

Hidden granite-related W-Cu-Pb-Zn-Ag deposits in Dayaoshan-Xidamingshan area, Guangxi, South China: mineralization patterns and geodynamic setting

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The Dayaoshan-Xidamingshan area, located in the southeastern of Guangxi autonomous region, is an important part of the well-known Qinzhou Bay to Hangzhou Bay metallogenic belt in South China. A large number of hidden granite bodies with various scales are speculated beneath the land surface according to geological, geophysical and geochemical evidences. These concealed magmatic units are thought to be associated with the formation of many W-Cu-Pb-Zn-Au-Ag deposits in this region. Recently, the drilling projects for mineral exploration revealed the spatial relationships between ore bodies and hidden granite bodies, and two mineralization patterns are determined including “up to body” pattern and “body in body” pattern. The former means that the ore bodies are situated overlying the hidden granite, whereas the latter means that the ore bodies are included at the internal of the hidden granite.

Geochronological works reveal that the hidden granites and their related mineralization are generated at late Cretaceous (100-90 Ma). Hf isotopic evidences indicate that the sources of magmatism related to hidden granites were originated from the Mesoproterozoic and minor early Paleozoic juvenile crusts at different depth levels. Moreover, geochemical indices (e.g., Nb/Y-Y) suggest that the intrusion of these hidden granites were corresponding to an extensional tectonic background, which is consistent with the general geodynamic situation in South China at the Late Yanshanian era (110-80 Ma).

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