Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)
©2011. Japan Geoscience Union. All Rights Reserved.

PPS021-P08 Room:Convention Hall Time:May 23 16:15-18:45

Al-Mg isotope distribution in Type B CAI: partial melting and chronology

Shoichi Itoh[1*], Steven Simon[2], Lawrence Grossman[2], Hisayoshi Yurimoto[1]

[1]Natural History Sci., Hokudai, [2]Dept. Geophys. Sci., The Univ. Chicago

Introduction: Oxygen isotopic compositions are heterogeneously distributed within and between minerals in coarse-grained CAIs, suggesting crystallization from different generations of melt. These minerals often plot on a straight line or multiple lines on an Al-Mg isochron diagram. From petrographic and O isotopic study, these CAIs have experienced at least two partial melting events (e.g., Simon et al., 2005; Itoh et al., 2009). In the present study, we report preliminary results of Al-Mg isotopic measurements of spinel and melilite in Golfball and TS34 to estimate the reset for Al-Mg isotope system of the multiple melting events of each melt.

Results and discussion: Al-Mg isotope analyses were performed with a Cameca ims-1270 SIMS instrument at Hokkaido University. These analytical procedures are described in detail elsewhere.

Two isochrons are defined by the Al-Mg data for these CAIs. For Golfball, the gehlenitic core melilite and rim melilite yield different initial $^{26}Al/^{27}Al$ ratios of 4.9 (8) and 1.9 (12) x 10^{-5},, respectively. The age difference between the two isochrons is calculated to be about 1 My. For TS34, the spinel (through the origin) and the mantle melilite yield different initial $^{26}Al/^{27}Al$ ratios of 5.5 (4) and 4.5 (6) x 10^{-5}, respectively. The age difference between the two isochrons is calculated to be about 0.2 My. These results are consistent with the multiple crystallization history by the results of petrographic study.

Keywords: SIMS, Al-Mg isotope, CAI, oxygen