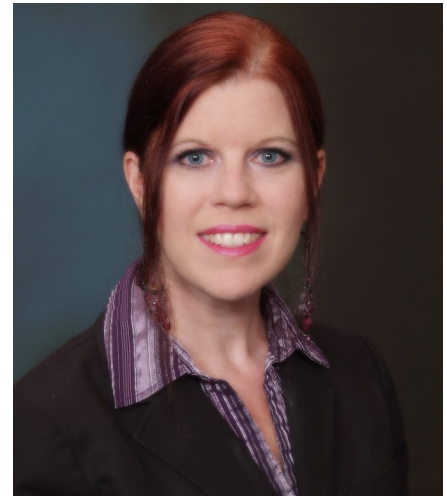




DIFFUSE OPTICAL IMAGING OF BREAST CANCER USING A NOVEL HAND-HELD DEVICE

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LECTURE: 9:00 AM - 10:00 AM
ENGINEERING CENTER
ROOM EC 2300
10555 WEST FLAGLER STREET
MIAMI, FL 33174



Abstract: Optical imaging is an emerging technology towards non-invasive breast cancer diagnostics. In recent years, portable and patient comfortable hand-held optical imagers are developed towards two-dimensional (2D) tumor detections. However, these imagers are not capable of three-dimensional (3D) tomography because they cannot register the positional information of the hand-held probe onto the imaged tissue. A unique, portable hand-held optical imager has been developed in our Optical Imaging Laboratory with coregistration facilities towards 3D tomographic imaging of breast cancer. The feasibility of 3D tomography was demonstrated *for the first time* in breast tissues using the hand-held optical imager, wherein a 0.45 cm^3 fluorescent target (superficially placed) was recovered along with artifacts. Diffuse optical imaging studies were performed in breast cancer patients with invasive ductal carcinoma. The images showed greater absorption at the tumor sites (as observed from x-ray mammography, ultrasound, and/or MRI). The results demonstrate the potential for bedside imaging of breast tissues in the clinical setting using a hand-held optical imager.

Biography

Sarah Erickson received a B.S. in physics from the University of South Florida and entered the biomedical engineering Ph.D. program at Florida International University in Fall of 2005 on a presidential fellowship. She performed her doctoral research in the Optical Imaging Laboratory under Dr. Anuradha Godavarty on the clinical translation of a hand-held optical imager for breast cancer diagnostics. During her doctoral research Erickson received several national awards including the Session Best Paper Award (14th World Multi-Conference on Systems, Cybernetics and Informatics, 2010), the Lydia I. Pickup Scholarship (Society of Women Engineers, 2009), the 1st Place Doctoral Student Paper Award (Southern Biomedical Engineering Conference, 2009), and 3rd Place Best Student Poster Award (National Institutes of Health Workshop, Bethesda, MD, 2009). Her graduate research has been published in six peer-reviewed journal publications and nine conference proceedings as well as presented at eleven national conferences including SPIE Photonics West BiOS (2009, 2010), Optical Society of America BIOMED (2010), and Radiological Society of North America (2008). She graduated in May 2011 and currently works in the Optical Imaging Laboratory at FIU as a postdoctoral associate funded by a postdoctoral fellowship from the American Cancer Society and Canary Foundation.

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