

Chemical Phase State of Gold in the Yangshan Gold Mining Area, Western Qinling Orogen, China

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We carried a gold phase state research on rocks of expo-sure strata and typical ores in the Yangshan gold mining area, utilizing the phase analysis flow diagram as Fig. 1. The results showed that gold mainly lies in five phases, including water-soluble phase, free phase, carbonate phase, sulfide phase and silicate phase.

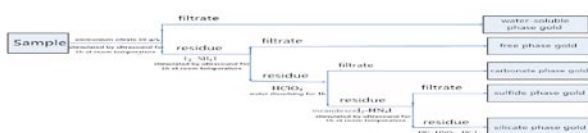


Fig. 1. The gold phase analysis flow diagram

In the exposure strata (Proterozoic, Devonian, Carboniferous, Permian and Jurassic strata), most of gold exists in silicate phase, accounting for a large proportion of 50% to 60% (Fig. 2). The total proportion of gold in water-soluble phase, free phase, carbonate phase and sulfide phase is about 40% in the Devonian and Permian strata, which may explain that the great majority of gold deposits in Yanshan gold mining area are hosted by these two stratas. The ores of gold mainly occur in quartz vein, granite-porphry, siliceous lime-stone and slate. Carbonate phase gold and free phase gold represent the main parts in slate ores, and sulfide phase gold low to only 5%; while sulfide phase gold has a high proportion of 35% to 60% in other three types of ores (Fig. 3).

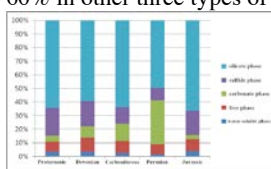


Fig.2. Proportion of each phase gold in stratas

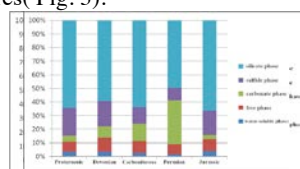


Fig.3. Proportion of each phase gold in ores

Through analyzing the content and studying character of each phase in rocks and ores, we could investigate the formation process of typical ores, and seek the geologic body that has a close relationship with mineralization in mining area.