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Ar-Ar Age of Muscovite in the Xushan W-Cu Deposit, Central Jiangxi, and its Geological Significances

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1 Introduction

Qin-hang metallogenic belt is located between Yangtze plate and Cathaysian plate, many large copper, gold, silver, lead-zinc, tungsten, tin, niobium-tantalum and uranium deposits are located in this area. Xushan tungsten-copper deposit is a typical one in the northwest of this belt, three different types of ore-bodies can be found in this deposit, including: Quartz vein wolframite type, which is also the most important, skarn type and greisen type.

2 Rb-Sr Dating Result of Previous Work

Rb-Sr micro-isochron method was first used to get the age of this deposit by analyzing muscovites growing at the edge of the quartz vein, the isochron age is 147.1 ± 3.4 Ma, MSWD = 0.71, But I_{sr} value is 0.849 ± 0.026 (Li et al., 2011), not only higher than that of mantle, but also much higher than that of crust, which also affected the interpretation of the age.

3 Ar-Ar Dating of Muscovite

3.1 Samples and method

The $^{40}\text{Ar}/^{39}\text{Ar}$ method is employed to analyze the same samples used for Rb-Sr isotope dating. The sample for $^{40}\text{Ar}/^{39}\text{Ar}$ analyses was cleaned, the experiment start at a temperature of 700°C and ended at 1400°C, the detailed analytical method has been discussed by sang et al.(1996).

3.2 Analytical result

The analytical result for incremental heating experiments of the muscovite shows a discordant $^{40}\text{Ar}/^{39}\text{Ar}$

age spectra, apparent age 864.74 ± 436.83 Ma is defined by 0.02% ^{39}Ar released at the temperature of 750°C. The continuous high temperature(810°C–1260°C) recorded a similar apparent $^{40}\text{Ar}/^{39}\text{Ar}$ spectra over 90% of total ^{39}Ar released with little variations of apparent age(145.01 ± 1.44 Ma – 148.71 ± 1.63 Ma), the sample yield $^{40}\text{Ar}/^{39}\text{Ar}$ plateau age of 146.0 ± 1.00 Ma, MSWD = 2.24, the total fusion age is 146.05 ± 0.96 Ma, normal isochron age is 145.94 ± 1.21 Ma and the inverse isochron age is 145.94 ± 0.86 Ma, all of those ages are consistent with the Rb/Sr isochron age of muscovites within the error bar.

Acknowledgments

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