NWA 4797

Wehrlite

15 grams

Introduction

Irving et al. (2008) have reported on a small ultramafic shergottite with dramatic shock features. It has a fusion crust on one side, and is cut by several veins of glass apparently produced by shock.

Petrography

NWA4797 is primarily olivine and clinopyroxene. Large oikocrysts of zoned clinopyroxene enclose mm-sized chadocrysts of olivine (figure 1). Interstitial regoins have been to shocked to vesicular glass, with very small birefringent microlites of plagioclase. Acccessory phases include Ti-chromite, Mg-ilmenite, merrillite and pyrrhotite.

This sample will need to be examined for high-pressure phases.

Chemistry

The chemical composition of NWA4797 has been determined by Korotev and reported by Irving et al. 2008 (table 1). The REE pattern is low and flat (figure 2).

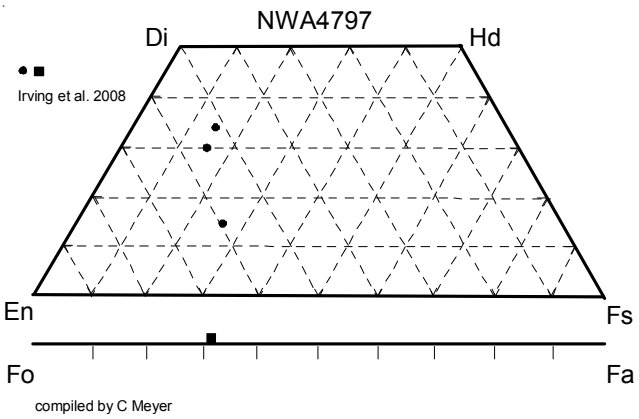

Figure 1: Olivine and pyroxene composition for NWA4797 (from Irving et al. 2008).

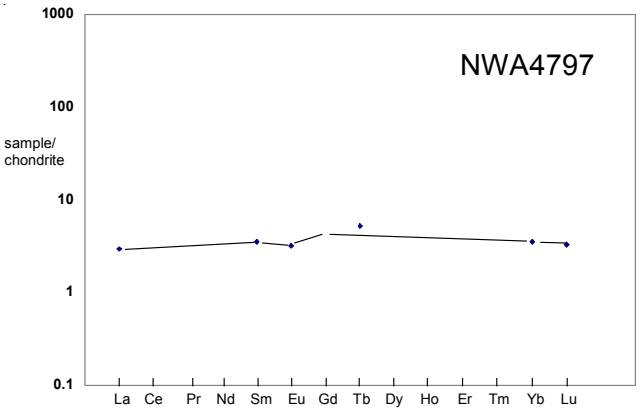

Figure 2: Normalized rare-earth-element diagram for NWA4797 (data from table 1).

References for NWA4797

Irving A.J., Bunch T.E., Kuehner S.M., Korotev R.L. and Classen N.C. (2008) Unique ultramafic shergottite Northwest Africa 4797: A highly shocked Martian wehrlite cumulate related to enriched basaltic (not "lherzolitic") shergottites (abs#2047). *Lunar Planet. Sci.* **XXXIX**. Lunar Planet. Institute, Houston.

Table 1. Chemical composition of NWA 4797.

reference	Irving 2008	
weight		
SiO2 %		
TiO2		
Al2O3		
FeO	19.6	(a)
MnO		
MgO		
CaO		
Na2O	0.4	(a)
K2O		
P2O5		
S %		
sum		
Sc ppm	26.3	(a)
V		
Cr	6620	(a)
Co		
Ni	330	(a)
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	0.69	(a)
Ce		
Pr		
Nd		
Sm	0.52	(a)
Eu	0.18	(a)
Gd		
Tb	0.19	(a)
Dy		
Ho		
Er		
Tm		
Yb	0.57	(a)
Lu	0.08	(a)
Hf	0.55	(a)
Ta		
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm	0.1	(a)
U ppm		
technique:	*(a) INAA*	