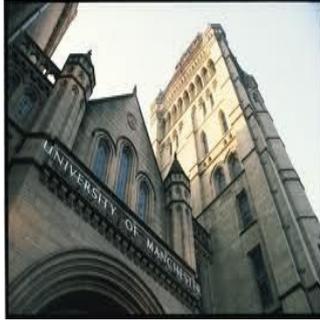## New Portable Breast Cancer Detection Scanner

A new portable scanner, based on radio frequency technology, is able to instantly identify the presence of a breast tumour, malignant or benign, from the comfort of the patient's home.

The new invention, developed by Professor Zhipeng Wu, from the University of Manchester, UK, provides a quicker and less intrusive means of breast cancer testing and can be used at GP surgeries, instead of a hospital or specialist care centre, which can help dramatically reduce waiting times and often avoid unnecessary X-ray mammography. The scanner could also be used at home for continuous monitoring of breast health.

The patented real-time radio frequency scanner uses computer tomography and works by using the same technology as a mobile phone, but with only a tiny fraction of its power. This makes it both safe and low-cost and the electronics can be housed in a case the size of a lunch box for compactness and portability.

The usual way of detecting breast cancer up to now is mammography, which is based on density, and is 95% accurate for women over the age of 50, however it is less effective for testing women under 50. Radio frequency technique instead works on dielectric contrasts between normal and diseased breast tissues and since malignant tissues have higher permittivity and conductivity, the presence of a tumour or other abnormality instantly shows up in red as the sensor detects the difference in tissue contrasts at radio frequencies.

According to Professor Wu the scanner minimises the chance of overlooking a breast tumour during scanning since the system is portable and works in real-time, meaning you get a scan as soon as you lie down. There is no need to use a liquid or gel as a matching substance, such as in an ultrasound as it can be done simply in oil, milk, water or even with a bra on. Although the research is still continuing, the system has great potential to bring a new way for breast cancer diagnosis.

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