MESOSIDERITE NORTHWEST AFRICA 11774 FROM MAURITANIA: A NEAR CLONE OF BONDOC

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Background: The Bondoc mesosiderite discovered in the Philippines in 1956 [1, 2] is known predominantly from so-called metal-rich "nodules" [3], which presumably represent the more weathering-resistant portions of an originally texturally more complex mesosiderite meteoroid [4].

Petrography of NWA 11774: A 439.2 gram dense, strongly magnetic specimen recovered near Ain Ben Tili, Mauritania in December 2017 has many similarities to the nodules from Bondoc. The specimen is composed predominantly of granular kamacite (containing small, irregularly-shaped grains of taenite and rare schreibersite) together with interstitial regions (~10 vol.%) containing calcic plagioclase ($An_{85.3\text{-}86.9}Or_{0.5\text{-}0.2}$), orthopyroxene ($Fs_{30.3\text{-}31.7}Wo_{2.9\text{-}3.8}$, FeO/MnO = 18-19), silica polymorph, chromite, merrillite, ilmenite and troilite.

Acid-etching of the cut and polished interior reveals an interesting metal texture (see Figure 1B). The overall texture consists of roughly equigranulat metal grains with interspersed silicate-rich regions. However, the metal grains in a narrow zone parallel to the curved edge of the nodule are much smaller, and we suggest that this may represent a more rapidly cooled or annealed margin of the metal-rich nodule against the more silicate-rich mesosiderite matrix.

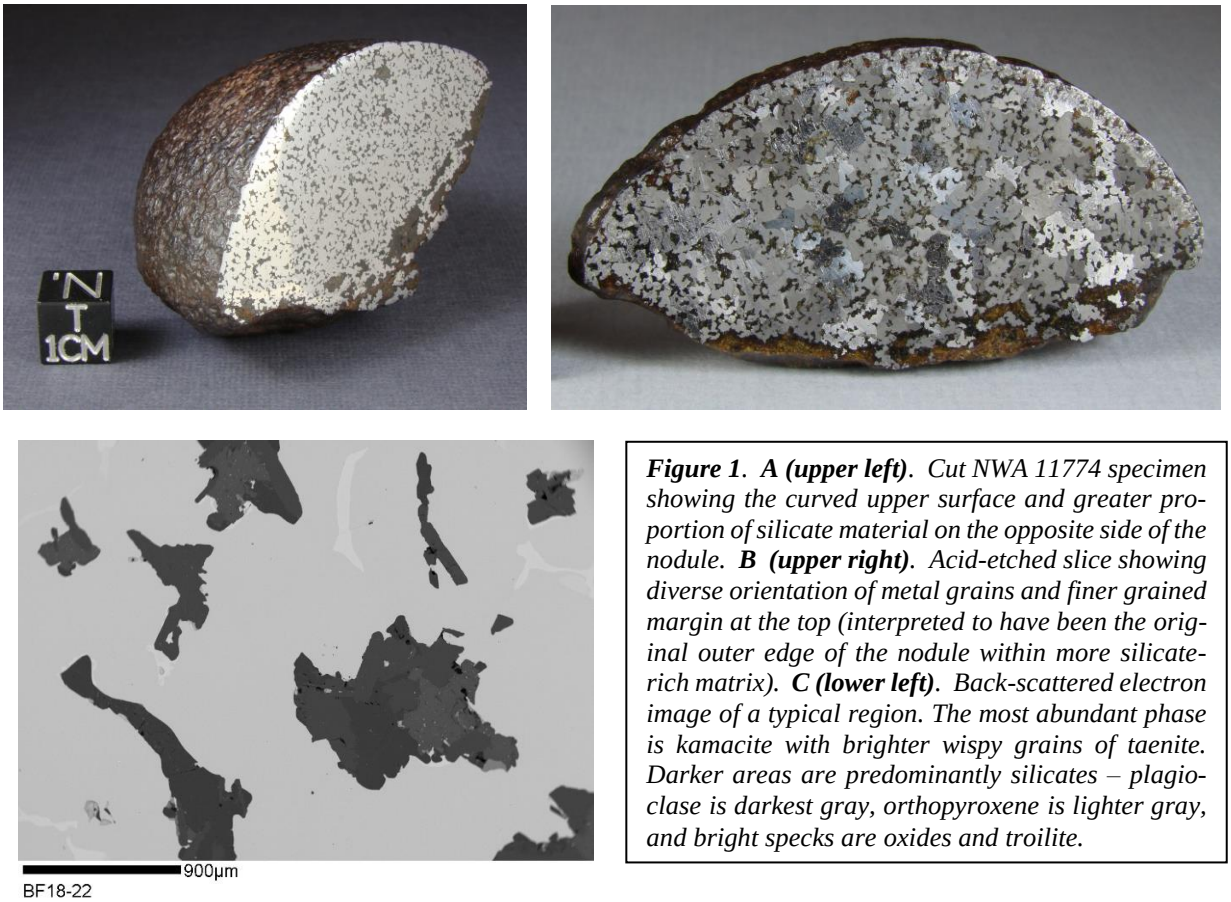

***Figure 1**. **A (upper left)**. Cut NWA 11774 specimen showing the curved upper surface and greater proportion of silicate material on the opposite side of the nodule. **B (upper right)**. Acid-etched slice showing diverse orientation of metal grains and finer grained margin at the top (interpreted to have been the original outer edge of the nodule within more silicate-rich matrix). **C (lower left)**. Back-scattered electron image of a typical region. The most abundant phase is kamacite with brighter wispy grains of taenite. Darker areas are predominantly silicates – plagioclase is darkest gray, orthopyroxene is lighter gray, and bright specks are oxides and troilite.*

References: [1] Krinov E. L. (1962) *Meteorit. Bull.* **25**, p. 3. [2] Nininger H. H. (1963) *Science* **139**, 345-347. [3] Axon H. J. and Nasir M. J. (1977) *Mineral. Mag.* **41**, 121-122. [4] Garvie. L. A. J. *et al.* (2010) *Lunar Planet. Sci.* **XLI**, #1386.