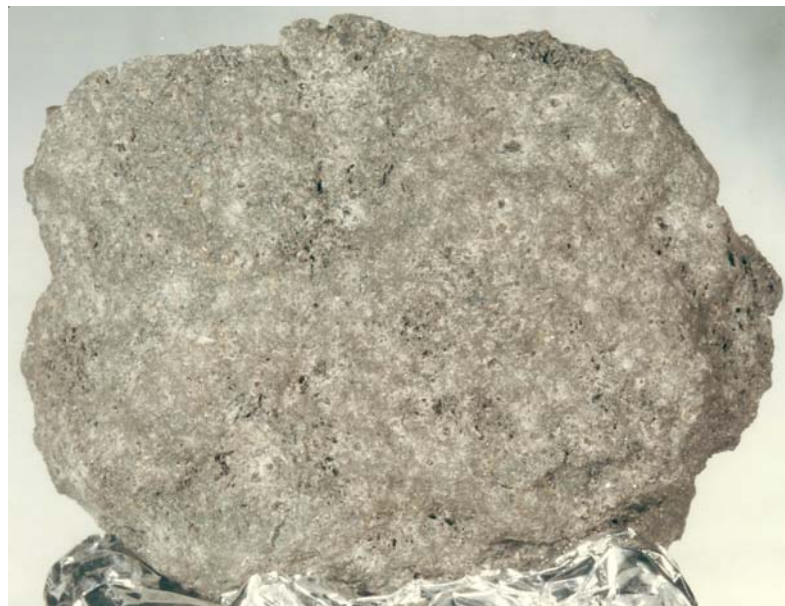


**70275**  
Ilmenite Basalt  
171.4 grams



*Figure 1: Photo of 70275 T1. Sample is 6 cm across. S73-16210.*



*Figure 2: Photo of 70275 B1. S73-16211*

**Introduction**

70275 was collected from the regolith about 300 meters east of the Apollo 17 ALSEP station. It is an olivine porphyritic basalt with olivine and ilmenite phenocrysts set in a variolitic matrix of pyroxene and plagioclase (figure 4a, b). It has a surface well-rounded on all sides by micrometeorite erosion (figures 1 and 2).

**Mineralogical Mode**

Olivine	10.4
Pyroxene	45
Plagioclase	17.2
Opaques	25.7
Silica	1.7
Meostasis	

70275 has not been dated, and has not been well-studied.

### **Petrography**

Brown et al. (1975) classified 70275 as “type 1a” basalt with early pyroxene being high Ca (figure 3). However, the texture illustrated in their photomicrograph of 70275 (figure C) is much finer grained than the photomicrograph of thin section 70275,34 (figure 4).

Bell et al. (1975) reported minute high-Cr inclusions apparently decorating dislocations in the olivine phenocrysts in 70275.

The modal percent olivine given in Neal and Taylor (1993) is wrong.

### **Chemistry**

The chemical composition has been reported by Shih et al. (1975), Rhodes et al. (1976) and Neal (2001). It is a type B2 basalt (Neal 2001)(figure 6). The REE pattern is intermediate between type A and B (figure 7).

### **Radiogenic age dating**

Apollo 17 mare basalts are generally considered  $3.72 \pm 0.04$  b.y. old (see Paces et al. 1991), but 70275 has not been dated. However, Nyquist et al. (1974) reported the Sr isotopic composition for the “whole rock”.

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

Keith et al. (1974) determined the cosmic ray induced activity of  $^{22}\text{Na} = 84$  dpm/kg.,  $^{26}\text{Al} = 91$  dpm/kg.,  $^{46}\text{Sc} = 83$  dpm/kg.,  $^{48}\text{V} = 32$  dpm/kg.,  $^{54}\text{Mn} = 180$  dpm/kg., and  $^{56}\text{Co} = 220$  dpm/kg.

Drozd et al. (1977) determined an exposure age of 109 m.y.

### **Processing**

70275 was collected with soil from the surface near the SEP station and returned in bag 23E.

70275 has been broken and not sawn (figure 8). There are 8 thin sections of 70275.

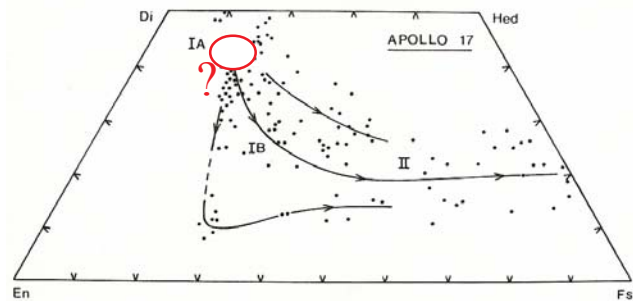
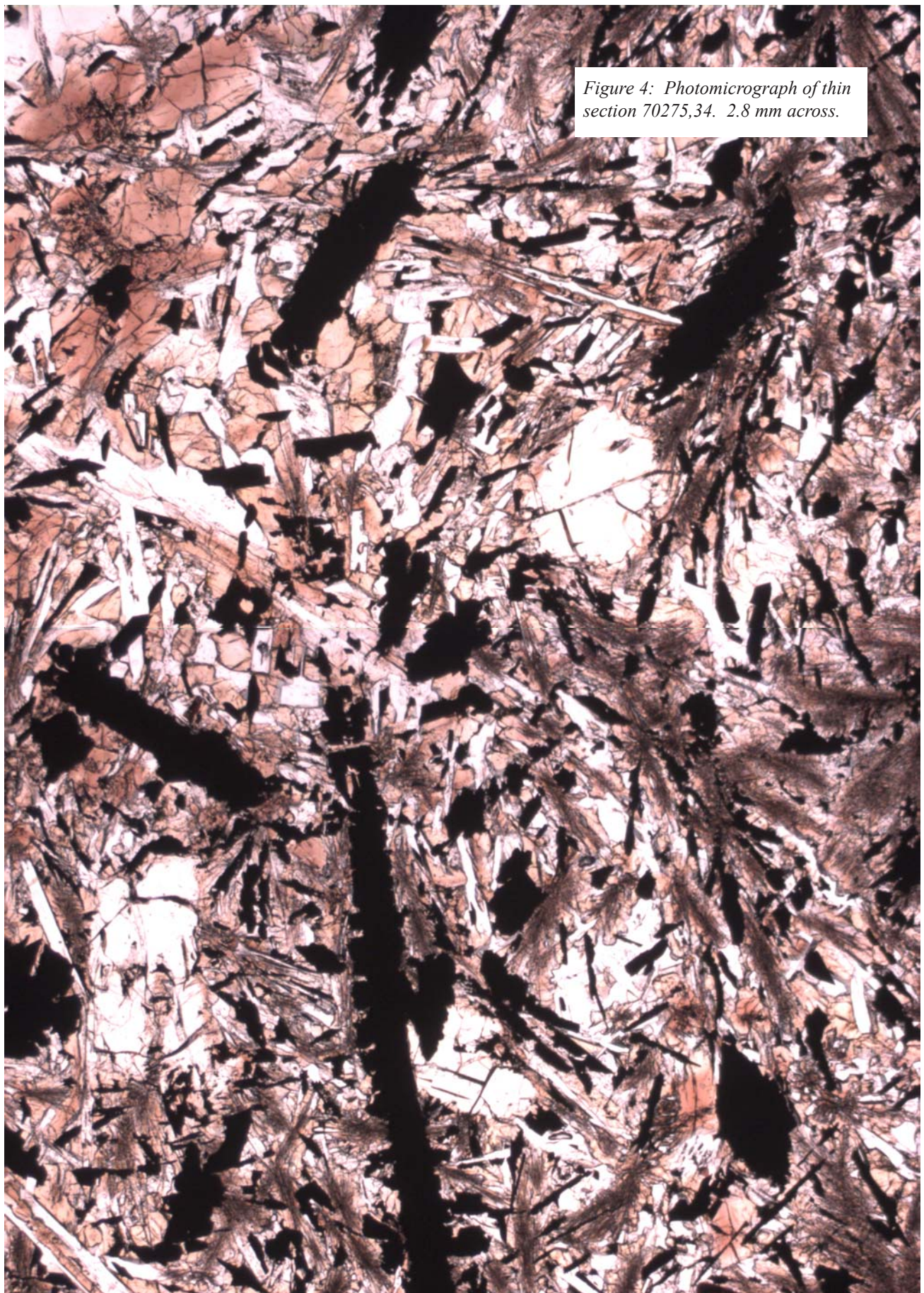
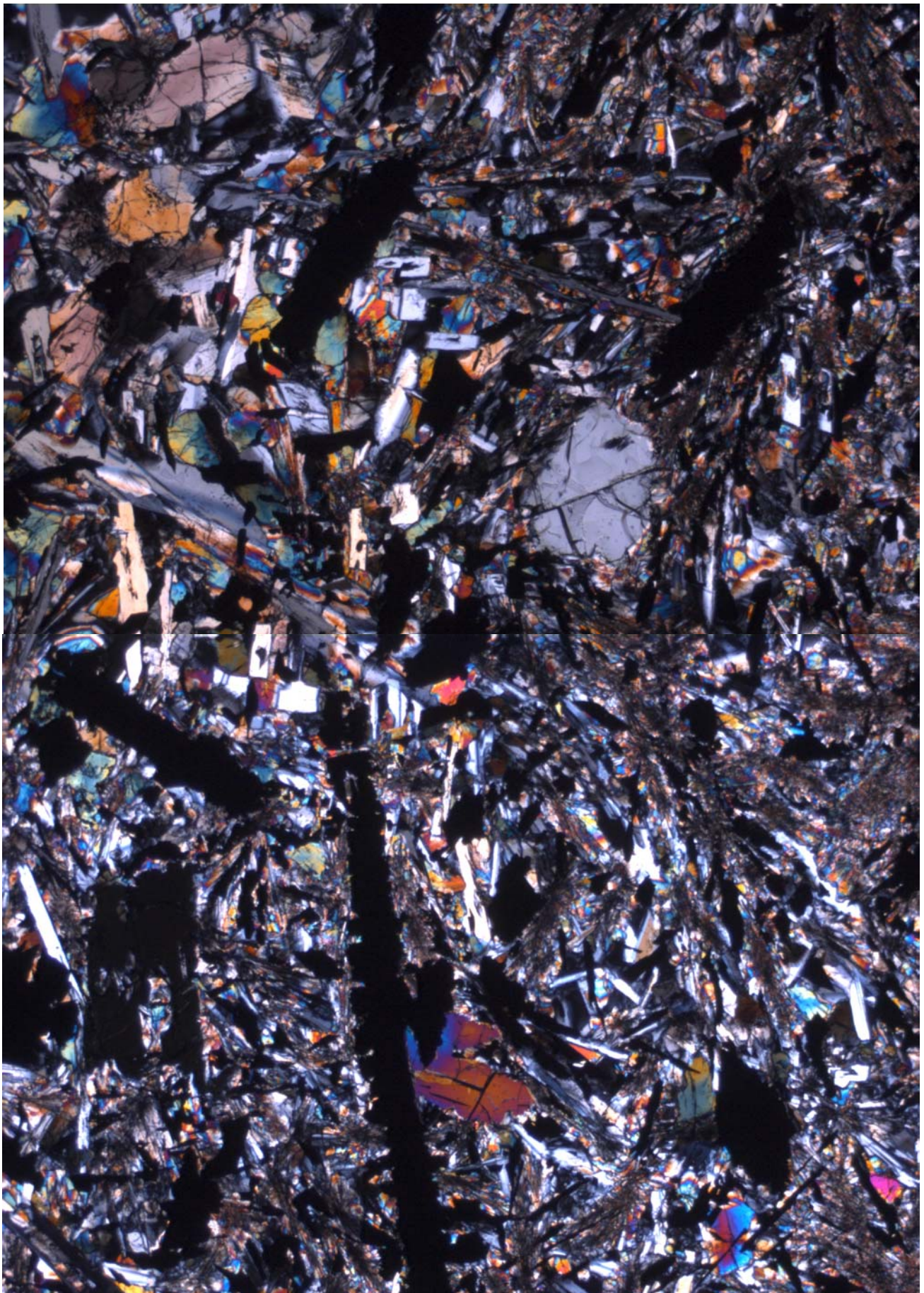


Figure 3: Pyroxene diagram from Brown et al. (1975).



*Figure 4: Photomicrograph of thin section 70275,34. 2.8 mm across.*



**Table 1. Chemical composition of 70275.**

reference weight	Keith74	Rhodes76	Shih75 Wiesmann76	Neal2001
SiO <sub>2</sub> %		39.37 (a)		
TiO <sub>2</sub>		11.9 (a)		
Al <sub>2</sub> O <sub>3</sub>		10.23 (a)		
FeO		18.61 (a)		
MnO		0.28 (a)		
MgO		6.09 (a)		
CaO		11.65 (a)		
Na <sub>2</sub> O		0.38 (a)		
K <sub>2</sub> O	0.052 (d)	0.06 (a)	0.055 (b)	
P <sub>2</sub> O <sub>5</sub>		0.08 (a)		
S %		0.15 (a)		
sum				
Sc ppm		85 (b)	80 (c)	
V			76 (c)	
Cr			1727 (c)	
Co		16 (b)	17 (c)	
Ni			1.03 (c)	
Cu			36 (c)	
Zn			84 (c)	
Ga			4.1 (c)	
Ge ppb				
As				
Se				
Rb		0.454 (b)	0.59 (c)	
Sr		153 (b)	155 (c)	
Y			83 (c)	
Zr		219 (b)	184 (c)	
Nb			19 (c)	
Mo			0.22 (c)	
Ru				
Rh				
Pd ppb				
Ag ppb				
Cd ppb				
In ppb				
Sn ppb				
Sb ppb			20 (c)	
Te ppb				
Cs ppm				
Ba		73.5 (b)	67 (c)	
La		6.32 (b)	5.95 (c)	
Ce		20.8 (b)	21.3 (c)	
Pr			3.54 (c)	
Nd		21.8 (b)	20.3 (c)	
Sm		8.75 (b)	8.34 (c)	
Eu		1.73 (b)	1.57 (c)	
Gd		14 (b)	12.1 (c)	
Tb			2.09 (c)	
Dy		15.2 (b)	13.4 (c)	
Ho			2.98 (c)	
Er		9.14 (b)	8.06 (c)	
Tm			1.13 (c)	
Yb		8.3 (b)	8.07 (c)	
Lu		1.17 (b)	1.13 (c)	
Hf			6.34 (c)	
Ta			1.32 (c)	
W ppb			100 (c)	
Re ppb				
Os ppb				
Ir ppb				
Pt ppb				
Au ppb				
Th ppm	0.43 (d)		0.36 (c)	
U ppm	0.12 (d)		0.14 (b)	0.12 (c)

technique (a) XRF, (b) INAA, (c) ICP-MS, (d) radiation count.

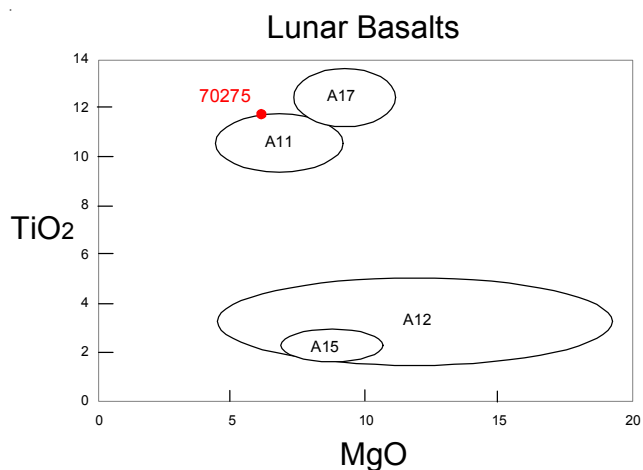


Figure 5: Composition of 70275 and Apollo basalts.

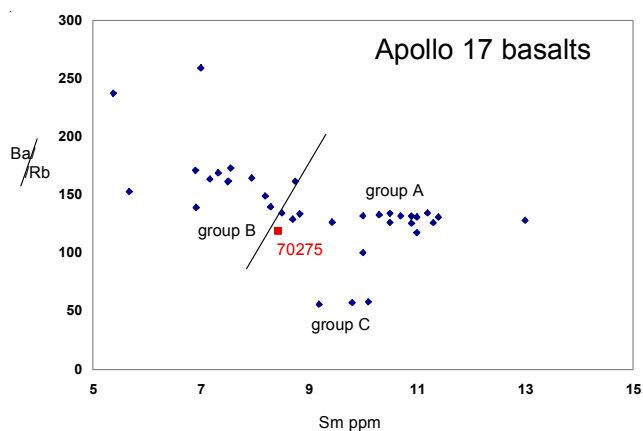


Figure 6: Composition of 70275 and Apollo 17 basalts.

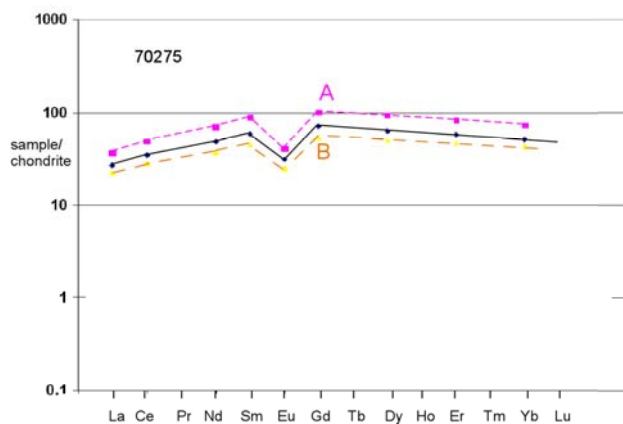
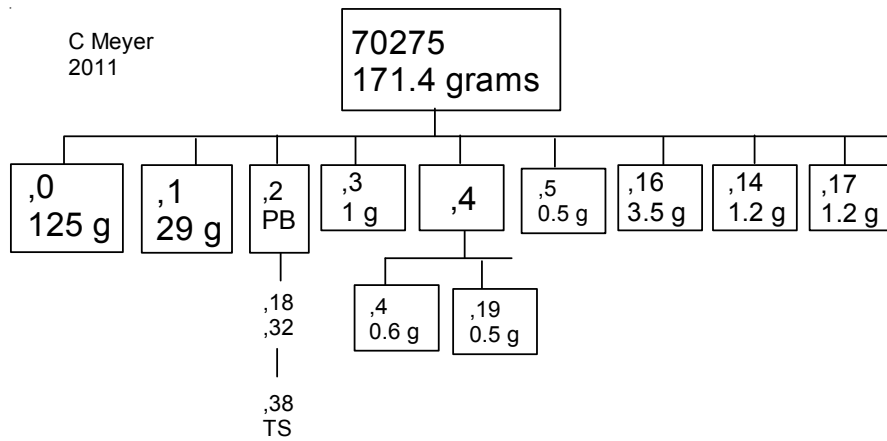


Figure 7: Normalized rare-earth-element diagram for 70275 with typ A and b shown for comparison.



Figure 8: Cutting plan for 70275. S74-19025 Cube is 1 cm.



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