

Dhofar 925, 960, 961

Basalt-bearing anorthositic impact melt breccia
49, 35.4, 22.6 g



Figure 1: Cut slab of Dhofar 925 showing feldspathic clasts in a breccia. Black cube is 1 cm.

Introduction

Dhofar 925 (Fig. 1) was found in the Dhofar region of Oman (Figs. 2 and 3) in February, 2003. The 49 g stone lacks fusion crust, and contains terrestrial weathering products such as calcite, gypsum, celestite, barite, smectite and Fe hydroxides. In November 2003, Dhofar 960 (35.4 g) and Dhofar 961 (21.6 g) were found nearby and on the basis of texture, petrography and mineralogy, all three stones have been paired together as feldspathic impact melt breccia.

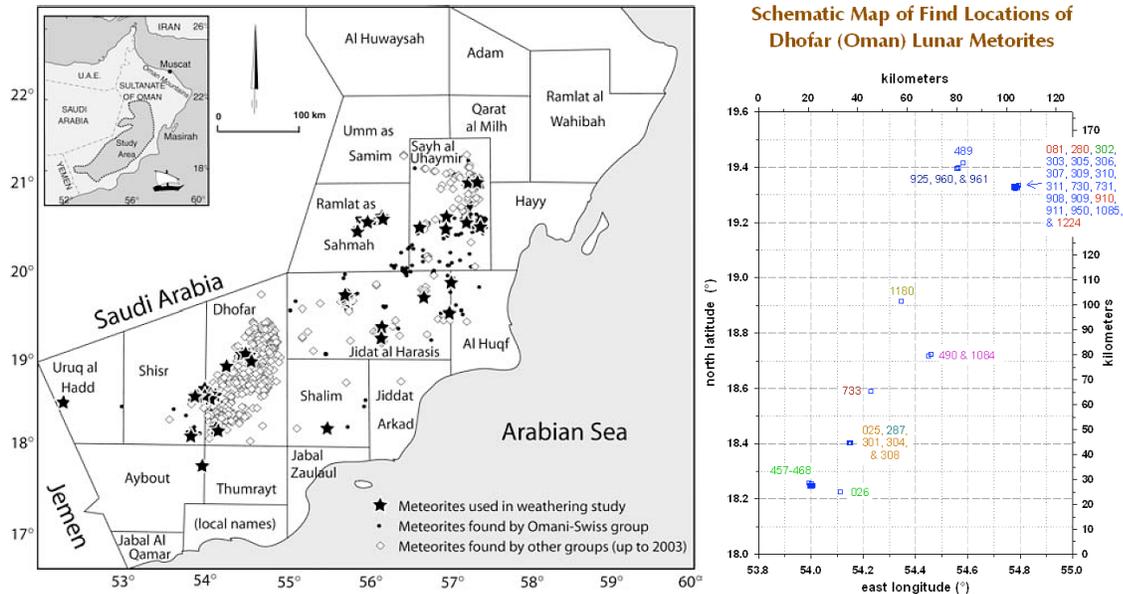


Figure 2 and 3: Location maps of the Dhofar region in Oman (from Al-Kathiri et al., 2005) and the specific coordinates for Dhofar 925, 960 and 961.

Petrography and mineralogy

This meteorite is an impact melt breccia with mineral and lithic clasts in an impact melt rich matrix. The lithic clasts are granulitic, anorthositic, troctolitic, gabbro-noritic, and noritic. Most of the meteorite is comprised of anorthositic or highlands materials, but it is a polymict breccia that also contains mare basalt, KREEP-related materials, and even granitic material (Russell et al., 2004). Accessory minerals in these meteorites are numerous and include ulvospinel, Ti-chromite, pleonaste, ilmenite, silica, troilite, FeNi metal, Ba-bearing potassium feldspar, whitlockite, chlorapatite, baddeleyite, zircon, armolcolite, monazite, tranquilityite, and zirconalite (Russell et al., 2004, 2005).

Chemistry

Although Dho 925, 960 and 961 have been classified as a feldspathic impact melt breccia, they have 9 to 13% FeO reflecting, perhaps, up to 40% of a basaltic component in addition to the feldspathic (Korotev, 2006). One of the most distinctive features of this meteorite is the incompatible element enrichment – Sm and La/Yb for Dhofar 960 are very high. And siderophile element concentrations such as Ir are also very high (Fig. 4).

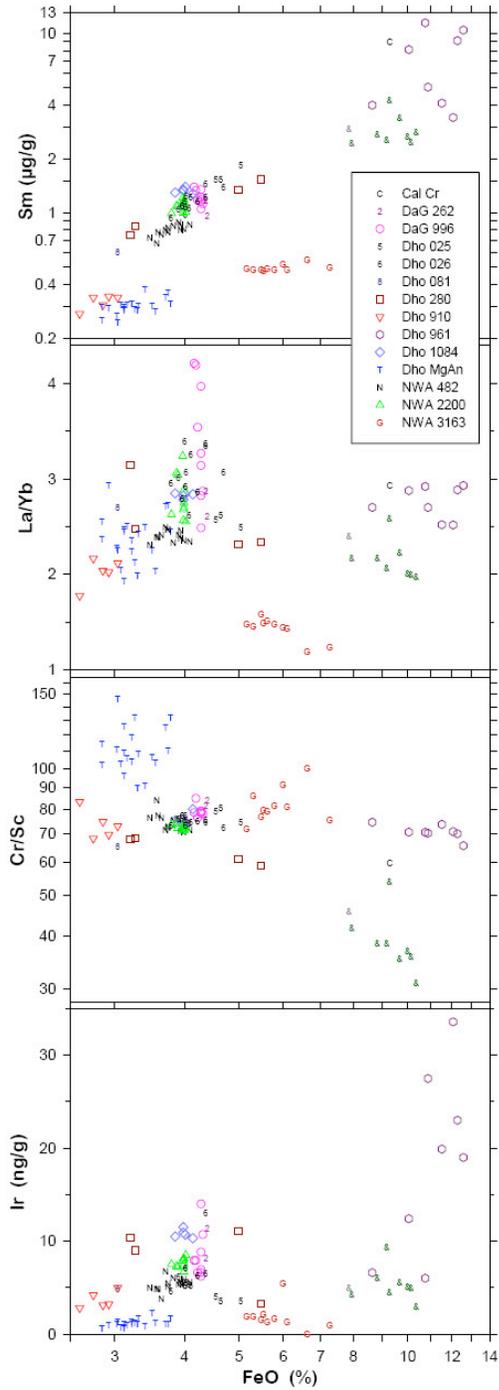


Figure 4: FeO vs. Sm, La/Yb, Cr/Sc, and Ir for a large number of lunar meteorites, including Dhofar 961 (open purple circles; from Korotev, 2006).

Radiogenic age dating

No work has been reported yet.

Cosmogenic isotopes and exposure ages

No work has been reported yet.