

BAO001-P06

Room: Convention Hall

Time: May 24 17:15-18:45

Analysis and Astrobiological Significance of Amino Acids and Enzymes in Seawater near

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Submarine hydrothermal systems have been noted from the point of view of astrobiology since they are regarded as sites of the generation of the first life on the Earth. They were also important for the study of biospheres in extreme environments. We sampled seawater near Tarama Knoll, the Southwest Islands during the NT09-10 Cruise in July, 2009. The sampling sites located in Okinawa Trough, and it is suggested that there are some unknown hydrothermal systems nearby. High concentration of methane was detected in the area. In order to evaluate biological and abiological activities, we analyzed amino acids and phosphatase activity in the seawater samples. Phosphatases are essential enzymes for terrestrial organisms since phosphate esters are crucial components for them.

One of the seawater sample (HD1034N2) showed quite high phosphatase activity. It is of interest to study the characteristics of the detected phosphatases and correlation between phosphatase activity and other biological parameters such as amino acids and their D/L ratios.

We thank to the members of the NT09-10 Cruise.

Keywords: submarine hydrothermal systems, amino acid, phosphatase, Tarama knoll