

## Method for Measuring Nitrite and Nitrate in Aqueous Medium

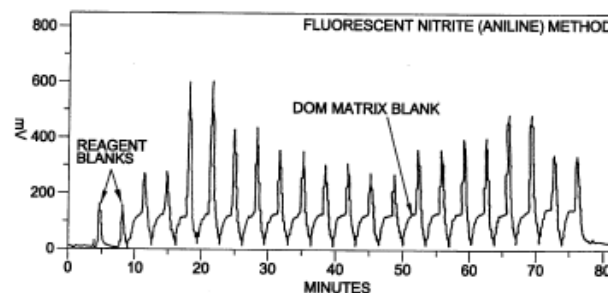
**R**esearchers at the University of South Florida have developed a novel fluorescence-based technique for measuring nanomolar concentrations of nitrates and nitrites, applicable to various bodies of water.

Nitrates and Nitrites represent important widespread contaminants of aqueous environment and serve as significant indicators of natural water quality. Inputs of these ions to the environment occur via industrial and domestic processes, however, the vast majority arise from their use as fertilizers. Excessive levels of nitrate in drinking water have caused serious illnesses and even death. In addition, lifetime exposure to lower levels may result in diuresis, increased starchy deposits and hemorrhaging of the spleen. Numerous techniques have been developed for the detection and monitoring of these ions, however, the increasing demand of rapid on-site analyses require the development of more sensitive and efficient methods.

Our inventors have developed an automated approach called 'flow-injection' that is capable of detecting nitrate and nitrite concentrations lower than 10 nanomolar, while still being able to analyze samples at the same or higher rate as conventional methods. The approach is based on the pH conversion of nitrite to nitrosium ion followed by a series of reactions that yield a chemical species that fluoresces. With this technique, 20 determinations per hour can be made, thereby enabling near real-time determination of nitrites and nitrates.

### ADVANTAGES:

- Near real-time determination of nitrites and nitrates
- High Sensitivity
- Detection limit of less than 10 nanomoles per liter



*Figure 1: Peak Records for Fluorescent Nitrite Analysis By Reverse Flow injection.*