Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SIT002-P04 Room:Convention Hall Time:May 27 14:00-16:30

Two types of dunite in the mantle section of the Lizard ophiolite, Cornwall

Shohei Takano[1*], Shoji Arai[2], Akihiro Tamura[3], Satoko Ishimaru[4], Norikatsu Akizawa[1], Hironori Negishi[1]

[1]Dept. Earth Sci., Kanazawa Univ., [2]Nat. Sci. Tech., Kanazawa Univ., [3]FSO, Kanazawa Univ., [4]Dept. Earth Sci., Kanazawa Univ.

The Lizard ophiolite, Cornwall, UK, is of the slow-spreading ridge origin(Roberts et al., 1993), and petrological characteristics of peridotites are useful for our understanding of deep magma processes related with the origin of MORB. We have found two types of dunite(concordant dunite and discordant dunite) in this study area; They were strongly serpentinized and we could find relict olivine only in some discordant dunites.

Fo(Fo_{89-92}) and NiO content(0.35-0.40 wt%) of olivine in lherzolite and harzburgite are similar to those of abyssal peridotite. But, olivine in the discordant dunite is low in Fo(Fo_{83-85}) and NiO content(0.20-0.30 wt%). Fo(Fo_{84-87}) and NiO content(0.20-0.35 wt%) of olivine in lherzolite adjacent to the discordant dunite are close to those of olivine in this dunite. The TiO_2 content(0.50-1.00 wt%) of clinopyroxene in this marginal lherzolite is higher than that of massive lherzolite($<$0.25 wt%) for from the dunite dike. The concordant dunite was formed through interaction between N-MORB-like melt and lherzolite. This is consistent with the presence of spinel concentrations (Arai & Yurimoto, 1994). The discordant dunite is post-deformational, and was formed though interaction between E-MORB-like melt(high-Ti, and high- Fe^{3+}) and lherzolite. Two-phase spinels in this dunite have been crystallized from evolved melt with higher TiO_2 and Fe^{3+} content.

Keywords: dunite, lherzolite, harzburgite, Lizard ophiolite, melt/wall interaction