Verasonics designs and markets leading-edge Vantage™ ultrasound research systems for academic and commercial investigators. These real-time, software-based, programmable ultrasound systems accelerate research by providing unsurpassed speed and control to simplify the data collection and analysis process. Researchers in 34 countries routinely use the unparalleled flexibility of the Vantage platform to advance the art and science of ultrasound through their own research efforts. In addition, to protect your investment and encompass additional research options, every Vantage System can be upgraded to any configuration. Verasonics’ Vantage Systems are the ideal solution for ultrasound driven research and development in biomedical, materials science, earth sciences, and the physics of acoustics.

FUJIFILM VisualSonics, Inc is the undisputed world leader in the development of real-time ultrasound and photoacoustic systems, providing tools specifically designed to support imaging-based research. Our cutting edge technologies support researchers at the world’s top pharmaceutical and biotechnology companies, hospitals, and universities in their research efforts across areas including cardiovascular, cancer, neurobiology, developmental biology, and acoustics. These technologies support applications including genetic research, phenotypic studies, drug development, imaging systems development, and many more. VisualSonics' platforms combine a broad range of frequencies, high resolution, real-time data acquisition, and access to quantifiable data, all supported by powerful user-friendly software.

Polytec provides testing services, rentals, and equipment sales & support to researchers and manufacturers. Our innovative solutions in vibration analysis and surface metrology enable our customers to maintain technological leadership in their fields of ultrasonics. Measurements can be performed either in one of our state-of-the-art labs or on-site in your facility: design validation, troubleshooting, calibration and quality control, component and structure level, traveling wave analysis for improving NDT methods, and roughness & shape measurements on the device or wafer. Our instruments measure accurately and reliably with sub-pm resolution at frequencies from DC to 2.5 GHz.
We provide technical expertise and engineering support for emerging applications in advanced ultrasound technologies.

Daxsonics offers services to help companies develop ultrasound products. We work in at all stages of the life cycle providing a range of services including R&D, acoustic stack design, transducer design, electronics, software design, firmware design, and system integration. Our team of industry leading experts consistently come up with creative solutions to help develop market-disrupting products.

Silver Patrons

us4us Ltd. delivers advanced ultrasound research systems and OEM components optimized for software-defined ultrasound applications and GPU processing. Our solutions feature raw RF acquisition and high-speed PCIe data streaming, enabling the end user to implement their own real-time CPU/GPU processing algorithms. An open SDK provides flexibility and easy integration with C/C++/Python/Matlab.

Our current offering:

- **us4R-lite** – a low-cost, portable ultrasound research system featuring 256TX/64RX channels and an external Thunderbolt 3 interface (40Gb/s). The first truly portable solution to work with your PC/notebook.
- **us4R** – an advanced 2D/3D-ready ultrasound research system featuring 256TX/256RX channels and an extremely high data transfer rate (up to 30GB/s). The system is intended for real-time implementation of advanced/complex ultrasound processing algorithms on GPUs.
- **us4OEM** – a credit-card sized ultrasound front-end module with 128TX/32RX channels for integration in the end-user system/solution.

Furthermore, we offer consulting and development services in the area of ultrasound methods, systems, and product development.
Electronics & Innovation, Ltd is a focused and dynamic company fulfilling the market demand for rugged and reliable RF power amplifiers. Founded in 2003, by former ENI engineers and executives, E&I was incorporated on the 16th of March, 2004. We are located in Rochester, NY, where all products are designed, assembled, and tested at our facility. E&I services and supports all major markets; operating globally through distributor outlets worldwide. E&I is committed to providing RF power amplifier solutions of the highest quality, durability, and ruggedness. Our amplifiers have undergone tests by the military and have proven to be even more reliable than the original ENI amplifiers. In addition unlike the old ENI amplifiers, they are CE marked, RoHS Compliant and meet all relevant emissions and safety standards. The Difference to You E&I has the people, the products, and the capabilities to meet your RF needs. Quality is and has been at the cornerstone of our growth – we constantly strive to be better, so that you can achieve more.

The Focused Ultrasound Foundation was created to improve the lives of millions of people worldwide by accelerating the development of this noninvasive technology. The Foundation works to clear the path to global adoption by organizing and funding research, fostering collaboration, and building awareness among patients and professionals. Since its establishment in 2006, the Foundation has become the largest nongovernmental source of funding for focused ultrasound research. For more information, visit http://www.fusfoundation.org.

Sponsor
Group 1
Essentials of Ultrasound Imaging: An Introduction
Sunday, September 6 | 8:00 AM PDT
Peter Kaczkowski, Verasonics, Inc.
Thomas L. Szabo, Boston University

Artificial Intelligence in Ultrasound Imaging
Sunday, September 6 | 4:00 AM PDT
Yonina Eldar, Weizmann Institute of Science
Ruud JG van Sloun, Eindhoven University of Technology

Ultrafast Ultrasound Imaging: Basic Principles and Applications
Sunday, September 6 | 11:00 PM PDT
Mickael Tanter, French National Institute for Health and Medical Research

Super-resolution ultrasound
Monday, September 7 | 4:00 AM PDT
Olivier Couture, CNRS
Vincent Hingot, Laboratoire d’Imagerie Biomedicale

Group 2
Machine Learning and Signal Analysis for Ultrasonic Imaging and Communication Applications
Monday, September 7 | 7:00 AM PDT
Jafar Saniie, Illinois Institute of Technology
Erdal Oruklu, Illinois Institute of Technology

Acoustofluidics
Sunday, September 6 | 8:00 AM PDT
James Friend, University of California

Group 3
Acoustical Imaging: from acoustic field equations to imaging and full waveform inversion
Sunday, September 6 | 4:00 AM PDT
Koen W.A. van Dongen, Delft University of Technology

Finite Element Modelling of Acoustic Resonators
Sunday, September 6 | 8:00 AM PDT
Yook-Kong Yong
Rutgers University

Acoustic Tweezing
Monday, September 7 | 2:00 AM PDT
Charles Courtney, University of Bath

Group 4
MEMS Technology for Ultrasound Devices
Sunday, September 6 | 4:00 PM PDT
Sunil Bhave, Purdue University
Shuji Tanaka, Tohoku University

Fundamentals and applications of surface acoustic wave sensors
Sunday, September 6 | 9:00 PM PDT
Jun Kondoh, Shizuoka University

Group 5
Medical Ultrasound Transducers
Monday, September 7 | 7:00 AM PDT
David M. Mills, GE Global Research
Scott Smith, GE Global Research

CMUT: Theory, Fabrication, and Applications
Monday, September 7 | 12:00 PM PDT
Butrus (Pierre) T. Khuri-Yakub, Stanford University
Kamyar Firouzi, Stanford University
Quintin Stedman, Orchard Ultrasound Innovation
Ömer Oralkan, North Carolina State University
IUS 2020 Opening/Closing Events

Tuesday, September 8, 2020

6:30 AM – 6:45 AM PDT
Opening Session

6:45 AM – 7:45 AM PDT
Plenary Session: David B. Tanner

7:45 AM – 8:30 AM
Awards Session

Friday, September 11, 2020

9:45 AM – 10:15 AM PDT
Challenge Session

10:15 AM – 10:45 AM PDT
Student Awards

10:45 AM – 11:15 AM
Closing Session

IUS 2020 Live Social/Workshop Events

Tuesday, September 8, 2020

12:15 PM - 1:00 PM PDT
Student Social
Students attending IEEE IUS 2020 are invited to participate in the STUDENT SOCIAL! Meet other students in a casual setting and network with future colleagues. This event will be held over Zoom on Tuesday, September 8 at 12:15 PM PDT.

1:00 PM - 2:00 PM PDT
Pub Quiz
We can’t meet in person at this year’s symposium, but we know delegates will still want to connect with colleagues and meet new faces. Why not sign up for the IUS 2020 Pub Quiz Tournament? This happy-hour social event is open to all registered IUS participants and will take place on Tuesday (Sept 8th) and Wednesday (Sept 9th) at 1 pm PDT.

Teams of 6 to 10 people can compete for the coveted IUS Pub Quiz Cup. Will a team from Verasonics outlast FUJIFILM VisualSonics? Or will a team from academia be crowned champions … on both nights? Nothing like a little friendly team competition to hoist the IUS Pub Quiz Cup!

Get your team together and sign up here! If you don’t have a team, sign up anyway and you’ll be placed on a team at random. You can choose to attend either or both events, and you are welcome to sign up at any time before the quiz starts. All those who sign up will be sent instructions closer to the time of the event. Hope to see you there!

1:00 PM - 2:00 PM PDT
Fujifilm VisualSonics Webinar: Vevo F2 - Empowering Researchers of Ultrasound Technology
Presented by Andrew Needles

2:00 PM - 3:00 PM PDT
Verasonics Webinar: New Turnkey Preclinical Research Platforms for 3D Ultrasound-Guided Focused Ultrasound (USgFUS): HIFUPlex™ PLUS 1000 for Small Subjects and HIFUPlex™ PLUS 3000 for Large Subjects
Presented by Peter Kaczkowski, Ph.D., Sr. Scientist, Verasonics, Inc. & Kyle Morrison, President, Sonic Concepts, Inc.
Overview of Structured Problem-Solving
Speaker: Mark Sneeringer, SigMax-NH LLC

Biography: Mark Sneeringer is a Continuous Improvement leader with over 37 years of industrial experience and deep expertise in Six Sigma, Lean, Change Management and Program Management. He has led improvement efforts for businesses ranging from consumer lifestyle products, to large household appliances, to complex medical devices. Mark holds a Ph.D. in Geochemistry from MIT and has achieved advanced certifications in Six Sigma, Lean and Reliability. In recent years, he has helped several medical device companies improve cost, time to market, and product quality via training and coaching.

Abstract: Everyone faces problems. Some have known solutions and the right way to deal with those is to simply implement that remedy. Other problems require determining what needs to be done and how to execute the solution. That is where a structured Problem-Solving method is critical to quickly and effectively fixing the issue. This session will describe a multi-step process that is proven to yield good results. It starts with defining the problem unambiguously, runs through root cause analysis and solution selection, and ends with preventive actions that ensure the problem does not recur. The steps and some of the activities/tools used will be described. The approach is applicable in just about any setting: research, manufacturing, sales and marketing, etc. and training can be done in one to two days.

Wednesday, September 9, 2020

1:00 PM - 2:00 PM PDT
Pub Quiz
We can't meet in person at this year's symposium, but we know delegates will still want to connect with colleagues and meet new faces. Why not sign up for the IUS 2020 Pub Quiz Tournament? This happy-hour social event is open to all registered IUS participants and will take place on Tuesday (Sept 8th) and Wednesday (Sept 9th) at 1 pm PDT.

Teams of 6 to 10 people can compete for the coveted IUS Pub Quiz Cup. Will a team from Verasonics outlast FUJIFILM VisualSonics? Or will a team from academia be crowned champions … on both nights? Nothing like a little friendly team competition to hoist the IUS Pub Quiz Cup!

Get your team together and sign up here! If you don't have a team, sign up anyway and you'll be placed on a team at random. You can choose to attend either or both events, and you are welcome to sign up at any time before the quiz starts. All those who sign up will be sent instructions closer to the time of the event. Hope to see you there!

1:00 PM - 2:00 PM PDT
Student Pitch Competition
Students attending IEEE IUS 2020 are invited to participate in the STUDENT PITCH COMPETITION—present your research in 60 seconds and win a cash prize! This will be held on Wednesday, September 9, at 1 PM PDT. Participation is limited.
1:30 PM - 3:30 PM PDT
Ally Training Workshop
Speaker: Valerie Aurora, Frame Shift Consulting

Want to take concrete action to fight injustice, but not sure what to do? The Ally Skills Workshop teaches simple everyday techniques you can use to make your workplace and community more fair and just. In this workshop, you will learn how to recognize when you have the most power and influence—when you can best act as an ally—and how to take effective action to make your workplace and community better.

Facilitator and Ally Skills Workshop lead creator Valerie Aurora brings more than a decade of experience in the tech industry and more than twenty years in the area of diversity and inclusion. Valerie has taught ally skills for more than 8 years, co-founded and led a non-profit supporting women in open technology and culture, and worked as a software engineer for Intel, IBM, and Red Hat.

More about the workshop: The Ally Skills Workshop is a highly interactive discussion-oriented workshop. It starts with a 30 minute introduction on the basics of ally skills and inclusive, respectful, productive discussions. Then participants split up into groups of 4-6 people to discuss specific real-world scenarios in which an ally could take action. After a 5-8 minute group discussion, each group reports out what they discussed and any questions they have, with guidance from the facilitators. We will take a short break every hour.

Note: If you miss the first 30 minutes of the workshop, you cannot participate in the workshop. You are welcome to leave and/or return at any time after the first 30 minutes, and to eat at any point during the workshop. Participation in discussion groups is voluntary. You will receive video conference instructions two days before the workshop.

*There is a limited capacity. You will receive an email if you are selected.*

2:00 PM - 3:00 PM PDT
Verasonics Webinar:
Ultrafast Ultrasound Volume Imaging and Integration of Row/Column Arrays into the Vantage Family
Presented by Miguel Bernal, Ph.D., Ultrasound Scientist, Verasonics, Inc.
A New Generation of Graphical User Interface Software for the Vantage Platform: SoniVue™ QuickScan and Improved Script-Based UI Controls
Presented by Daniel Rohrbach, Ph.D., Sr. Scientist and Software Engineer, Verasonics, Inc.

3:00 PM - 4:00 PM PDT
Women in Engineering
All attendees active in the technical areas of the IUS are invited to participate in a virtual networking event. We will be discussing strategies for visual and graphical communication of research. Felice Frankel will be giving a talk on scientific illustration and visual communication. Felice Frankel is a science photographer and a research scientist at the Massachusetts Institute of Technology. She has extensively worked on developing new approaches to promote the public understanding of science through visual expression. We will have breakout sessions where we will work on the visual representation of our research. We will work on creating a graphical abstract for our next paper or thesis dissertation.

Thursday, September 10

11:30 AM PDT - 12:30 PM PDT
Ultrasound Industry Perspectives: Career Development in Industry / Moderator: Jessica Liu Strohmann, Qualcomm
Speakers: Clyde Oakley; Samir Gupta, Qualcomm; Sophia Shi, Samsung; Holly Lay, Fujifilm VisualSonics; Aqsa Patel, GE Global Research
Do you want to work in industry? Do you have a personalized career development plan? What are your strengths and career aspirations? Would you like to learn more about what it would be like to work in industry at a different stage of your career? You are welcome to join us in this interactive and inspiring panel discussion. We have five distinguished industry leaders to share their experience and offer guidance.

12:15 PM - 1:00 PM PDT
Student-Professional Networking
Students attending IEEE IUS 2020 are invited to participate in the STUDENT-PROFESSIONAL NETWORKING event—connect with leaders in ultrasonics from academia and industry! This will be a Zoom event on Thursday, September 10 at 12:15 PM PDT.
Resume Building Workshop
Speakers: Abhay Patil, GE Healthcare; Frederic Cegla, Imperial College London; Jason Weigold, MEMSTAFF; Lynn Ewart-Paine, Naval Undersea Warfare Center; Meaghan O'Reilly, Sunnybrook Research Institute - University of Toronto

Attention all job seekers, Young Professionals and students! Submit your resume for feedback from Ultrasonics Professors, Government and Industry Experts!

This live panel discussion, Q&A and feedback session will follow on from our UFFC Soft-Skills Seminar on “How to Create an Effective Resume”. Our panel members, from industry, government and academia, will review submitted resumes and give general comments on all submissions. The workshop will then move into breakout rooms for smaller group feedback sessions. Finally, an open Q&A session will conclude the workshop. Learn from job advertisers what you need to include in your resume to get that elusive interview!

Registration is limited to a total of 35 Young Professionals and students on a first-come, first-served basis. YouTube link to UFFC Seminar and registration details to follow.

1:30 PM – 2:30 PM PDT
Polytec Webinar: Optical metrology solutions for advancing ultrasonic driven technologies
Speaker: Jerome Eichenberger

1:30 PM - 3:00 PM PDT
Grant Application Workshop
Speakers & Schedule:
1:30 – 1:35 pm
Introduction: Zhen Xu, University of Michigan
1:35 – 1:55 pm
Houston Baker, Ph.D., Program Director, Imaging Technology Development Branch, Cancer Imaging Program, National Cancer Institute, National Institute of Health (NIH)
1:55 – 2:15 pm
Ruyan Guo, Ph.D., Program Director, EPMD, ENG/ECCS, National Science Foundation (NSF)
2:15 – 2:35 pm
Lynne Elmore, Ph.D., Scientific Director, Translational Cancer Research, American Cancer Society
2:35 – 2:55 pm
Matt Eames, Ph.D., Director of Extramural Research, Focused Ultrasound Foundation

Abstract: At this workshop, Program directors from the National Institute of Health (NIH), National Science Foundation (NSF), American Cancer Society, and Focused Ultrasound Foundation will give an update of their institutions and currently funded work as well as provide guidance on the funding opportunities and application process. Each speaker will give a 15-minute presentation followed by a 5-minute Q&A session.

1:30 PM – 2:00 PM PDT
Daxsonics Webinar

2:00 PM - 3:00 PM PDT
Verasonics Webinar: Verasonics Vantage: A Platform for Cutting Edge NDT Ultrasound Research
Presented by Jack Potter, Ph.D., Ultrasound Scientist, Verasonics, Inc.
Diversity Survey
The IEEE UFFC Society is committed to cultivating a diverse professional community. By taking part in this survey, you can help us learn about the makeup of this symposium and ensure that future UFFC-S events are inclusive and representative.

Survey Link: https://www.surveymonkey.com/r/FTNLJKK

Diversity & Inclusion
IEEE’s mission to foster technological innovation and excellence to benefit humanity requires the talents and perspectives of people with different personal, cultural, and disciplinary backgrounds. IEEE is committed to advancing diversity in the technical profession, and to promoting an inclusive and equitable culture in its activities and programs that welcomes, engages and rewards those who contribute to the field without regard to race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression.

UFFC-S Message on Black Lives Matter
“If you are neutral in situations of injustice, you have chosen the side of the oppressor.”

–Bishop Desmond Tutu

UFFC-S is dedicated to living up to the ideals of these words, continuously revisiting our own actions, and standing with those who are oppressed. # Black Lives Matter
Expand your Ultrasonic Research Capabilities with the Verasonics Vantage System

The Vantage systems’ unparalleled flexibility continues to expand with new features and options

- New techniques & technologies for Volume Imaging
- HIFUplex™ PLUS Focused Ultrasound research solutions for small and large animals
- New transducer options
- SoniVue™ QuickScan provides a user-friendly, clinical-style interface for real-time imaging
- New capabilities for NDE applications
- New options for education and product training
- Flexible architecture from 32 to 2048 channels
- High power options for ARFI and Elastography

To learn more, please visit our booth [here](http://www.verasonics.com)

info@verasonics.com
Optical metrology solutions for advancing ultrasonic driven technologies

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- Medical imaging
- Microacoustics
- NDT defect mapping
- Microfluidics lab-on-a-chip
- Sound field mapping
- Quality control of medical devices

Non-contact measurements for

- Design validation at frequencies from DC up to 2.5 GHz
- Calibration and quality control with high accuracy
- Optimization of energy efficiency with full surface displacement mapping
- Roughness and shape measurements
- Traveling wave analysis for improving system behavior
- Wafer-level test integration for process control
- Troubleshooting mechanical behavior down to sub-pm levels
- And more...

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Access pre-beamformed individual channel data (VADA)

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Adaptable for imaging small to large animals

**Intuitive**
Easy-to-use graphical interface

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Compatible with the Vevo LAZR-X laser cart for multi-modal imaging

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Implement plane-wave techniques for ultrafast ultrasound imaging for applications such as ultrafast Doppler and super-resolution ultrasound

**Beamforming Algorithm Development**
Test novel beamforming techniques for image reconstruction

**External Devices Syncing**
Coordinate timing between HIFU pulses for imaging, or shear wave generation for elastography measurements

**Small to Large Animals**
Conduct imaging and analysis of small and large animals on one platform to streamline data collection
Technical Program Table of Contents

*PLEASE NOTE THAT THIS PROGRAM IS LISTED IN PACIFIC TIME (PDT).

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<td>2503: A1L-01</td>
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<td>9:00:00 AM - 10:00:00 AM</td>
<td>A2L-01: MTH</td>
<td>Transcranial Ultrasound I</td>
<td>Jean-Francois Aubry (Langevin Institute)</td>
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<td>09:00 AM</td>
<td>1089: A2L-02</td>
<td>Bringing Transcranial Focused Ultrasound Into Focus</td>
<td>Kim Butts Pauly</td>
<td>Stanford University, United States</td>
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<td>09:30 AM</td>
<td>1623: A2L-03</td>
<td>Microelectrode Array (MEA) Measurements of Focused Ultrasound (FUS)-Induced Neural Responses in Ex Vivo Acute Hippocampal Brain Slices</td>
<td>Ivan Suarez Castellanos(2), Elena Dossi(1), Jeremy Vion-Bailly(2), Jean-Yves Chapelon(2), Alexandre Carpentier(3), Gilles Huberfeld(4), Apoutou N’DiJin(2)</td>
<td>(1)Center for Interdisciplinary Research in Biology / CIRB - CNRS UMR 7241 / INSERM U1050, France; (2)INSERM U1032 / LabTAU, France; (3)Research Laboratory on Advanced Surgical Technologies, La Pitié-Salpêtrière Hospital, Paris, France; (4)Sorbonne Université, AP-HP, La Pitié-Salpêtrière Hospital, France</td>
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<td>2025: A2L-04</td>
<td>Noninvasive Focused Ultrasonic Glympthic Control Improves Intrathecal Drug Delivery</td>
<td>Muna Aryal, Quan Zhou, Eben Rosenthal, Raag Airan</td>
<td>Stanford University, United States</td>
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<td>1604: A2L-05</td>
<td>Spatial Coherence Volumetric Beamforming of Microbubbles Using a Sparse Array</td>
<td>Luxi Wei(3), Gerald Wahyulaksana(3), Alessandro Ramalli(4), Emile Noothouf(1), Enrico Boni(4), Piero Tortoli(4), Antonius F.W. van der Steen(3), Nico de Jong(2), Hendrik J. Vos(3)</td>
<td>(1)Delft University of Technology, Netherlands; (2)Erasmus University Medical Center / Delft University of Technology, Netherlands; (3)Erasmus University Medical Center / University Medical Center Rotterdam, Netherlands; (4)Università degli Studi di Firenze, Italy</td>
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<td>09:15 AM</td>
<td>1770: A2L-06</td>
<td>Adaptive Ultrasound Beamforming and Compounding Through Model Based Deep Learning</td>
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Tuesday, September 8

Ben Luijten(1), Frederik de Bruin(2), Harold Schmeitz(2), Massimo Mischi(1), Yonina C. Eldar(3), Ruud van Sloun(1)
(1)Eindhoven University of Technology, Netherlands; (2)Philips Research, Netherlands; (3)Weizmann Institute of Science, Israel

09:30 AM
1850: Sparse Convolutional Plane-Wave Compounding for Ultrasound Imaging
Baptiste Herard-Dubreuil(2), Adrien Besson(1), Frederic Wintzenneth(1), Jean-Philippe Thiran(3), Claude Cohen-Bacrie(1)
(1)E-Scopics SAS, France; (2)E-Scopics SAS / École Polytechnique Fédérale de Lausanne, France; (3)École Polytechnique Fédérale de Lausanne, Switzerland

09:45 AM
1863: Ultrasound Beamforming with Empirical Mode Decomposition
Jun Seob Shin
Philips Research North America, United States

09:00 AM
1773: Sub-Array Beamforming with Time-Division Multiplexing System-on-Chip for Massive Cable Reduction in Ultrasound Imaging Systems
Coskun Tekes(3), Gwangrok Jung(1), Ahmad Rezvanitabar(2), Thomas Carpenter(4), David Cowell(4), Steven Freear(4), F. Levent Degertekin(2)
(1)Broadcom Inc., United States; (2)Georgia Institute of Technology, United States; (3)Kennesaw State, United States; (4)University of Leeds, United Kingdom

09:15 AM
2406: A 2D Ultrasonic Transmit Phased Array Based on a 32x32 CMUT Array Flip-Chip Bonded to an ASIC for Neural Stimulation
Chunkyun Seok, Oluwafemi Adelegan, Ali Biliroglu, Feyssel Yalcin Yamaner, Omer Oralkan
North Carolina State University, United States

09:30 AM
1581: Large Area 1.75D Array for Liver Cancer by Tiling of Multi-Generation ASIC Array Modules
Robert Wodnicki(3), Haochen Kang(3), Yizhe Sun(3), Ruimin Chen(3), Josquin Foirat(1), Douglas Stephens(2), Qifa Zhou(3), Katherine Ferrara(1)
(1)Stanford University, United States; (2)University of California, Davis, United States; (3)University of Southern California, United States

09:00 AM
1575: Attenuation Measurements for Tissue Characterization
Michael Oelze (University of Illinois)
09:00 AM
1950: Regularized framework for simultaneous estimation of ultrasonic attenuation and backscatter coefficients
Hector Chahuara{1}, Adrian Basarab{2}, Roberto Lavarello{1}
{1}Pontificia Universidad Católica del Perú, Peru; {2}Université Toulouse III - Paul Sabatier, France

09:15 AM
1441: System-independent Ultrasound Attenuation Coefficient Estimation in Harmonic Imaging
Ping Gong, Pengfei Song, Chengwu Huang, U-Wai Lok, Shanshan Tang, Chenyun Zhou, Lulu Yang, Kymberly Watt, Matthew Callstrom, Shigao Chen
Mayo Clinic, United States

09:30 AM
2218: Tomographic Attenuation Imaging with Pulse-Echo Ultrasound
Xiran Cai{2}, Josquin Foirot{2}, Dinah Brandner{1}, Bernhard Zagar{1}, Katherine W. Ferrara{2}
{1}Johannes Kepler University Linz, Austria; {2}Stanford University, United States

09:45 AM
1590: Quantitative Fibroglandular Tissue Volume Estimation: Comparison of Three Methods
James Wiskin, Sanghyeb Lee, Martin Cwikla, Bilal Malik
QT Ultrasound LLC, United States

9:00:00 AM - 10:00:00 AM
A2L-05: POA: Opto-Acoustics I
Session Chair(s): Alex Maznev (MIT)

09:00 AM
1102: Acoustic Attenuation in Crystalline and Amorphous Solids in the Sub-THz Frequency Range via Ultrafast Optical Techniques
Agnès Huynh
Institut des NanoSciences de Paris / Sorbonne Université, France

09:30 AM
2401: Generation and Detection of 50 GHz Surface Acoustic Waves by Extreme Ultraviolet Pulses
Produced by a Free Electron Laser
Alexei Maznev{2}, Filippo Bencivenga{1}, Stefano Bonetti{4}, Flavio Capotondi{1}, Zhiwei Ding{2}, Ryan Duncan{2}, Laura Foglia{1}, Maria Izzo{3}, Alessandro Martinelli{5}, Riccardo Mincigrucci{1}, Giulio Monaco{5}, Emanuele Pedersoli{1}, Vivek Unikandanun
{1}Elettra-Sincrotrone Trieste, Italy; {2}Massachusetts Institute of Technology, United States; {3}Sapienza University of Rome, Italy; {4}Stockholm University, Sweden; {5}University of Trento, Italy

09:45 AM
2410: Interferometric Detection of Optical Phase Modulation from a Planar Focusing Fresnel Type GHz Ultrasonic Transducer
Adarsh Ravi, Amit Lal
Cornell University, United States

10:15:00 AM - 11:15:00 AM
A3L-01: MTH: Transcranial Ultrasound II
Session Chair(s): Hairong Zheng (Shenzhen Institutes of Advanced Technology)

10:15 AM
2098: Transcranial Focused Ultrasound for Non-Invasive Neuromodulation of the Visual Cortex
Gengxi Lu, Xuejun Qian, Runze Li, Johnny Castillo, Laiming Jiang, Haotian Lu, Kirk Shung, Mark Humayun, Biju Thomas, Qifa Zhou
University of Southern California, United States

10:30 AM
1067: Transducer Design for Transcranial Ultrasound Therapy: Challenges and Recent Breakthroughs
Jean-François Aubry
Inserm, ESPCI Paris, CNRS, PSL Research University, France

10:45 AM
1500: Transcranial Histotripsy Initiates Immune Cascade in Murine Glioblastoma Tumors and Prolongs Survival
Sarah Duclos, Sang Won Choi, Rachel Surowiec, Badih Junior Daou, Adam Fox, Aditya Pandey, Stefanie Gablan, Zhen Xu
University of Michigan, United States

10:15:00 AM - 11:15:00 AM
A3L-02: MBB: Adaptive Image Correction
Session Chair(s): Gregg Trahey (Duke University)

10:15 AM
1226: Medical Pulse-Echo Ultrasound Imaging Based on the Cross-Correlation of Transmitted and Backpropagated-Receive Wavefields
Rehman Ali, Joseph Jennings, Jeremy Dahl
Stanford University, United States

10:30 AM
1392: SVD Beamforming for Ultrafast Aberration Correction and Real-Time Speed-of-Sound Quantification
Hanna Bendjador{1}, Thomas Defieux{3}, Mickaël Tanter{2}
{1}ESPCI, PSL Research University, INSERM, CNRS, France; {2}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; {3}Physics for Medicine Paris, Inserm, ESPCI Paris, PSL Research University, France

10:45 AM
1912: Matrix Approach of Aberration Correction in Ultrasound Imaging: an In-Vivo Proof-of-Concept
William Lambert{3}, Laura Cobus{2}, Thomas Frappart{5}, Christophe Fraschini{5}, Jeremy Bercoff{5}, Mathias Fink{4}, Alexandre Aubry{1}
{1}ESPCI Paris, PSL University, CNRS, Institut Langevin, France; {2}Institut Langevin, Canada; {3}Institut Langevin / SuperSonic Imagine, France; {4}Institut Langevin, ESPCI Paris, CNRS UMR 7587, PSL University, France; {5}SuperSonic Imagine, France
Tuesday, September 8

11:00 AM
2316: Reduction of Bright Off-Axis Clutter in Plane-Wave Ultrasound Imaging
Ryan Hammond, Zin Khaing, Matthew O'Donnell, Christoph Hofstetter, Matthew Bruce
University of Washington, United States

10:15 AM - 11:15 AM
A3L-03: TPM: Single Crystal Piezoelectrics
Session Chair(s): Shijun Zhang (University of Wollongong), Yongrae Roh (Kyungpook National University)

10:15 AM
1109: Current Status of Alternate Current (AC) Poling of PMN-PT Single Crystals
Xiaoning Jiang
North Carolina State University, United States

10:45 AM
2176: Gen III “Ultrahigh Strain (d33 > 4,000 pC/N)” PMN-PZT Single Crystals for Ultrasonic Transducers, Piezoelectric Actuators, and Composites
Hyun-Jae Joo{1}, Hyun-Taek Oh{1}, Moon-Chan Kim{1}, Ho-Yong Lee{2}
{1}Ceracomp Co., Ltd., Korea; {2}Ceracomp Co., Ltd./Sunmoon University, Korea

11:00 AM
1701: Assessment of Posterior Eye Shape Changes of Myopic Eyes by Means of 20-MHz Ultrasound
Kazuyo Ito{4}, Daryle Jason G Yu{4}, Kazuki Tamura{2}, Myo Thu Khine{4}, Jeffery A. Ketterling{3}, Jonathan Mamou{4}
{1}Columbia University / Singapore Eye Research Institute, Singapore; {2}Hamamatsu University School of Medicine, Japan; {3}Lizzi Center for Biomedical Engineering, Riverside Research, United States; {4}Singapore Eye Research Institute, Singapore

10:15:00 AM - 11:15:00 AM
A3L-05: PAT: Acoustic Tweezers & Particle Manipulation I
Session Chair(s): Amit Lal (Cornell University)

10:15 AM
1079: 3D Spiral Manipulation of Particle with Twisted Focusing Beam Induced by a Metasurface with Spiral Structure
Xiangxiang Xia, Yongchuan Li, Feiyan Cai, Teng Ma, Qin Lin, Jinping Wang, Hui zhou, Hairong Zheng
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

10:30 AM
1847: On-Demand Droplet Loading of Ultrasonic Acoustic Levitator with Small Droplets for Protein Crystallography Applications
Soichiro Tsujino, Takashi Tomizaki, Michal Kepa, Paul Scherrer Institut, Switzerland

10:45 AM
1031: Design of Acoustic Pillar Array Chip for Programmable Particle Sorting
Guanyu Zhang{1}, Weiwei Cui{1}, Shuchang Liu{1}, Xingchen Li{1}, Mark Reed{2}
{1}Tianjin University, China; {2}Yale University, United States

11:30:00 AM - 1:30:00 PM
A4P-06: MSD: Poster PM - Medical System Design - Volumetric 2D/3D Imaging
Session Chair(s): Roger Zemp (University of Alberta)

11:30 AM
1793: A Fast Three-Dimensional Ultrasound Microvessel Imaging Using Linear Transducer Array and Continuous Scan Strategy
Shanshan Tang, Chengwu Huang, Ping Gong, U-Wai Lok, Shigao Chen
Mayo Clinic, United States

11:40 AM
1900: Designing a System for Forward-Viewing 3D Intravascular Ultrasound Imaging of Blood Flow: Assessing the Effect of the Catheter on Velocity Estimation in Stenoses
Saeyoung Kim, Bowen Jing, Brooks Lindsey
Georgia Institute of Technology, United States

11:50 AM
2104: Large-Area Abdominal Body Scanner: Initial Swept-Aperture Prototype
Carl Herickhoff, Dongwoon Hyun, Stefan Bran-Meléndez, Jeremy Dahl
Stanford University, United States

12:00 PM
2378: Wearable 64x64 Element 2D Tobe Ultrasound Array
Chris Ceroici, Roger Zemp
University of Alberta, Canada
11:30:00 AM - 1:30:00 PM
A4P-07: MSD: Poster PM - Medical System Design - Real-Time Imaging
Session Chair(s): Kathy Nightingale (Duke University)

12:10 PM
2024: Hybrid Hardware and Software-Based Fully-Flexible Ultrasound Open Platform
Alexandre Osorio{1}, Santiago Rodríguez{1}, Rafael Silva{1}, Leonardo Domingues{1}, Guilherme Fonseca{1}, José Bertuzzo{1}, Haroldo Onisto{1}, Joaquim Maia{2}, Amauri Assef{2}, Adilton Carneiro{4}, Eduardo Costa{3}
{1}Eldorado Research Institute, Brazil; {2}Federal University of Technology – Paraná (UTFPR), Brazil; {3}State University of Campinas (UNICAMP), Brazil; {4}University of São Paulo (USP), Brazil

12:20 PM
2135: Linear Signal Cancellation of Nonlinear Pulsing Schemes Implemented on the Verasonics Research Scanner
Ting-Yu Lai, Michalakis Averkiou
University of Washington, United States

12:30 PM
2155: Real-Time, Simultaneous DAS, ADMIRE, and SLSC Imaging Using GPU-Based Processing
Christopher Khan{2}, Kazuyuki Dei{1}, Siegfried Schluink{2}, Kathryn Ozgun{2}, Brett Byram{2}
{1}GE Healthcare, United States; {2}Vanderbilt University, United States

12:40 PM
2436: Real-Time Power Doppler on an Ultrafast High-Frequency Hardware-Based Beamformer
Nicholas Campbell, Chris Samson, Jeremy Brown
Dalhousie University, Canada

11:30:00 AM - 1:30:00 PM
A4P-08: MSD: Poster PM - Medical System Design - Application Specific
Session Chair(s): William O'Brien (University of Illinois)

11:30 AM
1151: Reproducible Thyroid Ultrasound Procedure Enabled by Robot-Assisted Scanning
Jakub Tomasz Kaminski, Haichong K. Zhang
Worcester Polytechnic Institute, United States

11:40 AM
1516: Cobot-Guided Histotripsy for Venous Clot Ablation in Vitro
Kenneth Bader, Samuel Hendley
University of Chicago, United States

11:50 AM
1438: Use of Lorentz Force to Induce Shear Waves for Magnetic Resonance Elastography Applications
Guillaume Flé{3}, Guillaume Gilbert{2}, Pol Grasland-Mongrain{1}, Guy Cloutier{3}
{1}École Normale Supérieure de Lyon, France; {2}Philips Healthcare Canada, Canada; {3}University of Montreal Hospital Research Center, Canada

12:00 PM
1513: Acoustic Characterization of Tissue-Mimicking Materials for Ultrasound Imaging Research
Peiran Chen{2}, Andreas Pollet{2}, Simona Turco{2}, Jaap Den Toonder{2}, Hessel Wijkstra{1}, Massimo Misch{2}
{1}Amsterdam University Medical Centers, Netherlands; {2}Eindhoven University of Technology, Netherlands

12:10 PM
2428: Ultrasound Signal Detection with Multi-Bounce Laser Microphone
Qianqian Wan{4}, Chenchia Wang{1}, Keshuai Xu{4}, Jeeun Kang{2}, Yixuan Wu{4}, Sudhir Trivedi{1}, Peter Gehlbach{3}, Ernad Doctor{3}
{1}Brimrose Corporation of America, United States; {2}Johns Hopkins Medical Institute, United States; {3}Johns Hopkins School of Medicine, United States; {4}Johns Hopkins University, United States

11:30:00 AM - 1:30:00 PM
A4P-10: MEL: Poster PM - High Frequency Waves Used for Elastography
Session Chair(s): Dainel Rohrbach (Verasonics)
Mark Palmeri (Duke University)

12:20 PM
1410: Diagnostic Performance of Shear Wave Elastography for Carpal Tunnel Syndrome Combined with High Frequency Ultrasound Imaging
Kibo Nam, Shawn Peterson, Corinne Wessner, Priscilla Machado, Fleming Forsberg
Thomas Jefferson University, United States

12:30 PM
2035: In Vivo Elasticity Mapping in Human Skin with AuT-Based OCE to Monitor Skin Graft Surgeries
Mitchell Kirby, John Pitre Jr., David Li, Tueng Shen, RuiKang Wang, Matthew O'Donnell, Ivan Pelivanov
University of Washington, United States

12:40 PM
2226: To Simultaneously Assess the Whole Eye Biomechanics in Vivo Using High Frequency Ultrasound Elastography
Runze Li, Xuejun Qian, Gengxi Lu, Kirk Shung, Mark Humayun, Qifa Zhou
University of Southern California, United States

12:50 PM
2359: High Frequency Shear Wave Elastography (SWE) Imaging of a Rodent Spinal Cord Injury
John Pitre Jr., Zin Khaing, Brian Nhuyen, Christoph Hofstetter, Matthew O'Donnell, Matthew Bruce
University of Washington, United States

11:30:00 AM – 1:30:00 PM
A4P-11: MEL: Poster PM – Cancer Elastography
Session Chair(s): Marvin Doyley (University of Rochester)

11:30 AM
2087: In Vivo Demonstration of Single Transducer Harmonic Motion Imaging (ST-HMI) in a Breast Cancer Mouse Model and Breast Cancer Patients

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Authors/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:40 AM</td>
<td>2102: Evaluating Image Quality Improvement in Multiparametric Ultrasound Imaging of Prostate Cancer by Combining ARFI, SWEI, B-mode, and QUS</td>
<td>Md Murad Hossain, Niloufar Saharkhiz, Elisa Konofagou, Columbia University, United States; Derek Chan, D. Cody Morris, Theresa Lye, Thomas Polascik, Mark Palmen, Jonathan Mamou, Kathryn Nightingale, Duke University, United States; Lizzi Center for Biomedical Engineering, Riverside Research, United States</td>
</tr>
<tr>
<td>11:50 AM</td>
<td>2288: Shear Wave Elastography of Invasive Breast Cancer: Correlation Between Quantitative Elasticity Values, Prognostic Histologic Features &amp; Immunohistochemical Biomarkers</td>
<td>Juanjuan Gu, Mostafa Fatemi, Azra Alizad, Mayo Clinic, United States</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>2500: Evaluating the Effectiveness of Combined Radiation Therapy and Interleukin-12 Treatment in Pancreatic Tumor Models Using Shear Wave Elastography</td>
<td>Rifat Ahmed, Reem Mislati, Bradley Mills, Scott Gerber, Marvin Doyley, University of Rochester, United States</td>
</tr>
<tr>
<td>11:30:00 AM – 1:30:00 PM</td>
<td>A4P-12: MEL: Poster PM – Elastography Acquisition Methods II</td>
<td>Session Chair(s): Pengfei Song (University of Illinois)</td>
</tr>
<tr>
<td>12:10 PM</td>
<td>1527: Hydrophone Spatial Averaging Artifacts for ARFI Beams from Array Transducers</td>
<td>Keith Wear, Anant Shah, Christian Baker, Food and Drug Administration, United States; National Physical Laboratory, United Kingdom</td>
</tr>
<tr>
<td>12:20 PM</td>
<td>1927: Comparison of Ultrasound Shear Wave Elasticity and Optical Coherence Elasticity in Tissue-Mimicking Phantoms</td>
<td>Justin Rippy, Mannoham Singh, Salavat Aglyamov, Kirill Larin, University of Hoston, United States; University of Houston, United States</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>2066: Experimental Study to Evaluate the Generation of Reverberant Shear Wave Fields (R-SWF) in Phantoms</td>
<td>Gilmer Flores, Juvenal Ormachea, Stefano Romero, Fernando Zvetocovich, Kevin Parker, Benjamin Castaneda, Pontificia Universidad Católica del Perú, Peru; University of Houston, United States; University of Rochester, United States</td>
</tr>
<tr>
<td>12:40 PM</td>
<td>2132: Optimizing the Receive Beamforming for Improving the Performance of Focused-Transmit Based Single Track Location Shear Wave Elastography</td>
<td>Rifat Ahmed, Marvin Doyley, University of Rochester, United States</td>
</tr>
<tr>
<td>12:50 PM</td>
<td>2225: Frequency Dependence of Inclusion Characterization in Harmonic Motion Imaging</td>
<td>Niloufar Saharkhiz, Hermes A. S. Kamimura, Md Murad Hossain, Elisa E. Konofagou, Columbia University, United States</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>2314: Evaluating the Feasibility of Nondiffractive Bessel Beams for Shear Wave Elasticity Imaging: a Simulation Study</td>
<td>Fan Feng, Soumya Goswami, Siladitya Khan, Stephen McAlavey, University of Rochester, United States</td>
</tr>
<tr>
<td>1:10 PM</td>
<td>2345: Imaging Shear Shock Waves in the in Situ Porcine Brain</td>
<td>Sandhya Chandrasekaran, Francisco Santibanez, Bharat Tripathi, Gianmarco Pinto, North Carolina State University, United States; North Carolina State University / University of North Carolina at Chapel Hill, United States; University of North Carolina at Chapel Hill, United States</td>
</tr>
<tr>
<td>11:30:00 AM – 1:30:00 PM</td>
<td>A4P-13: MEL: Poster PM – Elastographic Interrogation of Atherosclerotic Plaque</td>
<td>Session Chair(s): George Kapodistrias (Samsung Research America)</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>1043: 4D Pulse Wave Imaging with Sub Aperture Compounding in the Carotid Artery in Simulations, Phantoms and Human Subjects</td>
<td>Nirvedh Meshram, Julien Grondin, Grigoris Karageorgos, Rachel Weber, Elisa Konofagou, Columbia University, United States</td>
</tr>
<tr>
<td>11:40 AM</td>
<td>1463: Premature Carotid Artery Atherosclerosis Assessment with Non-Invasive Ultrasound Elastography in HIV Positive Individuals</td>
<td>Marie-Hélène Roy Cardinal, Madeleine Durand, Carl Chartrand-Lefebvre, Gilles Soulez, Cécile Tremblay, Guy Cloutier, University of Montreal Hospital, Canada; University of Montreal Hospital Research Center, Canada</td>
</tr>
<tr>
<td>11:50 AM</td>
<td>2206: Carotid Strain Imaging with a Locally Optimized Adaptive Bayesian Regularized Motion Tracking Algorithm</td>
<td>Carol Mitchell, Rashid Mukaddim, Ashley Weichmann, Kevin Eliceiri, Melissa Graham, Tomy Varghese, University of Wisconsin-Madison, United States</td>
</tr>
</tbody>
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Tuesday, September 8

12:00 PM
2271: In Vivo Comparison of Pulse Wave Velocity Estimation Based on Ultrafast Plane Wave Imaging and High Frame Rate Focused Transmissions
Melissa van de Steeg, Stein Fekkes, Anne Saris, Chris de Korte, Rik Hansen
Radboud University Medical Center, Netherlands

12:10 PM
2324: On the Influence of External Force Induced by the Ultrasound Probe on Internal Carotid Artery Elastography Features
Boris Chayer(2), Marie-Hélène Roy Cardinal(2), Louise Allard(2), Noémie Cloutier(1), Clara Pettit(1), Guy Cloutier(2)
(1)Collège André-Grasset, Canada; (2)University of Montreal Hospital Research Center, Canada

12:20 PM
2414: Monitoring Progression of Atherosclerotic Plaque Initiation and Development in WMS-FH Pigs
Paul Kemper, Pierre Nauleau, Grigorios Karageorgos, Rachel Weber, Elisa Konofagou
Columbia University, United States

12:30 PM
2446: Harmonic Imaging Improves Delineation of Human Carotid Plaque Features by ARFI Variance of Acceleration
Gabriela Torres(1), Keerthi Anand(1), Jonathon Homeister(2), Mark Farber(2), Caterina Gallippi(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States

12:40 PM
2449: Combination of ARFI Excitation Powers, Tracking Frequencies, and Acquisitions at Diastole and Systole for Improving Automatic Segmentation of Vulnerable Carotid Plaque Features
Gabriela Torres(1), Keerthi Anand(1), Jonathon Homeister(2), Mark Farber(2), Caterina Gallippi(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States

11:40 AM
1760: A 3D Motion Tracking Algorithm Using Ultrasound B-Mode Images: a Feasibility Study
Hongliang Li, Guy Cloutier, Samuel Kadoury, Gilles Soulez
University of Montreal Hospital Research Center, Canada

11:50 AM
2122: Adaptive Data Function for Robust Ultrasound Elastography
Md Ashikuzzaman(1), Timothy J. Hall(2), Hassan Rivaz(1)
(1)Concordia University, Canada; (2)University of Wisconsin-Madison, United States

12:00 PM
2163: Robust and Fast Algorithm for Estimating 2D Shear Wave Speed
Hyungkiy Lee(2), Donggeon Kong(1), Kiwan Cho(1), Reem Mislati(2), Marvin Doyley(2)
(1)Samsung Electronics, Korea; (2)University of Rochester, United States

12:10 PM
2302: BSS-Based Displacement Tracking Improves Quantitative, On-Axis Shear Elastic Modulus Estimation by DoPlO Ultrasound
Keita Yokoyama, Caterina Gallippi
North Carolina State University / University of North Carolina at Chapel Hill, United States

12:20 PM
2335: A Framework for Strain Simulations in the k-Wave Toolbox
Jan-Willem Muller(2), Hans-Martin Schwab(2), Marcel Rutten(2), Frans van de Vosse(2), Marc van Sambeek(1), Richard Lopata(2)
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands

12:30 PM
2419: Numerical Simulation of Dye Diffusion Altered by Shear Wave Propagation Induced by Acoustic Radiation Force Acting on an In-Situ Forming Implant
Taehoon Bok(2), Agata Exner(1), Michael C. Kolios(2)
(1)Case Western Reserve University, United States; (2)Ryerson University, Canada

12:40 PM
2432: Experimental Evaluation of the Impact of Signal Decorrelation on Plane Wave Versus Focused ARFI VoA Measurements
Keerthi Anand, Gabriela Torres, Caterina Gallippi
North Carolina State University / University of North Carolina at Chapel Hill, United States

11:30 AM
1734: Time-Aligned Plane Wave Compounding for Motion Detection for Shear Wave Elastography in Dispersive Media
Margherita Capriotti, James Greenleaf, Matthew Urban Mayo Clinic, United States

11:30 AM – 1:30:00 PM
A4P-14: MEL: Poster PM – Elastography Algorithms & Modelling
Session Chair(s): Aiguo Han (University of Illinois at Urbana-Champaign)

11:30 AM
1734: Time-Aligned Plane Wave Compounding for Motion Detection for Shear Wave Elastography in Dispersive Media
Margherita Capriotti, James Greenleaf, Matthew Urban Mayo Clinic, United States

11:30 AM
1735: A 3D Motion Tracking Algorithm Using Ultrasound B-Mode Images: a Feasibility Study
Hongliang Li, Guy Cloutier, Samuel Kadoury, Gilles Soulez
University of Montreal Hospital Research Center, Canada

11:50 AM
2122: Adaptive Data Function for Robust Ultrasound Elastography
Md Ashikuzzaman(1), Timothy J. Hall(2), Hassan Rivaz(1)
(1)Concordia University, Canada; (2)University of Wisconsin-Madison, United States
11:30 AM
1217: Repeatability and Reproducibility of Quantitative Ultrasound Parameter Estimation Using Spatially Weighted Total Variation (SWTV) Regularization
Farah Deeba, Robert Rohling
University of British Columbia, Canada

11:40 AM
Yasamin Karbalaeisadegh, Marie Muller
North Carolina State University, United States

11:50 AM
2207: Technique to Compensate Unknown Laminate Transmission Loss in Phantom Attenuation Measurements
Karthik Nagabushana, William D. O'Brien Jr., Aiguo Han
University of Illinois at Urbana-Champaign, United States

12:00 PM
2217: Characterization and Evaluation of a Hydrogel-PVC Aberrator Phantom
Siladitya Khan, Soumya Goswami, Fan Feng, Stephen McAleavey
University of Rochester, United States

12:10 PM
2402: Evaluation of Contrast-to-Noise Ratio of Parametric Images of Regularized Estimates of Quantitative Ultrasound Parameters
Noushin Jafarpisheh(1), Ivan M Rosado-Mendez(2), Timothy J Hall(3), Hassan Rivaz(1)
(1)Concordia University, Canada; (2)Universidad Nacional Autónoma de México, Mexico; (3)University of Wisconsin-Madison, United States

11:30:00 AM – 1:30:00 PM
A4P-18: MBF: Poster PM – Blood Flow Detection/Measurements
Session Chair(s): Guy Cloutier (University of Montreal)

12:20 PM
1475: Towards an Operator Independent Blood Flow Volume Quantification Using 3D Ultrasound
Sibo Li(2), William Shi(2), Stephen Pinter(3), Jonathan Rubin(3), Oliver Kripfgans(3), Brian Fowlkes(3), Ronald Leichner(1), James Jago(1), Shriram Sethuraman(2)
(1)Philips Healthcare, United States; (2)Philips Research North America, United States; (3)University of Wisconsin-Madison, United States

12:30 PM
1488: Ultrasonic Measurement of Hematocrit Using Blood Non-Newtonian Properties
Baptiste Plaît(1), Jérémie Gachelin(1), Jean Provost(2), Olivier Couture(3)
(1)Aenitis Technologies, France; (2)Polytechnique Montréal, Canada; (3)Sorbonne Université, CNRS, INSERM, Laboratoire d'Imagerie Biomédicale, France

12:40 PM
1530: Hydrophone Spatial Averaging Artifacts for Pulsed Doppler Beams from Array Transducers
Keith Wear(1), Anant Shah(2), Christian Baker(2)
(1)Food and Drug Administration, United States; (2)National Physical Laboratory, United Kingdom

12:50 PM
1841: Intraosseous Blood Circulation: a First Assessment Using Plane Wave Ultrasound Imaging and Transverse Oscillations
Sébastien Salles(3), Jami L. Johnson(4), Pierre Clouzet(2), Hendrik J. Vos(1), Guillaume Renaud(2)
(1)Erasmus University Medical Center, Netherlands; (2)Sorbonne Université, France; (3)Sorbonne Université / Norwegian University of Science and Technology, France; (4)University of Auckland, New Zealand

12:30 AM
1431: On the Potential Uses of Ultrasound Imaging for the Detection of Anesthesia-Induced Neuronal Apoptosis in the Developing Brain
Swapnil Dolui, Shreya Reddy, June Bryan de la Pena, Jane Song, Haowei Tai, Zachary Campbell, Kenneth Hoyt
University of Texas at Dallas, United States

1435: Interpretation Based on Stochastic Geometry of Homodyned-K Distribution Scatterer Clustering Parameter for Quantitative Ultrasound Imaging
François Destrempes, Guy Cloutier
University of Montreal Hospital Research Center, Canada

11:50 AM
1739: Ultrasound Pulse Shaping for Improved H-Scan Imaging and Tissue Classification
Swapnil Dolui, Haowei Tai, Mawia Khairalseed, Kenneth Hoyt
University of Texas at Dallas, United States

12:00 PM
1430: Early Assessment of Nonalcoholic Fatty Liver Disease Using Multiparametric Ultrasound Imaging
Lokesh Basavarajappa(2), Haowei Tai(2), Girdhari Rijal(2), Kevin Parker(1), Kenneth Hoyt(2)
(1)University of Rochester, United States; (2)University of Texas at Dallas, United States
Tuesday, September 8

12:10 PM
1433: Spatial Comparison Between the H-Scan Format for Classification of Ultrasound Scatterers and Histology – Preliminary Results Using an Animal Model of Breast Cancer
Mawia Khairalseed, Girdhari Rijal, Kenneth Hoyt
University of Texas at Dallas, United States

12:20 PM
1499: Machine Learning Based on Quantitative Ultrasound for Assessment of Chronic Liver Disease
François Destrempes{3}, Marc Gesnik{3}, Boris Chayer{3}, Marie-Hélène Roy Cardinal{3}, Damien Oliévi{2}, Jeanne-Marie Giard{3}, Giada Sebastiani{1}, Bich Nguyen{3}, Guy Cloutier{3}, An Tăng{3}
(1)McGill University, Canada; (2)University of Montreal Hospital, Canada; (3)University of Montreal Hospital Research Center, Canada

12:30 PM
1743: Liver Fat Droplet Dependency on Ultrasound Backscatter Coefficient in Nonalcoholic Fatty Liver Disease Subjects
Yashuo Wu{2}, Leonardo Lopez{2}, Michael Andre{1}, Rohit Loomba{1}, Mark Valasek{1}, Matthew Wallig{2}, William O’Brien Jr.{2}, Aigu Han{2}
(1)University of California, San Diego, United States; (2)University of Illinois at Urbana–Champaign, United States

12:40 PM
2003: Multi-Parametric Ultrasound Tissue Characterization (MUTC) as a Surrogate to Magnetic Resonance Imaging (MRI) for Non-Alcoholic Fatty Liver Disease (NAFLD) Characterization
Stanford University, United States

12:50 PM
2118: Deep Compressed Sensing for Characterizing Inflammation Severity with Microultrasound
Shufan Yang{2}, Christina Lemke{2}, Ben F. Cox{1}, Ian P. Newton{1}, Sandy Cochran{2}, Inke Näthke{1}
(1)University of Dundee, United Kingdom; (2)University of Glasgow, United Kingdom

11:40 AM
1693: DNN-Based Speed-of-Sound Reconstruction for Automated Breast Ultrasound
Famaz Khun Jush{3}, Markus Biele{2}, Peter Michael Duerksen{2}, Oliver Schmidt{2}, Andreas Maier{1}
(1)Friedrich-Alexander-University Erlangen-Nuremberg, Germany; (2)Siemens Healthcare GmbH, Germany; (3)Siemens Healthcare GmbH/ Friedrich-Alexander-University, Germany

11:50 AM
1767: Quantitative Ultrasound a Priori Prediction of Breast Cancer Chemotherapy Outcomes
Lakshmanan Sannachi, Hadi Tadayyon, William Tran, Maureen Trudeau, Kasia Jerzak, Gregory Czarnota
Sunnybrook Research Institute, Canada

12:00 PM
1831: Breast Lesion Characterization Using Quantitative Ultrasound (QUS) and Derivative Texture Methods
Laurentius Osapoetra, Lakshmanan Sannachi, Daniel Dicenzo, Karina Quiaoit, Kashuf Fatima, Gregory Czarnota
Sunnybrook Research Institute, Canada

12:10 PM
1837: Comparison of Automated Breast Volume Scanning and Handheld Ultrasound in Breast Lesion Characterization Using Quantitative Ultrasound and Texture Analysis Methods
Alec Hughes, Lakshmanan Sannachi, Mehrdad Gangeh, Ali Sadeghi-Naini, Gregory Czarnota
Sunnybrook Research Institute, Canada

12:20 PM
1849: Predictive Quantitative Ultrasound Radiomic Markers Associated with Radiation Treatment Response in Head and Neck Cancer
Kashuf Fatima, Daniel Dicenzo, Harini Suraweera, Karina Quiaoit, Divya Bhardwaj, Irene Karam, Ian Poon, Mehrdad Gangeh, Ali Sadeghi-Naini, William Tran, Lakshmanan Sannachi, Gregory Czarnota
Sunnybrook Research Institute, Canada

12:30 PM
1995: Learning Steatosis Staging with Two-Dimensional Convolutional Neural Networks: Comparison of Accuracy of Clinical B-Mode with a Co-Registered Spectrogram Representation of RF Data
Stanford University, United States
11:30 AM
1482: Adversarial Attacks on Deep Learning Models for Fatty Liver Disease Classification by Modification of Ultrasound Image Reconstruction Method
Michał Byra(3), Grzegorz Styczynski(2), Cezary Szmięłeksi(2), Piotr Kalinowski(2), Łukasz Michałowski(2), Rafał Paluszkiewicz(2), Bogna Ziarkiewicz-Wroblewska(2), Krzysztof Zieniewicz(2), Andrzej Nowicki(1)
(1)Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland; (2)Medical University of Warsaw, Poland; (3)Polish Academy of Sciences, Poland

11:40 AM
1489: SVM (Support Vector Machine) Based Liver Classification: Fibrosis, Steatosis, and Inflammation
Jihye Baek, Kevin Parker
University of Rochester, United States

11:50 AM
1490: Robustness Analysis of Texture Features with Different Beamforming Techniques
Silvia Seoni(1), Giulia Matrone(2), Kristen Meiburger(1)
(1)Politecnico di Torino, Italy; (2)University of Pavia, Italy

12:00 PM
Herwig Wendt(1), Mohamed Hourani(3), Adrian Basarab(2), Denis Kouamé(2)
(1)CNRS, France; (2)IRIT / Université de Toulouse, France; (3)University of Pavia, Italy

12:10 PM
1722: Automated Characterization of Muscle Architectural Variation in Ultrasonic Images
Jan Egil Kirkeba(2), Amelie Werkhausen(1), Olivier Seynnes(1), Andreas Austeng(2)
(1)Norwegian School of Sport Sciences, Norway; (2)University of Oslo, Norway

12:20 PM
1798: Ultrasound-Based Estimation of Remaining Cardiac Function in LVAD-Supported Ex Vivo Hearts
Louis Fixsen(2), Niels Petterson(2), Patrick Houthuizen(1), Marcel Rutten(2), Frans van de Vosse(2), Richard Lopata(2)
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands

12:30 PM
2067: Wrist-Side Pulse Sensing: Pilot Comparison Between Ultrasound Imaging and a Wearable Pulse-Taking Sensor
Yuchen Tang, Wei-Ning Lee
University of Hong Kong, Taiwan; University of Hong Kong, China

12:40 PM
2161: Ultrasound Sagittal Projection Imaging for the Assessment of Scoliosis
Dong-Sheng Li(2), Guang-Quan Zhou(2), Yi-Kang He(3), Ping Zhou(2), Si-Yuan He(2), Yong-Ping Zheng(1)
(1)Hong Kong Polytechnic University, Hong Kong; (2)Southeast University, China; (3)Zhongda Hospital Affiliated to Southeast University, China

12:50 PM
2171: Ultrasonic Measurement of Luminal Surface Roughness of Carotid Artery Wall with Removal of Local Displacement Induced by Blood Vessel Pulsation
Shohei Mori(2), Takahisa Abe(2), Motoyuki Kimura(2), Mototaka Arakawa(2), Jens E. Wilhjelm(1), Hiroshi Kanai(2)
(1)Technical University of Denmark, Denmark; (2)Tohoku University, Japan

01:00 PM
2366: Electromechanical Cycle Length Mapping for Atrial Arrhythmia Characterization and Cardioversion Success Assessment
Melina Tourni, Lea Melki, Rachel Weber, Elisa Konofagou
Columbia University, United States
Tuesday, September 8

12:10 PM
1592: Human Placental Vasculature Imaging Using Long Ensemble Angular-Coherence-Based Doppler (LEAD)
You Li, Jane Chueh, Virginia Winn, Amen Ness, Dongwoon Hyun, Marko Jakovljevic, Jeremy Dahl
Stanford University, United States

12:20 PM
1620: Hemodynamic Analysis of Single Vessel in the Cerebral Cortex with Ultrafast Doppler
Bao-Yu Hsieh{1}, Yi-Pei Lin{1}, Yu-Ying Mei{1}, Dong-Chuan Wu{1}, Yu-Chieh Jiao Kao{2}, Ning Zhou{1}
{1}China Medical University, China; {1}China Medical University, Taiwan; {2}National Yang-Ming University, Taiwan

12:30 PM
1754: Ultrafast Doppler Imaging Combined with Adaptive Spatiotemporal SVD Filtering Allows to Assess Complex Liver Blood Flows Down to 5 Mm/s in Healthy Volunteers
Sofiane Décombos-Deschamps{2}, Hanna Bendjador{1}, Mickaël Tanter{3}, Thomas Deffieux{4}
{1}ESPCI, PSL Research University, INSERM, CNRS, France; {2}Inserm, ESPCI Paris, CNRS, PSL University, France; {3}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; {4}Physics for Medicine Paris, Inserm, ESPCI Paris, CNRS, PSL University, France

12:40 PM
1833: Side-Viewing Rotational IVUS Imaging of Slow Flow with Adaptive SVD Filtering
Graham Collins{2}, Natalia Pato Montemayor{1}, Kathryn Ozgun{3}, Brett Byram{3}, Brooks Lindsey{1}
{1}Georgia Institute of Technology, United States; {2}Georgia Institute of Technology / Emory University, United States; {3}Vanderbilt University, United States

12:50 PM
2272: In-Vivo 3D Power Doppler Imaging Using Mechanical Translation and Ultrafast Ultrasound
Chuan Chen{2}, Gjis A.G.M. Hendriks{1}, Stein Fekkes{2}, Hendrik H.G. Hansen{1}, Chris L. de Korte{1}
{1}Medical UltraSound Imaging Center / Radboud University Medical Center, Netherlands; {2}Radboud University Medical Center, Netherlands

01:00 PM
2309: Estimation of Velocity Changes in Sub-Resolved Microvasculature Using Contrast Enhanced Ultrasound (CEUS)
Matthew Bruce{2}, Zin Khain{2}, Charles Tremblay-Darveau{1}, Ming Xin{2}, Bryan Cuntiz{2}, Christoph Hofstetter{2}
{1}Philips Medical Systems, United States; {2}University of Washington, United States

01:10 PM
2311: Intraventricular Pressure Gradients – Vector Flow Imaging Versus Color M-Mode
Solveig Fadnes, Kristian Sørensen, Siri Ann Nyrnes, Morten S. Wigen, Lasse Løvstakken
Norwegian University of Science and Technology, Norway

01:20 PM
2346: Pre-Clinical Functional Ultrasound Imaging of Rat Brain Activation During Thalamic Deep Brain Stimulation
Rohit Nayak, Jeyeon Lee, Mostafa Fatemi, Su-Youne Chang, Azra Alizad
Mayo Clinic, United States

11:30:00 AM – 1:30:00 PM
A4P-20: MPA: Poster PM – Photoacoustic Vascular Imaging
Session Chair(s): Thanasis Loupas (Philips Ultrasound)

11:30 AM
1555: Photoacoustic Imaging as a Tool for Assessing the Biomechanical Behavior of Aqueous Veins and Perilimbal Sclera Complex
{1}Ohio State University, United States; {2}University of Michigan, United States

11:40 AM
1924: Intraoperative Carotid Artery Plaque Hemorrhage Detection with Hand-Held Photoacoustic Probe
Jan-Willem Muller{2}, Min Wu{2}, Roy van Hees{2}, Marcel Rutten{2}, Frans van de Vosse{2}, Marc van Sambeek{1}, Richard Lopata{2}
{1}Catharina Hospital, Netherlands; {2}Eindhoven University of Technology, Netherlands

11:50 AM
2127: Photoacoustic Guided Endovenous Laser Ablation: Calibration and in Vivo Canine Studies
Samuel John{2}, Yan Yan{2}, Tanyeem Shaik{2}, Loay Kabbani{1}, Mohammad Mehrmohammadi{2}
{1}Henry Ford Health System, United States; {2}Wayne State University, United States

12:00 PM
2239: Transcranial Photoacoustic Imaging of Photothermbotic Stroke in Neonatal Piglet in Vivo
Jeeun Kang, Xiuyun Liu, Shawn Adams, Ernest Graham, Raymond Koebler, Emad Docto
Johns Hopkins Medical Institute, United States

11:30:00 AM – 1:30:00 PM
A4P-21: MPA: Poster PM – Quantitative Photoacoustic Imaging
Session Chair(s): Xueding Wang (University of Michigan)

12:10 PM
1857: Fluence Compensation for Improving Quantitative Photoacoustic Spectroscopy
Alexander Pattyn, Naser Alijabbari, Mohammad Mehrmohammadi
Wayne State University, United States

12:20 PM
1867: Calibrated Photoacoustic Spectrometry with a Standard Imaging Setup
Alexander Pattyn, Naser Alijabbari, Mohammad Mehrmohammadi
Wayne State University, United States

12:20 PM
1871: Photoacoustic Intracranial Pressure Monitoring in Human Contra-Lateral to a Fontanelle
Steven M. Gage{1}, Charles D. McNab{2}, Sung Suk Kim{1}, Joseph Caplan{1}, Maria M. Robins{1}, Mark A. Christensen{2}, Rachel N. Bower{1}
{1}Washington University School of Medicine, United States; {2}Washington University Health Sciences, United States
Tuesday, September 8

Mitradeep Sarkar{3}, Théotim Lucas{2}, Gilles Renault{1}, Lori Bridal{2}, Jérome Gateau{2}
{1}Institut Cochin, France; {2}Sorbonne Université, CNRS, INSERM, France; {3}Université de Paris, Inserm, PARCC, France

12:30 PM
2071: The International Photoacoustic Standardisation Consortium: a Community-Driven Consensus-Based Initiative Towards Standardisation in Photoacoustic Imaging
Sarah Bohndiek{5}, Ben Cox{4}, James Joseph{5}, Janek Groehl{1}, Lina Hacker{5}, Stefan Morscher{2}, William Vogt{3}
{1}German Cancer Research Center, Germany; {2}iThera Medical, Germany; {3}U.S. Food and Drug Administration, United States; {4}University College London, United Kingdom; {5}University of Cambridge, United Kingdom

12:40 PM
2232: A Cost-Effective Spectral Equalization Method for Multispectral Photoacoustic Imaging
Yixuan Wu{2}, Jeeun Kang{1}, Christopher Yung{3}, Hanh Le{3}, Jeeseong Hwang{3}, Emad Boctor{1}
{1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States; {3}National Institute of Standards and Technologies, United States

12:50 PM
2327: Fluence Correction in Ultrasound-Guided Photoacoustic Imaging Using External Tissue Deformation
David Qin{1}, Timothy Sowers{1}, Lingyi Zhao{2}, Stanislav Emelianov{1}
{1}Georgia Institute of Technology, United States; {2}Peking University, China

11:30:00 AM – 1:30:00 PM
Session Chair(s): Stanislav Emelianov (Georgia Inst. of Technology & Emory Univ. School of Medicine)

11:30 AM
2077: Theory-Based Predictions of Generalized Contrast-to-Noise Ratios for Photoacoustic Images
Mardava Gubbi, Muyinatu Lediju Bell
Johns Hopkins University, United States

11:40 AM
2137: Dual-Illumination Ultrasound/Photoacoustic Endoscopic System
Maryam Basij{3}, Andrei Karpjouk{2}, Ira Winer{1}, Stanislav Emelianov{2}, Mohammad Mehrmohammadi{3}
{1}Barbara Ann Karmanos Cancer Institute, United States; {2}Georgia Institute of Technology, United States; {3}Wayne State University, United States

11:50 AM
2164: A New Photoacoustic Imaging Platform for Potential Applications in Prostate Cancer
Nidhi Singh{4}, Emmanuel Chérin{3}, Yohannes Soenjaya{2}, Felipe Roa{4}, Samuel Papernick{2}, Brian Wodlinger{1}, Stuart Foster{5}, Christine Démoré{6}
{1}Exact Imaging, Canada; {2}Sunnybrook Health Sciences Centre, Canada; {3}Sunnybrook Research Institute, Canada; {4}University of Toronto, Canada; {5}University of Toronto, Sunnybrook Health Sciences Centre, Canada; {6}University of Toronto, Sunnybrook Research Institute, Canada

12:00 PM
2433: Real-Time Thermoacoustic Imaging and Thermometry Using Self Calibration for Guiding Hyperthermia Therapy
Ehab Tamimi, Waleed Ahmad, Hao Xin, Russell Witte
University of Arizona, United States

11:30:00 AM - 1:30:00 PM
A4P-23: MPA: Poster PM - Advances In Photoacoustic Reconstruction / Beamforming
Session Chair(s): Julien Grondin (Columbia University) Muyinatu Bell (Johns Hopkins University)

12:10 PM
1239: Speed-of-Sound Mapping with Laser-Induced Ultrasound
David Thompson{2}, Damien Gasteau{2}, Jeffrey Nagel{2}, Maura Dantuma{2}, Michael Jaeger{1}, Martin Frenz{1}, Sriram Manohar{2}
{1}University of Bern, Switzerland; {2}University of Twente, Netherlands

12:20 PM
1573: Photoacoustic Delay-and-Sum Beamforming with Spatiotemporal Coherence Factor
Rashid Al Mukaddim, Ashley M. Weichmann, Tomy Varghese
University of Wisconsin-Madison, United States

12:30 PM
2017: Compact and Low-Cost Acoustic-Resolution Photoacoustic Microscopy Based on Delta Configuration Actuator
Shang Gao{3}, Tsumura Ryosuke{3}, Doua Vang{3}, Keion Bisland{3}, Keshuai Xu{1}, Yasuyuki Tsuno{i}, Haichong K. Zhang{3}
{1}John Hopkins University, United States; {2}National Defense Medical College Research Institute, Japan; {3}Worcester Polytechnic Institute, United States

12:40 PM
2048: Deep-Learning Reconstruction for Integrated Photoacoustic and Ultrasound System
Minwoo Kim, David Li, Geng-Shi Jeng, Ivan Pelivanov, Matthew O’Donnell
University of Washington, United States

11:30:00 AM - 1:30:00 PM
A4P-24: MPA: Poster PM - Pre-Clinical Photoacoustic Imaging
Session Chair(s): Michael Kolios (Ryerson University)

11:30 AM
1093: In Vivo Photoacoustic Chemical Imaging of Potassium
Joel Tan, Jeff Folz, Raoul Kopelman, Xueding Wang
University of Michigan, United States
Tuesday, September 8

11:40 AM
1153: Functional Neuroimaging of Mice Using Ultrasound and Optoacoustics

Richard Rau{1}, Justine Robin{1}, Berkkan Lafci{1}, Aileen Schröter{3}, Michael Reiss{1}, Xose Luis Dean Ben{1}, Orcun Goksel{1}, Daniel Razansky{2}

{1}ETH Zürich, Switzerland; {2}ETH Zürich / Universität Zürich, Switzerland; {3}University of Zurich, Switzerland

11:50 AM
1199: The Use of Nanobubbles for Enhancing Radiation Therapy: Biophysical Insights from Photoacoustic Imaging and Histology

Eno Hysi{2}, Muhammad Fadhel{2}, Yanjie Wang{2}, Joseph Sebastian{2}, Anoja Giles{3}, Gregory Czarnecka{4}, Agata Exner{1}, Michael C. Kolios{2}

{1}Case Western Reserve University, United States; {2}Ryerson University, Canada; {3}Sunnybrook Health Sciences Centre, Canada; {4}Sunnybrook Research Institute, Canada

12:00 PM
1890: Spectroscopic Photoacoustic Imaging of Cervical Tissue Composition in Preterm Murine Model

Yan Yan, Jose Galaz, Nardhy Gomez-Lopez, Mohammad Mehrmohammadi

Wayne State University, United States

12:10 PM
2237: Supervised Machine Learning for Effective Differential Diagnosis of Cerebral Arterial Occlusion Versus Global Hypoxia in Vivo

Jeeun Kang, Shawn Adams, Ernest Graham, Raymond Koehler, Emad Docter

Johns Hopkins Medical Institute, United States

12:20 PM
2341: In Vivo Quantitative Photoacoustic Imaging with PAtrace in TNBC Model

Cayla Wood{2}, Sangheon Han{2}, William Schuler{2}, Jason Cook{1}, Mark Pagel{2}, Konstantin Sokolov{2}, Richard Bouchard{2}

{1}NanoHybrids, Inc., United States; {2}University of Texas MD Anderson Cancer Center, United States

11:30:00 AM - 1:30:00 PM
A4P-32: MTH: Poster PM - Ultrasound Mediated Delivery II

Session Chair(s): Mostafa Fatemi (Mayo Clinic)

Hong Chen (Washington University in St. Louis)

12:30 PM
1294: A Novel Gold Nanoparticles Drug Delivery System: Design and Ex Vivo Tissue Testing

Anshuman Jakhmola{1}, Tyler Hornsby{1}, Kevin Rod{2}, Jahan Tavakkoli{1}

{1}Ryerson University, Canada; {2}Toronto Poly Clinic Inc, Canada

12:40 PM
1469: Controlled Release of Basic Fibroblast Growth Factor (bFGF) Using Therapeutic Ultrasound Enhances Angiogenesis and Reperfusion in Ischemic Muscle

Hai Jin{2}, Carole Quesada{2}, Leidun Huang{3}, Mitra Aliabouzar{2}, Aniket Jivani{2}, Oliver Kripfgans{2}, J. Brian Fowlkes{2}, Renny Franceschi{2}, Jianhua Liu{1}, Andrew Putnam{2}, Mario Fabiili{2}

{1}South China University of Technology, China; {2}University of Michigan, United States; {3}University of Michigan, United States

12:50 PM
1477: Incubation Method for Loading Lonidamine in Oxygen Microbubbles for Targeted Drug Delivery

Quezia Lacerda{3}, Brian Oelfinger{1}, Margaret Wheatley{1}, Dennis Leeper{2}, Flemming Forsberg{2}, Patrick O’Kane{2}, Aniket Rochani{2}, Gagan Kaushal{2}, John Eisenbrey{2}

{1}Drexel University, United States; {2}Thomas Jefferson University, United States; {3}Thomas Jefferson University / Drexel University, United States

01:00 PM
1540: Sequential Release of Two Pro-Angiogenic Growth Factors from Acoustically-Responsive Scaffolds Using Standing Wave Assisted Acoustic Droplet Vaporization

Mitra Aliabouzar, Aniket Jivani, Xiaofang Lu, Oliver Kripfgans, Brian Fowlkes, Mario Fabiili

University of Michigan, United States

01:10 PM
1811: Characterization of Ultrasound-Mediated Delivery of Trastuzumab to Normal and Pathologic Spinal Cord Tissue

Paige Smith{3}, Natalia Ogrodnik{1}, Janani Satkunarajah{1}, Meaghan O'Reilly{2}

{1}Sunnybrook Research Institute, Canada; {2}Sunnybrook Research Institute / University of Toronto, Canada; {3}University of Toronto, Canada

01:20 PM
1868: Characterization of Focused Ultrasound-Mediated Brainstem Delivery of Intranasal Administered Agents

Dezhuang Ye{1}, Jingyi Luan{1}, Hannah Pang{1}, Yaoheng Yang{1}, Arash Nazemi{2}, Joshua B. Rubin{2}, Hong Chen{1}

{1}Washington University in St. Louis, United States; {2}Washington University School of Medicine, United States

11:30:00 AM - 1:30:00 PM
A4P-25: MIS: Poster PM - Lung Ultrasound

Session Chair(s): John Hossack (University of Virginia)

Marie Muller (North Carolina State University)

11:30 AM
1039: Effect of Imaging Parameters on the Visualization of Lung Ultrasound B-Line Artifacts

Federico Mento, Libertario Demi

University of Trento, Italy

11:40 AM
1041: Differentiation of Pulmonary Fibrosis by Means of Quantitative Lung Ultrasound Spectroscopy, First Clinical Study in Humans
Tuesday, September 8

11:50 AM
2103: Detecting Lung Nodules by Investigating Ultrasound Multiple Scattering
Roshan Roshankhah{2}, John Blackwell{3}, Mir Ali{2}, Kaustav Mohanty{1}, Thomas Egan{3}, Marie Muller{1}
{1}North Carolina State University, United States; {2}North Carolina State University / University of North Carolina at Chapel Hill, United States; {3}University of North Carolina at Chapel Hill, United States

12:00 PM
2233: Lung Ultrasound for Point-of-Care COVID-19 Pneumonia Stratification: Computer-Aided Diagnostics in a Smartphone. First Experiences
Classifying Semiology from Public Datasets
Aitor Almeida{3}, Aritz Bilbao{3}, Lisa Ruby{2}, Marga Rominger{2}, Diego Lopez-de-Ipiña{3}, Jeremy Dahl{1}, Ahmed El Kaffas{1}, Sergio Sanabria{1}
{1}Stanford University, United States; {2}University Hospital Zurich, Switzerland; {3}University of Deusto, Spain

12:30 PM
1955: A Channel Domain Higher-Order SVD Clutter Rejection Filter for Small Vessel Ultrasound Imaging
Kathryn Ozgun, Brett Byram
Vanderbilt University, United States

12:40 PM
1478: Congruence of Frequency-Dependent Spatial Coherence Between Linear Frequency-Modulated Pulses and Conventional Pulses
James Long{1}, Nick Bottenus{2}, Gregg Trahey{1}
{1}Duke University, United States; {2}University of Colorado Boulder, United States

12:50 PM
2296: Machine Learning-Based Double-Profile Intersection (ML-DoPlo) for Pointwise Prediction of Shear Elastic Modulus Through Support Vector Regression
Nada Rahmouni, Keita Yokoyama, Caterina Gallippi
North Carolina State University / University of North Carolina at Chapel Hill, United States

1:00 PM
Ouwen Huang{1}, James Long{1}, Will Long{1}, Gianmarco Pinton{2}, Gregg Trahey{1}, Mark Palmeri{1}
{1}Duke University, United States; {2}North Carolina State University / University of North Carolina at Chapel Hill, United States

1:01 PM
2323: Adaptive Slow-Time Singular Value Thresholding (SVT) Based on Stein’s Unbiased Risk Estimate (SURE) for Ultrasound Image Random Noise Reduction
Iason Zacharias Apostolakis, Jun Seob Shin, F. Can Meral, Jean-Luc Robert, Ali Sadeghi, Francois Vignon
Philips Research North America, United States

1:20 PM
2340: A Coherence-Based Technique to Separate and Quantify Sources of Image Degradation in Vivo with Application to Transcranial Imaging
Emelina Vienneau, Kathryn Ozgun, Brett Byram
Vanderbilt University, United States

11:30:00 AM - 1:30:00 PM
A4P-26: MIS: Poster PM - Coherence Imaging, Speckle tracking and Clutter Suppression
Session Chair(s): Marie Muller (North Carolina State University)
Muyinatu Bell (Johns Hopkins University)

12:00 PM
1172: Angular Apodization Estimation Using Independent Component Analysis in Coherent Plane-Wave Compounding
Soohan Goudarzi{1}, Amir Asif{2}, Hassan Rivaz{1}
{1}Concordia University, Canada; {2}York University, Canada

11:30 AM
1717: Implementation of Adaptive Transmit Parameter Adjustment in Ultrasound Imaging
Matthew Huber{1}, James Long{1}, Katelyn Flint{1}, Will Long{1}, Nick Bottenus{2}, Gregg Trahey{1}
{1}Duke University, United States; {2}University of Colorado Boulder, United States

11:50 AM
1225: Application of Common Midpoint Gathers to Medical Pulse-Echo Ultrasound for Optimal Coherence and Improved Sound Speed Estimation in Layered Media
Rehman Ali, Dongwoon Hyun, Jeremy Dahl
Stanford University, United States

12:00 PM
1437: Rapid Phase Correction Methods for Focused Ultrasound in the Vertebral Canal
David Martin{2}, Meaghan O’Reilly{1}
Tuesday, September 8

12:10 PM
2350: Correcting Transcranial Ultrasound Aberrations Through Acoustoelectric Derived Time Reversal Operations
Chet Preston, Alexander Alvarez, Russell Witte
University of Arizona, United States

12:20 PM
2387: Estimating Phase Aberration from Noisy Radiofrequency Data in Synthetic Aperture Ultrasound Imaging
Dena Monjazebi, Yuan Xu
Ryerson University, Canada

12:30 PM
1931: Synthetic Aperture Focusing for Extended Depth of Field in MIST
William Walker, Gregg Trahey, Matthew Morgan, Rifat Ahmed
Duke University, United States

11:30:00 AM - 1:30:00 PM
A4P-28: MBB: Poster PM - Volumetric Beamforming & Imaging
Session Chair(s): Carl Herickhoff (Stanford University)

11:30 AM
1056: Improvement of Focusing for Coarse 2D Phased Arrays Using the Biaxial Driving Method: a Numerical Study
Sagid Delgado{1}, Laura Curiel{2}, Samuel Pichardo{2}
{1}Lakehead University, Canada; {2}University of Calgary, Canada

11:40 AM
1439: High-Resolution 3D Ultrasound Imaging Using a Clinical Linear Array
Théotime Lucas{2}, Isabelle Quidu{1}, Lori Briday{2}, Jérôme Gateau{2}
{1}École Nationale Supérieure de Techniques Avancées Bretagne / Université de Bretagne Occidentale, France; {2}Sorbonne Université, CNRS, INSERM, France

11:50 AM
1497: Optimal Virtual Sources Distributions for Coherent Compounding Method in 2D and 3D Echography
Goulven Le Moign{2}, Patrice Masson{2}, Hervé Liebgott{1}, Olivier Bassel{1}, Nicolas Quaegebeur{2}
{1}Creatis - INSIA Lyon, France; {2}Université de Sherbrooke, Canada

12:00 PM
1560: Ultrafast 2D/3D Orthogonal Row-Column Electronic Scanning (uFORCES) with Top-Orthogonal-to-Bottom Electrode (TOBE) 2D Arrays
Roger Zemp, Chris Ceroci, Afshin Kashani Ilkhechi, Mohammad Rahim Sobhani
University of Alberta, Canada

12:10 PM
1600: Image Quality of Conventional and Plane-Wave Imaging in Automated Breast Volume Scanners
Gijs Hendriks{1}, Gert Weijers{1}, Chuan Chen{1}, Madeleine Hertel{2}, Chi-Yin Lee{3}, Peter Duspenbecker{2}, Marcus Radicke{2}, Andy Milkowski{3}, Hendrik Hansen{1}, Chris de Korte{1}
{1}Radboud University Medical Center, Netherlands; {2}Siemens Healthcare GmbH, Germany; {3}Siemens Ultrasound, United States

12:20 PM
1774: Using Sparse Array for 3D Passive Cavitation Imaging
Audrey Sivadon{3}, François Varay{1}, Barbara Nicolas{1}, Jean-Christophe Béra{2}, Bruno Gilles{2}
{1}Creatis - INSA Lyon, France; {2}Inserm, LabTau, U1032, France; {3}Univ Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS, France

12:30 PM
1903: Boundary Array Transducer and Beamforming for Low-Cost Real-Time 3D Imaging
Jesse Yen
University of Southern California, United States

12:40 PM
2245: High Volume Rate 3D Ultrasound Imaging Using Fast-Tilting Reflectors
Zhijie Dong{2}, Shuangliang Li{1}, Matthew Lowerison{2}, Jun Zou{1}, Pengfei Song{2}
{1}Texas A&M University, United States; {2}University of Illinois at Urbana–Champaign, United States

12:50 PM
2250: A Volumetric Transrectal Ultrasound Imaging Robust to Scanning-Angle Disorientation Using Radial Synthetic Aperture Focusing Technique
Hyunwoo Song{2}, Jeeun Kang{1}, Emad Doctor{1}
{1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States

11:30:00 AM - 1:30:00 PM
A4P-29: MBB: Poster PM - Enhancing Images Through Novel Beamforming I
Session Chair(s): Kai Thomenius (Massachusetts Institute of Technology)

11:30 AM
1875: Expanded Beamforming Models for High Dynamic Range Scenarios
Siegfried Schlunk, Brett Byram
Vanderbilt University, United States

11:40 AM
1945: Coherence Estimation Using Random Selection of Spatial Frequencies
Yang Lou, Jesse Yen
University of Southern California, United States

11:50 AM
1985: Revisiting the Wiener Postfilter for Ultrasound Image Quality Improvement
Tuesday, September 8


12:00 PM
1994: Noise and Clutter Reduction with MIST-Based Wiener Filtering
William Walker, Gregg Trahey, Matthew Morgan, Rifat Ahmed
Duke University, United States

12:10 PM
1134: A Retrospective Look at Retrospective Transmit Beamforming
Larry Mo
GE Research, United States

12:20 PM
1786: Decorrelated Compounding in Synthetic Transmit Aperture (STA) Ultrasound Imaging to Detect Low-Contrast Lesions
Na Zhao, Yuan Xu
Ryerson University, Canada

12:30 PM
2107: Application of a Range Doppler Algorithm to Frequency Domain Beamforming of Ultrasound Signals
Marko Jakovljevic, Roger Michaelides, Ettore Biondi, Carl Herickhoff, Dongwoon Hyun, Howard Zebker, Jeremy Dahl
Stanford University, United States

12:40 PM
2108: A New Approach for Passive Cavitation Imaging and Detection
Colin Hill, Mohamed Almekkawy
Pennsylvania State University, United States

12:50 PM
2382: Resolution Improvement in Phantom and in Vivo Through 11 Regularized Coherent Compounding
Jean-Luc Robert(3), Guillaume David(1), Bo Zhang(2), Francois Vignon(3), F. Can Meral(3), Iason Apostolakis(3)
(1)Columbia University, United States; (2)Philips Research, France; (3)Philips Research North America, United States

11:30 AM - 1:30:00 PM
A4P-31: MIM: Poster PM - Machine Learning Applications II
Session Chair(s): James Wiskin (QT Ultrasound Inc.) Roger Zamp (University of Alberta)

11:30 AM
2146: Ultrasonographic Risk Stratification of Indeterminate Thyroid Nodules, a Comparison of an Artificial Intelligence Algorithm with Radiologist Performance
Aylin Tahmasebi(2), Shuo Wang(2), Kelly Daniels(2), Elizabeth Cottrill(2), Ji-Bin Liu(1), Jiajun Xu(1), Andrej Lyschik(2), John Eisenbrey(2)
(1)Nanjing First Hospital, China; (2)Thomas Jefferson University, United States

11:40 AM
1445: Faster Motion Correction of Clinical Contrast-Enhanced Ultrasound Images Using Deep Learning
Ipek Oezdemir(2), Corinne Wessner(1), Colette Shaw(1), John Eisenbrey(1), Kenneth Hoy(2)
(1)Thomas Jefferson University, United States; (2)University of Texas at Dallas, United States

11:50 AM
1467: Deep Variational Network for High Quality 3D Ultrasound Imaging Using Sparse Array
U-Wai Lok, Joshua Trzasko, Ping Gong, Chengwu Huang, Shanshan Tang, Shigao Chen
Mayo Clinic, United States

12:00 PM
2456: Machine Learning Approaches for Quantitative Viscoelastic Response (QVisR) Ultrasound
Joseph Richardson, Christopher Moore, Keerthi Anand, Keita Yokoyama, Caterina Gallippi
North Carolina State University / University of North Carolina at Chapel Hill, United States

11:30:00 AM - 1:30:00 PM
A4P-31: MIM: Poster PM - Machine Learning Applications II
Session Chair(s): James Wiskin (QT Ultrasound Inc.) Roger Zamp (University of Alberta)

11:30 AM
2146: Ultrasonographic Risk Stratification of Indeterminate Thyroid Nodules, a Comparison of an Artificial Intelligence Algorithm with Radiologist Performance
Aylin Tahmasebi(2), Shuo Wang(2), Kelly Daniels(2), Elizabeth Cottrill(2), Ji-Bin Liu(1), Jiajun Xu(1), Andrej Lyschik(2), John Eisenbrey(2)
(1)Nanjing First Hospital, China; (2)Thomas Jefferson University, United States

11:40 AM
1445: Faster Motion Correction of Clinical Contrast-Enhanced Ultrasound Images Using Deep Learning
Ipek Oezdemir(2), Corinne Wessner(1), Colette Shaw(1), John Eisenbrey(1), Kenneth Hoy(2)
(1)Thomas Jefferson University, United States; (2)University of Texas at Dallas, United States

11:50 AM
1467: Deep Variational Network for High Quality 3D Ultrasound Imaging Using Sparse Array
U-Wai Lok, Joshua Trzasko, Ping Gong, Chengwu Huang, Shanshan Tang, Shigao Chen
Mayo Clinic, United States

12:00 PM
2456: Machine Learning Approaches for Quantitative Viscoelastic Response (QVisR) Ultrasound
Joseph Richardson, Christopher Moore, Keerthi Anand, Keita Yokoyama, Caterina Gallippi
North Carolina State University / University of North Carolina at Chapel Hill, United States

12:10 PM
1902: Data Augmentation to Aid 3D Convolutional Neural Network Segmentation of Landmarks in a Small Volumetric Ultrasound Dataset of the Pelvic Floor
Helena Williams(1), Laura Cattani(1), Mohammad Yaqub(3), Tom Vercauteren(2), Jan Deprest(1), Jan D’Hooge(1)
(1)Katholieke Universiteit Leuven, Belgium; (2)King’s College London, United Kingdom; (3)University of Oxford, United Kingdom

12:20 PM
1914: Ultrafast Doppler Image Denoising Using a Convolutional Neural Network with Perceptual Loss (fUS-net)
Matthieu Blons(3), Béatrice Berthon(3), Bruno Osmanski(1), Pierre Lemaire(1), Mickaël Tanter(2)
(1)Iconeus, France; (2)Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; (3)Physics for Medicine Paris, Inserm, ESPCI Paris, CNRS, PSL Research University, France

12:40 PM
2099: CNN-Based Image Reconstruction for Tracking Displacements Under Extreme Conditions
Dimitris Perdios, Manuel Voulantheni, Florian Martinez, Marcel Arditi, Jean-Philippe Thiran
École Polytechnique Fédérale de Lausanne, Switzerland

12:50 PM
2100: High-Dynamic-Range-Sensitive Training Loss for CNN-Based Ultrasound Image Reconstruction
Dimitris Perdios, Manuel Voulantheni, Florian Martinez, Marcel Arditi, Jean-Philippe Thiran
Tuesday, September 8

École Polytechnique Fédérale de Lausanne, Switzerland

01:00 PM
2101: Single-Shot CNN-Based Ultrasound Imaging with Sparse Linear Arrays
Dimitris Perdios, Manuel Vonlanthen, Florian Martinez, Marcel Arditi, Jean-Philippe Thiran
École Polytechnique Fédérale de Lausanne, Switzerland

01:10 PM
2186: Automatic Apical Standard Views Extraction from 3D Ultrasound Volumes Using Deep Learning
David Pasdeloup(2), Andreas Østvik(1), Erik Smistad(1), Thomas Grønli(1), Sindre Hellum Olaisen(1), Lasse Løvstakken(1)
{1}Norwegian University of Science and Technology, Norway; {2}Norwegian University of Science and Technology, Norway
4:15:00 AM – 6:15:00 AM
Student Paper Finalist Session #1 (Groups 1 & 2)

Group 1

04:15 AM: 2352
4D Flow and Wall Shear Stress Using Volumetric Ultrasound Image Velocimetry
Kai Riemer
Department of Bioengineering
Imperial College London

04:25 AM: 1392
SVD Beamforming for Ultrafast Aberration Correction and Real-Time Speed-of-Sound Quantification
Hanna Bendjador
Physics for Medicine Paris, ESPCI, PSL Research University, INSERM, CNRS

04:35 AM: 1762
Determinants of the Propagation Velocity of Natural Shear Waves in Cardiac Shear Wave elastography
Stéphanie Bézy
Katholieke Universiteit Leuven

04:45 AM: 2455
Non-Invasive Optogenetic Activation with Functional Ultrasound
Christian Aurup
Columbia University

04:55 AM: 1500
Transcranial Histotripsy Initiates Immune Cascade in Murine Glioblastoma Tumors and Prolongs Survival
Sarah Duclos
Department of Biomedical Engineering
University of Michigan

05:05 AM: 1197
Photoacoustic Imaging of Organ Fibrosis
Eno Hysi
Department of Physics
Ryerson University

Group 2

05:15 AM: 1492
Tracking Performance in Ultrasound Super-Resolution Imaging
Iman Taghavi
Department of Health Technology
Technical University of Denmark (DTU)

05:25 AM: 1233
Photoacoustic tomography system using a ring-array sensor for early detection of inflammatory arthritis in a human finger
Misaki Nishiyama
Graduate School of Medicine
Kyoto University

05:35 AM: 2301
Enabling fast charging lithium ion batteries with surface acoustic wave devices
An Huang
Department of Material Science and Engineering
University of California San Diego

4:15:00 AM - 6:15:00 AM
B1P-06: MSD: Poster AM - Medical System Design - Needle Applications
Session Chair(s): Alessandro Ramalli (University of Florence)

04:15 AM
1417: A Novel Transducer Construct Enables Miniaturisation of an Ultrasonically Actuated Medical Needle
Yohann Le Bourlout, Emanuele Perra, Gösta Ehnholm, Heikki Nieminen
Aalto University, Finland

04:25 AM
1789: Observations of Nonlinear Acoustic Phenomena Near the Tip of an Ultrasonically Actuated Medical Needle
Emanuele Perra{1}, Eetu Lampsijärvi{2}, Muhammad Arif{1}, Tuomas Puranen{2}, Edward Haeggström{2}, Kenneth Pritzker{3}, Heikki Nieminen{1}
{1}Aalto University, Finland; {2}University of Helsinki, Finland; {3}University of Toronto and Mount Sinai Hospital, Canada

04:35 AM
2178: Modified Surface Structure of an Ultrasonically Actuated Medical Needle Enhances Cavitation
Kai Liu{1}, Tuovinen Pauli{1}, Kenneth P.H. Pritzker{2}, Robin H. A. Ras{1}, Heikki J. Nieminen{1}
{1}Aalto University, Finland; {2}University of Toronto and Mount Sinai Hospital Toronto, Canada

4:15:00 AM - 6:15:00 AM
B1P-08: MEL: Poster AM - Myocardial Elastography
Session Chair(s): Annette Caenen (Ghent University)

04:45 AM
1332: Myocardial Strain Imaging of Murine Left Ventricles by Using Ultrafast High-Frequency Vector Doppler Imaging
Xi-Rui Qiu, Hsin Huang, Chih-Chung Huang
National Cheng Kung University, Taiwan

04:55 AM
1444: Ex-Vivo Study of Inter-Probe Angle in Myocardial Deformation Improvement Using Multi-Perspective Ultrafast Ultrasound
Peiliu Liu, Hein de Hoop, Marloes Sjoerdsm, Hans-Martin Schwab, Richard Lopata
Eindhoven University of Technology, Netherlands

05:05 AM
1567: Cardiac Strain Imaging with Dynamically Skipped Frames: a Simulation Study
Rashid Al Mukaddim, Tomy Varghese
University of Wisconsin-Madison, United States

05:15 AM
1632: Detection of HIFU Lesions in Ex-Vivo Cardiac Tissues Using Passive Elastography
Wednesday, September 9

05:25 AM
1746: The Effect of Different Coherence-Based Beamforming Techniques on the Accuracy of High Frame Rate Speckle Tracking Echocardiography
Marta Orlowska(1), Alessandro Ramalli(2), Stephanie Bézy(1), Giulia Matrone(3), Jens-Uwe Voigt(1), Jan D’Hooge(1)
(1)Katholieke Universiteit Leuven, Belgium; (2)Katholieke Universiteit Leuven / Università degli Studi di Firenze, Belgium; (3)University of Pavia, Italy

05:35 AM
2377: Myocardial Elastography Is Improved with Minimum Variance Beamforming in Silico and in Vivo
Jad El Harake, Changhee Lee, Paul Kemper, Vincent Sayseng, Julien Grondin, Elisa Konofagou
Columbia University, United States

05:45 AM
1052: Myocardial Stretch Propagation Measurement with Focused and Diverging Beams: a Feasibility and Reproducibility Study in Healthy Volunteers
Ali Sadeghi, Francois Vignon, Carolina Amador Carrascal, Patrick Rafter
Philips Research North America, United States

4:15:00 AM - 6:15:00 AM
B1P-07: MEL: Poster AM - Elastography of Muscles
Session Chair(s): Stefan Catheline (INSERM, LabTAU)

04:15 AM
1443: Acoustoelasticity in Transverse Isotropic Soft Tissues: Quantification of Muscles' Nonlinear Elasticity
Marion Bied, Laureïne Jourdain, Jean-Luc Gennisson
BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France

04:25 AM
1719: In Vivo Quantification of Diaphragm Viscoelasticity by Guided Shear Wave Analysis
Thomas Poulard(1), Javier Brum(4), Jérôme Laurent(2), Damien Bachasson(3), Jean-Luc Gennisson(1)
(1)BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; (2)CEA Leti, France; (3)Institut de Myologie, France; (4)University of the Republic, Uruguay

04:35 AM
1791: Viscoelastic Characterization in Muscle Using Group Speed Analysis and Volumetric Shear Wave Elasticity Imaging
Courtney Trutna, Anna Knight, Ned Rouze, Lisa Hobson-Webb, Mark Palmeri, Kathryn Nightingale
Duke University, United States

04:45 AM
1839: 3D Ultrasound Strain Imaging of the Puborectalis Muscle

Shreya Das(1), Rik Hansen(1), Gjs Hendriks(1), Frieda van Den Noort(3), Claudia Manzini(2), Huub van der Vaart(2), Chris de Korte(1)
(1)Radboud University Medical Center, Netherlands; (2)University Medical Center, Netherlands; (3)University of Twente, Netherlands

04:55 AM
2467: Feasibility of Reverberant Shear Wave Elastography for in Vivo Assessment of Skeletal Muscle Viscoelasticity
Estefano Machado, Stefano Romero, Gilmer Flores, Benjamin Castaneda
Pontificia Universidad Católica del Perú, Peru

4:15:00 AM - 6:15:00 AM
B1P-10: MEL: Poster AM - Arterial Wall Elastography
Session Chair(s): Hiroshi Kanai (Tohoku University)

05:05 AM
1587: Quantitative Assessment of Arterial Anisotropy by Spontaneous Pulsatile Waves
Dan Ran, He Li, Wei-Ning Lee
University of Hong Kong, China

05:15 AM
1797: Assessing Carotid Wall Stiffness with Ultrasound After Unilateral Irradiation Therapy
Judith Pruijssen, Joyce Wilbers, Ashwin Wenmakers, Chris de Korte, Johannes Kaanders, Hendrik Hansen
Radboud University Medical Center, Netherlands

05:25 AM
1964: Multimodal Inversion for Shear Modulus and Thickness of Arteries
Tuhin Roy(2), Matthew W. Urban(1), James Greenleaf(1), Murthy N. Guddati(2)
(1)Mayo Clinic, United States; (2)North Carolina State University, United States

05:35 AM
2036: Enhancing Arterial Dispersion Analysis via Mode Control
Nicholas Hugenberg(1), Hadiya Harrigan(1), Tuhin Roy(3), Murthy N. Guddati(3), James Greenleaf(2), Matthew Urban(2), Wilkins Aquino(1)
(1)Duke University, United States; (2)Mayo Clinic, United States; (3)North Carolina State University, United States

05:45 AM
2116: Improving Vascular Strain Imaging Using Ultrafast Multi-Perspective Ultrasound
Hein de Hoop(2), Niels Patterson(2), Marc van Sambeek(1), Hans-Martin Schwab(2), Richard Lopata(2)
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands

05:55 AM
2355: Beam-Steered Shear Wave Elastography to Assess Stiffness Along the Arterial Circumference: a Proof-of-Principle Study
Judith Pruijssen, Chris de Korte, Stein Fekkes, Hendrik Hansen
Radboud University Medical Center, Netherlands
06:05 AM
2424: Measurement of Change in Viscoelasticity of Radial Artery During Flow-Mediated Dilatation Using a Single Ultrasonic Probe
Yuto Shoji(2), Takumi Saito(2), Shohei Mori(2), Mototaka Arakawa(2), Shigeo Ohba(2), Kazuto Kobayashi(1), Hiroshi Kanai(2)
(1)Honda Electronics Co., Ltd., Japan; (2)Tohoku University, Japan

4:15:00 AM - 6:15:00 AM
B1P-11: MEL: Poster AM - Viscoelasticity, Anisotropy, and Nonlinearity I
Session Chair(s): Jean Luc Gennisson (Universite Paris-Saclay)

04:15 AM
1081: Development of a Viscoelastic Phantom for Ultrasound and MR Elastography Satisfying the QIBA Acoustic Specifications
Mikio Suga(1), Masashi Usumura(1), Riwa Kishimoto(2), Takeru Mizoguchi(1), Tadashi Yamaguchi(1), Takayuki Obata(2)
(1)Chiba University, Japan; (2)National Institute of Radiological Sciences, QST, Japan

04:25 AM
1781: Stress Estimation by Ultrasound: a Proof of Concept with Preliminary Results
Yue Xu, Yahua Wang, Wei-Ning Lee
University of Hong Kong, China

04:35 AM
1790: Estimation of Viscoelasticity for Anisotropic Phantom by Dual Ultrasonic Excitation
Mototaka Arakawa, Hibiki Kawamura, Narumi Fukuzawa, Shohei Mori, Hiroshi Kanai
Tohoku University, Japan

04:45 AM
2204: A Comparison of Single- and Multiple- Tracking Location Shear Wave Elastography (SWE) for Viscosity Mapping by System Identification (SI)
Xuefei Chen(1), Rogier Wildeboer(2), Alex Kolen(2), Ruud Sloun(1), Massimo Mischik(1)
(1)Eindhoven University of Technology, Netherlands; (2)Philips Research, Netherlands

04:55 AM
2423: In Vivo Monitoring of Corneal Viscoelasticity in Rabbits with Collagen Cross-Linking Treatment Using Ultrasound Elastography
Linfeng Zhao, Yuxi Zhang, Xin Chen, Siping Chen, Xinyu Zhang
Shenzhen University, China

05:05 AM
1162: Shear Wave Viscoelastography on Fatty Mulard Duck Livers in Vivo
Manish Bhatt(2), Ladan Yazdani(2), Francois Destrempes(2), Louise Allard(2), Bich Nguyen(1), An Tang(2), Guy Cloutier(2)
(1)University of Montreal Hospital, Canada; (2)University of Montreal Hospital Research Center, Canada

05:15 AM
1608: Verification of Effect of Lipid Droplet Distribution in the Liver on Evaluation of Shear Wave Velocity
Daiki Ito(1), Takuma Ogun(2), Kenji Yoshida(1), Tadashi Yamaguchi(1)
(1)Chiba University, Japan; (2)GE Healthcare, Japan

05:25 AM
1810: Imaging Nonlinear Shear Modulus of an Ex Vivo Porcine Kidney Using Multi-Compression and Shear Wave Elastography Techniques
Yuqi Wang, Matthew Urban
Mayo Clinic, United States

05:35 AM
2030: Can Early-Stage Nonalcoholic Steatohepatitis in Mouse Models be Effectively Identified by Shear Wave Elastography as a Non-Invasive Biomarker?
Xiaohong Wang, Tuo Shao, Viksit Kumar, Steven H. Liang, Anthony E. Samir
Massachusetts General Hospital, United States

04:15 AM
1123: Evaluation of Damage on Vascular Endothelial Cells Under Exposure of Burst Wave with Presence of Lipid Bubbles
Tatsuya Saito(3), Masakazu Seki(3), Kiyonobu Nozaki(3), Yoshitaka Miyamoto(1), Daiki Omata(2), Ryo Suzuki(2), Kohji Masuda(3)
(1)National Center for Child Health and Development, Japan; (2)Teikyo University, Japan; (3)Tokyo University of Agriculture and Technology, Japan

04:25 AM
1180: Ultrasonic Modulation of Neural Activity Mediated by Biogenic Nano Gas Vesicles
Xuandi Hou, Zhihai Qiu, Shashwati Kala, Jiejun Zhu, Jinghui Guo, Ting Zhu, Lei Sun
Hong Kong Polytechnic University, China

04:35 AM
1243: All-in-One Nanoplatform Augments in Situ Glioma Therapy Combining Ultrasound-Targeted Microbubble Destruction
Pengying Wu(2), Mingting Zhu(2), Yan Li(2), Yuchen Yuan(2), Lei Zhang(2), Wei Dong(2), Yujin Zong(2), Ayache Bouakaz(1), Mingxi Wan(2)
(1)iBrain, Université de Tours, Inserm, France; (2)Xi’an Jiaotong University, China
04:45 AM
1252: Cell Sonoporation and Lysis Based on Stable Cavitating Bubble Array
(1)Northeastern University, China; (2)Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

04:55 AM
1320: Evaluation of the Lifetime and Size Distribution of Daughter Bubbles Generated by Inertial Cavitation
Yanglin Li{1}, Chunjie Tan{1}, Tao Han{1}, Alfred.C.H Yu{2}, Peng Qin{1}
(1)Shanghai Jiao Tong University, China; (2)University of Waterloo, Canada

05:05 AM
1330: Ultrasound-Mediated Delivery of siRNA Silencing miRNAs Transcription Factor Using Targeted Cationic Polymeric Nanodroplet for Ischemic Stroke Therapy
Wei Dong, Mengfan Qin, Haiyang Yu, Anqi Huang, Mingxi Wan, Yujin Zong
Xi'an Jiaotong University, China

05:15 AM
1359: Biophysical Impact of Acoustic Droplet Vaporization on Single Cell in a Tissue Mimicking Hydrogel Phantom
Lei Zhang{2}, Pengying Ni{2}, Junjie Chen{2}, Yi Feng{1}, Mingxi Wan{2}
(1)Stanford University / Xi'an Jiaotong University, China; (2)Xi'an Jiaotong University, China

05:25 AM
1404: Visualization of Endothelial Cell Damage Caused by Ultrasonically Induced Microbubble Oscillation Inside a Capillary Phantom
Riichiro Shimizu, Nobuki Kudo
Hokkaido University, Japan

05:35 AM
1529: Correction for Spatial Averaging Artifacts for Circularly-Symmetric Nonlinear Pressure Beams Measured with Membrane Hydrophones
Keith Wear{1}, Anant Shah{2}, Christian Baker{2}
(1)Food and Drug Administration, United States; (2)National Physical Laboratory, United Kingdom

05:45 AM
1616: Precise Cellular Drug Delivery and Underlying Mechanisms of Drug-Loaded Microbubbles Cavitation
Ching-Hsiang Fan, Ho-Chun Chang, Chih-Kuang Yeh
National Tsing Hua University, Taiwan

05:55 AM
1840: Single Proton Acoustic Pressure for Dosimetry in Proton Therapy
Floris Deurvorst{1}, Gonzalo Collado Lara{2}, Agisilaos Matalliotakis{1}, Hendrik Vos{2}, Martin Verweij{1}, Nico de Jong{3}, Verya Daeichin{1}
(1)Delft University of Technology, Netherlands; (2)Erasmus University Medical Center / Delft University of Technology, Netherlands

04:15 AM
1273: Delayed and Prolonged Response Effect of Primary Hippocampal Neurons Under High-Frequency Ultrasound Stimulation
Yiming Chen{1}, Wenying Fan{2}, Long Meng{3}, Hairong Zheng{3}, Liming Cheng{1}, Lei Xue{2}, Qian Cheng{1}
(1)Tongji University, China; (2)Fudan University, China; (3)Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

04:25 AM
1529: Correction for Spatial Averaging Artifacts for Circularly-Symmetric Nonlinear Pressure Beams Measured with Membrane Hydrophones
Keith Wear{1}, Anant Shah{2}, Christian Baker{2}
(1)Food and Drug Administration, United States; (2)National Physical Laboratory, United Kingdom

04:35 AM
1597: Transcranial Focused Ultrasonic Stimulation to Modulate the Human Primary Somatosensory Cortex
Julien Lambert, André Mouraux
Université catholique de Louvain, Belgium

04:45 AM
1655: Ultrasonic Stimulation of Dorsal Root Ganglion Neurons at 20 MHz
Sungiae Yoo{1}, Elena Brunet{1}, Eric Debieu{2}, Olivier Macherey{2}, Aziz Moqrich{1}, Emilie Franceschini{2}
(1)Aix-Marseille University / CNRS / IBDM, France; (2)Aix-Marseille University / CNRS / LMA, France

04:55 AM
2248: Intracellular Calcium Influx Induced by Acoustic Radiation Force and its Effects on Stiffness
Wei-Wen Liu, Pei-Yu Chao, Pai-Chi Li
National Taiwan University, Taiwan

05:05 AM
2409: Sonication of in Situ Forming Implants Cause Concentration Dependent Changes to Dye Area
Elizabeth Berndt{2}, Emily Budziszewski{1}, Selva Jeganathan{1}, Agata Exner{1}, Michael C. Kolios{2}
(1)Case Western Reserve University, United States; (2)Ryerson University, Canada

04:15 AM
1229: Changes of Longitudinal Wave Velocity in Wet Collagen Film Due to Glycation
Wednesday, September 9

Keita Yano, Itsuki Michimoto, Shoya Ueno, Mami Matsukawa
Doshisha University, Japan

04:25 AM
1882: Average Sound Speed Estimation Using Backscattered Signals from Inhomogeneous Media and its Error Analysis
Naotaka Nitta{1}, Toshikatsu Washio{2}
{1}National Institute of Advanced Industrial Science and Technology, Japan; {2}National Institute of Advanced Industrial Science and Technology (AIST), Japan

04:35 AM
Mototaka Arakawa{2}, Kanta Nagasawa{2}, Akiyo Fukase{2}, Kohei Higashiyama{2}, Shohei Mor{2}, Satoshi Yashiro{1}, Yasushi Ishigaki{1}, Hiroshi Kanai{2}
{1}Iwate Medical University, Japan; {2}Tohoku University, Japan

04:45 AM
2483: Ultrasound Shear Wave Velocity and Attenuation for Characterizing the Recovery of Contused Muscles
Da-Ming Huang, Shyh-Hau Wang
National Cheng Kung University, Taiwan

04:55 AM
1310: Matrix Pencil Estimation of Guided Waves Dispersion in a Human Skull
Matteo Mazzotti{2}, Christopher Sugino{1}, Alper Erturk{1}, Massimo Ruzzene{2}
{1}Georgia Institute of Technology, United States; {2}University of Colorado Boulder, United States

05:05 AM
1502: Bone Health Assessment Using Synthetic Aperture Ultrasound Reflectometry
Jonathan Richardson{2}, Shakti Davis{2}, Emily Joback{2}, Lars Gjestebry{2}, Viksit Kumar{1}, Anthony Samir{1}
{1}Massachusetts General Hospital, United States; {2}MIT Lincoln Laboratory, United States

05:15 AM
1609: Ultrasound Characterization of Cortical Bone Using Backscatter Statistics
Yasamin Karbalaieasadegh{1}, Quentin Grimal{2}, Marie Muller{1}
{1}North Carolina State University, United States; {2}Sorbonne Université, France

05:25 AM
1680: Applicability of Axial Transmission Technique to the Evaluation of Equine Periostitis
Kazuki Miyashita{1}, Takashi Misaki{1}, Mineaki Takata{1}, Ko Chiba{3}, Hiroshi Mita{2}, Norihisa Tamura{2}, Mami Matsukawa{1}
{1}Doshisha University, Japan; {2}JRA Equine Research Institute, Japan; {3}Nagasaki University, Japan

05:35 AM
1704: Effects of Inflammation on the Longitudinal Wave Velocity in Equine Cortical Bone
Mineaki Takata{1}, Norihisa Tamura{2}, Hiroshi Mita{2}, Tsukasa Nakamura{1}, Kazuki Miyashita{1}, Mami Matsukawa{1}
{1}Doshisha university, Japan; {2}JRA Equine Research Institute, Japan

05:45 AM
1937: Quantitative Ultrasound Characterization of Human Articular Cartilage
Theresa Lye{2}, Omar Gachouch{1}, Lisa Renner{1}, Kay Raum{1}, Jonathan Mamou{2}
{1}Charité – Universitätsmedizin Berlin, Germany; {2}Lizzi Center for Biomedical Engineering, Riverside Research, United States

05:55 AM
2156: Change of Piezoelectric Signal in Water-Saturated Cancellous Bone with Irradiated Ultrasound Frequency
Atsushi Hosokawa
National Institute of Technology, Akashi College, Japan

04:15:00 AM - 6:15:00 AM
B1P-16: MTC: Poster AM - Bone & Cartilage Characterization Using Ultrasound
Session Chair(s): Kay Raum (Charité - Universitätsmedizin Berlin)

04:55 AM
1346: Effective Depth Expansion for Reliable Fatty Liver Assessment Using a Double Nakagami Distribution Model
Kazuki Tamura{2}, Jonathan Mamou{3}, Kenji Yoshida{1}, Hiroyuki Hachiya{4}, Tadashi Yamaguchi{1}
{1}Chiba University, Japan; {2}Hamamatsu University School of Medicine, Japan; {3}Lizzi Center for Biomedical Engineering, Riverside Research, United States; {4}Tokyo Institute of Technology, Japan

04:25 AM
2415: Acoustic Radiation Force Impulse Imaging for Predicting Response of Triple Negative Breast Cancer to Therapy
Amber Moody{3}, Tomasz Czernuszewicz{2}, William Zamboni{3}, Paul Dayton{1}
{1}North Carolina State University / University of North Carolina at Chapel Hill, United States; {2}Sonovol, Inc., United States; {3}University of North Carolina at Chapel Hill, United States

04:35 AM
1086: Detection of Motor Endplates in Deep and Pennate Skeletal Muscles In-Vivo Using Ultrafast Ultrasound
Wednesday, September 9

04:45 AM  
1274: Ultrafast Ultrasound Plane Wave Imaging as a Novel Non-Invasive Technique to Assess Diaphragm Contractility in Response to Phrenic Nerve Magnetic Stimulation  
Thomas Poulard{1}, Martin Dres{4}, Marie-Cécile Niérat{5}, Jean-Yves Hogrel{3}, Thomas Similowski{4}, Damien Bachasson{2}, Jean-Luc Gennisson{1}  
{1}BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; {2}Institut de Myologie, France; {3}Neuromuscular Physiology Laboratory, France; {4}Sorbonne Université / AP-HP, France; {5}Sorbonne Université, INSERM, France

05:05 AM  
1602: Backscattering Analysis for Characterization of Lymphedema Dermis and Hypodermis  
Wakana Saito, Masaaki Omura, Shinsuke Akita, Kenji Yoshida, Tadashi Yamaguchi{1}  
{1}Chiba University, Japan; {2}University of Toyama, Japan

05:15 AM  
1660: Experimental Performance Comparison Between CMUT and Piezoelectric Probes in Measuring Backscatter Anisotropy  
Lenin Chinchilla{2}, Emilie Franceschini{1}, Alessandro Savoia{3}  
{1}Aix-Marseille University / CNRS / LMA, France; {2}Aix-Marseille University / CNRS / Roma Tre University, France; {3}Roma Tre University, Italy

05:35 AM  
1355: Wavelet Transform-Based Photoacoustic Time-Frequency Spectral Analysis for Assessment of Bone Quality  
Weiya Xie{1}, Ting Feng{2}, Dean Ta{3}, Liming Cheng{1}, Qian Cheng{1}{1}Tongji University, China; {2}Nanjing University of Science and Technology, China; {3}Fudan university, China; {4}Fudan university, China.

05:55 AM  
1645: Assessment of Bone Chemical Composition Using Multi-Wavelength Photoacoustic Analysis  
Ting Feng{1,2}, Yejing Xie{2}, Weiya Xie{1}, Jie Yuan{4}, Dean Ta{3}, Xueding Wang{5}, Qian Cheng{2}{1}Tongji University, China; {2}Nanjing University of Science and Technology, China; {3}Fudan university, China; {4}Nanjing University, China; {5}University of Michigan, United States

04:15:00 AM - 6:15:00 AM  
B1P-18: MBF: Poster AM - Directional Flow Estimation  
Session Chair(s): Pauline Muleki Seya (CREATIS / Lyon INSA)

04:15 AM  
1185: High-Frame-Rate 3-D Vector Flow Imaging in the Frequency Domain  
Stefano Rossi{2}, Fabian Fool{1}, Alessandro Ramalli{2}, Piero Tortoli{2}  
{1}Medical Imaging, ImPhy, Applied Sciences / Delft University of Technology, Netherlands; {2}Università degli Studi di Firenze, Italy

04:25 AM  
1284: Influence of the Acoustic Lens on Vector Doppler Measurements Based on Plane Wave Transmission: a Simulation Study  
Stefano Rossi{2}, Alessandro Ramalli{2}, Lorenzo Francalanci{1}, Piero Tortoli{2}  
{1}Esaote S.p.A., Italy; {2}Università degli Studi di Firenze, Italy

04:35 AM  
1388: Murine Intraventricular Vector Flow Mapping from Color-Doppler Velocities  
Florian Vixège{1}, Jeffrey Ketterling{2}, Akshay Shekhar{4}, Orlando Arístizábal{3}, Damien Garcia{1}  
{1}CREATIS - INSIA Lyon, France; {2}Lizzi Center for Biomedical Engineering, Riverside Research, United States; {3}New York University School of Medicine, United States; {4}NYU Langone Health / Regenomer, United States

04:45 AM  
1274: Ultrafast Ultrasound Plane Wave Imaging as a Novel Non-Invasive Technique to Assess Diaphragm Contractility in Response to Phrenic Nerve Magnetic Stimulation  
Thomas Poulard{1}, Martin Dres{4}, Marie-Cécile Niérat{5}, Jean-Yves Hogrel{3}, Thomas Similowski{4}, Damien Bachasson{2}, Jean-Luc Gennisson{1}  
{1}BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; {2}Institut de Myologie, France; {3}Neuromuscular Physiology Laboratory, France; {4}Sorbonne Université / AP-HP, France; {5}Sorbonne Université, INSERM, France

05:05 AM  
1602: Backscattering Analysis for Characterization of Lymphedema Dermis and Hypodermis  
Wakana Saito, Masaaki Omura, Shinsuke Akita, Kenji Yoshida, Tadashi Yamaguchi{1}  
{1}Chiba University, Japan; {2}University of Toyama, Japan

05:15 AM  
1660: Experimental Performance Comparison Between CMUT and Piezoelectric Probes in Measuring Backscatter Anisotropy  
Lenin Chinchilla{2}, Emilie Franceschini{1}, Alessandro Savoia{3}  
{1}Aix-Marseille University / CNRS / LMA, France; {2}Aix-Marseille University / CNRS / Roma Tre University, France; {3}Roma Tre University, Italy

05:35 AM  
1355: Wavelet Transform-Based Photoacoustic Time-Frequency Spectral Analysis for Assessment of Bone Quality  
Weiya Xie{1}, Ting Feng{2}, Dean Ta{3}, Liming Cheng{1}, Qian Cheng{1}{1}Tongji University, China; {2}Nanjing University of Science and Technology, China; {3}Fudan university, China; {4}Fudan university, China.

05:55 AM  
1645: Assessment of Bone Chemical Composition Using Multi-Wavelength Photoacoustic Analysis  
Ting Feng{1,2}, Yejing Xie{2}, Weiya Xie{1}, Jie Yuan{4}, Dean Ta{3}, Xueding Wang{5}, Qian Cheng{2}{1}Tongji University, China; {2}Nanjing University of Science and Technology, China; {3}Fudan university, China; {4}Nanjing University, China; {5}University of Michigan, United States

4:15:00 AM - 6:15:00 AM  
B1P-18: MBF: Poster AM - Directional Flow Estimation  
Session Chair(s): Pauline Muleki Seya (CREATIS / Lyon INSA)

04:15 AM  
1185: High-Frame-Rate 3-D Vector Flow Imaging in the Frequency Domain  
Stefano Rossi{2}, Fabian Fool{1}, Alessandro Ramalli{2}, Piero Tortoli{2}  
{1}Medical Imaging, ImPhy, Applied Sciences / Delft University of Technology, Netherlands; {2}Università degli Studi di Firenze, Italy

04:25 AM  
1284: Influence of the Acoustic Lens on Vector Doppler Measurements Based on Plane Wave Transmission: a Simulation Study  
Stefano Rossi{2}, Alessandro Ramalli{2}, Lorenzo Francalanci{1}, Piero Tortoli{2}  
{1}Esaote S.p.A., Italy; {2}Università degli Studi di Firenze, Italy

04:35 AM  
1388: Murine Intraventricular Vector Flow Mapping from Color-Doppler Velocities  
Florian Vixège{1}, Jeffrey Ketterling{2}, Akshay Shekhar{4}, Orlando Arístizábal{3}, Damien Garcia{1}  
{1}CREATIS - INSIA Lyon, France; {2}Lizzi Center for Biomedical Engineering, Riverside Research, United States; {3}New York University School of Medicine, United States; {4}NYU Langone Health / Regenomer, United States
Wednesday, September 9

04:45 AM
1470: Tensor Velocity Imaging with Motion Correction
Lasse Thurmann Jørgensen, Mikkel Schou, Matthias Bo Stuart, Jørgen Arendt Jensen
Technical University of Denmark, Denmark

04:55 AM
1598: 3-D Directional Transverse Oscillations
Synthetic Aperture Tensor Velocity Imaging with a 1024 Element Matrix Probe in a Flow Phantom
Fatemeh Makouei{1}, Babak Mohammadzadeh Asl{1}, Lasse Thurmann Jørgensen{2}, Borisлав Gueorguiev Tomaev{2}, Matthias Bo Stuart{2}, Jørgen Arendt Jensen{2}
{1}Tarbiat Modares University, Iran; {2}Technical University of Denmark, Denmark

05:05 AM
1779: Clutter Removal for High Frame Rate Vector Flow Imaging with a 2-D Sparse Array
Fabian Fool{3}, Stefano Rossi{4}, Alessandro Ramalli{4}, Hendrik Vos{2}, Enrico Boni{4}, Nico de Jong{1}, Martin Verweij{3}
{1}Erasmus University Medical Center / Delft University of Technology, Netherlands; {2}Erasmus University Medical Center / University Medical Center Rotterdam, Netherlands; {3}Medical Imaging, ImPhys, Applied Sciences / Delft University of Technology, Netherlands; {4}Università degli Studi di Firenze, Italy

05:15 AM
2133: On the Choice of the f-Number in Ultrafast Vector Doppler
Vincent Perrot{2}, Damien Garcia{1}
{1}CREATIS - INSA Lyon, France; {2}Polytechnique Montréal, Canada

05:25 AM
2281: Vector-Flow Imaging in Convex-Array Configurations
Adrien Besson, Frédéric Wintzenrieth, Claude Cohen-Bacrie
E-Scopics SAS, France

05:35 AM
Naoya Kanno, Takuro Ishii, Yoshifumi Saijo
Tohoku University, Japan

4:15:00 AM - 6:15:00 AM
B1P-19: MBF: Poster AM - Ultrasound Localization Microscopy
Session Chair(s): Simona Turco (Eindhoven University)

04:15 AM
1369: Intraoperative Ultrasound Localization Microscopy of Human Spinal Cord: an In-Vivo Feasibility Study
Yaya Hao{2}, Linkai Jing{1}, Qiong He{2}, Jianwen Luo{2}
{1}Tsinghua Changgung Hospital, China; {2}Tsinghua University, China

04:25 AM
1684: A Deep Learning Method for Reduction of Microbubble Accumulation Time in Ultrasound Localization Microscopy
Xi Zhang, Yi Yang, Jingke Zhang, Qiong He, Jianwen Luo
Tsinghua University, China

04:35 AM
1785: Automatic and Robust Inflammation Assessment for Crohn’s Disease Using Ultrasound Microvessel Imaging
Shanshan Tang{1}, Chengwu Huang{1}, Ping Gong{1}, U-Wai Lok{1}, Chenyun Zhou{2}, Lulu Yang{2}, Kate Knoll{1}, Britta Thomforde{1}, Ida Smith{1}, Shannon Shedy{1}, John Knudsen{1}, David Bruining{1}, Shigao Chen{1}
{1}Mayo Clinic, United States; {2}Shenzhen Mindray Bio-Medical Electronics Co. Ltd, China

04:45 AM
1917: In-Human Super-Resolution Ultrasound Microvessel Imaging on a Clinical Ultrasound Scanner: a Pilot Study
Chengwu Huang{1}, Wei Zhang{3}, Ping Gong{1}, U-Wai Lok{1}, Shanshan Tang{1}, Xirui Zhang{2}, Lei Zhu{2}, Maodong Sang{2}, Lili Wu{3}, Rongqin Zheng{3}, Shigao Chen{1}
{1}Mayo Clinic, United States; {2}Shenzhen Mindray Bio-Medical Electronics Co. Ltd, China; {3}Third Affiliated Hospital of Sun Yat-Sen University, China

04:55 AM
1932: Multi-Resolution Data Processing for Accelerated and Robust Ultrasound Localization Microscopy
Matthew Lowerison{2}, Xi Chen{2}, Chengwu Huang{1}, Wei Zhang{2}, Shanshan Tang{1}, Nathiya Chandra Sekaran{2}, Daniel Llano{2}, Shigao Chen{1}, Pengfei Song{2}
{1}Mayo Clinic, United States; {2}University of Illinois at Urbana–Champaign, United States

05:05 AM
1954: Therapy Evaluation of Chemotherapy and Anti-Angiogenic Treated Colorectal Carcinoma Xenografts in Chicken Embryo via Ultrasound Localization Microscopy
Matthew Lowerison, Wei Zhang, Pengfei Song
University of Illinois at Urbana–Champaign, United States

05:15 AM
2196: Super-Resolution Ultrasound Localization Microscopy on a Rabbit Liver VX2 Tumor Model: an Initial Feasibility Study
Matthew Lowerison, Wei Zhang, Zhijie Dong, Rita Miller, Krista Keller, Pengfei Song
University of Illinois at Urbana–Champaign, United States

05:25 AM
2307: Can You Trust Your Ultrasound Microvascular Images?
Rohit Nayak, Mostafa Fatemi, Azra Alizad
Mayo Clinic, United States
Wednesday, September 9

05:35 AM
2337: Motion-Robust Background Noise Bias Suppression for Contrast-Free Ultrasound Microvascular Imaging
Rohit Nayak, Mostafa Fatemi, Azra Alizad
Mayo Clinic, United States

4:15:00 AM - 6:15:00 AM
B1P-20: MBF: Poster AM - Blood Flow Segmentation/Processing
Session Chair(s): Magnus Cinthio (Lund University)

04:15 AM
1309: Plane Wave Compounding with Blind Source Separation Framework for Perfusion Imaging During Tissue Acceleration
Geraldi Wahyulaksana(2), Luxi Wei(2), Jason Voorneveld(2), Antonius van der Steen(2), Nico de Jong(1), Hendrik Vos(2)
(1)Erasmus University Medical Center / Delft University of Technology, Netherlands; (2)Erasmus University Medical Center / University Medical Center Rotterdam, Netherlands

04:25 AM
1356: Visualization of Micro Flow Channel by Plane Wave Imaging and Temporal Variance
Ryo Nagaoka(2), Benjamin Meirza(1), Maria Evertsson(1), Magnus Cinthio(1), Hideyuki Hasegawa(2)
(1)Lund University, Sweden; (2)University of Toyama, Japan

04:35 AM
1866: Adaptive Transmit Beamforming for Robust Flow Monitoring Using Cross-Sectional Doppler
Luuk van Knippenberg(2), Ruud van Sloun(2), Arthur Bouwman(1), Sergei Shulepov(3), Massimo Mischi(2)
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands; (3)Eindhoven University of Technology / Philips Research, Netherlands

04:45 AM
1984: Left Ventricular High Frame Rate EchoPIV in Patients – Parameter Optimization
Jason Voorneveld(1), Lana Keijzer(1), Mihai Strachinaru(1), Daniel Bowen(1), Jeffrey Goei(1), Ferit Mutluer(1), Folkert Ten Cate(1), Antonius van der Steen(2), Nico de Jong(2), Hendrik Vos(1), Annemien van Den Bosch(1), Johan G. Bosch(1)
(1)Erasmus University Medical Center, Netherlands; (2)Erasmus University Medical Center / Delft University of Technology, Netherlands

04:55 AM
1987: Ultrafast Doppler Imaging Noise Suppression with Spectrum Desymmetrization, Bias Suppression, and Blind Deconvolution
Guillaume Lacoin(4), Ilyess Zemmoura(4), Jean Luc Gennisson(1), Denis Kouamé(2), Jean-Pierre Remenieras(3)
(1)BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; (2)IRIT / Université de Toulouse, France; (3)Université de Tours, Inserm, iBrain, France; (4)Université de Tours, Inserm, UMR 1253, iBrain, France

05:05 AM
2131: Background Noise Reduction in Ultrafast Power Doppler Imaging by Transmit Sub-Aperture Processing (TSAP)
Rifat Ahmed, Wentao Hu, Marvin Doyley
University of Rochester, United States

05:15 AM
2392: Contrast-Free Ultrasound Microvascular Imaging with Optimal Clutter Shrinkage to Enhance Tumor Vascular Quantification
Mahsa Bataghva, Danielle Johnston, Nicholas Power, Silvia Penuela, James Lacefield
Western University, Canada

05:25 AM
2472: Sensitivity and Specificity Analysis of Singular Value Decomposition and Independent Component Analysis Clutter Filters
Abbie Weeks, Jaime Tierney, Brett Byram
Vanderbilt University, United States

4:15:00 AM - 6:15:00 AM
B1P-22: MPA: Poster AM - Photoacoustic Ultrasound Frequency Analysis & Image Guided Interventions
Session Chair(s): Sophinese Iskander-Rizk (Erasmus MC)

04:15 AM
1169: Simulation and Experimental Validation of Photoacoustic Spectral Analysis for Quantifying Vascular Bleeding in Early Cancer Treatment Monitoring
Muhannad Fadhel, Eno Hysi, Jason Zalev, Sila Appak-Baskoy, Yanji Wang, Michael C. Kolios
Ryerson University, Canada

04:25 AM
1358: Photoacoustic Spectral Analysis for Quick Identification and Grading of Prostate Cancer
Shiyiing Wu(1), Yingna Chen(1), Shengsong Huang(2), Chengdang Xu(2), Denglong Wu(2), Qian Cheng(1)
(1)Tongji University, China; (2)Tongji Hospital, China

04:35 AM
1794: Robot-Assisted Image Guidance for Prostate Nerve-Sparing Surgery
Hamid Moradi(2), Emad Doctor(1), Septimiu Salcudean(3)
(1)Johns Hopkins Medical Institute, United States; (2)Johns Hopkins University, United States; (3)University of British Columbia, Canada
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>04:45 AM</td>
<td>2043: Dual-Wavelength Photoacoustic-Guided</td>
<td>Alycen Wiacek(2), Karen C. Wang(1), Harold Wu(1), Muyinatu A. Lediju Bell(2)</td>
<td>(1) Johns Hopkins Medical Institute, United States;</td>
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<tr>
<td></td>
<td>Hysterecmy Demonstration with a Human Cadaver</td>
<td></td>
<td>(2) Johns Hopkins University, United States</td>
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<tr>
<td>04:55 AM</td>
<td>2059: Experimental Cadaver Investigation of</td>
<td>Michelle Graham(2), Jiaqi Huang(2), Francis Creighton(1), Muyinatu A. Lediju Bell(2)</td>
<td>(1) Johns Hopkins Medical Institute, United States;</td>
</tr>
<tr>
<td></td>
<td>Ocular Receiver Location for Photoacoustic Imaging of Intracranial Blood Vessels</td>
<td></td>
<td>(2) Johns Hopkins University, United States</td>
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<tr>
<td>05:05 AM</td>
<td>2085: Acoustic Frequency-Based Differentiation of Photoacoustic Signals from Surgical Biomarkers</td>
<td>Eduardo Gonzalez(1), Muyinatu A. Lediju Bell(2)</td>
<td>(1) Johns Hopkins Medical Institute, United States;</td>
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<td></td>
<td>(2) Johns Hopkins University, United States</td>
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<tr>
<td>05:05 AM</td>
<td>2161: The Hybrid Optical and Photoacoustic Microscopy: a Novel System to Image Morphological and Photoacoustic Characteristics of Cells</td>
<td>Ryo Shintate(1), Ryo Nagaoka(2), Takuro Ishii(1), Yoshifumi Sajo(1)</td>
<td>(1) Tohoku University, Japan; (2) University of Toyama, Japan</td>
</tr>
<tr>
<td>05:25 AM</td>
<td>2101: Aptamer-Decorated Gold Nanoparticles for the Detection of Matrixmetalloproteinase-9 Through Molecular Photoacoustic Imaging</td>
<td>Jinhwan Kim(1), Laura Suggs(2), Stanislav Emelianov(1)</td>
<td>(1) Georgia Institute of Technology, United States;</td>
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<td>(2) University of Texas at Austin, United States</td>
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<tr>
<td>05:35 AM</td>
<td>2174: Real-Time Label-Free Ultraviolet Photoacoustic Remote Sensing Based Virtual Histopathology</td>
<td>Nathaniel Haven, Brendon Restall, Pradyumna Kedarisetti, Roger Zemp</td>
<td>University of Alberta, Canada</td>
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<tr>
<td>05:45 AM</td>
<td>2145: Photoacoustic Microscopy Using a Scanning Fourier Transform Spectrometer</td>
<td>Takashi Buma</td>
<td>Union College, United States</td>
</tr>
<tr>
<td>04:15 AM</td>
<td>1048: Unsupervised Deconvolution Neural Network for High Quality Ultrasound Imaging</td>
<td>Shujaat Khan, Jaeyoung Huh, Jong Chul Ye</td>
<td>Korea Advanced Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>04:25 AM</td>
<td>1486: Automatic Dynamic Range Estimation for Ultrasound Image Visualization and Processing</td>
<td>Kristen Meiburger(1), Silvia Seoni(1), Giulia Matrone(2)</td>
<td>(1) Politecnico di Torino, Italy; (2) University of Pavia, Italy</td>
</tr>
<tr>
<td>04:35 AM</td>
<td>1733: Block-Wise Ultrasound Image Deconvolution from Fundamental and Harmonic Images</td>
<td>Mohamad Hourani(4), Adrian Basarab(2), Francois Varray(1), Denis Kouame(2), Jean-Yves Tournet(3)</td>
<td>(1) Creatis - INSA Lyon, France; (2) IRIT / Universite de Toulouse, France; (3) IRIT / University of Toulouse, France; (4) University of Toulouse, France</td>
</tr>
<tr>
<td>04:45 AM</td>
<td>1873: Efficient GPU Implementation of 3D Spectral Domain Synthetic Aperture Imaging</td>
<td>Marcin Lewandowski(2), Piotr Jarosik(2), Yuriy Tasinkevych(1), Mateusz Walczak(2)</td>
<td>(1) Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland; (2) us4us Ltd., Poland</td>
</tr>
<tr>
<td>04:55 AM</td>
<td>1934: Deep Adaptive Beamforming: Reproducibility and Generalization</td>
<td>Naama Kessler(4), Ben Luijten(1), Oded Drori(4), Shai Tejman Yarden(3), Israel Aharony(2), Ruud Van Sloun(1), Yonina C. Eldar(4)</td>
<td>(1) Eindhoven University of Technology, Netherlands; (2) Haemek Medical Center, Israel; (3) Sheba Medical Center, Israel; (4) Weizmann Institute of Science, Israel</td>
</tr>
<tr>
<td>05:05 AM</td>
<td>2259: Programmable Single-Chip Solution of a Wearable Bladder Ultrasound Imaging System</td>
<td>Hyeyun Han, Ilseob Song, Jongmin Yoon, Yangmo Yoo</td>
<td>Sogang University, Korea</td>
</tr>
<tr>
<td>05:15 AM</td>
<td>2356: Probe Localization in Multi-Perspective Ultrasound Using a Radon Domain Tracking Approach</td>
<td>Hans-Martin Schwab, Frans van de Vosse, Richard Lopata</td>
<td>Eindhoven University of Technology, Netherlands</td>
</tr>
<tr>
<td>05:25 AM</td>
<td>1523: Localization of a Scatterer in 3D with a Single Measurement and Single Element Transducer</td>
<td>Luzhen Nie(4), Joshua Tjun Minh Moo(2), Matthieu Toulemonde(1), Meng-Xing Tang(1), Steven Freear(4), Sevan Harput(3)</td>
<td>(1) Imperial College London, United Kingdom; (2) King's College London, United Kingdom; (3) London South Bank University / Imperial College London, United Kingdom; (4) University of Leeds, United Kingdom</td>
</tr>
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<td>05:35 AM</td>
<td>1523: Localization of a Scatterer in 3D with a Single Measurement and Single Element Transducer</td>
<td>Luzhen Nie(4), Joshua Tjun Minh Moo(2), Matthieu Toulemonde(1), Meng-Xing Tang(1), Steven Freear(4), Sevan Harput(3)</td>
<td>(1) Imperial College London, United Kingdom; (2) King's College London, United Kingdom; (3) London South Bank University / Imperial College London, United Kingdom; (4) University of Leeds, United Kingdom</td>
</tr>
</tbody>
</table>
Wednesday, September 9

2005: Deconvolution-Based Super-Resolution Photoacoustic Microscopy for Visualizing the Internal Structure of Cells
Ryo Shintate{1}, Ryo Nagaoka{2}, Takuro Ishii{1}, Yoshifumi Sajo{1}
{1}Tohoku University, Japan; {2}University of Toyama, Japan

04:55 AM
1649: A Novel Adaptive Non-Local Means Filtering Technique for Ultrasound Image Speckle Reduction
Wei-Hsiang Shen, Meng-Lin Li
National Tsing Hua University, Taiwan

05:05 AM
1154: Joint Fusion and Registration of Magnetic Resonance and Ultrasound Images
Oumaima El Mansouri{2}, Adrian Basarab{1}, Fabien Vidal{3}, Denis Kouamé{1}, Jean-Yves Tourneret{2}
{1}IRIT / Université de Toulouse, France; {2}IRIT / University of Toulouse, France; {3}Paule de Viguié Hospital Toulouse, France

05:15 AM
1601: CNN-Based Semantic Segmentation Network for Multiple Fetal Biometric Measurements
Hyunwoo Cho{2}, Jinhum Kang{2}, Sunyeob Chang{1}, Yangmo Yoo{2}
{1}Alphinion Medical Systems Co., Ltd., Korea; {2}Sogang University, Korea

05:25 AM
1687: Scanner Independent Deep Learning-Based Segmentation Framework Applied to Mouse Embryos
Orlando Aristizabal{3}, Ziming Qiu{2}, Tongda Xu{2}, Hannah Goldman{3}, Jonathan Mamou{1}, Yao Wang{2}, Jeffrey Ketterling{1}, Daniel Turnbull{3}
{1}Lizzi Center for Biomedical Engineering, Riverside Research, United States; {2}New York University, United States; {3}New York University School of Medicine, United States

05:35 AM
1926: Multi-task learning for ultrasound image formation and segmentation directly from raw in vivo data
Manish Bhatt, Arun Asokan Nair, Kelley M Kempski, Muyinatu A Lediju Bell
Johns Hopkins University, United States

05:45 AM
1939: A Generalized Approach for Automatic Segmentation of Arteries in Transverse Ultrasound Images Using CNNs
Joeri de Ruiter{2}, Frans van de Vosse{2}, Marc van Sambeek{1}, Richard Lopata{2}
{1}Catharina Hospital, Netherlands; {2}Eindhoven University of Technology, Netherlands

05:55 AM
2394: BEASnet: a Shape Prior-Based Deep Convolutional Neural Network for Left Ventricular Segmentation in 2D Echocardiography
Hongnam Kim, Jinhum Kang, Yangmo Yoo
Sogang University, Korea
<table>
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<th>Time</th>
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<tr>
<td>4:15:00 AM</td>
<td>B1P-27: MIS: Poster AM - Speed of Sound Imaging</td>
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<td>4:15:00 AM</td>
<td>B1P-28: MTH: Poster AM - Blood-Brain Barrier &amp; Brain Applications</td>
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<td>4:15:00 AM</td>
<td>B1P-29: MTH: Poster AM - Ultrasound-Mediated Delivery I</td>
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<td>04:15 AM</td>
<td>1021: Ultrasound DMAS Beamforming for Estimation of Tissue Speed of Sound in Multi-Angle Plane-Wave Imaging</td>
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<td>04:25 AM</td>
<td>1173: Stratified-Medium Sound Speed Profiling for CPWC Ultrasound Imaging</td>
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<td>04:35 AM</td>
<td>1341: Fourier Domain Remapping Technique for the Speed of Sound Estimation Using Image Data</td>
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<td>04:45 AM</td>
<td>1823: Refraction-Aware Integral Operator for Speed-of-Sound Pulse-Echo Imaging</td>
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<td>04:55 AM</td>
<td>2473: Displacement Estimation Methods for Speed-of-Sound Imaging in Pulse-Echo</td>
</tr>
<tr>
<td>04:55 AM</td>
<td>1016: Impact of Ultrasound-Induced Blood-Brain Barrier Opening on the Distribution of Full Monoclonal Antibody Cetuximab</td>
</tr>
<tr>
<td>05:05 AM</td>
<td>1327: Ultrasound Stimulation Induced Augmented Exosome Release from Astrocytes and its Therapeutic Effects in Amyloid-β Oligomers Toxicated Neurons</td>
</tr>
<tr>
<td>05:15 AM</td>
<td>1071: MR-Guided Neuromodulation of Visual Networks in Rhesus Monkey</td>
</tr>
<tr>
<td>05:25 AM</td>
<td>1249: Multifocal Acoustic Holograms for Deep-Brain Neuromodulation and BBB Opening</td>
</tr>
<tr>
<td>05:35 AM</td>
<td>1644: Modeling the Cortical Response of Transcranial Ultrasound Stimulation Based on Neural Mass Model</td>
</tr>
<tr>
<td>05:45 AM</td>
<td>1679: Safety Assessment Over 48 Hours After Delivering Drugs Across the Blood-Brain Barrier Using Rapid Short-Pulse Sequences in Vivo</td>
</tr>
<tr>
<td>05:55 AM</td>
<td>1697: Noninvasive Ultrasound Stimulation Mediates Synaptic Plasticity of Nucleus Accumbens for Treatment of Drug Addiction</td>
</tr>
</tbody>
</table>

Somayeh Akbari Saghezchi{2}, Mahdi Tabassian{2}, Joao Pedro{1}, Sandra Queiros{3}, Jan D'Hoooge{2}  
{1}INESC TEC, Portugal; {2}Katholieke Universiteit Leuven, Belgium; {3}University of Minho, Portugal

Xiaojing Long, Yangzi Qiao, Chao Zou, Teng Ma, Weibao Qiu, Jo Lee, Changjun Tie, Lijuan Zhang, Xin Liu, Hairong Zheng  
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

Diana Andres, Sergio Jimenez-Gambin, Noé Jimenez, Francisco Camarena  
Universitat Politècnica de València, Spain

Zhengrong Lin, Lili Niu, Long Meng, Tianyuan Bian, Xiaowei Huang, Hairong Zheng  
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; {2}Yanshan University, China

Sophie V. Morse, Tiffany G. Chan, Nicholas J. Long, James J. Choi  
Imperial College London, United Kingdom

Zhengrong Lin, Lili Niu, Long Meng, Tianyuan Bian, Xiaowei Huang, Hairong Zheng  
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; {2}Yanshan University, China

Yan Li{2}, Mingting Zhu{2}, Meiling Liang{2}, Yujin Zong{2}, Ayache Bouakaz{1}, Mingxi Wan{2}  
{1}Brain, Université de Tours, Inserm, France; {2}Xi’an Jiaotong University, China
04:35 AM
Mihnea Vlad Turcanu{3}, Alexandru Moldovan{4}, Stavros Vlatakis{1}, Driton Vlasisliu{1}, Maria Thanou{1}, Inke Nächte{2}, Sandy Cochran{3}
{1}King’s College London, United Kingdom; {2}University of Dundee, United Kingdom; {3}University of Glasgow, United Kingdom; {4}University of Strathclyde, United Kingdom

04:45 AM
1961: Ultrasound Activation of Neuron Bound Piezoelectric Nanoparticles Induces Calcium and Glutamate Release
Tomas Jordan, Scott Alpizar, Mikaela O’Brien, Michael Hoppa, Geoffrey Luke
Dartmouth College, United States

04:55 AM
2205: Noninvasive Targeted Delivery of Nucleic Acids to Brain Cancer Cells Using Focused Ultrasound and Cationic Nanoparticles
Yutong Guo{2}, Jinhwan Kim{2}, Anastasia Velalopoulou{4}, Midhun Ben Thomas{1}, Yongtae Kim{2}, Daniel Pomeranz Krummel{3}, Soma Sengupta{3}, Tobey MacDonald{1}, Costas Arvanitis{2}
{1}Emory University, United States; {2}Georgia Institute of Technology, United States; {3}University of Cincinnati, United States; {4}University of Pennsylvania, United States

4:15:00 AM - 6:15:00 AM
B1P-30: MTH: Poster AM - Novel Devices & Methods for Therapy Delivery & Monitoring
Session Chair(s): Cyril Lafon (INSERM, LabTAU)

05:05 AM
1035: Modified Passive Acoustic Mapping with Diagnostic-Arrow Angular Response for Cavitational Monitoring During HIFU Ablation in Ex Vivo Tissue
Chunqi Li{1}, Harry Clegg{1}, Thomas Carpenter{1}, Luzhen Nie{1}, Steven Freear{1}, David Cowell{1}, James McLaughlan{2}
{1}University of Leeds, United Kingdom; {2}University of Pennsylvania, United States

05:15 AM
1339: Reduced Length/Width Ratio of Thermal Ablation Induced by High Intensity Focused Acoustic Vortex
Shifang Guo, Xuyan Guo, Zhen Ya, Pengying Wu, Mingxi Wan
Xi’an Jiaotong University, China

05:25 AM
1585: Robust Artifacts Suppression in Ultrasound Passive Cavitation Mapping Using Multi-Apodization with Cross-Correlation
Shukuan Lu, Yan Zhao, Xiaobo Yu, Renyan Li, Diya Wang, Bo Zhang, Mingxi Wan
Xi’an Jiaotong University, China

05:35 AM
1627: Mixed Low Energy Ultrasound (LEUS)/Patch Clamp Platform for the Study of Electrophysiological Mechanisms Involved in Neurostimulation/Neuromodulation by LEUS
Ivan Suarez Castellanos, Magali Perier, Jeremy Vion-Bailly, Jean-Yves Chapelon, Apoutou N’Djin
INSERM U1032 / LabTAU, France

05:45 AM
Sara Lee{2}, Pilsu Kim{1}, Euisuk Chung{2}, Tai-Kyong Song{2}
{1}Samsung electronics, Korea; {2}Sogang University, Korea

05:55 AM
2177: Investigation on Ultrasonic Exposure Sequence by Luminol Sonochemiluminescence for Highly Effective Sonodynamic Treatment
Kenki Tsukahara, Shin-Ichiro Umemura, Shin Yoshizawa
Tohoku University, Japan
Wednesday, September 9

04:55 AM
2453: Photosensitizers Carbon Dots-Based Microbubbles with Ultrasound in Sonodynamic Therapy
Nan Wu, Chih-Kuang Yeh
National Tsing Hua University, Taiwan

4:15:00 AM - 6:15:00 AM
B1P-32: TMI: Poster AM - Biomedical Diagnostic & Imaging Transducers
Session Chair(s): Weibao Qiu (Shenzhen Institutes of Advanced Technology)

04:15 AM
1006: Design and Fabrication of a 20 MHz Endoscopic Transducer with Enhanced Sensitivity
Jie Xu{1}, Zhile Han{1}, Chen Yang{2}, Ninghao Wang{2}, Zhangqian Li{2}, Yaoyao Ci{2}, Xiaohua Jian{2}
{1}Fudan University, China; {2}Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences, China

04:25 AM
1236: High Definition Intravascular Ultrasound Imaging (HD-IVUS): Ultrahigh Frequency (>100MHz) Transducer and Flushing Strategy
Suzi Liang, Zhiqiang Zhang, Min Su, Hairong Zheng, Weibao Qiu
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

04:35 AM
1256: Design and Fabrication of Focused Ultrasonic Transducers Using P(VDF-TrFE)/BT Single-Crystal Micro-Platelets Composite Film
Weicen Chen, Xiongjie Li, Liyuan He, Yiping Wang, Chunling Zhu, Dawei Wu
Nanjing University of Aeronautics and Astronautics, China

04:55 AM
2139: A Dual-Mode IVUS Catheter for Cardiac Output Monitoring
Shilin Hou, Chunxiao Zou, Yi Li, Hu Tang, Siping Chen, Jue Peng
Shenzhen University, China

05:05 AM
2224: Development of Two-Frequency Switchable Array Probe Consisting of Piezoelectric Elements with Polarization-Inverted Structure for Portable Ultrasonic Equipment
Ryo Nagaoka{2}, Shin-Ichiro Umemura{1}, Hideyuki Hasegawa{2}
{1}Tohoku University, Japan; {2}University of Toyama, Japan

05:15 AM
2395: Body Conformal Linear Ultrasound Array for Combined Ultrasound and Photoacoustic Imaging
Kaustav Roy{1}, Sumit Agrawal{2}, Ajay Dangi{2}, Tanning Liu{2}, Haoyang Chen{2}, Thomas Jackson{2}, Rudra Pratap{1}, Sri-Rajasekhar Kothapalli{2}
{1}Indian Institute of Science, India; {2}Pennsylvania State University, United States

4:15:00 AM - 6:15:00 AM
B1P-33: TTT: Poster AM - Biomedical Therapeutic Transducers
Session Chair(s): Charles Emery (Ulthera Inc.)

04:15 AM
1194: Dual-Mode Ultrasound 2D Array for Image-Guided Therapy Application
Zhiqiang Zhang{2}, Rong Liu{2}, Min Su{2}, Ruijin Cai{2}, Fei Li{3}, Thomas R. Shrout{1}, Hairong Zheng{2}, Weibao Qiu{2}
{1}Pennsylvania State University, United States; {2}Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; {3}Xi'an Jiaotong University, China

04:25 AM
1563: Pattern Interference Radiation Force (PIRF) Based on Large-Scale Focused Transducer Using Fresnel Lens
Young Hun Kim{1}, Ki Chang Kang{1}, Kamyar Firouzi{3}, Kwan Kyu Park{2}, Pierre Khuri-Yakub{3}
{1}Hanyang University, Korea; {2}Hanyang University / Stanford University, Korea; {3}Stanford University, United States

04:35 AM
1570: Transcranial Ultrasound Using Leaky Lamb Waves by an Array of Wedge Transducer
Ki Chang Kang{1}, Young Hun Kim{1}, Kwan Kyu Park{2}, Kamyar Firouzi{3}, Butrus Thomas Khuri-Yakub{3}
{1}Hanyang University, Korea; {2}Hanyang University / Stanford University, Korea; {3}Stanford University, United States

04:45 AM
1986: A PZT-PVDF Stacked Transducer for Acoustic Wavelet Therapy and Monitoring
Zheng Jiang{1}, Robert Dickinson{1}, Timothy Hall{2}, James Choi{1}
{1}Imperial College London, United Kingdom; {2}University of Michigan, United States

04:55 AM
2050: Rotating Dual-Mode Ultrasonic Transducer for High Intensity Ultrasound Treatment and High Resolution Imaging
Hyunhee Kim, Hae Gyun Lim, Hyung Ham Kim
Pohang University of Science and Technology, Korea

05:05 AM
2052: Precise Control of Ultrasound Stimulation/Treatment by a High-Frequency Focused Ring Transducer
Hyunhee Kim, Hae Gyun Lim, Jinhee Yoo, Hyung Ham Kim
Pohang University of Science and Technology, Korea

05:15 AM
2060: Enhanced Modelling of a 1-D Linear Phased Ultrasonic Array for Intracorporeal Sonoporation
Alexandru Moldovan{2}, Zhen Qiu{2}, David Lines{2}, Sandy Cochran{1}, Anthony Gachagan{2}
{1}University of Glasgow, United Kingdom; {2}University of Strathclyde, United Kingdom
Wednesday, September 9

05:25 AM
2222: A Hand-Held Magnetic-Acoustic Probe for Targeted Drug Delivery with Integrated Treatment Monitoring
Bernard Shieh(2), Alec Thomas(2), Lester Barnsley(1), Michael Gray(2), Regent Lee(2), Ashok Handa(2), Eleanor Stride(2)
(1)Australia’s Nuclear and Science Organisation, Australia; (2)University of Oxford, United Kingdom

06:30 AM - 8:00:00 AM
B2L-01: SPS: Advanced Imaging Technologies and Techniques
Session Chair(s): Paul Dayton (University of North Carolina)
Alessandro Savoia (Università degli Studi Roma Tre)

06:45 AM
2504: Cloud HPC to Design Next Generation Piezoelectric MEMS Devices
Gerry Harvey
OnScale Inc., United States

07:00 AM
2507: Photoacoustic Vision for Surgical Guidance
Muyinatu Bell
Johns Hopkins University, United States

07:00 AM
2508: Ionoacoustics for Pre-Clinical and Clinical Research in Proton Therapy: Opportunities and Challenges
Katia Parodi
Ludwig Maximilian University of Munich, Germany

06:30 AM - 8:00:00 AM
B2L-02: MSD: Medical System Design - Novel Medical Systems for Imaging & Therapy
Session Chair(s): Svetoslav Nikolov (BK Ultrasound)
Massimo Mischi (Einhoven University of Technology)

06:30 AM
1184: Real-Time System for 3D Doppler Spectral Analysis with Sparse Arrays
Alessandro Ramalli(2), Paolo Mattisini(2), Claudio Giangrossi(2), Alessandro Dallai(2), Rebekah Maffett(3), Alfred Yu(3), Hervé Liebgott(1), Piero Tortoli(2)
(1)Creatis - INSA Lyon, France; (2)Università degli Studi di Firenze, Italy; (3)University of Waterloo, Canada

06:45 AM
1034: Video-Rate 2D Imaging with a Handheld All-Optical Ultrasound Imaging Probe
Erwin Jozef Alles, Eleanor C Mackle, Edward Z Zhang, Paul C Beard, Adrien Emmanuel Desjardins
University College London, United Kingdom

07:00 AM
1366: A Novel Ultrasonic Haptic Device Induces Touch Sensations with Potential Applications in Neuroscience Research
Nick Hayward(1), Emelie Lewis(1), Emanuele Perra(1), Veikko Joumsäki(1), Veli-Matti Saarinen(1), Francis McGlone(2), Mikko Sams(1), Heikki Nieminen(1)
(1)Aalto University, Finland; (2)Liverpool John Moores University, United Kingdom

07:15 AM
1633: Design of a Transesophageal Ultrasound-Guided HIFU Probe to Treat Ventricular Arrhythmias
Elodie Cao, Jade Robert, Francis Bessière, Cyril Lafon
INSERM U1032 / LabTAU, France

07:30 AM
1295: MR-Compatible Histotripsy System for in Vivo Transcranial Treatment
Ning Lu(2), Tyler Gerhardson(2), Dave Choi(2), Timothy Hall(2), Aleksandra Rakic(1), Badih Daou(2), Aditya Pandey(2), Zhen Xu(2)
(1)Histosonic Inc, United States; (2)University of Michigan, United States

07:45 AM
1288: Real Time Synthetic Aperture and Plane Wave Ultrasound Imaging with the Xilinx VERSAL™ SIMD-VLIW Architecture
Giulio Corradi(2), Jørgen Arendt Jensen(1)
(1)Technical University of Denmark, Denmark; (2)Xilinx GmbH, Germany

06:30 AM - 8:00:00 AM
B2L-03: SPS: Special Session on MEMS Technologies for Ultrasound
Session Chair(s): Jessica Liu Strohma (Qualcomm)
Omer Oralkan (NC State University)

06:30 AM
1112: Ultrasonic MEMS for Imaging and Sensing
F. Levent Degertekin
Georgia Institute of Technology, United States

07:00 AM
1531: Encounter Between SAW and MEMS Technologies
Shuji Tanaka, Michio Kadota
Tohoku University, Japan

07:30 AM
Panel
Levent Degertekin (Invited Speaker), Georgia Institute of Technology
Shuji Tanaka (Invited Speaker), Tohoku University
Jamie Zahorian, Butterfly Network
David Horsley, University of California Davis

06:30 AM - 8:00:00 AM
B2L-04: NAS: Acoustic Sensors
Session Chair(s): David Greve (Carnegie Mellon University)
Kentaro Nakamura (Tokyo Institute of Technology)

06:30 AM
2092: Quantitative Characterization of Viscoelastic Properties of Biofilms and Soft Materials Based on Optical Coherence Elastography
Oluwaseyi Balogun
Northwestern University, United States

07:00 AM
1053: Surface Acoustic Wave H2 and O2 Sensors Based on Conducting Metal Oxides/Langasite for Elevated Temperature Applications
Elizabeth Mao, Jagannath Devkota, John Baltrus, Paul Ohodnicki, Benjamin Chopringen
National Energy Technology Laboratory, United States

07:15 AM
1115: Surface Acoustic Wave Sensor Array with Nanoporous Sensing Layers for CO2 and CH4
Jagannath Devkota(2), David Greve(1), Tao Hong(2), Paul Ohodnicki(2), Michael Buric(2)
(1)DVGreve Consulting, United States; (2)National Energy Technology Laboratory, United States

07:30 AM
1481: Simultaneous Imaging of Nonlinear Contrast from Acoustic Biomolecules and Hemodynamics
Claire Rabut, Mikhail Shapiro
California Institute of Technology, United States

07:45 AM
1457: Spiral Air-Coupled Ultrasonic Phased-Array for High Resolution 3D Imaging
Gianni Allevato(2), Matthias Rutsch(2), Jan Hinrichs(2), Ennes Sarraji(1), Marius Pesavento(2), Mario Kupnik(2)
(1)Technische Universität Berlin, Germany; (2)Technische Universität Darmstadt, Germany

6:30:00 AM - 8:00:00 AM
B2L-05: ABD: BAW Devices I
Session Chair(s): Amelie Hagelauer (University of Bayreuth)
Rich Ruby (Broadcom)

06:30 AM
1624: Lithium Niobate Film Bulk Acoustic Wave Resonator for Sub-6 GHz Filters
Marie Bousquet, Pierre Perreau, Catherine Maeder-Pachurka, Alice Joulie, Fanny Delaguillaumie, Julien Delprato, Gregory Enyedi, Gael Castellan, Clement Eleouet, Thierry Farjot, Christophe Billard, Alexandre Reinhardt
Grenoble Alpes Université, CEA-Leti, France

06:45 AM
2119: Crystalline Y-Cut Lithium Nobate Layers for the Bulk Acoustic Wave Resonator (YBAR)
Victor Plessky(2), Julius Koskela(1), Soumya Yadrapalli(1)
(1)GVR Trade SA, Switzerland; (2)GVR Trade SA / Resonant Inc, Switzerland

07:00 AM
2028: GHz BAW Piezoelectric Transformers with High Voltage Gain Using the Combination of High and Low Dielectric Constant Thin Films
 Sarina Kinoshita(1), Takahiko Yanagitani(2)
(1)Waseda University, Japan; (2)Waseda University / ZAIKEN / JST-PRESTO, Japan

07:15 AM
2008: 40.6 Watt, High Power 3.55 GHz Single Crystal XBAW RF Filters for 5G Infrastructure Applications
Ya Shen, Runqi Zhang, Ramakrishna Vetury, Jeffrey Shealy
Akoustis Technologies Inc., United States

07:30 AM
2358: Highly Doped AlScN XBAW Resonators with 15.7% k² eff for 5G RF Filter Applications
Craig Moe(1), Roy Olsson III(2), Pinal Patel(1), Zichen Tang(2), Michael D’Agati(2), Mary Winters(1), Ramakrishna Vetury(1), Jeffrey Shealy(1)
(1)Akoustis Technologies Inc., United States; (2)University of Pennsylvania, United States

07:45 AM
2258: Enhancement of GHz Electromechanical Coupling Coefficient k² of MgZnO and CaZnO Thin Film BAW Resonators
Kota Izumi(1), Takahiko Yanagitani(2)
(1)Waseda University, Japan; (2)Waseda University / ZAIKEN / JST-PRESTO, Japan

8:30:00 AM - 10:00:00 AM
B3L-01: MBE: Biological Effects & Dosimetry
Session Chair(s): Bajram Zeqiri (National Physical Laboratory)

09:00 AM
1267: Comparison of Rapid Short-Pulse to Long Burst Sequences for Focused Ultrasound and Microbubble-Mediated Blood-Brain Barrier Permeability Enhancement
Dallan McMahon(1), Lulu Deng(1), Kulervo Hynynen(2)
(1)Sunnybrook Research Institute, Canada; (2)Sunnybrook Research Institute / University of Toronto, Canada

09:15 AM
2199: Sonogenetics for Noninvasive and Cellular-Level Neuromodulation in Rodent Brain
Yaoheng Yang(1), Christopher Pham Pacja(1), Dezhuang Ye(1), Lifei Zhou(1), Hongchae Baek(1), Yimei Yue(1), Jinyun Yuan(1), Mark J Miller(1), Jianmin Cui(1), Joseph P Culver(1), Michael R Bruchas(2), Hong Chen(1)
(1)Washington University in St. Louis, United States; (2)Washington University School of Medicine, United States

09:30 AM
1886: Comparison Between Mechanical and Mechanical-Thermal Effect of Ultrasound Neuromodulation
Hongchae Baek, Christopher Pacja, Yaoheng Yang, Lu Xu, Yimei Yue, Hong Chen
Washington University in St. Louis, United States
Wednesday, September 9

09:45 AM
2202: Circulating Tumor Cell Detection Using High-Intensity Ultrasound-Enhanced Biomarker Release
Pradyumna Kedarisetti, Robert Paproski, John Lewis, Frank Wuest, Roger Zemp
University of Alberta, Canada

09:15 AM
1885: Dual-Mode CMUT Probe for Endocavitary Ultrasound-Guided HIFU Therapy
Alice Ganeau(3), Ivan M. Suarez Castellanos(3), Loïc Daunizeau(3), Françoise Chavrier(3), Tony Mateo(4), Nicolas Guillon(1), Nicolas Sénégond(4), Jean-Yves Chapelon(2), W. Apoutou N'Djin(3)
{1}EDAP TMS, France; {2}INSERM U1032 / LabTAU, France; {3}INSERM, Béard, Université de Lyon, France; {4}Vermont SA, France

09:30 AM
2379: Transcranial Neuromodulation Array for Non-Human Primates with Imaging Aperture
Rebecca Jones(3), Charles Caskey(4), Paul Dayton(2), Omer Oralkan(1), Gianmarco Pinton(2)
{1}North Carolina State University, United States; {2}North Carolina State University / University of North Carolina at Chapel Hill, United States; {3}University of North Carolina at Chapel Hill, United States; {4}Vanderbilt University / Vanderbilt University Medical Center, United States

8:30:00 AM - 10:00:00 AM
B3L-02: SPS: Special Session on Integrated and Portable Systems
Session Chair(s): Holly Lay (Fujifilm) Omer Oralkan (NC State University)

8:30 AM
1947: Ultrasound Democratization: an Exponential Growth Opportunity
Claude Cohen-Bacrie
E-Scopics SAS, France

09:00 AM
1113: Integrated Front-End Electronics for Miniature Ultrasound Probes
Michiel Pertijs
Delft University of Technology, Netherlands

09:30 AM
Panel
Claude Cohen-Bacrie (Invited Speaker), E-scopics Michiel Pertijs (Invited Speaker), TU Delft Kailling Chen, Butterfly Network Piero Tortoli, Università di Firenze

8:30:00 AM - 10:00:00 AM
B3L-03: TMU: Micromachined Transducers & Imaging/Therapy Arrays
Session Chair(s): Alessandro Savoia (Università degli Studi Roma Tre) Sanli Ergun (Stanford University)

8:30 AM
2179: An Ultra-Wideband Capacitive Micromachined Ultrasonic Transducer (CMUT) Array for Acoustic Angiography: Preliminary Results
Jean Sanders(1), Ali Onder Biliroğlu(1), Isabel Newsome(2), oluwafemi Adelegan(1), Feysel Yalcin Yamaner(1), Paul Dayton(2), Omer Oralkan(1)
{1}North Carolina State University, United States; {2}North Carolina State University / University of North Carolina at Chapel Hill, United States

09:30 AM
2371: Transparent Capacitive Micromachined Ultrasound Transducer Arrays
Afshin Kashani Ilkhechi, Chris Ceroci, Roger Zemp
University of Alberta, Canada
09:30 AM
2369: Measuring Temperature Distributions with Pulse-Echo Ultrasound and Dynamic Time Warping
Joel Harley{1}, Mason John{2}, Kenneth Walton{2}, Mikhail Skliar{2}
{1}University of Florida, United States; {2}University of Utah, United States

09:45 AM
1231: Development of a High Precision Ultrasonic 2D Temperature Distribution System with Reconstruction Algorithm Based on a Hexagonal Mesh
Soma Pal{2}, Fu-Sung Lin{2}, Ching-Chuan Hsieh{2}, Yahan Liu{2}, Chen-Yuan Lu{1}, Shan-Wen Du{1}, Chih-Hsien Huang{2}
{1}China Steel Corp., Taiwan; {2}National Cheng Kung University, Taiwan

8:30:00 AM - 10:00:00 AM
B3L-05: AMR: MEMS Resonators I
Session Chair(s): Songbin Gong (University of Illinois at Urbana Champaign)
Tuomas Pensala (VTT Technical Research Centre of Finland)

08:30 AM
1106: MEMS Resonators in CMOS
Dana Weinstein
Purdue University, United States

09:00 AM
1322: High Frequency Strip-Type Solidly-Mounted Shear Mode Bulk Wave Resonator Using X-LT
Michio Kadota, Yoshimi Ishii, Shuji Tanaka
Tohoku University, Japan

09:15 AM
2056: A 14.7 GHz Lithium Niobate Acoustic Filter with Fractional Bandwidth of 2.93%
Liuying Gao, Yansong Yang, Songbin Gong
University of Illinois at Urbana–Champaign, United States

09:30 AM
2138: Broadband Piston Mode Operation for First-Order Antisymmetric Mode Resonators
Yu-Po Wong{1}, Luyan Qiu{1}, Naoto Matsuoka{2}, Ken-Ya Hashimoto{1}
{1}Chiba University, Japan; {2}Nihon Dempo Kogyo Co., Ltd., Japan

09:45 AM
1336: High Frequency Solidly Mounted Resonator Using Ln Single Crystal Thin Plate
Kohel Matsumoto, Michio Kadota, Shuji Tanaka
Tohoku University, Japan

10:15:00 AM - 11:15:00 AM
B4L-01: MTH: Pre-clinical Studies
Session Chair(s): Ralf Seip (SonaCare Medical, LLC)

10:15 AM
1559: Ultrasound Stimulation Suppresses Microglial Activity in an MPTP Mouse Model of Parkinson’s Disease
Hui Zhou, Lili Niu, Long Meng, Na Pang, Xiaowei Huang, Hairong Zheng
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

10:30 AM
1778: Photo-Mediated Ultrasound Therapy for the Treatment of Corneal Neovascularization in Rabbit Eyes
Yu Qin{4}, Yixin Yu{1}, Julia Fu{4}, Xinyi Xie{2}, Tao Wang{4}, Yannis Paulus{4}, Xueding Wang{4}, Xinmai Yang{3}
{1}University of Michigan, United States; {2}Nanjing Medical University, China; {3}University of Kansas, United States; {4}University of Michigan, United States

10:45 AM
2381: Characterization of Ultrasound Neurostimulation in Mice
Tarik Iazourene{2}, Hanaa Malloul{2}, Edward Oujagirir{2}, Jean-Michel Escoffre{2}, Ayache Bouakaz{1}
{1}BRAIN, Université de Tours, Inserm, France; {2}Université de Tours, Inserm, UMR 1253, iBrain, France

11:00 AM
1120: Chronic Transcranial Focused Ultrasound Enhances Memory in an Alzheimer’s Disease Mouse Model
Xiaowei Huang, Lili Niu, Long Meng, Zhengrong Lin, Wei Zhou, Hairong Zheng
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

10:15 AM
1066: Near-Field Clutter Reduction in 3D Echocardiography with Preservation of Tissue Speckle
Marloes Sjoerdsma{2}, Sjoerd Bouwmeester{1}, Patrick Houthuizen{1}, Frans van de Vosse{2}, Richard Lopata{2}
{1}Catharina Hospital, Netherlands; {2}Eindhoven University of Technology, Netherlands

10:30 AM
1948: A k-Space-Based Approach to Coherence Estimation
Yang Lou, Jesse Yen
University of Southern California, United States

10:45 AM
1578: Prediction of the Correlation of Pulse-Echo Signals from Diffuse Moving Scatterers
Dongwoon Hyun, Marko Jakovljevic, Jeremy Dahl
Stanford University, United States

11:00 AM
1303: Blind Deconvolution-Based Clutter Suppression for Vascularization Imaging
Duong Hung Pham{1}, Adrian Basarab{1}, Guillaume Lacoin{3}, Ilyess Zemmoura{2}, Jean-Pierre Remeniéras{2}, Denis Kouamé{1}
10:15 AM
1036: High-Frequency, Vector-Flow Imaging in the Left Ventricle of FHF2 Deficient Murine Heart
Jeffrey A. Ketterling(3), Akshay Shekhar(5), Orlando Aristizabal(4), Glenn I. Fishman(2), Colin K.L. Phoon(1)
(1)Hassenfeld Children's Hospital at NYU Langone, United States; (2)Leon H. Charney Division of Cardiology, NYU Langone Health, New York, NY, United States; (3)Lizzi Center for Biomedical Engineering, Riverside Research, United States; (4)New York University School of Medicine, United States; (5)NYU Langone Health / Regeneron, United States

10:30 AM
1076: Full-Volume three-Component Intraventricular Vector Flow Mapping Using Triplane Doppler Echo
Fiorian Vixège(1), Franck Nicoud(3), Pierre-Yves Courand(2), Didier Vray(1), Damien Garcia(1)
(1)Creatis - INSA Lyon, France; (2)Hospices Civils de Lyon, France; (3)Université de Montpellier, France

10:45 AM
2169: Aortic Volume Flow Estimation Using 4D Vector Flow Imaging
Morten Wigen, Stefano Fiorentini, Asbjorn Støylen, Lasse Løvstakken
Norwegian University of Science and Technology, Norway

11:00 AM
2353: A Fully Automated Ultrasound Imaging Pipeline for 4D Intraventricular Flow Reconstruction - in Vivo Comparison to Phase-Contrast MRI
Thomas Grønli(1), Morten Smedsrud Wigen(1), Marius Eriksen(2), Knut Haakon Stensæth(1), Lasse Løvstakken(1)
(1)Norwegian University of Science and Technology, Norway; (2)St. Olavs Hospital, Norway

11:15 AM
1765: Shear Shocks Are Focused in Human Head Phantoms: Shear Wave Imaging and Simulations
Bharat Tripathi(2), Sandhya Chandrasekaran(1), Gianmarco Pinto(2)
(1)North Carolina State University, United States; (2)North Carolina State University / University of North Carolina at Chapel Hill, United States

11:20 AM
2362: Human Fascicle Strain Behavior During Twitch using Ultrafast Ultrasound
Christoph Leitner(2), Sergei Vostrikov(1), Markus Tilp(3), Pascal Hager(1), Andrea Cossettini(1), Luca Benini(1), Christian Baumgartner(2)
(1)ETH Zürich, Switzerland; (2)Graz University of Technology, Austria; (3)University of Graz, Austria

10:15 AM
1953: Model-Independent Quantification of Complex Shear Modulus via Speed and Attenuation of Surface Waves
Bhaskara Rao Chintada, Richard Rau, Orcun Goksel
ETH Zürich, Switzerland

10:30 AM
1059: Acoustic Radiation Force-Induced Capillary Waves in Biological Fluids and its Applications
Hsiao-Chuan Liu(2), Piotr Kijanka(1), Matthew Urban(2)
(1)AGH University of Science and Technology, Poland; (2)Mayo Clinic, United States

10:45 AM
2275: Fast Simulation Method of Distributed Nonlinearities in Surface Acoustic Wave Resonators
Marta González-Rodríguez(2), Carlos Collado(2), Jordi Mateu(2), J.M. González-Arbesú(2), Sebastian Hübner(1), Robert Aigner(1)
(1)RF360 Europe GmbH, Germany; (2)University of Bayreuth, Germany

11:00 AM
1163: LT/Quartz Layered SAW Substrate with Suppressed Transverse Mode Generation
Shogo Inoue, Marc Solal
Qorvo Inc., United States

11:15 AM
1456: Fast and High Quality Super-Resolution Ultrasound Micro-Vessel Imaging Using Spatiotemporal Data with Deep Learning
U-Wai Lok, Joshua Trzasko, Ping Gong, Chengwu Huang, Shanshan Tang, Lulu Yang, Shigao Chen
Mayo clinic, United States

11:30 AM
1456: Fast and High Quality Super-Resolution Ultrasound Micro-Vessel Imaging Using Spatiotemporal Data with Deep Learning
U-Wai Lok, Joshua Trzasko, Ping Gong, Chengwu Huang, Shanshan Tang, Lulu Yang, Shigao Chen
Mayo clinic, United States

11:40 AM
1788: Internal Microbubbles in Kidney Stones and the Doppler Ultrasound Twinkling Artifact
Eric Rokni, Scott Zinck, Julianna Simon
11:50 AM
1817: Evidence of Trapped Bubbles on in Situ Human Kidney Stones
Julianna Simon{2}, James Holm{3}, Jeffrey Thiel{1}, Barbrina Dunmire{1}, Bryan Cunitz{1}, Michael Bailey{1}
{1}University of Washington, United States; {2}University of Washington / Pennsylvania State University, United States; {3}Virginia Mason Medical Center, United States

12:00 PM
2298: Added Value of Fractal Dimension and Spatial Vascularity Pattern in Morphometric Analysis of Microvasculature Imaging of Breast Masses Using Contrast-Free Ultrasound
Redouane Ternifi, Yinong Wang, Mostafa Fatemi, Azra Alizad
Mayo Clinic, United States

12:10 PM
1426: Assessment of Early Pancreatic Cancer Response to Targeted Hyaluronan Treatment with Contrast-Enhanced Ultrasound and Photoacoustic Imaging
Girdhari Rijal, Kenneth Hoyt
University of Texas at Dallas, United States

12:20 PM
1503: Quantitative Assessments of Uterine Fibroids Pre and Post Uterine Artery Embolization
Priscilla Machado, Kathleen Gillmore, Allison Tan, Carin Gonsalves, Flemming Forsberg
Thomas Jefferson University, United States

12:30 PM
1972: Visualization of Intracellular Calcium Transport Between Cells Using High Frequency Ultrasound and FRET Live-Cell Imaging
Sunghoon Rho, Sunho Moon, Gyoyeon Hwang, Jihun Kim, Sangpil Yoon
University of Notre Dame, United States

12:40 PM
1521: Quantitative Assessment of Breast Density Using Transmission Ultrasound: Comparison to MRI-Based Breast Density
Bilal Malik{1}, Yang Zhang{2}, Jeon-Hor Chen{2}, Min-Ying Su{2}, James Wiskin{1}
{1}QT Ultrasound LLC, United States; {2}University of California, Irvine, United States

12:50 PM
2306: A Measure-Theoretic Perspective of Lesion Detectability
Dongwon Hyun{1}, Gene Kim{1}, Nick Bottenus{2}, Jeremy Dahl{1}
{1}Stanford University, United States; {2}University of Colorado Boulder, United States

1:00 PM
2325: Ultrasound Imaging of Abscesses Before and During Histotripsy Treatment
Matthew Bruce, Daniel Leotta, Yak-Nam Wang, Tatiana Khokhlova, Adam Maxwell, Keith Chan, Wayne Monsky, Tom Matula
Wednesday, September 9

12:40 PM
1656: Super-Resolution Ultrasound Imaging of the Renal Microvasculature in Rats with Diabetes
Stinne Byrholdt Søgaard{2}, Sofie Bech Andersen{2}, Iman Taghavi{3}, Carlos Hoyos{1}, Kristoffer Lindskov Hansen{2}, Fredrik Gran{1}, Jørgen Arendt Jensen{3}, Michael Bachmann Nielsen{2}, Charlotte Melhin Sørensen{4}
(1)BK Medical, Denmark; (2)Rigshospitalet, Denmark; (3)Technical University of Denmark, Denmark; (4)University of Copenhagen, Denmark

11:30:00 AM - 1:30:00 PM
B5P-08: MCA: Poster PM - Microbubbles and Contrast Imaging II
Session Chair(s): Mike Averkiou (University of Washington)

11:30 AM
1544: Real-Time Visualization and Acoustic Monitoring of Nanobubbles in Tumour-Affected Vasculature and Their Extravasation
Carly Pellow{2}, Eric Abenojar{1}, Agata Exner{1}, Gang Zheng{4}, David Goertz{3}
(1)Case Western Reserve University, United States; (2)Sunnybrook Research Institute, Canada; (3)Sunnybrook Research Institute / University of Toronto, Canada; (4)University Health Network, Canada

11:40 AM
1747: Deep Learning Implementation of Super-Resolution Ultrasound Imaging for Tissue Decluttering and Contrast Agent Localization
Katherine Brown, Scott Chase Waggener, Arthur David Redfern, Kenneth Hoyt
University of Texas at Dallas, United States

11:50 AM
1768: Enhanced Visualization of Intratumoral Microbubbles Using Singular Value Thresholding Combined with Normalized Singular Spectrum Area
University of Virginia, United States

12:00 PM
1209: Gas Volume Matters: Size and Particle Number Density Effects on Ultrasound Signal of Lipid-Shelled Contrast Agents with Matched Perfluoropropane Gas Volume Concentrations
Eric Abenojar{1}, Jirile Zhu{1}, Ilya Bederman{1}, Michael C. Kolios{2}, Agata Exner{1}
(1)Case Western Reserve University, United States; (2)Ryerson University, Canada

12:10 PM
2140: Exploring the Effects of Nanobubble-Blood Interactions on Acoustic Activity
Michaela Cooley{1}, Michael Sun{1}, Eric Abenojar{1}, Michael C. Kolios{2}, Anirban Sen Gupta{1}, Agata Exner{1}
12:10 PM
2215: Localized Release of Extracellular ATP by Ultrasound and Microbubbles for Enhancing Cancer Immunotherapy
Falonne Demeze Kenfack{3}, Balasubramanian Sellamuthu{1}, Andrea Shima{2}, Francois Yu{3}
(1)CHUM Research Center, Canada; (2)Polytech Marseille, France; (3)Université de Montréal, Canada
12:20 PM
2285: The Effects of Acoustic Parameters and Microbubble Concentration on the Likelihood of Encapsulated Microbubble Coalescence
David Le{2}, Virginie Papadopoulou{2}, Paul Dayton{1}
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States
12:30 PM
2479: Development of UV Activated Polymer Ultrasound Contrast Agents for Biomedical Applications
Muskan Pawar, Xili Lu, Hamza Lalami, Taylor Ware, Shashank Sirsi
University of Texas at Dallas, United States

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<th>B5P-13: MSD: Poster PM - Medical System Design - Needle Applications</th>
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<td>Session Chair(s):</td>
<td>Christine Demore (Sunnybrook Research Institute)</td>
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12:40 PM
1710: Forward-Viewing Ultrasound Imaging with Concentric-Ring Arrays for Registration-Free Needle Intervention
Ryosuke Tsumura, Haichong K. Zhang
Worcester Polytechnic Institute, United States
12:50 PM
1724: Reflector-Based Transrectal 3D Ultrasound Imaging System for Transperineal Needle Intervention
Ryosuke Tsumura, Yuchuan Tang, Haichong K. Zhang
Worcester Polytechnic Institute, United States

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<tr>
<th>01:00 PM</th>
<th>1803: An Ultrasonically Actuated Fine Needle Enhances Biopsy Tissue Yield</th>
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<tr>
<td>Emanuele Perra{1}, Eetu Lampsjärvi{2}, Gonçalo Barreto{3}, Muhammad Arif{1}, Tuomas Puranen{2}, Edward Häggström{2}, Kenneth Pritzker{4}, Heikki Nieminen{1}</td>
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<tr>
<td>(1)Aalto University, Finland; (2)University of Helsinki, Finland; (3)University of Helsinki and Invalid Foundation, Finland; (4)University of Toronto and Mount Sinai Hospital, Canada</td>
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11:30 AM
1221: Transcranial Imaging of Phase-Change Contrast Agents (PCCAs) Through the Temporal Bone Using Ultrafast Interframe Activation Ultrasound Sequence
Bowen Jing, Esha Kashyap, Brooks Lindsey
Georgia Institute of Technology, United States

11:40 AM
1403: Effect of Mechanical Index on Repeated Sparse Activation of Nanodroplets in Vivo
Ge Zhang{1}, Matthieu Toulmonde{1}, Kai Riemer{1}, Jiadi Zhu{1}, Sevan Harput{3}, Kirsten Christensen-Jeffries{2}, Bingxue Wang{1}, Ziyun Zhu{1}, Chee Hau Leow{1}, Peter Weinberg{1}, Chris Dunsby{1}, Meng-Xing Tang{1}
(1)Imperial College London, United Kingdom; (2)King’s College London, United Kingdom; (3)London South Bank University / Imperial College London, United Kingdom
11:50 AM
1853: 3D Super Localized Flow with Locally and Acoustically Activated Nanodroplets and High Frame Rate Imaging Using a Matrix Array
Matthieu Toulmonde{1}, Sevan Harput{2}, Thomas Tiennot{1}, Xiaowei Zhou{1}, Meng-Xing Tang{1}
(1)Imperial College London, United Kingdom; (2)London South Bank University / Imperial College London, United Kingdom
12:00 PM
1898: Lifetime of Phase-Change Contrast Agents After Activation with High-Frame Rate Ultrasound Imaging
Mark Burgess, Jeffrey Ketterling
Lizzi Center for Biomedical Engineering, Riverside Research, United States
12:10 PM
2042: Multiplexed Ultrasound Imaging Using Temporal Responses of Phase Change Contrast Agents
Austin Van Namen, Sidhartha Jandhyala, Geoffrey Luke Dartmouth College, United States

12:20 PM
2145: Optimization of High-Frequency-Ultrasound Imaging and Activation of High Boiling Point Activatable Perfluorocarbon Nanodroplets in a Tissue-Mimicking Phantom
Trevor Mitcham, Dmitry Nevozhay, Scott Lee, Stephen Lai, Konstantin Sokolov, Richard Bouchard
University of Texas MD Anderson Cancer Center, United States

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<th>B5P-12: MEL: Poster PM - Viscoelasticity, Anisotropy, and Nonlinearity II</th>
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<td>Session Chair(s):</td>
<td>James Greenleaf (Mayo Clinic)</td>
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11:30 AM
1306: Shear Wave Attenuation Measurements Using Reverberant Shear Wave Elastography (R-SWE)
Juvenal Ormachea, Kevin J. Parker
University of Rochester, United States

11:40 AM
1588: Quantitative Nonlinear Shear Modulus Mapping Using Freehand Scanning
Soumya Goswami, Rifat Ahmed, Marvin M. Doyley, Stephen A. McAleavey
University of Rochester, United States

11:50 AM
1599: A Local Spectral Nonlinear Elasticity Imaging Method: Contrast Enhancement in Heterogeneous Elastograms Based on Viscoelastic Nonlinear Characterizations
Soumya Goswami, Rifat Ahmed, Marvin M. Doyley, Stephen A. McAleavey
University of Rochester, United States

12:00 PM
2078: Strong Elastic Anisotropy in the Cornea: an Ex-Vivo Study with Acoustic Micro-Tapping Based Optical Coherence Elastography
John Pitre Jr., Mitchell Kirby, David Li, Tueng Shen, Ruikang Wang, Matthew O'Donnell, Ivan Pelivanov
University of Washington, United States

12:10 PM
2326: Improved Frequency-Shift Method for Shear Wave Attenuation Computation
Ladan Yazdani, Manish Bhatt, Guillaume Bosio, Guy Cloutier
University of Montreal Hospital Research Center, Canada

12:20 PM
2430: Elastically Anisotropic Phantoms Constructed from 3D-Printed PLA Fibers
Kristyna Herman{2}, Gabriela Torres{1}, Keita Yokoyama{1}, Caterina Gallippi{1}
{1}North Carolina State University / University of North Carolina at Chapel Hill, United States; {2}University of North Carolina at Chapel Hill, United States

11:30:00 AM - 1:30:00 PM
B5P-15: MTC: Poster PM - Attenuation & Sound Speed Imaging Session
Session Chair(s): Jonathan Mamou (Riverside Research)

12:30 PM
1285: Attenuation Coefficient Parameter Estimations to Characterize Ex Vivo Carotid Plaque
Catherine Steffel, Stephanie Wilbrand, Shahriar Salamat, Robert Dempsey, Carol Mitchell, Tomy Varghese
University of Wisconsin-Madison, United States

12:40 PM
1301: Nonlinearity Parameter Estimation Based on Quantifying Excess Ultrasonic Attenuation
Andres Colla, Michael Oelze
University of Illinois at Urbana–Champaign, United States

12:50 PM
12:20 PM
2147: Accounting for Domain Shift in Neural Network Ultrasound Beamforming
Jaime Tierney, Adam Luchies, Christopher Khan, Brett Byram, Matthew Berger
Vanderbilt University, United States

12:30 PM
2397: Deconvolution and Improved Visualization of Ocular Structures in UBM Using Deep Learning
Ahmed Tahseen Minzah(1), Mahdi Bayat(1), Faruk Orge(2), David L. Wilson(1)
(1)Case Western Reserve University, United States; (2)Rainbow Babies and Children's Hospital, United States

12:40 PM
2043: Multi-Array Imaging with Gap Compensation for Wide Field-of-View and Improved Resolution
Josquin Foiret, Xiran Cai, Katherine Ferrara
Stanford University, United States

12:50 PM
2000: Sparse Channel Sampling for Ultrasound Localization Microscopy (Sparse-ULM)
Erwan Hardy, Jonathan Porée, Hatim Belghbari, Chloé Bourquin, Frédéric Lesage, Jean Provost
Polytechnique Montréal, Canada

1:00 PM
2400: Standard Plane Extraction from 3D Ultrasound with 6-DOF Deep Reinforcement Learning Agent
Baichuan Jiang(2), Keshuai Xu(2), Russell Taylor(2), Ernest Graham(1), Mathias Unberath(2), Emad Doctor(1)
(1)Johns Hopkins Medical Institute, United States; (2)Johns Hopkins University, United States

11:30 AM - 1:30 PM
B5P-16: MTN: Poster PM - Theranostics
Session Chair(s): Mario Fabilli (University of Michigan)

11:30 AM
Arsenii Telichko, Taehwa Lee, Marko Jakovljevic, Dongwoon Hyun, Sayan Chowdhury, Sunitha Bachawal, Carl Herickhoff, Ramasamy Paulmurugan, Jeremy Dahl
Stanford University, United States

11:40 AM
1304: XACT Imaging for in Vivo Dosimetry During Radiation Therapy
Mohamed Eldib(1), Yong Chen(2), Salahuddin Ahmad(2), Liangzhong Xiang(1)
(1)University of Oklahoma, United States; (2)University of Oklahoma Health Sciences Center, United States

11:50 AM
1515: Assessment of Chirp-Coded Excitation to Monitor Histotripsy Bubble Clouds
Emily Wallach(2), Himanshu Shekhar(1), Kenneth Bader(2)
(1)Indian Institute of Technology, Gandhinagar, India; (2)University of Chicago, United States

12:00 PM
1536: MRI Characterization of Histotripsy Ablation in an in Vivo Murine Brain Tumor Model
Sang Won Choi, Sarah Duclos, Badih Daou, Rachel Surowiec, Stefanie Galban, Joan Greve, Neeraj Chaudhary, Timothy Hall, Aditya Pandey, Zhen Xu
University of Michigan, United States

12:10 PM
1745: Ultrasound Triggered Microbubble Destruction for Disrupting Biofilms in Synovial Fluid
Flemming Forsberg(1), Dylan Curry(1), Priscilla Machado(1), Maria Stanczak(1), John Eisenbrey(1), Thomas Schaer(2), Noreen Hickok(1)
(1)Thomas Jefferson University, United States; (2)University of Pennsylvania, United States

12:20 PM
1750: Ultrasound-Stimulated Microbubble Enhancement of Fractionated Radiation Tumour Treatment
Azza Al-Mahrouki, Niki Law, Scott McKay, Aaron Cumal, Gregory Czarnota
Sunnybrook Research Institute, Canada

12:30 PM
1800: Using a Diagnostic Ultrasound System for Photo-Mediated Ultrasound Therapy
Yu Qin(2), Yunhao Zhu(2), Yixin Yu(2), Yannis Paulus(2), Xueding Wang(2), Xinmai Yang(1)
(1)University of Kansas, United States; (2)University of Michigan, United States

12:40 PM
1911: Autonomous Ultrasound System for Targeted Drug Delivery in Central Nervous System with Sub-Millimeter Targeting Accuracy
Hohyun Lee, Scott Schoen Jr., Yutong Guo, Chulyong Kim, Costas Arvanitis
Georgia Institute of Technology, United States

12:50 PM
1942: Novel Iridium(III) Complex-Loaded Perfluoropropane Nanobubbles for Potential Sonodynamic Therapy
Pinunta Nittayacham{1}, Eric Abenojar{1}, Giuseppe Strangi{1}, Massimo La Deda{3}, Loredana Ricciardi{2}, Agata A Exner{1}
(1)Case Western Reserve University, United States; (2)CNR NANOTEC - Institute of Nanotechnology, Italy; (3)University of Calabria, Italy

01:00 PM
2011: High Contrast Ultrasonic CBE Monitoring Approach for Thermal Therapy Using Percutaneous Catheter-Based Ultrasound Applicators: Development and Ex Vivo Evaluations
Diya Wang(2), E. Clif Burdette{1}, Chris J. Diederich(2)
{1}Acoustic Medsystems Inc., United States; (2)University of California, San Francisco, United States

01:10 PM
2193: From Targeting to Simulation: Transducer Positioning and Localization for Focused Ultrasound Transcranial Applications
Michelle Sigona{1}, Marshal Anthony Phipps{1}, Jiro Kusunose{1}, Charles Caskey{2}
{1}Vanderbilt University, United States; {2}Vanderbilt University / Vanderbilt University Medical Center, United States

11:30:00 AM - 1:30:00 PM
B5P-17: MTH: Poster PM - Blood-Brain Barrier & Brain Applications
Session Chair(s): Hong Chen (Washington University in St. Louis)

11:30 AM
1045: Combination of BBB Disruption Immune Checkpoint Inhibitor and Pro-Resolution Cocktail as an Efficient Strategy for Glioblastoma Therapy (WITHDRAW)
Emmanuel De Schlichting{3}, Anthony Novell{1}, Didier Wion{3}, Tanguy Chabrol{3}, Benoit Larrat{2}, Francois Berger{3}
{1}BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; {2}Neurospin, CEA, Université Paris Saclay, France; {3}Université Grenoble Alpes, France

11:40 AM
1843: Considerations for Precise Sonication of Distal Cortical Targets in the Macaque
Thomas Manuel{1}, Sumeeth Jonathan{1}, Marshal Anthony Phipps{1}, Charles Caskey{2}
{1}Vanderbilt University, United States; {2}Vanderbilt University / Vanderbilt University Medical Center, United States

11:50 AM
1899: First in Vivo Demonstration of Bilateral Blood-Brain Barrier Opening Using Acoustic Holograms in Mice
Sergio Jiménez-Gambín{2}, Antonios N. Pouliopoulos{1}, Noé Jiménez{2}, José María Benlloch{2}, Elisa E. Konofagou{1}, Francisco Camarena{2}
{1}Columbia University, United States; {2}Universitat Politècnica de València, Spain

12:00 PM
2349: Real-Time Image-Based Refocusing of Transcranial Ultrasound: in Vivo Results
Parker O’Brien, Collin Smith, Hasan Aldiabat, Dalong Liu, Tim Carlson, Gerard O’Sullivan, Emad Ebbini
University of Minnesota -Twin Cities, United States

12:10 PM
2393: Mechanistic Investigation of Hyperthermia-Mediated Drug Delivery in Brain Tumors with Trans-Skull MRI-Guided FUS
Chulyong Kim{1}, Yutong Guo{1}, Anastasia Velaiopulous{5}, Johannes Leisen{2}, Anjan Motamarroy{3}, Dieter Haemmerich{4}, Costas Arvanitis{1}
{1}Georgia Institute of Technology, United States; {2}Georgia Institute of Technology, United States; {3}Massachusetts General Hospital, United States; {4}Medical University of South Carolina, United States; {5}University of Pennsylvania, United States

12:20 PM
2420: Targeted Blood Brain Barrier Opening by Focused Ultrasound with Polydispersed Microbubbles
Improves Spatial Memory in Wild Type Mice at Long and Short-Term Time Points
Rebecca Noel, Maria Eleni Karakatsani, Maria Murillo, Alina Kline-Schodner, Robin Ji, Alec Batts, Antonios Pouliopoulos, Elisa Konofagou
Columbia University, United States

11:30 AM
1124: Laryngoscope Mounted HIFU Transducer for Visually Guided Oral Cavity Therapies
Ralf Seip{2}, Yosef Krespi{1}, Ron Hadani{3}, Adam Morris{2}, Joshua Huff{2}, Mark Carol{2}
{1}Northwell, United States; {2}SonaCare Medical, LLC, United States; {3}Valam, United States

11:40 AM
1129: A 2-D Wearable Array for Awake Ultrasonic Drug Uncaging in Rats
Tommaso Di Ianni{2}, Brenda Yu{2}, Muna Aryan{2}, Praveen Pallegar{2}, Kyle Morrison{1}, Raag Airan{2}
{1}Sonic Concepts, Inc., United States; {2}Stanford University, United States

11:50 AM
1166: Phase Aberration Effects on Low f-Number, Large Aperture Focused Therapeutic Ultrasound Transducers
Ellen Yeats, Zhen Xu, Timothy Hall
University of Michigan, United States

12:00 PM
1318: Ultrasound-Triggered Release from Novel Polymeric Spinal Device
Lauren Delaney{2}, Selin Isguven{2}, Keith Fitzgerald{2}, Daniel MacDonald{1}, Noreen Hickok{2}, Steven Kurtz{1}, Flemming Forberg{2}
{1}Drexel University, United States; {2}Thomas Jefferson University, United States

12:10 PM
1349: Development of an Ultrasonic Nonlinear Frequency Compounding Method for Use in Noninvasive Tissue Thermometry
Tyler Hornsby, Elyas Shaswary, Jahan Tavakkoli
Ryerson University, Canada

12:20 PM
2001: Increasing Radiation Force-Induced Displacement at Matched Pressure by Reducing Effective Aperture
Marshal Anthony Phipps{1}, Sumeeth Jonathan{1}, Pai-Feng Yang{2}, Limin Chen{2}, William Grissom{1}, Charles Caskey{2}
{1}Vanderbilt University, United States; {2}Vanderbilt University / Vanderbilt University Medical Center, United States
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<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
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<tr>
<td>12:30 PM</td>
<td>Boiling Histotripsy Ablation of the Prostate: Early Results of a Prototype Transrectal Device</td>
<td>Rishi Sekar, Tatiana Khokhlova, Alex Peek, Vera Khokhlova, Yak-Nam Wang, Stephanie Totten, Wayne Kreider, Yashwanth Kumar, Adam Maxwell, George Schade</td>
<td>University of Washington, United States</td>
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<td>12:40 PM</td>
<td>Prototype Ultrasound Transducer / System for Intraoperative Image-Guided Brachytherapy: Proof-of-Concept in a Breast Cancer Patient</td>
<td>Sunil Unnikrishnan, David Brenin, Bruce Libby, Timothy Showalter, John Hossack</td>
<td>University of Virginia, United States</td>
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<td>12:50 PM</td>
<td>Catheter Tip Ultrasound Mediated Nanodroplet to Microbubble Conversion for Intravascular Therapeutic Applications</td>
<td>Alex Wright(1), Ross Williams(1), Kullervo Hynynen(2), David Goertz(2)</td>
<td>(1)Sunnybrook Research Institute, Canada; (2)Sunnybrook Research Institute / University of Toronto, Canada</td>
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<td>11:30 AM - 1:30 PM</td>
<td>B5P-19: MTH: Poster PM - Therapeutic Applications &amp; Targets</td>
<td>Session Chair(s): Zhen Xu (University of Michigan)</td>
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<td>11:30 AM</td>
<td>Spatially-Directed Cell Migration in Acoustically-Responsive Scaffolds (ARSs) via the Controlled Delivery of Basic Fibroblast Growth Factor (bFGF)</td>
<td>Xiaofang Lu(1), Hai Jin(1), Carole Quesada(1), Leidan Huang(2), Mitra Aliabouzar(1), Oliver Kripfgans(1), J. Brian Fowlkes(1), Renny Franceschi(1), Andrew Putnam(1), Mario Fabili(1)</td>
<td>(1)University of Michigan, United States; (2)University of Michigan, United States</td>
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<tr>
<td>11:40 AM</td>
<td>Optimization of Microbubble-Mediated Tumor Transfection via Applying Low Frequency Ultrasound</td>
<td>Nisi Zhang(1), Josquin Foiret(1), Azadeh Kheirolooom(1), Tali Ilievitch(1), Yi Feng(2), Spencer Tumbleale(1), Marina Raie(1), Bo Wu(1), James Wang(1), Katherine Ferrara(1)</td>
<td>(1)Stanford University, United States; (2)Stanford University / Xi'an Jiaotong University, United States</td>
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<td>11:50 AM</td>
<td>Dose-Dependent Effects of Ultrasound Therapy on Hepatocellular Carcinoma</td>
<td>Laith R Sultan, Julia C D'Souza, Migendra Karmacharya, Stephen J. Hunt, Angela K Brice, Susan M Schultz, Andrew KW Wood, Chandra M Sehgal</td>
<td>University of Pennsylvania, United States</td>
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<td>12:00 PM</td>
<td>Controlled Hypoxic Reperfusion Increases Cell Viability Following Simulated Ischemia of HL-1 Cardiomyocytes</td>
<td>Kevin Haworth(1), Vishnu Undyala(2), Christy Holland(1), Karin Przyklenk(2)</td>
<td>(1)University of Cincinnati, United States; (2)Wayne State University, United States</td>
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<tr>
<td>12:00 PM</td>
<td>Elucidation of Biological Mechanisms of Clinically Viable Low Frequency (20 kHz) Ultrasound Applicator for Chronic Wounds Therapy</td>
<td>Olivia Ngo(1), Jessica Niebuhr(1), Karissa Barbarevech(1), Jacob Hyatt(1), Ian Robinson(1), Rose Ann DiMaria-Ghalili(1), Michael Neidrauer(1), Leonid Zubkov(1), Michael Weingarten(1), David Margolis(2), Kara Spiller(1), Peter Lewin(1)</td>
<td>{1}Drexel University, United States; {2}University of Pennsylvania, United States</td>
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<tr>
<td>12:10 PM</td>
<td>Transvascular Ultrasound-Mediated Blood-Spinal Cord Barrier Opening in Pigs</td>
<td>Stecia-Marie Fletcher(1), Min Choi(1), Natalia Ogrodnik(1), Meaghan O'Reilly(2)</td>
<td>(1)Sunnybrook Research Institute, Canada; (2)Sunnybrook Research Institute / University of Toronto, Canada</td>
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<td>12:20 PM</td>
<td>Histotripsy Treatment of Abscesses</td>
<td>Tatiana Khokhlova, Yak-Nam Wang, Daniel Leotta, Matthew Bruce, Keith Chan, Wayne Monsky, Adam Maxwell, Tom Matula</td>
<td>University of Washington, United States</td>
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<td>11:30 AM - 1:30 PM</td>
<td>B5P-20: MTH: Poster PM - Therapeutic Use of Bubbles, Microbubbles &amp; Nanobubbles</td>
<td>Session Chair(s): Kendall Waters (Silicon Valley Medical Instruments)</td>
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<tr>
<td>11:30 AM</td>
<td>Optimization of Microbubble-Mediated Tumor Transfection via Applying Low Frequency Ultrasound</td>
<td>Nisi Zhang(1), Josquin Foiret(1), Azadeh Kheirolooom(1), Tali Ilievitch(1), Yi Feng(2), Spencer Tumbleale(1), Marina Raie(1), Bo Wu(1), James Wang(1), Katherine Ferrara(1)</td>
<td>(1)Stanford University, United States; (2)Stanford University / Xi'an Jiaotong University, United States</td>
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<td>11:40 AM</td>
<td>Temporal Stability of Therapeutic Microbubbles</td>
<td>Antonios Pouliopoulos, Daniella Jimenez, Alexander Frank, Alexander Robertson, Lin Zhang, Alina Kline Schoder, Vividha Bhaskar, Mitra Harpale, Elizabeth Caso, Elisa Konofagou</td>
<td>Columbia University, United States</td>
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<td>11:50 AM</td>
<td>Cavitation-Enhanced High-Pressure Pulsed Sonothrombolysis with Perfluorocarbon Nanodroplets Versus Microbubbles in Contracted and Uncontracted Clots</td>
<td>Jinwook Kim(4), Leela Goel(1), Xiaoning Jiang(1), Zhen Xu(3), Paul Dayton(2)</td>
<td>(1)North Carolina State University, United States; (2)North Carolina State University / University of North Carolina at Chapel Hill, United States; (3)University of Michigan, United States; (4)University of North Carolina at Chapel Hill, United States</td>
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<tr>
<td>12:00 PM</td>
<td>Enhancing Thermal Ablation of High Intensity Focused Ultrasound with Phase Shift Nanodroplets and Multi-Focus Ablation Patterns</td>
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12:10 PM
1808: Nanodroplet Mediated Intravascular Sonothrombolysis of Retracted Clots
Leela Goel{1}, Huaiyu Wu{1}, Bohua Zhang{1}, Jinwook Kim{4}, Paul Dayton{2}, Zhen Xu{3}, Xiaoning Jiang{1}
{1}North Carolina State University, United States; {2}University of North Carolina at Chapel Hill, United States; {3}University of Michigan, United States; {4}Sunnybrook Research Institute, Canada

12:20 PM
1856: Improving Antibiotic Efficacy in Methicillin-Resistant Staphylococcus Aureus Biofilms with Ultrasound-Stimulated Phase-Change Contrast Agents and Oxygen Microbubbles
Phillip Durham{3}, Sarah Rowe{3}, Lauren Radlinski{3}, Ashlyn Sidders{3}, Traci Reusser{2}, Awaneesh Upadhyay{2}, Mark Borden{2}, Paul Dayton{1}, Brian Conlon{3}, Virginie Papadopoulou{3}
{1}North Carolina State University, United States; {2}University of Colorado Boulder, United States; {3}University of North Carolina at Chapel Hill, United States; {4}Sunnybrook Research Institute, Canada

12:30 PM
2328: Ultrasound Stimulated Microbubbles Enhance the Potency and Durability of Anti-PD-L1 Checkpoint Blockade Therapy in an Orthotopic Breast Tumor Model
Sharshi Bulner{1}, William Cruz{1}, Alex Wright{1}, Robert Kerbel{1}, Kullervo Hynynen{2}, David Goertz{2}
{1}Sunnybrook Research Institute, Canada; {2}University of Toronto, Canada

11:30:00 AM - 1:30:00 PM
B5P-21: TIS: Poster PM - Electronics & Systems
Session Chair(s): Jeremy Brown (Dalhousie University)

11:30 AM
1485: MEMS- & Piezo-Free, Sensitive, Wideband, All-Electronic Ultrasound Imaging Arrays
Tom Robbins{1}, Cyril Renaud{2}
{1}Pinfold Technologies Ltd., United Kingdom; {2}University College London, United Kingdom

11:40 AM
1651: 384 Channel Modular Ultrasound CMUT Probe for Rapid Prototyping
Kasper Fløng Pedersen{2}, Mathias Engholm{2}, Andreas Spandet Havreland{2}, Christopher Beers{1}, Lars Moesner{1}, Borislav Gueorgiev Tomov{2}, Jørgen Arendt Jensen{2}, Erik Vilain Thomsen{2}
{1}BK Medical, United States; {2}BK Medical, Denmark; {3}Technical University of Denmark, Denmark

11:50 AM
1901: Active Damping of Air-Backed Ultrasonic Transducers Using Arbitrary Waveform Generators
Jesse Yen
University of Southern California, United States

12:00 PM
1915: On the Efficacy of In-Probe Pre-Amplifiers for Piezoelectric 2D Arrays
Enrico Boni{3}, Fabian Fool{2}, Martin Venweij{1}, Hendrik Vos{4}, Piero Tortoli{3}
{1}Delft University of Technology, Netherlands; {2}Medical Imaging, ImPhys, Applied Sciences / Delft University of Technology, Netherlands; {3}Università degli Studi di Firenze, Italy; {4}University Medical Center Rotterdam / Delft University of Technology, Netherlands

12:10 PM
2431: Open Platform for Accelerating Smart Ultrasound Transducer Probe Development
Xiaochen Xu, Shabbir Amjhera Wala, Abhishek Vishwa, Jun Shen, Djeesh K, Shriram Devi, Aatiash Chandak, Sanjay Dixit, Elisa Granata, Sandep Osval
Texas Instruments, Italy; Texas Instruments, United States; Texas Instruments, China; Texas Instruments, India

11:30:00 AM - 1:30:00 PM
B5P-24: TPF: Poster PM - Applications of Piezoelectrics Session
Session Chair(s): Xiaoning Jiang (NC State University)

12:20 PM
1127: Wearable Wireless Sensor to Characterize Respiratory Behavior
Ang Chen{1}, Andrew Halton{1}, Rachel Rhoades{1}, Jayden Booth{1}, Xiniao Shi{2}, Xiangli Bu{2}, Ning Wu{2}, Junseok Chae{1}
{1}Arizona State University, United States; {2}Nanjing University of Aeronautics and Astronautics, China

12:30 PM
1446: Evaluation of PIC 181 and Mn:PIN-PMN-PT Thickness Extensional Rings for Use in Power Ultrasonic Devices for Minimally Invasive Surgery
Nicola Giuseppe Fenu, Xuan Li, Margaret Lucas, Sandy Cochran
University of Glasgow, United Kingdom

12:40 PM
1518: Steering Single-Element Ferroelectric Materials Using Biaxial Driving
Sagid Delgado{1}, Laura Curiel{2}, Samuel Pichardo{2}
{1}Lakehead University, Canada; {2}University of Calgary, Canada

12:50 PM
1834: Progress Towards the Miniaturization of a Harmonic Scalpel for Endoscopic Surgery Using d31/d32 Mode of Mn:PIN-PMN-PT High Performance Piezocrystals
Wednesday, September 9

Nicola Giuseppe Fenu{4}, Nathan Giles-Donovan{4}, Xuan Li{4}, Zhu Liang{2}, Haosu Luo{2}, Chris Stock{3}, Shujun Zhang{1}, Margaret Lucas{4}, Sandy Cochran{4}

{1}Australian Institute for Innovative Materials, Australia; {2}Shanghai Institute of Ceramics, Chinese Academy of Sciences, China; {3}University of Edinburgh, United Kingdom; {4}University of Glasgow, United Kingdom

01:00 PM

Haotian Wan
North Carolina State University, United States

01:00 PM - 1:30:00 PM
B5P-22: TMI: Poster PM - Biomedical Diagnostic & Imaging Transducers
Session Chair(s): Qifa Zhou (University of Southern California)

11:30 AM

1396: Nonlinear Electrical Impedance of the Acoustic Stack in Cardiac Ultrasound Probe
Thong Huynh{2}, Trym Egggen{1}, Lars Hoff{3}
{1}GE Vingmed Ultrasound, Norway; {2}University College in Southeastern Norway, Norway; {3}University of Southern Norway, Norway

11:40 AM

1583: Lead-Free 2D Ultrasonic Array for Acoustic Radiation Force Optical Coherence Elastography of Retina
Haochen Kang{5}, Robert Wodnicki{5}, Yizhe Sun{5}, Xuejun Qian{5}, Ruimin Chen{5}, Yan Li{4}, Takayuki Matsuoka{2}, Masato Yamazaki{1}, Ahmad Safari{3}, Zhongping Chen{4}, Qifa Zhou{5}
{1}NGK Spark Plug Co., Ltd., Japan; {2}NGK SPARK PLUGS CO, Japan; {3}Rutgers University, United States; {4}University of California, Irvine, United States; {5}University of Southern California, United States

11:50 AM

1713: High-Frequency Endoscopic Linear Arrays for Intraluminal Imaging
Felipe Roa{2}, Jianhua Yin{1}, Aaron Boyes{1}, Emmanuel Cherin{1}, Nidhi Singh{2}, Bahar Motlagh{1}, Stuart Foster{3}, Christine Démoré{4}
{1}Sunnybrook Research Institute, Canada; {2}University of Toronto, Canada; {3}University of Toronto, Sunnybrook Health Sciences Centre, Canada; {4}University of Toronto, Sunnybrook Research Institute, Canada

12:00 PM

1716: Development of Ultrasound Transducers for Gating the Acquisition of Computed Tomography Coronary Angiography (CTCA)
Stephan Strassle Rojas{1}, Graham Collins{2}, Srinidhi Indandapani{3}, Brooks Lindsey{1}
{1}Georgia Institute of Technology, United States; {2}Georgia Institute of Technology / Emory University, United States; {3}University of Alabama at Birmingham, United States

12:10 PM

1888: Broadband Frequency Emission (cMUT) and Reception (PVDF) for Super Harmonic Imaging
Igor Campos Vilas Boas{3}, Rémi Rouffaud{3}, Laurent Colin{3}, Frédéric Ossant{1}, Franck Levassort{3}, Dominique Certon{2}
{1}INSERM Imaging and Brain, UMR 1253, University of Tours, France; {2}Université de Tours / GREMAN UMR 7347, France; {3}Université de Tours / GREMAN UMR 7347 / INSA Centre Val de la Loire, France

12:20 PM

1996: Orthogonal Bowtie-Shaped 2D Array for Real-Time 3D Imaging
Jesse Yen, Robert Wodnicki
University of Southern California, United States

12:30 PM

2088: High Frequency 1.75D Array Using a 3D Printed Pitch-Changing Interposer Backing
Robert Wodnicki, Haochen Kang, Yizhe Sun, Laiming Jiang, Haotian Lu, Qifa Zhou
University of Southern California, United States

12:40 PM

2332: Transducer Fabrication Using a 355nm Pulsed Picosecond Laser – Rapid Prototyping of 40 MHz Composites, Custom Electrode Patterns, and Circularly Symmetric Curvable Composite Patterns
Jeffrey Woodacre, Thomas Landry, Jeremy Brown
Dalhousie University, Canada

12:50 PM

2364: Fusion of Ultrasonic Tracking with Inertial Measurement Unit Using Kalman Filter for Cost-Effective 3D Space Localization
Jiale Hu{1}, Howuk Kim{1}, Qianqian Cai{1}, Chang Peng{1}, Mengyue Chen{1}, Juan Prieto{2}, Alan Rosenbaum{2}, Jeffrey Stringer{2}, Xiaoning Jiang{1}
{1}North Carolina State University, United States; {2}University of North Carolina at Chapel Hill, United States

01:00 PM

2367: Spatial and Temporal Probe Calibration via Feedback Optimization and Symmetric Acquisition Protocol
Qianqian Cai{1}, Chang Peng{1}, Juan Prieto{2}, Alan Rosenbaum{2}, Jeffrey Stringer{2}, Xiaoning Jiang{1}
{1}North Carolina State University, United States; {2}University of North Carolina at Chapel Hill, United States

11:30 AM - 1:30:00 PM
B5P-23: TMI: Poster PM - Micromachined Ultrasonic Transducers Session
Session Chair(s): Sanli Ergun (Stanford University)

11:30 AM

1407: Delay Line Separation of CMUT Elements
Andreas Havrelaud, Kasper Fleng Pedersen, Mathias Engholm, Ole Hansen, Erik Thomsen
Technical University of Denmark, Denmark
11:40 AM
1462: Modeling and Validation of CMUTs with Mechanically Coupled Plate Actuators
Marcel Krenkel{1}, Nicolas Lange{1}, Sandro G. Koch{1}, Mario Kupnik{2}
{1}Fraunhofer Institute Photonic Microsystems-IPMS, Germany; {2}Technische Universität Darmstadt, Germany

11:50 AM
1635: Electrical Insulation of CMUT Elements Using DREM and Lapping
Stine Loevholt Grue, Mathias Engholm, Erik Vilain Thomsen
Technical University of Denmark, Denmark

12:00 PM
1844: Impact of the Variability of Microfabrication Process Parameters on CMUTs Performance
Monica La Mura{3}, Alvise Bagolini{1}, Patrizia Lamberti{3}, Alessandro Savoia{2}
{1}Fondazione Bruno Kessler, Italy; {2}Roma Tre University, Italy; {3}University of Salerno, Italy

12:10 PM
1852: Wideband Air-Coupled CMUT Arrays for Acoustic Micro-Tapping
Zachary Coutant{1}, Oluwafemi Adelegan{1}, Ali Onder Biliröğlu{1}, Geng-Shi Jeng{2}, John Pitre Jr. {2}, Mitchell Kirby{2}, Feysel Yalcin Yamaner{1}, Ivan Pelivanov{2}, Matthew O'Donnell{2}, Ömer Oralkan{1}
{1}North Carolina State University, United States; {2}University of Washington, United States

12:20 PM
1889: Combined Use of Finite Element and Equivalent Circuit Modeling for System-Level Simulation of Integrated Capacitive Micromachined Ultrasonic Transducers (CMUT)
Alessandro Savoia{2}, Giuseppe Scaglione{2}, Bruno Haider{1}
{1}GE Healthcare, United States; {2}Roma Tre University, Italy

12:30 PM
1960: First Time of Nanoscopic Electrostatic Drives Pushing for Ultrasonic Transmission for Gesture Recognition
Marco Kircher, Franziska Wall, Marcel Krenkel, Bert Kaiser, Jorge Mario Monsalve Guaracao Fraunhofer Institute Photonic Microsystems-IPMS, Germany

12:40 PM
2013: Ultrasonic Power Transfer Using Capacitive Parametric Ultrasonic Transducers: Experimental Verification and Design Guidelines for Improved Efficiency
Charles Wei, Sushruta Surappa, F. Levent Degertekin Georgia Institute of Technology, United States

12:50 PM
2051: Improving Transmit and Receive Sensitivity of Thin Film PZT-Based PMUT Arrays for Imaging
Christopher Cheng, Ajay Dangi, Sumit Agrawal, Sri-Rajasekhar Kothapalli, Susan Trolier-McKinstry Pennsylvania State University, United States

1:00 PM
2174: Dielectric Characterization of Structural and Passivation Films for Flexible CMUT Microfabrication
Ivano Lucarini{2}, Luca Maiolo{1}, Francesco Maita{1}, Alessandro Savoia{2}
{1}CNR - IMM, Italy; {2}Roma Tre University, Italy

1:10 PM
2197: A Low-Frequency Piezoelectric Micromachined Ultrasonic Transducer Based on Multi-User MEMS Process with Enhanced Output Pressure
Jenitha Antony Balasingam, Siddharth Swaminathan University of Windsor, Canada

1:20 PM
2447: Forming an Annular Array from 2D CMUT Array Elements by Using a Metal Redistribution Layer
Oluwafemi Adelegan, Tamzid Ibn Minhaj, Zachary Coutant, Feyssel Yalcin Yamaner, Ömer Oralkan North Carolina State University, United States

1:30 PM
2450: Implementing a 32 x 32 2D Capacitive Micromachined Ultrasonic Transducer Array Incorporating Silicon-Through-Glass-Via (Si-TGV) Interconnects
Oluwafemi Adelegan, Zachary Coutant, Tamzid Ibn Minhaj, Feyssel Yalcin Yamaner, Ömer Oralkan North Carolina State University, United States

1:30:00 AM - 1:30:00 PM
B5P-25: TPM: Poster PM - Piezoelectric Transducers
Session Chair(s): Qifa Zhou (University of Southern California)

11:30 AM
1455: A Novel 3D-Printed (0-3) Piezocomposite Material for Low Frequency Sensing Applications
Rolan Mansour, Oluwaseun Omoniyi, Andrew Reid, Lin Liang, Richard O'Leary, James Windmill University of Strathclyde, United Kingdom

11:40 AM
1650: Evaluation of Direct Laser Sintered Ti6Al4V for a Prototype Power Ultrasonic Surgical Device
Rebecca Cleary, Xuan Li, Margaret Lucas University of Glasgow, United Kingdom

11:50 AM
Kristina Bespalova{1}, Glenn Ross{1}, Mervi Paulasto-Kröckel{1}, Abhilash Thaniyil Sebastian{2}, Cyril Baby Karuthedath{2}, Stefan Mertin{2}, Tuomas Pensala{2}
{1}Aalto University, Finland; {2}VTT Technical Research Centre of Finland, Finland

12:00 PM
2159: Combined Dynamic AC and Static DC Poling for Pb(Mg1/3Nb2/3)O3- Pb(In1/2Nb1/2)O3-PbTiO3- Single Crystals
Yohachi Yamashita{1}, Tomoaki Karaki{2}, Yiqin Sun{2}, Cong Luo{2}, Xiaoning Jiang{1}
Wednesday, September 9

12:10 PM  
2184: Characterization of (0-3) Piezocomposite Materials for Transducer Applications  
Oluwaseun Omoniyi, Rolan Mansour, Milovan Cardona, Maria Briuglia, Richard O'Leary, James Windmill  
University of Strathclyde, United Kingdom

12:20 PM  
2255: Design and Fabrication of High-Performance Ultrasound Transducers Based on Textured Pb(Mg1/3Nb2/3)O3-Pb(Zr,Ti)O3 Ceramics  
Yizhe Sun(2), Laiming Jiang(2), Ruimin Chen(2), Yongke Yan(1), Shashank Priya(1), Qifa Zhou(2)  
(1)Pennsylvania State University, United States; (2)University of Southern California, United States

12:40 PM  
2383: Bias Sensitive Transparent Electrostrictive Ultrasound Transducers  
Mohammad Rahim Sobhani(2), Chris Ceroci(2), Kate Latham(1), Jeremy Brown(1), Roger Zemp(2)  
(1)Dalhousie University, Canada; (2)University of Alberta, Canada

11:30:00 AM - 1:30:00 PM  
B5P-26: TTT: Poster PM - Biomedical Therapeutic Transducers  
Session Chair(s): Charles Emery (Ulthera Inc.)

11:30 AM  
1057: Application of the Biaxial Driving Method to Focus Ultrasound Using Only Two Electric Signals  
Sagid Delgado(1), Laura Curiel(2), Samuel Pichardo(2)  
(1)Lakehead University, Canada; (2)University of Calgary, Canada

11:40 AM  
1157: Evaluation of CMTL for Passive Monitoring of Microbubble-Assisted Ultrasound Therapies  
Ambre Dauba(1), Jordane Goulas(1), Laurent Colin(4), Laurene Jourdain(1), Benoit Larrat(2), Jean-Luc Gennisson(1), Dominique Certon(3), Anthony Novell(1)  
(1)BioMaps, Université Paris Saclay, CNRS, Inserm, CEA, France; (2)Neurospin, CEA, Université Paris Saclay, France; (3)Université de Tours / GREMAN UMR 7347, France; (4)Université de Tours / GREMAN UMR 7347 / INSA Centre Val de la Loire, France

11:50 AM  
1296: Fabrication and Validation of an Acoustic Reflective Casing for Neurostimulation Studies with Microscopy  
Jak Loree-Spacek, Catherine Swytink-Binnema, Zelma Kiss, Samuel Pichardo  
University of Calgary, Canada

12:00 PM  
Maryam Dadgar(2), Kulievro Hynynen(1)  
(1)Sunnybrook Research Institute / University of Toronto, Canada; (2)University of Toronto, Canada

12:20 PM  
2257: Enlarging HIFU Ablations Created Using a Toroidal Transducer by Depositing the Energy at Distance from the Acoustic Axis with a Minimal Number of Elements  
Marine Sanchez(1), David Melodelima(2)  
(1)INSERM U1032 / LabTAU, France; (2)LabTAU, INSERM, Centre Léon Bérard, Université Lyon 1, Université de Lyon, France

12:30 PM  
2292: A Tri-Frequency (1 MHz, 5 MHz, 30 MHz) Transducer for Combined Imaging and Therapy  
Matthew Mallay, Thomas Landry, Jeffrey Woodacre, Jeremy Brown  
Dalhousie University, Canada

12:40 PM  
2297: Dual-Frequency Intravascular Thrombolysis with Miniaturized Forward-Looking Transducers  
Huaiyu Wu(2), Yinghao Zhang(1), Leela Goel(1), Jinwook Kim(4), Paul Dayton(2), Zhen Xu(3), Xiaoning Jiang(1)  
(1)North Carolina State University, United States; (2)North Carolina State University / University of North Carolina at Chapel Hill, United States; (3)University of Michigan, United States; (4)University of North Carolina at Chapel Hill, United States

12:50 PM  
2303: Fiber Laser Ultrasound Transducers for Intravascular Thrombolysis with Detective Photoacoustic Imaging  
Huaiyu Wu(2), Yuqi Tang(1), Junjie Yao(1), Xiaoning Jiang(2)  
(1)Duke University, United States; (2)North Carolina State University, United States
**Thursday, September 10**

### 4:15:00 AM – 6:15:00 AM

**Student Paper Finalist Session #2 (Groups 3, 4, & 5)**

#### Group 3

**04:15 AM: 1401**

**Ultrasound full-Waveform Inversion with Accurate Transducer Characterisation**  
Carlos Cueto  
Department of Bioengineering  
Imperial College London

**04:25 AM: 2235**

**An Aluminum Nitride (AlN) Based Elastic Metamaterial with Guided Negative Refraction**  
Yanbo He  
Purdue University  
Indiana, USA

**04:35 AM: 2299**

**Mechanical four-Wave Mixing in GHz phononic Circuit on thin-Film Lithium Niobate on Sapphire**  
Wentao Jiang  
Ginzton Laboratory  
Stanford University

#### Group 4

**04:45 AM: 2275**

**Fast Simulation Method of Distributed Nonlinearities in Surface Acoustic Wave Resonators**  
Marta González-Rodríguez  
Universitat Politècnica de Catalunya (UPC)

**04:55 AM: 1336**

**High Frequency Solidly Mounted Resonator Using Ln Single Crystal Thin Plate**  
Kohel Matsumoto  
Department of Robotics  
Tohoku University

**05:05 AM: 2056**

**A 14.5 GHz Lithium Niobate Acoustic Filter with Fractional Bandwidth of 2.93%**  
Liuqing Gao  
Department of Electrical and Computer Engineering  
University of Illinois at Urbana-Champaign

#### Group 5

**05:15 AM: 2406**

**A 2D Ultrasonic Transmit Phased Array Based on a 32x32 CMUT Array Flip-Chip Bonded to an ASIC for Neural Stimulation**  
Chunkyun Seok  
Department of Electrical and Computer Engineering  
NC State University

**05:25 AM: 2012**

**Laser Sensor Guided Intravascular Catheter with Ring Type Stack Transducer for Sonothrombolysis**  
Bohua Zhang  
Department of Mechanical and Aerospace Engineering  
NC State University

**05:35 AM: 1161**

High-performance transparent ferroelectric crystals for photoacoustic transducer applications  
Chaorui Qiu  
Electronic Materials Research Laboratory  
Xi’an Jiaotong University

**04:15 AM**

1413: **Intra-Operative HIFU Treatment at the Hepato-Caval Confluence of the Liver in an in Vivo Porcine Model**  
Sophie Cambronero, Aurélien Dupre, Yao Chen, Michel Rivoire, David Melodelima  
LabTAU, INSERM, Centre Léon Bérard, Université Lyon 1, Université de Lyon, France

**04:25 AM**

1617: **3D FDTD Simulation Study of Ultrasound Focusing on the Human Femoral Neck**  
Takashi Misaki{1}, Kazuki Miyashita{1}, Leslie Bustamante{1}, Nobuo Niimi{3}, Ko Chiba{2}, Mami Matsukawa{1}  
{1}Doshisha University, Japan; {2}Nagasaki University, Japan; {3}Nippon Sigmax, Japan

**04:35 AM**

1772: **Ex Vivo Imaging of Ultrasound-Stimulated Metabolic Activity in Rat Pancreatic Slices**  
Andrew Chen, Aleksandar Jeremic, Vesna Zderic  
George Washington University, United States

**04:45 AM**

1832: **Histological Evaluation of Histotripsy in Ex Vivo Rat Tendon**  
Molly Smallcomb, Jake Elliott, Sujata Khandare, Meghan Vidt, Julianna Simon  
Pennsylvania State University, United States

**04:55 AM**

2194: **Therapeutic Ultrasound for Treatment of Corneal Keratitis**  
Bianca Karpinecz, Blake Cellum, Claire Allison, Natalie Edwards, Fadi Nasrallah, Vesna Zderic  
George Washington University, United States

**04:50 AM - 6:15:00 AM**

**C1P-06: Poster AM - Therapeutic Applications & Targets**  
Session Chair(s): Wilko Wilkening (Siemens Medical Solutions)  
Zhen Xu (University of Michigan)

**04:15 AM**

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Sophie Cambronero, Aurélien Dupre, Yao Chen, Michel Rivoire, David Melodelima  
LabTAU, INSERM, Centre Léon Bérard, Université Lyon 1, Université de Lyon, France

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Takashi Misaki{1}, Kazuki Miyashita{1}, Leslie Bustamante{1}, Nobuo Niimi{3}, Ko Chiba{2}, Mami Matsukawa{1}  
{1}Doshisha University, Japan; {2}Nagasaki University, Japan; {3}Nippon Sigmax, Japan

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George Washington University, United States

**04:50 AM - 6:15:00 AM**

**C1P-11: MIS: Poster AM - Interventional Ultrasound**  
Session Chair(s): Rik Hansen (Radboud University Medical Center)  
Jonathan Mamou (Riverside Research)
Thursday, September 10

05:25 AM
1675: A Dual-Frequency Probe with Coded Excitation for Ultrasound Guided Screw Insertion in Spinal Fusion Surgery
Chen Yang(2), Peiyang Li(2), Yaoyao Cui(3), Weiwei Shao(2), Ninghao Wang(2), Jun Shen(1)
(1)Affiliated Suzhou Hospital of Nanjing Medical University / Suzhou Municipal Hospital, China; (2)Chinese Academy of Science, Suzhou Institute of Biomedical Engineering and Technology, China; (3)Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences, China

05:35 AM
1907: Real-Time Adaptive Image-Based Refocusing with Mode Selection for Transcranial Therapies
Parker O'Brien, Collin Smith, Hasan Aldiabat, Dalong Liu, Emad Ebbini
University of Minnesota - Twin Cities, United States

4:15:00 AM - 6:15:00 AM
C1P-07: MBB: Poster AM - Enhancing Images Through Novel Beamforming II
Session Chair(s): Denis Kouamé (University of Toulouse III)

04:15 AM
1237: An R-Space Theorem for Plane Wave Ultrasound Reconstruction
Hans-Martin Schwab, Frans van de Vosse, Richard Lopata
Eindhoven University of Technology, Netherlands

04:25 AM
1652: Reducing Grating Lobe Artifacts by Exploiting Lateral Transducer Motion
Marvin Heller, Georg Schmitz
Ruhr University Bochum, Germany

04:35 AM
2175: On Archimedean-Spiral-Based Imaging
Adrien Besson(1), Frédéric Wintzenrieth(1), Baptiste Hériard-Dubreuil(2), Claude Cohen-Bacrie(1)
(1)E-Scopics SAS, France; (2)E-Scopics SAS / École Polytechnique Fédérale de Lausanne, France

04:45 AM
1063: A Simulation Study on the Second Harmonic Amplitude Generated with Plane Wave and Focused Wave Transmission
Libertario Demi(2), Francesco Guidi(1), Piero Tortoli(1)
(1)Università degli Studi di Firenze, Italy; (2)University of Trento, Italy

04:55 AM
1411: Reducing Dark Region Artifacts in Short-Lag Spatial Coherence (SLSC) Beamforming by Coherence Filtering of the Aperture-Domain Data
Luzhen Nie(1), Thomas Carpenter(1), Harry Clegg(1), James McLaughlan(2), David Cowell(1), Steven Freear(1)
(1)University of Leeds, United Kingdom; (2)University of Leeds / Leeds Institute of Medical Research, United Kingdom

05:05 AM
1511: Improving the Detectability of Highly Coherent Targets in Short-Lag Spatial Coherence Images with Multi-Line Transmission
Giulia Matrone(3), Muyinatu Lediju Bell(1), Alessandro Ramalli(2)
(1)Johns Hopkins University, United States; (2)Università degli Studi di Firenze, Italy; (3)University of Pavia, Italy

05:15 AM
1561: Design of Optimum 1D Sparse Arrays for Point-of-Care Ultrasound Imaging – Phantom Study
Jihyeok Choi(2), Jae Hee Song(1), Jaejin Lee(2), Tai-Kyong Song(2)
(1)Queensland Brain Institute, Australia; (2)Sogang University, Korea

05:25 AM
1913: Optimization of Transducer Distribution and Transmit Sequence in Coherent-Multi Transducer Ultrasound (CoMTUS) Imaging
Laura Peralta(1), Kirsten Christensen-Jeffries(1), Alessandro Ramalli(2), Joseph V Hajnal(1)
(1)King’s College London, United Kingdom; (2)Università degli Studi di Firenze, Italy

05:35 AM
2351: Transthoracic Cardiac Ultrasound Imaging Using a Flexible Transducer Array: in Silico Feasibility Study
Ekaterina Zilonova, Sjoerd Nooijens, Marcus Ingram, Jan D’Hooge
Katholieke Universiteit Leuven, Belgium

4:15:00 AM - 6:15:00 AM
C1P-08: MBB: Poster AM - Deep Learning in Beamforming
Session Chair(s): Yonina Eldar (Weizmann Institute of Science)

04:15 AM
1012: Challenge on Ultrasound Beamforming with Deep Learning (CUBDL)
Muyinatu Lediju Bell(2), Jiaqi Huang(2), Dongwoon Hyun(3), Yonina C. Eldar(4), Ruud van Sloun(1), Massimo Mischi(1)
(1)Eindhoven University of Technology, Netherlands; (2)Johns Hopkins University, United States; (3)Stanford University, United States; (4)Weizmann Institute of Science, Israel

04:55 AM
1270: Compressed Convolutional Beamforming for Wireless Ultrasound
Alon Mamistvalov, Sivan Grotas, Yonina C. Eldar
Weizmann Institute of Science, Israel

05:05 AM
1967: Deep Adaptive Beamforming of Subsampled Channel Data
Naama Kessler(4), Alon Mamistvalov(4), Oded Drori(4), Ben Luijten(1), Shai Tejman Yarden(3), Israel Aharoni(2), Ruud van Sloun(1), Yonina C. Eldar(4)
(1)Eindhoven University of Technology, Netherlands; (2)Haemek Medical Center, Israel; (3)Sheba Medical Center, Israel; (4)Weizmann Institute of Science, Israel
05:15 AM
Boudewine Ossenkoppele{1}, Ben Luijten{2}, Deep Bera(5), Nico de Jong(4), Martin Verweij(4), Ruud van Sloun(3)
{1}Delft University of Technology, Netherlands; {2}Eindhoven University of Technology, Netherlands; {3}Eindhoven University of Technology / Philips Research, Netherlands; {4}Erasmus University Medical Center / Delft University of Technology, Netherlands; {5}Philips Research, India

05:25 AM
1990: Resolution Improvement with a Fully Convolutional Neural Network Applied to Aligned Per-Channel Data
Francois Vignon, Jun Seob Shin, F. Can Meral, Iason Apostolakis, Jean-Luc Robert
Philips Research North America, United States

05:35 AM
2089: Joint Learning of Sparse Channel Arrays and Model-Based Deep Beamforming Networks
Iris Huijben{1}, Ben Luijten{1}, Bastiaan Veeling{3}, Frederik de Brujin{2}, Harold Schmeitz{2}, Massimo Mischi{1}, Ruud van Sloun{1}
{1}Eindhoven University of Technology, Netherlands; {2}Philips Research, Netherlands; {3}University of Amsterdam, Netherlands

05:45 AM
2190: Image Quality-Based Regularization for Deep Network Ultrasound Beamforming
Jaime Tierney, Adam Luchies, Matthew Berger, Brett Byram
Vanderbilt University, United States

05:55 AM
1374: A Deep Neural Network with Self-Supervised Learning for Ultrafast Ultrasound Imaging as an Inverse Problem
Jingke Zhang(2), Congzhi Wang(1), Qiong He(2), Jianwen Luo(2)
{1}Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; {2}Tsinghua University, China

06:00 AM
2243: Beamforming of Row-Column-Addressed 2D Arrays Based on Dynamic Apodization with Deep Neural Network
Shi-Hao Li, Pai-Chi Li
National Taiwan University, Taiwan

04:15 AM
1084: Apodizing Delay and Auto-Correlation Reconstruction Algorithm for High-Frame-Rate Ultrasound Imaging
Chunqi Li{1}, Harry Clegg{1}, Thomas Carpenter{1}, Luzhen Nie{1}, Steven Freear{1}, David Cowell{1}, James McLaughlan{2}
{1}University of Leeds, United Kingdom; {2}University of Leeds / Leeds Institute of Medical Research, United Kingdom

04:25 AM
1391: In-Vivo Comparison of Multiline Transmission and Diverging Wave Imaging for High Frame Rate Speckle Tracking Echocardiography
Marta Oriolowska{1}, Stephanie Bézy{1}, Alessandro Ramalli{2}, Valentino Meacci{3}, Jens-Uwe Voigt{1}, Jan D’hooge{1}
{1}Katholieke Universiteit Leuven, Belgium; {2}Katholieke Universiteit Leuven / Università degli Studi di Firenze, Belgium; {3}Università degli Studi di Firenze, Italy

04:35 AM
1465: High-Frame-Rate Coherence Imaging of the Heart with Ultrasound Diverging Waves
Giulia Matrone{3}, Edoardo Spairani{3}, Benedetta Matrone{1}, Alessandro Ramalli{2}
{1}Guglielmo da Saliceto Hospital, Italy; {2}Università degli Studi di Firenze, Italy; {3}Università degli Studi di Firenze, Italy

04:45 AM
1614: Sequence Optimization for High Frame Rate Imaging with a Convex Array
Nina Ghigo{1}, Alessandro Ramalli{2}, Stefano Ricci{2}, Piero Tortoli{2}, Didier Vray{1}, Hervé Liebgott{1}
{1}Creatis - INSA Lyon, France; {2}Università degli Studi di Firenze, Italy

04:55 AM
1653: Detecting and Characterizing the Fabella with High Frame-Rate Ultrasound Imaging
Michael A. Berthaume{3}, Matthieu Toullemonde{1}, Laura Peralta{2}, Kirsten Christensen-Jeffries{2}, Enrico G risan{3}, Sevan Harput{4}
{1}Imperial College London, United Kingdom; {2}King’s College London, United Kingdom; {3}London South Bank University, United Kingdom; {4}London South Bank University / Imperial College London, United Kingdom

05:05 AM
1424: 3D High Frame Rate Imaging Scheme for Ultrasound Carotid Imaging
Mehdi Soozande{2}, Moein Mozzaffarzadeh{1}, Fabian Fool{4}, Taehoon Kim{1}, Eunchul Kang{1}, Michiel Pertijs{1}, Martin Verweij{1}, Hendrik Vos{2}, Johan G. Boschi{2}, Nico de Jong{3}
{1}Delft University of Technology, Netherlands; {2}Erasmus University Medical Center, Netherlands; {3}Erasmus University Medical Center / Delft University of Technology, Netherlands; {4}Medical Imaging, ImPhys, Applied Sciences / Delft University of Technology, Netherlands

05:15 AM
2230: A 3D Motion Compensation Method for High Frame Rate Volumetric Ultrasound Imaging Based on Velocity Vector Estimation: a Simulation Study
Thursday, September 10

Yinran Chen{2}, Xiongbiao Luo{2}, Jianwen Luo{1}
{1}Tsinghua University, China; {2}Xiamen University, China

05:25 AM
2241: Feasibility of Fourier-Based Fast 3D Ultrasound Imaging Using Row-Column Addressed 2-D Arrays
Shang-Ching Lin, Pai-Chi Li
National Taiwan University, Taiwan

4:15:00 AM - 6:15:00 AM
C1P-12: MIS: Poster AM - Contrast Agent Signal Processing
Session Chair(s): Chih-Chung Huang (National Cheng Kung University)
Jonathan Mamou (Riverside Research)

05:35 AM
Diya Wang{1}, Mengxi Wan{2}, Chris J. Diederich{1}
{1}University of California, San Francisco, United States; {2}Xi'an Jiaotong University, China

05:45 AM
2142: Beyond Classical Ultrasound Contrast via Deep Neural Networks
Hannah Strohm{1}, Sven Rothlübbers{1}, Klaus Eickel{3}, Matthias Günther{2}
{1}Fraunhofer Institute Digital Medicine-MEVIS, Germany; {2}Fraunhofer Institute Digital Medicine-MEVIS / University of Bremen / mediri GmbH, Germany; {3}University of Bremen, Germany

05:55 AM
2331: Detection of Hepatocellular Carcinoma by Spatio-Temporal Analysis of Contrast-Enhanced Ultrasound and Machine Learning
Simona Turco{1}, Amir Pirmoazen{2}, Lyschik Andrej{3}, Massimo Misch{1}, Aya Kamaya{2}, John Eisenbrey{4}, Ahmed El Kaffas{2}
{1}Eindhoven University of Technology, Netherlands; {2}Stanford University, United States; {3}Thomas Jefferson University Hospital, United States; {4}Thomas Jefferson University, United States

06:05 AM
2464: Compounding Deep Convolutional Neural Networks, Contrast-Enhanced Ultrasound Imaging, and Quantitative Parameters for Liver Fibrosis Classification
Huang-Chen Lin, Shyh-Hau Wang
National Cheng Kung University, Taiwan

1434: Comparison of Pulse Sequences Used for Super-Resolution Ultrasound Imaging with Deep Learning
Katherine Brown, Kenneth Hoyt
University of Texas at Dallas, United States

04:25 AM
1525: An Anatomically-Realistic Simulation Framework for Ultrasound Localization Microscopy
Hatim Belgharbi, Jonathan Porée, Rafat Damseh, Léo Milecki, Patrick Delafontaine-Martel, Frederic Lesage, Jean Provost
Polytechnique Montréal, Canada

04:35 AM
1532: 2D and 3D Transcranial Brain-Wide Pulsatility Mapping in Vivo with Dynamic Ultrasound Localization Microscopy (DULM)
Chloé Bourquin, Jonathan Porée, Frédéric Lesage, Jean Provost
Polytechnique Montréal, Canada

04:45 AM
1757: Microbubble Tracking with a Non-Linear Motion Model
Marion Piepenbrock, Stefanie Dencks, Georg Schmitz
Ruhr University Bochum, Germany

05:05 AM
1944: Tracking of Microbubbles with a Recurrent Neural Network for Super-Resolution Imaging
Daniel Wilmes, Marion Piepenbrock, Georg Schmitz, Stefanie Dencks
Ruhr University Bochum, Germany

05:05 AM
Tianyang Zhou{1}, Xin Liu{1}, Yi Yang{2}, Qiong He{2}, Jianwen Luo{2}
{1}Shanghai University, China; {2}Tsinghua University, China

4:15 AM
4:15:00 AM - 6:15:00 AM  
C1P-27: MTC: Poster AM - Tissue Characterization: the Role of Phantoms  
Session Chair(s): Tadashi Yamaguchi (Chiba University)  

05:15 AM  
1078: Ultrasound Scattering from Cell Pellet Biophantoms Can Provide Insight Into the Cellular Structure Involved in Scattering  
Pauline Muleki-Seya{1}, William D. O’Brien Jr.{2}  
{1}Creatis - INSA Lyon, France; {2}University of Illinois at Urbana–Champaign, United States  

05:25 AM  
1504: Breast Tissue Mimicking Phantoms for Combined Microwave and Ultrasound Imaging  
Siyun Li, Elise Fear, Laura Curiel  
University of Calgary, Canada  

05:35 AM  
1828: Effect of Freezing and Fixation on Quantitative Ultrasound Parameters in Phantoms of Brain and Brain Tumour  
Hannah Thomson{2}, Shufan Yang{2}, Thomas Stretch{1}, Mitch Baldwin{1}, Sandy Cochran{2}  
{1}Stryker Medical Devices, Ireland; {2}Stryker Medical Devices, United States; {2}University of Glasgow, United Kingdom  

05:45 AM  
1865: Evaluation of Frequency Dependency of Speed of Sound in Homogeneous Phantoms and Diverse Rat Livers  
Mai Ino, Kazuma Noguchi, Kenji Yoshida, Tadashi Yamaguchi  
Chiba University, Japan  

05:55 AM  
2221: Differential Ultrasound Neuromodulatory Responses of Rat Primary Cortical Neurons (PCN) with Oxygen Deprivation in Vitro  
Hyunwoo Song{2}, Soumyajit Ray{2}, Jeeun Kang{1}, Maria Shishikura{2}, Maged Harraz{2}, Emad Doctor{1}  
{1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States  

4:15:00 AM - 6:15:00 AM  
C1P-15: MIM: Poster AM - Signal Processing Techniques in Medical Imaging  
Session Chair(s): Jianwen Luo (Tsinghua University)  

04:35 AM  
1919: Coherent-Multi Transducer Ultrasound Imaging: First in-Vivo Results  
Laura Peralta{1}, Veronika A Zimmer{1}, Kirsten Christensen-Jeffries{1}, Alessandro Ramalli{2}, Emily Skelton{1}, Jacqueline Matthew{1}, John M Simpson{1}, Joseph V Hajnal{1}  
{1}King’s College London, United Kingdom; {2}Università degli Studi di Firenze, Italy  

04:45 AM  
1920: Prototype for Simultaneous Matching and Reading of X-Ray and Ultrasound Breast Images  
Madeleine Hertel{4}, Michael Golatta{5}, Gijs Hendriks{3}, Manja Juski{5}, Steffen Kappler{4}, Chris de Korte{3}, Qiuting Li{1}, Chang Liu{1}, Andreas Maier{1}, Raif Nanke{4}, Georg Rose{2}, Benedikt Schäflgen{5}, Marcus Radicke{4}  
{1}Friedrich-Alexander-University Erlangen-Nuremberg, Germany; {2}Otto-von-Guericke University, Magdeburg, Germany; {3}Radboud University Medical Center, Netherlands; {4}Siemens Healthcare GmbH, Germany; {5}University Hospital Heidelberg, Germany  

04:55 AM  
Anton Nikolaev{1}, Leon de Jong{1}, Vincent Groenhuis{3}, Marcel Welleweerd{3}, Gert Weijers{1}, Françoise Siepel{3}, Stefano Stramigioli{3}, Hendrik H.G. Hansen{1}, Chris de Korte{2}  
{1}Medical Ultrasound Imaging Center / Radboud University Medical Center, Netherlands; {2}Radboud University Medical Center, Netherlands; {3}University of Twente, Netherlands  

4:15:00 AM - 6:15:00 AM  
C1P-14: MIM: Poster AM - Image Reconstruction Techniques  
Session Chair(s): Wei-Ning Lee (University of Hong Kong)  

05:05 AM  
1659: The Impact of Grating Lobe Clutter on Plane Wave DCE-US Parametric Imaging  
Elaha Moghimirad, Jeffrey Bamber, Emma Harris  
Institute of Cancer Research, United Kingdom  

05:15 AM  
1689: Alleviating Comet Tail Artifact Using Nakagami Images Based on Logarithmic Compression for Monitoring of Microwave Ablation  
Xin Jia, Shan Wu, Xuewei Wang, Gang Niu, Mingxi Wan, Siyuan Zhang  
X’ian Jiaotong University, China  

05:25 AM  
1923: Calibrated Anatomically Realistic Model of Aberration, Reverberation, and Coherence: Experiments and Simulations  
Francisco Santibáñez{2}, Gianmarco Pinton{1}  

05:35 AM
2046: A Hydrogel / Oil-in-Polymer Composite Phantom for Modeling Clutter and Aberration
Stephen McAleavey
University of Rochester, United States

05:45 AM
2284: 3D Matrix Approach for Aberration Correction in Random Scattering Media
Flavien Bureau², William Lambert³, Mathias Fink⁴, Alexandre Aubry¹
¹ESPCI Paris, PSL University, CNRS, Institut Langevin, France; ²Institut Langevin, France; ³Institut Langevin / SuperSonic Imagine, France; ⁴Institut Langevin, ESPCI Paris, CNRS UMR 7587, PSL University, France

05:55 AM
2466: Transcranial Ultrasound Computed Tomography Using Acoustoelastic Full-Waveform Inversion
Christian Boehm, Patrick Marty, Andreas Fichtner
ETH Zürich, Switzerland

05:15 AM
1205: 3D Tethered Ultrasound Capsule Endoscopy (3D-TUCE): an in Vivo Primate Study
Yaocai Huang¹, Zhijiang Zhang¹, Suzi Liang¹, Ning Lv¹, Peitian Mu¹, Rong Liu¹, Ge Yang¹, Hairong Zheng¹, Sandy Cochran², Weibao Qiu²
¹Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; ²University of Glasgow, United Kingdom

05:25 AM
1381: A Mechanical Rotating 3D Ultrasound Probe for Imaging Primate Cerebral Blood Flow
Yijing Dong², Shengguang Li¹, Rong Liu², Ge Yang², Tao Zhang¹, Hairong Zheng², Weibao Qiu²
¹Institute of Psychology, Chinese Academy of Sciences, China; ²Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

05:35 AM
2091: Synthesis of Ultrasound-Compatible Linear Heart Tube Phantom Using Water-Soluble 3D Printed Model for 3D Ultrasound Flow Velocimetry
Bowen Jing², Martin Tomov¹, Amanda Wijntjes², Sai Bhamidipati³, Reza Avazmohammadi³, Holly Bauser-Heaton¹, Vahid Serpooshan¹, Brooks Lindsey²
¹Emory University, United States; ²Georgia Institute of Technology, United States; ³Texas A&M University, United States

05:45 AM
2227: High Frequency Ultrasound Shear Elastography for Hand Tendon Rehabilitation: a New Fitting Approach Based on Sigmoid Function
Pei-Yu Chen, Hisin Huang, Wei-Yu Tsai, Chih-Chung Huang
National Cheng Kung University, Taiwan

04:15:00 AM - 6:15:00 AM
C1P-16: MIM: Poster AM - 3D Volumetric Imaging
Session Chair(s): Yoshifumi Saijo (Tohoku University)

04:15 AM
1205: 3D Tethered Ultrasound Capsule Endoscopy (3D-TUCE): an in Vivo Primate Study
Yaocai Huang¹, Zhijiang Zhang¹, Suzi Liang¹, Ning Lv¹, Peitian Mu¹, Rong Liu¹, Ge Yang¹, Hairong Zheng¹, Sandy Cochran², Weibao Qiu²
¹Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; ²University of Glasgow, United Kingdom

04:25 AM
1381: A Mechanical Rotating 3D Ultrasound Probe for Imaging Primate Cerebral Blood Flow
Yijing Dong², Shengguang Li¹, Rong Liu², Ge Yang², Tao Zhang¹, Hairong Zheng², Weibao Qiu²
¹Institute of Psychology, Chinese Academy of Sciences, China; ²Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

04:35 AM
2091: Synthesis of Ultrasound-Compatible Linear Heart Tube Phantom Using Water-Soluble 3D Printed Model for 3D Ultrasound Flow Velocimetry
Bowen Jing², Martin Tomov¹, Amanda Wijntjes², Sai Bhamidipati³, Reza Avazmohammadi³, Holly Bauser-Heaton¹, Vahid Serpooshan¹, Brooks Lindsey²
¹Emory University, United States; ²Georgia Institute of Technology, United States; ³Texas A&M University, United States

04:45 AM
2227: High Frequency Ultrasound Shear Elastography for Hand Tendon Rehabilitation: a New Fitting Approach Based on Sigmoid Function
Pei-Yu Chen, Hisin Huang, Wei-Yu Tsai, Chih-Chung Huang
National Cheng Kung University, Taiwan
04:15 AM
1015: Estimation of Ultrasound Echogenicity Map from B-Mode Images Using Convolutional Neural Network
Ryan Jui-En Yang, Che-Chou Shen, Ri-Cheng Lin
National Taiwan University of Science and Technology, Taiwan

04:25 AM
1345: Attentively Learning Residuals for Coherent Plane Wave RF Data Reconstruction via Generative Adversarial Networks
Junling Gao, Qin Kou, Lei Xu, Mingxi Wan
Xi’an Jiaotong University, China

04:35 AM
1678: Complex Convolutional Neural Networks for Fast Diverging Wave Imaging
Jingfeng Lu{2}, Fabien Millilo{1}, Damien Garcia{1}, Sebastien Sales{1}, Wanyu Liu{2}, Denis Friboulet{1}
{1}Creatis - INSA Lyon, France; {2}METISLab / Harbin Institute of Technology, China

04:45 AM
1082: Deep Learning for Hetero-Homo Conversion in Channel-Domain RF for Phase Aberration Correction in USCT
Tatsuki Koike, Yoshiki Watanabe, Naoki Tomii, Takashi Azuma, Shu Takagi
University of Tokyo, Japan

04:55 AM
1365: Image Resolution Improvement During Zooming in Ultrasound Image Using Deep Learning Technique
Jeong Seok Kim
GE Ultrasound Korea, Korea

05:05 AM
1376: Automated Prediction of Duchenne Muscular Dystrophy from Convolutional Neural Network on B-Mode and Nakagami Imaging
Shi-Hong Liu{3}, Ai-Ho Liao{3}, Po-Hsiang Tsui{1}, Ho-Chiao Chuang{2}
{1}Chang Gung University, Taiwan; {2}National Taipei University of Technology, Taiwan; {3}National Taiwan University of Science and Technology, Taiwan

05:15 AM
Kyungsu Lee{2}, Jun-Young Kim{1}, Moonhwan Lee{2}, Chang Hyuk Choi{1}, Jaeyoung Hwang{2}
{1}Daegu Catholic University, Korea; {2}Daegu Gyeonbuk Institute of Science and Technology, Korea

05:25 AM
1878: AI Assisted Feedback System for Transmit Parameter Optimization in Cardiac Ultrasound
Pavan Annangi, Hariharan Ravishankar, Rohan Patil, Svein Arne Aase, Tore Bjaastad, Erik Steen
GE Healthcare, India

05:35 AM
2461: Two Stages Deep Learning Approach of Carotid Intima-Media Thickness from Ultrasound Images
Kunkyu Lee, Miran Lee, Tai-Kyong Song
Sogang University, Korea
05:15 AM
1943: Magnetomotive Ultrasound Elastography for Simultaneous Localization of Magnetic Nanoparticles and Quantification of Local Tissue Elasticity: Feasibility Study
Yu-Hsiang Tsai, Meng-Lin Li
National Tsing Hua University, Taiwan

05:25 AM
1526: In Vivo and Simultaneously Acquired Endoluminal Ultrasound Biomicroscopic and Colonoscopic Images of Inflamed Mouse Colon and Wall Thickness Measurement
Rodrigo Oliveira, Carine Martins, Anderson Cunha, Rossana Solleti, Helena Borges, João Machado
Universidade Federal do Rio de Janeiro, Brazil

04:15 AM - 6:15:00 AM
C1P-19: MCA: Poster AM - Ultrasound Localization Microscopy & High Resolution Imaging II
Session Chair(s): Ayache Bouakaz (INSERM)

04:15 AM
1137: Singular Value Decomposition and 2D Cross-Correlation Based Localization of Gas Vesicles for Super-Resolution Ultrasound Imaging
Jihun Kim, Gyoyeon Hwang, Sungmoon Rho, Sangpil Yoon
University of Notre Dame, United States

04:25 AM
1425: Three-Dimensional Super-Resolution Ultrasound Imaging of Chicken Embryos - a Validation Framework for Analysis of Microvascular Morphology
Ipek Oezdemir, Kara Peak, Shelby Mohr-Allen, Victor Varner, Kenneth Hoyt
University of Texas at Dallas, United States

04:35 AM
1514: Towards Contrast Agent-Free Super-Resolution Ultrasound Imaging Using Coded Excitation Technique
Qiyang Chen(1), Brittny Rush(1), Sean Stocker(1), Roderick Tan(1), Kang Kim(2)
(1)University of Pittsburgh, United States; (2)University of Pittsburgh / University of Pittsburgh Medical Center, United States

04:45 AM
1524: Super-Resolution Ultrasonography Using Combined Microbubble Centroid Localization and Deconvolution Algorithm for Human Kidney Imaging
Qiyang Chen(1), Michael George(1), Roderick Tan(1), Kang Kim(2)
(1)University of Pittsburgh, United States; (2)University of Pittsburgh / University of Pittsburgh Medical Center, United States

04:55 AM
2125: In-Human Acoustic Angiography Using a 288-Element Dual-Frequency Array: a Pilot Study in the Peripheral Vasculature, Neck, and Breast
Isabel Nourse(2), Thomas Kierski(2), Guofeng Pang(1), Jianhua Yin(3), Jing Yang(3), Emmanuel Chérin(3), Stuart Foster(5), Claudia Carnevale(1), Christine Démoré(6), Yueh Lee(4), Paul Dayton(2)
(1)FUJIFILM VisualSonics, Inc., Canada; (2)North Carolina State University / University of North Carolina at Chapel Hill, United States; (3)Sunnybrook Research Institute, Canada; (4)University of North Carolina at Chapel Hill, United States; (5)University of Toronto, Sunnybrook Health Sciences Centre, Canada; (6)University of Toronto, Sunnybrook Research Institute, Canada

05:05 AM
2300: Super-Resolution Ultrasound with Morphological Image Reconstruction and Local Projection for Microvascular Characterization
Scott Schoen Jr(1), Zhigen Zhao(1), Chengwu Huang(2), Shigao Chen(2), Costas Arvanitis(1)
(1)Georgia Institute of Technology, United States; (2)Mayo Clinic, United States

05:15 AM
2440: Super-Resolution Mapping of Molecularly Targeted Ultrasound Contrast Bound in Vivo Using Superharmonic Imaging
Thomas Kierski(2), Rachel White(1), James Tsuruta(2), Isabel Nourse(1), Gianmarco Pinton(1), Stuart Foster(3), Christine Démoré(4), Paul Dayton(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States; (3)University of Toronto, Sunnybrook Health Sciences Centre, Canada; (4)University of Toronto, Sunnybrook Research Institute, Canada

05:25 AM
2443: Aberration Correction for Ultrasound Localization Microscopy with Deep Convolutional Neural Networks Trained by Fullwave Simulations
Thomas Kierski(2), Paul Dayton(1), Gianmarco Pinton(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States

04:15:00 AM - 6:15:00 AM
C1P-20: MCA: Poster AM - Microbubbles and Contrast Imaging I
Session Chair(s): Klazina Kooiman (Thoraxcenter, Erasmus MC)

Note: Wait until 4:25 to begin.

04:25 AM
1160: Arterial Labeling Ultrasound Subtraction Angiography
Jian An, Jiabin Zhang, Feihong Dong, Feng Feng, Jue Zhang
Peking University, China

04:35 AM
1269: Dual-Mode Contrast-Enhanced Ultrasound and Optoacoustic Imaging with Spherical Matrix Arrays - Towards Simultaneous 3D Mapping of Microvasculature, Blood Flow and Oxygenation
Justine Robin(2), Ali Özbek(2), Daniel Razansky(1)
(1)ETH Zürich / Universität Zürich, Switzerland; (2)ETH Zürich / University of Zurich, Switzerland
Thursday, September 10

04:45 AM
1316: Contrast-Enhanced Ultrasound of Skeletal Muscle Perfusion to Provide Insights Into Left Ventricular Assist Device Therapy Response
Lauren Delaney, Kathleen Fitzgerald, Maria Stanczak, Priscilla Machado, Gordon Reeves, Flemming Forsberg
Thomas Jefferson University, United States

04:55 AM
1505: Improved Microbubble (MB) Localisation Using Particle Detecting Algorithm: Evaluation of Algorithm Performance for Different Beamforming Methods
{1}Erasmus University Medical Center, Netherlands; {2}Heriot Watt University, United Kingdom; {3}Technical University of Denmark, Denmark; {4}University of Edinburgh, United Kingdom

05:05 AM
1520: In-vitro and in-silico Porous Phantoms for Investigating the Relationship Between Microvascular Architecture and Ultrasound-Contrast-Agent Kinetics
Peiran Chen{2}, Simona Turco{2}, Ruud van Sloun{2}, Andreas Pollet{2}, Jaap Den Toonder{2}, Hessel Wijkstra{1}, Massimo Mischi{2}
{1}Amsterdam University Medical Centers, Netherlands; {2}Eindhoven University of Technology, Netherlands

05:15 AM
1703: Simulation of Superharmonic Microbubble and Tissue Responses for Informed Design of Dual-Frequency Transducers for Acoustic Angiography
Isabel Newsome, Gianmarco Pinton, Paul Dayton
North Carolina State University / University of North Carolina at Chapel Hill, United States

05:25 AM
1848: Ligand Distribution Determines Microbubble Targeting Efficiency
Simone A.G. Langeveld{1}, Ines Beekers{1}, Bram Meijlink{1}, Antonius F.W. van der Steen{1}, Nico de Jong{2}, Klaizna Kooiman{1}
{1}Erasmus University Medical Center, Netherlands; {2}Eindhoven University Medical Centers, Netherlands

05:35 AM
2330: Estimation of Parametric Maps by Pharmacokinetic Analysis to Visualize Prolonged Retention of PSMA-Targeted Nanobubbles in Prostate Cancer
Chuan Chen{2}, Simona Turco{2}, Reshani Perera{1}, Agata A. Exner{1}, Massimo Mischi{2}
{1}Case Western Reserve University, United States; {2}Eindhoven University of Technology, Netherlands

04:15 AM - 6:15:00 AM
C1P-21: MCA: Poster AM - Bubble Cavitation & Applications
Session Chair(s): Mingxi Wan (Xi'an Jiaotong University)

04:35 AM
1742: Impact of SonoVue Suspension Time on the Subharmonic Response and Intracranial Blood Pressure Estimation in Vitro
Xiaoyang Qiao{2}, Yu Wen{2}, Jianjun Yu{2}, Shanshan Xu{2}, Ayache Bouakaz{1}, Mingxi Wan{2}
{1}iBrain, Université de Tours, Inserm, France; {2}Xi’an Jiaotong University, China

04:45 AM
1822: Estimating Central Cardiac Pressures Noninvasively in Patients Using Ultrasound Contrast Agents
{1}Clarius, Canada; {2}Thomas Jefferson University, United States; {3}Thomas Jefferson University / Drexel University, United States

04:55 AM
2120: Ultrasound-Activated Microbubbles Stimulate Degradation of Fibrin-Based Biofilms
Kirby R. Lattwein{1}, Margot E. Starrenburg{1}, Joop J.P. Kooijzer{1}, Simone A.G. Langeveld{1}, Marilé Leon-Groeters{1}, Antonius F.W. van der Steen{1}, Nico de Jong{2}, Moniek P.M. de Maat{1}, Willem J.B. van Wamel{1}, Klaizna Kooiman{1}
{1}Erasmus University Medical Center, Netherlands; {2}Eindhoven University Medical Centers, Netherlands

05:05 AM
2291: A Multiplexed Microfluidic and Microscopy Study of ATP Release Following Microbubble and Ultrasound Therapy
Joseph Goldgewicht{2}, Ju Jing Tan{2}, Ryszard Grygorczyk{2}, Thomas Gervais{1}, François Yu{2}
{1}École Polytechnique de Montréal, Canada; {2}Université de Montréal, Canada
Thursday, September 10

05:15 AM
1591: Analysis of Translational Motion of Microbubbles in a Simulated Lymph Channel Under Exposure of 15-MHz Focused Ultrasound
Kenji Yoshida, Masaaki Omura, Tadashi Yamaguchi
Chiba University, Japan

05:25 AM
1143: Single-Element Ultrasound Imaging System Based on a Mirror Scanning
Seongwook Choi, Jin Young Kim, Hae Gyun Lim, Jin Woo Baik, Hyung Ham Kim, Chulhong Kim
Pohang University of Science and Technology, Korea

05:35 AM
1612: Micro-Machined Ultrasonic Transducers Are Coming to Market: Why Now?
Marjorie Villien, Jerome Mouly, William Watkins
Yole Développement, France

05:45 AM
2136: Design of a Sparse Ellipsoidal Array for Volumetric Ultrasound Imaging of the Prostate
Sjoerd Nooijens(2), Alessandro Ramalli(3), Marcus Ingram(2), Marc Fournelle(1), Alexander Bertrand(2), Jan D’hooge(2)
(1)Fraunhofer Institute Biomedical Engineering-IBMT, Germany; (2)Katholieke Universiteit Leuven, United Kingdom; (3)Katholieke Universiteit Leuven, Belgium

05:55 AM
2246: Real-Time 3D Ultrasound Research Platform for a 1024-Element Matrix-Array
Marcin Lewandowski, Mateusz Walczak, Beata Witek, Damian Cacko, Piotr Jarosik
us4us Ltd., Poland

04:15 AM
1083: Estimation of Covariance Matrix in Minimum Variance Beamforming
Hideyuki Hasegawa, Ryo Nagaoka
University of Toyama, Japan

04:25 AM
1209: Mutual Coherence for the Enhancement of Minimum Variance Beamforming
Jing Liu(2), Chongchong Guo(2), Bo Yang(2), Wei Fan(2), Weibao Qiu(1)
(1)Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; (2)Shenzhen Mindray Bio-Medical Electronics Co., Ltd, China

04:35 AM
2111: Optimization of Frequency and Plane-Wave Compounding by Minimum Variance Beamforming
Ryoya Kozai(3), Norio Tagawa(3), Masasumi Yoshizawa(2), Takasuke Irie(1)
(1)Microsonic Co., Ltd., Japan; (2)Tokyo Metropolitan College of Industrial Technology, Japan; (3)Tokyo Metropolitan University, Japan

04:45 AM
2157: Estimation of Optimal Mean Sound Speed Maps for Reducing Beamforming Errors
Haine Lee, Jaejin Lee, Sua Bae, Tai-Kyong Song
Sogang University, Korea

04:55 AM
2166: A Weighted Non-Linear Beamformer for Synthetic Aperture Ultrasound Imaging
Anudeep Vayyeti, Arun Thittai
Indian Institute of Technology Madras, India

05:05 AM
1610: Effect of Skull Bone on Transcranial Doppler Measurements
Itsuki Michimoto(1), Keita Yano(1), Yasuyo Kobayashi(2), Kozue Saito(2), Mami Matsukawa(1)
(1)Doshisha University, Japan; (2)Nara Medical University, Japan

05:15 AM
1975: Resolution Measured as Separability Compared to Full Width Half Maximum for Adaptive Beamformers
Ole Marius Hoel Rindal(1), Alfonso Rodriguez-Molares(2), Andres Austeng(1)
(1)University of Oslo, Norway; (2)University of Vigo, Spain

05:25 AM
2090: Comparison of Autofocus Metrics for Self-Shape Estimation of Flexible Ultrasonic Transducer Arrays
Daniel Barbosa, Marcus Ingram, Ekaterina Zilonova, Jan D’hooge
Katholieke Universiteit Leuven, Belgium

05:35 AM
2273: Covariance mean-to-standard-Deviation Factor for Ultrasound Imaging
Yuanguo Wang, Chichao Zheng, Hu Peng
Hefei University of Technology, China

04:15 AM
1150: Transdermal Delivery of Large Nanoparticles via Ultrasound Irradiation in Low-Frequency Range
Yuta Kurashina, Risa Asano, Makoto Matsui, Takahiro Nomoto, Kentaro Nakamura, Nobuhiro Nishiyama, Yoshitaka Kitamoto
Tokyo Institute of Technology, Japan

04:25 AM
1228: A Distal Rotary-Linear Micromotor for Intravascular Ultrasound (IVUS) Imaging

4:15:00 AM - 6:15:00 AM
C1P-25: MSD: Poster AM - Medical System Design - Volumetric 2D/3D Imaging
Session Chair(s): Hendrik Vos (Erasmus Medical Centre)
Thursday, September 10

Boquan Wang, Xiaoniu Li, Liyuan He, Teng Cao, Chunling Zhu, Dawei Wu
Nanjing University of Aeronautics and Astronautics, China

04:35 AM
2173: Wearable Ultrasound Doppler System for Monitoring of Hemodynamic Change in Patients with Cardiovascular Diseases
Miji Kim{1}, Kyungmin Kim{2}, Yeonseong Park{1}, Hae Gyun Lim{2}, Hyung Ham Kim{2}, Changhan Yoon{1}
{1}Inje University, Korea; {2}Pohang University of Science and Technology, Korea

04:45 AM
2478: Intelligent Wearable Bladder Monitoring Device with an Inertial Measurement Unit for Robust Measurement of Bladder Volume
Moon Hwan Lee, Jae Youn Hwang
Daegu Gyeongbuk Institute of Science and Technology, Korea

04:55 AM
1906: Real-Time System for High Frame Rate Vector Flow Imaging
Stefano Rossi, Federico Acerbi, Alessandro Dallai, Francesco Guidi, Valentino Meacci, Alessandro Ramalli, Piero Tortoli
Università degli Studi di Firenze, Italy

05:05 AM
1935: Continuous-Time High-Pass Filtering for Real-Time Hfr Color Flow Imaging
Francesco Guidi, Alessandro Dallai, Piero Tortoli
Università degli Studi di Firenze, Italy

05:15 AM
1974: Integrated 1024 Channel Ultrasound Beamformer for Ultrasound Research
Holger Hewener, Christoph Risser, Selina Barry-Hummel, Heinrich Fonfara, Marc Fournelle, Steffen Tretbar
Fraunhofer Institute Biomedical Engineering-IBMT, Germany

05:25 AM
2096: Portable Low-Cost 32-Channel Ultrasound Research System
Marc Fournelle, Tobias Grün, Daniel Speicher, Steffen Weber, Steffen Tretbar
Fraunhofer Institute Biomedical Engineering-IBMT, Germany

04:15 AM
1233: Photacoustic Tomography System Using a Ring-Array Sensor for Early Detection of Inflammatory Arthritis in a Human Finger
Misaki Nishiyama, Takeshi Namita, Kengo Kondo, Makoto Yamakawa, Tsuyoshi Shina
Kyoto University, Japan

04:25 AM
1479: Seeing Inside and Through the Murine Skull with Hybrid Ultrasound-Photothermal Imaging
Hector Estrada, Johannes Reibling, Urs Hofmann, Daniel Razansky
ETH Zürich / Universität Zürich, Switzerland

04:55 AM
2263: Fake Finger Screening Based on Photoacoustic Characterization
Gyu Sang Cho, Min Gyu Joo, Hyo Jung Won Baac
Sungkyunkwan University, Korea

05:05 AM
2268: Beamforming for Large Area Scan in Photoacoustic Microscopy
Alejandro Cebrecos{1}, Juan José García-Garrigós{1}, Andreu Descals{1}, Noé Jiménez{2}, José María Benlloch{2}, Francisco Camarena{2}
{1}CSIC – Universitat Politècnica de València, Spain; {2}Universitat Politècnica de València, Spain

04:15 AM
1175: Enhanced Sonodynamic Therapy on Hepatocellular Carcinoma by Using Sub-10nm Phthalocyanine-Conjugated Mesoporous Silica Nanoparticles
Nisi Zhang{1}, Yunnxue Xu{1}, Yiming Zhou{1}, Hong Chen{1}, Xiaolong Liang{2}, Zhifei Dai{1}
{1}Peking University, China; {2}Peking University Third Hospital, China

04:25 AM
1350: New Focused Ultrasound Protocol to Enhance the Blood-Brain Barrier/Blood-Tumor Barrier
Permeability and Doxorubicin Delivery Into the Rat Brain
Byeongjin Jung, Hyungkyu Huh, Eun-Hee Lee, Juyoung Park
Daegu Gyeongbuk Medical Innovation Foundation, Korea

04:35 AM
1548: Detection and Monitoring of Microwave Ablation by Ultrasound Imaging Based on Convolutional Neural Network (CNN)
Shan Wu(2), Zhiwei Cui(2), Tianqi Xu(2), Dapeng Li(2), Xin Jia(2), Wang Hua(1), Mingxi Wan(2), Siyuan Zhang(2)
(1)Second Affiliated Hospital of Xi'an Jiaotong University, China; (2)Xi'an Jiaotong University, China

04:45 AM
1574: Enhanced Hemispherical-Array Passive Acoustic Mapping Utilizing Dual Apodization with Cross-Correlation
Shukuan Lu, Yan Zhao, Renyan Li, Diya Wang, Xianbo Yu, Bo Zhang, Mingxi Wan
Xi'an Jiaotong University, China

04:55 AM
1938: Real-Time Monitoring of High Intensity Focused Ultrasound for Blood Brain Barrier Opening
Simon Blais(1), Jonathan Porée(1), Gerardo Ramos(2), Samuel Desmarais(1), Abbas Sadikot(2), Jean Provost(1)
(1)École Polytechnique Montréal, Canada; (2)Montreal Neurological Institute, Canada

05:05 AM
2010: Experimental Investigation of Relationship Between Coagulation Size and Estimated Distribution of HIFU Heat Source from Displacement Distribution by Acoustic Radiation Force Imaging
Hiroki Yabata, Shin-Ichiro Umemura, Shin Yoshizawa
Tohoku University, Japan

05:15 AM
Bowen Jing, Brooks Lindsey
Georgia Institute of Technology, United States

05:25 AM
2063: Oxygen Microbubble Circulation Kinetics Affected by Anesthetic Carrier Gas
Phillip Durham(3), Virginie Papadopoulou(3), Traci Reusser(2), Awanees Upadhyay(2), Mark Borden(2), Paul Dayton(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of Colorado Boulder, United States; (3)University of North Carolina at Chapel Hill, United States

05:35 AM
2195: Focused Ultrasound-Enhanced Delivery of Radiolabeled Agents to Diffuse Intrinsic Pontine Glioma
Dezhuang Ye(1), Xiaohui Zhang(2), Yimei Yue(1), Lihua Yang(2), Yuanchuan Tai(2), Joshua B. Rubin(2), Yongjian Liu(2), Hong Chen(1)

05:45 AM
2308: Combined Transcranial Blood-Brain Barrier Opening, Targeting and Monitoring in Both Small and Large Animals in Vivo Using an Imaging Array
Robin Ji, Mark Burgess, Elisa Konofagou
Columbia University, United States

05:55 AM
2319: Accuracy Assessment of Transcranial Power Cavitation Imaging for BBB Opening
Alec Batts, Elisa Konofagou
Columbia University, United States
05:15 AM
2053: Lead-Free Piezoelectric Composite with Configurable Material Properties by Interdigital Pair-Bonding
Kyungmin Kim, Jinhee Yoo, Hae Gyun Lim, Mina Lee, Sung-Min Park, Hyung Ham Kim
Pohang University of Science and Technology, Korea

04:15 AM
1394: Enhanced KLM Model for Single-Fibre Piezocomposite Transducers
Martin Angerer(2), M. Zapf(2), S. E. Gebhardt(1), H. Neubert(1), N. V. Ruiter(1)
(1)Fraunhofer Institute Ceramic Technologies and Systems-IKTS, Germany; (2)Karlsruhe Institute of Technology, Germany

04:25 AM
1568: Analysis of an Underwater Conformal Array Transducer by the Equivalent Circuit Method
Seonghun Pyo(1), Youngsub Lim(2), Yongrae Roh(1)
(1)Kyungpook National University, Korea; (2)LIG Nex1 Co. Ltd., Korea

04:35 AM
Liyuan He, Xiaoniu Li, Weicen Chen, Boquan Wang, Ying Yang, Dawei Wu
Nanjing University of Aeronautics and Astronautics, China

04:45 AM
1988: Comparison of Lumped and Finite Element Models for Electro-Mechanical Characteristics of Miniaturized Piezoelectric Ultrasound Transducers
Pouria Torkinejad Ziarati, Levent Beker
Koç University, Turkey

05:05 AM
2032: Modelling of Laser-Generated Focused Ultrasound Transducers for Interventional Therapeutic Applications
Esra Aytaç Kipergil, Adrien Desjardins, Bradley Treeby, Erwin Alles
University College London, United Kingdom
### 4:15:00 AM - 6:15:00 AM C1P-33: TMU: Poster AM - Micromachined Ultrasonic Transducers PART 2

**Session Chair(s):** Jinwook Kim (UNC Chapel Hill)

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>04:15 AM</td>
<td>1545: A New CMUT Structure Fabricated on Glass Substrate for High Reliability</td>
<td>Seungmok Lee, Masashi Hasegawa, Takeshi Nizuka</td>
<td>Kyocera Corporation, Japan</td>
</tr>
<tr>
<td>04:25 AM</td>
<td>1572: Supersensitive Ultrasound Probes for Medical Imaging by Piezoelectric MEMS with Complemented Transmitting and Receiving Transducers</td>
<td>Kenji Suzuki{1}, Yuta Nakayama{1}, Naoki Shimizu{1}, Takashi Mizuno{1}, Takeshi Yoshimura{2} {1}Konica Minolta, Inc, Japan; {2}Osaka Prefecture University, Japan; {3}University of Tokyo, Japan</td>
<td></td>
</tr>
<tr>
<td>04:35 AM</td>
<td>1603: Wafer-Scale Fabrication of Nanometer Silicon Posts for Capacitive Micromachined Ultrasonic Transducers with Substrate-Embedded Springs</td>
<td>Hae Youn Kim{2}, Dong-Hyun Kang{2}, Jinsik Kim{1}, Butrus T. Khuri-Yakub{3}, Byung Chul Lee{2} {1}Dongguk University, Korea; {2}Korea Institute of Science and Technology, Korea; {3}Stanford University, United States</td>
<td></td>
</tr>
<tr>
<td>04:45 AM</td>
<td>1721: Significant Enhancement in Operational Bandwidth of ZnO PMUTs Due to the Simultaneous Existence of Softening and Hardening Nonlinearity</td>
<td>Randhir Kumar, Sudhanshu Tiwari, Rudra Pratap</td>
<td>Indian Institute of Science, India</td>
</tr>
<tr>
<td>04:55 AM</td>
<td>1821: Development of Micromachined Piezoelectric Near Ultrasound Transducers for Data-Over-Sound Applications</td>
<td>Harshvardhan Gupta, Bibhas Nayak, Anuj Ashok, Kasutav Roy, Antony Jayaseelan, Rudra Pratap</td>
<td>Indian Institute of Science, India</td>
</tr>
<tr>
<td>05:05 AM</td>
<td>2210: A Single Cell PMUT as a Bio-Fluid Density Sensor</td>
<td>Kaustav Roy, Avinandan Mandal, Anuj Ashok, Harshvardhan Gupta, Rudra Pratap</td>
<td>Indian Institute of Science, India</td>
</tr>
<tr>
<td>05:15 AM</td>
<td>1208: CMUT as a Sealed Gap Capacitive Microphone</td>
<td>Hayrettin Köymen{1}, Abdullah Atalar{1}, Ilir Köymen{2}, Akif Sinan Taşdelen{1}, Mehmet Yılmaz{1} {1}Bilkent University, Turkey; {2}TOBB University, Turkey</td>
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<tr>
<td>06:30 AM</td>
<td>1075: Inverse Problems in Computational Ultrasound Imaging and Related Applications: from Model-Based to Machine Learning Approaches</td>
<td>Adrian Basarab</td>
<td>IRIT / Université de Toulouse, France</td>
</tr>
<tr>
<td>07:00 AM</td>
<td>1317: GPU-Based Implementation of Real-Time Ultrasound Molecular Imaging with a Neural Network Microbubble Detector</td>
<td>Dongwoon Hyun, Rakesh Bam, Jeremy Dahl</td>
<td>Stanford University, United States</td>
</tr>
<tr>
<td>07:15 AM</td>
<td>1522: A Deep Learning Framework for Spatiotemporal Ultrasonic Localization Microscopy</td>
<td>Jonathan Porée, Léo Milecki, Hatim Belgharbi, Chloé Bourquin, Frédéric Lesage, Jean Provost</td>
<td>Polytechnique Montréal, Canada; Polytechnique Montréal, France</td>
</tr>
<tr>
<td>07:30 AM</td>
<td>1494: Dynamic Myocardial Ultrasound Localization Angiography</td>
<td>Philippe Cormier, Jonathan Porée, Chloé Bourquin, Jean Provost</td>
<td>Polytechnique Montréal, Canada</td>
</tr>
<tr>
<td>07:45 AM</td>
<td>2041: Coherence-Based Beamforming Improves the Diagnostic Certainty of Breast Ultrasound Exams</td>
<td>Alycen Wiacek{2}, Eniola Oluyemi{1}, Kelly Myers{1}, Lisa Mullen{1}, Muyinatu A. Lediju Bell{2} {1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States</td>
<td></td>
</tr>
<tr>
<td>08:00 AM</td>
<td>2170: Temporal Optimization of MCA for Improved Contrast of Breast Ultrasound Exams</td>
<td>T. Boldin{2}, L. Mullen{1}, M. Kozink{1}, R. A. Lee{2} {1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States</td>
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**Thursday, September 10**

Sigrid Husebø Øygard, Martin Lind Ommen, Mikkel Schou, Mathias Engholm, Søren Elmin Diederichsen, Erik Thomsen, Matthias Bo Stuart, Jørgen Arendt Jensen
Technical University of Denmark, Denmark

05:15 AM
1399: Fabricating High-Frequency Ultrasonic Array Transducers with Ultra-Low Performance Loss Based on Laser Techniques
Zhuhong Lei, Yongjian Xie, Yan Chen, Maodan Yuan, Lvming Zeng, Xuanrong Ji, Dawei Wu
Guangdong University of Technology, China

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**6:30:00 AM - 8:00:00 AM C2L-01: MIM: Machine Learning Approaches & Applications**

**Session Chair(s):** Jan D’hooge (Catholic University of Leuven), Kang Kim (University of Pittsburgh)
Thursday, September 10

06:45 AM
2069: Genetically Encoded Acoustic Biosensors for Ultrasonic Imaging of Intracellular Enzyme Activity
Anupama Lakshmanan, Zhiyang Jin, Suchita P. Nety, Daniel P. Sawyer, Audrey Lee-Gosselin, Dina Malounda, Mikhail G. Shapiro
California Institute of Technology, United States

07:00 AM
1625: Whole Organ Microvasculature Imaging in Vivo for Anatomical and Haemodynamic Characterization of the Rat's Brain
Baptiste Heiles{1}, Arthur Chavignon{6}, Antoine Bergele{4}, Vincent Hingo{6}, L. Rahal{2}, P. Lopez{3}, Hicham Serroune{4}, Mickaël Tanter{5}, Olivier Couture{6}
{1}Delft University of Technology / Maresca Lab, Netherlands; {2}ESPCI Paris, PSL Research University, France; {3}ESPCI Paris, PSL Research University / Institut Cochin INSERM, France; {4}Institute Physics for Medicine, CNRS, INSERM, ESPCI Paris, PSL Research University, France; {5}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; {6}Sorbonne Université, CNRS, INSERM, Laboratoire d'Imagerie Biomédicale, France

07:15 AM
1723: Cardiac Device-Related Biofilm Treatment Under Flow Using Vancomycin-Targeted Microbubbles
Joop J.P. Kouijzer{1}, Kirby R. Lattwein{1}, Inés Beekers{1}, Mariël Leon-Grooters{1}, Simone A.G. Langeveld{1}, Nico de Jong{2}, Antonius F.W. van der Steen{1}, Alexander L. Klibanov{3}, Willem J.B. van Wamel{1}, Klazina Kooiman{1}
{1}Erasmus University Medical Center, Netherlands; {2}Erasmus University Medical Center / Delft University of Technology, Netherlands; {3}University of Virginia, United States

07:30 AM
1805: Deep Learning-Based Microbubble Localization for Fast Ultrasound Localization Microscopy
Xi Chen, Matthew Lowerison, Zhijie Dong, Nathiya Chandra Sekaran, Daniel Llano, Pengfei Song
University of Illinois at Urbana–Champaign, United States

07:45 AM
1876: Ultrasound Imaging of Perfluorobutane Nanodroplet Vaporization Induced by Proton Irradiation: Towards a Novel Approach for Proton Range Verification and Dosimetry
Sophie Heymans{2}, Bram Carlier{2}, Yosra Toumia{3}, Sjoerd Nooijens{2}, Marcus Ingram{2}, Gaio Paradossi{3}, Emiliano d'Agostino{1}, Uwe Himmelreich{2}, Jan D’hooge{2}, Edmond Sterpin{2}, Koen Van Den Abeele{2}
{1}DoseVue, Belgium; {2}imec / Katholieke Universiteit Leuven, Belgium; {3}University of Rome at Urbana–Champaign, United States

6:30:00 AM - 8:00:00 AM
C2L-04: NSP Deep Learning, Imaging & Communications
Session Chair(s): Jafar Saniie (Illinois Institute of Technology), Yufeng Lu (Bradley University)

06:30 AM
1111: Air-Coupled Transducer Arrays: Imaging and Other Applications
Mario Kupnik
Technische Universität Darmstadt, Germany

07:00 AM
1065: Modeling of Dual-Backplate Based Airborne CMUTs with Enhanced Bandwidth
Sebastian Anzinger{2}, Alessandra Fusco{1}, David Tumpold{1}, Christian Brethauer{1}, Alfons Dehê{2}
{1}Infineon Technologies AG, Germany; {2}University of Freiburg, Germany

07:15 AM
1495: Polymer-Based Piezoelectric Ultrasound Transducer Arrays on Glass Demonstrating Mid-Air Applications
Christopher Chare{2}, Pieter Gijzenbergh{1}, Yongbin Jeong{2}, Jan Genoe{2}, Paul Heremans{2}, David Cheyns{1}, Kris Myny{1}
{1}imec, Belgium; {2}imec / Katholieke Universiteit Leuven, Belgium

07:30 AM
1980: Piezoelectric Micromachined Ultrasonic Transducers (pMUT) with Free Boundary
Sedat Pala, Liwei Lin
University of California, Berkeley, United States

07:45 AM
1558: Thin-Film Lithium Niobate Based Piezoelectric Micromachined Ultrasound Transducers
Ruochen Lu, Michael Breen, Ahmed Hassanien, Yansong Yang, Songbin Gong
University of Illinois at Urbana–Champaign, United States

6:30:00 AM - 8:00:00 AM
C2L-03: TPF: Airborne Ultrasonic Transducers
Session Chair(s): Tomás Gómez Álvarez-Arena (Spanish National Research Council (CSIC)), Stefan Rupitch (Friedrich-Alexander University)

06:30 AM
2009: Fast Ultrasonic Imaging Using End-To-End Deep Learning
Georgios Pilikos{2}, Lars Horchens{1}, Kees Joost Batenburg{3}, Tristan van Leeuwen{5}, Felix Lucka{4}
{1}Applus E&I Technology Centre, Netherlands; {2}Centrum Wiskunde & Informatica, Netherlands; {3}Centrum Wiskunde & Informatica / Leiden University, Netherlands; {4}Centrum Wiskunde & Informatica / University College London, Netherlands; {5}Utrecht University, Netherlands
Thursday, September 10

Error Deconvolution of the Spatio-Temporal System Transfer Function
Johan Carlson, Robert Olsson, Marcus Hedlund
Lulea University of Technology, Sweden

07:15 AM
1135: Generalized Matched Filter for Clutter Suppression in Cast Austenitic Stainless Steel Welds
Myles Dunlap[1], Steven Kay[2], Thomas Stafford[1]
(1)Electric Power Research Institute, Inc., United States; (2)Signal Processing Systems, United States

07:30 AM
1554: Software Defined Ultrasonic Communication System Based on Time-Reversal Signal Processing
Xin Huang, Jafar Sanie
Illinois Institute of Technology, United States

07:45 AM
1142: Ultrasonic Communication Through a Metallic Barrier: Transmission Modeling and Crosstalk Minimization
Christopher Sugino[1], Romain Gerbe[1], Charles Reinke[2], Massimo Ruzzene[3], Alper Erturk[1], Ihab El-Kady[2]
(1)Georgia Institute of Technology, United States; (2)Sandia National Laboratories, United States; (3)University of Colorado Boulder, United States

6:30:00 AM - 8:00:00 AM
C2L-05: AMA: Materials & Applications
Session Chair(s): Ausrine Bartasyte (University of Franche-Comté)
Jyrki Kaitila (N/A)

06:30 AM
1668: The Best Reciprocal Resonators Make the Best Non-Reciprocal Systems
Sunil Bhave
Purdue University, United States

07:00 AM
1472: Static Strain Modelling, Calibration, and Measurements for High-Temperature Wireless SAW Resonator Operation
Syeda Fizzah Jilani[2], David Lef[2], Anin Maskay[1], Robert Leder[2], Mauricio Pereira Da Cunha[2]
(1)Environetix Technologies Corporation, United States; (2)University of Maine, United States

07:15 AM
2486: Experimental and Theoretical Investigation of $k^2$ and Mechanical Quality Factor (Qm) in YbAlN Films Asing DFT
Naoya Iwata[2], Sarina Kinoshita[1], Junjun Jia[1], Takahiko Yanagitani[3]
(1)Waseda University, China; (2)Waseda University, Japan; (3)Waseda University / ZAIKEN, Japan

07:30 AM
2020: Smart Cut™ Piezo on Insulator (POI) Substrates for High Performances SAW Components
Eric Butaud[5], Brice Tavel[5], Sylvain Ballandras[3], Marie Bousquet[4], Alexis Drouin[5], Christophe Didier[5], Vincent Barec[5], Isabelle Huyet[5], Thierry Laroche[3], Emilie Courjon[3], F. Bernard[2], Isabelle Bertrand[5], Aymen Ghorbel[5], Alexandre
(1)CEA Leti, France; (2)Frecnor, France; (3)Frecnor / SOITEC, France; (4)Grenoble Alpes Université, CEA-Leti, France; (5)Soitec SA, France

8:30:00 AM - 10:00:00 AM
C3L-01: Clinical Session
Session Chair(s): Ton van der Steen (Erasmus Medical Centre)
Jeffrey Ketterling (Riverside Research)

08:30 AM
Javier Bermejo
Hospital General Universitario Gregorio Marañón, Spain

09:00 AM
1991: Recent Advances in the Application of Focused Ultrasound for the Treatment of Pancreatic Cancer
Joo Ha Hwang
Stanford University, United States

09:30 AM
1088: Noninvasive Ultrasonic Drug Uncaging for Brain Applications
Raag Airan
Stanford University, United States

8:30:00 AM - 10:00:00 AM
C3L-02: MCA: Ultrasound Localization Microscopy & High Resolution Imaging I
Session Chair(s): Olivier Couture (CNRS at Sorbonne University)

08:30 AM
1091: Towards Real-Time Super-Resolution Ultrasound
Meng-Xing Tang
Imperial College London, United Kingdom

09:00 AM
1941: In Vivo Abdominal Super-Resolution Ultrasound Microvessel Imaging with a Curved Array Transducer
Chengwu Huang, Shanshan Tang, Ping Gong, U-Wai Lok, Lulu Yang, Kate Knoll, Duane Meixner, Shannon Sheedy, John Knudsen, Shigao Chen
Mayo Clinic, United States

09:15 AM
1213: 3D Transcranial Ultrasound Localization Microscopy in Rat with a Multiplexed Matrix Probe
Arthur Chavignon[2], Baptiste Heiles[1], Vincent Hingot[2], Olivier Couture[2]
Thursday, September 10

2289: A Combined Super-Resolution Ultrasound Molecular Imaging Technique Applied to Tumor Microvasculature
Feifei Zhao, Sunil Unnikrishnan, Elizabeth B. Herbst, Alexander L. Klibanov, F. William Mauldin Jr., John A. Hossack
University of Virginia, United States

1178: Super-Resolution Ultrasound in Peripheral Nerve Blood Flow Imaging
Jiabin Zhang{2}, Yaqiong Zhu{1}, Nan Li{1}, Feihong Dong{2}, Jingyi Yin{2}, Yuexiang Wang{1}, Yukun Luo{1}, Jue Zhang{2}
{1}Chinese People’s Liberation Army General Hospital, China; {2}Peking University, China

8:30:00 AM - 10:00:00 AM
C3L-03: TPM: Transducers: From Underwater to Wearables
Session Chair(s): Valsala Kurusingal (Thales Australia)
Xiaoning Jiang (NC State University)

1110: A Review of Single Crystal Underwater Transducers (WITHDRAW)
Harold Robinson
Naval Undersea Warfare Center Division Newport, United States

09:00 AM
2027: Ultrasonic Biometric Authentication System with Contact Gesture Sensing
Jessica Liu Strohmann, Yipeng Lu, Hrishikesh Panchawagh
Qualcomm Technologies, Inc., United States

09:15 AM
2012: Laser Sensor Guided Intravascular Catheter with Ring Type Stack Transducer for Sonothrombolysis
Bohua Zhang, Huaiyu Wu, Leela Goel, Xiaoning Jiang
North Carolina State University, United States

09:30 AM
1161: High-Performance Transparent Ferroelectric Crystals for Photoacoustic Transducer Applications
Chaorui Qiu{3}, Bo Wang{1}, Nan Zhang{3}, Shujun Zhang{2}, Jinfeng Liu{3}, Thomas R. Shroot{1}, Long-Qing Chen{1}, Zhuo Xu{3}, Fei Li{3}
{1}Pennsylvania State University, United States; {2}University of Wollongong, Australia; {3}Xi’an Jiaotong University, China

09:45 AM
1569: Wearable Transparent PVDF Transducer for Photoacoustic Imager in Body Sensor Network
Ya-Han Liu, Fu-Sung Lin, Li-Xiang Chen, Hsin-Yi Su, You-Chi Hsu, Soma Pal, Yeong-Her Wang, Chih-Hsien Huang
National Cheng Kung University, Taiwan

09:45 AM
3L-04: SPS: Special Session on Wearable Ultrasound
Session Chair(s): Vincent Laude (FEMTO-ST / CNRS)
Jeffrey Ketterling (Riverside Research)

08:30 AM
1096: Sonomyography: a New Application of Wearable Ultrasound in Rehabilitation Engineering
Siddhartha Sikdar
George Mason University, United States

09:00 AM
1103: Piezoelectrics in Wearable Applications
Sebastjan Glinsek
Luxembourg Institute of Science and Technology, Luxembourg

09:30 AM
Panel
Siddhartha Sikdar (Invited Speaker), George Mason University
Sebastjan Glinsek (Invited Speaker), Luxembourg Institute of Science and Technology
Susan Troller-McKinstry, Penn State University
Steve Stoffels, Pulsify Medical

08:30:00 AM - 10:00:00 AM
C3L-05: PMI: Modelling & Inversion - In Memoriam Robert K. Thalhammer
Session Chair(s): Kimmo Kokkonen (Qualcomm)
Margaret Lucas (University of Glasgow)

08:30 AM
1105: Model Based Imaging and Material Property Mapping Based on Ultrasonic Array Data
Anthony Mulholland
University of Bristol, United Kingdom

08:45 AM
1667: A Frequency-Hopping Technique for Solving the Cycle-Skipping Problem Encountered with Acoustic Full-Waveform Inversion
Ulas Taskin, Koen W. A. van Dongen
Delft University of Technology, Netherlands

09:00 AM
1401: Ultrasound Full-Waveform Inversion with Accurate Transducer Characterisation
Carlos Cueto, Javier Cudeiro, Lluis Guasch, Óscar Calderón Agudo, Michael Warner, Meng-Xing Tang
Imperial College London, United Kingdom

09:15 AM
1846: Modeling Frequency Dependent Ultrasound Attenuation in Cortical Bone: Solving Direct and Inverse Problems
Rebekah White{1}, Omid Yousefian{1}, Yasamin Karbalaiesadegh{1}, Maryline Talmant{2}, Quentin Grimal{2}, Marie Muller{1}
{1}North Carolina State University, United States; {2}Sorbonne Universite, France

09:30 AM
2505: In Memoriam Robert K. Thalhammer
John Larson
In Memoriam Robert K. Thalhammer II
Mohamed Abd Allah
Qualcomm, United States

10:15 AM
1002: Echo-Focusing in Transcranial MR-Guided Focused Ultrasound Thalamotomy for Essential Tremor: a Feasibility Study
Ryan Jones{2}, Yuexi Huang{2}, Ying Meng{1}, Nadia Scantebury{1}, Michael Schwartz{1}, Nir Lipsman{2}, Kullervo Hynynen{3}
{1}Sunnybrook Health Sciences Centre, Canada; {2}Sunnybrook Research Institute, Canada; {3}Sunnybrook Research Institute / University of Toronto, Canada

10:30 AM
1122: Non-Invasive Focused Ultrasound Therapy of Calcified Aortic Stenosis: First-In-Man Study
{1}Amphia Hospital, Netherlands; {2}Cardiawave SA, France; {3}Hôpital Européen Georges Pompidou, France; {4}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France

10:45 AM
1131: FUS-Induced Median Nerve Stimulation Alters Thermal Pain Sensation in Humans
Stephen Lee, Hermes Kamimura, Elisa Konofagou
Columbia University, United States

11:00 AM
1097: Clinical Phase I/Phase II Study Using LoFU in Addition to Stem Cells in Patients with Peripheral Arterial Disease
Narendra Sanghvi{3}, Mark Carol{3}, Roy Carlson{3}, Ralf Seip{3}, Joseph Frank{2}, Wilson Wong{1}, Bruce Murphy{1}
{1}Arkansas Heart Hospital, United States; {2}National Institute of Health, United States; {3}SonaCare Medical, LLC, United States

10:15 AM
1010: Deep Learning Models for Fast Ultrasound Localization Microscopy
Jihwan Youn{3}, Ben Luijten{1}, Matthias Bo Stuart{3}, Yonina C. Eldar{4}, Ruud van Sloon{2}, Jørgen Arendt Jensen{3}
{1}Eindhoven University of Technology, Netherlands; {2}Eindhoven University of Technology / Philips Research, Netherlands; {3}Technische Universität Berlin, Germany; {4}Weizmann Institute of Science, Israel

10:30 AM
2074: XDoppler: imaging of a New Strategy for Ultrafast Volumetric Flow Imaging Using a Row-Column Approach
Jack Sauvage{3}, Adrien Bertolo{2}, Oscar Demeulenaere{2}, Baptiste Heles{1}, Mickaël Tanter{3}, Mathieu Pernot{3}, Thomas Deffieux{4}
{1}Delft University of Technology, Netherlands; {2}Physics for Medicine Paris, France; {3}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; {4}Physics for Medicine Paris, Inserm, ESPCI Paris, CNRS, PSL University, France

10:45 AM
2183: Vector Doppler Imaging of Small Vessels Using Directionally Filtered Power Doppler Images
{1}Delft University of Technology, Netherlands; {2}Erasmus University Medical Center, Netherlands

11:00 AM
2252: Vascular Ultrasound Super-Resolution Without Contrast Agents
Avinoam Bar-Zion{1}, Oren Solomon{2}, Joseph Wewseblatt{1}, David Maresca{1}, Mikhail G. Shapiro{1}, Yonina C. Eldar{3}
{1}California Institute of Technology, United States; {2}Technion, Israel; {3}Weizmann Institute of Science, Israel

10:15 AM
1076: 3D-Rendered Electromechanical Wave Imaging to Quantify and Inform Cardiac Resynchronization Therapy Response Within 24 Hours of Device Implantation
Lea Melki, Daniel Wang, Christopher Grubb, Rachel Weber, Angelo Biviano, Elaine Wan, Hasan Garan, Elisa Konofagou
Columbia University, United States

10:30 AM
1744: High-Frame-Rate Imaging of Cardiac Tissue-Flow Interaction: Towards the Origin of the Atrial Kick Wave
Sébastien Salles{3}, Solveig Fadnes{2}, Siri Ann Nynaes{1}, Lasse Laestakken{2}
{1}Aalesund Hospital / St. Olavs University Hospital, Norway; {2}Norwegian University of Science and Technology, Norway; {3}Sorbonne Université / Norwegian University of Science and Technology, France
10:45 AM
1762: Determinants of the Propagation Velocity of Natural Shear Waves in Cardiac Shear Wave Elastography
Stéphanie Bézy, Aniela Petrescu, Marta Cvijic, Marta Orlowska, Pedro Santos, Annegret E Werner, Jürgen Duchenne, Jens-Uwe Voigt, Jan D’Hooge
Katholieke Universiteit Leuven, Belgium

10:45 AM
1421: Acoustic Hologram for Ultrasonic Transducer with Optimized Focus and Reception
Zhaoxi Li(2), Danfeng Wang(1), Chunlong Fei(2), Zeyu Chen(1), Runcong Wu(2), Jun Chen(2), Di Li(2), Dongdong Chen(2), Yingtang Yang(2)
(1)Central South University, China; (2)Xidian University, China

11:00 AM
1278: Transthoracic Cardiac Shear Wave Elastography During Hemodynamic Alterations and Infarct
Annette Caenen{4}, Lana B.H. Keijzer{1}, Stéphanie Bézy{5}, Jürgen Duchenne{1}, Johan G. Bosch{1}, Jens-Uwe Voigt{5}, Jan D’Hooge{5}, Hendrik J. Vos{1}
{1}Erasmus University Medical Center, Netherlands; {2}Erasmus University Medical Center / Delft University of Technology, Netherlands; {3}Ghent University, Belgium; {4}Ghent University / IBItech-bioMMeda, Belgium; {5}Katholieke Universiteit Leuven, Belgium

10:15 AM - 11:15 AM
C4L-04: MBF: Wall Shear Stress
Session Chair(s): Piero Tortoli (University of Florence)

10:15 AM
1870: Combined ARFI Variance of Acceleration (VoA), Vector Flow, and Wall Shear Stress Estimation for Assessing Atherosclerotic Risk: Ex-Vivo Human Cadaveric Results
Keerthi Anand{1}, Jonathon Homeister{2}, Jennifer Ashley Ezzel{1}, Gabriela Torres{1}, Caterina Gallippi{1}
{1}North Carolina State University / University of North Carolina at Chapel Hill, United States; {2}University of North Carolina at Chapel Hill, United States

10:30 AM
1871: Adaptive Wall Shear Stress Imaging Coupled with Pulse Wave Imaging: a Feasibility Study in Phantoms, Fsi Simulations and Atherosclerotic Swine in Vivo
Grigorios Marios Karageorgos, Nirvedh Meshram, Pierre Nauleau, Changhee Lee, Rachel Weber, Salah Mahmoudi, Paul Kemper, Elisa Konofagou
Columbia University, United States

10:45 AM
2352: 4D Flow and Wall Shear Stress Using Volumetric Ultrasound Image Velocimetry
Kai Riemer, Mathieu Toulemonde, Ethan M. Rowland, Chee Hau Leow, Meng-Xing Tang, Peter D. Weinberg
Imperial College London, United Kingdom

10:15 AM - 11:15 AM
C4L-05: PGP: General Physical Acoustics I
Session Chair(s): Yun Jing (North Carolina State University)

10:15 AM
1448: Wavefront Control with Acoustic Metamaterials: Concepts and Applications
Steven Cummer
Duke University, United States

11:30 AM - 1:30:00 PM
C5P-06: ABD: Poster PM - BAW Devices III
Session Chair(s): Paul Bradley (Broadcom) Ventislav Yantchev (Chalmers University of Technology)

11:30 AM
Gergely Simon, Mihir S. Patel, Andrew Tweedie, Gerald Harvey
OnScale Inc., United States

11:40 AM
2274: An Equivalent Model for Lateral Modes on the H2 Response of Bulk Acoustic Wave Resonators
Carlos Udaondo, Carlos Collado, Jordi Mateu, David Garcia-Pastor
Universitat Politècnica de Catalunya, Spain

12:00 PM
1398: In-Plane Oriented Stacks of c-AlScN/Mo (110) for BAW Resonators Grown by Magnetron Sputter Epitaxy
Balasubramanian Sundarapandian{1}, Maximilian Kessel{1}, Agne Zukauskaite{1}, Lutz Kirste{2}, Cheng Sun{3}, Oliver Ambacher{2}
{1}Fraunhofer Institute Applied Solid State Physics-IAF, Germany; {2}Fraunhofer Institute Applied Solid State Physics-IAF / University of Freiburg, Germany; {3}INATECH-University of Freiburg, Germany

12:10 PM
2396: High-Frequency BAW Resonators Based on 33°Y-LInbO3 Films Grown by DLI-CVD
Mihaela Ivan{3}, Vincent Astié{3}, Sondes Boujnah{3}, Lilia Arapan{2}, Samuel Margueron{3}, Jean-Manuel Decams{1}, Aurine Bartasyte{4}
{1}Annealsys, France; {2}FEMTO-ST Institute, France; {3}University of Bourgogne Franche-Comté, France; {4}University of Bourgogne Franche-Comté / FEMTO-ST Institute, France

12:30 PM
1877: Machine Learning Enabled FBAR Digital Twin for Rapid Optimization
Gergely Simon, Andrew Tweedie, Mihir S. Patel, Gerald Harvey
OnScale Inc., United States

12:10 PM
2396: High-Frequency BAW Resonators Based on 33°Y-LInbO3 Films Grown by DLI-CVD
Mihaela Ivan{3}, Vincent Astié{3}, Sondes Boujnah{3}, Lilia Arapan{2}, Samuel Margueron{3}, Jean-Manuel Decams{1}, Aurine Bartasyte{4}
{1}Annealsys, France; {2}FEMTO-ST Institute, France; {3}University of Bourgogne Franche-Comté, France; {4}University of Bourgogne Franche-Comté / FEMTO-ST Institute, France

12:30 PM
1877: Machine Learning Enabled FBAR Digital Twin for Rapid Optimization
Gergely Simon, Andrew Tweedie, Mihir S. Patel, Gerald Harvey
OnScale Inc., United States
12:20 PM
1379: On the Efficiency of Excitation of High Coupling Plate Acoustic Modes
Ventsislav Yantchev, Patrick Turner, Robert Hammond Resonant Inc., Bulgaria; Resonant Inc., United States

12:30 PM
2141: 167-MHz AlN Capacitive-Piezoelectric Oscillator
Qianyi Xie, Clark Nguyen
University of California, Berkeley, United States

12:40 PM
2286: Suppression of Spurious Modes in Lithium Niobate A1 Resonators Using Dispersion Matching
Yansong Yang, Luqing Gao, Luochen Lu, Songbin Gong
University of Illinois at Urbana-Champaign, United States

12:50 PM
2336: A Comparative Study on the Performance of Aluminum Nitride Thickness- and Quasi-Thicknes Extensional Mode Resonators
Xuanyi Zhao, Cristian Cassella
Northeastern University, United States

01:00 PM
1250: Design Guidelines for Acoustic Wave Ladder Filters Starting in Shunt Resonator
Eloi Guerrero, Patricia Silveira, Jordi Verdú, Pedro de Paco
Universitat Autònoma de Barcelona, Spain

11:30:00 AM - 1:30:00 PM
C5P-08: ASA: Poster PM - Sensors & New Applications II
Session Chair(s): Hagen Schmidt, Leibniz Institute for Solid State & Materials Research Dresden
Sergei Zhgoon, National Research University MPEI

11:30 AM
1546: Slow Waves in Metamaterial Two-Dimensional-Resonant-Rods (2DRRs) Delay Lines
Xuanyi Zhao, Cristian Cassella
Northeastern University, United States

11:40 AM
1637: Flexible Frequency Plan Acoustic Star-Junction Multiplexer Based on Minimum Susceptance Networks
Patricia Silveira, Jordi Verdú, Pedro de Paco
Universitat Autònoma de Barcelona, Spain

11:50 AM
2162: New Approach of Interdigitated Transducers Engineering for High-Temperature SAW Sensors
Arthur De Sousa Lopes Moreira(1), Lilia Arapan(1), Ausrine Bartasyte(2)
(1)FEMTO-ST Institute, France; (2)University of Bourgogne Franche-Comté / FEMTO-ST Institute, France

12:00 PM
1017: Phase Noise Transfer in High-Q Quartz Phononic Frequency Combs
Walter Wall, Randall Kubena
HRL Laboratories, LLC, United States

12:10 PM
2073: Non-Polar a-plane AlScN(112̅0) Thin Film Based SAW Resonators with Significantly Improved
Electromechanical Coupling Coefficient
Anli Ding(1, Niclas Feil(3), Rachid Driad(1), Yuan Lu(1), Lutz Kirste(1), Tim Christoph(1), Maximilian Kessel(1), Oliver Ambacher(2), Agne Žukauskaitė(1)
{1}Fraunhofer Institute Applied Solid State Physics-IAF, Germany; {2}Fraunhofer Institute Applied Solid State Physics-IAF / University of Freiburg, Germany; {3}University of Freiburg, Germany

12:20 PM
2260: Nonlinear Performance on Acoustic Transversal Filters
Rafael Perea-Robles(2), Jordi Mateu(2), Carlos Collado(2), Robert Aigner(1)
{1}Qorvo Inc., United States; {2}Universitat Politècnica de Catalunya, Spain

12:30 PM
2347: Interfacial Omnidirectional Spiral Surface Acoustic Wave Confinement for Contact-Free Particle/Cell Manipulation
Naqing Zhang, Cécile Floer, James Friend
University of California, San Diego, United States

12:40 PM
2485: Well-Free Cell Agglomeration and On-Demand Spheroid Forming Using Guided Surface Acoustic Waves Through a Couplant Layer
Jiyang Mei(4), Aditya Vasan(4), Uri Magaram(3), Kenjiro Takemura(1), Sreekanth Chalasani(2), James Friend(4)
{1}Keio University, Japan; {2}Salk Institute for Biological Studies, United States; {3}Salk Institute for Biological Studies / University of California San Diego, United States; {4}University of California, San Diego, United States

12:50 PM
1266: Towards Scalable Full-Device Simulation for Surface Acoustic Wave Devices
Yu-Po Wong(1), Luyan Qiu(1), Naoto Matsuoka(2), Ken-Ya Hashimoto(1)
{1}Chiba University, Japan; {2}Nihon Dempa Kogyo Co., Ltd., Japan

01:00 PM
1390: Resonance Properties of Leaky SAW Harmonics on Bonded Dissimilar-Material Structures
Shiori Asakawa(1), Masashi Suzuki(1), Shoji Kakio(1), Ami Tezuka(2), Jun Mizuno(2)
{1}University of Yamanashi, Japan; {2}Waseda University, Japan

01:10 PM
1210: Peculiarities of Wireless Interrogation of SAW-Resonator Vibration Sensor by RF Pulse-Signal
Andrey Merkulov(1), Alexander Shvetsov(1), Baptiste Paulmier(2), Sergei Zhgoon(1), Sami Hage-Ali(2), Omar Elmazria(2)
11:30 AM
1459: Valley-Locked Waveguiding of Ultrasonic Waves in Topological Square-Lattice Crystal
Nicolas Laforge(3), Mehul Makwana(2), Richard Craster(2), Sébastien Guenneau(2), Vincent Laude(1), Muamer Kadic(4)
(1)Centre National de la Recherche Scientifique, France; (2)Imperial College London, United Kingdom; (3)Université Bourgogne Franche-Comté, France; (4)Université de Franche-Comté, France

11:40 AM
1815: Experimental Evidence of Mass Sensitivity for Love Wave Interacting with Phononic Pillars
Jérémy Bonhomme(1), Mourad Oudich(1), Jean-François Bryche(2), Mohammed Lamine F. Bellarej(1), Pedro Alberto Segura Chavez(1), Paul G. Charrette(2), Frédéric Sarry(1)
(1)Université de Lorraine, France; (2)Université de Sherbrooke, Canada

11:50 AM
2235: An Aluminum Nitride (AlN) Based Elastic Metamaterial with Guided Negative Refraction
Yanbo He, Dana Weinstein
Purdue University, United States

12:00 PM
2299: Mechanical Four-Wave Mixing in GHz Phononic Circuit on Thin-Film Lithium Niobate on Sapphire
Wentao Jiang, Felix Mayor, Christopher Sarabalis, Timothy McKenna, Jason Herrmann, Jeremy Witmer, Amir Safavi-Naeini
Stanford University, United States

12:10 PM
2470: 3C-SiC Phononic Waveguide for Manipulating Mechanical Wave Propagation
Jaesung Lee(2), Yanan Wang(2), Wenshao Zhu(1), Philip Feng(2)
(1)Case Western Reserve University, United States; (2)University of Florida, Florida States

11:30:00 AM - 1:30:00 PM
C5P-11: PPN: Poster PM - Phononics
Session Chair(s): Vincent Laude (FEMTO-ST / CNRS)

11:30 AM
1459: Valley-Locked Waveguiding of Ultrasonic Waves in Topological Square-Lattice Crystal
Nicolas Laforge(3), Mehul Makwana(2), Richard Craster(2), Sébastien Guenneau(2), Vincent Laude(1), Muamer Kadic(4)
(1)Centre National de la Recherche Scientifique, France; (2)Imperial College London, United Kingdom; (3)Université Bourgogne Franche-Comté, France; (4)Université de Franche-Comté, France

11:40 AM
1815: Experimental Evidence of Mass Sensitivity for Love Wave Interacting with Phononic Pillars
Jérémy Bonhomme(1), Mourad Oudich(1), Jean-François Bryche(2), Mohammed Lamine F. Bellarej(1), Pedro Alberto Segura Chavez(1), Paul G. Charrette(2), Frédéric Sarry(1)
(1)Université de Lorraine, France; (2)Université de Sherbrooke, Canada

11:50 AM
2235: An Aluminum Nitride (AlN) Based Elastic Metamaterial with Guided Negative Refraction
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12:00 PM
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Stanford University, United States

12:10 PM
2470: 3C-SiC Phononic Waveguide for Manipulating Mechanical Wave Propagation
Jaesung Lee(2), Yanan Wang(2), Wenshao Zhu(1), Philip Feng(2)
(1)Case Western Reserve University, United States; (2)University of Florida, Florida States

11:30:00 AM - 1:30:00 PM
C5P-12: NDE: Poster PM - Non-Destructive Evaluation
Session Chair(s): Robert Addison (Rockwell Science Center)

11:30 AM
1139: Ultrasonic Simulator for Manual Ultrasonic Testing
Myles Dunlap(2), Ternill Massey(1), Mark Dennis(1)
(1)Electric Power Research Institute, United States; (2)Electric Power Research Institute, Inc., United States

11:40 AM
1816: Performance Evaluation of High Temperature Ultrasonic Communication System
Xin Huang(2), Jafar Saniie(2), Sasan Bakhtian(1), Alexander Heifetz(1)
(1)Argonne National Laboratory, United States; (2)Illinois Institute of Technology, United States

11:50 AM
2411: The Study of the Acoustic Emission from Gas Bubble Dynamics: a Signature of CO2 Leakage
Hung Doan, Vanshi Chilli, Cristian Pantea
Los Alamos National Laboratory, United States

11:30:00 AM - 1:30:00 PM
C5P-13: NAI: Poster PM - Acoustic Imaging & Microscopy
Session Chair(s): Edward Haeggstrom (University of Helsinki)

12:00 PM
1976: Axisymmetric Lenses for Ultrasound Microscopy Using Model-Based Reconstruction
Michael Brown(3), Pim van der Meulen(1), Geert Leus(1), Pieter Kruizenga(2)
(1)Delft University of Technology, Netherlands; (2)Erasmus University Medical Center, Netherlands; (3)University College London, Netherlands

12:10 PM
2376: Characterization of Microbubble Localization Accuracy in the Presence of Phase Aberration and Reverberation Clutter
Jake McCall(1), Thomas Kierski(2), Paul Dayton(1), Giammarco Pinton(1)
(1)North Carolina State University / University of North Carolina at Chapel Hill, United States; (2)University of North Carolina at Chapel Hill, United States

11:30:00 AM - 1:30:00 PM
C5P-14: NAS: Poster PM - Acoustic Sensors I
Session Chair(s): Walter Arnold (Fraunhofer Institute for NDT)

12:20 PM
1050: Network of SAW Sensors with Hyperbolically Frequency-Modulated Reflecting Gratings
Dmitrij Smirnov(1), Victor Plessky(2), Rimantas Miskinis(1), Emilis Urba(1), Soumya Yandrapalli(2)
(1)Fisher-Titus Medical Center, Lithuania; (2)GVR Trade SA / Resonant Inc, Switzerland

12:30 PM
1324: Optimization of Wireless Coupling to SAW Sensors
David Greve(1), Jagannath Devkota(2), Paul Ohodnicki(3)
(1)DWGreve Consulting, United States; (2)National Energy Technology Laboratory, United States; (3)University of Pittsburgh, United States

12:40 PM
1473: Wireless Interrogation of High Temperature Surface Acoustic Wave Dynamic Strain Sensor
David Leff(2), Anin Maskay(1), Mauricio Pereira Da Cunha(2)
(1)Environetix Technologies Corporation, United States; (2)University of Maine, United States
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>12:50 PM</td>
<td>1969: Surface Acoustic Wave (SAW) Sensors for Temperature and Strain Measurements</td>
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<td>Yang Yan, Yudong Wang, Dorinamaria Carka, Fang Li</td>
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<td>New York Institute of Technology, United States</td>
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<td>01:00 PM</td>
<td>1998: Large Area Multi-Functional Ultrasound Sensor: Fingerprint, Force Touch, Stylus Tracking</td>
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<td>Changting Xu, Yipeng Lu, Jessica Liu Strohmann, Hrishikesh Panchawagh</td>
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<td>Qualcomm Technologies, Inc., United States</td>
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<td>11:30 AM</td>
<td>C5P-15: NMC: Poster PM - Material and Defect Characterization</td>
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<td>Session Chair(s): Walter Arnold (Fraunhofer Institute for NDT)</td>
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<td>11:30 AM</td>
<td>1775: Ultrasonic Detection of Crack Defects in Pipe Samples with a 132-Channel Test Scanner in Gas</td>
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<td>Petter Norli(1), Emilie Vallée(1), Magne Aanes(1), Fabrice Prieur(2), Tore Gruner Bjaøstad(2), Øyvind Standal(2), Ole Martin Brende(2), Martin Frijlink(2)</td>
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<td>(1)Halfwave AS, Norway; (2)InPhase Solutions AS, Norway</td>
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<td>11:40 AM</td>
<td>1929: Frequency Dependent Ultrasound Absorption in Solid Disks Determined by Means of Radiation</td>
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<td>Power Measurements</td>
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<td>Tina Fuhrmann, Konrad Mehle, Klaus V. Jenderka</td>
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<td>University of Applied Sciences Merseburg, Germany</td>
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<td>11:50 AM</td>
<td>2168: A Dictionary Learning Approach for Processing Multimodal Vibrational Data in High-Frequency</td>
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<td>Aluminum Nitride (AIN) Piezoelectric Nanomembrane Resonators</td>
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<td>Harsha Tetali, Xuqian Zheng, Philip Feng, Joel Harley</td>
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<td>University of Florida, United States</td>
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<td>12:00 PM</td>
<td>C5P-16: NAS: Poster PM - Acoustic Sensors II</td>
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<td>Session Chair(s): Anthony Gachagan (University of Strathclyde, Glasgow)</td>
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<td>12:00 PM</td>
<td>1862: Acoustic Frequency Comb Generation in a Parametrically Excited Capacitive Micromachined</td>
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<td>Ultrasonic Transducer (CMUT) for Precise Distance Measurement</td>
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<td>Sushruta Surappa, F. Levent Degertekin</td>
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<td>Georgia Institute of Technology, United States</td>
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<td>12:10 PM</td>
<td>2021: Heart Rate Monitoring Using Ultrasonic Biometric Sensors</td>
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<td>Soon Joon Yoon(2), Changting Xu(2), Jessica Liu Strohmann(2), Hrishikesh Panchawagh(2), Kostadin</td>
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<td>Djordjevic(1)</td>
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<td>(1)Qualcomm, United States; (2)Qualcomm Technologies, Inc., United States</td>
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<td>12:20 PM</td>
<td>2294: Optimal Cut of Quartz Crystal/FeGaB for RF MEMS Magnetic Sensors</td>
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<td>Xiangnan Pang, Yook-Kong Yong</td>
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<td>Rutgers University, United States</td>
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<td>12:30 PM</td>
<td>2295: Ultrasonic Measurements of Temperature Distribution in Extreme Environments: Results of</td>
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<td>Power Plant Testing</td>
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<td>Mason John, Kenneth Walton, Mikhail Skliar</td>
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<td>University of Utah, United States</td>
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<td>12:40 PM</td>
<td>2435: Relationship Between Lateral Field Excited AT-Cut Quartz Crystal Microbalance Operation and</td>
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<td>Acoustic Plate Modes</td>
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<td>Jequil Hartz, Nuni Emanetoglu, John Vetelino</td>
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<td>University of Maine, United States</td>
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<td>12:50 PM</td>
<td>2064: Ultrasonic Communication in Solid Channels Using Adaptive OFDM</td>
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<td>Boyang Wang(2), Jafar Saniei(2), Sasan Bakhtiari(1), Alexander Heifetz(1)</td>
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<td>(1)Argonne National Laboratory, United States; (2)Illinois Institute of Technology, United States</td>
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<td>12:50 PM</td>
<td>1706: Novel, High Temperature, Low Frequency, Thin Film, NDT Ultrasound Transducers</td>
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<td>Claire Thring, Fergus Band, Daniel Irving, Kevin</td>
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<td>McAughey, David Hughes</td>
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<td>Novosound, United Kingdom</td>
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<td>12:50 PM</td>
<td>1451: Understanding and Improving the Lift-Off Performance of Electromagnetic Acoustic Transducers</td>
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<td>Lunci Xiang, Claire Thring, Steve Dixon, Rachel Edwards</td>
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<td>University of Warwick, United Kingdom</td>
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<td>12:50 PM</td>
<td>1460: Protection Layer for Air-Coupled Waveguide Ultrasonic Phased Arrays</td>
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<td>Matthias Rutsch, Gianni Allevato, Jan Hinrichs, Mario Kupnik</td>
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<td>Technische Universität Darmstadt, Germany</td>
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<td>12:50 PM</td>
<td>1706: Novel, High Temperature, Low Frequency, Thin Film, NDT Ultrasound Transducers</td>
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<td>McAughey, David Hughes</td>
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<td>12:50 PM</td>
<td>C5P-19: NPA: Poster PM - Photoacoustics</td>
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<td>Session Chair(s): Nick Bottenus (University of Colorado Boulder)</td>
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<td>12:50 PM</td>
<td>11:30:00 AM - 1:30:00 PM</td>
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<td>11:30 AM</td>
<td>1917: Large Area Multi-Functional Ultrasound Sensor: Fingerprint, Force Touch, Stylus Tracking</td>
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<td>Changting Xu, Yipeng Lu, Jessica Liu Strohmann, Hrishikesh Panchawagh</td>
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<td>Qualcomm Technologies, Inc., United States</td>
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<td>11:30 AM</td>
<td>C5P-16: NMC: Poster PM - Material and Defect Characterization</td>
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<td>Session Chair(s): Walter Arnold (Fraunhofer Institute for NDT)</td>
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<td>11:40 AM</td>
<td>1929: Frequency Dependent Ultrasound Absorption in Solid Disks Determined by Means of Radiation</td>
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<td>Power Measurements</td>
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<td>Tina Fuhrmann, Konrad Mehle, Klaus V. Jenderka</td>
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<td>University of Applied Sciences Merseburg, Germany</td>
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<td>11:50 AM</td>
<td>2168: A Dictionary Learning Approach for Processing Multimodal Vibrational Data in High-Frequency</td>
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<td>Aluminum Nitride (AIN) Piezoelectric Nanomembrane Resonators</td>
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<td>Harsha Tetali, Xuqian Zheng, Philip Feng, Joel Harley</td>
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<td>University of Florida, United States</td>
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<td>12:00 PM</td>
<td>C5P-16: NAS: Poster PM - Acoustic Sensors II</td>
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<td>Session Chair(s): Anthony Gachagan (University of Strathclyde, Glasgow)</td>
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<td>12:00 PM</td>
<td>1862: Acoustic Frequency Comb Generation in a Parametrically Excited Capacitive Micromachined</td>
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<td>Ultrasonic Transducer (CMUT) for Precise Distance Measurement</td>
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<td>Sushruta Surappa, F. Levent Degertekin</td>
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<td>Georgia Institute of Technology, United States</td>
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<td>12:10 PM</td>
<td>2021: Heart Rate Monitoring Using Ultrasonic Biometric Sensors</td>
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<td>Soon Joon Yoon(2), Changting Xu(2), Jessica Liu Strohmann(2), Hrishikesh Panchawagh(2), Kostadin</td>
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<td>Djordjevic(1)</td>
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<td>(1)Qualcomm, United States; (2)Qualcomm Technologies, Inc., United States</td>
</tr>
</tbody>
</table>
Thursday, September 10

1171: Functionalized Chain-Like Cluster Gold Nanoparticles for in Vivo Tracking of Transplanted Progenitor Cells Using Multimodal Photoacoustic Microscopy and Optical Coherence Tomography
Xueding Wang\(^{2}\), Van Phuc Nguyen\(^{2}\), Tianye Zhu\(^{2}\), Wen Fan\(^{2}\), Wei Qian\(^{1}\), Yanxiu Li\(^{2}\), Wei Zhang\(^{2}\), Jessica Henry\(^{2}\), Bing Liu\(^{1}\), Yannis Paulus\(^{2}\)
\(^{1}\)IMRA America Inc, United States; \(^{2}\)University of Michigan, United States

12:20 PM
1538: Co-Axial Three-Dimensional Photoacoustic Imaging Based on Double-Reflector and Modified Elevational Synthetic Aperture Focusing
Yichuan Tang, Ryosuke Tsumura, Haichong K. Zhang
Worcester Polytechnic Institute, United States

12:30 PM
1769: Singular Value Decomposition in Photoacoustics: Noise Reduction and Separation of Stationary Tissue and Blood Signals
Roy van Hees, Min Wu, Frans van de Vosse, Richard Lopata, Marcel Rutten
Eindhoven University of Technology, Netherlands

12:40 PM
2049: Optimizing Photoacoustic Assessment of Absolute Optical Absorption Coefficient Using a Genetic Algorithm
João Uliana, Theo Pavan
University of São Paulo, Brazil

12:50 PM
2097: Volumetric Optoacoustic Imaging Using a T-Shaped Array – a Simulation Study
Marc Fourmelle, Wolfgang Bost
Fraunhofer Institute Biomedical Engineering-IBMT, Germany

11:30:00 AM - 1:30:00 PM
C5P-21: NWP: Poster PM - Wave Propagation
Session Chair(s): James Blackshire (Air Force Research Laboratory)

12:30 PM
1140: Ultrasound Beam Characterization Through Real Time Visualization with Schlieren Imaging
Myles Dunlap\(^{1}\), Jacob Beach\(^{1}\), Terrill Massey\(^{1}\)
\(^{1}\)Electric Power Research Institute, Inc., United States; \(^{2}\)Electric Power Research Institute, Inc., United States

12:20 PM
1648: Contactless Acoustic Power Transmission Through Air/Skin Interface: a Feasibility Study
Yosra Dammak\(^{2}\), Dominique Certon\(^{1}\), Francois Vander Meulen\(^{1}\), Thien Hoang\(^{2}\), Guillaume Ferin\(^{2}\), Bogdan Rosinski\(^{2}\), Samuel Callé\(^{1}\)
\(^{1}\)Université de Tours / GREMAN UMR 7347, France; \(^{2}\)Vermon SA, France

11:30:00 AM - 1:30:00 PM
C5P-22: NAF: Poster PM - Acoustic Microfluidics
Session Chair(s): James Friend (University of California, San Diego)

12:30 PM
1936: Two-Stage Ultrasonic Atomization of Liquid Using a New Sprinkle Approach
Balasubramanian Nallanan\(^{1}\), Henri Siljanen\(^{2}\), Heikki Nieminen\(^{1}\)
\(^{1}\)Aalto University, Finland; \(^{2}\)University of Eastern Finland, Finland

12:40 PM
2301: Enabling Fast Charging Lithium Ion Batteries with Surface Acoustic Wave Devices
An Huang, Haodong Liu, Amihai Horesh, Ping Liu, James Friend
University of California, San Diego, United States

12:50 PM
2375: Controllable Fluid Manipulation via MHz-Order Surface Acoustic Waves at the Nanoscale
Naiqing Zhang\(^{2}\), Amihai Horesh\(^{2}\), Ofer Manor\(^{1}\), James Friend\(^{2}\)
\(^{1}\)Technion - Israel Institute of Technology, Israel; \(^{2}\)University of California, San Diego, United States
01:00 PM
2220: 3D-Printing Piezoelectric Ultrasonic Device for Energy Harvesting
Yushun Zeng, Laiming Jiang, Yizhe Sun, Runze Li, Yong Chen, Qifa Zhou
University of Southern California, United States
04:15 AM
4293: Zig-Zag ScAlN Multilayer SMR for High Power BAW Filter Application Such as RF Base Station
Yusuke Sato{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

04:25 AM
1380: Dual-Mode Ultra-Compact FBAR-Multiferroic Antennas
Yi Yuan{1}, Wenjie Chen{2}, Chongling Sun{1}, Yungui Ma{2}, Wei Pang{1}, Qingrui Yang{1}
{1}Tianjin University, China; {2}Zhejiang University, China

04:35 AM
2019: Self-Standing FBAR Transformer Based on Shear Mode Zig-Zag ScAlN Multilayer for Rectenna Application
Sarina Kinoshita{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

04:45 AM
1636: Potentialities of LiTaO3 for Bulk Acoustic Wave Filters
Marie Bousquet, Pierre Perreau, Gael Castellan, Michael Bertucchi, Catherine Maeder-Pachurka, Fanny Delaguillaumue, Alice Jouliie, Gregory Enyedi, Bastien Sailler, Denis Mariolle, Patrice Gerqua, Anne-Marie Papon, Francois-Xavier Darras, Frederic Mazen, PGrenoble Alpes Université, CEA-Leti, France

04:55 AM
1553: Effects of Post-Annealing on Texture Evolution of Sputtered ScAIN Films
Minghua Li, Bangtao Chen, Jieli Xie, Yao Zhu
Agency for Science, Technology and Research, Singapore

05:05 AM
1759: Acoustic Attenuation in CTGS Single Crystals Up to Microwave Frequencies
Andrei Sotnikov{3}, Boris Sorokin{4}, Manfred Weihnacht{2}, Yuriy Suha{k}{1}, Holger Fritz{1}, Hagen Schmidt{3}
{1}Clausthal University of Technology, Germany; {2}inoXacs, Germany; {3}Leibniz IFW Dresden, Germany; {4}Technological Institute for Superhard and Novel Carbon Materials, Russia

05:15 AM
2047: Extraction of kt² of Piezoelectric Film/Substrate Structure by Conversion Loss Derived by Electromagnetic Signal Including No Acoustic Losses
Ryota Tatsumi{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan
### D1P-10: ASA: Poster AM - Sensors & New Applications I

**Session Chair(s):** Tao Han (Shanghai Jiao Tong University), Omar Elmazria (Université de Lorraine)

<table>
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<tr>
<th>Time</th>
<th>Presentation Title</th>
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<th>Affiliations</th>
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<tr>
<td>04:55 AM</td>
<td>1227: AlN/6H–SiC Hybrid-Coupled Resonators</td>
<td>Kangfu Liu, Junrui Liang, Tao Wu</td>
<td>Hangzhou Dianzi University, China; Silicon Austria Labs, Austria; Wuhan University, China</td>
</tr>
<tr>
<td>05:05 AM</td>
<td>1622: Effect of Thickness Ratio of Double Layered Thickness-Shear Resonator on Temperature Characteristics of Resonance Frequency</td>
<td>Yusuke Owada, Yuji Ohashi, Masaya Omote, Yuui Yokota, Shunsuke Kurosawa, Kei Kamada, Hiroki Sato, Satoshi Toyoda, Masao Yoshino, Akihiro Yamaji, Akira Yoshikawa</td>
<td>Tohoku University, Japan</td>
</tr>
<tr>
<td>05:15 AM</td>
<td>1508: A Piezo-Capacitive High-Frequency Resonant Accelerometer</td>
<td>Hakhamanesh Mansoorzare, Ankesh Todi, Sina Moradian, Reza Abdolvand</td>
<td>University of Central Florida, United States</td>
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<tr>
<td>05:25 AM</td>
<td>1949: Inductor-Less Compensation of the Antiresonance in Piezoelectric Resonator</td>
<td>Michele Pirro, Luca Colombo, Giuseppe Michetti, Yao Yu, Cristian Cassella, Matteo Rinaldi</td>
<td>Northeastern University, United States</td>
</tr>
<tr>
<td>05:35 AM</td>
<td>2234: A High-Performance Antenna-Plexer for Mobile Devices</td>
<td>Adrián Contreras-Lizárraga, Wei Ouyang, Weikang Zhang, Jason McGann, Fumiya Matsukura, Tabito Tanaka, Mingdong Li, Jun Tsutsumi, Alberto Canabal</td>
<td>Qorvo Inc., United States</td>
</tr>
<tr>
<td>05:45 AM</td>
<td>2418: Planar Lens for GHz Fourier Ultrasonics</td>
<td>Juneho Hwang, Benyamin Davaji, Justin Kuo, Amit Lal</td>
<td>Cornell University, United States</td>
</tr>
<tr>
<td>05:55 AM</td>
<td>1253: Integrated Chip Combined Ultrasound Stimulation with MEA for Investigating the Neural Circuit</td>
<td>Wei Zhou, Zhengrong Lin, Wenbin Li, Lili Niu, Long Meng, Hairong Zheng</td>
<td>Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China</td>
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### D1P-11: ASD: Poster AM - SAW Devices II

**Session Chair(s):** Ryo Nakagawa (Murata Manufacturing), Hiroyuki Nakamura (Skyworks Solutions)

<table>
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<th>Time</th>
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<th>Authors</th>
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<tr>
<td>04:15 AM</td>
<td>1291: Multifunctional Sensor (Magnetic Field and Temperature) Based on Microstructured and Multi-Layered SAW Device</td>
<td>Harshad Mishra{2}, Michel Hehn{2}, Sami Hage-Ali{2}, Sébastien Petit-Watelot{2}, Prince W. Mengue{2}, Sergei Zghoon{1}, Hamid M’Jahed{2}, Daniel Lacour{2}, Omar Elmazria{2}</td>
<td>National Research University MPEI, Russia; Université de Lorraine / CNRS, France</td>
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<tr>
<td>04:25 AM</td>
<td>1352: Leaky Surface Acoustic Wave with Velocity 10 km/s and Suppressed Leakage in LiNbO3 Plate Bonded to Sapphire</td>
<td>Natalya Naumenko</td>
<td>National University of Science and Technology MISiS, Russia</td>
</tr>
<tr>
<td>04:35 AM</td>
<td>1665: Doped Silicon Temperature Compensation of Surface Acoustic Wave Devices</td>
<td>Yiming Ma{3}, Xianhao Le{4}, Srinivas Menugu{1}, Jaibir Sharma{1}, Nan Wang{1}, Amit Lal{2}, Chengkuo Lee{4}, Eldwin Jiaqiang Ng{1}</td>
<td>Agency for Science, Technology and Research, Singapore; Agency for Science, Technology and Research / Cornell University, Singapore; Agency for Science, Technology and Research / National University of Singapore, Singapore; National University of Singapore, Singapore</td>
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<td>04:45 AM</td>
<td>1884: Towards a 915MHz High-Temperature Reflective Delay Line SAW Sensor</td>
<td>Cecile Floer{4}, Jordan Maufay{3}, Sami Hage-Ali{4}, Pascal Nicolay{1}, Thierry Aubert{3}, Sergei Zghoon{2}, Omar Elmazria{4}</td>
<td>Carinthia University of Applied Sciences / CiSMAT, Austria; National Research University MPEI, Russia; Université de Lorraine / CentraleSupélec, France; Université de Lorraine / CNRS, France</td>
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<tr>
<td>04:55 AM</td>
<td>1313: Implementation of Absolute Amplitude Measurement Function to High-Speed and Phase-Sensitive Laser Probe for RF SAW/BAW Devices</td>
<td>Hikaru Takahashi, Naohiro Ono, Tatsuya Omori, Ken-Ya Hashimoto</td>
<td>Chiba University, Japan</td>
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### D1P-12: ASD: Poster AM - SAW Devices IV

**Session Chair(s):** Ben Abbott (Skyworks Solutions), Marc Solal (Qorvo)

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<td>Harshad Mishra{2}, Michel Hehn{2}, Sami Hage-Ali{2}, Sébastien Petit-Watelot{2}, Prince W. Mengue{2}, Sergei Zghoon{1}, Hamid M’Jahed{2}, Daniel Lacour{2}, Omar Elmazria{2}</td>
<td>National Research University MPEI, Russia; Université de Lorraine / CNRS, France</td>
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<tr>
<td>04:25 AM</td>
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<td>Natalya Naumenko</td>
<td>National University of Science and Technology MISiS, Russia</td>
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<tr>
<td>04:35 AM</td>
<td>1665: Doped Silicon Temperature Compensation of Surface Acoustic Wave Devices</td>
<td>Yiming Ma{3}, Xianhao Le{4}, Srinivas Menugu{1}, Jaibir Sharma{1}, Nan Wang{1}, Amit Lal{2}, Chengkuo Lee{4}, Eldwin Jiaqiang Ng{1}</td>
<td>Agency for Science, Technology and Research, Singapore; Agency for Science, Technology and Research / Cornell University, Singapore; Agency for Science, Technology and Research / National University of Singapore, Singapore; National University of Singapore, Singapore</td>
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<td>1884: Towards a 915MHz High-Temperature Reflective Delay Line SAW Sensor</td>
<td>Cecile Floer{4}, Jordan Maufay{3}, Sami Hage-Ali{4}, Pascal Nicolay{1}, Thierry Aubert{3}, Sergei Zghoon{2}, Omar Elmazria{4}</td>
<td>Carinthia University of Applied Sciences / CiSMAT, Austria; National Research University MPEI, Russia; Université de Lorraine / CentraleSupélec, France; Université de Lorraine / CNRS, France</td>
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<td>Chiba University, Japan</td>
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05:15 AM
1378: Leaky SAW Propagation Properties on LiNbO3 Thin Plate Bonded to Similar-Material Substrate
Takumi Fujimaki, Masashi Suzuki, Shoji Kakio
University of Yamanashi, Japan

05:25 AM
1796: Higher-Order Surface Acoustic Wave Modes of a Finite Elastic Solid
Jinghui Wu(2), Ken-Ya Hashimoto(1), Zengwen Wu(2), Bin Huang(2), Ji Wang(2)
(1)Chiba University, Japan; (2)Ningbo University, China

05:35 AM
2279: Suppression of Spurious Modes on LGS with Euler Angle of (0°, 22°, 30°)
Qingchuan Shan(2), Han Ke(2), Yirou Shi(2), Wenchang Hao(1), Wei Luo(1), Tao Han(2)
(1)Beijing Research Institute of Telemetry, China; (2)Shanghai Jiaotong University, China

05:45 AM
1265: Analysis of SAW Slowness Shape on I.H.P. SAW Structures
Yu-Po Wong(1), Naoto Matsuoka(2), Luyan Qiu(1), Ken-Ya Hashimoto(1)
(1)Chiba University, Japan; (2)Nihon Dempa Kogyo Co., Ltd., Japan

4:15:00 AM - 6:15:00 AM
D1P-13: POA: Poster AM - Opto-Acoustics II
Session Chair(s): Charles Courtney (University of Bath)

04:15 AM
1235: Effects of Substrate Materials on Ultrasound Detection by SPR Sensors
Shoya Ueno, Hayato Ichihashi, Keita Yano, Mami Matsukawa, Yoshiaki Watanabe
Doshisha University, Japan

04:25 AM
1562: Pulse Duration Influence on the Photoacoustic Temporal Waveform of the Liquid-Filled Thin Glass Capillary Embedded in a Soft Object
Shili Qu, Yosuke Mizuno, Kentaro Nakamura
Tokyo Institute of Technology, Japan

04:35 AM
1836: Non-Intrusive Mapping of HIFU-Affected Region in Water Using Rainbow Schlieren Deflectometry (RSD)
Pragya Gupta(1), Atul Srivastava(2)
(1)IITB-Monash Research Academy / Indian Institute of Technology Bombay, India; (2)Indian Institute of Technology Bombay, India

04:45 AM
006: Photoacoustic Imaging for Detecting Inflammation Resulting from Cancer Immunotherapy
Janggun Jo, Girish Gandikota, Elena Schiopu, Nada Abdulaziz, Leslie Fecher, Christopher Lao, Xueding Wang
University of Michigan, United States

04:55 AM
2305: Robustness Enhancements of Time-of-Flight Measurements in a CDMA Ultrasonic Channel of an Opto-Acoustic Indoor Positioning System Using MEMS Microphones
Martin Oberdorfer(2), Dominik Esslinger(2), Gregor Benz(1), Oliver Sawodny(2), Cristina Tarin(2)
(1)Sarissa GmbH, Germany; (2)University of Stuttgart, Germany

4:15:00 AM - 6:15:00 AM
D1P-15: PMI: Poster AM - Modelling & Inversion
Session Chair(s): István A. Veres (Qorvo Inc.)

05:05 AM
1442: Rapid Acoustic Holograms Enabled by Deep Learning
Qin Lin(2), Feiyuan Cai(3), Jiaqian Wang(2), Rujun Zhang(1), Fei Li(3), Xiangxiang Xia(2), Jingping Wang(2), Zhiqiang Zhang(2), Weibao Qi(3), Hairong Zheng(2)
(1)Guangdong Medical University, China; (2)Paul C. Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology, China; (3)Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

05:15 AM
1638: Ultrasound Imaging of the Brain Using Full Waveform Inversion
Ulas Taskin(1), Kjersti Eikrem(2), Geir Naesdal(3), Morten Jakobsen(4), Dirk Verschuur(1), Koen van Dongen(1)
(1)Delft University of Technology, Netherlands; (2)NORCE, Norway; (3)Norwegian Research Centre, Norway; (4)University of Bergen, Norway

05:25 AM
2151: Application of the Superposition Method with k-Wave Pseudo-Spectral Modelling
Andrew Drainville(1), Samuel Pichardo(2)
(1)INRM U1032 / LabTAU, France; (2)University of Calgary, Canada

05:35 AM
2254: Efficient Simulation Algorithm Using Dynamic Mesh Segmentation for Pulsed Nonlinear Acoustic Propagation of Laser-Generated Focused Ultrasound
Min Gyu Joo, Pilgyu Sang, Kyu-Kwan Park, Hyoung Won Baac
Sungkyunkwan University, Korea

05:45 AM
2334: Simulation Study of kHz Wave Modes Generated by a Wedge Embedded in Tissue
Saif Bunni, Heikki Nieminen
Aalto University, Finland

4:15:00 AM - 6:15:00 AM
D1P-14: PGP: Poster AM - General Physical Acoustics II
Session Chair(s): Andreas Mayer (HS Offenburg - Univ. of Applied Sciences, Gengenbach)

04:15 AM
Hakan Caldag, Serhat Yesilyurt
Friday, September 11

Sabanci University, Turkey

04:25 AM
1222: Analysis of Vibrations of Circular Quartz Crystal Resonators for Sensor Applications
Qi Huang(2), Bernd Neubig(1), Zengwen Wu(2), Longtao Xie(2), Tingfeng Ma(2), Ji Wang(2)
{1}GmbH & Co. KG, Germany; {2}Ningbo University, China

04:35 AM
2026: Engineering the Quasi-Rayleigh-Wave Beat Length for Embedded Information Storage Methodology
Christopher Hakoda, Cristian Pantea, Vamshi Chillara
Los Alamos National Laboratory, United States

04:45 AM
2144: Investigation of the Limit Operating Temperature of LiNbO3 as Substrate for SAW Devices
Jordan Maufay(1), Thierry Aubert(1), Ninel Kokanyan(1), Cécile Floer(2), Sami Hage-Ali(2), Omar Elmezaria(2)
{1}Université de Lorraine / CentraleSupélec, France; {2}Université de Lorraine / CNRS, France

04:55 AM
2150: Visualization of Acoustic Wave Phenomena by Numerical Simulation for Educational Purposes
Yu-Po Wong(1), Naoto Matsuoka(2), Luyan Qiu(1), Ken-Ya Hashimoto(1)
{1}Chiba University, Japan; {2}Nihon Dempa Kogyo Co., Ltd., Japan

05:05 AM
2501: Anomalous Behavior of Ultrasonic Love Waves Propagating in Two-Layer Waveguides Loaded with a Newtonian Liquid
Piotr Kiełczyński, Marek Szalewski, Andrzej Balcerzak, Krzysztof Wieja
Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland

05:15 AM
1395: Rotation and Position Control of a Cubic Object Using Airborne Ultrasound
Takumi Kasai, Takuro Furumoto, Hiroyuki Shinoda
University of Tokyo, Japan

05:25 AM
2429: The Pressure Threshold of the 1/2 Order Subharmonic Emissions in the Oscillations of Ultrasonically Excited Uncoated Air Bubbles Is Not at Twice the Resonance Nor Is It at the Resonance Frequency
Amin Jafari Sojahrood, Hossein Haghj, Niloufar Rostami Shirazi, Raffi Karshafian, Michael C. Kolios
Ryerson University, Canada

05:35 AM
1663: Nonlinear Properties of Guided Acoustic Waves in a Soft Layer Between Stiff Quarter-Spaces
Pavel Pupyrev(4), Ilya Nedospasov(3), Marek Rjelka(1), Andreas Mayer(2)
{1}Fraunhofer Ceramic Technologies and Systems-IKTS, Germany; {2}Hs Offenburg - University Of Applied Sciences, Germany; {3}Kotelnikov Institute of Radio Engineering and Electronics, Moscow, Russia; {4}Prokhorov General Physics Institute, Russia

4:15:00 AM - 6:15:00 AM
D1P-16: PAT: Poster AM - Acoustic Tweezers & Particle Manipulation II
Session Chair(s): Minoru Kurosawa (Tokyo Institute of Technology)

04:15 AM
1024: Ultrahigh Frequency Surface Acoustic Waves Actuated Digital Micro-Centrifugal Chip for Rapid Separation of Sub-Micron Bioparticles
Shuchang Liu, Weiwei Cui, Xuexin Duan, Wei Pang
Tianjin University, China

04:25 AM
1353: Dexterous and Precise Adjustment of the Focal Region Location in Acoustic Vortices
Shifang Guo, Zhen Ya, Xuyan Guo, Pengying Wu, Mingxi Wan
Xi’an Jiaotong University, China

04:35 AM
1362: Reducing Spiraling in Transducer Array Based Acoustic Levitation
Carl Andersson, Jens Ahrens
Chalmers University of Technology, Sweden

04:45 AM
1385: Particle Manipulation by a Novel Lamb Wave Resonator Array with Grating Reflectors
Zhaoxun Wang, Suge Wang, Yuan Ning, Xuejiao Chen, Xuexin Duan, Wei Pang, Qingrui Yang
Tianjin University, China

04:55 AM
2458: Deep Learning-Based Intelligent Acoustic Trapping System for Determination of Invasion Potentials of Suspended Cancer Cells in an Acoustic Trap
Sangyeon Youn, Kyungsu Lee, Jeewon Son, Jae Youn Hwang
Daegu Gyeongbuk Institute of Science and Technology, Korea

4:15:00 AM - 6:15:00 AM
D1P-18: PUM: Poster AM - Ultrasonic Motors & Actuators
Session Chair(s): Takahiko Yanagitani (Waseda University)

05:05 AM
1069: Variable-Focus in Radial Direction in Liquid Crystal Lens Using Ultrasound Vibration
Jessica Onaka, Takahiro Iwase, Daisuke Koyama
Doshisha University, Japan

05:15 AM
1230: Concave Liquid Crystal Lens with a Large Aperture Using Ultrasound Traveling Wave
Takahiro Iwase(1), Jessica Onaka(1), Daisuke Koyama(1), Akira Emoto(2), Kentaro Nakamura(3), Mami Matsukawa(1)
Friday, September 11

05:25 AM
1804: Propulsion and Speed Measurement of High Frequency Underwater SAW Actuators
Sho Kajii, Deqing Kong, Kazuki Nishio, Minoru Kuribayashi, Kurosawa
Tokyo Institute of Technology, Japan

05:35 AM
2413: Particle Excitation by Using a Piezoelectric Vibrator for a Hydraulic Valve
Takelumi Kanda{1}, Kou Hashimoto{1}, Hikaru Yamamoto{1}, Shuichi Wakimoto{1}, Koichi Suzumori{2}, Takahiro Ukida{2}, Hiroyuki Nabea{2}
{1}Okayama University, Japan; {2}Tokyo Institute of Technology, Japan

4:15:00 AM - 6:15:00 AM
D1P-17: PTF: Poster AM - Thin Films
Session Chair(s): Ji Wang (Ningbo University)

04:15 AM
1368: Deterioration in the Piezoelectric Property of ScAlN Thin Films by Negative Ion Bombardment Increased in Low-Pressure Sputtering Deposition
Takumi Tominaga{1}, Shinji Takayanagi{1}, Takahiko Yanagitani{2}
{1}Doshisha University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

04:25 AM
Niclas Manuel Feil{4}, Elena Mayer{3}, Bjørn Christian{4}, Anli Ding{1}, Agnė Žukauskaitė{1}, Oliver Ambacher{2}
{1}Fraunhofer Institute Applied Solid State Physics-IAF, Germany; {2}Fraunhofer Institute Applied Solid State Physics-IAF / University of Freiburg, Germany; {3}Offenburg University of Applied Sciences, Germany; {4}University of Freiburg, Germany

04:35 AM
2058: Accurate Extraction of $k^2$ of Piezoelectric Film/Substrate Structure by Conversion Loss Method Subtracting Experimental Acoustic Losses in the Substrate
Ryota Tatsumi{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

04:45 AM
2187: Comb Transducer for Generation of SH0 Mode in Crystalline Piezoelectric Membrane
Victor Plessky{2}, Julius Koskela{1}, Soumya Yandrapalli{1}
{1}GVR Trade SA, Switzerland; {2}GVR Trade SA / Resonant Inc, Switzerland

04:55 AM
2256: c-Axis Oriented ScAlN/ SiO2 Multilayer BAW Transformer for Rectifying Antenna Applications
Kota Izumi{1}, Takahiko Yanagitani{2}

05:05 AM
2310: Measurement of Time Response of Electrical Properties in Thickness Shear Mode Resonator with Liquid Loadings
Mao Watabe{1}, Shinji Takayanagi{1}, Takahiko Yanagitani{2}
{1}Doshisha University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

05:15 AM
2476: Improvement of Crystallization and Shear-Mode Electromechanical Coupling of c-Axis-Parallel-Oriented ZnO Film by Annealing Treatment
Shinji Takayanagi{1}, Kanae Kimoto{1}, Takahiko Yanagitani{2}
{1}Doshisha University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

05:25 AM
2488: Extracting Mechanical Q Factor of the Pure AlN, ZnO, and ScAlN Film Without Etching Substrate
Naoya Iwata{2}, Sarina Kinoshita{1}, Takahiko Yanagitani{3}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN, Japan; {3}Waseda University / ZAIKEN / JST-PRESTO, Japan

05:35 AM
2489: Effect of Negative-Ion-Bombardment Suppression by Applying Voltage to Grids Set Between Substrate and Sputtering Target During Sputtering Deposition on Crystalline Orientation of ZnO Film
Kohei Tominaga{1}, Shinji Takayanagi{1}, Takahiko Yanagitani{2}
{1}Doshisha University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

05:45 AM
2491: Measurement of Antiresonant Frequency During DC Bias Voltage Application for Analysis of Second Harmonic Response of ScAlN on SMR
Takumi Soutome{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

05:55 AM
2492: Effect of Negative-Ion-Bombardment Suppression by Applying Voltage to Grids Set Between Substrate and Sputtering Target During Sputtering Deposition on Crystalline Orientation of ZnO Film
Kohei Tominaga{1}, Shinji Takayanagi{1}, Takahiko Yanagitani{2}
{1}Doshisha University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

06:05 AM
2493: ScAlN Nano-Rods Structure Thin Film Grown by a Self-Shadowing Oblique Sputtering for High Electromechanical Coupling Transducer Applications
Takumi Soutome{1}, Takahiko Yanagitani{2}
{1}Waseda University / ZAIKEN, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan

06:15 AM
2494: Measurement of Antiresonant Frequency During DC Bias Voltage Application for Analysis of Second Harmonic Response of ScAlN on SMR
Takumi Soutome{1}, Takahiko Yanagitani{2}
{1}Waseda University, Japan; {2}Waseda University / ZAIKEN / JST-PRESTO, Japan
4:15:00 AM - 6:15:00 AM  
D1P-19: NAS: Poster AM - Acoustic Sensors I  
Session Chair(s): Kentaro Nakamura (Tokyo Institute of Technology)

04:15 AM  
1040: A Wireless and Passive Temperature-Compensated SAW Strain Sensor  
Wen Wang, Shuyao Fan, Xueling Li, Xufeng Xue  
Institute of Acoustics, Chinese Academy of Sciences, China

04:25 AM  
1196: Large Piezoelectric Strain with Superior Thermal Stability of Lead-Free Potassium Sodium Niobate-Based Grain Orientation-Controlled Ceramics for High Frequency Ultrasonic Transducer Application  
Yi Quan{3}, Wei Ren{3}, Chunlong Fei{4}, Lingyan Wang{3}, Gang Niu{3}, Jinyan Zhao{3}, Jian Zhuang{3}, Junshan Zhang{3}, Zuo-Guang Ye{1}, Tomoaki Karaki{2}  
{1)Simon Fraser University, Canada; {2)Toyama Prefectural University, Japan; {3)Xi’an Jiaotong University, China; {4)Xidian University, China

04:35 AM  
1566: A Piezoelectric Toluene Sensor Based on Titanium Dioxide Nanostructured Composite Sensing Film  
Yung-Yu Chen, Wei-Han Hsia  
Tatung University, Taiwan

04:45 AM  
1963: An Algorithm to Reduce the Offset Error in Transit-Time Ultrasonic Flow Measurement  
Douwe van Willigen{1}, Paul van Neer{2}, Nico de Jong{3}, Michiel Pertijs{1}, Martin Verweij{1}  
{1)Delft University of Technology, Netherlands; {2)Delft University of Technology / Netherlands Organisation for Applied Scientific Research, Netherlands; {3)Erasmus University Medical Center / Delft University of Technology, Netherlands

4:15:00 AM - 6:15:00 AM  
D1P-21: NFM: Poster AM - Flow Measurement  
Session Chair(s): Nishal Ramadas (Elster Instromet)

04:15 AM  
1715: Experimental Characterization of a Linear Transducer Array Prototype for Ultrasonic Clamp-on Flow Metering  
Jack Massaad{1}, Douwe van Willigen{1}, Paul van Neer{2}, Nico de Jong{3}, Michiel Pertijs{1}, Martin Verweij{1}  
{1)Delft University of Technology, Netherlands; {2)Delft University of Technology / Netherlands Organisation for Applied Scientific Research, Netherlands; {3)Erasmus University Medical Center / Delft University of Technology, Netherlands

04:25 AM  
1663: An Algorithm to Reduce the Offset Error in Transit-Time Ultrasonic Flow Measurement  
Douwe van Willigen{1}, Paul van Neer{2}, Jack Massaad{1}, Nico de Jong{3}, Michiel Pertijs{1}, Martin Verweij{1}  
{1)Delft University of Technology, Netherlands; {2)Delft University of Technology / Netherlands Organisation for Applied Scientific Research, Netherlands; {3)Erasmus University Medical Center / Delft University of Technology, Netherlands

04:35 AM  
1183: Automatic Feature Extraction Based on Meta Learning for Ultrasonic Flaw Classification  
Kushal Virupakshappa, Erdal Oruklu  
Illinois Institute of Technology, United Kingdom; Illinois Institute of Technology, United States

04:45 AM  
1576: Deep Convolutional Neural Networks Applied to Ultrasonic Images for Material Texture Recognition  
Xin Zhang, Boyang Wang, Jafar Saniee  
Illinois Institute of Technology, United States

4:15:00 AM - 6:15:00 AM  
D1P-22: NSP: Poster AM - Deep Learning  
Session Chair(s): Erdal Oruklu (Illinois Institute of Technology)

04:35 AM  
1183: Automatic Feature Extraction Based on Meta Learning for Ultrasonic Flaw Classification  
Kushal Virupakshappa, Erdal Oruklu  
Illinois Institute of Technology, United Kingdom; Illinois Institute of Technology, United States

04:55 AM  
2014: Deep Data Compression for Approximate Ultrasonic Image Formation  
Georgios Pilikos{2}, Lars Horchens{1}, Kees Joost Batenburg{3}, Tristan van Leeuwen{5}, Felix Lucka{4}  
{1)Applus E&I Technology Centre, Netherlands; {2)Centrum Wiskunde & Informatica, Netherlands; {3)Centrum Wiskunde & Informatica / Leiden University, Netherlands; {4)Centrum Wiskunde & Informatica / University College London, Netherlands; {5)Utrecht University, Netherlands

05:05 AM  
2240: Fiber-Optic Ultrasound Sensor with Low Reverberating Noises  
Xiangdong Ma, Yiqi Cai, Lijun Xu, Jianguo Ma  
Beihang University, China

05:15 AM  
1512: Acousto-Optic Modulator Based Electric Field Sensor  
Yusuf Samet Yaras, F. Levent Degertekin  
Georgia Institute of Technology, United States
Friday, September 11

05:05 AM
1893: Ultrasound Flaw Detection of Medium-Density Polyethylene Fused Joints Using Chord Transducers and Implementation of Artificial Intelligence
Maryam Shafiei Alavijeh, Ryan Scott, Fedar Seviaryn, Roman Maev
University of Windsor, Canada

04:15 AM
1013: Evaluation of Ultrasonic Target Detection by Alternate Transmission of Different Codes in m-Sequence Pulse Compression
Khanistha Leetang, Shinnosuke Hirata, Hiroyuki Hachiya
Tokyo Institute of Technology, Japan

04:25 AM
1242: Fundamental Research on Shallow Underground Exploration Technology by Acoustic Irradiation Induced Vibration from UAV
Tsuneyoshi Sugimoto(2), Kazuko Sugimoto(2), Itsuki Uechi(2), Noriuki Utagawa(1), Chitose Kuroda(1)
(1)SatoKogyo Co., Ltd., Japan; (2)Toin University of Yokohama, Japan

04:35 AM
1402: Localization of Plastic Zone Around the Crack Tip Using Non-Collinear Ultrasonic Wave Mixing
Xin Yin(2), Wujun Zhu(2), Yanxun Xiang(2), Mingxi Deng(1), Fuzhen Xuan(2)
(1)Chongqing University, China; (2)East China University of Science and Technology, China

04:45 AM
1584: Evaluation of the Localized Plasticity Using the Mixing of Counter-Propagating Lamb Waves
Bin Lou(2), Maoxun Sun(2), Yanxun Xiang(2), Mingxi Deng(1)
(1)Chongqing University, China; (2)East China University of Science and Technology, China

4:15:00 AM - 6:15:00 AM
D1P-23: NDE: Poster AM - Non-Destructive Evaluation Session Chair(s): Robert Addison (Rockwell Science Center)

05:05 AM

Yuji Ohashi, Yuui Yokota, Akihiro Yamaji, Masao Yoshino, Shunsuke Kurosawa, Kei Kamada, Hiroki Sato, Satoshi Toyoda, Akira Yoshikawa
Tohoku University, Japan

05:15 AM
2192: Optimization and Evaluation of a Biometric Recognition Technique Based on 3D Ultrasound Palm Vein
Antonio Iula
University of Basilicata, Italy

4:15:00 AM - 6:15:00 AM
D1P-25: NDE: Poster AM - Transducers - NDE & Industrial Session Chair(s): Kui Yao (A STAR, Singapore)

05:25 AM
1080: Detection of Micro-Scaled Flaws in the Steel Sheet Using 30 MHz Line-Focused Single-Element Ultrasonic Transducer
Yeonggeun Kim(1), Jongbeom Kim(1), Joongho Ahn(1), Hae Gyun Lim(1), Ki Jong Lee(1), Juseung Lee(2), Chulhong Kim(1), Hyung Ham Kim(1)
(1)Pohang University of Science and Technology, United States; (1)Pohang University of Science and Technology, Korea; (2)POSCO, Korea

05:35 AM
1802: Removal of Droplet on Glass Plate by Exciting Low Frequency Viscoelastic Vibration Through Gated High Intensity Surface Acoustic Waves
Kentaro Nakamura, Soraki Fuchiwaki
Tokyo Institute of Technology, Japan

05:45 AM
1824: Schlieren Photography of 40-Khz Leaky Lamb Waves in Air
Jan Hinrichs, Yannick Bendel, Matthias Rutsch, Gianni Allevato, Matthias Sachsenweger, Axel Jäger, Mario Kupnik
Technische Universität Darmstadt, Germany

4:15:00 AM - 6:15:00 AM
D1P-26: NWP: Poster AM - Wave Propagation Session Chair(s): James Blackshire (Air Force Research Laboratory)

04:15 AM
1708: 19 kHz Large Capacity Ultrasonic Complex Vibration Welding System for Power Devices and Larger Specimens
Jiromaru Tsujino
Kanagawa University / LINK-US Co., Ltd, Japan

04:25 AM
1921: Acoustic Spoof Surface Wave Propagating Along a Double Side Periodically Corrugated Coaxial Waveguide
Norbert Cselyuszka, Vladimir Pashchenko, Nikolai Andrianov, Sarah Risquez, Mohssen Moridi
Silicon Austria Labs, Austria
04:35 AM
2065: Development of Fine Dust Measurement Method Through Ultrasonic Multiple Scattering Numerical Analysis
Ukyong Woo, Jinyoung Hong, Ryulri Kim, Hajin Choi
Soongsil University, Korea

04:45 AM
2158: Investigation of Transcranial Focused Ultrasound Attenuation with Multilayer Head Model
Xizi Song, Yufeng Ke, Jiande Guo, Dong Ming, Xinrui Chen
Tianjin University, China

04:15 AM
1240: Blind Vision for Real-Time Inspection of Spot Welds
Aryaz Baradarani(2), Andriy Chertov(1), Roman Gr. Maev(1)
{1}University of Windsor / Tessonics Inc, Canada; {2}University of Windsor / University of Tabriz, Canada

04:25 AM
1534: Using Generative Adversarial Networks to Generate Ultrasonic Signals
Kushal Virupakshappa, Erdal Oruklu
Illinois Institute of Technology, United States

04:35 AM
1897: Dictionary-Based Learning for 3D-Imaging with Air-Coupled Ultrasonic Phased Arrays
Raphael Müller, David Schenck, Gianni Allevato, Matthias Rutsch, Jan Hinrichs, Mario Kupnik, Marius Pesavento
Technische Universität Darmstadt, Germany

04:45 AM
2261: Separation of Interfering Signals in an Ultrasonic Flow Measurement System by Using Variable Time-Delay Properties
Matthias Bächle, Fernando Puente León
Karlsruhe Institute of Technology, Germany

04:55 AM
1027: Inspection of Subsurface Defects in CFRP-Plate with Using Point-Source Constrained Partial Differential Equation
Kenbu Teramoto, Haruka Ishibashi, Taku Mihara
Saga University, Japan

05:05 AM
Shifeng Guo, Dan Chen, Yehai Li, Xinyu Wu, Wei Feng
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

05:15 AM
Giosuè Caliano
University Roma Tre, Italy

05:25 AM
1321: Ultrafast Open Channel SAW Based Active Micromixer for Microfluidics
Umar Farooq, Xiufang Liu, Wei Zhou, Long Meng, Hairong Zheng
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

05:35 AM
1383: Programmable Liquid Handling by a Multi-Resonant Transducer Array with Frequency Division Multiplexing
Yuan Ning, Menglin Zhang, Xuexin Duan, Wei Pang
Tianjin University, China

05:45 AM
1297: Dictionary-Based Learning for 3D-Imaging with Air-Coupled Ultrasonic Phased Arrays
Raphael Müller, David Schenck, Gianni Allevato, Matthias Rutsch, Jan Hinrichs, Mario Kupnik, Marius Pesavento
Technische Universität Darmstadt, Germany

06:15 AM
2261: Separation of Interfering Signals in an Ultrasonic Flow Measurement System by Using Variable Time-Delay Properties
Matthias Bächle, Fernando Puente León
Karlsruhe Institute of Technology, Germany
Friday, September 11

05:25 AM
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05:25 AM
06:30 AM
06:45 AM
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07:00 AM
2229: Multispectral Photoacoustic Imaging of Aggressive Prostate Cancer in Vivo Using PAMAM Dendrimer Conjugated Agent
Yixuan Wu{2}, Jeeun Kang{1}, Wojciech Lesniak{1}, Srikanth Boinapally{1}, Sangeeta Ray Banerjee{1}, Ala Lisok{1}, Anna Jablonska{2}, Martin Pomper{1}, Emad Doctor{1}
{1}Johns Hopkins Medical Institute, United States; {2}Johns Hopkins University, United States

07:15 AM
1387: Lipid Spectral Histology
Sophinese Iskander-Rizk, Mirjam Visscher, Astrid Moerman, Antonius van der Steen, Gijs van Soest Erasmus University Medical Center, Netherlands

07:30 AM
2444: F-Mode Ultraviolet Photoacoustic Remote Sensing for Label-Free Virtual H&E Histopathology
Pradyumna Kedarisetti, Nathaniel Haven, Brendon Restall, Matthew Martell, Roger Zemp University of Alberta, Canada

07:45 AM
1168: Integrated Simultaneous Photoacoustic Microscopy, Optical Coherence Tomography, and Fluorescence Microscopy for Rabbit Ocular Imaging in Vivo
Wei Zhang, Phuc Nguyen, Yanxiu Li, Yannis Paulus, Xueding Wang University of Michigan, United States

07:00 AM - 8:00:00 AM
D2L-02: MIM: Functional & Multimodal Imaging
Session Chair(s): Kang Kim (University of Pittsburgh)
Jan D’hooge (Catholic University of Leuven)

06:30 AM
2455: Non-Invasive Optogenetic Activation with Functional Ultrasound
Christian Aurup, Antonios Pouliopoulos, Stephen Lee, Elisa Konofagou Columbia University, United States

06:45 AM
1940: Investigating Simultaneous Neurovascular and Mechanical Coupling in the Rodent Brain with Ultrafast Imaging
Florian Laszlo{1}, Claire Rabut{1}, Sophie Pezet{4}, Thomas Deffieux{3}, Mickael Tanter{2}
{1}Physics for Medicine Paris, France; {2}Physics for Medicine Paris, INSERM U1273, ESPCI Paris, PSL University, CNRS FRE 2031, France; {3}Physics for Medicine Paris, Inserm, ESPCI Paris, CNRS, PSL University, France; {4}Physics for Medicine, INSERM U1273, ESPCI Paris, CNRS, PSL Research University, France
07:15 AM
1283: Evaluating Kidney Biopsy Prediction Using Shear Wave Elastography and Machine Learning Techniques and Shapley Explanation Techniques  
Luiz Vasconcelos(3), Carolina Amador(2), Sara Aristizabal(4), Ivan Nenadic(1), Matthew Urban(1)  
(1)Mayo Clinic, United States; (2)Philips Research North America, United States; (3)University of Minnesota - Rochester, United States; (4)Well Living Lab, Inc., United States

07:30 AM
1725: In Vivo Semi-3D Functional Ultrasound Imaging of Healthy and Aneurysmal Abdominal Aortas  
Larissa Jansen(2), Joerik de Ruijter(2), Hans-Martin Schwab(2), Marc van Sambeek(1), Frans van de Vosse(2), Richard Lopata(2)  
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands

07:45 AM
1916: A New Elastographic Technique Using Acoustic Vortices  
Noé Jiménez, José Maria Benlloch, Francisco Camarena  
Universitat Politècnica de València, Spain

6:30:00 AM - 8:00:00 AM
D2L-04: NWP: Wave Propagation & NMC Material & Defect Characterization  
Session Chair(s): Paul Wilcox (University of Bristol)  
Joel Harley (University of Florida)

06:30 AM
2093: Ultrasonic Guided Wave Imaging of Plates Containing Defects and Inclusions  
Annamaria Pau  
Sapienza University of Rome, Italy

07:00 AM
2148: Experimental Investigation of Low Frequency Vibration in Synthetic Tibial Cortical Bone  
Anurup Guha(2), Michael Aynardi(1), Parisa Shokouhi(2), Cliff Lissenden(2)  
(1)Penn State Health Milton S. Hershey Medical Center, United States; (2)Pennsylvania State University, United States

07:15 AM
2438: Characterization of Piezoelectric AlScN on CMOS HBAR Systems  
Yutong Liu(2), Justin Kuo(2), Amit Lal(2), Jaibir Sharma(1), Navab Singh(1)  
(1)Agency for Science, Technology and Research, Singapore; (2)Cornell University, United States

07:30 AM
2471: Combining Texture Analysis with Quantitative Ultrasound Parameters and Statistical Imaging for the Assessment of Additive Manufacturing Components  
Chun-Hui Lin, Huang-Chen Lin, Shyh-Hau Wang  
National Cheng Kung University, Taiwan

1539: In-situ Ultrasonic Monitoring for Adhesive-Bonded Structure by Utilizing Piezoelectricity of the Adhesive  
Kui Yao, Zheng Zheng Wong, Shuting Chen, Suo Hon Lim, Menglong Liu, Fangsen Cui  
Agency for Science, Technology and Research, Singapore

6:30:00 AM - 8:00:00 AM
D2L-05: SPS: Special Session on Ultrasound and Electronics  
Session Chair(s): David Cowell (University of Leeds)  
Omer Oralkan (NC State University)

06:30 AM
1809: Forward-Viewing, Robotically-Steerable Guidewire System for Peripheral Chronic Total Occlusions: Transducer and Imaging System Development  
Graham Collins(3), Achraj Sarma(2), Zachary Bercu(1), Jaydev Desai(3), Brooks Lindsey(2)  
(1)Emory University, United States; (2)Georgia Institute of Technology, United States; (3)Georgia Institute of Technology / Emory University, United States

06:45 AM
Tony Matéo(2), Philippe Vince(2), Nicolas Sénégon(2), Mingliang Tan(1), Eunchul Kang(1), Michel Perlijs(1)  
(1)Delft University of Technology, Netherlands; (2)Vermont SA, France

07:00 AM
1452: Phased Electromagnetic Acoustic Transducer (EMAT) Array for Rayleigh Wave Surface Defect Detection  
Lunci Xiang, David Greenshields, Steve Dixon, Rachel Edwards  
University of Warwick, United Kingdom

07:15 AM
1020: 5 GHz A1 Mode Lateral Overtone Bulk Acoustic Resonators in Thin-Film Lithium Niobate  
Ruochen Lu, Yansong Yang, Songbin Gong  
University of Illinois at Urbana–Champaign, United States

07:30 AM
Panel  
David Cowell, University of Leeds  
Brooks Lindsey, Georgia Institute of Technology  
Xiaochen Xu, Texas Instruments  
Giulio Ricotti, ST Microelectronics

8:30:00 AM - 9:30:00 AM
D3L-01: MIS: Cardiac Imaging  
Session Chair(s): Mickael Tanter (INSERM)

08:30 AM
1405: Aortic Strain Imaging Using Bistatic Coherent Dual-Transducer Ultrasound  
Vera van Hau(2), Hein de Hoop(2), Marc van Sambeek(1), Hans-Martin Schwab(2), Richard Lopata(2)  
(1)Catharina Hospital, Netherlands; (2)Eindhoven University of Technology, Netherlands
08:45 AM  
1728: Quality Control of Echocardiographic Images Using Deep Learning  
Mahdi Tabassian\(^2\), Lamia Al Saikhan\(^3\), Paulo Tostes\(^2\), Chloe Park\(^3\), Guy Lloyd\(^1\), Alun Hughes\(^3\), Jan D’Hooge\(^2\)  
\(\{\)Barts Heart Centre, United Kingdom; \(\}Katholieke Universiteit Leuven, Belgium; \(\}University College London, United Kingdom\)

09:00 AM  
1730: A Fully Automatic Segmentation Method to Assess the Geometry of the Intraluminal Thrombus and Arterial Wall of Abdominal Aortic Aneurysms in 3-D+t US Images  
Arjet Nievergeld\(^2\), Esther Maas\(^2\), Joerik de Ruijter\(^2\), Frans van de Vosse\(^2\), Marc van Sambeek\(^1\), Richard Lopata\(^2\)  
\(\{\)Catharina Hospital, Netherlands; \(\}Eindhoven University of Technology, Netherlands\)

09:15 AM  
1956: 3D Principal Strain Analysis for Cardiac Infarct Zone Identification  
Jonathan Langdon\(^2\), Zhao Liu\(^2\), Geng-Shi Jeng\(^1\), John Stendahl\(^2\), Albert Sinusas\(^2\), Matthew O’Donnell\(^1\), James Duncan\(^2\)  
\(\{\)University of Washington, United States; \(\}Yale School of Medicine, United States\)

8:30:00 AM - 9:30:00 AM  
D3L-02: MTN: Theranostics & Image Guidance  
Session Chair(s): Mark Borden (University of Colorado Boulder)  
Ralf Seip (SonaCare Medical, LLC)

08:30 AM  
1641: Acoustically Detonated Biomolecules for Targeted and Genetically Encoded Cavitlation  
Avinoam Bar-Zion, Atousa Nourmahnad, Marjorie Buss, Robert C. Hurt, Shirin Shivaeei, Ojas Pradhan, Margaret B. Swift, David R. Mittelstein, Dina Malounda, Mohammad Abedi, Mikhail G. Shapiro  
California Institute of Technology, United States

08:45 AM  
1165: Real-Time Visualization of a Focused Ultrasound Beam Using Ultrasonic Backscatter for Monitoring of Mechanical-Based Therapies  
Miles Thies, Michael Oelze  
University of Illinois at Urbana-Champaign, United States

09:00 AM  
1487: Characterize Brain Tumor Genetic Signatures with Focused Ultrasound-Enabled Liquid Biopsy (FUS-LBx)  
Christopher Pacia, Lifei Zhu, Jinyun Yuan, Yimei Yue, Hong Chen  
Washington University in St. Louis, United States

09:15 AM  
2265: Cavitation Dose Mapping for Prediction of Localized Drug Concentration in Brain Drug Delivery Using Focused Ultrasound  
Sua Bae, Pilsu Kim, Sara Lee, Tai-Kyong Song  
Sogang University, Korea

08:30 AM  
1458: Pleural Strain Measurements During Mechanical Ventilation Using Ultrasound Elastography: a Proof of Concept Study  
Martin Girard\(^3\), Marie-Hélène Roy Cardinal\(^3\), Sébastien Garneau\(^3\), Alexandros Cavayas\(^1\), André Denault\(^2\), Guy Cloutier\(^3\)  
\(\{\)Sacré-Coeur Hospital of Montreal, Canada; \(\}University of Montreal Hospital, Canada; \(\}University of Montreal Hospital Research Center, Canada\)

08:45 AM  
2249: Diagnosis of Obstructive Sleep Apnea Using Dynamic Strain Measurements of Tongue Muscle  
Shih-Jou Chung, Yu-Wen Huang, Pei-Lin Lee, Pai-Chi Li  
National Taiwan University, Taiwan

09:00 AM  
1869: Ultra-Fast Ultrasound Strain Imaging for Quantifying Fatigue Effect of the Human Quadriceps Muscle Due to Neuromuscular Electrical Stimulation  
Zhiyu Sheng\(^2\), Nitin Sharma\(^1\), Kang Kim\(^3\)  
\(\{\)North Carolina State University / University of North Carolina at Chapel Hill, United States; \(\}University of Pittsburgh, United States; \(\}University of Pittsburgh / University of Pittsburgh Medical Center, United States\)

09:15 AM  
1825: Demonstration of Complex Shear Wave Patterns in Skeletal Muscle in Vivo Using 3D SWE  
Anna Knight\(^2\), Courtney Trutna\(^1\), Ned Rouze\(^1\), Lisa Hobson-Webb\(^1\), Mark Palmeri\(^1\), Annette Caenen\(^2\), Kathryn Nightingale\(^1\)  
\(\{\)Duke University, United States; \(\}Ghent University / IBiTech-bioMMeda, Belgium\)

8:30:00 AM - 9:30:00 AM  
D3L-04: NAI: Acoustic Imaging & Microscopy & NPA - in Memoriam Calvin Quate  
Session Chair(s): Walter Arnold (Fraunhofer Institute for NDT)  
Mario Kupnik (Technische Universität Darmstadt)

08:30 AM  
1492: Tracking Performance in Ultrasound Super-Resolution Imaging  
Iman Taghavi\(^2\), Sofie Bech Andersen\(^3\), Carlos Villagomez Hoyos\(^1\), Mikkel Schou\(^2\), Sigrid Husebekk\(^2\), Fredrik Gran\(^1\), Kristoffer Lindskov Hansen\(^3\), Charlotte Mehlin Sørensen\(^3\), Michael Bachmann Nielsen\(^3\), Matthias Bo Stuart\(^2\), Jørgen Arendt  
\(\{\)BK Medical, Denmark; \(\}Technical University of Denmark, Denmark; \(\}University of Copenhagen, Denmark\)
08:45 AM
Depth-Seeing with an Ultrasonic Force Microscope
Walter Arnold (in place of withdrawn paper)

09:00 AM
2212: Dual-Modal B-Mode Ultrasound and
Photoacoustic Imaging in a Tomographic
Configuration
Xiran Cai(2), Josquin Foiret(2), Jeese Kim(1), Chulhong
Kim(1), Katherine W. Ferrara(2)
(1) Pohang University of Science and Technology, Korea;
(2) Stanford University, United States

09:15 AM
1957: Resolution Enhanced Non-Contact
Thermoacoustic Imaging Using Coded Pulse
Excitation
Ajay Singhvi, Aidan Fitzpatrick, Amin Arbabian
Stanford University, United States