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摘要:

铜陵地区中酸性侵入岩与广泛分布的铜、金矿床有着密切成因关系。为有效限定狮子山矿田内岩浆活动时代, 对其中岩性由辉石闪长质、石英闪长质至花岗闪长质的侵入岩体进行系统的锆石LA ICPMS定年研究, 获得南洪冲花岗闪长岩的 $^{206}\text{Pb}/^{238}\text{U}$ 年龄为 141.2 ± 1.6 Ma。在辉石闪长岩和石英闪长岩中发现继承锆石(继承锆石构成的核部), 为揭示分散复杂的年龄中包含的地质意义, 通过综合相关研究成果, 做 $^{207}\text{Pb}/^{235}\text{U}$ $^{206}\text{Pb}/^{238}\text{U}$ 图解, 发现年龄介于太古宙到古元古代和年龄介于中元古代到早白垩世的投影点分别构成了不一致直线(下交点年龄分别为 1785^{+64} -69 Ma, 141.9 ± 8.1 Ma; 上交点年龄分别是 2795^{+91} -80 Ma, 1290 ± 12 Ma, 其中, 141.9 ± 8.1 Ma 与燕山期岩浆活动时代相一致, 而三个较为古老的交点年龄与年轻地壳中锆石的统计峰值年龄(2.7Ga、1.9Ga、1.2Ga)较为接近, 暗示了壳源物质加入的可能性; 通过把已发表的岩浆成分数据代入由锆石结晶实验获得的公式, 得到Zr饱和温度, 辉石闪长岩为 $650 \sim 700^\circ\text{C}$, 石英闪长岩为 $750 \sim 790^\circ\text{C}$, 花岗闪长岩为 $750 \sim 760^\circ\text{C}$ 。饱和温度、Zr/SiO₂ 图解和继承锆石出现的事实, 共同表明狮子山矿田内岩浆温度偏低。

关键词: [U Pb年代学](#) [LA ICPMS](#) [继承锆石](#) [狮子山矿田](#) [安徽铜陵](#)

Zircon U Pb geochronology and Its Implication for the Temperature of Yanshanian Magma in Tongling, Anhui Province [Download Fulltext](#)

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Abstract:

The Yanshanian plutons that occur extensively in Tongling, Anhui Province are essential to the genesis of world class strata bound ore deposits. We have sampled plutons ranging from gabbroic diorite to granodiorite in the Shizishan orefield to conduct systematical studies on geochronology with LA ICPMS. The magmatic zircons from the Nanhongchong granodiorite yield an age of 141.2 ± 1.6 Ma. A number of inherited zircons (or inherited cores) have been found in Baimangshan gabbroic diorite as well as Qingshanjiao quartz diorite. In order to reveal geological significance of complicated ages, the age data for these zircons and age data for adjacent quartz diorites are plotted on the $^{207}\text{Pb}/^{235}\text{U}$ and $^{206}\text{Pb}/^{238}\text{U}$ diagram, from which two groups of age data (one group ranging from Archean to paleo Proterozoic, and the other from middle Paleozoic to Early Cretaceous), do not constitute a straight line, with lower intercepts at 1785^{+64} -69 and 141.9 ± 8.1 Ma and upper intercepts at 2795^{+91} -80 Ma, 1290 ± 12 Ma respectively. Of the four ages, the second (141.9 ± 8.1 Ma) is consistent to the times of Yanshanian magma activity and the other three are the old intercept age, close to the three statistical age peaks (2.7Ga, 1.9Ga and 1.2Ga) for juvenile continental crust, implying a possibility of supplement of crustal materials. Zr/SiO₂ correlation diagram, and the presence of inherited zircons indicate that zirconium reached to saturation in the magma; consequently, the dominant magmatic temperatures were close to the calculated temperatures for saturated zirconium (for gabbroic diorite: $650 \sim 700^\circ\text{C}$, quartz diorite: $750 \sim 790^\circ\text{C}$ and granodiorite: $750 \sim 760^\circ\text{C}$), indicating that the magma temperature in Shizishan was relatively lower.

Keywords: [U Pb geochronology](#) [LA ICPMS](#) [inherited zircons](#) [Shizishan ore field](#) [Tongling](#) [Anhui Province](#)

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