THE RELATION OF GOLD TO LEAD-ZINC MINERALIZATION

WANG DONGBO, SHAO SHICAI, XU YONG. Beijing Institute of Geology for Mineral Resources, Beijing, P. R. China

In 1990s, some medium-large gold deposits have been discovered in several lead-zinc metallogenetic belts (e.g. Qinling lead-zinc metallogenetic belt, Shanxi Province and Gansu Province, Qingchengzi lead-zinc mining field, Liaoning Province etc.) in China. Gold deposits and lead-zinc deposits spatially co-exist in the same tectonic unit; lead-zinc ore bodies are commonly located under gold ore bodies. The host strata of lead-zinc ore bodies are conformably overlain by those of gold ore bodies. The epoch of gold mineralization is obviously younger than that of lead-zinc mineralization.

A preliminary geochemical research has demonstrated: the lead-zinc deposited from the marine sedimentary-exhalative system, which has the characteristics of high water/rock, salinity and activity of cloride, meanwhile, most of gold was transported into lower temperature hydrothermal plume and primarily enriched in the sediments. During later (magmatism) metamorphism-tectonism, the gold remobilize into the metamorphic fluid which has the characteristics of medium-high temperature, low water/rock, low activity of chloride, and participated at an appropriate structural site. Therefore, The co-existence of gold and lead-zinc deposits and the separation of gold from lead-zinc result from the differences of chemical composition and circulation of ore-forming fluids in the same tectonic unit. This phenomenon can be used as a prospecting criterion in the exploration.