©2017 Society of Economic Geologists, Inc.
SEG 2017 Conference

Geological Relation Between High-Ca Calcite Marbles and Metallic Ore Deposits in Taebaseksan Region, Korea

Chan Su Kim,* Jae Ho Jang, Tong Ha Lee, Se Il Sohn, Yun Seok Yang, and Jung Hun Seo

Inha University, Incheon, Republic of Korea, *e-mail, chance0312@naver.com

Hydrothermal activity forming numerous metallic ore deposits hosted in Cambrian-Ordovician carbonate-rich sedimentary sequences of the Joseon Supergroup in the Taebaseksan region is associated with Late Cretaceous magmatic intrusions of the Bulkugsa orogeny. The ore deposits in the region show close temporal-spatial associations with high-Ca marble deposits. We studied the geological relationship between the high-Ca marble and the metallic ore deposits in the Taebaseksan metallogenic belt to establish a model for mineral exploration.

The Middle Cambrian Pungchon Formation of the Joseon Supergroup contains limestone that is 200- to 300-m-thick. The upper part of the Pungchon Formation is targeted for the high-Ca marble deposit, which could be produced by processes such as diagenesis and later hydrothermal activity. The high-Ca marbles and associated Fe-Pb-Zn orebodies in the Seongwoo mine in the Gasari area were studied. The lens-shaped carbonated replacement Pb-Zn and magnetite skarn orebodies have been identified in the high-Ca mine.

Calcite samples were collected from drill core and underground. We classified the high-grade part of the calcite marbles as micro crystalline calcite (<1 mm), middle crystalline calcite (1~10 mm), and coarse crystalline (10~20 mm). The color of the calcite is white to gray. Oolitic textured calcite, dark-colored-limestone, dolomite, muds with propylitic alteration, and skarn with sulfide occur in low-grade samples. Each sample will be observed under the polarization microscope to verify texture of calcite and hydrothermal alteration. Fluid inclusions will be studied in the microcrystalline calcite. Geochemical analyses, such as XRD, XRF, and LA-ICP-MS, will be conducted to study alteration features and calcite composition. The geological and geochemical information will be applied to constrain the genetic relationship between the metallic ore deposits and high-Ca marble.