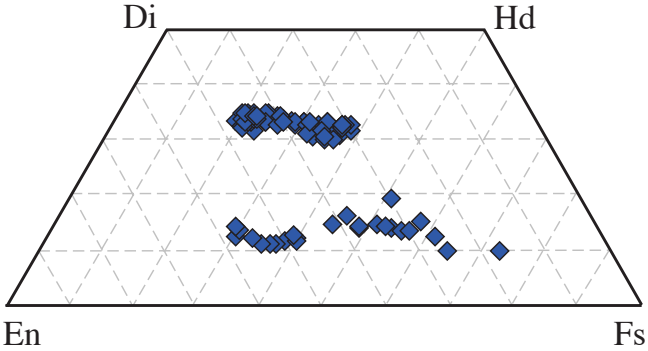
PETROLOGY AND REDOX STATE OF BASALTIC SHERGOTTITE NWA 3171. A. J. Irving[1], C. D. K. Herd[2], S. M. Kuehner[1], D. A. Gregory[3] and A. A. Aaronson[4], [1]Earth & Space Sciences, Univ. of Washington, Seattle, WA 98195; irving@ess.washington.edu, [2]Earth & Atmos. Sciences, Univ. of Alberta, Edmonton, Alberta T6G 2E3, [3]St. Thomas, Ontario, [4]Lagrange, Texas

Discovery: Algerian basaltic shergottite NWA 3171 is a fresh, 506 gram, greenish-gray stone partially coated by thin, black fusion crust exhibiting flow orientation.

Petrography: The sample consists mainly of subequal amounts of prismatic pyroxene and glassy maskelynite. Pyroxenes are zoned from cores of subcalcic augite ($Fs_{19.3}Wo_{33.1}$; FeO/MnO = 26.4) or pigeonite ($Fs_{29.9}Wo_{12.1}$; FeO/MnO = 28.2) to pigeonite rims (as ferroan as $Fs_{72.9}Wo_{9.8}$; FeO/MnO = 39.9), a pattern similar to that in Shergotty and Zagami. Maskelynite exhibits patchy compositional heterogeneity ($An_{41.5}Or_{3.7}$ - $An_{54.4}Or_{1.3}$). Accessory phases are ulvöspinel, ilmenite, chlorapatite, merrillite, pyrrhotite, Na-K-Al-Si-rich glass, silica (formerly stishovite, judging from radial fractures around some grains), rare baddeleyite, and rare barite and calcite (probably of terrestrial origin). Minor rusty staining occurring around ulvöspinel grains, and along thin, black (shock-produced?) veinlets across the specimen, appears to be a complex mixture of iron hydroxide and Si-Al-Ca-Mg-Cl-K-Br(?)-bearing phases (possibly pre-terrestrial). This specimen is not obviously paired with any of the other four African evolved, olivine-free basaltic shergottites NWA 480, NWA 856, Zagami or NWA 1669 [1].

Oxygen Fugacity: The compositions of coexisting ulvöspinel and ilmenite imply an oxygen fugacity during crystallization of 1.4 log units below the QFM buffer, similar to the values determined for other basaltic shergottites, specifically Shergotty, Zagami and Los Angeles [2].



References: [1] Irving, A. and Kuehner, S. (2003) *LPSC XXXIV*, #1503; Jambon, A. et al. (2002) *MAPS,* 37, 1147-1164; McCoy, T. et al. (1992) *GCA, 56*, 3571-3582; Russell, S. et al. (2004) *Meteorit. Bull. 88* [2] Herd, C. et al. (2001) *Am. Miner., 86*, 1015-1024.