

71155
Ilmenite Basalt
26.15 grams

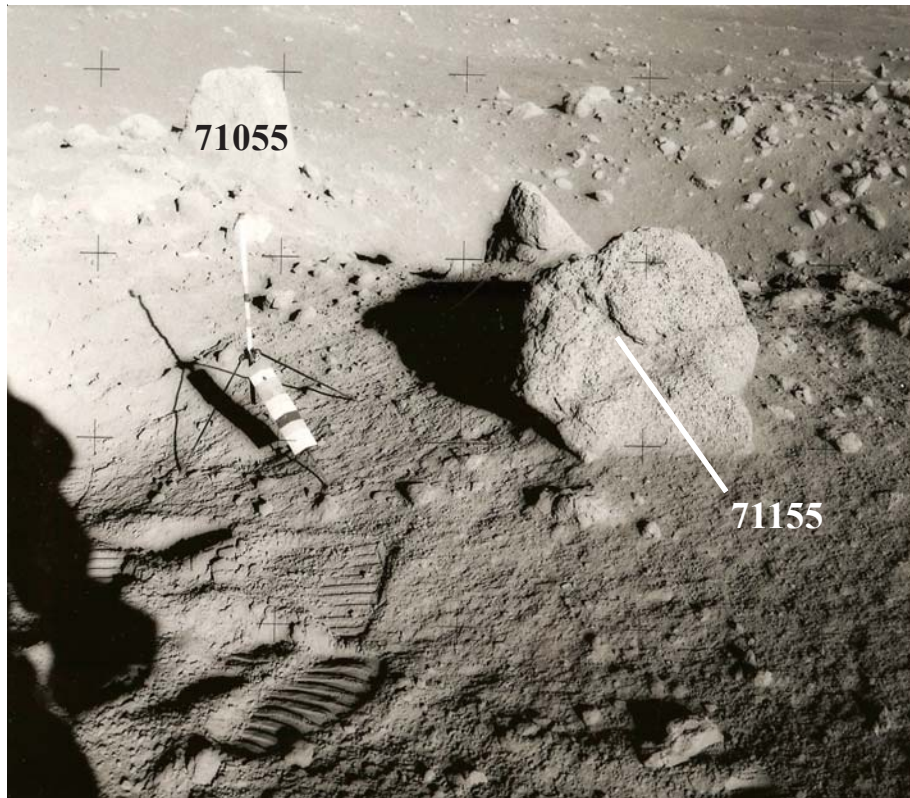


Figure 1: Astronaut photo of boulders sampled at station 1, Apollo 17. AS-136-20741.

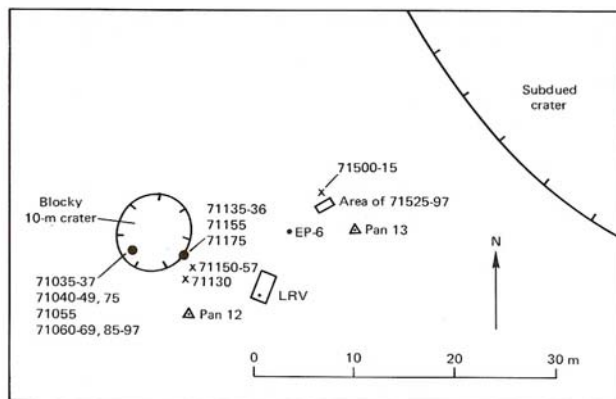


Figure 2: Map of station 1, Apollo 17 - south of LM.

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).

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.

Mineralogical Mode

Olivine	6.1
Pyroxene	49.3
Plagioclase	23.3
Opaques	18.4
Silica	2.9
Meostasis	

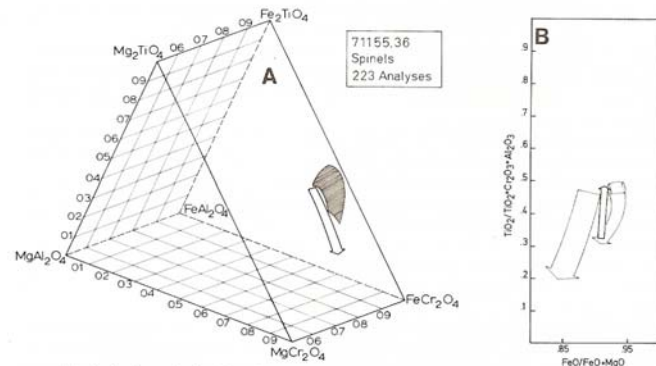


Figure 4: The only mineral study for 71155 (chrome spinel).

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

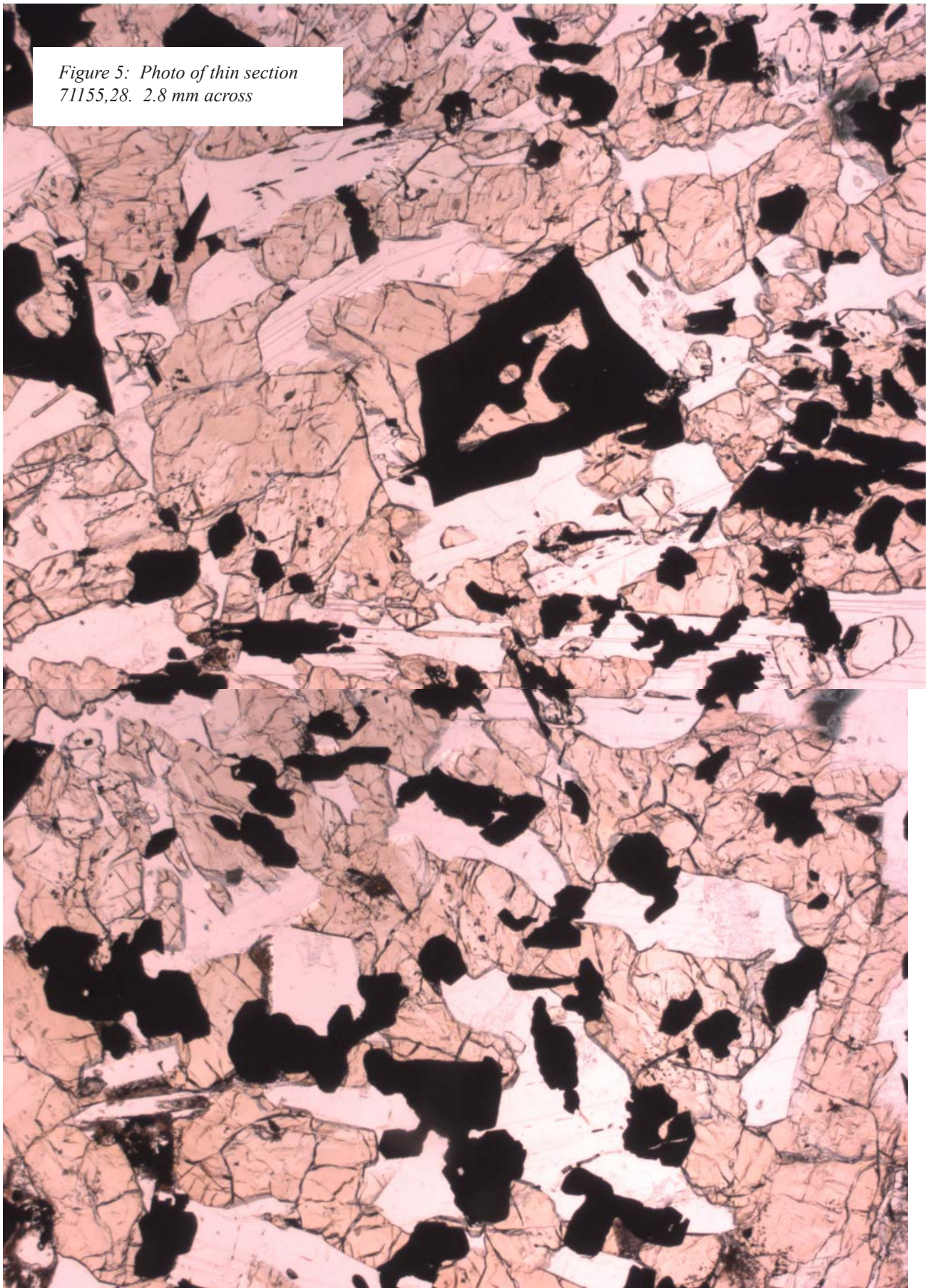


Figure 5b: Thin section photo with crossed Nicols.

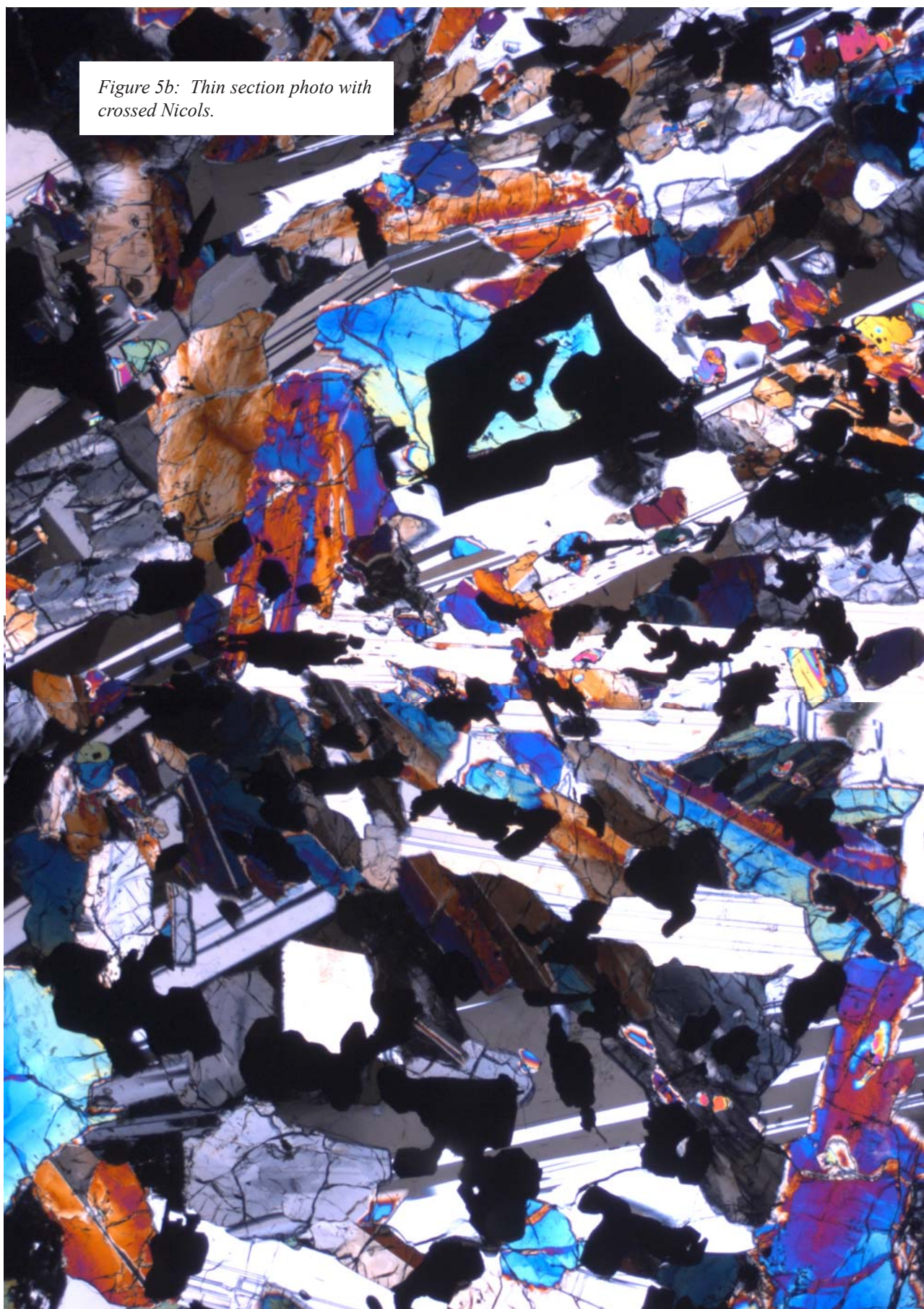


Table 1. Chemical composition of 71155.

reference weight	Warner79	Keith74	Fruchter75	Rancitelli74
SiO ₂ %				
TiO ₂	10.1	(a)		
Al ₂ O ₃	9.2	(a)		
FeO	19.1	(a)		
MnO	0.25	(a)		
MgO	8	(a)		
CaO	10.8	(a)		
Na ₂ O	0.353	(a)		
K ₂ O	0.048	(a)	0.048	(b) 0.054
P ₂ O ₅				
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) 0.29
U ppm		0.118	(b) 0.13	(b) 0.13

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

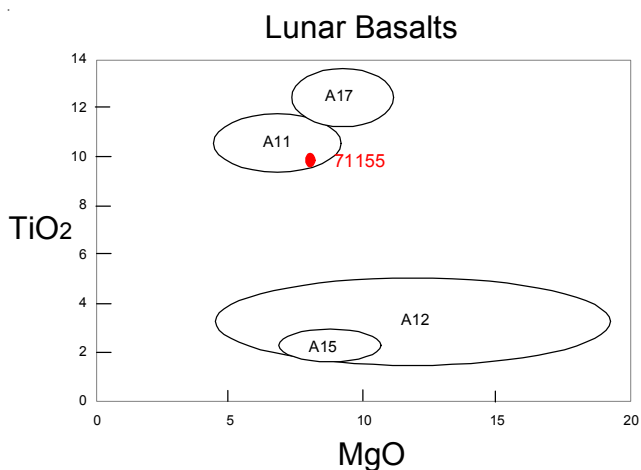


Figure 6: Composition of 71155 compared with other Apollo basalts.

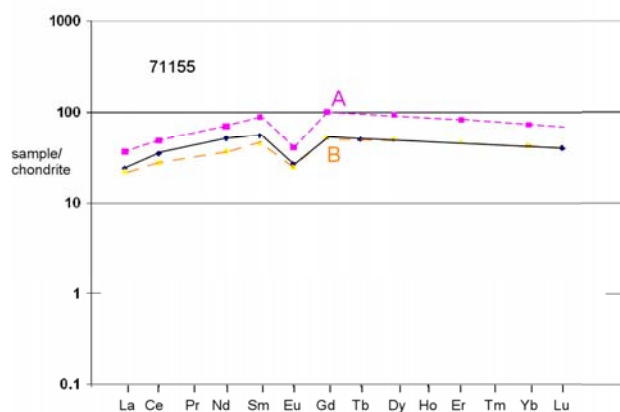


Figure 7: Normalized rare-earth-element diagram for 71155 and type A and B basalts.

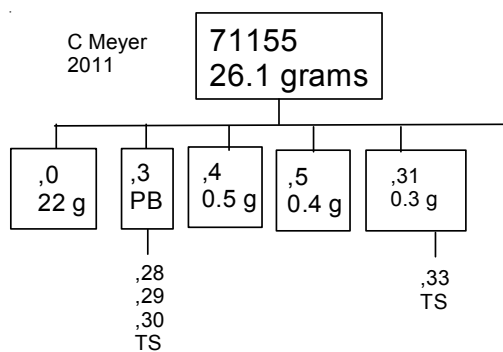


Table 2: Zr-rich mineral 71155

(Brown et al. 1975)

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

References for 71155

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