NWA6963 ~ 8 Kg.
NWA7258 – 310 grams
Enriched Basaltic Shergottite
(shower)

DRAFT

"So why isn't this meteorite called Qued Touflit?" C Meyer 2012

Figure 1: *Photo of fusion-crusted piece of NWA 6963 (from internet). Cube is 1 cm.*

Figure 2: *Photo of sawn surface of NWA6963. Note that orientation cube is same as fig. 1.*

Introduction

Numerous pieces of another large shergottite were found near the river Qued Touflit in 2011 (Meteoritical Bulletin). They range in size up to 700 grams and are individually covered with fusion crust (figures 1, 3). Some pieces are getting new numbers (e.g. NWA7258).

A thin patch of rusty material is found beneath the fusion crust, but otherwise the specimens are not badly weathered. *One can expect that almost every kind of experiment, and measurement will be made on this abundant meteorite.*

Mineralogical Mode of NWA6963

	Wilson *et al.* 2012	Warren et al. 2012
Olivine	0	0
Pyroxene	60 vol. %	75
Plagioclase	35	20
Opaques	2	
Melt pockets	2	

Figure 3a: *This piece of NWA6963 weighs 250 grams. Photos by Matthew Martin.*

Figure 3b: *NWA6963 (250 g).*

Petrography

First reports are that NWA6963 is very like Shergotty (Wilson *et al.* 2012; Warren *et al.* 2012). It has a subophitic texture with intergrown pyroxene and maskelynite (figure 2). Grain size is reported as ~1-4 mm, but there are obvious mineral laths up to 1 cm in slabs. There are two pyroxene trends, just like those in Shergotty, (figure 4). There are large grains of ulvospinel, minor amounts of merrillite, trace apatite and pyrrhotite (Wilson et al.).

Figure 3c: *NWA6963 (250 gram piece).*

Figure 3d: *NWA6963, end piece. Note the cube.*

Pockets of black glass formed by shock melting are reported, and small black dots are obvious in numerous photos of sawn surfaces. Wilson et al. reported silica in shock melt pockets.

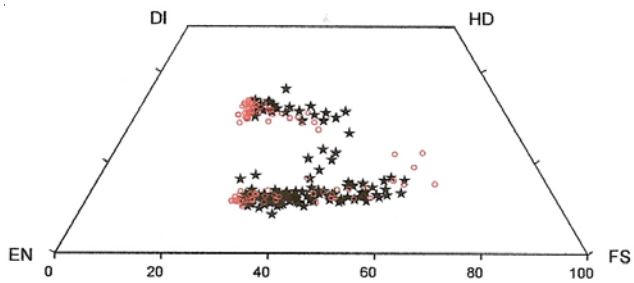


Figure 4: *Composition of pyroxene in NWA6963 (black stars) compared with that in Shergotty (red circles) (Wilson et al. 2012).*

Mineralogy

Olivine: none

Pyroxene: Both pigeonite and augite are zoned as two trends across the pyroxene quadrilateral (figure 4). The Mn/Fe ratios are similar to those in Shergotty.

Plagioclase: All of the plagioclase (An_{50}) in NWA6963 and NWA7258 has been completely converted to maskelynite.

Chemistry

Warren et al. (2012) have analyzed NWA7258. Al_2O_3 is low; Hf, Th, REE are high (~20xC1) and relatively flat, as in "enriched" shergottites. Tabulated analyses not available at this time.

Radiogenic isotopes to be expected soon.

Other Studies

Oxygen isotopes were reported by Wilson et al. (2012).

Processing

Many slices of NWA6963 are for sale on the internet (photos attached). *There must be a lot of sawdust.*

There is nothing romantic about the name NWAxxxx!

References for NWA6963

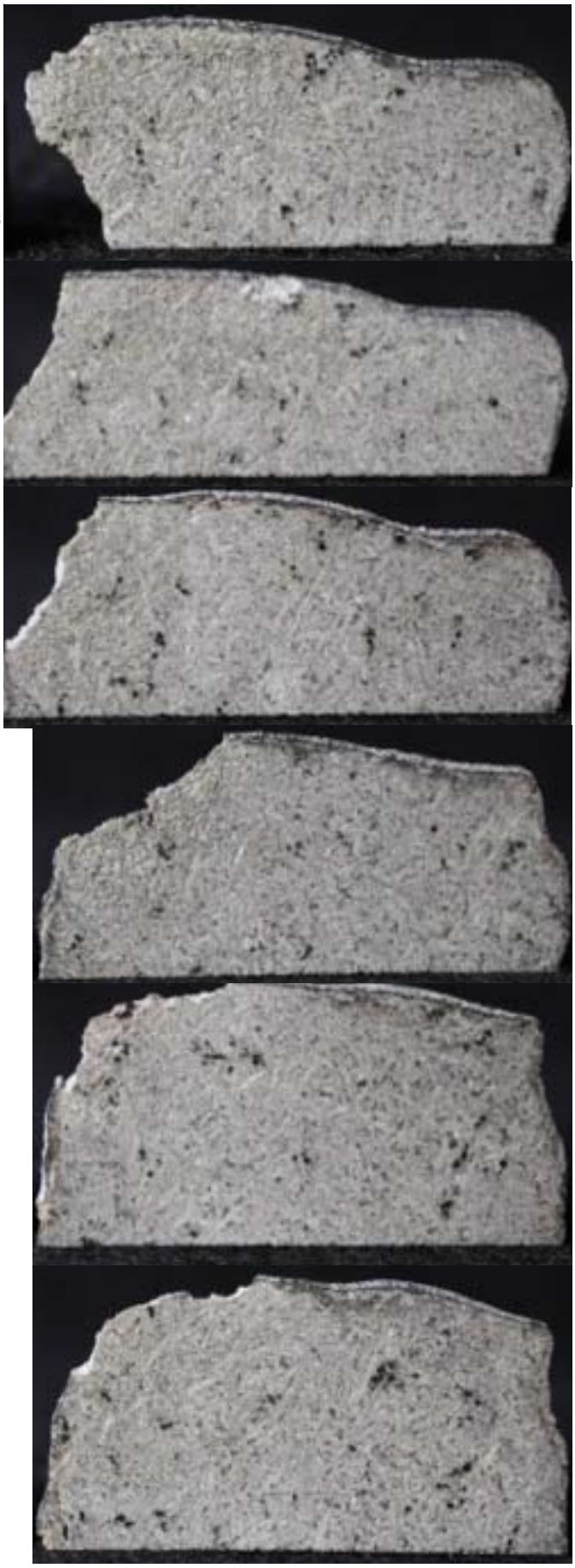
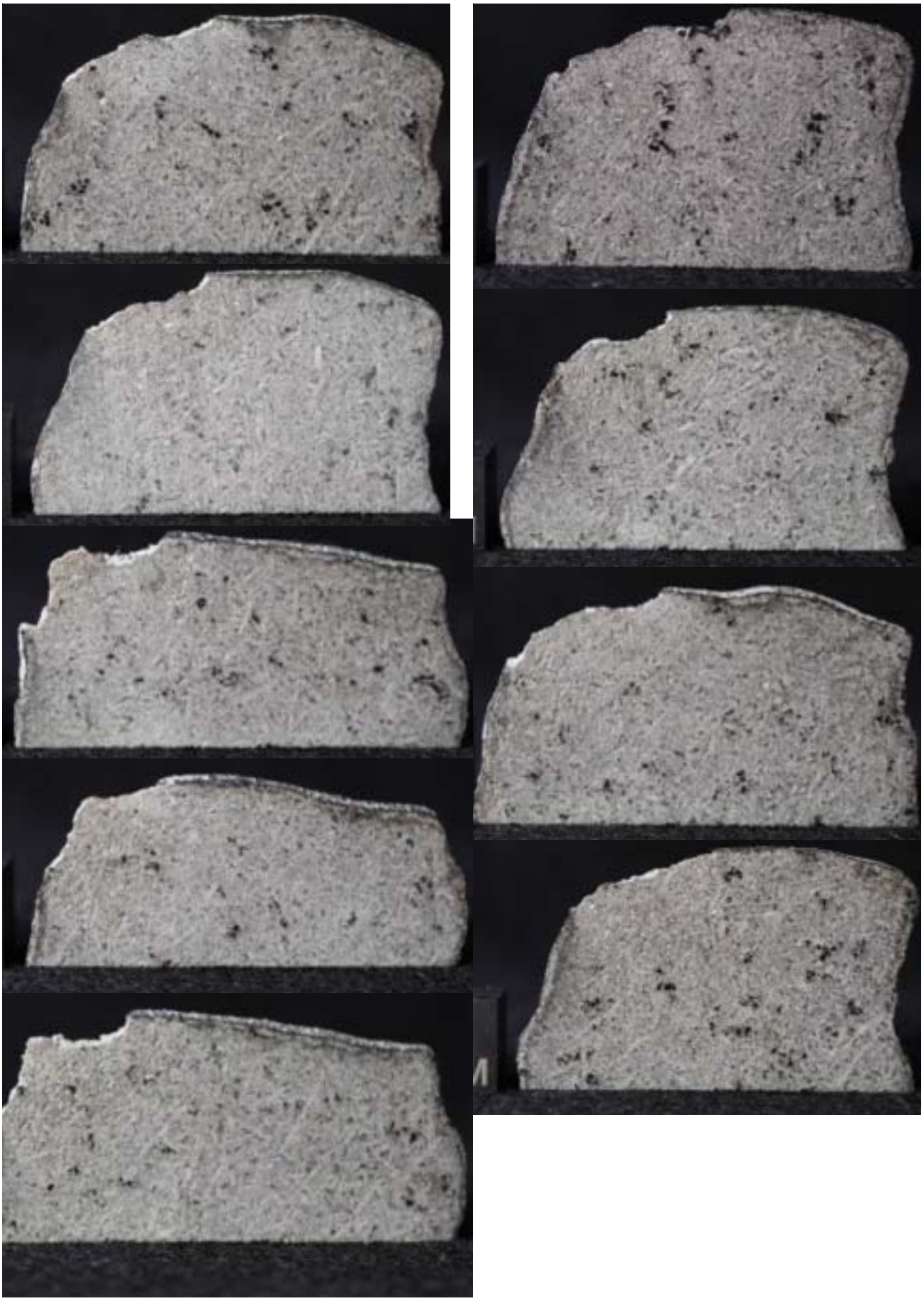
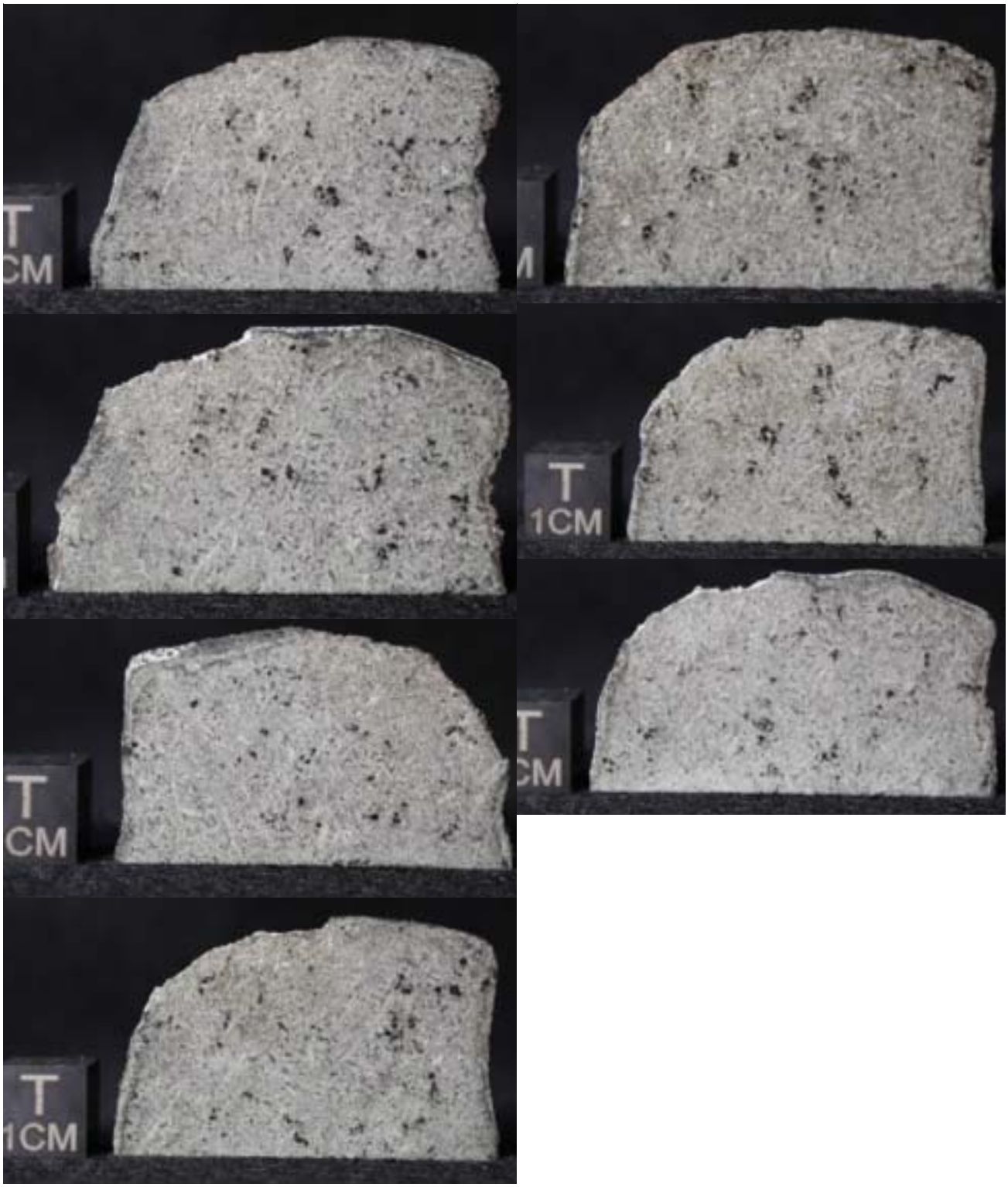


Figure 5 a - v: *Numerous slices of the 250 gram whole pictured in figure 3 (not serial). Each about 2 cm high. Sliced by Marlin Cilz. Very thin.*

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