

## **Geochemistry of upper mantle xenoliths from Huangsongpu in Jilin Province, China**

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The Huangsongpu is located on about 23km northeast of Mt. Baekdu's caldera, one of the world's largest active volcanoes. Geochemical characteristics of spinel peridotite xenoliths, enclosed in Miocene alkali basalt (12.0~16.7 Ma) in the Huangsongpu, provide important clues for understanding the lithosphere composition, equilibrium temperature and pressure conditions, and depletion and enrichment processes of subcontinental lithospheric mantle beneath Mt. Baekdu. Thin section, electron microprobe, and LA-ICPMS analyses were used to obtain detailed textural information, mineral compositions, and whole rock geochemistry. The spinel peridotite xenoliths from the Huangsongpu are classified as protogranular and porphyroclastic texture types. Absence of mineral reaction rims and uniform compositions of minerals indicate that minerals of the spinel peridotite xenoliths were in equilibrium before eruption. The equilibrium temperatures of the spinel peridotites from the Huangsongpu are 825~1062 °C. The variations of modal and mineral compositions of the spinel peridotite xenoliths indicate that the spinel peridotite xenoliths have undergone 1~15% fractional melting and cryptic mantle metasomatism.