



*If you are interested in the Wireless RF Passive Strain Sensor, please contact Nancy Saucier, Director of New Venture Development at [Nancy\\_Saucier@uml.edu](mailto:Nancy_Saucier@uml.edu) or 978-934-3212.*

## **Wireless RF Passive Strain Sensor**

### *Health and Safety Monitoring*

#### *Status: Prototype Development On-Going*

Dr. Ramaswamy Nagarajan from the Department of Plastic Engineering at UMass Lowell has developed a new type of strain sensor suitable for wirelessly monitoring the mechanical deformation in tension, compression or bending using radio frequency based interrogation. It is a multi-layer structured wireless strain sensor that operates based on relative deformation of metallic sensing elements with potential for remote interrogation and substantial improvement of long-term performance. This technology is unlike any other due to both its wireless and passive capabilities which are used for monitoring structural integrity. In addition, it is cost effective and efficient by not requiring a clear line of sight, like most technologies do. This creates more accuracy and convenience when detecting tension, strain, compression, and more.

Strain sensing is one of the most critical aspects of structural health monitoring, which is the market being pursued by Dr. Nagarajan and his technology. The global market for non-destructive testing was estimated at \$1.1 billion in 2008 with a growth rate of 3.2% over the period of 2008 to 2013. This means the industry is increasing at a steady rate. Typically, however, strain sensors are developed on spec and therefore the market is highly fragmented and no single technology has gained dominance in the market.

This technology was chosen for the New Venture Initiative due to its competitive advantages and capabilities:

- Robustness
- Easier way to detect (no man power needed after installation process)
- High value of applications in extremely challenging environments where neither line-of-sight nor the ability to constantly power up or maintain the sensors exists
- Replacement for conventional strain gauges

It differs strongly from what is on the market today and has the potential to make a great impact in the global market for non-destructive testing.

NVI will engage in the RFID Sensor technology by:

- Providing an internal grant of \$12,000 for full prototype development including interrogator design and sensor design refinement
- Assignment of a NVI fellow for development of a technical plan of action
- Initial market analysis
- Pending internal grant results, development of an initial business strategy and early customer validation activities