A Supramolecular Sensing Array for Qualitative and Quantitative Analysis of Organophosphates in Water

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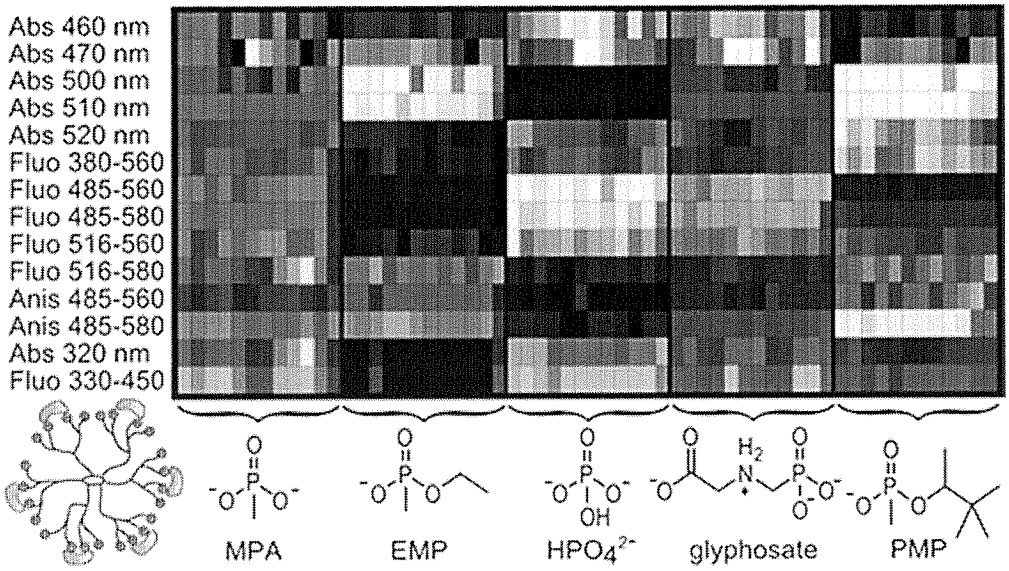
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Abstract



The organophosphate class of compounds includes common herbicides as well as highly toxic nerve gases whose detection is important from an environmental and a public safety perspective. We describe here a fluorescence turn-on sensor array for the rapid detection and quantitation of relevant organophosphates in neutral water. The array elements self-assemble from commercially available dyes and PAMAM dendrimers, and sensing is based on an indicator displacement assay. Data interpretation through pattern recognition methods (PCA, LDA) showed excellent cluster separation and sample classification. In addition, we were also able to use this system for simultaneous differentiation and quantitative analysis of methylphosphonate (a nerve gas byproduct), glyphosate (a ubiquitous herbicide), and inorganic phosphate over a wide range of concentrations (10 μM to 2 mM).

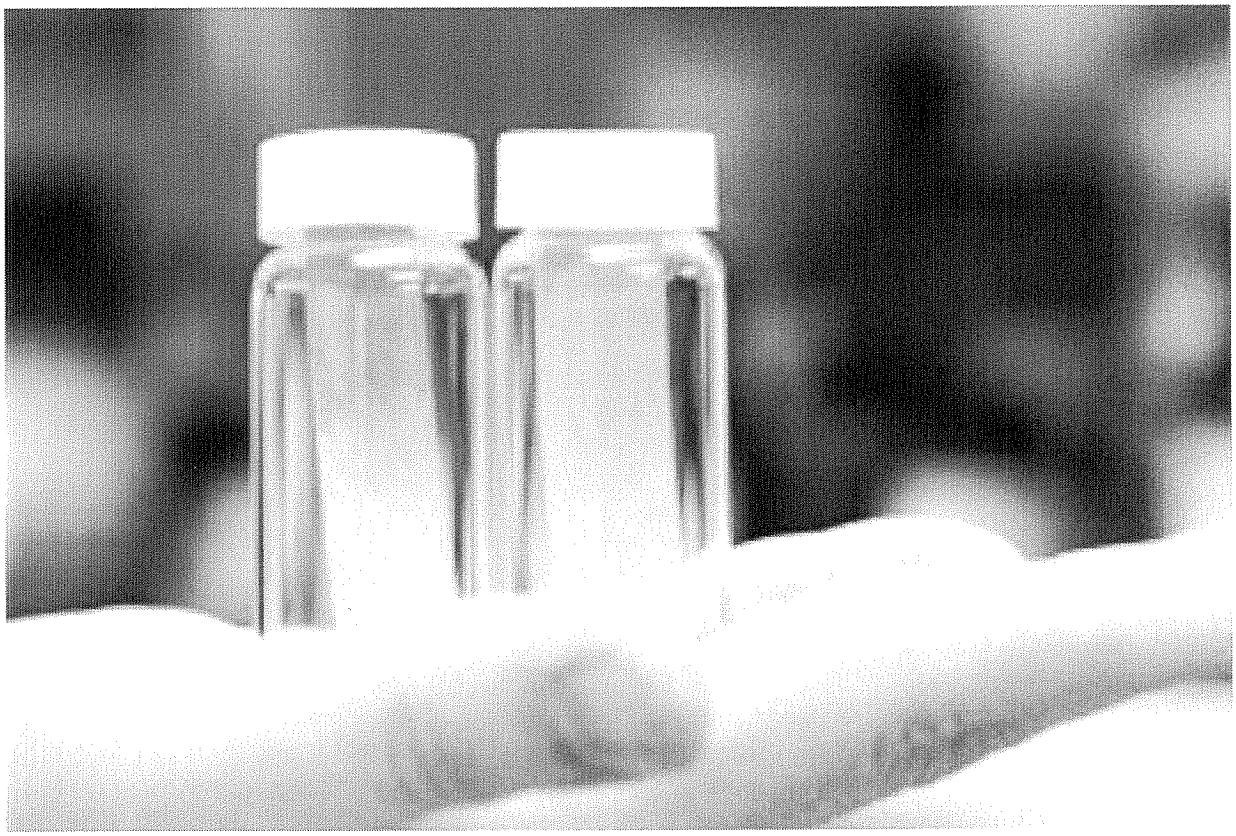
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HEALTH

Shocking Pink: An Inexpensive Test for Chemical Weapon Attacks

Paper sensors change color from blue to pink within 30 seconds of exposure to trace amounts of the toxic gas

By Larry Greenemeier on March 15, 2012



Courtesy of University of Michigan College of Engineering photographer Marcin Szczepanski

It seems unlikely that the maker of hundred-million-dollar Hollywood blockbusters such as *Armageddon* and *The Transformers* could inspire scientists to develop an ultralow-cost tool for quickly sensing airborne chemical weapons. Yet one former University of Michigan at Ann Arbor (U.M.) researcher says his idea to use a nerve-gas