## Microstructural analyses of peridotite xenoliths in Shimane prefecture ~ implications for plastic deformation during Japan Sea opening

\*Miki Tasaka<sup>1</sup>, Hiroyuki Oma<sup>2</sup>, Shunsuke Inagawa<sup>2</sup>

1. Shizuoka University, 2. Shimane University

A number of Cenozoic ultramafic xenoliths are located on the southwest Japan arc. In this study, we conducted microstructural analyses using peridotite xenoliths in Noyama-dake and Kawashimo, Shimane prefecture. The microstructural results imply that these textures are formed by plastic deformation during Japan Sea opening (~15 Ma) with various stress conditions before volcanic eruption (~7 Ma).

The microstructure of peridotites is classified into 2 types, including (1) coarse-grained equigranular texture (~ 1mm), (2) large- and fine-grained combined texture. Based on electron backscattered diffraction (EBSD) analysis, the olivine crystals in (1) coarse-grained equigranular texture have a crystallographic preferred orientation (CPO) with (010)[100] slip systems, indicating plastic deformation during mantle flow. In (2) large- and fine-grained combined texture, large grains have kink band with slip direction (001)[100] or (100)[001]. Further nine-grained aggregates have similar CPOs indicating the fine grains are recrystallized by one large grain.

Based on electron probe micro analyzer (EPMA), both (1) coarse-grained equigranular texture and (2) large- and fine-grained combined texture have origin of residual mantle. Two pyroxene geothermometer (Wells, 1977) indicates that the rock has equilibrium temperature  $T^{\sim}$  1200C, resulting from high temperature at the pressure of spinel stability field ( $P^{\sim}$  1 to 2 GPa). Based on these results, we will discuss the deformation history of the ultramafic xenoliths.

Keywords: ultramafic xenoliths, EBSD, Japan Sea opening