

## Petrological character of the large off-axis lava in the southern East Pacific Rise

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Petrological characters of the large off-axis lava flow in EPR 14S area, which was discovered during YK04-07 Yokosuka/Shinaki 6500 cruise in 2004, are reported. This lava flow covers an area spreading from 2 to 18 km apart from the ridge-axis of EPR and the total volume is evaluated ca 19m<sup>3</sup> or more. This lava flow field can be divided into two regions, eastern and western parts, as the topographic characters. The western part of the lava field is covered with smooth-surface sheet flow. The center of this region is highest and gently down to outward. The marginal part is filling the grabens of the basement. An eruption fissure in NS direction is recognized in the highest area, suggesting that the lavas of the western part were fed from this fissure. The eastern part of this lava field consists of a flat-topped seamount and surrounding lobes. Topographic characters show that the lavas of eastern part are younger than that of the western part.

Phenocryst contents are different between the both areas. The lavas in the western part are phenocryst-poor (less than 5% ) or almost aphyric. Most of the phenocrysts are plagioclase. The lavas in the eastern part contain plagioclase phyric basalt though majority is phenocryst-poor. The lavas collected from another flat-topped seamount in the west of this lava field also consist of plagioclase-phyric basalt.

The lava contain 6.5 - 8.5 wt.% of whole-rock MgO. Chondrite-normalized REE patterns of the lava samples show flat and moderately-LREE depleted patterns. Whole-rock K<sub>2</sub>O content of the lavas indicates that the lava flow consists of two different parts; low-K<sub>2</sub>O and high-K<sub>2</sub>O lavas. The flat-topped seamount in the eastern part contains less than 0.13 wt.% of K<sub>2</sub>O and the western part contains contain 0.16 wt.% or more of K<sub>2</sub>O, although their MgO content is overlapped. Concentrations of REE are concordant with the grouping with K<sub>2</sub>O; high REE concentrations in the western part and low in eastern flat-topped seamount.

According to these petrological characters, magmas with different source and process have erupted in the off-axis region. Eruption with high effusion rate formed flat and widely-spread lava field and eruption with low effusion rate formed seamount. The source mantle produced the off-axis lavas were more depleted than that of the ridge-axis source. The difference within the off-axis lava is difficult to form by crystal fractionation and reflects the difference of the source process, such as the difference of degree of melting and the compositional heterogeneity of the source mantle.