

# TECHNOLOGY AVAILABLE FOR LICENSING

UNIVERSITY of



DAYTON

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## Sensing System for Monitoring the Structural Health of Composite Structures

### Advantages:

- Monitors the structural health of composite structures when physical inspection may be impractical
- Data collection compatible with existing sensors
- Low power, simple voltage measurement
- Easily applied to complex shapes with minimal surface preparations

### Applications:

- Any composite structure that should be monitored for structural health, such as wind turbine blades, pipelines, bridges, aircraft, satellites and ships

### Description:

Monitoring the structural health of structures which are used over long periods of time has become increasingly important. Over time, structures such as architectural and vehicular structures as well as aircraft, turbine blades, bridges, satellites, and ships can suffer from defects such as fractures and fatigue cracks. Such defects, if undetected, may result in dangerous accidents. Currently, the monitoring of such structures is time consuming and expensive. This is particularly evident where the structures to be monitored must be disassembled and transported to testing facilities. Detecting hidden defects without disassembly of the structures is even more difficult when the structures cannot be disassembled, for example, in the case of buildings and bridges. Structural health monitoring systems are also helpful in instances where structural performance may be uncertain (e.g., prototypes) or where inspection is impractical (e.g., buried structures or structures in remote locations). This invention is a structural health monitoring system consisting of a robust, tailorable conductive ink, a simple application method, and data acquisition system based on DC-resistance measurement. The ink, which incorporates carbon nanofibers, may be applied in a variety of patterns that are tailored to yield the desired component information.

### IP Status:

US: <https://patents.google.com/patent/US7921727B2/en>

Canada: <https://patents.google.com/patent/CA2570117C/en>

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