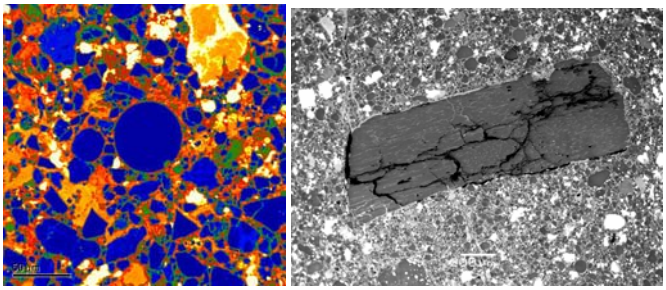
PETROLOGY AND BULK COMPOSITION OF CH3 CHONDRITE NORTHWEST AFRICA 2210 T. E. Bunch[1], A. J. Irving[2], J. H. Wittke[1], S. M Kuehner[2], M. Gellissen[3], H. Palme[3], D. Rumble, III[4] and D. A. Gregory [1]Dept. of Geology. Northern Arizona University, Flagstaff, AZ, tbear1@cableone.net, [2]Earth & Space Sciences, Univ. of Washington, Seattle, WA, [3]Inst. Geologie/Mineralogie, Univ. Köln, Germany, [4]Geophysical Laboratory, Washington, DC

Petrology: This relatively fine grained and fresh (W1/2), black, magnetic stone (74 grams) is composed mainly of rounded glass spheres and chondrules (together with broken fragments of the same) and metal (~15 vol.%) in a sparse matrix – see image A. Chondrules contain zoned, euhedral olivine (Fa_{1-50}) and/or orthopyroxene (Fs_{1-50}) in a matrix of glass. Some cryptocrystalline chondrule fragments are composed of "eutectoid" intergrowths of low-Ca and high-Ca enstatite, and homogeneous glass spheres have various compositions intermediate between almost pure forsterite and enstatite. Other phases include Cr-Al-rich diopside, troilite, feldspathic glass, Al-rich chromite, and a large grain of opx ($Fs_{6.5}Wo_{1.5}$) with exsolved aluminous cpx ($Fs_{14}Wo_{33}$, 18.5 wt.% Al_2O_3 - see image B). No CAIs were found, and this specimen evidently differs from and is not paired with NWA 470, NWA 739 or NWA 770 [1, 2].



BSE images ***A.*** *Complete and broken glassy spheres (~Fa_1Fs_1; blue) and altered metal (white, orange).* ***B.*** *Large 1.6 mm long opx grain with Al-rich cpx exsolution lamellae.*

Oxygen Isotopes: Analyses of acid-washed, metal-free material by laser fluorination gave $\delta^{17}O$ = 1.07, 1.05; $\delta^{18}O$ = 3.95, 4.11; $\Delta^{17}O$ = - 1.008, - 1.112 per mil. These values are like those for other CH chondrites, ***except*** NWA 739 [1, 3].

Bulk Composition: X-ray fluorescence analyses gave in wt.%: Mg 10.2, Si 12.1, Al 0.86, Ca 0.88, Ti 0.058, Fe 36.1, Cr 0.31, Mn 0.10, P 0.12, V 57 ppm. These abundances are similar to those found for other CH chondrites [4], except for somewhat lower refractory element contents.

References: [1] Ivanova M. et al. 2001. *LPS XXXII*, #1817; Lawrence S. et al. 2004. *LPS XXXV*, #1451; Krot A. et al. 2004. *LPS XXXV*, #1394; Jones R. et al. 2005. *LPS XXXV*, #1813 [2] *Meteorit. Bulls.* 85, 86 [3] Clayton R. and Mayeda T. 1999. *GCA* 63: 2089-2104 [4] Lodders K. And Fegley B. 1998. *The planetary scientist's companion*, Oxford U. Press.