Microfluidic Devices for Ocean Exploration
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Abstract
Integrated In Situ chemical and biochemical Analyzers (IISAs) have been developed for oceanography applications in this study. A goal of this study is to develop series of analyzers that can be mounted on small ROVs and AUVs for detailed and automated survey of ocean environments including extreme environments such as deep-sea. We have been developing the IISA for microbial gene detection (IISA-Gene), microbial ATP quantification (IISA-ATP), manganese ion quantification (IISA-Mn) and seawater pH measurement (IISA-pH). For miniaturization and functional integration, microfluidic devices have been used as a core element. IISAs developed in this study were evaluated in our laboratory, mounted on an underwater vehicle and operated in deep-sea environments for real field trial.

References:
