

The relationship between spatial compositional distribution and field occurrence of peridotites in the southernmost part of Salahi mantle section, the Oman ophiolite

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Extensive lenticular-shaped ultramafic complex that is composed of dominant amount of high refractory dunite associated with residual harzburgite and pyroxenite cumulates occur in the basal part of the Salahi mantle section (Nomoto and Takazawa, 2013). It is considered that an infiltration of fluid from the base of the ophiolite caused flux melting of harzburgite and formed boninitic melt associated with highly refractory dunite. There are two other ultramafic complexes of the same scale located in the direction of south-southeast of the above complex and the distribution of highly refractory peridotites is expected similar to the northern part of Fizh mantle section (Kanke and Takazawa, 2014). In this study, we report spatial variability in mineral compositions in the southernmost part of the Salahi mantle section. Particularly we focus on a distinct area where occurrence of dunite, mineral compositions and lithological variation are different from the surrounding area.

It is common in the Oman mantle section that dunites occur either parallel or oblique to the foliation of the host harzburgite. Concordant dunites are common in the southern part of the study area where discordant dunite is rare. In this area, spinel Cr# of harzburgite is limited in a narrow range of 0.46-0.67. The cpxs in harzburgites and concordant dunites in this area are highly depleted in LREE relative to HREE. Abundances of REE in cpxs from dunites are in agreement with those of cpxs in the adjacent harzburgite in the same outcrop. In the southern part of the study area, plagioclase-bearing peridotites and wehrlite were found from an outcrop. The abundances of REE in cpxs from plagioclase-bearing peridotites are contained in the range of abyssal peridotites indicating a possibility that a MORB melt was trapped in a residual peridotite. Moreover, basal lherzolite has been found in the southwest corner of this area. The spinel Cr# is low (0.15-0.25) similar to Type I lherzolite of Takazawa et al. (2003).

On the other hand, discordant dunites are dominant in the northeast to eastern part of the study area. In this area spinel Cr# of dunite has a wide range from 0.43 to 0.80. Moreover, highly refractory dunite with spinel Cr# >0.7 frequently occurs in the eastern part. The cpxs in discordant dunite and those in dunites from ultramafic complex are enriched in LREE relative

to the cpxs in the adjacent harzburgite.

The origin of two distinct areas will be discussed in the poster.

References

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