Metamorphic and geochronological constraints on the evolution of Wuhe high-pressure mafic granulites, Jiao–Liao–Ji Belt, North China Craton

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The Wuhe Complex of the Bengbu area in the Jiao–Liao–Ji Belt, at the southeast margin of the North China Craton, contains garnet-bearing mafic granulites that have undergone high-pressure metamorphism. Petrographic observations and quantitative phase equilibria modeling reveal clockwise *P–T* paths involving decompressional process and subsequent cooling. The high-pressure assemblage of garnet + clinopyroxene + plagioclase +K-feldspar ± amphibole ± quartz ± rutile ± ilmenite indicates *P–T* conditions of 900–930 °C and 11–14 kbar. This was followed by post-peak, near-isothermal decompression with the development of orthopyroxene + clinopyroxene + plagioclase + amphibole + quartz + magnetite + ilmenite at 860–970 °C and 7–10 kbar, resulting in the development of orthopyroxene rims on resorbed garnet. These high-*P–T* rocks were exhumed rapidly following high-pressure metamorphism. U–Pb geochronology of zircon with inclusions of clinopyroxene, plagioclase, and apatite constrain the timing of metamorphism to 1930–1840 Ma. Combined with previously reported results, our data indicate that the Wuhe high-pressure mafic granulites were sourced from underplated magma at lower crustal levels at ~2.1 Ga, and experienced high-pressure granulite-facies metamorphism during post-crystallization cooling at ~14 kbar. As is the case for high-pressure granulites from the Shandong, Liaoning, and Southern Jilin in the central and northeastern part of the Jiao–Liao–Ji Belt, the studied granulites experienced subsequent decompression due to continent–continent subduction and collision, followed by exhumation and cooling at 1.90–1.85 Ga, which formed the Jiao–Liao–Ji Belt.