OXYGEN ISOTOPIC COMPOSITIONS AND DEGREE OF ALTERATION OF CR CHONDRITES. B.-G. Choi[1], I. Ahn[1,2], K. Ziegler[3], J. T. Wasson[3,4], E. D. Young[3,4] and A. E. Rubin[4]. [1]Earth Sci. Ed., Seoul Nat'l Univ., Seoul, Korea, 151-748. E-mail: bchoi@snu.ac.kr, [2]Korea Polar Research Institute, Incheon, 406-840, Korea, [3]Earth & Space Sciences, UCLA, [4]IGPP, UCLA, Los Angeles, CA 90095, USA

Although hydrously altered, CR chondrites are among the most primitive samples of the solar nebula because of no evidence for thermal or shock metamorphism [1], high presolar grain abundances [2], and perhaps because of their solar refractory lithophile/Mg ratios [3]. Previous O-isotope measurements showed that CR chondrites form a mixing line of slope ~ 0.7 with a rather large scatter [4].

We measured O-isotopic compositions of 10 CR chondrites, including seven Antarctic and two hot-desert finds and one fall, using the CO_2-laser fluorination techniques at UCLA and Korea Polar Research Institute. Samples were gently crushed using an agate mortar and pestle; relatively fresh-looking fragments were carefully selected under a binocular microscope. Each meteorite was prepared with (1) dilute-acid wash + pre-fluorination, (2) pre-fluorination only and (3) no pretreatment. Acid wash and pre-fluorination techniques help in the removal of terrestrial weathering products; however, they may also remove some non-terrestrial materials. It is difficult to recover fine-grained materials completely after acid wash and pre-fluorination are used to remove some surface hydroxyl oxygen. GRO 99577, the most altered CR [5] was measured only without pretreatments.

Our data fall on a mixing line of slope ~0.75 with less scatter than the previous data set. In each case, the washed and pre-fluorinated samples of each chondrite have the lightest O-isotopes followed by samples with pre-fluorination only and those analyzed without pretreatments. All of the data fall along the same mixing line. While the previous data showed that Antarctic members fall closer to the terrestrial fractionation line than the others [4], our data do not show such a tendency, implying that our data reflects lower levels of terrestrial contamination.

It had been recognized that O-isotopic composition correlates with the degree of alteration of CR chondrites [4]. Our data show the same trend. Three CR chondrites that have been proposed as the least altered members, LAP 02342 [6], MET 00426 and QUE 99177 [7], form a tight cluster on the ^{16}O-rich end ($\delta^{17}O \approx -2.4‰$, $\delta^{18}O \approx 0.4‰$), followed by GRO 03116, EET87770, GRV 021710, Acfer 187, Renazzo, Gao-Guenie (b) and GRO 95577 with increasing $\delta^{18}O$. Our GRO 95577 data ($\delta^{17}O = 4.70‰$, $\delta^{18}O = 9.73‰$) differ from the previous measurements, but are very similar to matrix from EET 87770 and Renazzo [4].

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