

# **CARBONATITES IN THE EASTERN HIMALAYAN SYNTAXIS: A DIRECT EVIDENCE FOR MANTLE MAGMA UPWELLING DURING NEOGENE**

<sup>1</sup>Yan Liu, <sup>1</sup>Dalai Zhong and <sup>2</sup>Jiangqing Ji <sup>1</sup>Institute of Geology & Geophysics, Chinese Academy of Sciences, Beijing 100101, China; <sup>2</sup>Department of Geology, Peking University, Beijing 100871, China

Geophysical observations in eastern Himalayan syntaxis have implied that a mantle plume occurs. We describe carbonatitic dykes and associated ultramafic and mafic dykes in this area, and offer a direct evidence for this view. The carbonatitic dykes and associated ultramafic and mafic dykes intruded the granulite facies gneiss parallel to gneissosity, and were divided into two belts: northern belt and southern belt. From center of carbonatitic dykes to country rock, five different types of rock are observed: center part of carbonatitic dykes, rim part of carbonatitic dykes, biotite hornblendite or pyroxenite, altered rock and country rock. The carbonatitic dykes have dolomitic composition, and consist of dolomite, calcite, olivine, spinel and abundant accessory minerals. Compared with the center part, the rim part of carbonatitic dykes usually has dark color and fine grains. The hornblendite consists of hornblende, pyroxene, biotite, and olivine. The pyroxenite has orthopyroxene, clinopyroxene, olivine, and biotite. These rocks usually occur in the middle of carbonatite. Three kinds altered rock exists. The gneissosity of country rock was deformed by intrusion of carbonatitic dykes. In the northern belt, many ultramafic dykes occur around the carbonatitic dykes. Most of these are olivine pyroxene phlogopite hornblendite. One of them is spinel olivine pyroxenite, consisting of orthopyroxene phlogopite hornblendite. One of them is spinel olivine pyroxenite, consisting of orthopyroxene, clinopyroxene, olivine, spinel and carbonate. The volcanic agglomerate of carbonatite is also discovered in the northern belt, and has garnet-rich inclusions. Results of K-Ar analysis for phlogopite from two belts are  $3.6 \pm 0.1$  Ma and  $5.5 \pm 0.2$  Ma, respectively, suggesting that mantle magmatism took place in the convergent environment.