THE UNGROUPED TRACHYANDESITIC ACHONDRITE NORTHWEST AFRICA 11575. M. A. Habermann[1], C. B. Agee[1] Insititute of Meteoritics, Department of Earth and Planetary Sciences, University of New Mexico, MSC03-2050, Albuquerque, NM 87131, (myahaber@unm.edu).

Introduction: Northwest Africa 11575 is an ungrouped achondrite found near the border of Mali and Algeria in 2016, and then purchased by Daryl Pitt. We report here preliminary results on the host lithology and the dark lithology.

Methods: Composition data and backscatter electron images were collected using a JEOL JXA 8200 electron microprobe at the University of New Mexico. Color thresholding in Fiji was used on qualitative element maps to determine the bulk composition of the host and dark lithologies. X-ray Diffraction was used to confirm the SiO2 phase. Oxygen isotopic ratios were determined using the MAT 252 mass spectrometer, coupled with an in-situ laser fluorination line.

Petrography of the Host Lithology: The host lithology of NWA 11575 consists of pyroxene (35%), feldspar (52%), microcline (5%), quartz (3%), apatite (3%), with minor olivine, chromite, ilmenite, iron oxide, iron sulfide, and low-Ni iron. The host lithology has an ophitic texture. Pyroxene crystals are found to be as large as 800-1000 µm, but are commonly in the 200-500 µm range. The pyroxenes display igneous, sector zoning with cores of magnesian pigeonite, mantled by augite, and then rimmed by suc-calcic ferroaugite or ferrpigeonite (Fig. 1). The feldspars consist of primarily oligoclase, along with orthoclase. The orthoclase was often found in contact with quartz and other minor phases.

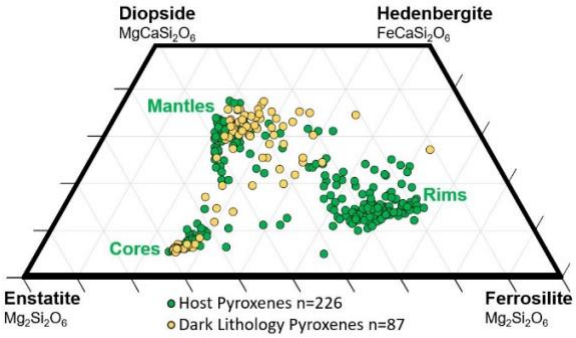

Figure 1. Pyroxene quadrilateral for the dark xenolith (yellow) and the main light lithology (green).

Petrography of the Dark Lithology: The dark lithology of NWA 11575 consists of a microporphyry of euhedral pyroxenes set in a groundmass of fine grained quench crystals and mesostasis. Apatite is present in some regions of the dark lithology, but are not ubiquitous. The pyroxenes within the dark lithology show igneous zoning, similar to the compositional zoning trends observed in the host lithology (Fig. 1). Within the dark lithology, the early-formed, larger pyroxene crystals are dominated by magnesian pigeonite, while the smaller pyroxene crystals have a wider range of compositions that plot within the augite field.

Similarities to Ordinary Chondrites: Triple oxygen isotope analyses indicate that the host and dark lithologies are both similar isotopically to LL chondrites (Fig 2).

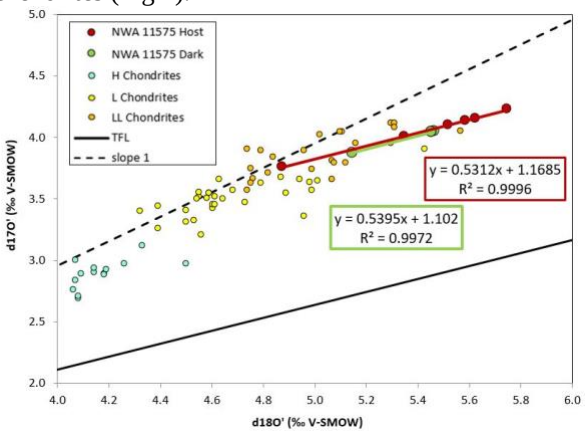

Figure 2. Triple oxygen isotope diagram showing analyses from the host lithology and dark lithology of NWA 11575.

Preliminary microprobe results on apatites from the host and dark lithologies are also similar to apatites from ordinary chondrites (Fig. 3). $\varepsilon^{54}Cr$ values are also similar to those of ordinary chondrites.

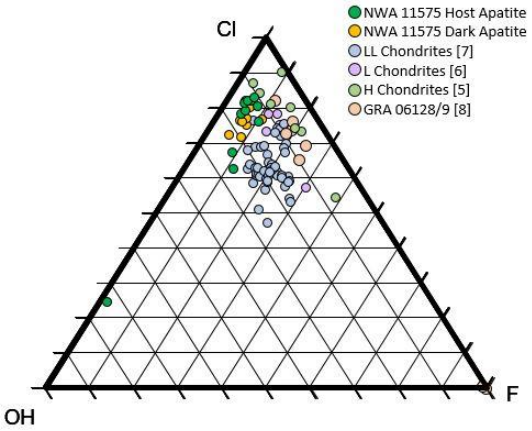

Figure 3. Cl-F-other ternary diagram of apatite compositions from NWA 11575 and ordinary chondrites.

Discussion: The similarities between NWA 11575 and ordinary chondrites (oxygen isotopes, apatite compositions, and $\varepsilon^{54}Cr$) suggest that NWA 11575 may be derived from ordinary chondrites, although further research is needed to confirm or deny this.