NWA 1500: THE FIRST BASALTIC UREILITE? R. Bartoschewitz[1], F. Wlotzka[2], R. N. Clayton[3], and T. K. Mayeda[3] [1]BML, Lehmweg 53, D-38518 Gifhorn, Germany (Bartoschewitz.Meteorite-Lab@t-online.de), [2]Max-Planck-Institut für Chemie, P.O. Box 3060, D-55020 Mainz, Germany, [3]University of Chicago, Chicago IL 60637, USA

Introduction: This 3.3 kg meteorite was purchased in Zagora/Morocca in 2000. The stone is a nearly complete individual and shows a red-brown colored surface with some patches of fusion crust. The cut face shows a gray-black interior with weak layering and brecciation.

Petrography and Mineralogy: Thin sections show the texture of typical monomict ureilites with abundant triple junctions and curved intergranular boundaries. Olivine crystals (about 90 vol-%) of 0.2-0.5 mm are embedded in a dark vein material with finely dispersed graphite and metal. Minor components are augite, orthopyroxene, plagioclase, chromite, metal and troilite. The plagioclase grains are 0.5 - 3 mm across and in igneous contact with olivine, the larger ones poikilitically enclose rounded olivine grains.

Mineral compositions were determined by SEM and a Link EDAX system:

Olivine: Fo72; molar Fe/Mn 57; Cr_2O_3 ,CaO <0.1%
Augite: En44Wo45; Cr_2O_3 0.74%
Orthopyroxene: En70Wo2; Cr_2O_3 0.11%
Plagioclase: An37Or0
Chromite: Fe/(Fe+Mg) 0.75; Cr/(Cr+Al) 0.75
Kamacite: Ni 1.5%; Co 0.4%; Si 0.3%

Texture and mineralogy reflect a typical monomict type 2 (olivine-augite-orthopyroxene) ureilite [1], but with additional plagioclase and chromite. NWA 1500 is the first monomict ureilite containing feldspar and, after LEW 88774, the second with primary chromite [2]. With Fa28 it is the most ferroan ureilite known. The molar Fe/Mn ratio in olivine is higher than in other ureilites, but it follows their trend for Mg/Fe vs. Fe/Mn [3].Ca and Cr in olivine are much lower than in other ureilites, but the low Cr may be connected with the presence of chromite. Plagioclase composition meets the intermediate feldspathic clasts in polymict ureilites [4].

According to these mineralogical data, NWA 1500 has to be discussed as the first member of the until now missing basaltic ureilites, although it bears, in addition to feldspar, dense minerals like metal and sulfide and does not meet the model of Ikeda [5].

Oxygen isotopes: Its O-isotopes are δO-17 +1.58 and δO-18 +4.56 and do not fall in the ureilite field, but on the border of the winonaite/IAB field. The closest match with chondritic meteorites is with the CR/CH group. O-isotope data of felsic clasts from polymict ureilites clasts fall in the ureilitic field [4, 6], but only one result from a Nilpena feldspathic clast shows delta-values nearly as low as those in NWA 1500 (δO-17 +2.92, δO-18 +6.80) [7]. For the missing basaltic ureilite formed by partial melting of an ultramafic source, we expect the melt to move to the right of the source composition on the O-isotope three-isotope graph, due to the well-known mass-dependent isotopic fractionation. This is opposite to what we have seen in NWA 1500.

References: [1] C. A. Goodrich et al. (2002) *LPS XXXIII,* CD-ROM (#1379). [2] C. A. Goodrich (2001) *Meteorit. Planet. Sci.,* **36**, A67. [3] C A. Goodrich et al. (2000) *Meteorit. Planet. Sci* 35, 521-535 [4] B.A. Cohen et al. (2003) *LPS XXXIV,* CD-ROM (#1518). [5] Y. Ikeda et al. (2001) *Meteorit. Planet. Sci.,* **36**, 481-499. [6] N. T. Kita et al. (2000) *Meteorit. Planet. Sci.,* **35**, A88. [7] R.N. Clayton et al. (1988) *Geochimica et Cosmochimica Acta,* **52**, 1313-1318.