DRAFT

NWA7042 - 3033 grams
Intermediate basaltic Shergottite

Figure 1: Photo of NWA 7042 before subdivision (Irving et al. 2012).

Introduction

A large stone was found in Morocco in 2011 and purchased by Moroccan dealers (figure 1). It has since been proven to be Martian with distinctive Mn/Fe ratios in pyroxene and oxygen isotopes (Meteoritical Bulletin).

Petrography

Irving *et al.* (2012) have briefly described NWA7042 and picture the texture (figure 3). It consists of chemically-zoned blocky pyroxene and olivine with interstitial leaves of intergrown plagioclase and Fe-pyroxene. The plagioclase is now maskelynite.

Figure 2: *Photo of slab cut from NWA7042 (from internet). Note weathered rind and glass vein.*

Mineralogy

Olivine: $Fo_{71-53.}$

Pyroxene: $Wo_{13}En_{58}$ and $Wo_{32}En_{36.}$

Plagioclase: An_{49-54}.

Chemistry

Irving et al. (2012) give a partial analysis (table 1 and figure 4).

Radiogenic age dating

Not yet

Cosmogenic isotopes and exposure ages

Not yet

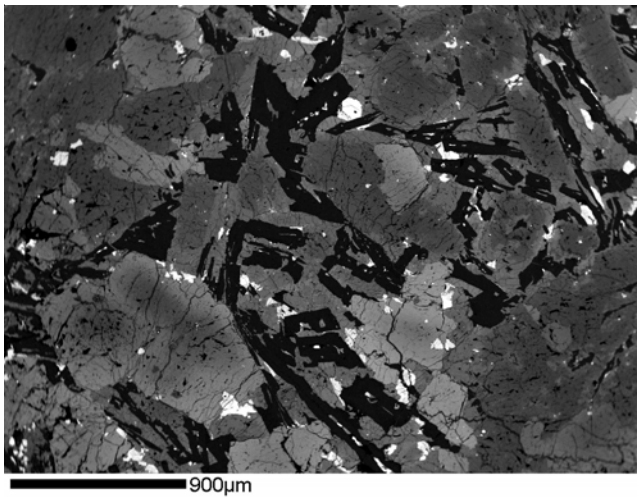

Figure 3: *BSE photo of polished thin section of NWA7042 (from Irving et al. 2012).*

References for NWA7042

Table 1. Chemical composition of 7042.

reference	Irving12	
weight		
SiO2 %		
TiO2		
Al2O3		
FeO		
MnO		
MgO		
CaO		
Na2O		
K2O		
P2O5		
S %		
sum		
Sc ppm		
V		
Cr		
Co		
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	0.9	(b)
Ce	2.39	(b)
Pr	0.36	(b)
Nd	1.95	(b)
Sm	1.07	(b)
Eu	0.79	(b)
Gd	2.01	(b)
Tb	0.38	(b)
Dy	2.46	(b)
Ho	0.52	(b)
Er	1.44	(b)
Tm	0.2	(b)
Yb	1.24	(b)
Lu	0.17	(b)
Hf	1.31	(b)
Ta		
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm		
U ppm		
technique:	*(a) XRF (b) ICP-MS*	

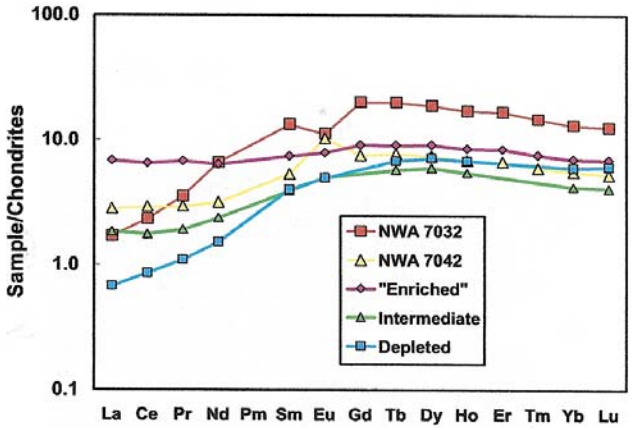

Figure 4: *Normalized rare-earth-element diagram for NWA7042 (and 7032) compared with the three kinds of shergottites (Irving et al. 2012).*