

# Wireless Handheld Optical Probe for Breast Cancer Imaging

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## Technology description

### Summary

The technology is a handheld, optical probe that can be used frequently to monitor patient progress and determine the response of tumors to treatment. This probe uses near-infrared imaging to measure the content of hemoglobin, water, and lipid to determine the presence and size of tumors. Because it is non-ionizing, the probe can safely be used more often than other tools such as x-ray mammography, and its size makes it portable and suitable for screening purposes.

#### Problem or Unmet Need:

Breast cancer affects approximately 1 in 8 women in the United States and the incidence of breast cancer throughout the world is increasing. With more than 200 000 new cases every year, it accounts for 28% of all new cancers diagnosed in women. Because of growing awareness, more women today are undergoing breast cancer screening, such as x-ray mammography. However, there have been noted cases of poorly maintained mammography machines emitting excessive x-ray radiation that can lead to cancer and radiation sickness. Furthermore, more portable imaging methods are required for various surgical procedures, such as neoadjuvant chemotherapy (NACT). Due to safety issues and shortcomings of current x-ray imaging methods, other promising imaging modalities, such as diffuse optical tomography (DOT), have recently emerged to image breast tissue for the purpose of breast cancer screening.

## Application area

Front line and maintenance screening for breast cancer

Screening in regions with poor healthcare access

Alternative applications include neurological and cardiovascular screening

## Advantages

Contains no optical fibers, hence limits the size and weight of the device.

Wireless design and Bluetooth technology allows for greater range of movement

Portable design allows for screening to be conducted in regions with poor healthcare access

Safety design prevents near infrared laser from causing eye damage

Institution

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Inventors

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