FIU Engineering & Computing
Biomedical Engineering

# Wallace H. Coulter Foundation
## Biomedical Engineering Seminar Series

**QUING ZHU, PHD** joined Washington University in St. Louis as a professor of the Department of Biomedical Engineering in July 2016. Previously, she was a professor of Electrical and Computer Engineering and Biomedical Engineering at the University of Connecticut.

Professor Zhu has been named Fellow of Optical Society of American (OSA), Fellow of SPIE- International Society for Optics and Photonics, a Member of Connecticut Academy of Science. Professor Zhu received the Connecticut Technology Council 2007 Women of Innovation Award. She is a Topical Editor of Optics Letters, an Associate Editor of Transactions on Biomedical Engineering, and an editorial board member of Photoacoustics and Journal of Biomedical Optics. She is a member of organizing committee for the SPIE Photonics West Photon Plus Ultrasound Conference, and Optical Tomography and Spectroscopy of Tissue IX conference.


## DR. QUING ZHU

**Professor of Biomedical Engineering**
Washington University in St Louis

## CO-REGISTERED PHOTOACOUSTIC AND ULTRASOUND IMAGING OF OVARIAN AND RECTAL CANCERS

**ABSTRACT:** In the past decade, with advances in lasers, ultrasound transducers, and tomographic reconstruction techniques, photoacoustic imaging (PAI) has seen immense growth, providing unprecedented spatial resolution and functional information at depths ranging from several millimeters up to several centimeters. PAI is a hybrid imaging technology that uses a short-pulsed laser to excite tissue. The resulting acoustic (or photoacoustic) waves are generated from thermoelastic expansion due to transient temperature rises. They are then acquired by US transducers and used to image the optical absorption distribution, which in turn reveals optical contrast. Oncologic targets of PAI to date include breast cancer, prostate cancer, skin cancer, thyroid cancer, ovarian cancer, and colorectal cancer. The penetration depth of PAI is tunable with the ultrasound frequency. In this talk, I will present our recent clinical results of utilizing PAI for ovarian cancer diagnosis and for rectal cancer chemoradiation treatment outcome prediction. Ovarian cancer remains the deadliest of all the gyneco-logical malignancies. Our proposed co-registered dual-modality PAI and Ultrasound (US) technology has shown potential to improve US in more accurate diagnosis of ovarian masses. Colorectal cancer is the third most common cancer diagnosed in both sexes in the Western World. In 2019 there were approximately 44180 new cases of rectal cancer diagnosed in the United States. Rectal cancer is a prevalent disease that requires complex, coordinated care to achieve maximal survival. Photoacoustic microscopy combined with deep learning neural network has shown potential of predicting chemo-radiation treatment outcome which may lead to the reduction on unnecessary surgeries and improve patient's quality of life.

FRIDAY, APRIL 9 / 9:00 AM / VIA ZOOM

▸ Zoom Registration https://bme.fiu.edu/seminars

Through the generous support of the Wallace H. Coulter Foundation the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to campus to provide a research seminar and to meet with faculty and students and to tour our academic and research facilities.

Friday, April 9, 2021
9:00AM-10:00AM | https://bme.fiu.edu/seminars