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皖南绩溪县靠背尖高Ba-Sr花岗闪长斑岩年代学及其成因

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摘要:

皖南绩溪县靠背尖花岗闪长斑岩侵入于新元古代南华系、震旦系和下古生界海相沉积盖层中,岩石学、地球化学研究表明其为高钾钙碱性系列准铝质I型斑岩体,稀土、微量元素及Sm-Nd、Rd-Sr同位素数据指示其主要来自地壳重熔,并有幔源物质的加入。异常高的Ba-Sr含量源于对区域早期富Ba-Sr岩浆岩物质的继承,幔源物质的加入使岩浆由S型转为I型。微量元素构造判别图指示其形成于岛弧环境。三件样品锆石SHRIMP U-Pb测年得出的年龄加权平均值分别为 151.9 ± 1.1 Ma、 147.7 ± 1.3 Ma和 152.7 ± 1.1 Ma,表明岩体侵入于晚侏罗世。靠背尖岩体受后期热液影响广泛发育钾化、硅化等高温蚀变,并可能有高温条件的韧性变形,因此前人报道的黑云母 $^{40}\text{Ar}/^{39}\text{Ar}$ 年龄 134.3 ± 1.4 Ma可能代表构造热事件的年龄。

英文摘要:

The Kaobeijian granodiorite porphyry, outcrop area of 0.7km^2 , is a small stock which intruded into Neoproterozoic-Paleozoic marine sedimentary strata in Jixi County, South Anhui Province. With hornblende grains, this porphyry are composed of SiO_2 64.05%~69.64% and total alkalis ($\text{K}_2\text{O}+\text{Na}_2\text{O}$) 6.1%~11.5%, with A/CNK values 0.77~0.98. Their LREE/HREE ratios are high and Eu is a bit depleted. It belongs to I-type granitoid formed in an island-arc environment. The Kaobeijian granodiorite porphyry have $\epsilon_{\text{Nd}}(t)$ values of -3.69~-6.24 and initial $^{87}\text{Sr}/^{86}\text{Sr}$ ratios of 0.70784~0.71033, roughly in conformity to the syntectonic type granites of southern China. The unusual high Ba-Sr composition comes from Neoproterozoic granodiorites which was enriched of Ba-Sr. The mantle-derived materials likely played an important role in the generation of the magma, letting the S-type magma gradually transformed into I-type magma in mixing process. In addition, lots of felsic-quartz veins and hydrothermal alteration indicate that the stock had been underwent an intensively residual melting and/or hydrothermal fluid activities. And the quartz of granodiorite were transformed into sub-grains under high temperature. All these indicate that pervious $^{40}\text{Ar}/^{39}\text{Ar}$ age of 134.3 ± 1.4 Ma for biotite from the Kaobeijian granodiorite porphyry is more likely to document a tectonic-thermal event, rather than the forming age of the rock. SHRIMP zircon U-Pb analyses yield consistent ages of 151.9 ± 1.1 Ma, 152.9 ± 1.1 Ma and 147.7 ± 1.3 Ma for three samples of granodiorite, indicate the magma was emplaced in Late Jurassic.

关键词: [花岗闪长斑岩](#) [高Ba-Sr](#) [年代学及成因](#) [靠背尖](#) [皖南](#)

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