

Development of a deep-sea in situ chemical analyzer and its application for hydrothermal fields

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The first in situ flow-through chemical analyzer using chemiluminescence (CL) method in deep sea up to a depth of 5200 m was developed. The analyzer called GAMOS (Geochemical Anomalies MONitoring System) determines concentration of dissolved manganese continuously in seawater automatically. A detection limit of 0.78 nM was obtained. The performance of GAMOS was carefully cleared by using high pressure test chambers to complete the system for deep-sea operation. The GAMOS was then used successfully for deep-sea hydrothermal plume observation by towing it from a research vessel.