

## Mineralogical and chemical studies of ore deposits collected from the Hatoma Koll, southern Okinawa Trough

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The Hatoma Koll is a submarine volcano located in the southern Okinawa trough, 24° 51' N and 123° 50' E. Hydrothermal activity was observed within the crater floor at the water depth around 1500 m. In 2006, the 'blue smoker' vent was discovered, which has attracted attention of many scientists. We studied mineralogical/chemical composition of hydrothermal precipitates collected in the vicinity of the blue smoker. We will report the results comparing with the previous mineralogical study on sulfide samples collected in 2000 and 2001.

A white chimney sample was collected by SHINKAI6500 (JAMSTEC) during the 'YK07-04' cruise conducted in March 2007. Mineralogical and chemical composition of the sample were analyzed by microscopy, XRD and EPMA.

The predominant mineral of the chimney sample was quite fine anhydrite ( $\text{CaSO}_4$ ). While gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) was found from the top to the bottom, barite ( $\text{BaSO}_4$ ) was found only in the bottom of the chimney associated with sulfides. As minor sulfides, sphalerite ( $\text{ZnS}$ ) and galena ( $\text{PbS}$ ) were identified. While sizes of the sulfides collected from the top of the chimney were around 10 micrometer, those from the bottom part were a few hundred micrometer. Previous study reported the occurrence of anhydrite, barite and galena as well as our observation. On the other hand, in the chimney sample of this study, neither chalcocopyrite nor pyrite was observed.

Elemental replacement of Zn in the sphalerite was studied by EPMA analysis. For the chimney sample of this study, ZnS was replaced by only 1 mol% FeS and 4 mol% MnS on average, with Mn/Fe ratio around 3 or 4. It is noteworthy that similar Mn/Fe ratio in ZnS was reported for the sulfide collected from the Yonaguni Koll IV in the southern Okinawa trough (Suzuki et al, 2008). This geochemical characteristic may be a common signature among the mineralization of submarine hydrothermal systems in sediment-rich environment.