Geochemical variation of fresh quenched glass in axial MORB along 15-18°S, Central Indian Ridge

Y. ORIHASHI[1], M. MAGNANI,[1] S. MACHIDA[2], N. NEO[3], A. YASUDA[1] AND K. TAMAKI[4]

[1]Earthquake Research Institute, the University of Tokyo (oripachi@eri.u-tokyo.ac.jp, marukoma@eri.u-tokyo.ac.jp, yasuda@eri.u-tokyo.ac.jp)
[2]Ocean Research Insitute, the University of Tokyo (machida@ori.u-tokyo.ac.jp)
[3]Department of Geology, Faculty of Sciences, Niigata University (f05j007@mail.cc.nigata-u.ac.jp)
[4]Graduate School of Engineering, the University of Tokkyo, (tamaki@frcer.t.u-tokyo.ac.jp)

The Rodrigues Ridge bifurcating from the Reunion hotspot track meets the Central Indian Ridge (CIR) at 19°S, and provides the best opportunity to understand ridge-hot spot interaction. The CIR MORBs have enrichment in incompatible elements increasing gradually northward along 18-21°S [1]. However, it is controversial that the increase of enrichments results from either an input of the plume materials channeled from the Reunion hot spot beneath the lithosphere and dammed by the Marie Celeste Fracture Zone (MCFZ) [1] or metasomatic process in the upper mantle such as recycling of ancient alkali basalts of subducted oceanic island [2]. In order to clarify the above issue, it is important to reveal distribution of the E-MORBs along the CIR over the MCRZ. We dredged the axial MORBs along 15-18°S during KH06-04 cruise and measured major and trace element compositions of the recovered fresh quenched glasses. Our result indicates that E-MORBs having high La/Sm, Ba/Nb and Nb/Zr ratios are distributed up to15°S in CIR, and that the glasses with strongest enrichment signature are distributed near the MCRZ. The plume materials dispersed along the CIR might be lately overprinted by metasomatism related to the MCFZ.

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S and O functional analysis of aqueously altered carbonaceous chondrites IOM

F.R. ORTHOUS-DAUNAY[1]*, E. QUIRICO[1], L. LEMELLE[2], P. BECK[1], V. DE ANDRADE[3], A. SIMIONOVICI[4], S. DERENNE[5] AND B. SCHMITT[1]

[1]L.P.G. CNRS/UJF BP53 38041 Grenoble Cedex9 France (*correspondence: forthous@ujf-grenoble.fr)
[2]E.N.S. CNRS 46 allée d'Italie 69009 Lyon France
[3]ID21 Beamline ESRF BP220 38043 Grenoble France
[4]LGCA CNRS/UJF 1381 rue de la piscine 38041 Grenoble
[5]BioEMCo CNRS/UPMC 11 rue P. M. Curie 75005 Paris

CI1, CM2, CR2 and ungrouped C2 carbonaceous chondrites contain a few percent of insoluble organic matter (IOM) which could provide clues on the organic chemistry of nebular and/or protostellar environments. These chondrites also have experienced complex hydrothermal processes on parent bodies [1-3]. A major issue is the understanding of IOM compositional and structural changes due to hydrothermalism. Chemical variability has been reported among various IOMs, and so far interpreted as the consequence of oxidation processes [4; 5]. The primordial diversity of organic precursors could be also involved.

11 IOMs extracted from CI1: Ivuna, Orgueil, Alais; CM2: Murchison, Cold Bokkeveld, QUE99355, QUE97990, Mighei, Murray; CR2: Renazzo; and C2 ungrouped: Tagish Lake were measured with µ-IR and S K-edge µ-XANES spectroscopy (in Grenoble, at LPG and ESRF, resp.).

C1 and C2 IOMs can be systematically distinguished regarding their oxidised groups. Indeed, CI1 IOMs show sulfonyl and carboxyl features on XANES and IR spectra. CI1 aliphatic enrichment toward CM is consistent with previous IR and NMR studies [5; 6]. Each in their group, Cold Bokkeveld (most altered CM) and Alais (least altered CI1 [7]) have peculiar IOMs: one exhibits abnormally oxidised sulfur and the other seems to be richer in aliphatics. If there are not precursor effects, the crescent IOM oxidation state seems to be driven by the increasing alteration degree.

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