Characteristics of metallogenetic fluids and genesis of Nongping gold-copper deposit in Eastern Yanbian, Northeastern China

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Nongping is another porphyry deposit besides Xiaoxinancha large-scale gold-copper deposit in Yanbian area, Northeastern China. It experienced such four stages as sulfides, quartz-sulfides, quartz-sulfides-bismuthinite and quartz-melnikovite-tourmaline stage. And the quartz-sulfide-bismuthinite stage is the main gold mineralizing stage.

The petrographic and microthermometric studies on the fluid inclusions in quartz grains from sulfides-bearing quartz vein formed in the main mineralizing stage show that there are five types of the primary inclusions: (I) gas-liquid, (II) CO_2-bearing three-phase, (III) multiple phases, (IV) pure gas and (V) pure aqueous phase. The metallogenic fluid is of high-moderate temperature (homogenization temperature ranges from 237.8 to 399.4 °C, mainly in the range of 310 ~ 370 °C). The salinity of fluid inclusions is 1.39~12.3wt% and 33.32 ~ 42.03wt%. Different types of inclusions are closely accompanied, with roughly accordant homogenization temperatures and significantly different salinity. These characteristics indicate that the metallogenetic fluids experienced fluid boiling. The laser Raman spectroscopic analysis shows that the main components gas phase of the metallogenetic fluids are H_2O and CO_2, with a small amount of CH_4.

Nongping gold-copper deposit and Xiaoxinancha large-scale gold-copper deposit develop the same kinds of inclusions with similar homogenization temperatures, and they both experienced fluid boiling in the formation of deposits [1,2]. Combined with metallogenic geological conditions and mineralization, a conclusion can be drawn that both two deposits are derived from the same magmatic and mineralization events under alike tectonic settings. At the end of the early Cretaceous, thanks to the subduction of the Pacific Ocean slab to the Eurasia plate, large copper-gold mineralization took place under the background of lithospheric extension.

[1] Li *et al*. (1995) *Mineral Deposits*. **14**(2), 151-166. [2] Zhao *et al*. (2008) *Journal of jilin university (earth science edition)*.**38** (3),384-388

High-resolution carbon and oxygen isotopic record through the transition from OAE1a to ORB1 in the Mudurnu section, central Turkey

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Change in oceanic sedimentation from Cretaceous black organic carbon-enriched deposits (Oceanic Anoxic Events) to predominantly oceanic red beds (ORBs) occurred widely in the Tethys. Few attentions have been given to the transition and environmental changes from the Selli Level (OAE1a) to the Oceanic Red Bed 1 (ORB1).

High-resolution carbon and oxygen isotope curves derived from the early Aptian hemipelagic sediments cropping out at Mudurnu, central Turkey, reveals isotopic excursion and recovery through the transition from the OAE1a to ORB1. Comparison with the standard reference $\delta^{13}C$ curve of the Alpine Tethys shows that the overall character of the excursion through OAE1a is clearly reproduced in central Tethys. A sharp negative $\delta^{13}C$ excursion (1.5‰) followed by an abrupt and prolonged positive $\delta^{13}C$ excursion (3.5‰) and black shale deposition through OAE1a. $\delta^{18}O$ values also show sharp negative excursion synchronous with $\delta^{13}C$ before OAE1a, implying that the onset of OAE1a might be related with rapid influx of CO_2 into the atmosphere from volcanogenic and/or methanogenic sources. Aftermath the OAE1a, $\delta^{13}C$ values keep high value and last for a long time (>1.0 myr), then decrease gradually to normal values until the appearance of ORB1. The recovery of carbon isotope last for longer than 1myr. Gradually intensifying of bottom circulation and increasing in dissolved oxygen in bottom waters is the most probable the cause for the transition from OAE1a to ORB1.