Studies on the Zircon U-Pb-Hf isotopes of host rocks and enclaves from the Shahewan pluton in Qinling Orogen, central China

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The Shahewan pluton was intruded into the boundary between North and South Qinling Belts, providing us an important object to reveal the continent-continent collisional history between North China and Yangtze blocks in Mesozoic. The two group ages from host rocks (209.2Ma-205.4Ma and 198.3Ma-197.6Ma) and enclaves (199.09Ma-199.90Ma and 192.6Ma-187.4Ma) were obtained from this pluton using *in situ* zircon LA-ICP-MS method, respectively. The age from basic dykes adjacent to Shahewan pluton was slightly older (212.5Ma). Furthermore, they have narrow ranges of $^{176}Hf/^{177}Hf$, with the ε_{Hf}(209.2Ma) of -0.77 and ε_{Hf}(205.4Ma) of -0.40 from host rocks and εHf(199.9Ma) of -0.63 and ε_{Hf}(199.09Ma) of -1.23 from enclaves. The ε_{Hf}(212.5Ma) of the basic dykes is -0.87. In addition their T_{DM2} are quite similar. In witch the T_{DM2} of host rocks are from 1079Ma to 1057Ma, enclaves from 1095Ma to 1064Ma and the basic dykes 1090Ma. All these suggest that the Shahewan pluton was mainly formed by the melting of the Neoproterozoic crustal materials in South Qinling basement and granitic magmatic activity was trigged by basic magma derived from the enriched mantle similar to that of middle Neoproterozoic in South Qinling [1, 2], implying the mantle was not much changed from Neoproterozoic to Mesozoic in Qinling.

[1] Lu *et al*. (2003) *Earth Sci. Front*. **10(3),** 69-75. [2] Zhang *et al.* (2007) *Sci. China Ser. D-Earth Sci.* **50(09),** 1293-1301.

U-Pb SHRIMP-dating of zircons and structures of granitoid plutons in the Tongling area (Anhui, China) and their tectonic significance

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In southeastern China, there are numerous Mesozoic plutons, which are considered to be controlled by a NNE trending tectonic regime (D_3 deformation) during ascent and emplacement. Unfortunately, the chronology and structural geology of these plutons are not commonly studied. Thus clearly distinguishing the relationship between the D_3 deformation and pluton's emplacement is hampered because of the shortage of direct isotopic ages and structural evidence.

Chronological and structural information are used to evaluate the emplacement mechanisms of the plutons in the Tongling area and their relationship with regional tectonics. Five zircon U-Pb SHRIMP ages from 5 different plutons in the Tongling area are 142.8±1.8Ma, 144.2±2.3Ma, 151.8±2.6Ma, 146.4±4.3Ma and 148.2±3.1Ma, indicating that the plutons formed at the end of late Jurassic (142.8~151.8Ma). The meso- and microscopic structural analysis indicate that the plutons experienced high temperature magmatic to low temperature solid-state deformation. The magmatic, enclave and magnetic foliation all show the feature of concentric fabrics within the plutons, rather than the preferred orientation of the regional D_3 deformation. The S-C fabrics and mylonites, representing the D_3 deformation, transect the pluton, which show that the low temperature solid-state deformation occurred during the cooling of the pluton post-emplacement.

From the above results, it is suggested that the crystallization and emplacement of the plutons occurred at the late Jurassic, older than the D_3 deformation. Thus the regional D_3 deformation didn't control the formation, ascent and emplacement of the plutons in the Tongling area.

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