TECHNOLOGY AVAILABLE FOR LICENSING

University of Dayton

Resonant Bio-chemical Sensor Capable of Wireless Interrogation

Advantages:

- Higher sensitivity
- Higher selectivity
- Ease of wireless interrogation

Applications:

- Detention of specific trace environment analytes in solid or gaseous form, such as odors, ammonia, TNT, etc.

Description:

A resonant sensor can vary its output in accordance with changes in specific environment conditions near the sensor. Typically, resonant sensors are comprised of an inductance-capacitance (LC) circuit with a spe-cific resonance frequency.

Biopolymers, such as Deoxyribonucleic acid (DNA)-cetyltrimethylammonium (CTMA) and bovine serum albumin (BSA), have been found to have unique dielectrical properties. These biodielectrics can exhibit voltage tunable dielectric properties at room temperatures at microwave frequencies. Dielectric tunability of more than 50% has been measured in DNA-CTMA biopolymer and about 40% in BSA-polyvinyl alcohol (PVA) polymer. Therefore, the voltage dependent dielectric tunability of these polymers can offer a unique opportunity to use the polymers in resonant sensor applications.

The described invention is a resonant sensor applicable for sensing bio-chemicals or trace chemicals in solid or gaseous form. It uses functionalized biopolymers as a sensing layer, whose dielectric properties or electrical conductance changes in the presence of an analyte. These changes can be sensed wirelessly.

IP Status:

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Inventors
Dr. Guru Subramanyam

UD Reference #:
UD 482

Contact:
Mathew Willenbrink
Director, Technology & Entrepreneurial Partnerships
937-229-3472
Mathew.Willenbrink@udri.udayton.edu
udayton.edu/research/resourcesforresearchers/tpo/index.php