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# Petrogenesis and mineralization of W-Mo deposits in Jiangnan transitional belt, northern Yangtze block

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Tungsten-polymetallic metal resources have been widely explored in the northern Yangtze block in recent decades, and more than 4 million tonnes of $WO_3$ have been discovered. The Jiangnan transitional belt (JTB) is in the north part of the block, where it is characterized by early Paleozoic sedimentary strata intruded by 150-120 Ma granitoids. More than 15 W-Mo deposits have been explored in the JTB, such as Gaojiabang, Yangmeiqiao, Longtoushan, Baizhangyan, Shitan, Jitoushan, Guilingzheng, Fanjiaqiao, and Shibanqiao. Almost all the W-Mo deposits are genetically related to granitoid porphyries, which occur as satellite intrusions (less than 1 $km^2$) surrounding the Qingyang-Jiuhua plutonic complex (~860 $km^2$), the largest intrusive complex in the JTB. The Qingyang-Jiuhua plutonic complex has ages of 146-128 Ma; it can be subdivided into four main intrusion stages. All the satellite intrusions with W-Mo mineralization in the JTB correspond to different stages of the plutonic complex. The temporal and spatial characteristics of the W-Mo mineralization in JTB are as follows:

Stage I: Satellite intrusions with W-Mo mineralization (e.g., Gaojiabang) in the northern part of the complex; ages of the intrusions and mineralization 146-144 Ma;

Stage II: Satellite intrusions with W-Mo mineralization (e.g., Jitoushan) in the southern part of the complex; ages of the intrusions and mineralization 138-137 Ma;

Stage III: Satellite intrusions with W-Mo mineralization (e.g., Baizhangyan) in the northeastern part of the complex; ages of the intrusions and mineralization 134-132 Ma;

Stage IV: Satellite intrusions with W-Mo mineralization (e.g., Guilingzheng) in the southwestern part of the complex; ages of the intrusions and mineralization 130-128 Ma.

The first two stages of satellite intrusions are granodiorite; the later two stage intrusions are granite, indicating higher degrees of fractional crystallization in the later intrusions. The W/Mo ratios and Re concentrations in molybdenite decrease in the younger W-Mo mineralization, indicating that the satellite intrusions are becoming enriched in Mo and depleted in W during their evolution.