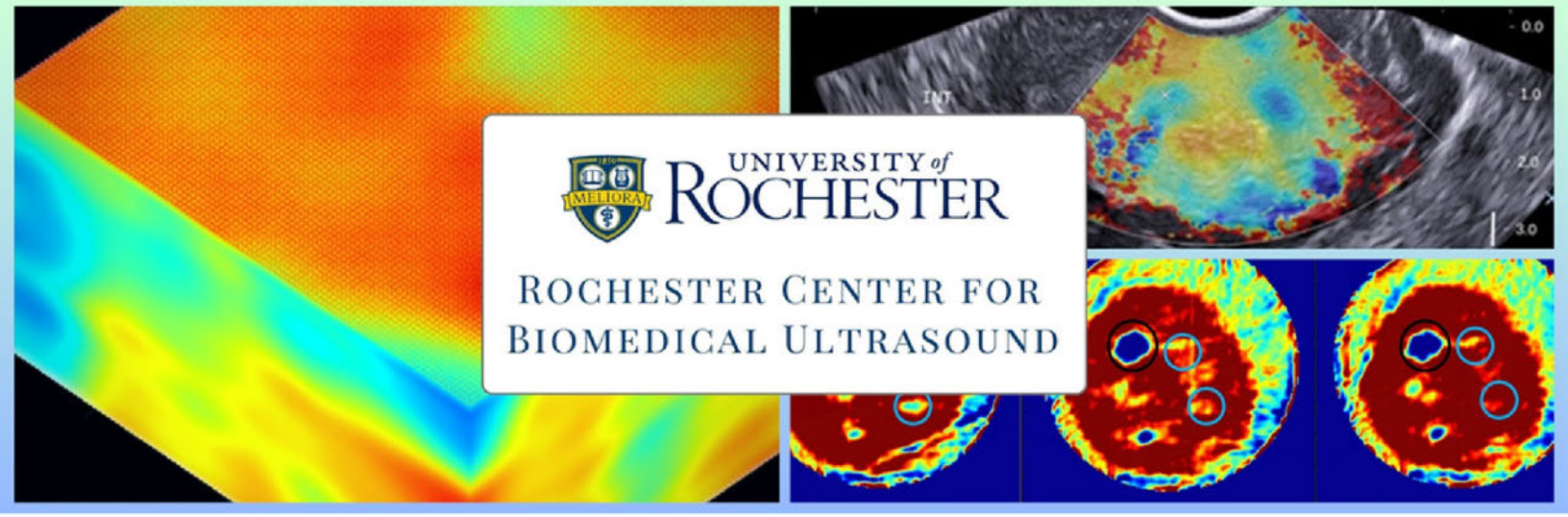



# 2023 RCBU Biomedical Ultrasound Symposium Day

## THURSDAY, NOVEMBER 9, 2023
## 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/95802540750

Support for the RCBU Biomedical Ultrasound Symposium is 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.

# 2023 RCBU BIOMEDICAL ULTRASOUND SYMPOSIUM DAY

## AGENDA

*Thursday, November 9, 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
Department of Biomedical Engineering, University of Rochester

**9:00-10:00AM** — **Distinguished Edwin L. Carstensen Lecture**
*Synergy and Applications of Ultrasound, Photoacoustic and Elasticity Imaging*
**Stanislav Emelianov, Ph.D.**
Georgia Research Alliance Eminent Scholar and Joseph M. Pettit Professor
School of Electrical & Computer Engineering and Department of Biomedical Engineering
Georgia Institute of Technology and Emory University Medical School

**10:00-10:05AM** — **Break**

**10:05-11:15AM** — **Trainee Presentations**
Moderator: Stephen A. McAleavey, Ph.D.
Chair and Associate Professor of Biomedical Engineering
University of Rochester

**11:15-NOON** — *Diffuse Liver Disease: Ultrasound Challenges and Opportunities*
**Deborah Rubens, M.D**
Professor and Vice-Chair of Research, Department of Imaging Sciences
Associate Director, Rochester Center for Biomedical Ultrasound
University of Rochester

**NOON-1:15PM** — **Lunch, Scientific Posters, and Networking**

**1:15-1:30PM** — **Introduction of Distinguished RCBU Alumni Lecturer**
Diane Dalecki, Ph.D.

**1:30-2:30PM** — **Distinguished RCBU Alumni Lecture**
*Ultrasound, Accelerating into the Future*
**Thomas Szabo, Ph.D.**
Professor of Biomedical Engineering
Boston University

**2:30-3:15PM** — *Ultrafast Ultrasound Imaging: Pushing the Boundaries of Functional Imaging and Shear Wave Elastography*
**Marvin Doyley, Ph.D.**
Chair and Professor of Electrical and Computer Engineering
University of Rochester

**3:15-5:00PM** — **Poster Session and Networking**

# DISTINGUISHED LECTURERS

## Distinguished Edwin L. Carstensen Lecture

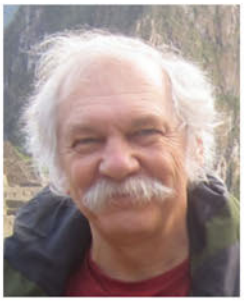
*Synergy and Applications of Ultrasound, Photoacoustic and Elasticity Imaging*

Stanislav Emelianov, Ph.D.
Georgia Research Alliance Eminent Scholar and Joseph M. Pettit Professor, School of Electrical & Computer Engineering and Department of Biomedical Engineering, Georgia Institute of Technology and Emory University Medical School

Dr. Emelianov is Director of the Ultrasound Imaging and Therapeutics Research Laboratory where projects are focused on the discovery, development and clinical translation of diagnostic imaging and image-guided therapy augmented with theranostic nanoagents. Throughout his career at the University of Michigan, the University of Texas at Austin, and now at Georgia Tech and Emory, Dr. Emelianov has been developing advanced functional, cellular and molecular imaging methods capable of detecting and diagnosing cancer and other pathologies, assisting treatment planning, enhancing image-guided therapy, and monitoring of the treatment outcome. In recognition of his contributions to the field, Dr. Emelianov has been named a Fellow of the American Institute for Medical and Biological Engineering (AIMBE), Institute of Electrical and Electronics Engineers (IEEE), Acoustical Society of America (OSA), and Society of Photographic Instrumentation Engineers (SPIE).

### Synergy and Applications of Ultrasound, Photoacoustic and Elasticity Imaging

The noninvasive and quantitative visualization of morphological and, more importantly, functional, cellular and molecular properties of tissue is desired in the field of biomedical imaging. This presentation will introduce combined ultrasound (US), photoacoustic (PA) and elasticity (E) imaging, augmented with theranostic agents, and, via examples, will offer a few insights into how nanoscale theranostic agents and US/PA/E imaging can change both fundamental medical science and the clinical management of diseases. Several applications of the multi-scale non-ionizing US/PA/E imaging—ranging from cancer detection and diagnosis to cell tracking to image-guided molecular and adoptive cell transfer immunotherapy—will be presented. The role of nanoconstructs in these applications will be highlighted, and the methods tailored for high contrast, background-free US/PA imaging will be discussed. Finally, current challenges and concerns associated with theranostic agents and US/PA/E imaging will be presented, and possible solutions will be discussed.



## Distinguished RCBU Alumni Lecture

*Ultrasound, Accelerating into the Future*

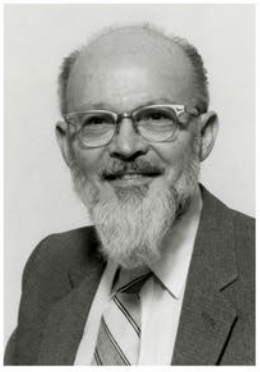
Thomas L. Szabo, Ph.D.
Professor of Biomedical Engineering, Boston University

Dr. Thomas Szabo is Professor of Biomedical Engineering and Mechanical Engineering at Boston University. He is an internationally recognized leader in biomedical ultrasound with over fifty years of acoustics research and development experience in government laboratories, industry, and academia. His areas of expertise include diagnostic imaging, tissue characterization, wave equations, nonlinear phenomena, exposimetry, therapeutic ultrasound, and surface acoustic waves. He is the author of the widely used textbook Diagnostic Ultrasound Imaging: Inside Out, author of over 100 scientific papers and 12 book chapters, and he holds 4 patents. Dr. Szabo is a Fellow of the American Institute of Ultrasound in Medicine, a Fellow of the Acoustical Society of America, and a Life Senior Member of the IEEE. He was a recipient of the U.S. Meritorious Service Medal, a Hewlett Packard Fellowship, and a best paper award in the IEEE Transactions on Sonics and Ultrasonics. Dr. Szabo is a leader of numerous scientific and standards committees, including a U.S. delegate to the International Electrotechnical Commission (IEC), Technical Committee 87, since 1986, and a Convenor of Working Group 6 on high intensity therapeutic ultrasound and focusing since 1988.

### Ultrasound, Accelerating into the Future

From ultrasound's earliest antecedents to its present explosive growth, how did we get here and where are we going? I describe trends in the way ultrasound has developed and its future directions. Along the way, my journey includes experiences first as a graduate student (and later as a collaborator) at the University of Rochester, a university professor, an R/D engineer at Hewlett Packard resulting in leading echocardiology phased array imaging systems, an entrepreneur in a fledgling start-up, a book author, and as a leader of international ultrasound standards groups on HIFU.

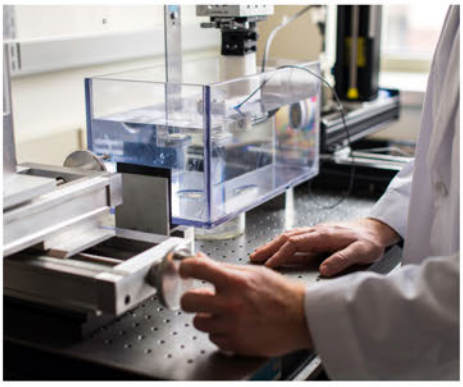
## THE EDWIN AND PAM CARSTENSEN FAMILY ENDOWMENT



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.**