



## **Oxygen isotope and trace element compositions of peridotite xenoliths in Nushan Cenozoic basalts (SE China): implications for mantle metasomatism**

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The magmatic province characterized by the Nushan Volcano in SE China is located at the margins of the North China Craton and Yangtze plate. Several petrological studies have been undertaken during recent years on this region. It has been inferred that the lithospheric mantle underneath this area has been affected by the continental subduction related to the juxtaposition of these two cratons, and by the subduction of the Pacific ocean plate underneath Eastern China. Mantle xenoliths brought to surface indicate that complex interactions between mantle and crust occurred. In order to constrain the processes taking place upon crust-mantle interaction we combined a stable isotope investigation (laser fluorination) with trace element data (LA-ICP-MS) of selected mantle xenoliths. The  $\delta^{18}\text{O}$  values of mineral separates are in the range of typical mantle rocks ( $\delta^{18}\text{O}_{cpx}=5.19\text{-}5.83$  per mil;  $\delta^{18}\text{O}_{opx}=5.31\text{-}6.34$  per mil;  $\delta^{18}\text{O}_{ol}=5.13\text{-}5.75$  per mil), and several samples show oxygen isotope disequilibrium between pyroxene and olivine. Clinopyroxene from the amphibole-bearing xenoliths are enriched in LILE (Sr, Th, LREE) and depleted in HFSE (Nb, Zr, Ti). Trace element vs. O-isotope correlations suggest that Nushan upper mantle experienced two different metasomatic events involving fluids from the subducted plates. Similar O-isotope characteristics have been observed in Nushan Al-rich augite megacrysts. A negative correlation between  $\Delta^{18}\text{O}_{cpx-ol}$  and formation depth of the Nushan xenoliths suggest an “ascending + buffering” model for mantle metasomatism in Nushan.