**NOBLE GAS RECORD OF THE ANOMALOUS CM DHOFAR 1434.** R. Bartoschewitz, U. Ott, and S. Herrmann. Bartoschewitz Meteorite Laboratory, Lehmg 53, D-38518 Gifhorn, Germany. E-mail: bartoschewitz meteorite-lab@t-online.de. Abt. Biogeochemie, Max-Planck-Institut für Chemie, Joh.-J.-Becher-Weg 27, D-55128 Mainz, Germany

**Introduction:** We report noble gases for Dhofar 1434 that has been classified as anomalous CM chondrite [1]. It was discovered about 600 m west of Dhofar 225 that is classified as anomalous CM, too [2]. Petrological and mineralogical data of Dhofar 1434 are very close to Dhofar 225 [3]; and both meteorites seem to be paired. The O-isotopes plot on the far extension of CM2 chondrites and have affinities to the anomalous CM chondrites Belgica-7904, Y-82162, and Y-86720 [3].

**Samples and Experimental:** Noble gases were analyzed by standard analytical techniques (e.g., [4]) in two fragments (sample I: 8.54 mg; sample II: 14.7 mg). Gas extraction was at 600 °C, 1000 °C, and 1800 °C.

**Results:** Data for He and Ne are summarized in Table 1, those for Ar, Kr and Xe in Table 2.

**Helium and neon.** Neon data are shown in the 3-isotope plot of Fig. 1. The dominant trapped component is Ne-HL (Ne-A2) carried by presolar diamond [5, 6], with indications for a small amount of Ne with higher 20Ne/22Ne (air, P3, solar) released at the lowest temperature. Evident is also the presence of presolar SiC as carrier for Ne-E (Ne-G) indicated by the low 20Ne/22Ne [6, 7] at 1800 °C. With a trapped 4He abundance of ~6x10^-8 cc/g a significant amount – if not virtually all – of measured 4He must be of trapped origin. In fact, for a trapped 4He/20Ne ratio of ~600 (as in primitive HL gases; [6, 8]) the expected amount of trapped 4He is about twice that observed; For the 4He/20Ne ratio of “processed HL” gases [8] of ~290, on the other hand, the expected trapped 4He agrees well with the observed amount, which then leaves little room for radionenic He. Almost half of 3He would then be trapped, with corresponding uncertainties about the amount of cosmogenic He (see below).

**Argon, krypton, xenon.** Ar, Kr and Xe are dominated by Q-gases [6, 11]. As shown in Fig. 2, a small contribution from adsorbed air is evident in the first release step, while HL-Xe carried by presolar nanodiamond [5, 6] makes a significant contribution (~25% of 132Xe) at intermediate temperature (1000 °C).
Abundance of presolar phases. The isotopic excursions in Ne (Fig. 1) and Xe (Fig. 2) allow an estimate of the abundances of presolar diamond and SiC. Using the approach of [12, 13] and a “constant” Ne-E (= Ne-G) concentration in SiC of 16500x10^8 cc/g [13], from the 1800 °C steps an abundance of ~6 ppm is inferred. A similar estimate for presolar diamond, based on ^{132}Xe-HL in the 1000°C steps of ~6x10^{-11} cc/g and a typical ^{132}Xe-HL abundance in CM diamonds of 1.5x10^{-7} cc/g [8, 13] results in an estimated diamond abundance of ~400 ppm.

Ages. Assuming that Dho 1434 is paired with Dho 225 we used the chemical composition from [3] for age calculations. Nominal K-Ar ages based on the ^{40}Ar abundances in Table 2 (probably containing a significant air contribution) are 0.23 and 0.24 Ga. With a probably dominant contribution to ^{4}He from trapped He, it is not possible to calculate a U/Th-He age. Cosmic ray exposure (CRE) ages that we have calculated following [14] suffer from the problem that the abundance of trapped Ne is too high for a reliable determination of the shielding parameter (^{22}Ne/^{21}Ne)_cos. Assuming “average shielding” (shielding parameter = 1.11) leads to CRE ages from ^{21}Ne of 0.74 and 0.79 Ma. Corresponding ages based on ^{3}He and the unrealistic assumption that all of ^{3}He is cosmogenic (see above) are 0.35 and 0.32 Ma, reflecting loss of at least half of cosmogenic helium.