

Evolution of intrusive rocks at Linxi polymetallic Deposit Inner Mongolia

Y. Q. YANG¹, Z. F. CHEN² AND H. J. LIU³

¹State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Beijing, 100083, China (yangyonq@cugb.edu.cn)

²China University of Geosciences, Beijing, 100083, China (chenzf@cugb.edu.cn)

³China University of Geosciences, Beijing, 100083, China (liuhuij@cugb.edu.cn)

Located in south section of the Daxing'anling metallogenic belt, the Bianjia polymetallic deposits include three types: typical hydrothermal vein-type Pb-Zn-Ag deposit, breccia type Cu-Pb-Zn deposit and porphyry type Mo-Sn-Cu deposit. In addition to, each deposit was derived from an intrusive rock. In order to determine the diagenetic age of the deposit, and their relationship, LA-ICP-MS U-Pb age study is conducted on the zircons in the gabbro, granite and quartz porphyry associated with the mineralization. The results suggest that the gabbro, granite and quartz porphyry were crystallized in 135 Ma, 130 Ma and 145 Ma, respectively. So we can get the process of three ore-forming: (1) gabbro causing filling vein type deposit: gabbro was intruded from the North-West along a fault structure, leading to the ore fluid migration and enrichment along the cracks. (2) granite derived breccia deposit: the overlying and later than gabbro intrusive in same direction, multi-source gas, intrusion of magma top heating fluid accumulation, resulting in magma intrusion and a gas-liquid aggregation, high-pressure cryptoexplosion, bearing ore fluid injection, enrichment and mineralization. (3) quartz porphyry lead to porphyry deposit: the area is affected by Yanshanian orogenic movement with the intensely folded, faulted, this quartz porphyry is rich Cu, Mo and Sn sulfur metal elements derived from the evolution of crust and mantle. The magma were derived from lithospheric mantle and formed in extensional tectonic setting, and accompanied with ore-forming from early to late Yanshanian. This work was financially supported by grants from the Natural Science Foundation of China (Nos. 41272110, 41373068).