



2008 IEEE International Ultrasonics Symposium

(Including Short Courses & Tutorials)



November 2-5, 2008

Beijing International Convention Center, Beijing, China

Sponsored by the IEEE Ultrasonics, Ferroelectrics, & Frequency Control Society
In Cooperation with the Acoustical Society of China and the Institute of Acoustics, Chinese Academy of Sciences

General Co-Chairs

Overall Management:

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Short Course

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The Great Wall

Final Call for Papers

Abstract deadline: **May 4, 2008**

Abstract submission and conference website:

http://ewh.ieee.org/conf/ius_2008/

In 2008, the annual IEEE International Ultrasonics Symposium (IUS) will be held at the Beijing International Convention Center (BICC), Beijing, China, from November 2-5, 2008. This will be the first time that the IUS will take place in China. Beijing is the capital of China and has a long history and a great culture. It will also host the 2008 Summer Olympics and Paralympics in August and September 2008, respectively. After the Olympics, Beijing will have decorated city streets, improved infrastructure, cleaner environment, and greatly increased hotel capacity. The 2008 IUS will take advantage of this historic opportunity to offer conference attendees and their guests not only an excellent technical program, but also an opportunity to explore the rich culture and visit tourist attractions of Beijing and the rest of China. The BICC is located within the Olympic Complex.

Papers are solicited for this conference describing original work in the field of ultrasonics. Poster and oral presentation formats will be used at the symposium. Prospective authors should note that poster sessions provide an alternative format which allows for greater flexibility and expanded audience interaction. The deadline for submission of abstracts is **May 4, 2008**. The abstracts should be submitted in electronic form according to the specific information posted on the conference web page. Additional conference information can be found at the Symposium web site: http://ewh.ieee.org/conf/ius_2008/. Each abstract will receive careful review and evaluation by the Symposium Technical Program Committee. Evaluation criteria will include originality of the work, contribution to the state-of-the-art, and overall interest to the ultrasonics community. Authors are required to concisely divide their abstract into four sections: **I. Background/Motivation/Objective; II. Statement of Contribution/Methods; III. Results, IV. Discussion/Conclusions.** Papers are solicited from the following **subject classifications**:

Group 1: Medical Ultrasonics

MBB Medical Beamforming and Beam Steering
MBE Biological Effects & Dosimetry
MBF Blood Flow Measurement
MCA Contrast Agents
MEL Elastography
MIM Medical Imaging
MPA Medical Photoacoustics
MSP Medical Signal Processing
MTC Medical Tissue Characterization
MTH Therapeutics, Hyperthermia, and Surgery

Group 2: Sensors, NDE & Industrial Applications

NAM Acoustic Microscopy
NAI Acoustic Imaging
NAS Acoustic Sensors
NDE General NDE Methods
NFM Flow Measurement
NMC Material & Defect Characterization
NSP Signal Processing
NTD Transducers: NDE and Industrial
NWP Wave Propagation

Group 3: Physical Acoustics

PBW Bulk Wave Effects & Devices
PGP General Physical Acoustics
PMI Magnetic/Electromagnetic Interactions
POI Optical Interactions
PUM Ultrasonic Motors & Actuators
PTF Thin Films

Group 4: Microacoustics – SAW, FBAR, MEMS

MMP Materials & Propagation
MDM Device Modeling
MDD Device Design
MDA Device Applications

Group 5: Transducers & Transducer Materials

TMC Transducers: Materials Characterization and Fabrication Technology
TPF Transducers: Piezoelectric and Ferroelectric Materials
TMI Medical Imaging Transducers
TMO Transducer Modeling (Analytical & Numerical)
TMU Micromachined Ultrasound Transducers
TTT Medical Therapeutic Transducers

Student Travel Support: Limited funds are available to support **IEEE UFFC student member attendees** at the 2008 symposium. Awards will be given on a competitive basis. Please see the conference website for details.

Student Paper Competition: Students submitting abstracts are invited to participate in a student paper competition. To participate, the student must be the lead author and present his/her paper. Further information will be posted on the conference website.

Visa Application: Please visit the Symposium web site for updated information regarding invitation letters, and apply in advance if you need a visa to travel to China. The information is expected to be available in March 2008.



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Invited Speakers

There will be 21 invited speakers as follows:

Group 1: Medical Ultrasonics:

- **Jan D'hooge**, "Functional imaging of the heart," *Cardiovascular Imaging and Dynamics, Medical Imaging Center, University Hospital Gasthuisberg, Belgium.*
- **Mathias Fink**, "Supersonic shear wave elasticity imaging," *Laboratoire Ondes et Acoustique, ESPCI and Paris 7 University, Paris, France.*
- **Stuart Foster**, "Micro-ultrasound takes off," *Department of Medical Biophysics, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, Canada.*
- **Hiroshi Kanai**, "Ultrasonic imaging of 3-dimensional propagation of electric excitation and vibrations in human heart," *Department of Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan.*
- **Richard Prager, Andrew Gee and Graham Treece**, "Deconvolution and elastography based on 3D ultrasound," *Department of Engineering, University of Cambridge, Cambridge, CB2 1PZ, United Kingdom.*
- **Hairong Zheng**, "Ultrasound particle velocimetry: an emerging technique in cardiology," *Lauterbur Biomedical Imaging Center, Institute of Biomedical and Health Engineering, Shenzhen Institutes of Advanced Technology, Chinese Academy of Science, Shenzhen, China.*

Group 2: Sensors, NDE, and Industrial Application:

- **Saul Jacobson**, "New developments in ultrasonic gas analysis and flowmetering," *403 Huon Road, TAS 7004, Australia.*
- **Claire Prada and Mathias Fink**, "Invariants of the time reversal operator and ultrasonic applications," *Laboratoire Ondes et Acoustique, ESPCI, PARIS, FRANCE.*
- **Orest G. Symko**, "Ultrasonic Thermoacoustic Energy Conversion," *Department of Physics, University of Utah, Salt Lake City, Utah, USA.*
- **Michael Thompson and Scott Ballsntyne**, "Ultra high frequency acoustic wave detection of HIV antibody in whole serum," *Department of Chemistry and Institute for Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada.*

Group 3: Physical Acoustics:

- **Eun Sok Kim**, "Piezoelectric MEMS for audio signal transduction, microfluidic management, resonant mass sensing, and movable surface micromachined structures," *Department of Electrical Engineering-Electrophysics, University of Southern California, USA.*
- ***Vivian Pistre and **Bikash Sinha**, "Applications of sonic waves in the geophysical, geomechanical, and petrophysical characterization of subsurface rocks," **Schlumberger Beijing Geoscience Center, China. **Schlumberger-Dill Research, Cambridge, MA, USA.*
- **Yuesheng Wang**, "Interfacial waves and stability at the frictional sliding interface between two solids," *Institute of Engineering Mechanics, Beijing Jiaotong University, China.*
- **Yook-Kong Yong, Mihir Patel, and Masako Tanaka**, "Theory, and experimental verification of the resonator Q and equivalent electrical parameters due to viscoelastic, conductivity and mounting supports losses," *Dept. of Civil & Environmental Engineering, Rutgers University, USA.*



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Invited Speakers (Continued)

Group 4: Microacoustics – SAW, FBAR, MEMS:

- **Robert Aigner**, "SAW vs. BAW: A Review of the Relative Strengths and Weaknesses of These Technologies for RF Filter Applications," *TriQuint Semiconductor, Hillsboro, OR, USA.*
- ***Ken-ya Hashimoto** and ****Michio Kadota**, "Piezoelectric Boundary Wave Devices: Their Underlying Physics and Applications," **Chiba University, Chiba, Japan. **Murata MFG, Co. Ltd., Kyoto, Japan.*
- **C. S. Lam**, "A Review of the Recent Development of MEMS and Crystal Oscillators and Their Impacts on the Frequency Control Products Industry," *Integrated Device Technology, Inc., San Jose, CA, USA.*

Group 5: Transducers and Transducer Materials:

- **Ho-yong Lee**, "PMN-PZT Single Crystals and Composites for Transducer Applications," *Ceracomp Co., Ltd., Sunmoon University, Asan, Chungnam, South Korea.*
- **Haosu Luo**, "PMN-PT single crystals and their medical transducer applications," *SICCAS, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China.*
- **Wen Rei**, "Piezoelectric Thin and Thick Films for Transducer Applications," *Electronic Materials Research Lab, Xi'an, Jiaotong University, Xi'an, Shaanxi, China.*
- **Stewart Sherit**, "The Physical Acoustics of Energy Harvesting," *Advanced Technologies Group, Instrument Mechanical Engineering Section, Jet Propulsion Laboratory, Pasadena, CA, USA.*

Special Clinical Session

The 2008 IEEE International Ultrasonics Symposium will include a special clinical session to show how medical ultrasound technologies are used in clinical practices. This special session consists of the following half-hour invited presentations. More information is available at the symposium web site: http://ewh.ieee.org/conf/ius_2008/.

Talk #1: Making microbubbles work for ultrasound: Technical and Broader Challenges, **Peter Burns**, Department of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada.

Talk #2: Clinical Ultrasound in China, **Yuxin Jiang**, Department of Diagnostic Ultrasound, Peking Union Medical College Hospital, Beijing 100730, China.

Talk #3: Applications of Contrast Ultrasound in Radiology, **Stephanie Wilson**, Department of Diagnostic Imaging, Foothills Medical Centre, Calgary AB, Canada.



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Short Courses & Tutorials

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8:00 A.M. - 12:00 Noon, Sunday, November 2, 2008:

- **Short Course 1A: Medical Ultrasound Transducers**, *Douglas G. Wildes* and *L. Scott Smith*, GE Global Research Center, Niskayuna, NY, USA.
- **Short Course 2A: Ultrasound Imaging Systems: from Principles to Implementation**, *Kai E. Thomenius*, GE Global Research Center, Niskayuna, NY, USA.
- **Short Course 3A: Acoustical Near-Field Imaging**, *Walter Arnold*, Fraunhofer Institute for Non-Destructive Testing, Saarbrücken, Germany.
- **Short Course 4A: Estimation and Imaging of Tissue Motion and Blood Velocity**, *Hans Torp* and *Lasse Lovstakken*, Department of circulation and medical imaging, Norwegian University of Science and Technology, Trondheim, Norway.

1:00 P.M. - 5:00 P.M, Sunday, November 2, 2008:

- **Short Course 1B: Ultrasound Elastography: Quantitative Approaches**, **Jeffrey Bamber* and ***Paul Barbone*, **Institute of Cancer Research and Royal Marsden Hospital, UK.* ***Boston University, USA.*
- **Short Course 2B: Photoacoustic Imaging and Sensing**, *Stanislav Emelianov*, Biomedical Engineering Department, University of Texas at Austin, USA.
- **Short Course 3B: Acoustic Microscopy - Fundamentals and Applications**, **Roman Gr. Maev*, ***Naohiro Hozumi*, ****Kazuto Kobayashi*, and *****Yoshifumi Saijo*, **Centre for Imaging Research and Advanced Materials Characterization, University of Windsor, Ontario, Canada.* ***Department of Electrical & Electronic Engineering, Aichi Institute of Technology, Toyota, Japan.* ****Honda Electronics Co. Ltd., Aichi, Japan.* *****Tohoku University, Sendai, Japan.*
- **Short Course 4B: SAW Modelling Techniques**, *Victor P. Plessky*, GVR Trade SA, Bevaix, Switzerland.

6:00 P.M. - 10:00 P.M, Sunday, November 2, 2008:

- **Short Course 1C: Ultrasound Contrast Agents: Theory and Experiment**, **Nico de Jong* and ***Michel Versluis*, **Erasmus MC, The Netherlands.* ***University of Twente, The Netherlands.*
- **Short Course 2C: CMUTs: Theory, Technology, and Applications**, *B.T. Khuri-Yakub*, *Ömer Oralkan*, and *Mario Kupnik*, *E.L. Ginzton Laboratory, Stanford University, USA.*
- **Short Course 3C: Time Reversal Acoustics**, *Mathias Fink*, *École Supérieure de Physique et de Chimie de la Ville de Paris, France.*

Plenary Speaker

The 2008 IEEE International Ultrasonics Symposium will have a plenary speaker on acoustics of traditional Chinese theaters as follows. More information is available at the symposium web site: http://ewh.ieee.org/conf/ius_2008/.

Acoustics of Traditional Chinese Theatrical Buildings, *Jiqing Wang*, Institute of Acoustics, Tongji University, Shanghai, China 200092, E-mail: wongtsu@126.com.