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赣南八仙脑破碎带型钨锡多金属矿床成矿流体和年代学研究

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摘要:

八仙脑矿床为赣南近年确认的较为典型的破碎带型钨锡多金属矿床。本文通过流体包裹体岩相学、显微测温、氢、氧同位素和年代学研究,探讨了八仙脑钨矿成矿流体来源及演化、成岩成矿时代和形成构造环境。结果表明,流体包裹体以液体包裹体为主,含少量CO₂包裹体,流体具低(150~170℃和200~220℃)、中(250~270℃)和高(290~310℃)等不同的显微测温峰,显示出多期次流体活动相互叠加的特征,成矿流体为低盐度、低密度的H₂O-CO₂-NaCl体系。矿石中石英的δD为-78‰~-65‰,δ¹⁸O_{H₂O}为4.33‰~6.44‰,表明成矿流体以岩浆水为主并有大气降水的混合。利用SHRIMP锆石U-Pb法和辉钨矿Re-Os等时线法,分别获得八仙脑矿床成矿黑云母花岗岩和破碎蚀变带中黑钨矿-石英脉的形成年龄为157.2±2.2Ma和157.9±1.5Ma,成岩成矿年龄一致,均为晚侏罗世。结合区域最新研究成果,认为赣南钨矿形成于华南中生代岩石圈伸展时期的侏罗纪板内拉张环境的地球动力学背景,为同一成岩成矿系统的产物。

英文摘要:

Baxiannao is a typical mineralized fractured zone-type W-Sn polymetallic deposit which was discovered recently. Based on detailed petrographic observations and microthermometric studies of fluid inclusion, hydrogen and oxygen isotopes and radiometric dating, this paper studied the origin and evolution of the ore-forming fluid, ages of tungsten mineralization and petrogenesis and tectonic environment of this deposit. The results show that the fluid inclusions are mainly of H₂O-NaCl type with minor CO₂ type. The homogenization temperature peaks of low (150~170℃, 200~220℃), medium (250~270℃) and high (290~310℃) indicate multistage fluid activities. The ore-forming fluid is a type of low-salinity, low-density H₂O-CO₂-NaCl system. The δD values of fluids from fluid inclusions in quartz vary from -78‰ to -65‰, δ¹⁸O_{H₂O} values of quartz from the ore change from 4.33‰ to 6.44‰, suggesting the ore-forming fluid was derived mainly from magmatic water and was mixed by meteoric water. The dating of zircon from biotite granite determined by SHRIMP yields an age of 157.2±2.2Ma. Re-Os isotopic dating of molybdenite from the Baxiannao fractured zone-type tungsten deposit by ICP-MS yield an isochron age of 157.9±1.5Ma, which is consistent with diagenetic age of biotite granite. Combined with those available from the literature, it can be concluded that tungsten mineralization occurred at the same geodynamic background that is Jurassic intraplate extensional environment during the large-scale extension period of lithosphere in southern China.

关键词: [破碎带型钨矿](#) [成矿流体](#) [SHRIMP锆石U-Pb测年](#) [辉钨矿Re-Os同位素测年](#) [八仙脑](#) [赣南](#)

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