

## The distribution of dolomite and calcite in the carbonatite from Badou carbonatite pipe, Shandong, China

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Approximately one hundred carbonatites distribute in Laiwu-Zibo area in the northern part of the Luxi anticline in Shandong province, China. Although they appear as sheets, dikes and pipes, most of them are sheets and dikes. Only two pipes have been found at Badou and Lutong in Laiwu-Zibo area. The Badou carbonatite pipe distributes in the Ordovician limestone. It forms an ellipsoidal shape. Wan et al. (1983) and Hong et al. (1992) pointed out that the Badou carbonatite pipe includes such lithologic types as the breccia-bearing carbonatite glimmerite and the brecciated mica carbonatite.

In this study, we collected as many samples as possible from side to central area in this pipe. These samples were observed and analyzed. The result of XRD analysis revealed two type carbonatites. One of them is dolomite-rich carbonatite, and the other is calcite-rich carbonatite. The dolomite-rich carbonatite distributes near the margin of the pipe and the calcite-rich carbonatite is found near the center of the Badou pipe. Geochemical compositions of the Badou carbonatite show the clear difference between the types. The major element contents of  $\text{Fe}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{K}_2\text{O}$ , and  $\text{P}_2\text{O}_5$  have distinctly different between the two types. It should be pointed out that we can divide the hand specimens into two types according to the different lithologic type. The amounts of mica contents and varieties of xenoliths are different between them.

Carbonate minerals of carbonatite are mostly dolomite and calcite. Harmer et al. (1997) discussed the model of the intrusion mechanism. They suggested in their model that calcitic carbonate melt could be generated from dolomitic carbonate melt through reaction with the mantle. Therefore, the calcitic carbonate melt could construct wall between the mantle and dolomitic carbonate melt. According to their model, calcitic carbonate should occupy the margin of the pipe and dolomitic carbonate should be dominant in the center of the pipe. The carbonate mineral distribution of the Badou carbonatite pipe, however, is reverse to their model.