

## XXXI. NWA2046

Basaltic Shergottite

63 grams



*Figure XXXI-1: Sawn surface of NWA2046 (photo from Irving et al. 2004). Sample is 3 cm across.*

### **Introduction**

Russell et al. (2004) report that a 63 gram complete and partially crusted stone was purchased in Morocco in 2003 by M. Farmer. The interior is fresh (figure XXXI-1).

### **Petrography**

Irving et al. (2004) report the petrology of NWA2046. Olivine phenocrysts (2 mm) are euhedral to subhedral and found in clumps. Long prismatic pyroxenes (2 mm) have low-Ca cores (orthopyroxene?) are overgrown with pigeonite (figure XXXI-2). These phenocrysts are set in a fine-grained groundmass composed mainly of intergrown pigeonite and maskelynite. Irving et al. find that the pyroxene and olivine phenocrysts have preferred orientation (figure XXXI-4).

Minor phases include chromite, ilmenite, ulvöspinel, pyrrhotite, merrillite, chlorapatite, and fayalite. Olivine

also includes melt inclusions (described in Irving et al. 2004).

### **Mineralogy**

**Olivine:** Olivine is zoned from  $\text{Fo}_{84-52}$ .

**Pyroxene:** Pyroxene cores are  $\text{En}_{80}\text{Fs}_{18}\text{Wo}_{2.5}$ . Zoning is shown in figure XXXI-3.

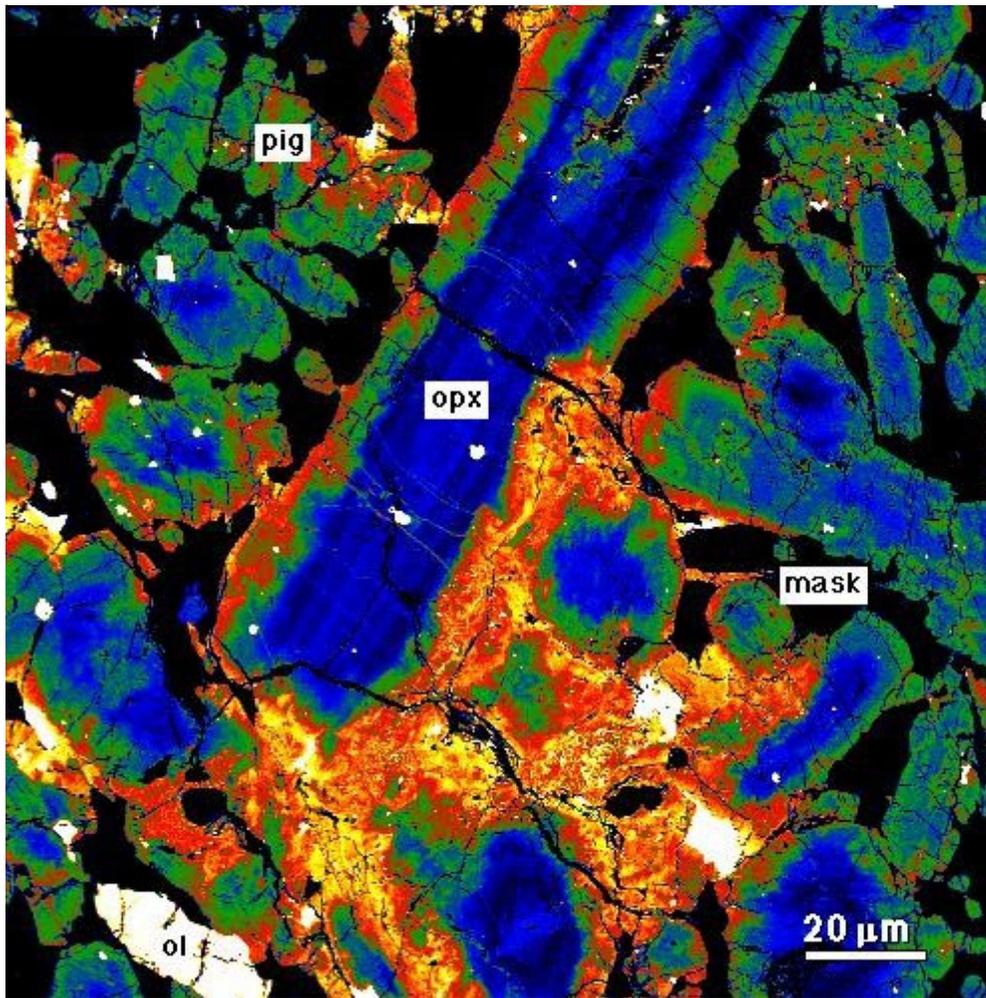
**Plagioclase:** Maskelynite is  $\text{An}_{75-62}$ .

### **Chemistry**

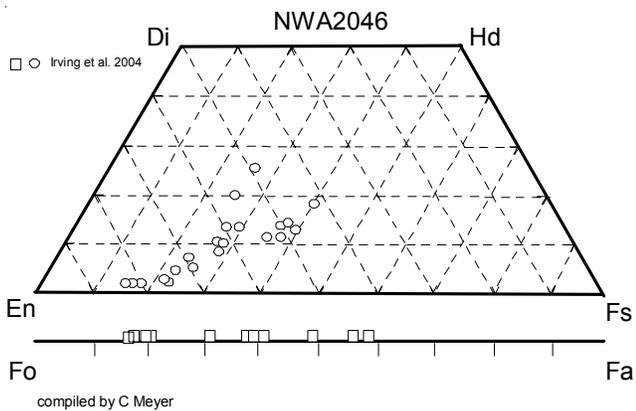
None

### **Radiogenic age dating**

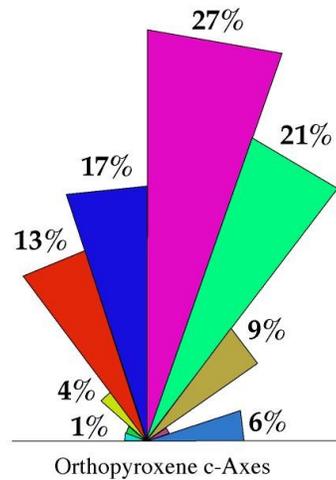
None



**Figure XXXI-2:** Element map (Fe?) from Tony Irving showing large, zoned orthopyroxene (this is figure 3 in Irving et al. 2004).



**Figure XXXI-3:** Pyroxene and olivine composition of NWA2046 (replotted from Irving et al. 2004).



**Figure XXXI-4:** Rose diagram plot of the long axes orientations of 148 prismatic orthopyroxene phenocrysts in a thin section of NWA 2046, indicating that 87% of the orthopyroxene grains are preferentially oriented within  $\pm 36^\circ$  in the same direction (in planer projection). Diagram from Theodore Bunch.