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Spectroscopic analysis of gas separated from liquid[1] JAMES BOUNDS, FENG ZHU, AYSENUR BICER, ALEXANDRE KOLOMENSKII, Department of Physics, Texas A&M University, College Station, TX 77845, VASSILIOS KELESSIDIS, Science and Petroleum Departments, Texas A&M University in Qatar, Doha, Qatar, HANS SCHUESSLER, Department of Physics, Texas A&M University, College Station, TX 77845, SIBOR TEAM — After the Deepwater Horizon oil spill, large concentrations of methane were observed dissolved in the Gulf of Mexico corresponding to a huge release of methane along with the discharge of oil from the site. It has been proposed that quantifying the amount of released methane could help quantify the magnitude of such a spill. We propose to build a system for extracting dissolved trace gasses from collected sea water samples that is capable of operating on board a research vessel. This system will enable on-site analysis of gas content without the need to transport large volumes of water samples back to the laboratory. The system is designed to continuously circulate a sample volume of water through a membrane filter that will extract dissolved gasses into an evacuated collection cylinder. The extracted gasses can then be analyzed on-site with infrared cavity ringdown spectroscopy. We present our initial results on the gas-liquid separation and on the ringdown spectroscopy of methane. The high sensitivity cavity ringdown spectrometer enables isotopic analysis of ^{13}C, which can also serve to differentiate between carbon sources of natural and anthropogenic sources.

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