

**Application of FTIR Techniques to
Characterization of Contaminated Estuarine Sediments***

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Contaminated estuarine sediments in the NY/NJ Harbor pose an important environmental problem. As a result, the disposal of the dredged material removed from the Harbor in navigational and maintenance dredging projects has become a matter of pressing concern. The nature of the natural and anthropogenic organic and inorganic compounds associated with the sediments is important in developing methods for the environmentally responsible handling of the approximately 3,000,000 m³ of dredged material produced each year. Characterization of the chemical properties of the contaminated sediments is essential for developing decontamination methods and beneficial uses that do not damage the environment.

Results of several experiments conducted for this purpose at the Brookhaven National Synchrotron Light Source U2B beam line using Fourier transform infrared (FTIR) spectroscopy will be presented. Measurements were made on humic and fulvic acid materials, sediment samples taken from the Harbor, and sediments that had been processed with a commercial sediment washing decontamination procedure. Comparisons were made with spectra of sediments from San Diego Bay, the Venetian Lagoon, and of kerogen samples. The results indicate, that in the NY/NJ Harbor regions, petroleum products may be a biomarker for major organic compounds of anthropogenic origin. In the future, we hope to look for correlations with trace organic compounds such as dioxins and furans, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs).

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