PAIRING AND PETROGENETIC RELATIONSHIPS AMONG BASALTIC LUNAR METEORITES FROM NORTHWEST AFRICA. R.A. Zeigler[1], R. L. Korotev[1], B. L. Jolliff[1], T. E. Bunch[2], and A. J. Irving[3], [1]Dept. Earth & Planetary Sciences, Washington University, Campus Box 1169, St. Louis, MO 63130 zeigler@levee.wustl.edu [2] Dept. of Geology, Northern Arizona University, Flagstaff, AZ 86011. [3]Dept. Earth & Space Sciences, University of Washington, Seattle, WA 98195.

Several lunar meteorite stones discovered in northwestern Africa since 2000 are fragments of a single, complex, coarse-grained basaltic breccia from the Moon. The stones, about 1.2 kg in total mass, include previously studied NWA (Northwest Africa) 773 [1,2] and more recently discovered NWA 2700, NWA 2727, NWA 2977, NWA 3160 [3,4], and at least one other yet-to-be described stone.

As a whole, the meteorite consists of several lithologies, but the breccia is sufficiently coarse grained and the stones sufficiently small that individual stones each contain only a subset of the lithologies. The meteorite is best described as a fragmental breccia consisting mainly of clasts, some greater than 1 cm in size, of porphyritic olivine basalt, (most prominent in stones 2727 and 3160) and cumulate olivine gabbro (most prominent in 773, 2700, and 2977) [1]. NWA 773 also contains regolith breccia that is finer grained than the fragmental breccia and which itself contains a minor component of nonmare material [1,2]. NWA 2727 contains a minor component of ferrogabbro [4].

We conclude that the stones are paired on the basis of their compositional and textural similarity to each other and their uniqueness as whole compared to other lunar samples. The olivine basalt is a VLT (very-low-Ti) lunar basalt [1]. On the basis of mineral composition and bulk sample composition (INAA [5]), the same basalt occurs in all the stones. Similarly, the olivine cumulate is compositionally distinct. Both lithologies share several key trace-element characteristics that show they are petrogenetically related to each other and together distinct from any other basaltic lunar meteorite and any basalt from the Apollo and Luna collection. These features are relative enrichment in LREE, high Th/REE, and very low concentrations of the 'plagiophile' elements Na_2O, Sr, and Eu. This fingerprint suggests a common source region for the different lithologies, one that is different from that of nearly any previously studied lunar basalt.

For NWA 773, Jolliff et al. [2] argued for a shallow intrusive setting for crystallization of the olivine cumulate and derivation from a melt of composition similar to Apollo 14 VLT volcanic glass, with modest assimilation of a KREEP component. Moreover, the breccia associated with the olivine cumulate may be dominated by extrusive VLT basalt related to the shallow intrusive. We will test this and other scenarios for petrogenetic relationships using data from the new NWA meteorites

References: [1] Fagan T. J. et al. (2003) *MAPS* **38**: 529-554. [2] Jolliff B. L. et al. (2003) *GCA* **67**: 4857-4879. [3] Zeigler R. A.. et al. (2006) *LPS XXXVII*, Abstract #1804. [4] Bunch T. E. et al. (2006) *LPS XXXVII*, Abstract #1375. [3] Zeigler et al. (2006) *Antarctic Meteorites* **XXX**. **Acknowledgements:** This work was supported by NASA grant NNG04GG10G.