

[Home](#) > [ETDS](#) > [THESES](#) > [952](#)

## Masters Theses 1896 - February 2014

Off-campus UMass Amherst users: To download campus access theses, please use the following link to [log into our proxy server](#) with your UMass Amherst user name and password.

Non-UMass Amherst users: Please talk to your librarian about requesting this thesis through interlibrary loan.

Theses that have an embargo placed on them will not be available to anyone until the embargo expires.

### Terahertz Imaging for Cancer Detection

[Download](#)

[Benjamin A. St. Peter](#)

[Follow](#)

Document Type  
Open Access

Degree Program  
Electrical & Computer Engineering

Degree Type  
Master of Science (M.S.)

Year Degree Awarded  
2012

Month Degree Awarded  
September

Keywords  
THz, medical imaging, reflectivity, refractive index, FDTI, breast cancer

Advisor Name  
Sigfrid

Advisor Middle Initial  
K.

Advisor Last Name  
Yngvesson

Co-advisor Name  
Paul

Co-advisor Middle Initial  
R.

Co-advisor Last Name  
Siqueira

Abstract

**Included in**  
[Bioimaging and biomedical optics Commons](#), [Biomedical Commons](#), [Electromagnetics and photonics Commons](#), [Other Analytical, Diagnostic and Therapeutic Techniques and Equipment Commons](#)

[SHARE](#)

Enter search terms:

  

[Advanced Search](#)

[Notify me via email or RSS](#)

[Browse](#)

[Collections](#)

[Disciplines](#)

[Authors](#)

[Author Corner](#)

[Author FAQ](#)

[Links](#)

[University Libraries](#)

[UMass Amherst](#)

[Contact Us](#)

This project evaluates the ability of terahertz (THz) radiation to differentiate cancerous from non-cancerous human breast lumpectomy and mastectomy tissue. This is done by aiming a narrow-band THz beam at medical samples and measuring reflected power. THz images of specimens from Breast Conservation Surgery (BCS) were created using a gas laser source and mechanical scanning. The design and characterization of this system is discussed in detail. The images were correlated with optical histological micrographs of the same specimens and discrimination values of more than 70% were found for five of the six samples using Receiver Operating Characteristic (ROC) analysis.

Advisor(s) or Committee Chair  
Yngvesson, Sigfrid K.  
Siqueira, Paul R.

This page is sponsored by the [University Libraries](#).

© 2009 [University of Massachusetts Amherst](#) • [Site Policies](#)