

## 华北北缘承德地区高压麻粒岩的变质演化历史——锆石年代学和地球化学证据

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中文摘要:冀北承德一带的高压麻粒岩多呈弱应变域构造透镜体,出现于由花岗岩麻岩组成的宽阔的复式剪切带内,其代表的深部地壳热运动及相应的折返机制对华北克拉通的碰撞造山模式和克拉通构造演化模式研究有着重要的制约作用。冀北承德高压麻粒岩及其围岩的锆石U-Pb同位素定年结果显示,围岩原岩年龄约2500 Ma,大约在2297 Ma基性岩侵入花岗岩麻岩,在大约2381 Ma后开始俯冲,经历高压麻粒岩相变质,经历俯冲及长期地壳加厚过程,于2001 Ma之后某个时间开始折返,在此过程中1896 Ma还有另外一期基性岩墙侵入,在1885 Ma经历了抬升过程与麻粒岩相退变质,而在1850 Ma经历了华北大面积高角闪岩相事件,甚至有部分熔融出现,此事件抹杀了大部分古元古代变质演化过程。由此可见,承德地区甚至整个华北北部古元古代地质演化历史并不是不同地点的一两期不同事件,而是一个复杂连续的演化过程,以往的研究只揭示了一期或两期事件,而承德地区高压麻粒岩的证据则记录了更多信息。

中文关键词:锆石微区微量元素 年代学 高压基性麻粒岩 承德 华北

## The Metamorphic Evolution History of High Pressure Granulites in Chengde Area, Northern Margin of North China: Zircon Chronology and Geochemical Evidence

**Abstract:**High pressure granulites in Chengde area of northern Hebei province occur as tectonic lenses with weak deformation in a wide composite shear zone composed dominantly of granitic gneiss. The deep crust thermal dynamics and exhumation mechanism demonstrated by these granulites play a critical role in the study of the collisional orogenic model of North China craton and the tectonic evolution model of North China craton as a whole. According to the result of U-Pb isotopic dating for these high pressure granulites and their surrounding rocks, the age of the surrounding protolith is ca. 2500 Ma. At around 2297 Ma, basic rock intruded granitic gneiss. At around 2381 Ma, subduction started, and then there occurred high-pressure-granulite-phase metamorphism. Following the subduction and a long-term crust thickening process, the exhumation at a certain point began after 2001 Ma. During the exhumation process, another basic dike invaded at around 1896 Ma. At 1885 Ma, the uplifting process and granulite-phase retrograde metamorphism took place. At 1850 Ma, a large part of North China experienced high-amphibolite phase metamorphic event including even partial melt. This event destroyed most part of the Paleoproterozoic metamorphic evolution. It can thus be seen that Paleoproterozoic geological evolution history in Chengde area or even the whole northern part of North China was not one or two phases of independent events that happened in different places. Instead, it was a complex and continuous process. Previous studies only revealed events of a few stages, whereas the high pressure granulites in Chengde area have recorded much more information.


**keywords:**[trace element in zircons](#) [chronology](#) [high pressure basic granulite](#) [Chengde](#) [North China](#)

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