

# Geochemical characteristics of sulfide chimneys collected from arc-backarc hydrothermal fields at Western Pacific.

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**Introduction** Chemical characteristic of poly-metallic sulfide ores formed through active submarine hydrothermal activity is generally affected by the geological setting and the interaction with the surrounding sediments.

We have studied the chemical composition of hydrothermal sulfide chimneys collected from various arc and backarc hydrothermal fields of Okinawa Trough, Mariana Trough, Lau basin and Suiyo sea mount, as well as mid-ocean ridges of EPR and TAG, through dive studies by manned submersible SHINKAI2000 and SHINKAI6500. Heavy metal elements were determined by non-destructive neutron activation analysis at Kyoto University Research Reactor Laboratory.

In this paper, we discuss about (1) difference between the hydrothermal fields associated with felsic magma (Okinawa Trough and Suiyo seamount) and mafic magma (mid-ocean ridges, Lau basin, and South Mariana trough), (2) influence of sediments on hydrothermal activity by comparing the two different type of hydrothermal fields; sediment hosted Okinawa Trough and few sedimented Suiyo seamount which are commonly associated with the felsic magma.

**Results and Discussion** Sulfide chimney samples collected from the mid Okinawa Trough and Suiyo seamount revealed that contents of heavy metals (such as gold, silver, arsenic, antimony, gallium and mercury) are higher than those of sulfide chimneys collected from EPR, TAG, Lau basins and south Mariana Trough. This difference is probably due to the associated magma contents between dacite and basalt magma. Comparison of heavy metal contents of sulphide chimney between Okinawa Trough and Suiyo seamount shows similar each other except rather high antimony content in Okinawa Trough, where rather thick sediments are distributed. The differences in chemical characteristic among these hydrothermal ore deposits are reflected both the difference in the chemical composition of the magmatic hosts in hydrothermal fields resulting from plate subduction and the presence of sediments reacting with hydrothermal fields.