

Northwest Africa 5000

Anorthositic regolith breccia

11528 g



Figure 1: Exterior and interior images of NWA 5000 with scale bars indicated (from Irving et al., 2008).

Introduction

Northwest Africa 5000 (Fig. 1) is breccia containing predominantly light colored gabbroic clasts in a gray partly glassy matrix. This meteorite was discovered in southern Morocco in the Summer of 2007 (Connolly et al., 2008). The 27 cm x 24 cm x 20 cm sample is the second largest lunar meteorite known, has translucent fusion crust on one side, contraction cracks and regmaglypts that are also associated with desert patina or varnish.

Petrography

The clasts are largely mono-lithologic (Irving et al., 2008) "leuco" gabbro, although there are also gabbroic anorthosite and impact melt clasts and matrix mineral fragments (Fig. 2). The coarse-grained (0.5 to 2.7 mm) calcic plagioclase feldspar (An_{96-98}) is most common phase with pigeonite (Fs_{32-65}) also present, and some of the latter contain fine exsolution lamellae (Irving et al., 2008). Accessory phases include kamacite, merrillite, magnesian ilmenite, titanian chromite, baddeleyite, zirconalite, silica, potassium feldspar, and troilite (Irving et al., 2008).



Figure 2: Slice of NWA 5000 showing the "leuco" gabbro clasts as well as grey matrix and a dark impact melt clast near the bottom (from Irving et al., 2008).

Chemistry

The composition of NWA 5000 falls within the field that is typical for feldspathic lunar meteorites (Korotev et al., 2008), despite the scatter portrayed in Figure 3. It has an average of 6.4 wt% FeO, 10 ppm Sc, 900 ppm Cr, 860 ppm Ni, and 0.4 ppm Th (Fig. 3). It also exhibits a moderate and positive Eu anomaly. Splits of the black impact melt clast exhibit relatively higher Na, Sm and Cr compared to the gabbroic clasts (Fig. 3).

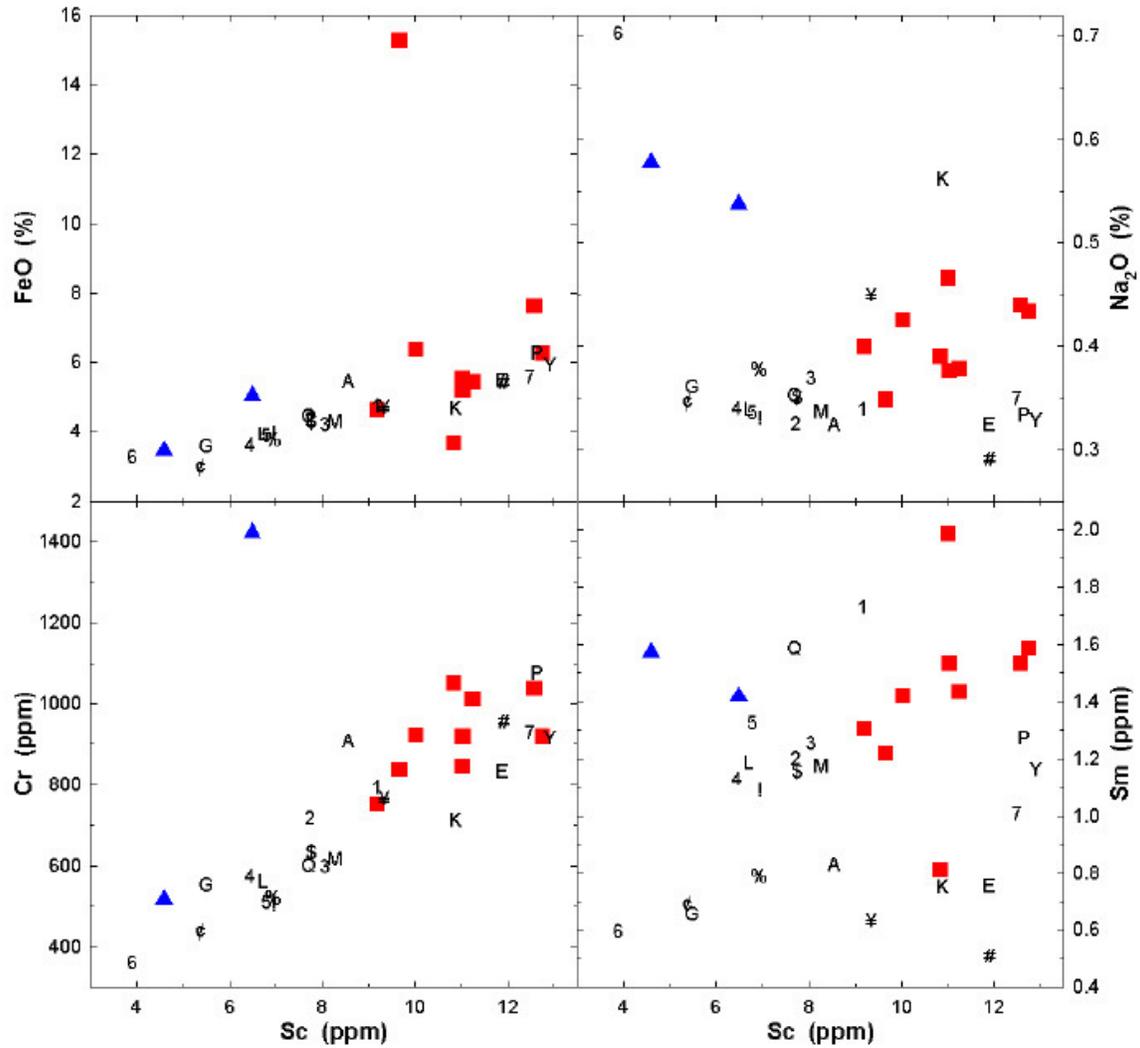


Figure 3: Splits of NWA 5000 analyzed and reported by Korotoev et al. (2008). Red squares are gabbroic and matrix splits, whereas the blue triangles are splits of the impact melt clasts.

Radiogenic age dating

None yet reported.

Cosmogenic isotopes and exposure ages

None yet reported.