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

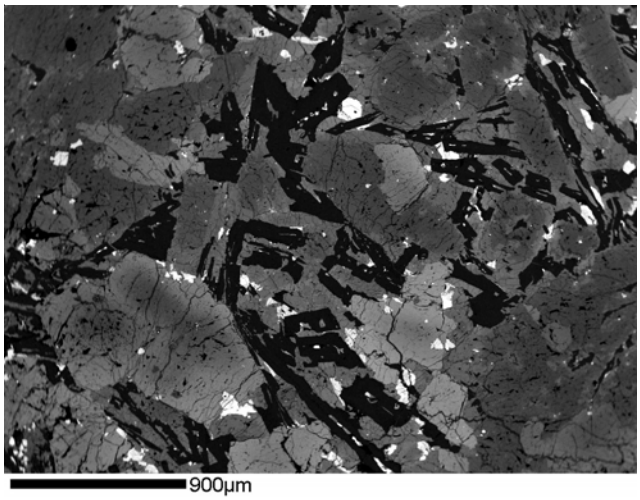


***Figure 3:*** *BSE photo of polished thin section of NWA7042 (from Irving et al. 2012).*

## 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* | |

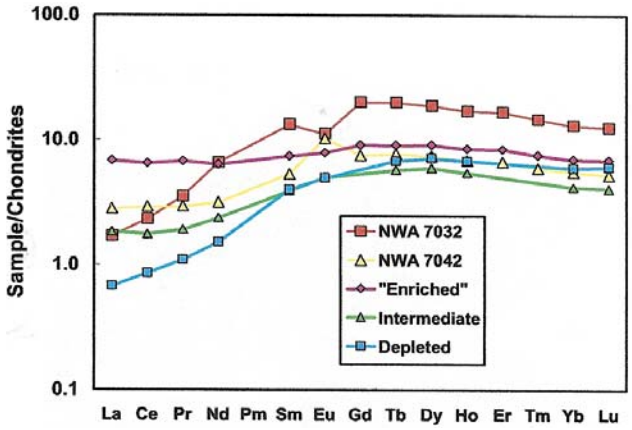


***Figure 4:*** *Normalized rare-earth-element diagram for NWA7042 (and 7032) compared with the three kinds of shergottites (Irving et al. 2012).*