

## **Petrology and zircon U–Pb age spectra of high-pressure mafic rocks in the the Jiaobei terrane, east Shandong of the North China Craton**

LI XU-PING<sup>1</sup>, KONG FAN-MEI<sup>1</sup>

<sup>1</sup> College of Earth Science & Engineering, Shandong University of Science and Technology, Qingdao 266590, China

The Jiaobei terrane, located on the eastern margin of the North China Craton (NCC), contains an important Precambrian core. The High-pressure (HP) mafic granulites in this study, which are included within the TTG gneisses in the Jiaobei terrane, are composed of garnet mafic granulites, calc-silicated granulite and metamorphized calc-silicates.

Four metamorphic episodes in the HP mafic granulites are identified. Petrogenesis studies found that the mafic granulites recorded pre-peak conditions at  $\sim 754\text{--}757^\circ\text{C}/0.71\text{--}0.73\text{Gpa}$ , experienced peak metamorphism at least  $771\text{--}891^\circ\text{C}/1.31\text{--}1.34\text{Gpa}$ , retrograde to  $693\text{--}887^\circ\text{C}/0.60\text{--}0.84\text{Gpa}$  and the last greenschist facies metamorphism that is characteristic of exsolution occurrence of amphibolite and plagioclase within clinopyroxene. Accordingly, a clock wise P-T path is concluded. The calc-silicated granulite develops on the late stage of continent-continent collision during the exhumation process of the HP granulite, combined with Ca metasomatism at the same time.

An integrated study on zircon grains, involving LA-ICP-MS analysis of major and trace element compositions, cathodoluminescence imaging, and in situ U–Pb dating of zircons, presents inherited zircons with ages from  $\sim 2.87$  to  $2.55\text{ Ga}$  and four-group metamorphic ages of  $\sim 2.50\text{ Ga}$ ,  $2.46\text{--}2.20\text{ Ga}$ ,  $\sim 1.85\text{ Ga}$  and  $\sim 1.06\text{ Ga}$ . The inherited zircons are commonly accepted as major Archean crustal growth periods in the North China Craton, whereas  $\sim 2.5\text{ Ga}$  represents a period of reworking of the  $\sim 2.7\text{--}2.9\text{ Ga}$  juvenile crust in the NCC. The pervasive metamorphic ages of  $\sim 1.85\text{ Ga}$  in the Jiao-Liao-Ji Belt reflects a later thermal event probably related to post-orogenic/anorogenic extension. The  $\sim 1.0\text{ Ga}$  is rare reported so far in the Jiaobei terrane, Eastern NCC. Its petrogenesis and tectonic affinity is still under investigation.

**Acknowledgement:** The current study was supported by the Natural Science Foundation of China 41272072.