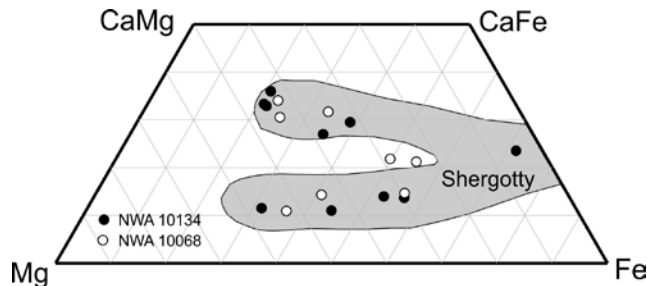


PETROLOGY, MINERALOGY AND RADIOGENIC ISOTOPIC COMPOSITION OF ENRICHED MAFIC SHERGOTTITE NORTHWEST AFRICA 10134.

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Northwest Africa 10134 is a small (25.4 gram) fusion-crusted, discoidal-shaped shergottite stone which is the subject of multi-disciplinary studies at the Royal Ontario Museum. We report here on its petrographic and radiogenic isotopic characteristics in comparison with those for other similar Martian specimens [1-4]. Future studies will include Raman spectroscopy of phosphates as well as analyses of bulk major elements, cosmogenic isotopes, and lead isotopes in any Zr-bearing accessory minerals.

Petrography and Mineralogy: This specimen is relatively fine grained (mean grainsize 0.4 mm) with an intersertal texture, and is composed predominantly of stubby prismatic grains of zoned clinopyroxene (60 vol.%) and maskelynite (37 vol.%, $An_{44.4-55.3}Or_{5.0-1.2}$) with accessory Cr-bearing ulvöspinel, ilmenite, chlorapatite, merrillite, pyrrhotite, silica+plagioclase intergrowths and interstitial microlite-bearing glass. Pyroxene compositions comprise high-Ca subcalcic augite ($FS_{21.0-38.6}WO_{36.0-27.0}$; FeO/MnO = 26-38) and low-Ca pigeonite ($FS_{31.6-56.3}WO_{11.0-14.0}$; FeO/MnO = 33-39), with sparse rims of very subcalcic augite ($FS_{71.7}WO_{23.5}$; FeO/MnO = 49) – see plot below. Scattered pockets of deep brown, vesicular shock glass are also present. The unusual flat discoidal shape of this meteorite may imply some preferred orientation of crystals by magmatic flow, although this possibility cannot be properly assessed from the studied thin section cut perpendicular to the direction of flattening.



Pyroxene compositions in NWA 10134 and other enriched mafic shergottites, including NWA 10068 (paired with NWA 2975).

Bulk Hf and Nd Isotopes: The hafnium isotopic composition ($\epsilon_{Hf} -19 \pm 0.5$) coupled with the abundance of Hf (1.68 ppm), determined on a 85 mg interior sample indicate that NWA 10134 is another member of the enriched group of shergottites (like Shergotty and Zagami). Analyses for Sm and Nd are in progress and will be reported at the meeting.

References: [1] Tait K. et al. 2015. Abstract #2709. *LPS XLVI* [2] Irving A. et al. 2014. Abstract #5196. *77th Met.Soc. Mtg.* [3] Stolper E. and McSween H. 1979. *GCA* 43, 589-602. [4] Stolper E. and McSween H 1979. *GCA* 43: 1475-1498; Smith J. and Hervig R. 1979. *Meteorit.* 14:121-142; Stöffler D. et al. 1986. *GCA* 50: 889-913.