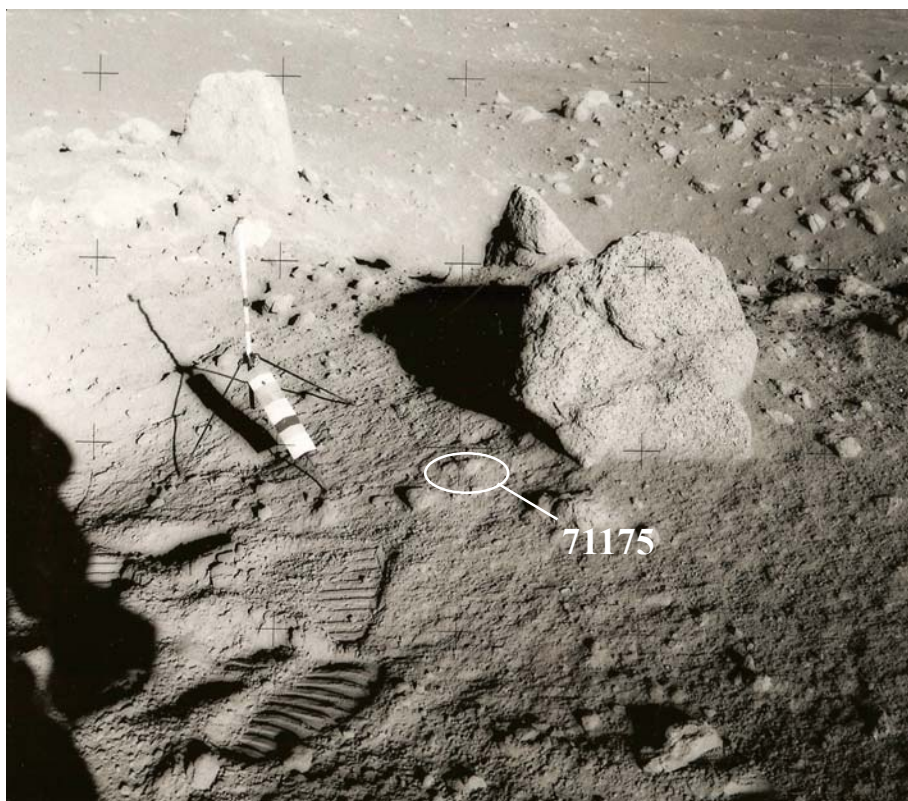


Figure 1: Astronaut photo of boulders sampled at station 1, Apollo 17. AS-136-20741.

**Introduction**

71175 is an equigranular basalt found partially buried near the 71135 – 71155 boulder (figure 1). It has not been adequately studied and has not been dated – although all Apollo 17 basalts are 3.72 b.y. old.

**Petrography**

71175 has a subophitic texture with long crystals of plagioclase (> 2mm) intergrown with pyroxene (figure 6). Abundant equigranular ilmenite is sprinkled throughout. Large (up to 0.8 mm) regions of silica are reported (Neal and Taylor 1993).

Brown et al. (1975) reported a mineral mode and Roedder and Weiblen (1975) studied K-rich silicate inclusions in ilmenite. However, pyroxene composition has not been reported.

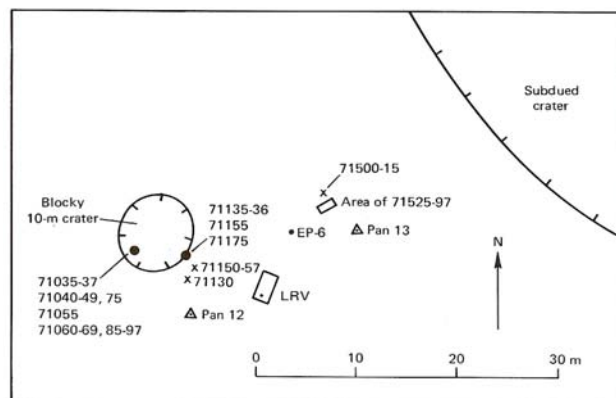


Figure 2: Location map for station 1, Apollo 17.



Figure 3: Photo of top surface of 71175. Cube is 1 cm. S73-15728.

Green et al. (1975) used the composition of 71175 to determine the phase diagram for high-Ti basalt.

### **Chemistry**

The chemical composition of 71175 has been determined by Warner et al. (1975), Rhodes et al. (1976) and Eldridge et al. (1974). Gibson et al. (1975) reported 1685 ppm S.

### **Radiogenic age dating**

The age of 71175 has not been determined, but Nyquist et al. (1976) determined the Rb, Sr and  $\text{Sr}^{87/86}$  ratio for the “whole rock”.

### **Cosmogenic isotopes and exposure ages**

O’Kelley et al. (1974) determined the cosmic-ray-induced activity of  $^{22}\text{Na} = 68$  dpm/kg.,  $^{26}\text{Al} = 60$  dpm/kg.,  $^{46}\text{Sc} = 43$  dpm/kg.,  $^{54}\text{Mn} = 125$  dpm/kg and  $^{56}\text{Co} = 120$  dpm/kg.

### **Processing**

There are 5 thin sections.

### **Mineralogical Mode**

Olivine	1.7
Pyroxene	50.2
Plagioclase	27.1
Opagues	19.4
Silica	1.6
Meostasis	



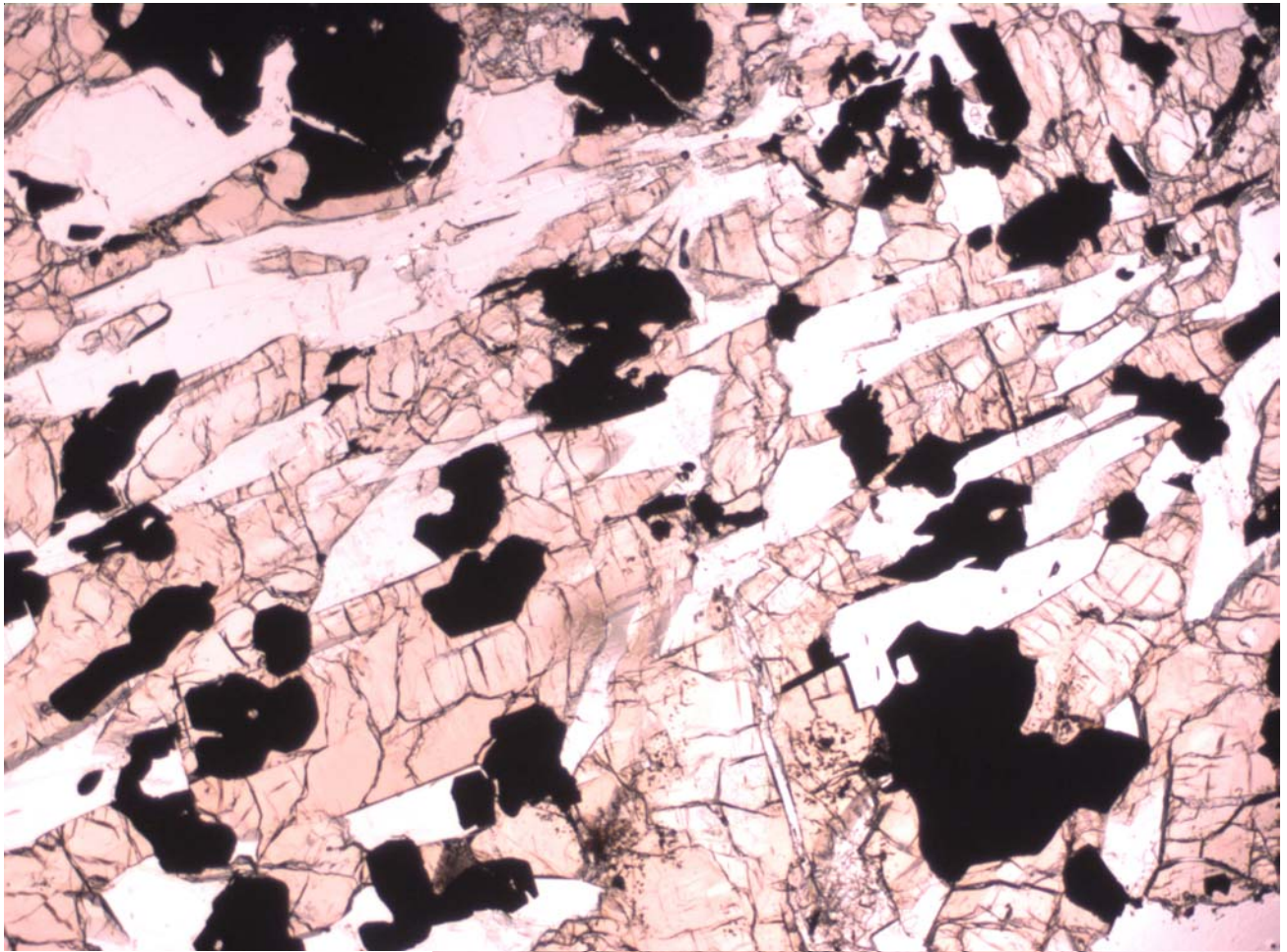
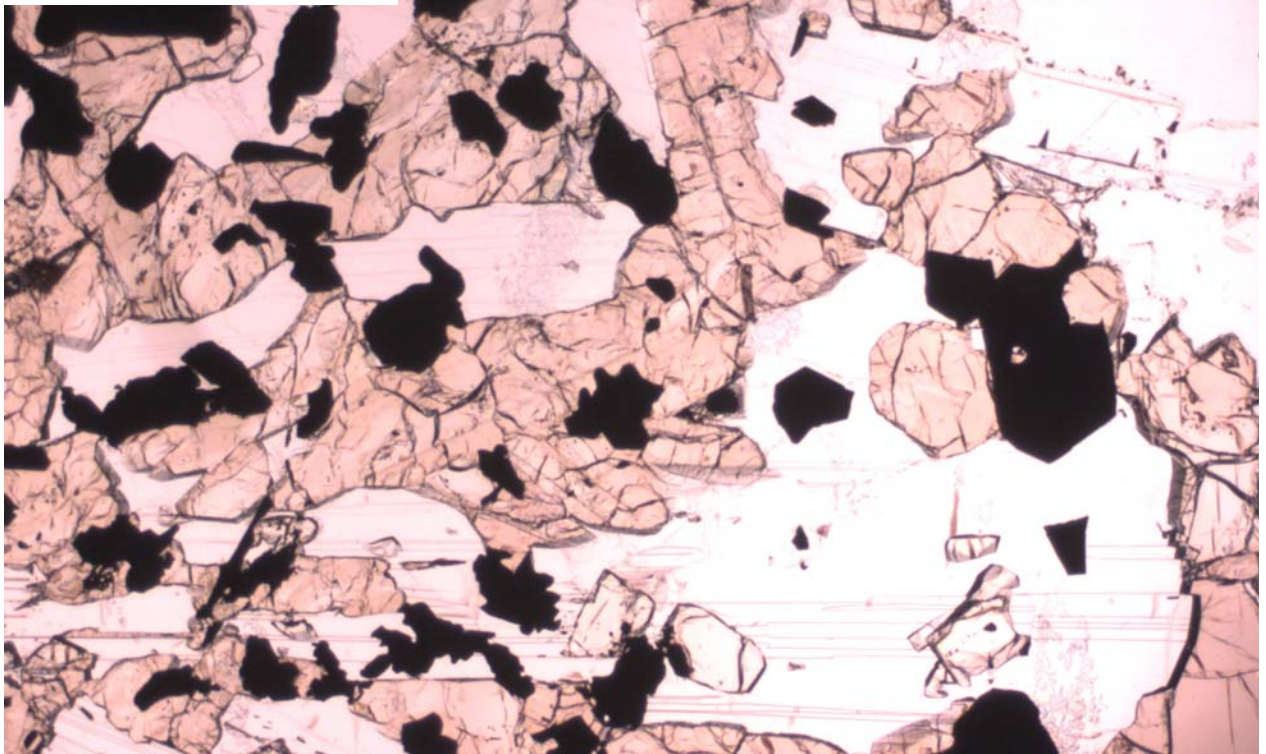
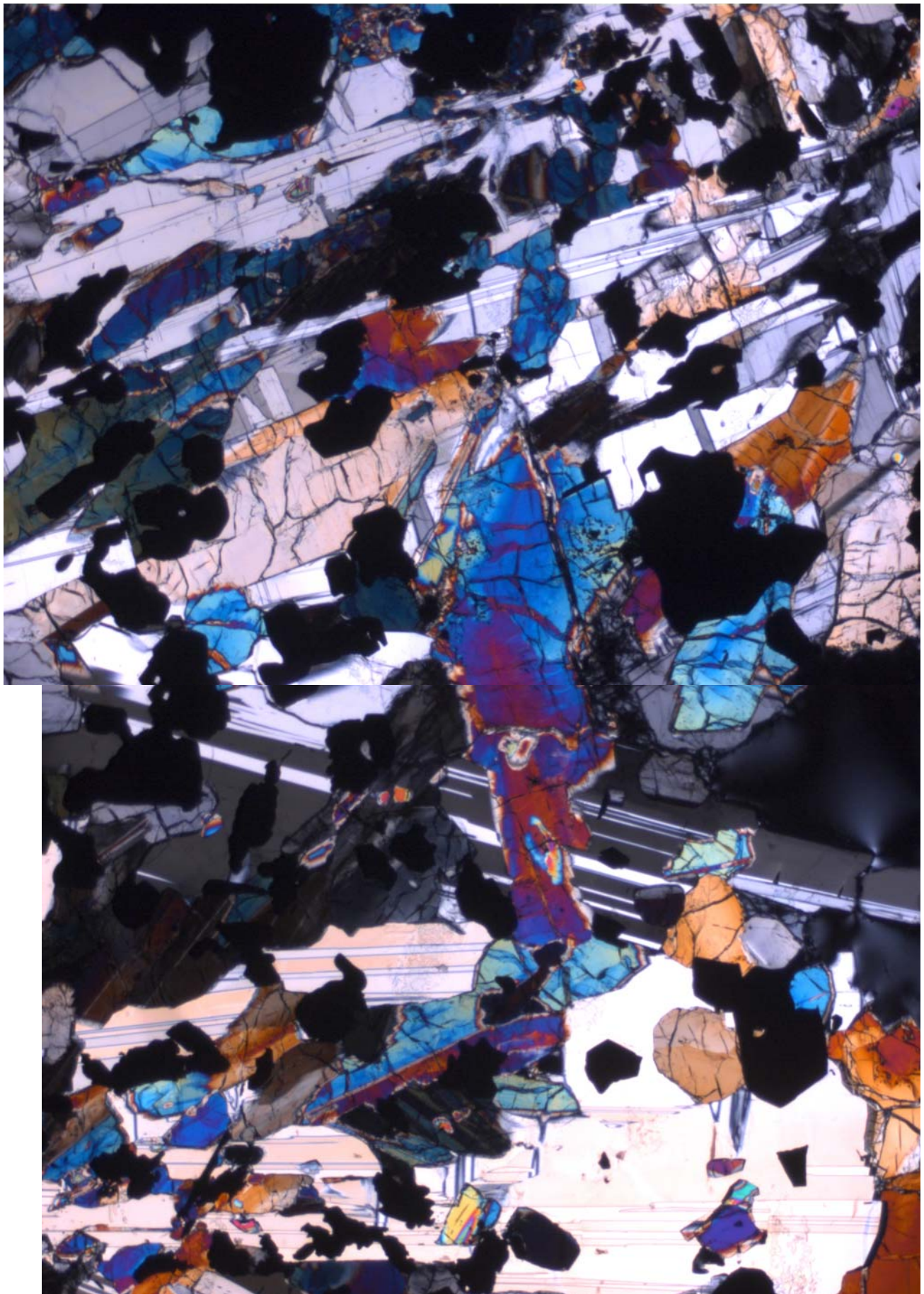


Figure 4: *Photomicrographs of thin section 71175,36. 2.8 mm across*







**Table 1. Chemical composition of 71175.**

reference weight	Rhodes76	Eldridge74	Warner75
SiO <sub>2</sub> %	37.93 (a)		
TiO <sub>2</sub>	13.08 (a)		12.7 (b)
Al <sub>2</sub> O <sub>3</sub>	8.47 (a)		9.1 (b)
FeO	19.37 (a)		20.5 (b)
MnO	0.28 (a)		0.238 (b)
MgO	9.63 (a)		10.1 (b)
CaO	9.79 (a)		9.2 (b)
Na <sub>2</sub> O	0.38 (a)		0.387 (b)
K <sub>2</sub> O	0.04 (a)	0.067	0.059 (b)
P <sub>2</sub> O <sub>5</sub>	0.04 (a)		
S %	0.16 (a)		
sum			
Sc ppm	77 (b)		78 (b)
V			122 (b)
Cr	3695 (a)		3462 (b)
Co	17.6 (b)		22 (b)
Ni			
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb	0.59 (c)		
Sr	184 (c)		
Y			
Zr			
Nb			
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba	78.5 (c)		
La	6.43 (c)		5 (b)
Ce	22.3 (c)		
Pr			
Nd	24.7 (c)		
Sm	10.3 (c)		8 (b)
Eu	2.08 (c)		1.89 (b)
Gd	15.7 (c)		
Tb			
Dy	18 (c)		14 (b)
Ho			
Er	11 (c)		
Tm			
Yb	9.69 (c)		8.3 (b)
Lu	1.52 (c)		1.2 (b)
Hf	8.9 (b)		
Ta			
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm		0.39 (d)	
U ppm		0.11 (d)	

technique: (a) XRF, (b) INAA, (c) IDMS, (d) radiation count.

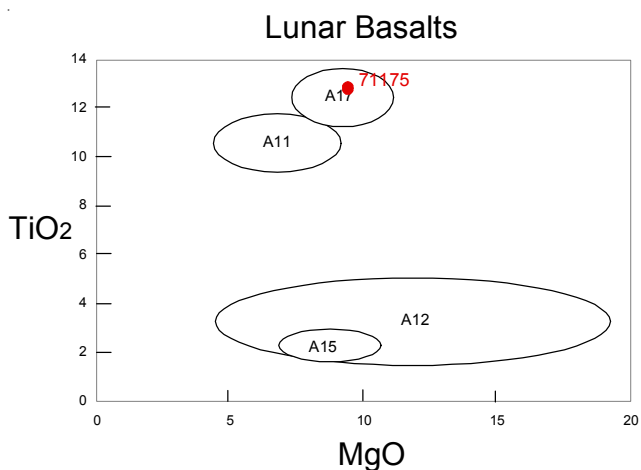


Figure 5: Composition of 71175 compared with other Apollo basalts.

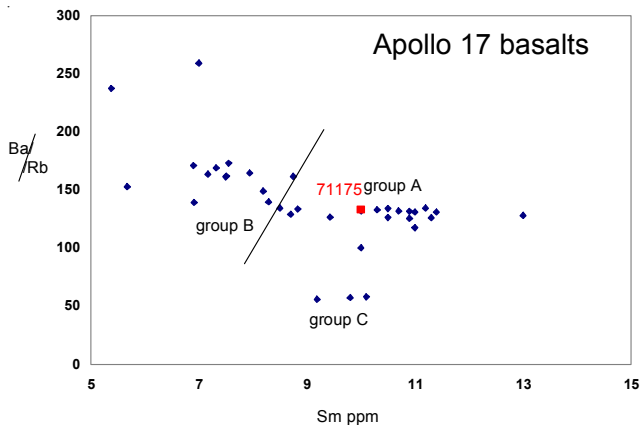


Figure 6: 71175 is a type A basalt (based on trace element analysis).

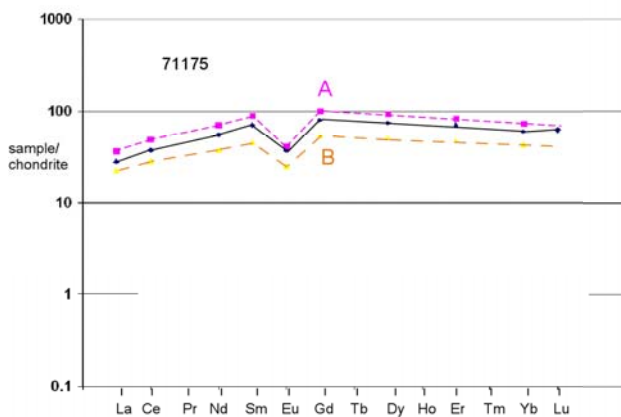
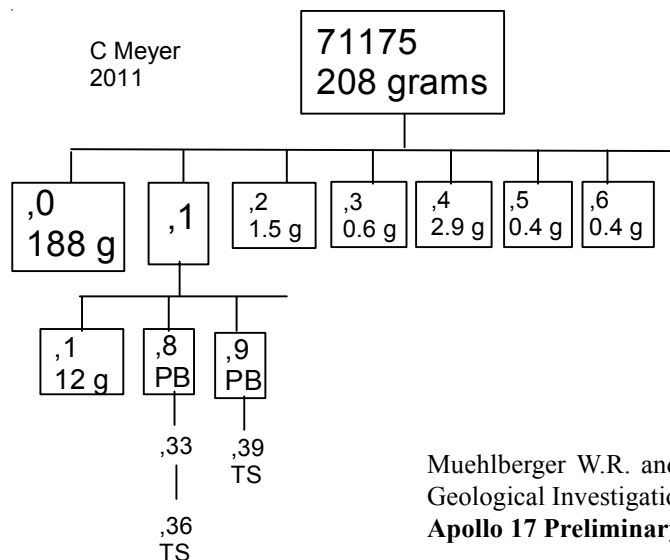


Figure 7: Normalized rare-earth-element diagram for 71175 and type A and B basalts.



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