

Request Information

Permalink

## Environmentally-Sensitive Reconfigurable Antenna

Tech ID: 18818 / UC Case 2005-514-0

### BACKGROUND

With the exception of light-based sensors, that change their light interaction properties, all sensors require some power in order to operate and provide a signal to a remote source. Light-based systems are readily blocked by typical obstructions such as buildings, trees, and vegetation. Some wireless systems require the use of on-board circuitry that temporarily charges up a battery or capacitor in the presence of an externally applied RF radiation, then use this electrical energy to re-transmit signal. This method is bulky, expensive, and can only transmit data at short distances. The need for a powered sensor/transmitter severely limits the deployment of such sensors in large scale such as over large geographic regions or as part of the civil infrastructure.

### TECHNOLOGY DESCRIPTION

University researchers have developed an antenna system that changes the nature of its transmission and reception of electromagnetic radiation based on local environmental conditions. It may use this feature to transmit local environmental information by wireless means without the need for power. The sensor system described in this invention requires no power, but may be interrogated remotely by wireless means. The simplicity of the device and passive operation means the device can be deployed over large regions while still enabling remote readout. Furthermore, since the interrogating system may use directional antennas, the interrogating radiation may be highly localized, e.g., through the use of a "pencil beam". Thus the location of the sensors may be determined by the interrogating system, allowing true geographic mapping of the sensor networks.

### APPLICATIONS

- » Wireless, battery-free acoustic sensor.
- » Acoustically actuated antenna system.
- » Remote sensing,
  - » large area surveillance,
  - » covert monitoring,
  - » infrastructure monitoring,
  - » traffic monitoring,
  - » biochemical detection for homeland security.

### PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,570,169	08/04/2009	2005-514

### CONTACT

Doug Crawford  
doug.crawford@uci.edu  
tel: 949-824-2405.



### OTHER INFORMATION

#### KEYWORDS

antenna, environmentally-sensitive

#### CATEGORIZED AS

- » **Communications**
  - » Other
  - » Wireless
- » **Environment**
  - » Sensing
- » **Security and Defense**
  - » Other
- » **Sensors & Instrumentation**
  - » Biosensors
  - » Environmental Sensors
  - » Other

**UCI** Beall  
Applied Innovation

5270 California Avenue / Irvine, CA  
92697-7700 / Tel: 949.824.2683



© 2009 - 2010, The Regents of the University of  
California  
[Terms of use](#)  
[Privacy Notice](#)