Luzonite-Famatinite Series Minerals at the Victoria Gold Deposit, Northern Luzon, Philippines

Tanaka Takahiro* (Engineering, Kyushu Univ.), Akira Imai (Engineering and Resource Sci., Akita Univ.) and Koichiro Watanabe (Engineering, Kyushu Univ.)

The Victoria epithermal gold deposit is located in the Mankayan mineral district in northern Luzon, Philippines. The Mankayan mineral district is known as a porphyry copper-gold and epithermal deposit-bearing magmatic-hydrothermal system. The Victoria epithermal gold deposit is adjacent to the Far Southeast porphyry copper-gold deposit and the Lepanto enargite deposit. The Lepanto enargite deposit is famous as type locality of luzonite. The Victoria gold deposit was classified as a low-sulfidation epithermal deposit (Cuison et al., 1998; Sajona et al., 2002). Principal ore minerals are sphalerite, galena, chalcopyrite, tetrahedrite group minerals and native gold/electrum (Claveria, 2001). However, high-sulfidation state minerals are identified at deeper levels in the Victoria gold deposit in this study (e.g. luzonite, enargite and colusite). Additionally, tellurium, bismuth and tin-bearing minerals are also observed at the deeper levels in the Victoria gold deposit.

Luzonite group minerals are observed in tetrahedrite group minerals and chalcopyrite, or along tetrahedrite group minerals and chalcopyrite at the Victoria gold deposit. Further, luzonite group minerals and chalcopyrite often overprinted the pre-existing vein materials (e.g. tetrahedrite group minerals, quartz and sericite). Luzonite group minerals of this type often replace tetrahedrite group minerals, and often show a small scale flaky intergrowth structure and banding structure of submicron order, with chalcopyrite. It is considered that these structures are formed by decomposition of intermediate-products which replaced tetrahedrite group minerals. Furthermore, these luzonite group minerals show the wide range of chemical composition that is luzonite to famatinite, reflecting the chemical composition of tetrahedrite group minerals which was replaced by luzonite group minerals. These phenomena indicate that luzonite group minerals are formed at the last stage of mineralization at the Victoria gold deposit. Thus, the sulfidation-state of a mineralizing fluid during the last stage corresponds to high-sulfidation.

Key word: luzonite, famatinite, structure, mineralization, high-sulfidation

*Corresponding author: takahiro-tanaka@mine.kyushu-u.ac.jp

Fig.1 Photomicrograph of banding structure of luzonite (lz) and chalcopyrite (ccp) in tennantite (ten).

Fig.2 Photomicrograph of flaky intergrowth structure of luzonite (lz) and chalcopyrite (ccp) associated with tennantite (ten).