

## **Zircon U–Pb dating and tectonic significance of high-grade metamorphic rocks from Southern Liaoning, Jiao-Liao-Ji Belt, North China Craton**

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Greenschist to amphibolite-facies metamorphic rocks, involving mica schist, quartzite, marble, amphibolite (together are called the South Liaohe groups) as well as intrusive metabasic rocks, are cropped out in Southern Liaoning in the Paleoproterozoic Jiao-Liao-Ji Belt, eastern North China Craton. Reported U–Pb zircon dating analyses have been focused on the aforementioned low–medium-grade metamorphic rocks, however, high-grade granulite-facies rocks have not been documented as well as their metamorphic ages. Now we report here that high-grade granulite-facies rocks including metapelitic sillimanite-garnet-biotite gneisses and garnet-hypersthene granulite have been found in South Liaoning. Further SHRIMP U–Pb dating of metamorphic zircons from sillimanite-garnet-biotite gneisses and garnet-hypersthene granulite reveal consistent ages of 1853–1849 Ma and  $1854 \pm 5$  Ma. Moreover, other amphibolite-facies rocks of marble, garnet-bearing quartzofeldspathic rock, and garnet amphibolite show similar metamorphic ages of 1853–1858 Ma,  $1856 \pm 4$  Ma, and  $1855 \pm 3$  Ma, respectively. These new age data indicate that metamorphic age of high-grade metapelitic rocks of South Liaohe groups and metabasic rocks of amphibolite and granulite in Southern Liaoning is concentrated in  $\sim 1855$  Ma. Similar age has been reported in the Jiaobei Terrane of the Jiao-Liao-Ji Belt, southwest to Southern Liaoning. For instance, metamorphic zircons from medium-pressure granulite/amphibolite show post-peak retrogressive metamorphic age of 1860–1820 Ma, and anatectic zircons from granitic leucosomes reveal melt crystallization age of 1860–1833 Ma. It is therefore proposed that the age of 1860–1820 Ma corresponds to the timing of exhumation in the southwestern part of the Jiao-Liao-Ji Belt. As a whole, combined with our age data as well as the reported results, it is elucidated that  $\sim 1900$  Ma and  $\sim 1855$  Ma represent the metamorphic ages of peak stage and post-peak decompressional stage accompanied with partial melting event, related to the tectonic processes of subduction and collision ( $\sim 1900$  Ma), followed by exhumation ( $\sim 1855$  Ma) of the Jiao-Liao-Ji Belt.