

**71155**  
Ilmenite Basalt  
26.15 grams

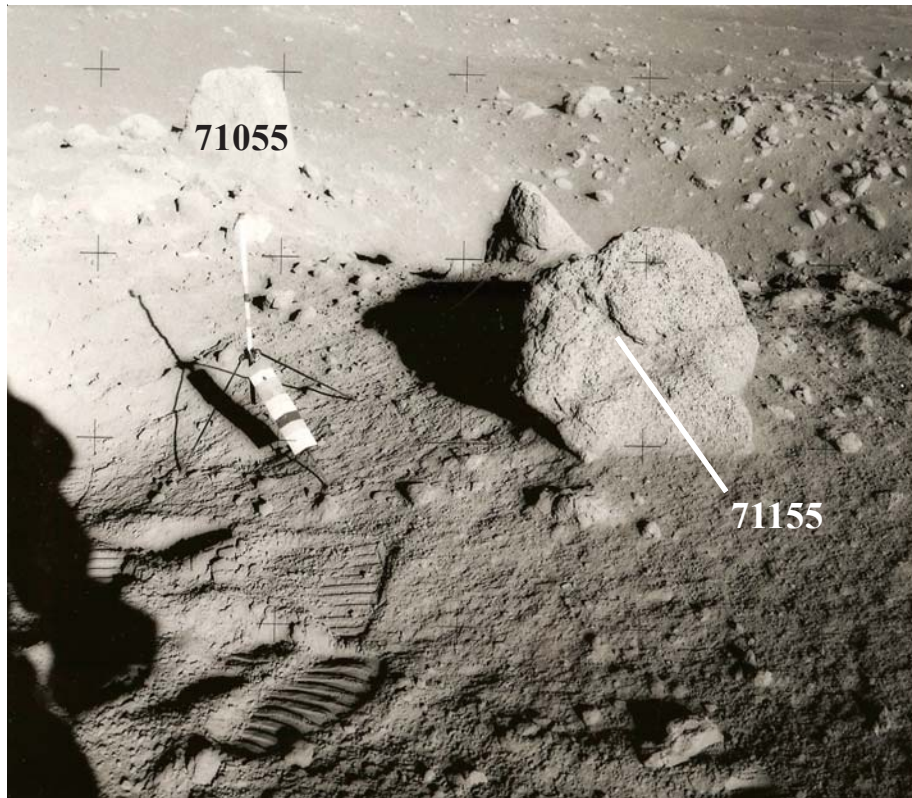


Figure 1: Astronaut photo of boulders sampled at station 1, Apollo 17. AS-136-20741.

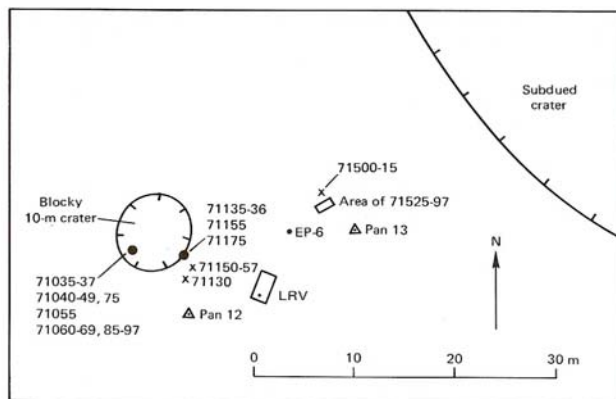


Figure 2: Map of station 1, Apollo 17 - south of LM.

**Introduction**

The astronauts chipped this fragment off of a 0.5 meter boulder at station 1 (figures 1 and 2). It has a texture quite different from 71135 and it is also more vesicular (figure 3). One side is freshly broken and the other shows the usual signs of space exposure (micrometeorites).

**Petrography**

71155 has a granular texture with medium grain size, contains olivine, and has less ilmenite than 71135. Brown et al. (1975) reported the mineral mode for 71155, but composition diagrams for olivine and pyroxene have not been reported. Neal and Taylor (1993) briefly described the samples.

ElGoresy and Ramdohr (1977) studied the Fe,Ti,Cr-spinel (figure 4). Brown et al. (1975) reported a Zr-rich mineral in 71155 (table 2).



Figure 3: Photo of freshly broken side of 71155. S73-15860. Cube is 1 cm.

### Chemistry

Keith et al. (1974), Fruchter et al. (1975) and Warner et al. (1979) determined the chemical composition (figures 6 and 7).

### **Mineralogical Mode**

Olivine	6.1
Pyroxene	49.3
Plagioclase	23.3
Opaques	18.4
Silica	2.9
Meostasis	

### Radiogenic age dating

None

### Cosmogenic isotopes and exposure ages

Keith et al. (1974) determined the cosmic-ray-induced activity of  $^{22}\text{Na} = 119$  dpm/kg,  $^{26}\text{Al} = 105$  dpm/kg,  $^{46}\text{Sc} = 81$  dpm/kg,  $^{54}\text{Mn} = 160$  dpm/kg and  $^{56}\text{Co} = 310$  dpm/kg. while Rancitelli et al. (1974) also determined the cosmic ray induced activity of  $^{22}\text{Na} = 112$  dpm/kg,  $^{26}\text{Al} = 105$  dpm/kg,  $^{46}\text{Sc} = 80$  dpm/kg,  $^{54}\text{Mn} = 227$  dpm/kg and  $^{56}\text{Co} = 310$  dpm/kg.

### Processing

There are 4 thin sections.

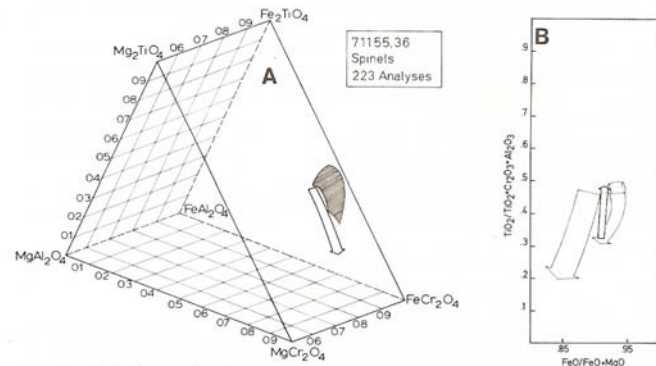
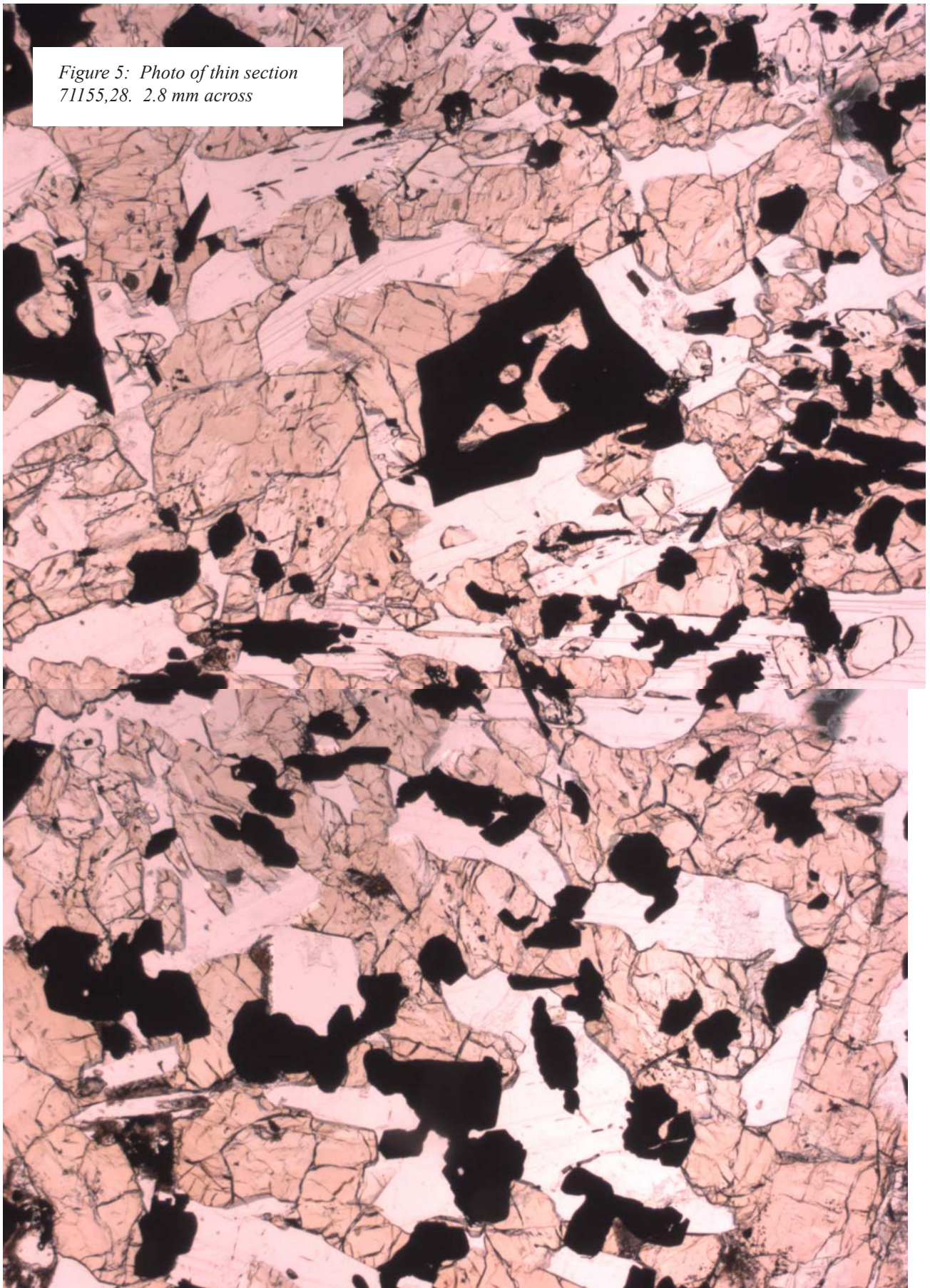


Figure 4: The only mineral study for 71155 (chrome spinel).

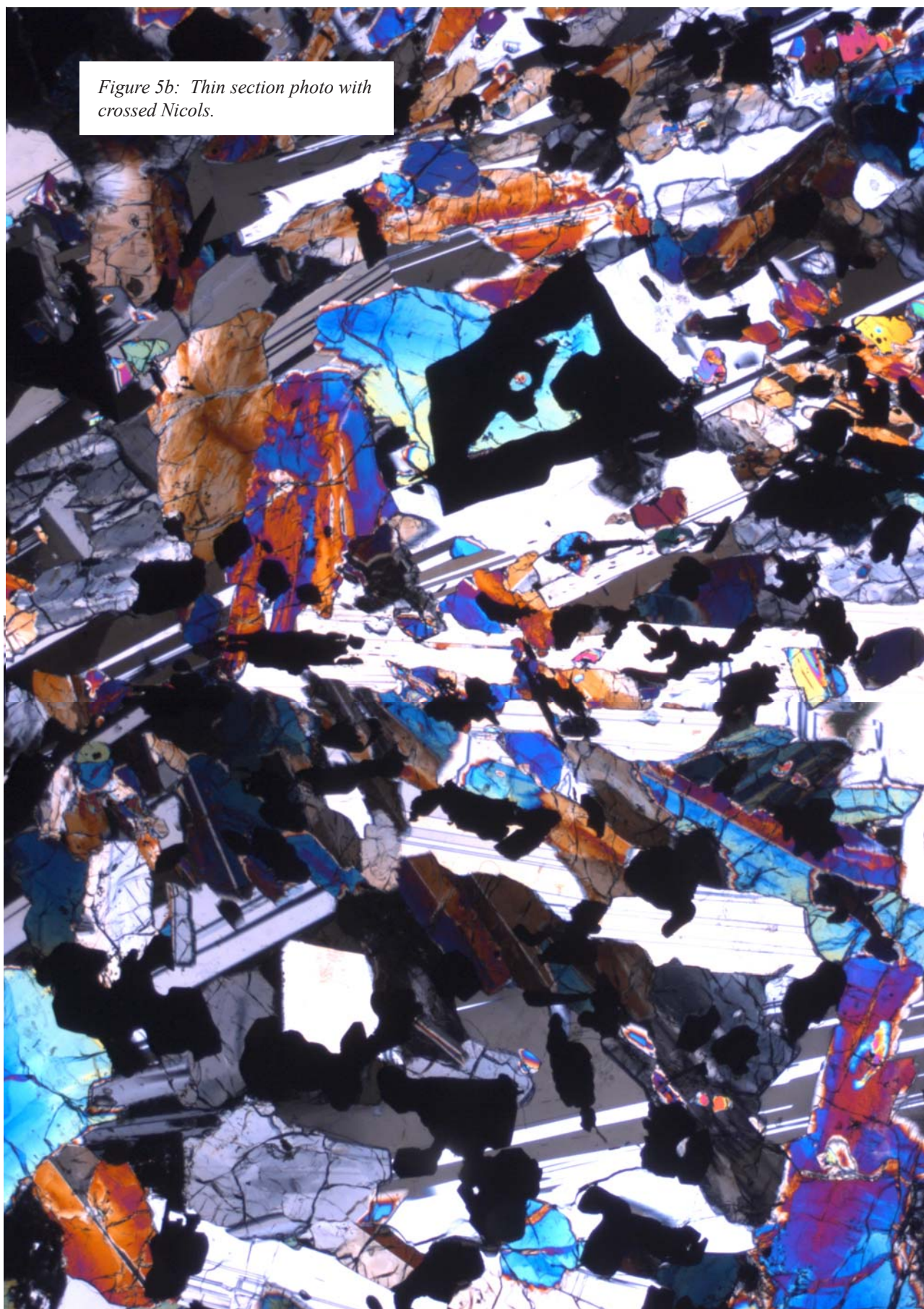


*Figure 5: Photo of thin section  
71155,28. 2.8 mm across*





*Figure 5b: Thin section photo with  
crossed Nicols.*



**Table 1. Chemical composition of 71155.**

reference weight	Warner79	Keith74	Fruchter75	Rancitelli74	
SiO <sub>2</sub> %					
TiO <sub>2</sub>	10.1	(a)			
Al <sub>2</sub> O <sub>3</sub>	9.2	(a)			
FeO	19.1	(a)			
MnO	0.25	(a)			
MgO	8	(a)			
CaO	10.8	(a)			
Na <sub>2</sub> O	0.353	(a)			
K <sub>2</sub> O	0.048	(a)	0.048	(b)	
P <sub>2</sub> O <sub>5</sub>			0.054	(b)	
S %					
sum					
Sc ppm	81	(a)			
V	118	(a)			
Cr	3339	(a)			
Co	23	(a)			
Ni					
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					
La	5.6	(a)			
Ce	21	(a)			
Pr					
Nd	23	(a)			
Sm	8.1	(a)			
Eu	1.49	(a)			
Gd					
Tb	1.8	(a)			
Dy	12	(a)			
Ho					
Er					
Tm					
Yb	6.9	(a)			
Lu	0.97	(a)			
Hf	6.3	(a)			
Ta	1.3	(a)			
W ppb					
Re ppb					
Os ppb					
Ir ppb					
Pt ppb					
Au ppb					
Th ppm		0.31	(b)	0.29	(b)
U ppm		0.118	(b)	0.13	(b)

technique: (a) INAA, (b) radiation count.

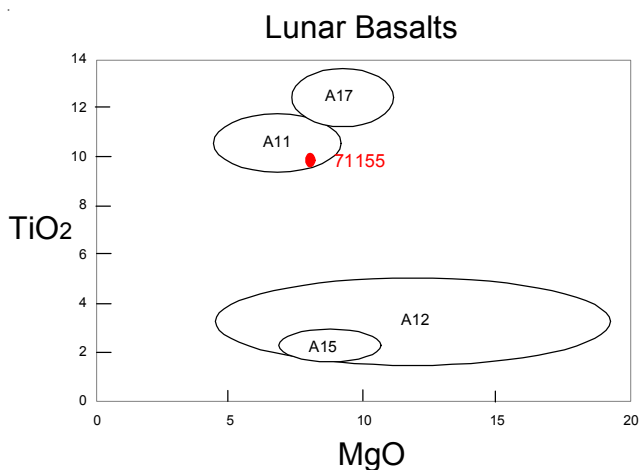


Figure 6: Composition of 71155 compared with other Apollo basalts.

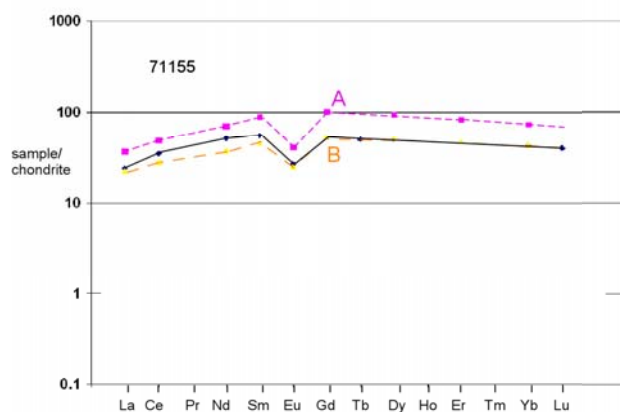
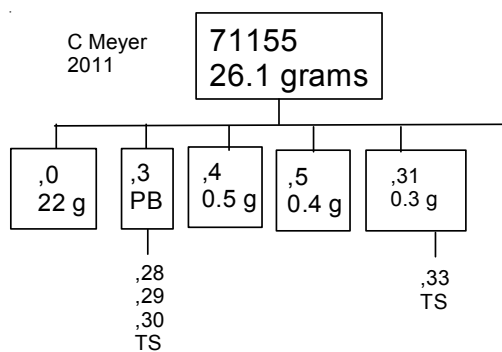


Figure 7: Normalized rare-earth-element diagram for 71155 and type A and B basalts.



**Table 2: Zr-rich mineral 71155**

(Brown et al. 1975)

TiO <sub>2</sub>	5.86
FeO	2.78
MgO	0.12
CaO	0.79
ZrO <sub>2</sub>	85.1
Y <sub>2</sub> O <sub>3</sub>	1.74
NbO <sub>5</sub>	0.2
HfO <sub>2</sub>	0.81

## References for 71155

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