**Progress on the Array-Based Detection of Persistent Organic Pollutants**

The rapid detection of persistent organic pollutants, including polycyclic aromatic hydrocarbons (PAHs), PAH metabolites, polychlorinated biphenyls (PCBs), and pesticides, in complex environments is highly desirable to both first responders and medical personnel. Reported herein is a detection scheme that addresses precisely this objective using γ-cyclodextrin. Gamma-cyclodextrin is a renewable cyclic oligosaccharide that is capable of simultaneously binding a fluorophore and analyte within its cavity. It is able to extract hydrophobic pollutants from aqueous environments by sequestering them within its hydrophobic core, forming a guest-host inclusion complex. Upon excitation of the analyte, proximity-induced energy transfer occurs, wherein the analyte acts as an energy donor to the fluorophore (energy acceptor). In some cases, fluorescence modulation is observed, at which point the fluorophore emission signal is altered in a unique way in the presence of the analyte. The new fluorophore emission signal is unique to each fluorophore-analyte combination. As such, a "fingerprint" for each analyte can be developed and used to detect the analytes via an array-based scheme. Successful extraction and energy transfer was observed in simple environments such as phosphate buffered saline to more complex matrices, including oil spill oil, surface residual (tar) balls, and human urine, breast milk, and plasma. Additionally, we have developed arrays in both phosphate buffered saline and human urine. The successful extraction and detection of these carcinogenic pollutants in complex environments highlights the utility of array based detection in various phases of pollutant spill response, from immediately after the event to long-term monitoring. The pollutants can be extracted and detected in both environmental and biological systems rapidly, allowing first responders to understand pollutant transport and potentials for human exposure can be easily discerned. Thus, the development of an array-based detection scheme can be a valuable tool in the rapid response to a spill event.