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摘要:

长江中下游是中国东部中生代大规模成矿的重要地区之一,是我国东部一个重要的Cu-Fe-Au-Mo多金属成矿区带。本文以鄂东南地区铁山岩体和金山店岩体为研究对象,利用原位LA-ICP-MS锆石U-Pb测年和锆石Hf同位素分析方法,探讨该地区岩体成因以及岩浆作用与成矿作用。铁山石英闪长岩LA-ICP-MS锆石U-Pb年龄加权平均值为 $138.9 \pm 0.96\text{Ma}$ (样品jls1-110)、 $138.2 \pm 0.94\text{Ma}$ (样品jls3)、 $131.0 \pm 1.2\text{Ma}$ (样品jls4)和 $118.9 \pm 1.2\text{Ma}$ (样品jls5),金山店石英闪长岩LA-ICP-MS锆石U-Pb年龄加权平均值为 $128.6 \pm 0.88\text{Ma}$ (样品jsd),为早白垩世、燕山晚期。铁山岩体石英闪长岩 $\epsilon_{\text{Hf}}(0)$ 为负值, $\epsilon_{\text{Hf}}(t)$ 为负值(-17.3707~-8.31555),一阶段Hf模式年龄(t_{DM1})平均为1.33Ga,二阶段Hf模式年龄(t_{DM2})平均为2.03Ga;金山店岩体石英闪长岩 $\epsilon_{\text{Hf}}(0)$ 为负值, $\epsilon_{\text{Hf}}(t)$ 为负值(-7.81135~-3.45982),一阶段Hf模式年龄(t_{DM1})平均为1.03Ga,二阶段Hf模式年龄(t_{DM2})平均为1.56Ga。铁山和金山店石英闪长岩样品中锆石Hf同位素组成特征显示该地区为岩体形成时有地壳源物质参加的这一可能性,为长江中下游壳源岩浆提供补充。在结合已有的岩石学、地球化学以及矿床同位素年龄资料基础上,可以推断出鄂东南地区早白垩世矽卡岩型铁矿床形成于岩石圈伸展-减薄环境。

英文摘要:

During the Late Mesozoic, extensive magmatism and associated ore deposits were developed in the Middle-Lower Yangtze River metallogenic belt, East China. As the Tieshan and Jinshandian quartz diorite in the southeastern Hubei Province examples, we performed in situ zircon U-Pb dating and Hf isotopic analyses on 5 samples. Twenty-six zircons in the quartz diorite from the Tieshan sample jls1-110 yield excellent concordant results with a weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age of $138.9 \pm 0.96\text{Ma}$ ($n=26$, MSWD=0.82). Zircons from Tieshan sample jls3 yield excellent concordant results with a weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age of $138.2 \pm 0.94\text{Ma}$ ($n=24$, MSWD=0.85). Zircons from Tieshan sample jls4 yield excellent concordant results with a weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age of $131.0 \pm 1.2\text{Ma}$ ($n=11$, MSWD=0.94). Zircons from Tieshan sample jls5 yield excellent concordant results with a weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age of $118.9 \pm 1.2\text{Ma}$ ($n=4$, MSWD=1.20). Zircons from Jinshandian sample jsd yield excellent concordant results with a weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age of $128.6 \pm 0.88\text{Ma}$ ($n=22$, MSWD=0.98). $\epsilon_{\text{Hf}}(0)$ and $\epsilon_{\text{Hf}}(t)$ values of the Tieshan quartz diorite are minus. Hf model age of the first stage (t_{DM1}) is 1.33Ga and the age of the second stage (t_{DM2}) is 2.03Ga. $\epsilon_{\text{Hf}}(0)$ and $\epsilon_{\text{Hf}}(t)$ values of the Jinshandian quartz diorite are minus. Hf model age of the first stage (t_{DM1}) is 1.03Ga and the age of the second stage (t_{DM2}) is 1.56Ga. Hf isotopic compositions from the Tieshan and Jinshandian quartz diorites show that maybe the crust-derived materials joined in the rock body forming supplement for the crust-derived magma of the Middle-Lower Yangtze River. Based on the datum of petrology, geochemistry and ore isotope ages, we can infer that the Early Cretaceous iron deposits of the southeastern Hubei Province formed on the environment of lithospheric extending and thinning.

关键词: [LA-ICP-MS锆石U-Pb测年](#) [锆石Hf同位素分析](#) [矽卡岩型铁矿床](#) [晚中生代](#) [鄂东南地区](#)

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