

Northwest Africa 3163, 4483, 4881

Anorthositic granulitic breccia

1634, 208, 606 g



Figure 1: Northwest Africa (NWA) 3163 with a 1 cm cube for scale.

Introduction

Northwest Africa (NWA) 3163 was found in Mauritania or Algeria and purchased in August 2005 (Fig. 1). It is almost completely covered with a thin transparent greenish fusion crust (Connolly et al., 2006). It has a pale grey interior with thin glass veins and multiple shock fractures (Fig. 2). NWA 4483 and 4881 were found in 2005; NWA 4881 consists of a single, broken, irregular conical stone partially covered by translucent, pale greenish fusion crust and with a pale grey-brown interior.

Petrography, mineralogy and chemistry

The dominant texture is a poikiloblastic recrystallized breccia with about 70% plagioclase enclosing pyroxene (20%) olivine (10%), and minor chromite, ilmenite, and troilite (Fig. 3). Pigeonite contains exsolution lamellae of two pyroxenes recording temperatures of 1070 °C Irving et al., 2006). Plagioclase is almost completely converted to maskelynite. Although the mineralogy is dominantly feldspathic, the bulk composition includes 5.8 wt% FeO, which is more mafic than most feldspathic highlands meteorites (Korotev, 2006; Irving et al., 2006). Incompatible trace elements such as Sm and La/Yb are significantly lower than any feldspathic lunar meteorites (Fig. 4). In addition, siderophile element contents such as Ir (Fig. 4) are very low. Analyses of NWA 4483 overlap with those for NWA 3163 (Korotev et al., 2008). Additional compositional studies of these unique samples will be very interesting.



Figure 2: slab cut of NWA 3163 illustrating the feldspathic nature of the sample, as well as the thin veins (photo from R. Korotev).

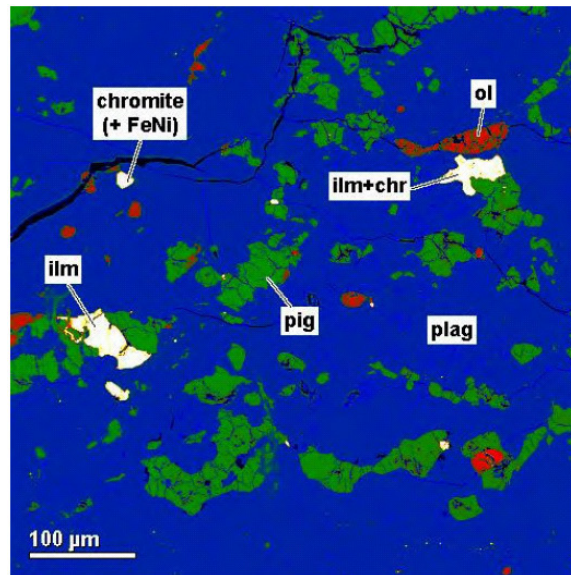


Figure 3: BSE image of NWA 3163 from Irving et al. (2006)

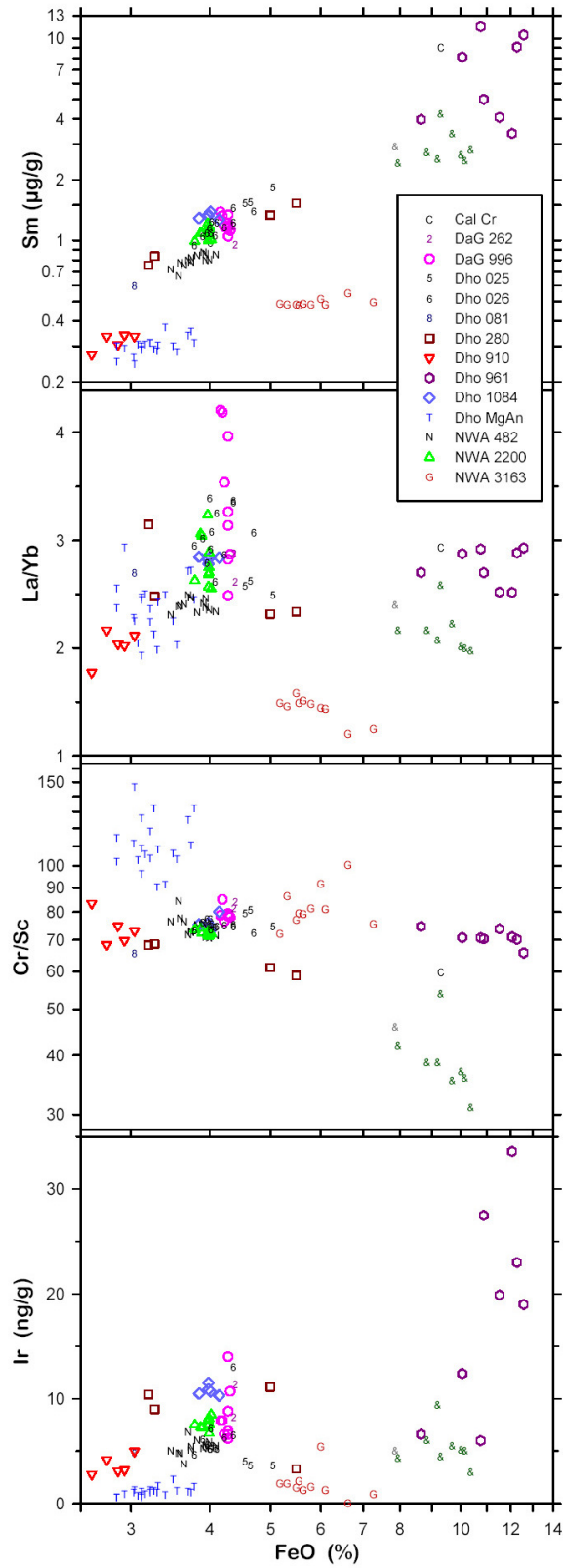


Figure 4: Chemical composition of NWA 3163 (small red 'G') from Korotev (2006).