2008 Summary of Research Reports

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Project: Investigation of CDOM Phenolic Chemistry and Optical Properties Using Enzymatic Degradation and Capillary Electrophoresis Chromatography with Uv-Visible Spectrophotometric Detection
Sponsor: NRL

Statement of Work:

Colored dissolved organic matter (CDOM) in estuarine and seawater systems primarily absorbs light in the deep UV (280-300 nm) with a featureless absorption tailing above 350 nm to 650 nm. The exponential decrease of this tail can modeled with a simple exponential whose coefficient, S, is a bio-optical signal of use to the Navy. Knowing how the chemical characteristics of CDOM relate to its optical properties will improve the Navy's ability to determine salinity, the dispersion of contaminants, and light attenuation from CDOM. Current approaches to measuring CDOM (including lignin) are based on cumbersome concentration and extraction procedures that take hours to process, and also require derivitization for measurement by GC/MS. This project will investigate new approaches that can take advantage of other concentration, separation, and detection schemes. Specifically, an enzyme assay followed by separation and quantification using capillary electrochromatography (CEC) will be developed.