UNIVERSITY of ROCHESTER

ROCHESTER CENTER FOR BIOMEDICAL ULTRASOUND

2022 RCBU Biomedical Ultrasound Symposium Day

THURSDAY, NOVEMBER 10, 2022
8:00AM-5:00PM

RICHARD FELDMAN BALLROOM
FREDERICK DOUGLASS COMMONS
UNIVERSITY OF ROCHESTER
RIVER CAMPUS
ROCHESTER, NY

Zoom link for live broadcast: https://rochester.zoom.us/j/98470946527

Support for the RCBU Biomedical Ultrasound Symposium was provided by the Edwin and Pam Carstensen Family Endowment, the Rochester Center for Biomedical Ultrasound, and the Department of Biomedical Engineering at the University of Rochester.

2022 RCBU BIOMEDICAL ULTRASOUND SYMPOSIUM DAY

AGENDA

Thursday, November 10, 8am–5pm

8:00AM	**Arrive and Continental Breakfast**
8:45-9:00AM	**Welcome & Introduction of Distinguished Lecturer** Diane Dalecki, Ph.D. The Kevin J. Parker Distinguished Professor in Biomedical Engineering Director, Rochester Center for Biomedical Ultrasound Chair, Department of Biomedical Engineering University of Rochester
9:00-10:00AM	**Distinguished Edwin L. Carstensen Lecture** *Ultrasonic Elasticity Imaging with Acoustic Radiation Force* Kathy Nightingale, Ph.D. Theo Pilkington Professor of Biomedical Engineering Duke University
10:00-10:10AM	**Break**
10:10-11:00AM	**Trainee Presentations** Moderator: Stephen A. McAleavey, Ph.D. Associate Professor of Biomedical Engineering University of Rochester
11:00-NOON	**Sound of the light enables the next generation of theranostic systems for oncologic and obstetrics and gynecology applications** Mohammad Mehrmohammadi, Ph.D. Associate Professor, Department of Imaging Sciences University of Rochester
NOON-1:15PM	**Lunch, Scientific Poster Session, and Networking**
1:15-1:30PM	**Introduction of Distinguished RCBU Alumni Lecturer** Diane Dalecki, Ph.D.
1:30-2:30PM	**Distinguished RCBU Alumni Lecture** *Improving Access to Diagnostic Ultrasound* Manoj Menon, Ph.D. Director, Clinical Science and Innovation, Philips Ultrasound
2:30-3:30PM	**Ultrasound for Everyone: The Next Revolution is Here** Thomas Marini, M.D. Instructor, Imaging Sciences, University of Rochester
3:30-5:00PM	**Poster Session and Networking**

DISTINGUISHED LECTURERS

Distinguished Edwin L. Carstensen Lecture

Ultrasonic Elasticity Imaging with Acoustic Radiation Force

Kathy Nightingale, Ph.D.
Theo Pilkington Professor of Biomedical Engineering, Duke University

Dr. Kathy Nightingale is the Theo Pilkington Professor of Biomedical Engineering at Duke University. Her research interests include biomedical ultrasound and elasticity imaging. She pioneered the development and clinical translation of acoustic radiation force based elasticity imaging techniques and holds 10 patents. She was the recipient of the 2022 Joseph H. Holmes Pioneer Award-Basic Science from the American Institute of Ultrasound in Medicine, the 2021 Ultrasonics Carl Hellmuth Hertz Award from the IEEE UFFC Society and she is a fellow of the American Institute of Medical and Biological Engineering and the National Academy of Inventors. Dr. Nightingale is currently a member of the NIH's National Advisory Council for Biomedical Imaging and Bioengineering.

Ultrasonic Elasticity Imaging with Acoustic Radiation Force

Elasticity imaging methods mechanically perturb tissue, image the dynamic tissue response, and reconstruct images of underlying tissue mechanical properties using material models of varying complexity. Acoustic radiation force based ultrasonic elasticity imaging methods have become widely available commercially, including both shear wave elasticity imaging (SWEI) and acoustic radiation force impulse (ARFI) imaging, which provide quantitative (SWEI) and relative (ARFI) images of tissue elasticity. To date, these methods have found success clinically in the context of hepatic fibrosis staging and lesion characterization. A primary focus of our laboratory has been the development and implementation of high-resolution 3D ARFI elasticity imaging methods for prostate cancer imaging and treatment guidance. We are currently performing a clinical trial using ARFI imaging guidance for targeted prostate biopsy. We are also developing 3D SWE tools employing higher order material models and advanced data acquisition and processing methods to better characterize anisotropic and dispersive materials. We have obtained preliminary 3D SWE data in human vastus lateralis muscle in vivo in which we have observed propagation of multiple shear wave modes. These modes can both confound shear wave speed estimation during 2D imaging as well as provide opportunity to more fully characterize anisotropic properties of muscle, which we are investigating to serve as biomarkers for muscle health.

Distinguished RCBU Alumni Lecture

Improving Access to Diagnostic Ultrasound

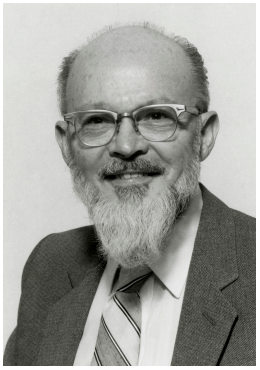
Manoj Menon, Ph.D.
Director, Clinical Science and Innovation, Philips Ultrasound

Manoj Menon is the Director of Clinical Science and Innovation for Radiology at Philips Ultrasound. He leads and manages a team of Ultrasound Clinical Scientists, subject matter experts that partner with a global research team to realize the product roadmap vision by underpinning it with a robust innovation pipeline. He holds a PhD in Biomedical Engineering from the University of Rochester where his research emphasis was on characterization of tissue stiffness using Acoustic Radiation Force Impulse imaging to highlight areas of pathology. Before joining Philips, he worked at Siemens Ultrasound for over 10 years as a Senior Ultrasound Engineer, then Lead Systems Engineer, and most recently the Manager of the Advanced Development team.

Improving Access to Diagnostic Ultrasound

Diagnostic ultrasound is a powerful patient screening and monitoring tool due to its small footprint, low cost, and large operating range across a variety of diverse clinical applications. Despite all of its advantages, access to effective ultrasound remains a challenge in a number of situations. Ultrasound systems, although small relative to MR and CT, are often still too large to transport to the patient bedside. As the average BMI of the patient population increases (especially in the United States) ultrasound is increasingly less effective at providing adequate image quality at depth. Finally, given the broad adoption of consumer devices such as the iPhone, users are now expecting a simplification of the ultrasound workflow to increase patient throughput and improve reproducibility. The ultrasound industry addresses these challenges with innovative solutions, such as portable ultrasound devices, enhanced transducer technologies and automated/AI ultrasound workflows, paving the way for greater access to care for an increasingly challenging patient population.

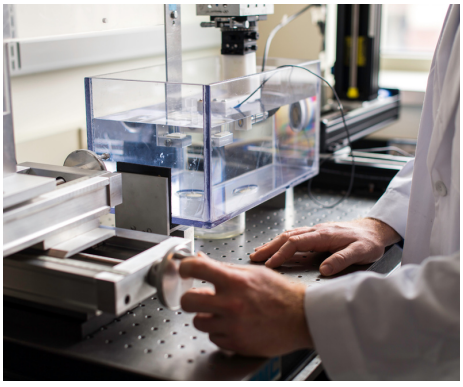
THE EDWIN AND PAM CARSTENSEN FAMILY ENDOWMENT



The Edwin and Pam Carstensen Family Endowment was established to honor the legacy of Edwin L. Carstensen and ensure that his vision of the Rochester Center for Biomedical Ultrasound endures. Edwin L. Carstensen was a pioneer in the field of biomedical ultrasound and internationally recognized throughout his career for his advances in understanding the interaction of ultrasound fields with biological tissues. He was the Founding Director of the Rochester Center for Biomedical Ultrasound (RCBU), a multidisciplinary research center dedicated to advancing the use of biomedical ultrasound in imaging and therapy. Professor Carstensen, the Arthur Gould Yates Professor Emeritus of Engineering, was a member of the Department of Electrical and Computer Engineering at the University of Rochester for over fifty years. Professor Carstensen was a member of the National Academy of Engineering, and his outstanding scientific achievements were widely recognized with numerous awards and honors. The fund was enabled by a generous seed gift from the Carstensen family.

To contribute to the Edwin and Pam Carstensen Family Endowment, please contact Derek Swanson at derek.swanson@rochester.edu or 585.273.1341.

THE ROCHESTER CENTER FOR BIOMEDICAL ULTRASOUND



The Rochester Center for Biomedical Ultrasound (RCBU) was created at the University of Rochester to unite professionals in engineering, medical, and applied science communities at the University of Rochester, Rochester General Hospital, and the Rochester Institute of Technology. Since its founding in 1986, the RCBU has grown to nearly 100 members, with several visiting scientists from locations around the world. The Center provides a unique collaborative environment where researchers can join together to investigate the use of high frequency sound waves in medical diagnoses and therapy. RCBU laboratories provide a rich environment for graduate training in biomedical ultrasound where students have access to state of-the-art research facilities in order to engage in leading-edge research in ultrasound. For more information on the RCBU or on graduate training opportunities, please contact RCBU Director Diane Dalecki at dalecki@bme.rochester.edu or visit our website at **rochester.edu/rcbu.**