

The chronology and geochemical characteristics of Jiuhuashan granite, Anhui, China

WEIPING WU¹, YANG CAI¹, TAO MA¹, QIGANG LIN² AND YINHU ZHANG²

¹Geological Survey of Anhui Province, Hefei 232001, PR China

²Jiuhuashan National Geopark Management Committee, Chizhou 242800, PR China

E-mail: 962745352@qq.com

Jiuhuashan National geopark is located in the southern part of Anhui Province. The geopark features granite geological landscape. The geopark is located in the central of Qingyang-Jiuhuashan complex granite. Qingyang-Jiuhuashan complex granite is a multi-stage composite granite complex, and constituted the main body of geopark. Qingyang granite is composed of granodiorite and monzogranite. Jiuhuashan granite is composed of moyite.

Qingyang-Jiuhuashan complex granite is located in the southeast margin of the Yangtze plate. Jiuhuashan granite intruded into the Qingyang granite, and was controlled by north-south tectonic system. Jiuhuashan granite was recognized as Cretaceous granite with a zircon laser ablation inductively coupled plasma mass spectrometry U-Pb age of 126.6 ± 1.6 Ma (MSWD=1.19). The granite has the high silica, alkali content and low iron, magnesium content. It belongs to the metaluminous to weakly peraluminous granite with ACNK values of 0.97 to 1.06. Jiuhuashan granite is considered as the A-type granite. The granite is also enriched in Rb, Th, U, K and high field strength elements, and depleted in Ba, Sr, P and Ti. The geochemical characteristic of granite is similar to that of A-type granites.

With negative $\epsilon_{\text{Hf}}(t)$ values, the magma source of Jiuhuashan granite was considered as crustal magma. Jiuhuashan granite formed from partial melting of lower crust, which caused by upwelling of asthenosphere. There is more mantle material input into lower crust during the magmatism process. Combine with other Cretaceous A-type granites in South Anhui Province and Northwest of Zhejiang Province, it indicates an post-orogenic extensional tectonic environment.

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