Using Voltammetric Au/Hg Microelectrodes for the *In Situ* Characterization of Habitat Chemistry at the East Lau Spreading Center

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Voltammetric Au/Hg microelectrodes were used to determine dissolved O_2 and H_2S *in situ* at Lau Basin diffuse flow areas to characterize the habitat chemistry. Temperature was also measured with a T-probe mated with microelectrodes. Measurements were conducted at five sites from north to south. Extensive measurements indicate that the fluid chemistry varied among sites and habitats but in general H_2S and temperature were correlated. The ratio of H_2S vs temperature was higher in the north and decreased significantly towards the south. As oxidized and reduced chemicals are the energy sources for chemoautotrophic organisms, the *in situ* determination of O_2 and H_2S are important to understand biological structure distribution and biogeochemical interactions at deep-sea hydrothermal vents.

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