

## **Zircon U-Pb Age and Hf Composition of Migmatite in South Qinling orogen, China**

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The Qinling orogen was ultimately formed by the suturing of the South Qinling and Yangtze blocks, but timing of the final amalgamation is still in dispute. Here we report U-Pb age and Hf isotopic composition of zircons of migmatites and leucosome of the Foping dome in South Qinling. Zircon grains of the migmatites occur as anhedral forms and variable sizes and have complex geochemical feature in trace elements. On the basis of zircon U-Pb ages, migmatites from the dome can be subdivided into two groups: Group one mainly retains Triassic zircons with U-Pb ages of 214-211 Ma and Hf model ages of  $\sim 1.46$  Ga both in the cores and the rim domains; zircons of Group two record both Triassic ages of about 210 Ma and Neoproterozoic ages, analogous to igneous rocks of the Neoproterozoic Wudang and Yaolinghe Groups exposed in South Qinling. The similar model age of Mesoproterozoic and U-Pb age with Triassic granitoids of the South Qinling orogen point to a comparable genesis. In combination of zircon ages and isotopic data, it is proposed that protoliths of Group one migmatites are deformed Triassic diorites, while the Group two migmatites came from Neoproterozoic igneous rocks being the major basement rocks of South Qinling. Partial melting of the orogenic crust took place in  $\sim 214$ -210 Ma, nearly consistent with retrograde metamorphism of granulites exposed in the boundary between the South Qinling and Yangtze blocks. We suggest the collision time of these two blocks prior to  $\sim 215$  Ma and the Foping dome resulted from rapid depression coupling with ductile flowing of thicken crust, partial melting and upwelling of asthenospheric mantle.