



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004MO31B

Title: Use of Excitation/Emission Matrix Fluorescence

Project Type: Research

Focus Categories: Treatment, Models, Water Quality

Keywords: Molecular fluorescence spectroscopy; fluorescence excitational emission; wastewater treatment; ground water, pollution

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$22,000

Non-Federal Matching Funds: \$46,805

Congressional District: 9th

Principal Investigator:

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Abstract

Water contamination can come from different sources, including wastewater treatment effluent, landfill leachate, agricultural runoff, and a wide varieties of industrial sources. Identifying and differentiating these sources are needed to effectively manage the water pollution issues and enforce the environmental regulation. Missouri Department of Natural Resources (MoDNR) has been using fluorescence spectroscopy as a tool to identify waste sources in contaminated waters. The objective of this collaborative project between the University of Missouri-Columbia (UMC) and MoDNR is to establish a fluorescence excitation/emission matrix database for different types of water in the state of Missouri and develop a mathematical procedure/computer model to identify the source of unknown water samples. The research tasks include: (i) collections of substantial numbers of water samples from various known sources, (ii) analysis of water samples for excitation/emission spectra, and (iii) development of a mathematical/computer model that can be used to identify different sources of water. The model will be tested in terms of sensitivity analysis and potential applications for source identification. The proposed research provides information critical for fluorescence data interpretation and will directly contribute to MoDNR's effort on wastewater sources identification.