

## XXIX. NWA 1669 (ver. 2003)

basalt  
35.85 grams



Figure XXIX- 1. Photograph of NWA 1669 by Bruno Fectay and Carine Bidaut.

### **Introduction**

NWA 1669 was purchased in Erfoud, Morocco, January 2001 by Bruno Fectay and Carine Bidaut and has been referred to as “Al Mala’ika” (Russell *et al.* 2003). It is covered with desert varnish and has only a few patches of fusion crust.

### **Petrography**

Jambon *et al.* (2003) report that NWA 1669 is a fine-grained basaltic rock with two closely “intricated” pyroxenes (pigeonite and augite) with plagioclase that has been converted into maskelynite. Texture is that of a basalt (figure XXIX-2). Accessory minerals include merrillite, Cl-apatite, pyrrhotite, ulvöspinel, ilmenite, silica and baddeleyite.

### **Mineral Chemistry**

**Pyroxenes:** Pigeonite  $Wo_{9-19} En_{58-25} Fs_{32-61}$   
Augite  $Wo_{39-24} En_{47-19} Fs_{54-18}$   
FeO/MnO = 34.

**Maskelynite:**  $Ab_{41-53} Or_{1-6} An_{58-42}$

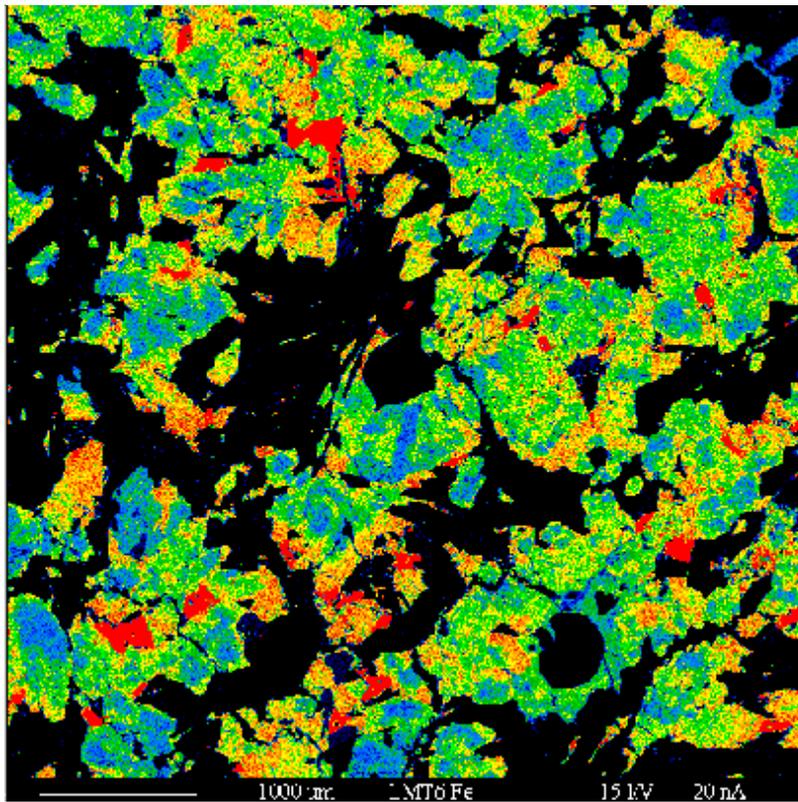
### **Whole-rock Composition**

See figure XXIX-3.

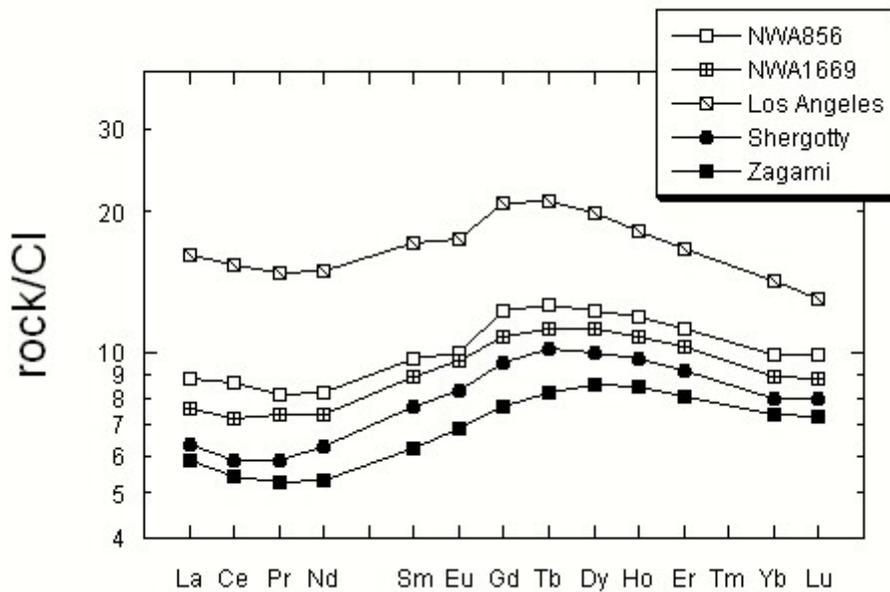
Terrestrial calcite (calichi) is present as veins cross-cutting the meteorite (Russell *et al.* 2003).

### **Other Isotopes**

Oxygen isotopes have been reported by Jambon *et al.* (2003) ( $\Delta^{17}O = 0.30\text{‰}$ ,  $\delta^{17}O = 2.85\text{‰}$  and  $\delta^{18}O = 4.91\text{‰}$ ).



**Figure XXIX-2:** X-ray map (Fe) of large area (4 mm field of view) of NWA1669 kindly provided by Jean-Alix Barrat and Marcel Bohn, showing intergrown maskelynite (black), and two pyroxenes (colors).



**Figure XXIX-3:** REE diagram kindly provided by J-A Barrat, comparing NWA1669 with other basaltic shergottites.