

秦岭佛坪变质结晶岩系年龄和物质组成特征
——SHRIMP锆英石U-Pb年代学和全岩Sm-Nd年代学数据

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摘要: 秦岭是长期多阶段发展的复杂大陆碰撞造山带。本文报道了位于造山带中部佛坪变质结晶杂岩系的SHRIMP锆英石U-Pb年龄和全岩Sm-Nd年龄同位素分析结果。变质岩SHRIMP锆英石U-Pb年龄十分复杂, 除有少量太古宇形成的锆英石外, 还存在大量元古宇至显生代的锆英石, 并在2 000 Ma, 1 200 Ma, 800 Ma, 400 Ma, 200 Ma左右形成峰期。片麻岩Nd模式年龄tDM1 372~2 081 Ma。佛坪变质结晶岩系主体可能形成于古元古代, 年龄2000 Ma左右。在后期强烈地质作用中有少量地幔物质加入。岩系形成于新太古代的见解笔者没有得到证实。秦岭造山带中部可能存在或存在过太古宙结晶基底岩石。

关键词: 佛坪变质结晶杂岩系; 同位素年代学; 秦岭造山带

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Age and material composition of the Foping metamorphic crystalline complex in the Qinling Mountains
: SHRIMP zircon U-Pb and whole-rock Sm-Nd geochronology

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Abstract: The Qinling is a complex continental collisional orogenic belt resulting from long-continued, multi-stage development. This paper reports the results of isotopic analyses of the SHRIMP zircon U-Pb ages and whole-rock Sm-Nd ages for the Foping metamorphic crystalline complex in the central part of the orogenic belt. The SHRIMP zircon U-Pb ages are very complex; except for small amount of Archean zircon, there are also significant amounts of Proterozoic to Phanerozoic zircon. The metamorphic peaks occurred at 2 000, 1 200, 800, 400 and 200 Ma. Gneiss has a Nd model age tDM of 1 372-208 Ma. The main part of the Foping metamorphic crystalline rock series possibly formed in the Paleoproterozoic, with an age of 2 000 Ma. In the subsequent strong geological processes, a small amount of mantle material was introduced. The view of the formation of the rock series in the Neo-archean has not been verified by the authors. Archean crystalline basement rocks may occur or may have occurred in the central part of the Qinling orogenic belt.

Key words: Foping metamorphic crystalline complex; isotope chronology; Qinling orogenic belt