Mineralization of Ag-rich Sulfide Minerals in Chimney Samples at Bayonnaise Knoll, Izu-bonin Arc.

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The Bayonnaise Knoll is located in the Izu-Bonin Arc, which forms an arc-trench system. In this study, the growth process of chimnies formed by hydrothermal fluid ejecting from hydrothermal vents, and mound ore formed around chimnies, is clarified based on geochemistry and mineralogy. Measured value for precious and base metals for the studied samples show Au (4.635 ppm), Ag (354 ppm), Cu (0.406 wt%), Pb (0.252 wt%), Zn (11.841 wt%) contents and used to compare with the average Kuroko-ore. In addition, the grade of Au and Ag are larger than that average value.

Chimney has a tubular structure and the growth axis is perpendicular to the chimney length. A manganese oxide is covered to the surface, 1) a white sulfate rich portion (G1), 2) followed by a gray portion containing sulfide (G2) and 3) a black porous portion containing sulfide (G3). This simillar classification can be also observed in the Kuroko-ore. Ba distribution are evenly confirmed in G1-G2 but only confiremed in G3 as a large crystalline portion in vug. It is known from previous studies that the formation temperature of barite (G1) is mainly estimated as 150-215 ℃ and the formation temperature of sphalerite (G2-G3) is around 205-225 ℃. Sphalerite, galena and chalcopyrite, which belongs to Kuroko-ore, were mainly observed in G2-G3. These similar mineralization can be obtained Kuroko-ore. From EPMA measurements, Ag-rich portion is distributed mainly on the outside of G2 and Ag-Cu-Pb, in which sulfide minerals were confirmed. It is presumed that Ag-rich-sulfide minerals were formed at around 200 ℃ because of the formation temperature of barite and sphalerite and that Ag-rich-sulfide distribution.Therefore, from the above point, chimney and mound ore in the Bayonnaise Knoll, is Au and Ag rich, but characterized by a similar concentration of major elements (Cu, Pb, Zn) to the Kuroko ores. And it was found that Ag-sulfide minerals were distributed in G2.

Keywords: Beyonnaise Knoll, Chimney, Ag-sulfide Minerals

