

Northwest Africa 5153

Polymict fragmental breccia

50.4 g



Figure 1: Chips of NWA 5153 with 1 mm scale bars below (photo courtesy of R. Korotev).

Introduction

Northwest Africa 5153 was found in 2007, and consists of a 50.4 g stone (Weisberg et al., 2008). It has an aeolian modified dark gray to reddish brown fusion crust (Weisberg et al., 2008). Interior is very fresh and lacks alteration veins.

Petrography, mineralogy, and chemistry

The breccia consists of a diversity of highland lithologies and Mare basalts and glasses. Highland components include cataclastic gabbro, troctolite, fragments of granophyric intergrowths of K-feldspar, felsic glasses and silica. Mare components include ophitic pigeonite and olivine basalts. The bulk composition of the sample includes $\text{Na}_2\text{O} = 0.476$ wt %; Sc = 25.6 ppm; Cr = 1963 ppm; FeO = 12.72 wt %; Ni = 150 ppm; Co = 42.4 ppm and Sr = 132 ppm (Weisberg et al., 2008; Korotev et al., 2009a,b), and illustrates that this sample is somewhat more enriched in REE and alkalis than, but equal in Sc to, the NWA 2995 pairing group (Fig. 2).

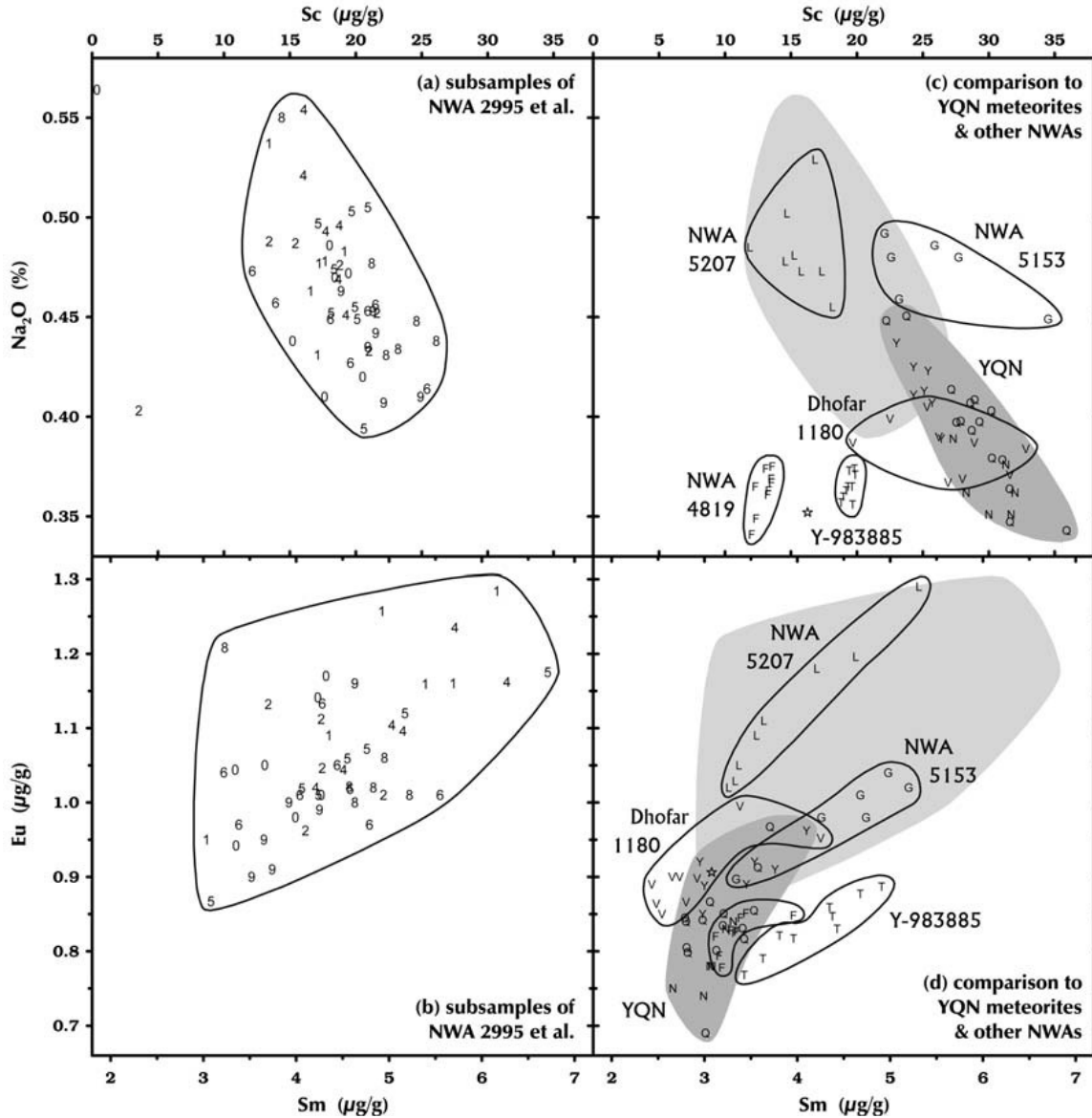


Figure 2: comparison of NWA 5153 bulk composition to other polymict lunar meteorite breccias, illustrating its distinct composition with slightly higher alkalis and REE compared to the YQN pairing group (Yamato, QUE, NWA 2995 pairs; Korotev et al., 2009b).

Radiogenic age dating and Cosmogenic isotopes and exposure ages

None yet reported.

Table 1a:Chemical composition of NWA 5153

<i>reference</i>	1	1	Ru	
<i>weight</i>	20-60	185	Rh	
<i>technique</i>	a	c	Pd ppb	
SiO ₂ %	46.6		Ag ppb	
TiO ₂	0.73		Cd ppb	
Al ₂ O ₃	17.3		In ppb	
FeO	12.7	12.72	Sn ppb	
MnO	0.18		Sb ppb	
MgO	8.95		Te ppb	
CaO	12.7	13.6	Cs ppm	0.12
Na ₂ O	0.48	0.525	Ba	127
K ₂ O	0.11	<0.3	La	9.94
P ₂ O ₅	0.11		Ce	26.2
S %			Pr	
sum	99.5		Nd	14.8
			Sm	4.61
			Eu	0.99
			Gd	
			Tb	0.9
			Dy	
			Ho	
Sc ppm		25.6	Er	
V			Tm	
Cr		1960	Yb	3.15
Co		42.4	Lu	0.431
Ni		150	Hf	3.27
Cu			Ta	0.4
Zn			W ppb	
Ga			Re ppb	
Ge			Os ppb	
As		<1.1	Ir ppb	3.6
Se		0.14	Pt ppb	
Rb		<6	Au ppb	1.8
Sr		132	Th ppm	1.54
Y			U ppm	0.43
Zr		123		
Nb				
Mo				

technique (a) EMPA, (b) ICP-MS, (c) INAA (d) XRF

**Table 1b. Light and/or volatile elements
for NWA 5153**

Li ppm

Be

C

S

F ppm

Cl

Br

0.33

I

Pb ppm

Hg ppb

Tl

Bi

References: 1) Korotev et al. (2009b)

K. Righter – Lunar Meteorite Compendium - 2010