

## Physical and Chemical Integrated Flow Imaging Systems

**R**esearchers at the University of South Florida have developed a device that will change the face of environmental detection systems.

Current environmental detection systems have limited sensor parameters that focus on chemical or physical elements but rarely the combination of both. Our inventors have designed a scientific detector tool, based on MEMS and flexible printed electronic technologies, that has enabled the incorporation of a wide array of sensors in a portable camera like detection system. The system detects various physical parameters and simultaneously images the flow of various chemicals and molecules that is in close proximity to the camera's sensing elements.

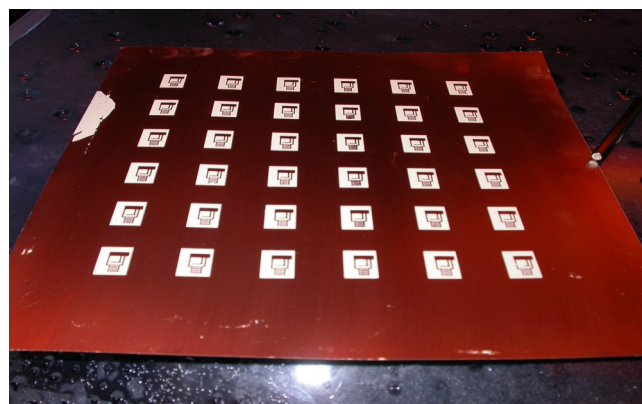
This device is made of an array of mixed sensing elements or pixels in a rigid or flexible electronic format. The pixel sensor parameter is vast and includes physical sensing elements such as pressure, temperature, and force. The chemical sensing elements include electrochemical, ion selective electrodes, ion detectors, polymer sensors, antibody and surface Plasmon elements, regenerate reactive/ sense surfaces, and discrete sensor chips, capable of detecting a wide array of chemicals and molecules.

The system allows for real-time visualization of the chemistry and physics parameter make-up of fluids such as air, water, and plasma. This creates a novel environmental monitoring system applicable to a wide variety of environments and investigations, such as safety security, process control, and scientific and environmental monitoring markets.

### ADVANTAGES:

- Simultaneous detection of physical and chemical elements
- Compact and portable
- Applicable to a vast number of markets
- Provides real-time visualization of molecules in various mediums

### *Novel Environmental Detection and Imaging Device*



### *Array of Electrochemical Sensors Made as a Large Area Sensor Array on Flex*

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