Researchers at the University of South Florida have developed a smart system and method for detecting and monitoring breast cancer and other tissue within the human body.

Breast cancer is the most common type of deadly cancer among women and screening methods are recommended for early breast cancer detection. There are various breast cancer tomography methods including mammography, ultrasound, magnetic resonance imaging (MRI), thermography, and electrical impedance tomography (EIT). Mammography is the most common method for breast cancer screening. These screening methods have drawbacks such as false-negative detection and uneasiness of patients as the breasts are compressed while screening. Most importantly, none of the existing technologies are suitable for constant monitoring. Due to the lack of a portable solution for the diagnosis, the process of monitoring the cancer growth is tedious and prolonged, owing to frequent visits to the clinic hence being very inconvenient and costly for the patient. There is need for persistent monitoring of cancer development in order to reduce the probability of false detection while providing information that allows a specialist to apply an appropriate treatment with the least amount of damage to healthy tissue.

USF Inventors have developed a monitoring system specifically designed to monitor tissues of the human body. The monitoring system is configured in such a way as to receive the data transmitted and generate a three-dimensional image of a monitored object based upon the data. While its application in breast cancer detection is discussed in detail, it is noted that this is but one of many applications in which such a system can be used. This system can be integrated into an elastic bandage that is applied to a broken limb prior to applying a cast to the limb in order to monitor the healing process of bone tissue.

**ADVANTAGES:**
- Persistent monitoring of tissue
- Accurate results of detected tissue
- Convenient and easy to use

**Detect Living Tissue as well as Non-living Objects within the Human Body**

Schematic diagram of a smart bra for monitoring breast cancer. The bra has a stretchable electronic mesh with smart electrodes in contact with the patient’s body.

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