

NWA 1110

Northwest Africa 1110 (NWA 1110)

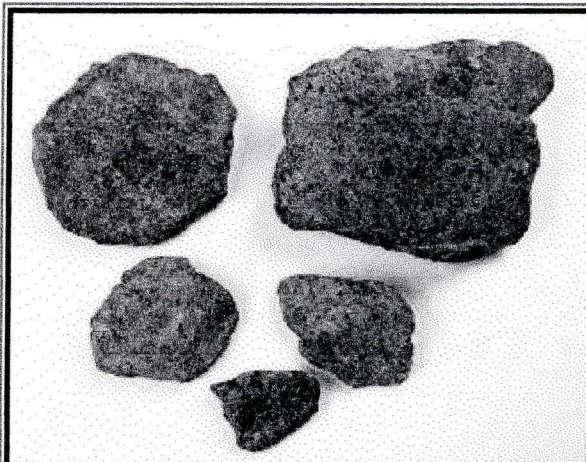


Photo © Adam Hupe & Greg Hupe
JPEG (81K)

Photo of the larger fragments. The largest fragment measures 30mm x 22mm x 10mm.



Photo © Adam Hupe & Greg Hupe
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NWA 1110 consists of several fragment with a total known weight of 118 grams.

NORTHWEST AFRICA 1110

Ron Baalke
March 15, 2002

Additional Mars meteorites fragments have been recovered from the Sahara desert in northwest Africa. These new meteorite fragments were purchased by Adam and Greg Hupe in November 2001 from a dealer in Erfoud, Morocco, after receiving a much smaller sample in September, 2001. The recovery location could not be confirmed since Moroccan dealers tend to keep their sources secret, but the strewn field for this meteorite is believed to be in Morocco. The meteorite has been given the official name of NWA 1110, and consists of several fragments with a total known weight of 118 grams.

Samples and thin sections of the meteorite were provided to the University of Washington in Seattle, Washington. Dr. Anthony Irving and Dr. Scott Kuehner have identified the meteorite as a Mars meteorite, and have also paired it with NWA 1068, another Mars meteorite recovered by a French team in April 2001. Since this meteorite is paired, the total number of Mars meteorite remains at 24. The following analysis of NWA 1110 is provided by Dr. Anthony Irving and Dr. Scott Kuehner from the University of Washington.

NWA 1110 Olivine-phyric basaltic shergottite paired with NWA 1068

Dr. Anthony Irving, Dr. Scott Kuehner
University of Washington

This sample consists of small olivine phenocrysts in a fine-grained groundmass of complexly-zoned

pigeonite and homogeneous plagioclase (maskelynite; Ab₄₆Or₂) with minor ilmenite, Ti-magnetite and pyrrhotite. Euhedral to subhedral olivine crystals have Mg-rich cores (Fa₂₈, FeO/MnO = 50) with narrow Fe-enriched rims (Fa₅₁, FeO/MnO = 53), and contain inclusions of chromite and glass (some with negative crystal outlines). Augite (Fs₃₃Wo₂₁) occurs as rare inclusions within olivine megacrysts. Pigeonite exhibits complex zoning typical of shergottites (Fs₂₈Wo₉ cores with sharply defined Fs₄₀Wo₁₅ rims) and has FeO/MnO = 30 (by comparison pigeonite analyzed concurrently in DaG 476 has FeO/MnO = 28). Rare chlorapatite is present in the mesostasis. Secondary features include minor barite (commonly associated with chromite inclusions in olivine), calcite in a cross-cutting glass veinlet, and narrow zones of K-Al-bearing glass or clay minerals along grain boundaries between pyroxene and plagioclase.

We are skeptical of the designation by Barrat et al. (2002) of this shergottite (and by inference DaG 476 and SaU 005) as "picritic". We have found 6-sided, euhedral crystals of olivine that appear to be phenocrysts grown from magma rather than xenocrysts related to another source. The interpretation of similar olivine megacrysts with Fe-rich rims in DaG 476 is likewise controversial (Zipfel et al., 1999, 2000; Wadhwa et al., 2000); however, it is possible that both phenocrystic and xenocrystic olivine could be present in these samples, and therefore the picritic designation may be valid.

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