THE CR2 CHONDRITE NWA 801: PETROGRAPHY AND PETROLOGY.

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Introduction: The CR2 chondrite Northwest Africa (NWA) 801 includes at least 5 kg of fragments [1], and has been subject to detailed analyses of many sorts [2-7]. However, there has been no published study of its overall petrogrpahy and petrology. We have begun that study as part of a related project. We purchased two part-slabs of NWA801 commercially (~30 cm^2), and verified that they are consistent with the formal meteorite description [1]. BSE and X-ray element maps of the slabs are in progresss, as are EMP analyses of mineral phases.

Petrography: NWA 801 is mostly typical of CR chondrites [8] in containing abundant Fe-Ni metal (partially altered to rust phases), abundant mm-sized Type 1 PO(porphyritic olivine) / POP(porphyritic olivine-pyroxene) chondrules, and ~30% matrix material. Refractory inclusion and lithic fragments [9] of several types are present but uncommon.

The most abundant chondrule type has a PO core surrounded by a POP or PP (porphyrtic pyroxene) mantle. Rounded metal blebs are scattered throughout, and generally are more common in the mantle, where they form concentric rings or shells. In some chondrules, the POP mantle is surrounded by a rind of small metal globules. Rims of many types are present: very fine-grained (~2 µm) laminated silicate-sulfide, matrix-like material [10], granular silicates, Fe-sulfide, and silica-rich [11]. Barred olivine (BO) chondrules are uncommon, radial pyroxene chondrules are rare, and no cryptocrystalline chondrules were observed.

Type II (Fe-rich) chondrules are uncommon, but include PO, POP, and BO types. An exceptional type II BO chondrule has three distinct layers, each of a different bar width and orientation, and each with Fe-S globules at its edge (see [12]).

Inference: The petrography and petrology of NWA 801 are representative of other CR2 chondrites, so that detailed investigations of it can reasonably be extrapolated to the whole class. In general, the impression one gains from NWA 801 chondrules is of multiple and repeated episodes of formation and growth in a variety of chemical and thermal environments [13].

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