INVENTION DESCRIPTION

MICROMACHINED CHEMICAL / BIOLOGICAL AGENT SENSOR ARRAYS BASED ON COMBINATORIAL LIBRARIES: THE DEVELOPMENT OF AN ELECTRONIC TONGUE

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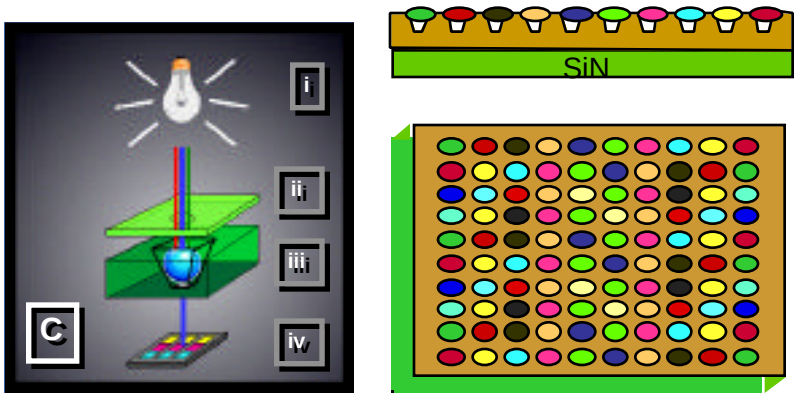

EXECUTIVE SUMMARY

The development of smart sensors capable of discrimination of different analytes, toxins, and bacteria has become increasingly important for environmental, health and safety, remote sensing, military, and chemical processing applications. Members of this team have developed recently a new type of sensor array that functions in a manner analogous to an *"electronic tongue"* Likewise methods have been developed in which a combination of state-of-the-art micromachining, novel photochemical sensing schemes, molecular engineering of receptor sites, and pattern recognition protocols are used to detect a variety of important biological and chemical agents. This exquisitely powerful sensor array concept developed at The University of Texas at Austin allows for the simultaneous detection of multi-analyte systems, while also properly "rejecting" irrelevant chemical/biochemical species in the environment.

CAPABILITIES

- the sensor array structures are compatible with microfabrication methods leading to small and inexpensive (i.e. disposable) sensor units.
- sensor suites responsive to multiple analytes, antigens, toxins and bacteria can be prepared.
- arrays can be calibrated readily so that new analyte systems can be recognized with minimal delay.
- ultra-high sensitivity is provided with CCD detection of transmission and/or fluorescence signals.
- pattern recognition capabilities can be combined with the described sensor arrays to allow for the simultaneous detection of multi-analyte systems, while also properly "rejecting" irrelevant chemicals in the environment.