# Phlogopite-bearing peridotite from 25°S oceanic core complex near Rodriguez Triple Junction

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We report the occurrences of the phlogopite-bearing peridotite from the 25°S oceanic core complex (OCC) located near the Rodriguez Triple Junction in the Indian Ocean [1]. The submersible SHINKAI 6500 collected peridotite, gabbro, basalt, granitic rock (plagiogranite) and their metasomatic equivalents around there.

The studied peridotite is a phlogopite-bearing harzburgit mainly composed of olivine, orthopyroxene, Cr spinel and phlogopite, and develops ductile deformation textures. Olivine and orthopyroxene vary in chemical composition. Fe rich olivine (Fo; 80-70) is distributed in a vein-like manner. Compositional zoning is observed in the orthopyroxene grain, decreasing Al and Ca content toward the rims.

Phlogopite shows syn-tectonic growth, and array of planer grains defining the foliation of the peridotite. Well foliated chloritized phlogopite domain exists in the altered part of the sample. The fresh phlogopite has Mg# ranging from 89 to 93, low $Al_2O_3$ contents (<13 wt%), and high K/(K+Na) (>0.93). $TiO_2$ and $Cr_2O_3$ contents are very low (<0.03 and 0.14 wt%, respectively).

REE abundances of orthopyroxene are high ($Yb_{CN}$=6-15) relative to those of orthopyroxene in residual peridotite (phlogoite free) from the 25°S OCC [1]. Treace-element compositions of calculated melt in equilibrium with the orthopyroxene are almost equivalent to those of granitic rock [2]. These indicate that the magmatic process forming granitic rock is involved in the alteration of residual peridoite, such as formation of the phlogopite-bearing peridotite.

The studied peridotite records the geological history from mantle to oceanic floor accompanying with the OCC development. Crystallization of phlogopite would weaken the strength of peridotite at the place of gabbro emplaced. Phlogopite in peridotite is rarely reported from other OCCs. Relativity faster rate of spreading (49 mm/year [3]), comparing with other slow spreading regions, would make the tectonic setting form phlogopite in the peridotite.

[1] Morishita et al. (2009) *Jour. Petrol.* **50**, 1299-1325. [2] Nakamura et al. (2007) *Geochem. Jour.* **41**, 135-140. [3] DeMets et al. (1990) *Geophys. Jour. Int.* **101**, 425-478.