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华北克拉通两类早前寒武纪麻粒岩(HT-HP和HT-UHT)及其相关问题

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摘要:

华北克拉通广泛存在高级变质的早前寒武纪岩石,其中高温高压(HT-HP)麻粒岩和高温超高温(HT-UHT)麻粒岩近年来备受人们的关注,并将它们视为探讨早前寒武纪大陆演化的关键课题。HT-HP麻粒岩主要是含石榴石的基性麻粒岩,它们以透镜体或强烈变形的岩墙状出露于片麻岩中。HT-UHT麻粒岩主要是富铝的变质沉积岩系,俗称孔兹岩系,其中有含假蓝宝石和尖晶石等矿物组合,指示部分岩石的变质温度高于900~1000℃。本文探讨了这两类麻粒岩的出露状况、变质过程与变质历史、原岩与变质年龄。初步研究表明:①两类麻粒岩在变质的峰期温度和压力上有很大的重叠区间,都经历了一个近等温-略升温的降压变质;②两类麻粒岩很有可能在峰期和随后的降压变质阶段是同时的或有关联的;③HT-HP和HT-UHT麻粒岩的分布特征是线状或面状分布仍有待进一步查明;④高级变质的麻粒岩代表了华北克拉通的最下部地壳,它们变质的温压体系、岩石的刚性程度、分布特征、岩石组合以及抬升速率等具有与显生宙明显的不同。本文从而指出两类麻粒岩是否有成因联系是今后研究中非常值得注意的问题,深入研究将会对华北克拉通早期地壳演化、构造和动力学机制提供丰富的资料和证据。

英文摘要:

High-grade metamorphic rocks are extensively distributed in the North China Craton (NCC), and study on high-temperature and high-pressure granulites (HT-HP) and high- ultrahigh- temperature granulites (HT-UHT) is a key issue to understanding the tectonic evolution of the Early Precambrian Earth. The HT-HP granulites are mainly garnet-bearing mafic granulites that are metamorphosed and deformed dykes enclosed in the orthogneisses. The HT-UHT rocks are metamorphosed pelites (khondalites), and sapphirine and spinel in khondalite indicates metamorphic temperature >900~1000℃. This paper deals with the occurrences, distribution, metamorphic conditions and history, isotopic ages of the two granulites, and emphasizes the following aspects: ①the peak metamorphic conditions and *P-T* paths with a relief of pressure for two granulites are similar; ②their metamorphic ages of the peak and followed decompressional stages are also similar; ③HT-HP and HT-UHT granulites probably occur in area distribution other than in linear distribution; ④high-grade granulites represent the Precambrian lowermost crust. Their metamorphic *P/T* gradients, uplifting rates, rigidities and protolith rock associations are significantly different from those of rocks in Phanerozoic orogenic belts. Therefore, the metamorphic geological setting and their original relation for the two granulites are most important in the future study.

关键词: [早前寒武纪](#) [高温高压麻粒岩](#) [高温超高温麻粒岩](#) [构造意义](#) [华北克拉通](#)

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