Microstructural and petrological analyses peridotites and gabbros from IODP Hole U1382A at North Pond in the Kane area of Mid-Atlantic Ridge

Y. HARIGANE[1]*, N. ABE[2], K. MICHIBAYASHI[3], J-. I. KIMURA[4], Q. CHANG[4]

[1] Geological Survey of Japan, AIST, Tsukuba, Ibaraki 305-8567, Japan (*correspondence: y-harigane@aist.go.jp)

[2] Research and Development Center for Ocean Drilling Science, JAMSTEC, Yokosuka, Kanagawa 237-0061, Japan

[3] Institute of Geosciences, Shizuoka University, Shizuoka 422-8529, Japan

[4] Department of Solid Earth Geochemistry, JAMSTEC, Yokosuka, Kanagawa 237-0061, Japan

North Pond is an isolated sediment pond on the western flank of the Mid-Atlantic Ridge Kane area, where located on extinct spreading segments far from the current spreading axis and transform zone. IODP Expedition 336 cruise were conducted for understanding hydrology, microbiology and geochemistry drilled Site U1382 [1]. The peridotite and gabbro samples obtained from the sediment breccia zone of Hole U1382A. We collected six fresh peridotites and three gabbros for investigating the crustal and mantle structures beneath an extinct spreading segment. The peridotite samples were classified as spinel harzburgite (4 samples), plagioclase-bearing harzburgite (1), and vein-bearing peridotite with gabbroic veins (1), and none exhibited obvious macroscopic shear deformation. The gabbro samples consist of olivine gabbro (1), gabbro (1) and gabbro norite (1). Although olivine gabbro has no shear deformation, gabbro and gabbro norite show shear deformation such as mylonite. In peridotite samples, spinel harzburgites with protogranular texture are consistent with refractory peridotite. Plagioclase-bearing harzbugite could result from the gradual melt-rock interaction in the spinel harzburgite. Vein-bearing peridotite could also result from the progressive melt-rock interaction in plagioclase-bearing harzburgite. Our results in peridotite samples indicate that the melt–rock interactions refertilized the spinel harzburgite while in the uppermost mantle, possibly in the extinct spreading segment of the North Pond.

In the presentation, we will also present details of the rock descriptions, mineral fabrics and mineral chemistry of the peridotite and gabbro samples recovered from Hole U1382A.

[1] Edwards *et al.* (2014) *Sci. Drill.*, **17**, 13–18.