DRAFT

NWA7257 – 180 grams
Enriched basaltic Shergottite

Introduction
NWA7257 was purchased at the Tucson Gem and Mineral Show in 2012. It is said to be from NWA, but who knows. It has a basaltic texture, albeit rather mafic, and it has the most REE of all the enriched shergottites (figure). The sample had a weathered brown surface, with partial fusion crust.

Petrography
NWA7257 is a medium-grained basalt with intersertal texture (Irving et al. 2012). Large grains of pyroxene (6 x 0.8 mm) are complexly zoned and twinned. Plagioclase is maskelynite (An55). Accessory ilmenite, ulvospinel, pyrrhotite, apatite, merrillite and fayalite are in the mesostasis.

Chemistry
A preliminary analysis of NWA7257 was made of the sawdust created during processing (table). The sample has the most REE (and Rb, Ba, Zr) of any "enriched" shergottite (figure).

Radiogenic age dating
None

Cosmogenic isotopes and exposure ages
None

Other Studies
Oxygen isotopes prove it is Martian (Irving et al.).

Table 1. Chemical composition of 7257.

	sawdust	
reference	Irving12	
weight		
SiO2 %		
TiO2		
Al2O3		
FeO		
MnO		
MgO		
CaO		
Na2O		
K2O		
Sc ppm		
Rb	10.1	(a)
Sr	60.2	(a)
Y		
Zr	135	(a)
Ba	103	(a)
La	4.36	(a)
Ce	12	(a)
Pr	1.72	(a)
Nd	8.39	(a)
Sm	3.14	(a)
Eu	1.11	(a)
Gd	4.73	(a)
Tb	0.86	(a)
Dy	5.57	(a)
Ho	1.21	(a)
Er	3.46	(a)
Tm	0.48	(a)
Yb	3.01	(a)
Lu	0.43	(a)
Hf	3.44	(a)
Th ppm		
U ppm		

technique: (a) ICP-MS

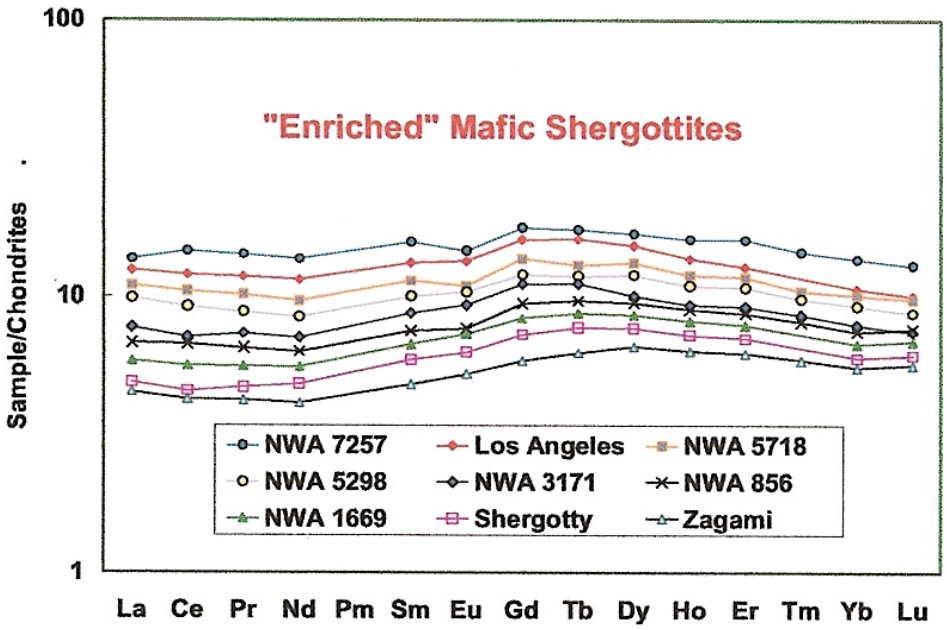

Figure : *Normalized rare-earth-element diagram for "enriched" shergottites (Irving et al. 2012).*

References

Irving A.J., Kuehner S.M., Chen G., Herd C.D.K., Tanaka R. and Gregory D.A. (2012c) Petrologic, elemental and oxygen isotopic chracterizatio of highly enriched mafic shergottite Northwest Aftrica 7257 (abs#5367). 75th Meteoritical Society @ Cairns