

## **Spongy rims of Cr-spinel in peridotite xenoliths, Jeju Island, South Korea: microscale effect of melt-rock interaction by melt infiltration**

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Microscale reaction rims of some minerals in mantle xenolith may provide a window on some metasomatic processes that occurred in the lithospheric mantle. Primary Cr-spinel in peridotite xenoliths, found in Jigri-oreum of Jeju Island, South Korea, shows a typical spongy rim, which is characterized by having lower  $\text{Al}_2\text{O}_3$  and  $\text{MgO}$  values and higher  $\text{Cr\#}$  ( $\text{Cr}/(\text{Cr}+\text{Al})$ ) value than the core composition. The area of spongy rim is trapped in metasomatic melts (Na-Ca-rich melt). These microtextural characteristics strongly indicate the typical infiltration-interaction effect of compositionally distinct melt (Na-Ca-rich) before being captured by basaltic magma. That is, the Na-Ca-rich melts enclosed in spongy spinel rims are inferred to have triggered the melt-rock interactions that formed the spongy rims. The undersaturated Na-Ca-rich mafic melts were probably formed in the asthenosphere by low-degree melting. Our observation demonstrates that Cr-spinel in mantle xenolith should be an excellent tracer to understand the complexity of metasomatic processes in the lithospheric mantle.