Dhofar 1436 / Jiddat al Harasis 348
Anorthositic impact melt breccia
24.2, 18.7 g

Figure 1: Slice through JaH 348 with 1 mm scale bars below (photo by R. Korotev).

Introduction

Dhofar 1436 (paired with Jiddat al Harasis 348; Fig. 1) was discovered by an anonymous finder in 2004 on a limestone plateau in the Dhofar region of Sultanate of Oman, far from other known lunar meteorites (Fig. 2 and 3). It consists of a single brownish-green 24.2 g stone, and fusion crust is absent. JaH 348 is a slightly smaller stone of 18.7 g (Connolly et al., 2008).

Petrography and mineralogy

The meteorite consists of lithic and mineral clasts embedded in a partially devitrified glassy matrix with abundant bubbles, and can be classified as an impact melt breccia. The lithic clasts are mainly impact melt breccias and rocks of anorthositic, gabbro-anorthositic, and gabbro-noritic lithologies, with minor granular breccia clasts. Lithic fragments range from 0.01 to 7 mm in size. The major minerals are pyroxene

(orthopyroxene - $En_{68.2-84.1}Wo_{0.2-5.0}$; Fe/Mn 62 and clinopyroxene - $En_{13.4-63.7}Wo_{12.8-40.5}$; Fe/Mn 63), feldspar (An92.5-98.7Ab1.1-7.2), with minor olivine ($Fo_{42.6-72.7}$; Fe/Mn 96). Accessory phases are silica, Al-Ti chromite, ilmenite, Ca-phosphate, troilite and FeNi metal (from Connolly et al., 2008).

Chemistry

Compositional data so far are limited to analyis of the glassy matrix composition: SiO_2 = 45.1, TiO_2 = 0.26, Al_2O_3 = 30.8, FeO = 4.49, MgO = 3.94, CaO = 16.7, Na_2O = 0.48, K_2O = 0.04 [all wt%, and represents an average]. Oxygen Isotope values fall within the field expected of a lunar meteorite: $\delta^{17}O$=3.286; $\delta^{18}O$=6.244 (both $\permille$) (from Connolly et al., 2008).
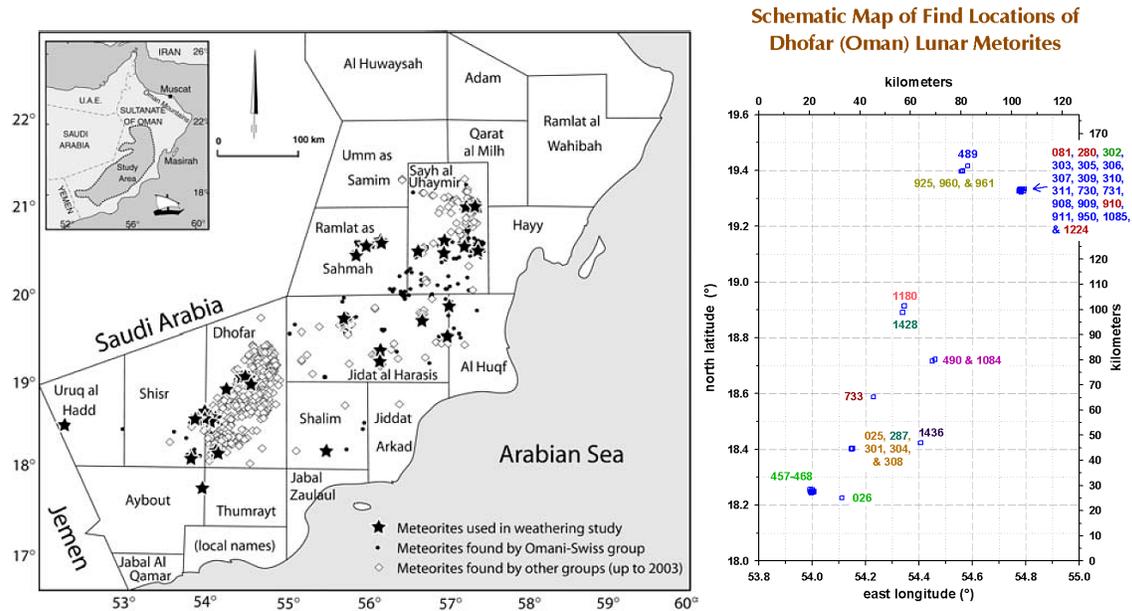
Figure 2 and 3: Location maps of the Dhofar region in Oman (from Al-Kathiri et al., 2005) and the specific coordinates for Dhofar 1436 (just below center).

Radiogenic age dating
None yet reported.

Cosmogenic isotopes and exposure ages
None yet reported.

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