Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SIT42-11 会場:105 時間:5 月 22 日 15:45-16:00

背弧拡大時における最上部マントル構造発達過程：一の目潟かんらん岩捕獲岩からの制約
The uppermost mantle evolution during back-arc spreading: Microstructural and petrological characteristics of Ichinomega

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This study deals with the microstructural development in the uppermost mantle associated with melt/fluid rock interactions in peridotites induced by the back-arc spreading. We have studied spinel peridotite xenoliths from Ichinomegata volcano, back-arc region of Japan Islands. The mineral chemistry shows a typical residual trend, depleted in LREE. Their strong Th-U positive anomaly indicates a possible metasomatic origin associated to the subduction of the Pacific plate. Water contents in olivine and pyroxenes were low, which values are in the same range of spinel peridotite xenoliths sampling the continental lithosphere. Olivine CPO are consistent with slip on (010)[100] and {0kl}[100]. Moreover, the peridotite xenoliths have distinct foliations defined by the compositional layers between olivine-rich and pyroxene rich layers as well as lineations defined by mineral shapes of olivine and pyroxene. The angles between the foliations and the olivine slip planes decrease with increasing J-index values (i.e. CPOs strength). Such composite planar relationships could result from shearing in the uppermost mantle, so that shear strains may be estimated by the angles between the foliation and the olivine slip plane in terms of simple shear strain. As a consequence, we argue that a suit of the peridotite xenoliths recorded a rare snapshot of the uppermost mantle flow related to back-arc spreading during the opening of Japan Sea. Moreover, the peridotites xenoliths with higher J-index values (higher shear strain) tend to have lower minimum temperature, indicating that a vertical strain gradient could take place from upper to lower in the uppermost mantle section.

キーワード: かんらん石, かんらん岩, ファブリック, 背弧拡大, 上部マントル, マントルダイナミクス
Keywords: olivine, peridotite, fabric, back-arc spreading, upper mantle, mantle dynamics