

The characteristics of tungsten mineralization in Nanling metallogenic province, South China

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Introduction

The Nanling metallogenic province is a famous tungsten metallogenic belt in South China. These tungsten deposits with close relation to the Yanshanian (J₂) igneous activities have characteristics of multi-stages of mineralization (Xiao *et al.*, 2006). This paper discusses factors controlled the tungsten formation in Nanling metallogenic province.

Experiment and Results

The chemical compositions of fluid inclusions are determined with RM-1000 laser Raman spectroscopy produced by Renishaw Company, at Institute of Geology & Mineral Res., Xi'an. Compositions of fluid inclusions are mainly composed of H₂O, CO₂ and CH₄. Under microscopic observation, three types of fluid inclusions have been identified, they are daughter mineral, gas-rich and liquid inclusion. Boiling is an important factor during tungsten mineralization provided by coexisting daughter minerals and gas-rich inclusions. This process indicates that the ore-forming fluids were experienced an evolution from high temperature to moderate one. Evidences for tungsten deposition from this study and the previous isotopes from ore-forming fluids indicate multi-stages of hydrothermal alteration derived from the igneous activities. We proposed model and mechanism for the formation of these tungsten deposits, which are the processing the following steps (Wei *et al.*, 2006): (1) deep source effusion; (2) weathering denudation sedimentation; (3) re-melting of wall rocks by multi-stages of granitic magmatic activities; (4) multi-stages of evolution of magma and its derived hydrothermal fluids with leaching, migration and accumulation of tungsten minerals.

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Mesozoic magmatic activities of western Shandong (Luxi), China

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Mesozoic intrusions and volcanic rocks are widely distributed in the western Shandong Province (Luxi). Field relationships and available K-Ar, ⁴⁰Ar-³⁹Ar and U-Pb zircon ages (Tan and Lin, 1994; Xu *et al.*, 1993; Xu *et al.*, 2004a, b, c; Liu *et al.*, 2004; Zhang and Sun, 2002; Qiu *et al.*, 2001; Guo *et al.*, 2003; Zhang *et al.*, 2004, 2005) suggest that the magmatic activities mainly took place in Luxi during the late Mesozoic, and this area may underwent a quiet period in magmatic activity from 185Ma to ca.130Ma (Zhang *et al.*, 2005). Mesozoic mafic dike swarms are widespread in Luxi. Comparatively few studies, especially precise dating, have been carried out on the voluminous mafic dikes in Luxi. Herein, we present the first precise U-Pb isotopic data on zircons obtained from two mafic dikes. Detailed SHRIMP zircon U-Pb dating yields emplacement ages of 144±2Ma and 143±2Ma for the two mafic dikes from Luxi (Mengyin and Zichuan). This study thus indicates that there did exist magmatic activities between 185 and 130Ma.

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