11 5

MESOZOIC GARNITOIDS AND GOLD-SILVER MINERALIZATION IN KOREA

SEON-GYU CHOI* · SANG JOON PAK, Dept. of Earth & Environmental Science,
Korea University, seongyu@korea.ac.kr
HONG JA SHIN, Korea Institue of Geology, Mining & Material

Contrasts in the style of mineralization, together with radiometric age data and differences in geologic settings, reflect the genetically variable nature of hydrothermal activities from the middle Jurassic to the late Cretaceous. The gold-dominant deposits in the central Korea took place between 121 and 183 Ma during the Daebo igneous activity. The gold-dominant mineralization occurred at relatively deep depth during the early stage of the Bulgugsa igneous activity (94-108 Ma). However, the depth of ore formation progressively changed to the shallow environments with time accompanied by gold-silver (73-109 Ma) and silver-dominant mineralization (79-98 Ma). Also, it was reported that the emplacement pressures of the Daebo granitoids range from 3.4 to 7.8 kb and those of the Bulgugsa are less than 2.8 kb based upon the amphibole geobarometer. This suggests a clear distinction between the plutonic and subvolcanic environments during Daebo and Bulgugsa igneous activities, respectively. The precious-metal hydrothermal activity in the central Korea took place during the middle Jurassic, and may have continued into the late Cretaceous, coinciding with portions of two magmatic activities. In contrast, the silver-rich mineralization in the southern Korea took place during the late Cretaceous igneous activity. The general features of these types can be summarized as follows. The Jurassic gold-dominant deposits commonly show several characteristics: prominent association with pegmatites, simple massive vein morphology, high fineness of ore minerals in the ore-concentrating parts, and a distinctively simple mineralogy including Fe-rich sphalerite, galena, chalcopyrite, Au-rich electrum, pyrrhotite and/or pyrite. The cretaceous precious-metal deposits are generally characterized by such features as complex vein morphology, low to medium fineness in the ore concentrates, and abundance of ore minerals including Ag sulfosalts, Ag sulfides, Ag tellurides, and native silver. Mineralogical, fluid inclusion and isotope studies indicate that the Jurassic Au-dominant deposits were formed at the relatively high temperature (about 300 to 500 ℃) and deep depth (about 4 to 5 kbars) from the hydrothemal fluids containing more amounts of magmatic or highly-evolved waters, whereas mineralizations of the Cretaceous Au-Ag type and Ag-dominant type deposits were occurred at the relatively low temperature (about 200 to 350 ℃) and shallow depth (<0.5 kbars) from the ore-forming fluids containing more amounts of less-evolved meteoric waters.