

Appendix A-L:

Conference Information

2008 IEEE International Ultrasonics Symposium Proceedings

Introduction

Thanks to the efforts and support of the Conference Organizing Committee, the Technical Program Committee, the Administrative Committee (AdCom) of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society, officials of the UFFC Society, Acoustical Society of China, Institute of Acoustics of Chinese Academy of Sciences, staff and volunteers, and all attendees, the 2008 IEEE International Ultrasonics Symposium (IUS) was held successfully from November 2-5, 2008 in Beijing International Convention Center (BICC), Beijing, China.

As a summary and a centralized place for the 2008 IEEE IUS conference information, twelve appendices (**Appendix A** to **Appendix L**) have been produced as a part of the 2008 IEEE International Ultrasonics Symposium Proceedings. These appendices were created mainly from the materials on the 2008 IEEE International Ultrasonics Symposium website at http://ewh.ieee.org/conf/ius_2008/ (the website is also saved on the DVD version of the 2008 IEEE International Ultrasonics Symposium Proceedings, ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD), which was developed based on the success of the previous IEEE International Ultrasonics Symposia.

The appendices contain a list of videos and a large number of photos taken during the conference. You may find yourself and/or your friends and colleagues in some of the photos and/or videos. (Videos can only be played on web or on DVD.)

Please notice that because many contents of the appendices were copied from the conference web site, the appendices may contain links that work on the web but may not work in the appendices.

The following is a list of **Digital Object Identifier** (DOI) (please see <http://www.doi.org/> for more information) of 15 digital objects (one of them is a combination of the other 14 objects) for the appendices of the 2008 IEEE International Ultrasonics Symposium proceedings. The DOI would be useful if you would like to refer to these objects since the DOI is designed to uniquely identify each object. The DOI of each digital object is also shown on the upper-left corner of each page of the object.

Digital Object Identifier (DOI) of Digital Objects in the Appendices:

1. A Combination of the 14 Objects below:	DOI: 10.1109/ULTSYM.2008.2000
2. Introduction (p. A.i – A.ii): Appendix A to L	DOI: 10.1109/ULTSYM.2008.2001
3. Table of Contents (p. A.iii – A. vi): TOC	DOI: 10.1109/ULTSYM.2008.2002
4. Appendix A (p. A.1 – A.4): Home Page of the Web	DOI: 10.1109/ULTSYM.2008.2003
5. Appendix B (p. B.1 – B.76): The Conference	DOI: 10.1109/ULTSYM.2008.2004
6. Appendix C (p. C.1 – C.8): Getting Around	DOI: 10.1109/ULTSYM.2008.2005
7. Appendix D (p. D.1 – D.16): Social Programs	DOI: 10.1109/ULTSYM.2008.2006
8. Appendix E (p. E.1 – E.33): Technical Programs	DOI: 10.1109/ULTSYM.2008.2007
9. Appendix F (p. F.1 – F.33): Students	DOI: 10.1109/ULTSYM.2008.2008
10. Appendix G (p. G.1 – G.11): Society Officials & Others	DOI: 10.1109/ULTSYM.2008.2009
11. Appendix H (p. H.1 – H.79): Conference Photos/Videos	DOI: 10.1109/ULTSYM.2008.2010
12. Appendix I (p. I.1 – I.132): Submit to TUFFC	DOI: 10.1109/ULTSYM.2008.2011
13. Appendix J (p. J.1 – J.15): Forms & Documents	DOI: 10.1109/ULTSYM.2008.2012
14. Appendix K (p. K.1 – K.131): Program Book	DOI: 10.1109/ULTSYM.2008.2013
15. Appendix L (p. L.1 – L.658): Abstract Book	DOI: 10.1109/ULTSYM.2008.2014

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 General Chair
 2008 IEEE International Ultrasonics Symposium

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Appendix A:

Home Page of the 2008 IEEE International Ultrasonics Symposium

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Home Page of 2008 IEEE IUS A.2-A.4

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Home Page of 2008 IEEE IUS



[Home](#) Click on Images above to Enlarge

2008 IEEE International Ultrasonics Symposium (IUS)

Beijing International Convention Center (BICC)

Beijing, China, November 2-5, 2008 (View: [Conf. Photos/Videos](#) and  [Beijing Photos](#) )




Sponsored by the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society



In Cooperation with the Acoustical Society of China and the Institute of Acoustics, Chinese Academy of Sciences

(By January 9, 2008, there have been **52930** visits since August 3, 2006) (**52648** by December 31, 2008; **49401** by November 11, 2008)

Please close all browser windows and then restart to refresh pages to view updated contents!

- **405** photos and **14** videos taken during the 2008 IEEE IUS: "[Conference Photos/Videos](#)" .
- Procedures to access **full papers** of the conference proceedings can be found at "[Sessions \(Papers\)](#)".
- Congratulations! Student Paper "[Competition Winners](#)" (see "[Conference Photos/Videos](#)" for photos and videos).
- The IEEE and UFCF **awards** presented during the 2008 IEEE IUS are available via "[Opening Session / Awards](#)".
- Slides (102) and a movie clip of the plenary talk are accessible via "[Plenary Speaker](#)".
- **Statistics** on abstracts, registration, proceedings, and short courses of the conference are in "[Conference Statistics](#)".
- Thanks for the **1021** attendees (including staff and exhibitors) who have made the 2008 IEEE IUS a success!
- Thanks for authors: **917** abstracts were successfully submitted and reviewed among **1194** total in the system.
- There are **674** abstracts in the "[Full Program \(Book\)](#)", and "[Abstract Book](#)" (Invited: **24**; Student Competition: **21**).
- There are **553 papers** in Proceedings ("[Paper Submission](#)" is now closed for both regular and **multimedia** papers).

| [Conference Registration](#) | [Paper Submission](#) | [Meeting Planner](#) | [Condensed Program](#) |
| [Call for Papers](#) | [Abstract Submission](#) | [Abstract Results](#) | [Full Program](#) | [Abstract Book](#) |

Events	Open (<i>Estimate</i>)	Deadlines
Abstract Submission: (Link)	<i>April 16, 2008 (Opened)</i>	<i>May, 4, 2008</i>
Paper Submission: (Link)	<i>Oct. 10, 2008 (Opened)</i>	<i>November 2, 2008</i>
Early Registration: (Link)	<i>July 20, 2008 (Opened)</i>	<i>September 12, 2008</i>
On-Site Registration: (Link)	<i>Nov. 1, 2008 (Opened)</i>	<i>November 5, 2008</i>
Hotel Discount Rate: (Link)	<i>April 11, 2008 (Opened)</i>	<i>October 5, 2008 *</i>
Visa Document: (Link)	<i>April 11, 2008 (Opened)</i>	<i>September 30, 2008 **</i>
Exhibit Registration: (Link)	<i>April 11, 2008 (Opened)</i>	<i>July 15 ***, Sept. 15, 2008</i>

- * Please notice that *October 5, 2008* will be the absolute deadline after which none of the hotels would guarantee the rates listed at the link "[Conference Hotels](#)". Rooms in some hotels are gone quickly and it is advised to book the rooms as early as possible.
- ** After the deadline a timely delivery of visa application documents may not be guaranteed.
- *** Company names may not appear in the Advance Program and Abstract Book after *July 15, 2008*.
- **Note:** China uses 220V/50Hz power. Please bring your [international converters/adaptors](#) (1, 2, 3) for your laptops if necessary. Wireless internet will be provided in the conference areas.

General Chair Message

Welcome to Beijing!

The 2008 IEEE International Ultrasonics Symposium (IUS) will be held in the Beijing International Convention Center ([BICC](#)), Beijing, China, from *November 2-5, 2008*. This will be the first time the IUS goes to Beijing, the capital of China. [Beijing](#) is a city of a long history and a great culture. It has served as the capital of China for long periods of times. Therefore, Beijing will be a great tourist attraction for the conference attendees and their guests besides the technical program. As we know, the 2008 Summer [Olympics](#) and Paralympics will be held in Beijing in August and September 2008, respectively. Beijing is preparing for this event by building and improving a lot of infrastructure and cleaning up the environment, and is welcoming hundreds of thousands of visitors. Thus, Beijing will become more beautiful after the Olympics. The 2008 IEEE IUS will take advantage of the improved transportation and vastly increased hotel capacity of Beijing after the Olympics. The BICC is located within the Olympic Complex and thus will be convenient for the conference attendees to visit the complex.

The 2008 IEEE IUS will also bring together more closely the ultrasonics communities around the world with the communities of China and East Asia to further the research and development of ultrasonics theories and applications. The 2008 IEEE IUS is expected to be another success in the history of this annual conference that started in the early [1960s](#) and has grown to have more than 1000 attendees in recent years.

To get a bird's eye view of Beijing and the conference, please click the icon below and visit our mini photo and video gallery.

--- Jian-yu Lu, Ph.D., General Chair of the 2008 IEEE International Ultrasonics Symposium

Please click: [Conference Photos/Videos](#) and  [Beijing Photos](#) 

For more information, please contact:

Jian-yu Lu, Ph.D.

General Chair
2008 IEEE International Ultrasonics
Symposium

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[Home](#) Contact the webmaster, [Dr. Jian-yu Lu](#), for questions. © Copyright 2006-2008 [IEEE UFFC](#) Society

Appendix B:

The Conference

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
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I. General Chair Message



Jian-yu Lu, Ph.D.

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Jian-yu Lu, Ph.D.

General Chair

2008 IEEE International Ultrasonics Symposium

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II. Message from the Technical Chair



Keith A. Wear, Ph.D.

This year, the IEEE International Ultrasonics Symposium will be held at the Beijing International Convention Center in Beijing, China, November 2-5, 2008. On behalf of the Technical Program Committee, I would like to invite you to join us for this annual event.

The first day will feature short courses on topics of current interest in ultrasonics. The next three days will include parallel oral and poster sessions covering 1) Medical Ultrasonics, 2) Sensors, NDE & Industrial Applications, 3) Physical Acoustics, 4) Microacoustics – SAW, FBAR, MEMS, and 5) Transducers & Transducer Materials. Awards will be given to the top student presentations.

In addition to the technical program, the social and guest programs will allow attendees to explore the rich history and culture of Beijing. There are many interesting sites in Beijing, including Tiananmen Square, the Forbidden City, the Great Wall of China, the Summer Palace, the Temple of Heaven, and the Ming Tomb.

I hope you will join us for this important international event of the ultrasonics community. See you in Beijing in November 2008.

Keith A. Wear, Ph.D.

Technical Chair

2008 IEEE International Ultrasonics Symposium

Food & Drug Administration
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III. Organizing Committee



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Proceedings:

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IV. Opening Session and Awards

Date, Time, and Location:

- 8:00 a.m. – 10:00 a.m.
- Monday, November 3, 2008
- Convention Hall No. 1, Beijing International Convention Center (BICC), Beijing, China

Agenda:

Welcome:

- **Jian-yu Lu**, Ph.D., General Chair, 2008 IEEE International Ultrasonics Symposium (IUS)
- **Jacqueline Hines**, Ph.D., Vice President of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) for Ultrasonics
- **Keith Wear**, Ph.D., Technical Program Committee (TPC) Chair, 2008 IEEE IUS
- **Susan Troler-McKinstry**, Ph.D., President of the UFFC-S

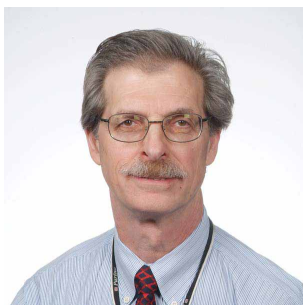
Awards and Recognitions (Presenter: **Helmut Ermert**, Ph.D., Awards Chair of the UFFC-S):

-
- **IEEE Awards:**
 - **IEEE Fellow Award 2008 Recipients:**

- **Raymond L. Filler, Ph.D.**

US Army Communications Electronics Research
Lebanon, NJ, USA

Citation: *For contributions to frequency control and timing in military systems*



- **Takeshi Inoue, Ph.D.**

NEC Corporation
Sagamihara, Kanagawa-Pref., Japan

Citation: *For contributions to bulk wave piezoelectric devices and applications*



- **Pai-Chi Li, Ph.D.**

National Taiwan University
Taipei, Taiwan

Citation: *For contributions to ultrasonic imaging technologies*



- **Jian-yu Lu, Ph.D.**

The University of Toledo
Toledo, Ohio, USA

Citation: *For contributions to medical ultrasonic imaging*



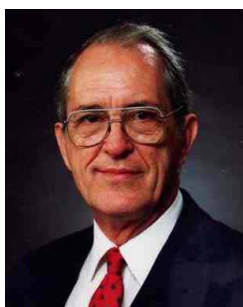
- **IEEE UFFC Society Awards:**

- ***Achievement Award 2008 Recipient:***

Mack A. Breazeale, Ph.D.

University of Mississippi
University, MO, USA

Citation: *For a five-decade-long career of major contributions to non-linear ultrasonics* (Laudation During Award Presentation: Dr. James G. Miller)

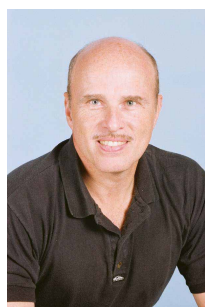


- ***Distinguished Service Award 2008 Recipient:***

Donald C. Malocha, Ph.D.

University of Central Florida
Orlando, FL, USA

Citation: *For his outstanding dedication and service to the IEEE UFFC-Society in numerous positions including President and his sustained Symposia and Technical Committee leadership* (Laudation During Award Presentation: Dr. Gerry Blessing)



- ***Distinguished Service Award 2008 Recipient:***

Allen H. Meitzler, Ph.D.

AHM Consulting
Ann Arbor, MI, USA

Citation: *For over 50 years of sustained technical contributions and services to the IEEE UFFC Society at many levels* (Laudation During Award Presentation: Dr. Susan TrolierMcKinstry)



- ***Outstanding Paper Award
2007 Recipient:***

Clark T.-C. Nguyen, Ph.D.

Paper: "MEMS Technology for Timing and Frequency Control," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 54, no. 2, February 2007, pp. 251 – 270



- ***2008-2009 Distinguished
Lecturer Award Recipient:***

Peter Burns, Ph.D.

University of Toronto and Sunnybrook
Health Sciences Centre
Toronto, Canada

Lecture Title: Bubbles and ultrasound: A new partnership for medical imaging



- **Ultrasonics Awards:**

- ***Rayleigh Award 2008 Recipient:***

- **William D. O'Brien, Ph.D.**

University of Illinois at Urbana-Champaign
Urbana, IL, USA

Citation: *For pioneering contributions in acoustics and medical diagnostics research and education and for devoted service to the IEEE UFFC Society (Laudation During Award Presentation: Dr. K. Kirk Shung)*



V. Plenary Speaker

Title of Presentation:

Acoustics of Traditional Chinese Theatrical Buildings

The Author:

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

Abstract:

The traditional Chinese theatrical building is a unique form in the architectural world. The Chinese opera matured as early as the Song and Yuan Dynasties, 11th–14th Centuries, and Chinese theatrical buildings developed accordingly. As the Chinese opera plays on the principle of imaginary actions, no realistic stage settings are required. But since ancient times, Chinese audiences have placed great demands on vocal performances; therefore, the acoustic effect of a theatre is a major concern to the audience as well as the performers.

Pavilion stages, that are small in area, open on three sides, and thrusting into the audience area, are commonly found in traditional Chinese theatres, both in the courtyard type and the auditorium type. Numerous theatres of the kind built in the Qing Dynasty, 17th–19th Centuries still exist, and in fact at the present day, some are still functioning in good condition. A study on the sound effects of the traditional Chinese theatres has been conducted with the knowledge of modern architectural acoustics.

As the courtyard theatre was a popular type of traditional Chinese theater at that time, its acoustic phenomenon is quite different from that of an enclosed space due to the absence of a roof. Therefore, the classic room acoustics, such as Sabine reverberation formula, is no longer applicable. It is well known that the parameter of reverberation time T_{60} shows the decay rate only, however it cannot properly characterize the prominent change in the fine structure of the echogram, particularly in case of a large reduction of reflections from the ceiling during the decay process. The sense of so-called 2.5D reverberation time in a courtyard space would differ from that of the equivalent 3D reverberation time in an enclosed space. Based upon the characteristic analysis of the sound field in an open-top space, a preliminary study on the acoustics of the courtyard theatre, both objectively and subjectively, will be introduced.

Professor Jiqing Wang:



Professor Jiqing Wang

Jiqing Wang is a Professor of Acoustics, Institute of Acoustics, School of Science (1981-present), and was also once the Director of Graduate Program on Architectural Science, School of Architecture and Urban Planning (1985-2002), Tongji University, Shanghai, China. He is a Fellow of Acoustical Society of China and a Fellow of Acoustical Society of America. He has served as the Chairman of the National Building Science Committee (1996-2000), President of the Acoustical Society of Shanghai (1987-1991), executive member of the Acoustical Society of China (1988-1998), technical member of the Acoustic Standardization Committee of China since 1980, and editor-in-chief for the Chinese journal of Technical Acoustics (1990-2004). He was the author and co-author of five books on architectural acoustics in Chinese, and published over 130 papers. He has also delivered several plenary, keynotes, invited and professional lectures worldwide.

External Links for Viewing Beijing Opera That Is Related to the Talk:

Huguang Guild Hall: <http://www.frommers.com/destinations/beijing/N20119.html>

Zhengyici Theatre: http://en.wikipedia.org/wiki/Zheng_Yici_Peking_Opera_Theatre

Beijing Opera Places: <http://www.beijingmadeeasy.com/beijing-arts/where-to-see-opera-in-beijing>

Beijing Opera in Wikipedia: http://en.wikipedia.org/wiki/Beijing_opera

Slides and Movie Clip Presented During the 2008 IEEE International Ultrasonics Symposium on November 3, 2008:



Slides of the Plenary Talk (102 slides)
([PDF](#) file - 17 MB)
([PowerPoint](#) file - 36 MB)



Movie Clip of the Plenary Talk
([MPEG](#) movie - 25 MB, 64 seconds)

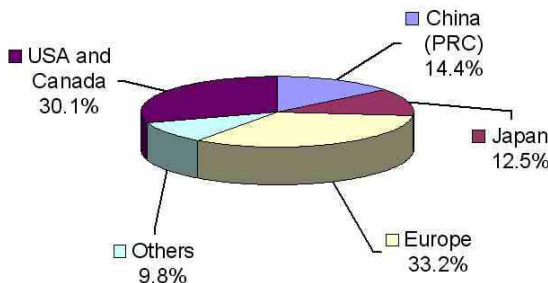
VI. Conference Statistics

Introduction:

The following are statistic charts related to the technical program, attendance, registration, proceedings, and short courses of the conference. Despite of recent global economic downturn and long traveling distances to China for many attendees, the total number of attendees of the 2008 IEEE International Ultrasonics Symposium (IUS) is still larger than 1000.

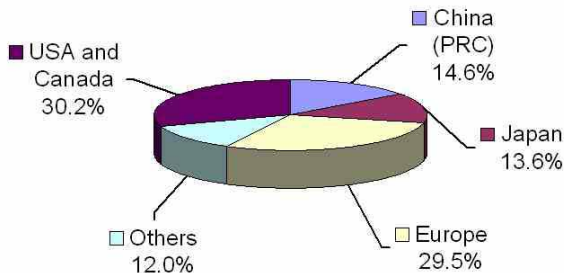
1. Abstract Accepted by Country: (Posted July 4, 2008)

Accepted Abstract by Country in the Technical Program (Total 674)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



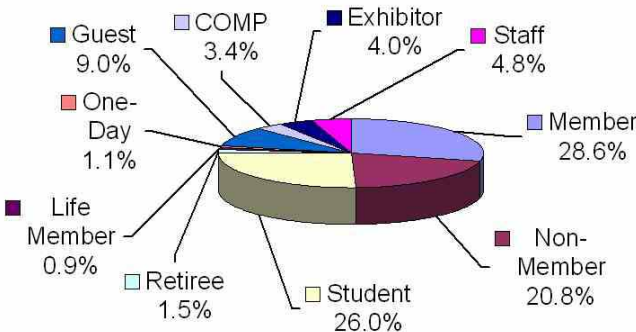
2. Conference Registration by Country: (Posted November 12, 2008)

Registration Distribution by Country
(Excluding Staff and Exhibitors)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



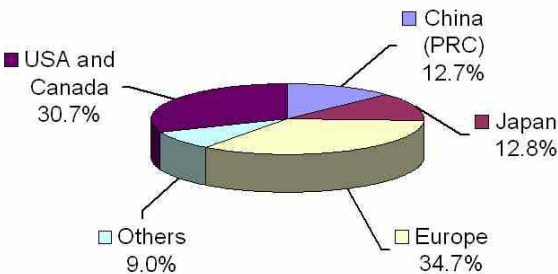
3. Conference Registration Types:
(Posted November 12, 2008)

Registration Types (Total 1021 Attendees)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



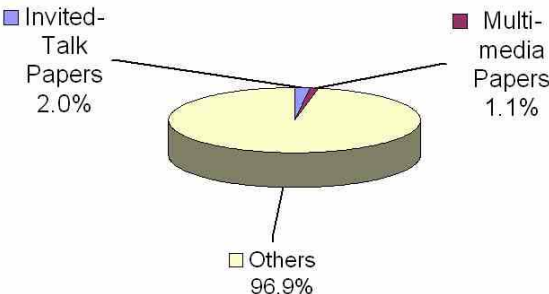
4. Proceedings Papers by Country:
(Posted December 1, 2008)

Number of Papers in Proceedings by Country
(Total 553 Papers)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



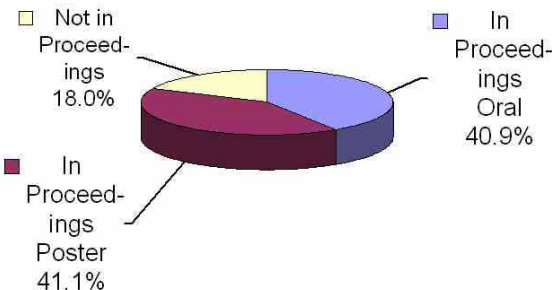
5. Paper Types in Proceedings:
(Posted December 1, 2008)

Paper Types in Proceedings (Total 553 Papers)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



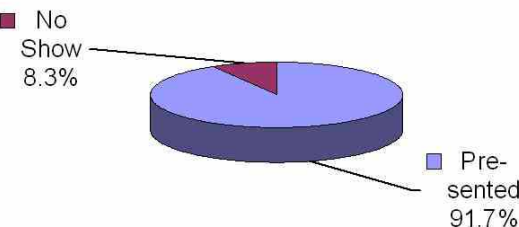
6. Abstract Statistics for Proceedings:
(Posted December 1, 2008)

Abstracts Statistics for Proceedings (Total 674 Abstracts)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



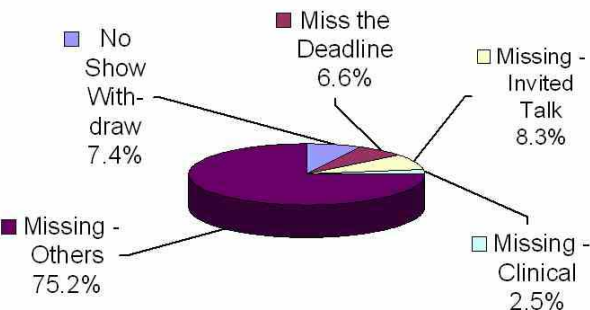
7. Abstract Presentation Status:
(Posted December 1, 2008)

Abstract Presentation Statistics (Total 674 Abstracts)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



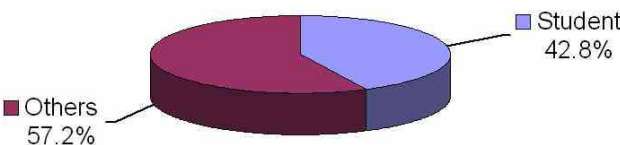
8. Papers Not in Proceedings:
(Posted December 1, 2008)

Papers Not in Proceedings (Total 121 Papers)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



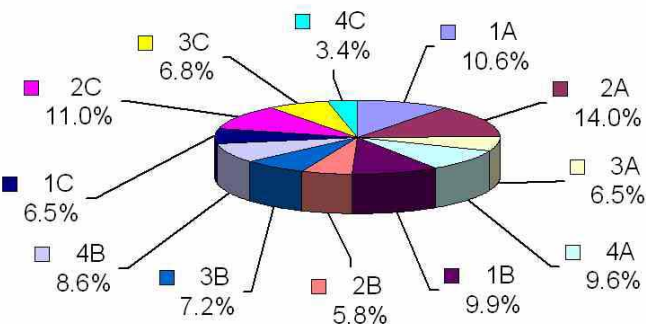
9. Short Course Registration Types:
(Posted November 12, 2008)

Short Course Registration Types (Total 292)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



10. Short Course Registration by Courses:
(Posted November 12, 2008)

Short Course Registration by Courses (Total 292)
(2008 IEEE IUS, Beijing, China, November 2-5, 2008)



VII. Technical Program Committee (TPC) (136 Members)

Group 1: Medical Ultrasonics

Vice Chair of TPC:

Stanislav Emelianov, Ph.D.

University of Texas at Austin

Austin, Texas, U.S.A.

Members:

1. **Olivier Basset:** *CREATIS, Université Lyon I, France*
2. **Geneviève Berger:** *National Centre for Scientific Research (CNRS), France*
3. **Ayache Bouakaz:** *INSERM, Université Tours, France*
4. **Charles Cain:** *University of Michigan, USA*
5. **Richard Chiao:** *Siemens Medical Solutions, USA*
6. **Jan D'hooge:** *Catholic University Leuven, Belgium*
7. **Paul Dayton:** *UNC Chapel Hill and NC State University, USA*
8. **Emad Ebbini:** *University of Minnesota, USA*
9. **David Evans:** *University of Leicester, UK*
10. **Kathy Ferrara:** *University of California Davis, USA*
11. **Stuart Foster:** *University of Toronto, Canada*
12. **James Greenleaf:** *Mayo Clinic College of Medicine, USA*
13. **Anne Hall:** *General Electric Medical Systems, USA*
14. **Christopher Hall:** *Philips Research North America, USA*
15. **Peter Hoskins:** *The University of Edinburgh, UK*
16. **John Hossack:** *University of Virginia, USA*
17. **Kullervo Hynynen:** *University of Toronto, Canada*
18. **Michael F. Insana:** *University of Illinois, Urbana-Champaign, USA*
19. **Jorgen Jensen:** *Technical University of Denmark, Denmark*
20. **Nico de Jong:** *Erasmus Medical Centre and University of Twente, The Netherlands*
21. **Hiroshi Kanai:** *Tohoku University, Japan*
22. **Jeff Ketterling:** *Riverside Research Institute, USA*
23. **Michael Kolios:** *Ryerson University, Canada*
24. **Chris de Korte:** *Radboud University Nijmegen Medical Centre, The Netherlands*
25. **Nobuki Kudo:** *Hokkaido University, Japan*
26. **Pai-Chi Li:** *National Taiwan University, Taipei, Taiwan*
27. **Jian-yu Lu:** *University of Toledo, USA*
28. **Leonardo Masotti:** *Università degli Studi di Firenze, Italy*
29. **Tom Matula:** *University of Washington, USA*
30. **James G. Miller:** *Washington University in Saint Louis, USA*
31. **Kathy Nightingale:** *Duke University, USA*
32. **William O'Brien:** *University of Illinois, Urbana-Champaign, USA*
33. **Georg Schmitz:** *Ruhr-Universität Bochum, Germany*
34. **Ralf Seip:** *Philips Research North America, USA*
35. **Mickael Tanter:** *Laboratoire Ondes et Acoustique, ESPCI, France*
36. **Tom Thomas:** *Boston Scientific, Inc., USA*

37. **Kai Thomenius:** *General Electric's Corporate R&D, USA*
38. **Hans Torp:** *Norwegian University of Science and Technology, Norway*
39. **Piero Tortoli:** *Università degli Studi di Firenze, Italy*
40. **Ton van der Steen:** *Erasmus Medical Center, The Netherlands*
41. **Keith Wear:** *US Food and Drug Administration, USA*

Group 2: Sensors, NDE, and Industrial Application

Vice Chair of TPC:

Jafar Saniie, Ph.D.

Illinois Institute of Technology

Chicago, Illinois, U.S.A.

Members:

1. **Robert C. Addison:** *Rockwell Science Center, USA*
2. **Walter Arnold:** *Fraunhofer Institute for Nondestructive Testing, Germany*
3. **Nihat Bilgutay:** *Drexel University, USA*
4. **Ramazan Demirli:** *Canfield Scientific, USA*
5. **Eric S. Furgason:** *Purdue University, USA*
6. **David Greve:** *Carnegie Mellon University, USA*
7. **Edward Haeggstrom:** *University of Helsinki, Finland*
8. **Jacqueline Hines:** *Applied Sensor Research and Development Corporation, USA*
9. **Fabien J. Josse:** *Marquette University, USA*
10. **Lawrence W. Kessler:** *Sonoscan Inc., USA*
11. **Pierre T. Khuri-Yakub:** *Stanford University, USA*
12. **Mario Kupnik:** *Stanford University, USA*
13. **Jun-ishi Kushibike:** *Tohoku University, Japan*
14. **Roman Maev:** *University of Windsor, Canada*
15. **Kentaro Nakamura:** *Tokyo Institute of Technology*
16. **Massimo Pappalardo:** *University di Roma TRE, Italy*
17. **Tony Sinclair:** *University of Toronto, Canada*
18. **Bernhard Tittman:** *Pennsylvania State University, USA*
19. **Jiromaru Tsujino:** *Kanagawa University, Japan*
20. **John F. Vetelino:** *University of Maine, USA*
21. **Paul Wilcox:** *University of Bristol, UK*
22. **Donald E. Yuhas:** *Industrial Measurement Systems, Inc., USA*

Group 3: Physical Acoustics

Vice Chair of TPC:

Yook-Kong Yong, Ph.D.

Rutgers University

Piscataway, New Jersey, U.S.A.

Members:

1. **Robert Aigner:** *TriQuint Semiconductor, USA*
2. **Art Ballato:** *U.S. Army, USA*
3. **Jan Brown:** *JB Consulting, USA*

4. **Weiqiu Chen:** *Zhejiang University, China*
5. **David Hecht:** *DLH Consulting, USA*
6. **Fred Hickernell:** *Retired from Motorola, USA*
7. **Yonkee Kim:** *U.S. Army, USA*
8. **Amit Lal:** *Cornell University, USA*
9. **C.S. Lam:** *Epson Electronics America, Inc., USA*
10. **John Larson:** *Avago Technologies, USA*
11. **Moises Levy:** *Department of Physics, Naples, Florida, USA*
12. **George Mansfeld:** *Russian Academy of Sciences, Russia*
13. **Vitold Poghar:** *Scientific and Technological Center of Unique Instrumentation of Russian Academy of Science, Russia*
14. **Valeri Proklov:** *Institute of Radio Engineering & Electricity, Russia*
15. **Edgar Schmidhammer:** *EPCOS, Germany*
16. **Susan Schneider:** *Marquette University, USA*
17. **Bikash Sinha:** *Schlumberger-Doll Research, USA*
18. **Ji Wang:** *Ningbo University, China*
19. **Qing-Ming Wang:** *University of Pittsburgh, USA*

Group 4: Microacoustics - SAW, FBAW, MEMS

Vice Chair of TPC:

Peter Smith, Ph.D.

McMaster University

Hamilton, Ontario, Canada

Members:

1. **Sylvain Ballandras:** *LPMO, France*
2. **Kushal Bhattacharjee:** *RF Micro Devices, USA*
3. **Sergey Biryukov:** *Leibniz Institute for Solid State and Materials Research Dresden (IFW), Germany*
4. **Jidong Dai:** *RF Monolithics, USA*
5. **Yasuo Ebata:** *Fujitsu Media Device Ltd., Japan*
6. **Gernot Fattinger:** *Sawtek, USA*
7. **Ken-ya Hashimoto:** *Chiba University, Japan*
8. **Daniel Hauden:** *CNRS LPMO, France*
9. **Mitsutaka Hikita:** *Kogakuin University, Japan*
10. **Chunyun Jian:** *Nortel Networks, Canada*
11. **Jyrki Kaitila:** *Infineon, Germany*
12. **Jan Kuypers:** *University of California, USA*
13. **Ken Lakin:** *TFR Technologies, USA*
14. **Don Malocha:** *University of Central Florida, USA*
15. **David Morgan:** *Impulse Consulting, UK*
16. **Hiroyuki Odagawa:** *Tohoku University, Japan*
17. **Mauricio Pereira da Cunha:** *University of Maine, USA*
18. **Viktor Plessky:** *GVR Trade SA, Switzerland*
19. **Bob Potter:** *Vectron International, USA*
20. **Leonard Reindl:** *Albert-Ludwigs-University Freiburg, Germany*
21. **Arne Ronnekleiv:** *Norwegian Institute of Technology, Norway*
22. **Richard Ruby:** *Avago Tech, USA*
23. **Clemens Ruppel:** *EPCOS AG - SAW RD SAM, Germany*
24. **Takahiro Sato:** *Samsung, Japan*

25. **Marc Solal:** *Sawtek, USA*
26. **Robert Weigel:** *Friedrich-Alexander University, Germany*

Group 5: Transducers and Transducer Materials

Vice Chair of TPC:

Scott Smith, Ph.D.

GE Global Research

Niskayuna, New York, U.S.A.

Members:

1. **Sandy Cochran:** *University of Dundee, UK*
2. **Christopher Daft:** *Siemens Medical Solutions, USA*
3. **Levent Degertekin:** *Georgia Institute of Technology, USA*
4. **Charles Emery:** *Mirabilis Medica, USA*
5. **John Fraser:** *Philips Medical Systems, USA*
6. **Jean-Francois Gelly:** *GE Healthcare, France*
7. **Reinhard Lerch:** *Friedrich-Alexander-Universität Erlangen-Nuremberg, Germany*
8. **Geoff Lockwood:** *Queen's University, Canada*
9. **Clyde Oakley:** *W. L. Gore, USA*
10. **Omer Oralkan:** *Stanford University, USA*
11. **Paul Reynolds:** *Weidlinger Associates, USA*
12. **Yongrae Roh:** *Kyungpook National University, Korea*
13. **Ahmad Safari:** *Rutgers University, USA*
14. **Mark Schafer:** *Sonic Tech Inc., USA*
15. **Thomas Shrout:** *Pennsylvania State University, USA*
16. **Kirk Shung:** *University of Southern California, USA*
17. **Stephen Smith:** *Duke University, USA*
18. **Wallace Smith:** *Office of Naval Research, USA*
19. **Yasuhito Takeuchi:** *Kagoshima University, Japan*
20. **Vasandara Varadan:** *University of Arkansas, USA*
21. **Jian Yuan:** *Boston Scientific, USA*
22. **Qiming Zhang:** *Pennsylvania State University, USA*
23. **Qifa Zhou:** *University of Southern California, USA*

VIII. Invited Talks (21 in Total)

Topics of Invited Talks:

Notes: To quickly find where the invited talks are scheduled in the conference technical program, please check the [Condensed Program](#) and the [Floor Plan](#). You could also see more details of the technical program in the [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#). (Please use the labels such as "1I-3" to locate the corresponding sessions).

Group 1: Medical Ultrasonics:

- [Talk #1.1 \(1I-3\)](#): *Jan D'hooge (Presenter), Piet Claus, Jens-Uwe Voigt, and Frank Rademakers, "Functional imaging of the heart,"* Department of Cardiovascular diseases, Catholic University of Leuven, Leuven, Belgium. (Abstract ID: 1185)
- [Talk #1.2 \(1C-5\)](#): **Mathias Fink (Presenter), *Mickael Tanter, **Jeremy Bercoff, and **Jacques Souquet, "Supersonic Shear Wave Elasticity Imaging,"* *ESPCI, Laboratoire Ondes et Acoustique, Paris, France. **Supersonic Imagine, Aix en Provence, France. (Abstract ID: 908)
- [Talk #1.3 \(1B-3\)](#): *F. Stuart Foster, "Micro-ultrasound Takes Off (In the Biological Sciences),"* Imaging Research, Sunnybrook Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada. (Abstract ID: 590)
- [Talk #1.4 \(1H-3\)](#): **Hiroshi Kanai (Presenter), **Junya Ohkohchi, and **Hideyuki Hasegawa, "Ultrasonic Imaging of 3-Dimensional Propagation of Electric Excitation and Vibrations in Human Heart,"* *Department of Electronic Engineering, Tohoku University, Sendai, Miyagi, Japan. **Graduate School of Biomedical Engineering, Tohoku University, Sendai, Miyagi, Japan. (Abstract ID: 36)
- [Talk #1.5 \(1F-5\)](#): *Richard Prager (Presenter), Andrew Gee, Graham Treece, Joel Lindop, and Nick Kingsbury, "Deconvolution and elastography based on 3D ultrasound,"* Department of Engineering, University of Cambridge, United Kingdom. (Abstract ID: 111)
- [Talk #1.6 \(1A-1\)](#): **Hairong Zheng (Presenter) and **Robin Shandas, "Ultrasound Particle Velocimetry: an Emerging Technique in Cardiology,"* *Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China. **University of Colorado at Boulder, Boulder, CO, USA. (Abstract ID: 1178)

Group 2: Sensors, NDE, and Industrial Application:

- [Talk #2.1 \(5E-1\)](#): *Saul Jacobson, "New Developments in Ultrasonic Gas Analysis and Flowmetering,"* 403 Huon Road, TAS 7004, Australia. (Abstract ID: 1017)
- [Talk #2.2 \(5I-1\)](#): *Claire Prada (Presenter) and Mathias Fink, "Invariants of the time reversal operator and ultrasonic applications,"* Laboratoire Ondes et Acoustique, CNRS, Université Paris 7, ESPCI, Paris, France. (Abstract ID: 1187)
- [Talk #2.3 \(5C-1\)](#): **Michael Thompson (Presenter) and **Scott Ballantyne, "Ultra High Frequency Acoustic Wave Detection of HIV Antibody,"* *Chemistry, University of Toronto, Toronto, Ontario, Canada. **Maple Biosciences, Toronto, Ontario, Canada. (Abstract ID: 130)

Group 3: Physical Acoustics:

- [Talk #3.1 \(6I-1\)](#): *Eun Kim*, "Piezoelectric MEMS for Audio Signal Transduction, Microfluidic Management, Resonant Mass Sensing, and Movable Surface Micromachined Structures," Electrical Engineering - Electrophysics, University of Southern California, Los Angeles, CA, USA. (Abstract ID: 647)
- [Talk #3.2 \(5A-4\)](#): **Bikash Sinha and **Vivian Pistre (Presenter)*, "Applications of Sonic Waves in the Estimation of Petrophysical, Geophysical and Geomechanical Properties of Subsurface Rocks," *Mathematics and Modeling, Schlumberger-Doll Research, Cambridge, MA, USA. **Well Placement and Safety, Schlumberger Beijing Geoscience Centre, Beijing, China. (Abstract ID: 304)
- [Talk #3.3 \(5A-3\)](#): *Yue-Sheng Wang*, "Interfacial Waves and Stability at the Frictional Sliding Interface between Two Solids," Institute of Engineering Mechanics, Beijing jiaotong University, Beijing, China. (Abstract ID: 1177)
- [Talk #3.4 \(6D-1\)](#): **Yook-Kong Yong (Presenter)*, **Mihir Patel*, and ***Masako Tanaka*, "Theory, and Experimental Verifications of the Resonator Q and Equivalent Electrical Parameters due to Viscoelastic, Conductivity and Mounting Supports Losses," *Civil and Environmental Engineering, Rutgers University, Piscataway, New Jersey, USA. **Epson Toyocom, Japan. (Abstract ID: 258)

Group 4: Microacoustics – SAW, FBAR, MEMS:

- [Talk #4.1 \(4F-1\)](#): *Robert Aigner*, "SAW and BAW Technologies for RF Filter Applications: A Review of the Relative Strengths and Weaknesses," TriQuint Semiconductor, Apopka, Florida, USA. (Abstract ID: 405)
- [Talk #4.2 \(4J-1\)](#): **Ken-ya Hashimoto (Presenter)*, **Yiliu Wang*, **Tatsuya Omori*, **Masatsune Yamaguchi*, ***Michio Kadota*, ***Hajime Kando*, and ***Teruhisa Shibahara*, "Piezoelectric Boundary Wave Devices: Their Underlying Physics and Applications," *Dept. EEE, Chiba University, Chiba, Chiba, Japan. **Murata MFG, Co. Ltd., Yasu, Shiga, Japan. (Abstract ID: 21)
- [Talk #4.3 \(4G-1\)](#): *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., Andover, MA, USA. (Abstract ID: 407)

Group 5: Transducers and Transducer Materials:

- [Talk #5.1 \(4B-1\)](#): *Sung-Min Lee*, *Dong-Ho Kim*, and *Ho-Yong Lee (Presenter)*, "PMN-PZT Single Crystals and Composites for Transducer Applications," Ceracomp Co., Ltd., Sunmoon University, Asan, Chungnam, South Korea. (Abstract ID: 326)
- [Talk #5.2 \(4B-4\)](#): *Dan Zhou* and *Haosu Luo (Presenter)*, "Vibration Mode and Relevant Ultrasonic Applications of Ferroelectric Single Crystals $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$," Shanghai Institute of Ceramics, CAS, Shanghai, China. (Abstract ID: 877)
- [Talk #5.3 \(4C-1\)](#): **Wei Ren (Presenter)*, **Peng Lin*, **Zheng Wang*, **Xiaoqing Wu*, **Peng Shi*, **Xi Yao*, ***Qifa Zhou*, ***Dawei Wu*, ***Benpeng Zhu*, and ***K. Kirk Shung*, "Piezoelectric Thin and Thick Films for Transducer Applications," *Electronic Materials Research Laboratory, Xi'an Jiaotong University, Xi'an, Shanxi, China. **NIH Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, Los Angeles, CA 90089, USA. (Abstract ID: 723)
- [Talk #5.4 \(6J-3\)](#): *Stewart Sherrit*, "The Physical Acoustics of Energy Harvesting," Advanced Technologies Group, Instrument Mechanical Engineering Section, Jet Propulsion Laboratory, Pasadena, CA, USA. (Abstract ID: 90)
- [Talk #5.5 \(6J-4\)](#): *Orest G. Symko (Presenter)* and *Myra Flitcroft*, "Ultrasonic Thermoacoustic Energy Conversion," Department of Physics, University of Utah, Salt Lake City, Utah, USA. (Abstract ID: 1181)

Talk #1.1:

Title: Functional imaging of the heart

Jan D'hooge (Presenter), Piet Claus, Jens-Uwe Voigt, and Frank Rademakers, Department of Cardiovascular diseases, Catholic University of Leuven, Leuven, Belgium.

Abstract:

Background, Motivation and Objective: The function of the heart is to eject blood into the aorta/pulmonary artery during systole (i.e. systolic function) and to refill with blood during diastole (i.e. diastolic function). The heart is able to do so by active contraction and relaxation of the heart muscle (i.e. the myocardium) resulting in changes in wall and cavity dimensions. This in turn results in cavity pressure changes accelerating the blood in or out of the ventricular cavity.

Ultrasound (US) imaging has been the modality of choice for the non-invasive assessment of cardiac function. Traditionally, M-mode derived volume-changes are measured to assess systolic function while blood flow patterns measured using Doppler techniques are used as an index for diastolic function.

Technological developments in ultrasound imaging have resulted in new methodologies for the quantification of cardiac function.

Statement of Contribution/Methods: US approaches for the quantification of cardiac function can be categorized into methods that assess properties of the myocardium and methods that assess characteristics of the blood flow.

In the former approaches, myocardial motion and deformation imaging has taken an important role. Although the original methods were based on Doppler imaging, later developments allowed to measure motion and deformation within the image plane (2D) and recently also in 3D (using volumetric US). These methods have enabled assessing ventricular twist/untwist characteristics – the latter being an interesting parameter for diastolic function. The above measurements in combination with mechanical models of the heart allow estimating the force regionally developed by the cardiac muscle.

Besides of these mechanistic approaches, acoustic properties of the myocardium have also been studied to functionally characterize the heart. Integrated backscatter and its cyclic variation have shown to be of interest in a large number of studies.

3D US systems have allowed a better characterization of ventricular volume changes which has led to the introduction of several new functional parameters.

Color Doppler M-mode imaging of blood flow can be used to estimate intra-ventricular pressure gradients which in turn have been correlated to cardiac function. More recently, speckle tracking approaches have also been applied to characterize (2D) blood flow patterns within the ventricle. It might be an important new approach.

Results: In this review lecture, the above described techniques will be presented from a technical point of view together with the experimental validation and/or clinical findings already available. Pros and cons of the approaches will be discussed.

Discussion and Conclusions: Developments in cardiac US have driven new methodologies to more accurately quantify cardiac function. They provide us with tools to better understand cardiac (patho)-physiology and, as such, better diagnose and treat the individual patient.

Talk #1.2:

Title: Supersonic Shear Wave Elasticity Imaging

**Mathias Fink (Presenter), *Mickael Tanter, **Jeremy Bercoff, and **Jacques Souquet, *ESPCI, Laboratoire Ondes et Acoustique, Paris, France. **Supersonic Imagine, Aix en Provence, France.*

Abstract:

Background, Motivation and Objective: This lecture presents a review of the applications of Supersonic Shear Imaging (SSI) modality.

Statement of Contribution/Methods: This technique is based on the combination of a dynamic radiation force induced in tissue by a set of ultrasonic beams and an ultrafast imaging sequence (5000 Images/s) capable of catching in real time the propagation of resulting shear waves. A shear source moving at a supersonic speed is remotely induced in tissues by the use of a special transmit beamforming sequence. It radiated quasi-plane shear waves propagating in a Mach cone. The local shear wave velocity is recovered using a time of flight technique and enables the two dimensional (2D) mapping of shear elasticity. This imaging modality is implemented on conventional probes driven by dedicated ultrafast echographic platforms. Consequently, it can be performed during a standard echographic exam.

Results: The preliminary clinical results demonstrate the clinical feasibility of this new elastography technique in providing quantitative assessment of relative stiffness of breast tissues. Experimental results will emphasize the potential of this elastography technique for many other potential applications such as liver, cardiovascular, ophthalmologic and muscular applications.

Discussion and Conclusions: Beyond elasticity imaging, a complete in vivo assessment of tissue rheology can be performed using this approach. Dispersion effects affecting the propagation of visco-elastic waves in soft tissues are a key to understanding the rheological behavior of human tissues. New signal processing approaches based on the Supersonic shear imaging modality were also developed and introduce a new concept of shear wave spectroscopy that could potentially become a great tool in tissue characterization and medical diagnosis.

Talk #1.3:**Title: Micro-ultrasound Takes Off (In the Biological Sciences)**

F. Stuart Foster, Imaging Research, Sunnybrook Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada.

Abstract:

Background, Motivation and Objective: Disease models in the mouse have become a central part of modern biomedical research. The next major project following the sequencing of the mouse genome is the coordinated and systematic knocking out of each of the mouse's ~ 30,000 genes and the discovery of the phenotypes associated with these mutations. In addition, subtle gene variations that predispose individuals to disease will be studied in ever increasing numbers. The National Institutes of Health in the United States and other international organizations are betting 100's of millions of dollars that this will lead to critical discoveries needed along the path to better healthcare. Imaging will play a major role in this enterprise and ultrasound will take its rightful seat at the table. The successful development of high frequency mechanical sector imaging has led to an entirely new community of ultrasound users whose backgrounds are not necessarily in imaging or medicine. They are physiologists, cell and molecular biologists, developmental biologists, and animal scientists.

Statement of Contribution/Methods: This talk will describe the path of instrument and applications development for high frequency “micro-ultrasound” for mice. Basic imaging, Doppler, and contrast imaging modes will be reviewed and the current state of the art in high frequency imaging of the mouse will be discussed.

Results: Examples of functional imaging of inflammation, cardiovascular disease, and tumour microcirculation will be used to illustrate the potential and limitations of the current technology. Potential for molecular imaging will be explored in a melanoma xenograft model in which the expression pattern of VEGFR-2 is studied. In contrast imaging, performance improvements will require optimization of the microbubbles themselves, a better understanding of microbubble interactions at high frequencies in both the bound and unbound state, and improved capabilities for nonlinear excitation.

Discussion and Conclusions: One of the barriers to development of micro-ultrasound imaging has always been the lack of high frequency arrays. This barrier is about to disappear. The latest results on the development of composite materials, high frequency linear arrays, and beamformers will be presented. These devices will dominate the next generation of micro-ultrasound imaging systems. Speculation on the future of micro-ultrasound technology and applications will be discussed.

Talk #1.4:

Title: Ultrasonic Imaging of 3-Dimensional Propagation of Electric Excitation and Vibrations in Human Heart

**Hiroshi Kanai (Presenter), **Junya Ohkohchi, and **Hideyuki Hasegawa, *Department of Electronic Engineering, Tohoku University, Sendai, Miyagi, Japan. **Graduate School of Biomedical Engineering, Tohoku University, Sendai, Miyagi, Japan.*

Abstract:

Background, Motivation and Objective: If the heart wall vibration caused as the response to the electric excitation is visualized using transcutaneous ultrasound, regional physiological properties in action potential and mechanical properties of the viscoelasticity can be noninvasively revealed. We have already found that the pulsive vibration is excited on the myocardium 15 ms after the electrical stimulation to an isolated heart [Acoustical Science and Technology 24, 17 (2003)]. Based on the fact, we have transcutaneously detected the propagation of minute vibration caused just around R-wave of the electrocardiogram (ECG). However, such visualization was limited to 2-dimensional (2D) plane obtained by scanning the ultrasonic beams. In this study, the propagation of the vibrations caused just around R-wave of ECG is visualized in 3-dimensional (3D) space.

Statement of Contribution/Methods: Since the propagation speed is several m/s along the heart wall, the necessary temporal resolution is at least 2 ms for the visualization. In our previous study, using a sparse sector scan in 2D plane [IEEE Trans. UFFC. 51, 1931 (2005)], the vibration waves were measured almost simultaneously at about 10,000 points set in the heart wall at a high frame rate but the scanning direction was limited to 10-16. Thus, there is no space to detect the RF data in 3D space with high temporal resolution. In this study, therefore, the multiple 2D data are acquired during consecutive several cardiac cycles and the propagation properties in 3D space are reconstructed. The probe on the chest wall is rotated intermittently by 15 degrees at each of the relaxation periods during the consecutive 13 cardiac cycles, and RF data are acquired in the 2D plane by sparse scan in 16 directions. Since the direction of the ultrasonic beam at the center of the 2D planes is common in the data acquisition, it is easy to synchronize the time of each cardiac cycle precisely using the detected vibrations, and then the propagation of the vibration of the myocardium can be reconstructed in 3D space.

Results: The method was noninvasively applied to healthy subjects. The consecutive spatial distributions of the spatially interpolated phase of the waves reveal wave propagation along the heart wall. Just after the Q-wave of the ECG, the propagation started at the center of the interventricular septum, where Purkinje fiber contacts with the

myocardium, to the base side and apical side of the heart. Its propagation speed was slow (1 m/s), which shows the propagation of electrical excitation. After the R-wave of the ECG, other pulsive waves started to propagate from the base to the apex. Since its speed was several m/s for about 50 Hz but there was dispersion, this is the shear wave caused by the mitral-valve closure.

Discussion and Conclusions: The method noninvasively reveals the propagation of electrical conduction wave by measuring regional myocardial response to it in human heart, which will be a novel tissue characterization of the heart.

Talk #1.5:

Title: Deconvolution and elastography based on 3D ultrasound

Richard Prager (Presenter), Andrew Gee, Graham Treece, Joel Lindop, and Nick Kingsbury, Department of Engineering, University of Cambridge, United Kingdom.

Abstract:

Background, Motivation and Objective: This talk is in two parts and addresses two ways of getting more information out of the RF signal from a 3D mechanically-swept medical ultrasound scanner. The first topic is the use of non-blind deconvolution to improve the clarity of the data, particularly in the direction perpendicular to the individual B-scans. The second topic is strain imaging. We present a robust and efficient approach to the estimation and display of axial strain information.

Statement of Contribution/Methods: For deconvolution, we calculate an estimate of the point-spread function at each depth in the image using Field II. This is used as part of an EM framework in which the ultrasound scatterer field is modelled as the product of (a) a piece-wise smooth and (b) a fine-grain varying function. In the E step, a Wiener filter is used to estimate the scatterer field based on an assumed piece-wise smooth component. In the M step, wavelet denoising is used to estimate the piece-wise smooth component from the scatterer field.

For strain imaging we use a quasi-static approach with efficient phase-based algorithms. Our contributions lie in robust and efficient 3D displacement tracking, point-wise quality-weighted averaging, and a stable display that shows not only strain but also an indication of the quality of the data at each point in the image. This enables clinicians to see where the strain estimate is meaningful and where it is mostly noise.

Results: For deconvolution we will present in-vivo and in-vitro images and simulations with quantitative performance measures. For example, with the blurred 3D data taken as 0dB, we get an improvement of 5.68dB with a Wiener filter alone, 5.90dB with ForWaRD and 7.45dB with our EM algorithm. For strain imaging we will show images based on 2D and 3D data and show how full 3D analysis can be performed in about 20 seconds on a typical computer. We will also present initial results of our clinical study to explore the applications of our system in our local hospital.

Discussion and Conclusions: We have shown that it is possible to use fast phase-based algorithms to provide accurate, stable images. With appropriate point-wise persistence, sufficiently clear and stable images can be presented in real-time to be of clinical interest. Our study of deconvolution with a spatially-varying point-spread function indicates that such algorithms may soon be fast enough to be a cost effective way of improving medical ultrasound images.

Talk #1.6:

Title: Ultrasound Particle Velocimetry: an Emerging Technique in Cardiology

**Hairong Zheng (Presenter) and **Robin Shandas, *Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China. **University of Colorado at Boulder, Boulder, CO, USA.*

Abstract:

Background, Motivation and Objective: Development and progression of vascular atherosclerosis and aneurysms are modulated by local hemodynamics such as wall shear stress and blood flow recirculation. However, current non-invasive imaging techniques either cannot resolve the multi-component nature of such flows or are too cumbersome for routine clinical use. We have recently developed a novel contrast-based echo particle image velocimetry technique (Echo PIV) to quantify complex blood flow vectors noninvasively. The method is angle independent, possesses excellent spatial and temporal resolution, and is simpler to use than MRI velocimetry. Here we examine the utility of this method to characterize hemodynamics around carotid plaques and abdominal aortic aneurysms using in vitro phantoms.

Statement of Contribution/Methods: A custom-designed Echo PIV system, including a 7.5 MHz 128-element linear array transducer, custom-designed firing sequences, and a velocimetry algorithm for analyzing the backscattered radio-frequency (RF) data, was used along with commercially available ultrasound contrast microbubbles to obtain velocity vectors through models of carotid stenosis and abdominal aortic aneurysms. Both steady and pulsatile flows were used.

Results: Echo PIV was able to resolve and quantify the complex hemodynamics around carotid plaques and abdominal aortic aneurysms, including proximal flow velocity vectors and distal vortex recirculation patterns. The method was also capable of producing time-resolved multi-component velocity, shear stress and vorticity maps. Good agreement between peak velocities found by Echo PIV and those measured by conventional ultrasound Doppler was also found.

Discussion and Conclusions: The Echo PIV method provides an easy, direct and accurate means of quantitatively yet non-invasively characterizing complex vascular hemodynamics with comparable spatial resolution and superior temporal resolution to MRI velocimetry.

Talk #2.1:

Title: New Developments in Ultrasonic Gas Analysis and Flowmetering

Saul Jacobson, 403 Huon Road, TAS 7004, Australia.

Abstract:

Background, Motivation and Objective: Ultrasonic methods have important advantages in the measurement of gas flow, including the ability to measure almost any gas or gas mixture over a wide pressure range and turndown ratio. Ultrasonic gas flowmeters also are capable of measuring bi-directional flow and may be non-intrusive with no pressure loss. In certain cases the sensors may even be clamped on the outside of the pipe. Traditionally the Transit-time method has been used, but more recently interesting developments in Tag Cross-correlation have yielded promising results, particularly for low-pressure clamp-on applications. Ultrasonic flowmeters for gas have been commercially available since the 1980s, and they are widely accepted today for flare gas and stack gas monitoring and for a wide variety of industrial and fuel gas measurements. Highly accurate multi-path meters are approved and commonly used for custody transfer measurement of natural gas. In addition to the many advantages ultrasonic methods have in the measurement of the gas flowrate, ultrasonic propagation characteristics of the gas may also be measured to determine properties of the gas, such as its molecular weight, density or energy content.

Statement of Contribution/Methods: Sound speed, in conjunction with temperature and pressure measurement were first used in the 1980s to determine the molecular weight and derive the mass flowrate of flare gas. Ultrasonic flowmeters for custody transfer natural gas gained acceptance in the 1990s with the publication of the American Gas Association AGA-9 report, which includes guidelines on the measurement and use of the gas sound speed. More recently gas sound speed and other properties such as attenuation have been used for the analysis of binary gases and pseudo-binary gases such as breathing gases, biogas, landfill gas, and process gases. Acoustic impedance has been measured and used to determine the density of high pressure gases.

Results: This paper reviews the methods to analyze binary, ternary and multi-component gases as well as presenting some new results from work conducted by the author and colleagues for biogas, consisting primarily of methane and carbon dioxide at 100% RH.

Discussion and Conclusions: A review of the literature finds ultrasonic methods to be an effective means of gas flow measurement and analysis for many applications. The authors' experiments found good correlation between ultrasonic methods and gas chromatography for the analysis of "simulated" as well as real biogas.

Talk #2.2:

Title: Invariants of the time reversal operator and ultrasonic applications

Claire Prada (Presenter) and Mathias Fink, Laboratoire Ondes et Acoustique, CNRS, Université Paris 7, ESPCI, Paris, France.

Abstract:

Background, Motivation and Objective: It is well known that acoustic time reversal mirrors own outstanding focussing properties in complex media. Used in the pulse echo mode, the time reversal process can be iterated to achieve selective focusing on the most reflective point among a set of scatterers or to enhance and extract the echo from a defect in a noisy structure.

Statement of Contribution/Methods: The iterative time reversal process can be described by the Time Reversal Operator. This process has an ensemble of invariants that can be determined from the measurement of the array inter-element impulse responses and the singular value decomposition of corresponding array response matrix. The determination and analysis of these invariants is the object of the D.O.R.T. method (French acronym for Decomposition of the Time Reversal Operator). It can be used to separate the echoes of several scatterers in an inhomogeneous medium. It also enables the separation of the radiation modes of a solid scatterer, like, for example, the various Lamb waves circumnavigating a hollow cylinder, leading to its characterization. Furthermore, when an estimate of the medium's Green function is available, high resolution and low noise images can be achieved using the back-propagation of the dominant invariants.

Results: This presentation will provide an overview of the different results obtained with the DORT method in the context of non destructive evaluation. Different improvements of the method will be shown, like the acquisition of the array response matrix using the Hadamard basis or focussed transmissions, or the coding of the inter-element impulse responses on 1-bit with little loss of information. Several examples of invariants of the time reversal operator and applications to the detection and characterization of solid scatterers will be presented.

Discussion and Conclusions: The DORT method is a powerful tool that can be used as a complement to conventional beamforming imaging technique. Furthermore, it allows detection and focusing through aberrating media where conventional beamforming fails.

Talk #2.3:

Title: Ultra High Frequency Acoustic Wave Detection of HIV Antibody

**Michael Thompson (Presenter) and **Scott Ballantyne, *Chemistry, University of Toronto, Toronto, Ontario, Canada. **Maple Biosciences, Toronto, Ontario, Canada.*

Abstract:

Background, Motivation and Objective: Screening and detection of HIV disease in patients requires assaying of blood or serum samples for antibody. For rapid screening, the detection of only one antibody is required, but for confirmation of the presence of the disease up to 10 are mandatory. Such assays are highly time consuming and costly, and involve significant skilled labour. It is the specific overall objective of this project to develop an electronic signalling approach to the detection of HIV in biological fluids. The technology incorporates a biosensor methodology which will be designed for the clinical laboratory. The basis is ultra high frequency acoustic wave technology

Statement of Contribution/Methods: Our contribution has three distinct but connected goals. First we have developed a flow through system which incorporates a bulk acoustic wave sensor in an analytical configuration. The sensor is a conventional 20 MHz quartz device which is excited not by the usual electrode technique, but by a flat spiral coil. Secondary electric fields drive the device up to the 50th harmonic thus generating high sensitivity. The second crucial aspect of the project is the attachment of antibody probes to the device surface. These probes which are based on peptide structures bind antibody which is then detected by the sensor. We have designed and developed new linking agents for attaching probes at optimum surface density but also that avoid the vexing non-specific adsorption problem. The third part of the work involves the use of the whole configuration to analyse real samples such as human serum

Results: We have demonstrated that the sensor can be operated with facility in a flow-injection apparatus. The faces of the device must be extremely parallel and have optimum surface physical nature as shown by AFM. XPS and other surface techniques have been used widely to demonstrate the presence of peptide probes on the quartz surface. The linkers are based on customized silane chemistry and constitute new molecules for the surface bioanalytical chemist. The binding of antibody in the flow system yields signals in the thousands of Hz. In serum we can achieve ratios of signal over nonspecific adsorptive noise at up 5 to 1.

Discussion and Conclusions: The system described above is being developed for commercial application in the clinical lab. Required for the future is the design and implementation of a multiplexed system involving series or parallel flow. Also the prototype instrument requires significant design engineering for non-technical users. The instrument will then be tested in the clinical environment

Talk #3.1:**Title: Piezoelectric MEMS for Audio Signal Transduction, Microfluidic Management, Resonant Mass Sensing, and Movable Surface Micromachined Structures**

Eun Kim, Electrical Engineering - Electrophysics, University of Southern California, Los Angeles, CA, USA.

Abstract:

Background, Motivation and Objective: This paper describes (1) piezoelectric microphone and microspeaker, (2) micromachined self-focusing acoustic transducers for liquid droplet-ejection, mixing, pumping and transporting, (3) resonant mass sensors based on film bulkacoustic resonators (FBAR), and (4) piezoelectrically actuated mirror array and tunable capacitor.

First presented will be micromachined microphones and microspeakers that consume very low power, and are small, rugged and highly sensitive. The microphones and microspeakers are built on micromachined diaphragms with a piezoelectric ZnO, and have large dynamic range, no need to have a polarization voltage, and no major performance/reliability problem due to water condensation. The fabrication processes for the transducers are relatively simple and very robust. We have incorporated various types of diaphragms that are cantilever-like, bimorph-type, containing partially-etched holes, corrugated, dome-shaped, etc.

Another line of presentation will be on microfluidic mixers, pumps, transporters and ejectors based on the self-focusing acoustic-wave transducer (SFAT). All the transducers are powered by a piezoelectric film or substrate, and are inherently fast, consume low power, and require no heat. The SFATs do not require any nozzle or acoustic lens, and their fabrications are very simple. Moreover, the SFAT ejector (unlike a nozzle-based ejector) can eject liquid droplets at any oblique angle, and does not have to be moved to ink a spot with different liquids. We have integrated a 2-D ejector array with microchannels, chambers and other microfluidic components on a single silicon chip for a small, portable, affordable DNA synthesis system.

Also described will be FBAR-based highly sensitive, resonant mass sensors that can operate in vapor and liquid. In vapor, the sensor based on an FBAR with Q of about 500 at 1 GHz can detect a mass change of 10-9g/cm² on its surface. The following FBAR-based sensors will briefly be described: mercuric ion sensor, DNA hybridization sensor, explosive-vapor- trace detector, and a 1.5mm long, 250 μ m wide and 15 μ m thick polymer probe with an FBAR mass sensor at its tip.

Finally presented will be a piezoelectrically actuated array of cantilevers/bridges (whose facets can accurately be controlled by electrical voltage) for tunable capacitors, RF switches and projection displays. Through the implementation of a simply-supported bridge driven by two 100- μ m-long ZnO-actuated cantilevers, a compact surface-micromachined tunable capacitor has been fabricated on a single chip without any warping, and shown to be capable of a 1,400% continuous tuning from 0.13 pF to 1.82 pF. Also shown will be a cantilever array with a pixel size of 100x100 μ m² that was developed for a projection display. A piezoelectric ZnO film was used to produce 0.116 $^\circ$ /V vertical deflection of the cantilever.

Statement of Contribution/Methods: None.

Results: None.

Discussion and Conclusions: None.

Talk #3.2:

Title: Applications of Sonic Waves in the Estimation of Petrophysical, Geophysical and Geomechanical Properties of Subsurface Rocks

**Bikash Sinha and **Vivian Pistre (Presenter), *Mathematics and Modeling, Schlumberger-Doll Research, Cambridge, MA, USA. **Well Placement and Safety, Schlumberger Beijing Geoscience Centre, Beijing, China.*

Abstract:

Background, Motivation and Objective: Sonic waves play an important role in estimating rock properties that are crucial in an efficient and safe production of oil and gas wells. An acoustic source in a fluid-filled borehole can generate both nondispersive headwaves as well as relatively stronger borehole guided modes. Processing of waveforms recorded with adequate spatial sampling yields sonic velocities in the surrounding formation over the receiver aperture. These velocities are then transformed into elastic moduli of the propagating medium. Elastic moduli of the formation provide many useful petrophysical, geophysical and geomechanical attributes of porous rocks that

constitute hydrocarbon bearing formations. Petrophysical attributes of hydrocarbon bearing formations include porosity, pore pressure, and fluid mobility. Geophysical attributes of the formation deal with anisotropy characterization of formations on a seismic scale. Geomechanical properties of rock consists of estimating in situ formation stresses and strengths as a function of radial position away from the borehole surface.

Statement of Contribution/Methods:Compressional velocity through a porous rock has been used to estimate porosity using Wyllie time-average equation whereby an interval transit time is decomposed into transit times in the solid and fluid components of the composite structure. Rock porosity can then be estimated using compressional velocity of the rock matrix and pore fluid in conjunction with measured velocity in the composite structure. There are well established correlations that help identify formation lithology in terms of the compressional to shear velocity ratio or the Poisson's ratio of the material. Plots of compressional to shear velocity ratio against compressional transit time help identify intervals containing limestone, dolomite, salt and quartz.

Results, Discussion and Conclusions:Recent applications of elastic moduli of rocks in a reasonably uniform lithology are in the estimation of fluid mobility in porous rocks; formation stresses; and fracture characterization. The presence of a fluid-filled borehole in a tectonically stressed formation causes both radial and azimuthal heterogeneities in rock stresses. Formation stresses are estimated using an acoustoelastic model based on nonlinear continuum mechanics. This model predicts crossing dipole dispersions to be an indicator of stress differential in the borehole cross-sectional plane. In-situ rock strength can be estimated using radial variations of shear velocities obtained from the inversion of borehole dispersions. Estimates of rock stresses and strength help maintain wellbore stability during drilling and production.

Talk #3.3:

Title: Interfacial Waves and Stability at the Frictional Sliding Interface between Two Solids

Yue-Sheng Wang, Institute of Engineering Mechanics, Beijing jiaotong University, Beijing, China.

Abstract:

Background, Motivation and Objective:Interfacial waves play an important role in many fields such as geophysics, seismology and non-destructive evaluation, etc., and thus have received considerable attention. Most of the published papers are concerned with the welded interface. However, contact interfaces, smooth or frictional, are also common in practical cases. The slip dynamics and Rayleigh-Stoneley-wave theory involving frictional contact interfaces are attracting more and more scientists working with experimental, numerical and analytical tools.

Statement of Contribution/Methods:In this paper, the theoretical study is presented on the interfacial waves and stability at a frictional interface between two anisotropic elastic or piezoelectric solids that are pressed together by remote pressure and meanwhile sheared by remote shearing traction and electric load. The external loads may or may not lead to steady rigid sliding between two solids. A perturbation field propagating steadily along the interface is examined by ignoring the details of the perturbation source. The local stick-slip motion at the frictionally contact interface caused by the perturbed slip pulse is studied. The Stroh formalism, together with the concept of the surface impedance tensor is employed. The boundary value problem involving unknown slip/stick zones is cast to a Cauchy singular integral equation with an unknown integral interval.

Results:By solving the singular integral equations analytically, the explicit expressions of interface waves, which could satisfy the boundary conditions and energy balance, are therefore obtained. The explicit solutions are obtained. The existence conditions are given. Particularly, the existence conditions and physical properties of interface waves have been further discussed based on numerical calculations for practical examples.

Discussion and Conclusions: The results show: 1) Slip-stick frictional interface waves might exist in most material combinations. In some specific cases, the waves will involve $1/2$ singularity at one end of slip zones while be bounded at the other end, which in the meantime requires enough large frictional coefficient. The wave speed ranges are related to the frictional coefficient. In more general cases, the interface waves will involved singularity weaker than $1/2$ at one end of slip zones while be bounded at the other end. 2) Between the anisotropic elastic or piezoelectric media that are steadily frictionally sliding under the applied tractions, there will be no such interface waves that could change the stresses so as to cause the local slip motion at the interface, i.e., self-excited oscillations of instable interface waves will not transformed to the steady slip-stick motion at the interface without separation.

Talk #3.4:

Title: Theory, and Experimental Verifications of the Resonator Q and Equivalent Electrical Parameters due to Viscoelastic, Conductivity and Mounting Supports Losses

**Yook-Kong Yong (Presenter), *Mihir Patel, and **Masako Tanaka, *Civil and Environmental Engineering, Rutgers University, Piscataway, New Jersey, USA. **Epson Toyocom, Japan.*

Abstract:

Background, Motivation and Objective: Current finite element software does not allow for the calculation of a resonator Q without apriori assumptions of the resonator impedance or damping. A novel analytical/numerical method for calculating the resonator Q, and its equivalent electrical parameters due to viscoelastic, conductivity and mounting supports losses is presented. Hence the method presented will be quite useful for designing new resonators, and reducing their time and costs of prototyping. There is also a necessity for better and more realistic modeling of the resonators due to miniaturizations, and the rapid advances in frequency ranges in telecommunication.

Statement of Contribution/Methods: We present new three-dimensional finite elements models of quartz resonators and aluminum nitride SMR's with viscoelasticity, conductivity, and mounting support losses. For quartz the materials losses attributed to electrical conductivity and acoustic viscosity were obtained from Lee, Liu and Ballato[1], and Lamb and Richter[2], respectively. The losses at the mounting supports were modeled by perfectly matched layers (PML's). The theory for dissipative anisotropic piezoelectric solids given by Lee, Liu and Ballato [1] was formulated in a weak form for finite element applications. PML's were placed at the base of the mounting supports to simulate the energy losses to a semi-infinite base substrate. FE simulations were carried out for free vibrations and forced vibrations of AT-cut quartz resonators, and solidly mounted resonators (SMR's). The FEM models for the SMR's employ periodic boundary conditions[3].

Results: Results for quartz thickness shear AT-cut quartz resonators and SMR's are presented and compared with experimental data. Results for the resonator Q and the equivalent electrical parameters were compared with their measured values. Good comparisons were found. Results for low and high Q AT-cut quartz resonators compared well with their experimental values. FEM models with periodic boundary conditions were employed to calculate the Q of SMR's operating in the range of 1.70 to 1.90 GHz. The Bragg layers of the SMR's consist of three alternating layers of W and SiO₂. The resonating element consisted of AlN piezoelectric film with Mo electrodes. Their Q and Keff values showed very good agreement with the measured data. The effect of thermal compensating oxide and Mo electrode resistance on the Q values was studied and compared with the measurement data.

Discussion and Conclusions: Comparisons of the Q and other electrical parameters obtained from the free vibration analysis with their corresponding values from the forced vibration analysis were found to be in excellent agreement. The results were validated by good comparisons with their experimental values. The resulting FE model gives the Q value without prior assumptions of damping factors and impedance. A new method for estimating the Q directly from the frequency spectrum obtained for free vibrations was also presented.

Talk #4.1:**Title: SAW and BAW Technologies for RF Filter Applications: A Review of the Relative Strengths and Weaknesses**

Robert Aigner, TriQuint Semiconductor, Apopka, Florida, USA.

Abstract:

Background, Motivation and Objective: The first part of this paper aims to present facts and figures comparing SAW and BAW technologies with regard to

- (a) process complexity / cost , size
- (b) function, performance and fundamental limitations
- (c) simulation methods and design flow

Based on the criteria above the application space for RF filters in wireless communication will be mapped and selected examples will be discussed in detail.

Statement of Contribution/Methods: The second part of this paper will review how both technologies progressed in recent years and will focus on innovations. Both SAW and BAW keep pushing for better performance and at times compete with each other. Despite that there are surprisingly many areas where SAW and BAW face similar challenges on a path to improved performance and/or lower cost. Commonalities and areas where SAW and BAW learn from each other are:

- (a) frequency correction “trimming” methods for yield improvement
- (b) materials and processes for acoustic layers
- (c) wafer-level-packaging

Results: Results of research and development work at TriQuint in both SAW and BAW will be presented. The emphasis will be on temperature compensated (TC) filters and duplexers. TC SAW shows promise to fulfill demanding duplexer requirements for emerging mobile phone bands. Fully temperature compensated BAW filters enable to fix interference issues in emerging wireless applications.

Discussion and Conclusions: The shockwave FBAR/BAW has generated inside the SAW community a few years ago has passed. It generated a lot of pressure while approaching and a lot of traction while dissipating. Several suppliers now have both technologies in their portfolio while others stick to either the one or the other. SAW is recovering lost market share based on cost advantages and innovations which aim to overcome their main weaknesses. BAW on the other side keeps pushing the performance envelope for filters with extreme specifications. In the history of electronics over the past 50 years there are many cases of a new technology challenging established technologies. Examples range from “Transistor vs. Vacuum tube” and “GaAs vs. Silicon” to “CMOS vs. Bipolar”. Which of those best compares to “BAW vs. SAW” will be speculated about in the discussion.

Talk #4.2:**Title: Piezoelectric Boundary Wave Devices: Their Underlying Physics and Applications**

**Ken-ya Hashimoto (Presenter), *Yiliu Wang, *Tatsuya Omori, *Masatsune Yamaguchi, **Michio Kadota, **Hajime Kando, and **Teruhisa Shibahara, *Dept. EEE, Chiba University, Chiba, Chiba, Japan. **Murata MFG, Co. Ltd., Yasu, Shiga, Japan.*

Abstract:

Background, Motivation and Objective: For SAW devices, bulky and expensive packaging has been one of the vital problems for their further miniaturization and price cuts. Piezoelectric boundary acoustic waves (PBAWs) have long been expected to be one of the possible solutions to break down this problem. Very recently, Kando, et al. proposed the SiO₂ overlay/heavy grating electrode/rotated Y-cut LiNbO₃ (rot. YX-LN) substrate structure for developing PBAW devices. The remarkable advantage of this device is that the cavity over the chip surface can completely be got rid of. This makes the packaging most simple and enables the packaged device size to be minimized, whilst the device fabrication process is almost identical with that for traditional SAW devices.

Statement of Contribution/Methods: This paper reviews physical properties of PBAWs and their application to miniature and high performance RF filters/duplexers.

Results: First, basic properties of PBAWs are discussed. It is shown that PBAWs are supported in various structures provided that highly piezoelectric material(s) are employed as structural member(s). For example, the Si/SiO₂/IDT/rot. YX-LN structure supports PBAWs with a large electromechanical coupling factor and moderate temperature coefficient of velocity. In the structure, the PBAW energy is confined around the relatively thick SiO₂ layer, where the wave velocity is relatively small. On the other hand, PBAWs are trapped near the electrode region in the SiO₂/heavy grating electrode/rot. YX-LN structure. This means that PBAW properties in the structure are independent of the SiO₂ layer thickness. This is a significant advantage for mass production. One may mind the fact with the structure, however, that the PBAW velocity should be smaller than the shear-wave velocity in SiO₂, otherwise the PBAW becomes leaky. Rot. YX-LN possesses piezoelectric coupling with Rayleigh-type waves as well as SH-type waves. Responses associated with the former have to be suppressed completely for filter applications. It is discussed how these two waves are dependent on the substrate rotation angle, electrode thickness, and metallization ratio. The PBAW devices employing SiO₂/Au electrodes/0-15°YX-LN are now being mass-produced. Because of the removed cavity from the chip surface, the packaged device size can be reduced dramatically. For example, a DMS filter based on PBAWs is developed for GSM900 Rx in a size of 0.8x0.6x0.25 mm³. The minimum insertion loss achieved in the passband (925-960 MHz) is 2.7dB (max), which is comparable to that of conventional SAW filters in a relatively large device size. The SiO₂ layer is effective in achieving the improved temperature coefficient of frequency of -30 to -40 ppm/°C.

Discussion and Conclusions: The PBAW devices for various standards such as GSM1800 and GSM1900 have already been developed and are being mass-produced.

Talk #4.3:

Title: A Review of the Recent Development of MEMS and Crystal Oscillators and Their Impacts on the Frequency Control Products Industry

C.S. Lam, Integrated Device Technology, Inc., Andover, MA, USA.

Abstract:

Background, Motivation and Objective: Due to its high Q and temperature-stable properties, quartz crystal based oscillators are important clock sources in consumer, commercial, industrial, and military products. The demand for quartz crystal resonators and oscillators continues to rise and the quartz crystal industry has made major progresses in miniaturization, performance enhancement, and cost reduction in the past ten years. The unique fabrication and encapsulation requirements though render quartz crystal resonators and oscillators difficult or close to impossible to be integrated onto the mature silicon based IC platforms. The recent technical breakthroughs of all silicon MEMS (Micro Electro Mechanical Systems) based resonators and oscillators seem to re-ignite the interest in displacing/replacing the quartz crystal technology and to open up again the prospect in clock source integration.

Based on a 2006 review paper by the author[1], this paper expands on the subject by reviewing the development of all silicon MEMS oscillators and crystal oscillators in the past few years and commenting on what challenges they face in the highly competitive frequency control products industry. This paper will also touch on the recent development of CMOS oscillators (without moving parts) and piezoelectric-activated silicon MEMS resonators and oscillators.

[1] "An Assessment of the Recent Development of MEMS Oscillators as Compared with Crystal Oscillators," C.S. Lam, Piezoelectricity, Acoustic Waves and Device Applications- Proc. of the 2006 Symposium, Zhejiang University, China, 14~16 December 2006, ed. Ji Wang and Weiqu Chen, pp. 308-315 (also in http://www.txccorp.com/download/tech_paper/2006-SPAWDA-3.pdf)

Statement of Contribution/Methods: None.

Results: None.

Discussion and Conclusions: None.

Talk #5.1:

Title: PMN-PZT Single Crystals and Composites for Transducer Applications

Sung-Min Lee, Dong-Ho Kim, and Ho-Yong Lee (Presenter), Ceracomp Co., Ltd., Sunmoon University, Asan, Chungnam, South Korea.

Abstract:

Background, Motivation and Objective: Crystallographically engineered Relaxor-PT single crystals, specifically PMN-PT and PZN-PT, offer very high piezoelectric and electromechanical coupling coefficients ($d_{33} > 2,000$ pC/N; $k_{33} > 0.9$), promising for next generation electromechanical devices such as ultrasonic transducers and actuators. However, these piezoelectric single crystals exhibit relatively low TC, TRT and EC, and thus have very limited usage range. In contrast to the growth of relaxor-PT single crystals, PZT and relaxor-PZTs can not be readily grown in single crystal form because of their incongruent melting behavior. Attempts to grow single crystals of PZT and relaxor-PZTs have been made by numerous researchers, resulting in crystallites too small (2 ~ 3 mm in size) to allow adequate property measurements. If PZT and relaxor-PZTs materials could be grown in single crystal form, PZT and relaxor-PZT single crystals have been expected to have remarkable and wide range of dielectric and piezoelectric properties such as high K_{3T}, TC, TRT and EC.

Statement of Contribution/Methods: The solid-state crystal growth (SSCG) technique is to grow a single crystal in a polycrystalline precursor by continuous grain growth of an external seed single crystals without complete melting of major components. In the SSCG process, no melting of PZT is involved and thus the issue of incongruent melting can be avoided. It is also readily amenable to dopant modifications which give us the family of piezoelectrically "soft" and "hard" PZT and relaxor-PZT single crystals, similar to "soft" and "hard" ceramics we have today. In this investigation, undoped and doped MPB PMN-PZT single crystals were fabricated using the SSCG technique and their dielectric/piezoelectric properties characterized.

Results: The undoped and doped (Fe-, Mn-, and In-) PMN-PZT single crystals of high TC (> 180~300°C) and EC (> 3.5~10 kV/cm) were successfully fabricated by the SSCG technique and their dielectric/piezoelectric properties characterized. Especially the temperature dependence of the piezoelectric/electromechanical properties, the dc bias effect on TRT (or the application usage temperature range), the high field unipolar strain, and the development of an internal bias were investigated and compared to PMN-PT single crystals. Piezoelectric single crystal-polymer composites were also prepared by using undoped and doped PMN-PZT single crystals and their dielectric/piezoelectric properties characterized.

Discussion and Conclusions: Compared to PMN-PT single crystals, the high TC/EC PMN-PZT single crystals were found to exhibit a much wider usage range with respect to electric field as well as temperature, and thus are better candidates for application in transducers and actuators. Along with high TCs, the ability for dopant engineering using the SSCG technique has been demonstrated to piezoelectrically "harden" crystals ($Q_m = 500 \sim 1,000$) via the development of an internal bias.

Talk #5.2:

Title: Vibration Mode and Relevant Ultrasonic Applications of Ferroelectric Single Crystals $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$

Dan Zhou and Haosu Luo (Presenter), Shanghai Institute of Ceramics, CAS, Shanghai, China.

Abstract:

Background, Motivation and Objective: Modern medical ultrasonic imaging relies almost exclusively on piezoelectric transducers to convert mechanical waves to electrical signals and vice versa. The vast majority of these devices incorporate a polycrystalline piezoelectric based on the composition $\text{Pb}(\text{Zr}_{1-x}\text{Ti}_x)\text{O}_3$, generally known as PZT. These materials offer electromechanical properties k_{33} of 75% and piezoelectric properties d_{33} of 600 pC/N. Recently, much research work has been reported on the relaxor ferroelectric single crystals $(1-x)\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-xPbTiO}_3$ (PMN-PT) with superior properties of k_{33} (~94%), d_{33} (>2000 pC/N), etc. Such excellent performances will lead to large improvement of sensitivity and resolution in medical ultrasonic imaging systems.

Statement of Contribution/Methods: The electromechanical factors were measured according to IEEE standards by HP4194A impedance analyzer. The single element PMN-PT transducer was fabricated with the same structure as PZT transducer. The PMN-PT/Epoxy composites and array transducers were simulated with PiezoCAD.

Results: The PMN-PT crystals were investigated of electromechanical factors k_{33} , k_t , k_{33}' and piezoelectric constant d_{33} , with different orientation and cuts for various medical ultrasonic applications. Based on the longitude extension mode (k_{33}), the PMN-PT/Epoxy 1-3 composites were modeled and fabricated. The holistic k_t (>90%) of the composites far exceeds that of the PZT ceramics (only ~50%). The relatively low acoustic impedance makes the acoustic matching to human tissue much easier. The results will be favorable for single element ultrasonic transducers, such as Doppler blood flow imaging applications. For medical linear and phase array transducers, the coupling factor k_{33}' is a key indicator. The PMN-PT resonators of this vibration mode were studied systematically with orientations and poling conditions. The optimized cut type of PMN-PT for array applications was obtained with k_{33}' of 92%, which is larger than that 70% of conventional PZT ceramics.

Then, ultrasonic transducer devices utilizing PMN-PT were investigated. The PMN-PT pulse wave 2MHz TCD probe was manufactured with 30% broader bandwidth and 4dB higher sensitivity compared with PZT probe. These enhanced performances were induced by relatively high k_t (62%) and d_{33} of PMN-PT. The single element transducer based on PMN-PT/Epoxy 1-3 composites was simulated with broader bandwidth and higher echo response than PZT transducers. The PMN-PT 3.5MHz linear array transducer was also simulated with the similar effects.

Discussion and Conclusions: The PMN-PT were investigated and optimized for various medical ultrasonic transducer applications. The ultrahigh piezoelectric and electromechanical constants were obtained in PMN-PT. Three types of fabricated or simulated medical transducers utilizing PMN-PT all show improved pulse length, bandwidth and sensitivity. So the next generation of high performance ultrasonic transducers is expected.

Talk #5.3:

Title: Piezoelectric Thin and Thick Films for Transducer Applications

***Wei Ren (Presenter), *Peng Lin, *Zheng Wang, *Xiaoqing Wu, *Peng Shi, *Xi Yao, **Qifa Zhou, **Dawei Wu, **Benpeng Zhu, and **K. Kirk Shung,** *Electronic Materials Research Laboratory, Xi'an Jiaotong University, Xi'an, Shanxi, China. **NIH Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, Los Angeles, CA 90089, USA.

Abstract:

Background, Motivation and Objective: In recent years, the demands for miniaturized devices integrated with microelectronics have increased significantly, leading to great interests in the design and fabrication of thin/thick film transducers. Lead zirconate titanate (PZT) is an attractive material for transducer applications due to its excellent electromechanical properties. Such devices often require crack-free films with thickness of 1~10 μm . A polymer-assisted deposition and PZT powders/sol-gel solution composite thick films have been developed to prepare PZT thick films.

Statement of Contribution/Methods: $\text{PbZr}_{0.52}\text{Ti}_{0.48}\text{O}_3$ (PZT) thin and thick films with thickness of 1~10 μm have been prepared by a metallo-organic decomposition process modified by a polymer, poly(vinyl acetate) (PVAc). It's found that with an increase of PVAc in PZT solutions, the single-layer thickness of PZT films increases from 0.07 μm to 0.47 μm . When PVAc-related organic compounds are decomposed, nano-sized pores are formed and provide space for the structural and stress relaxation. It prevents the crack formation and increases the uncracking critical thickness of PZT films.

In addition, PZT composite thick films up to 30 μm -thick have been successfully prepared with a spin-coating of PZT powders/sol-gel composite solution. The electric properties of the films were evidently enhanced by infiltration of PZT solgel into composite films and optimization of PZT powders to PZT sol-gel mass ratio in composite solution. Transducer and array at a frequency high than 100 MHz have been fabricated using above PZT thick films by MEMS technology.

Results: Dielectric, ferroelectric, and piezoelectric properties of PZT films have been thoroughly investigated. For PVAc modified PZT films, with the increase of the film thickness from 0.95 μm to 9.9 μm , the dielectric constant increases from 1070 to 1600, while the dielectric loss is in a range of 0.03~0.04 at 1 kHz. Remanent polarization increases from 36.1 $\mu\text{C}/\text{cm}^2$ to 55.3 $\mu\text{C}/\text{cm}^2$, while coercive field decreases from 57.3 kV/cm to 40.9 kV/cm. The piezoelectric coefficient d_{33} increases from 43.9 pm/V to 200 pm/V.

Discussion and Conclusions: Using PZT thick films, high-frequency transducers and kerfless array at a frequency high than 100 MHz will be presented. Meanwhile, the effect of the residual stresses of PZT films on devices has been investigated.

Talk #5.4:

Title: The Physical Acoustics of Energy Harvesting

Stewart Sherrit, Advanced Technologies Group, Instrument Mechanical Engineering Section, Jet Propulsion Laboratory, Pasadena, CA, USA.

Abstract:

Background, Motivation and Objective: Energy harvesting systems based on the transformation of acoustic vibrations into electrical energy are increasingly being used for niche applications due to the reduction in power consumption of modern day electronic systems. Typically these applications involve extracting energy at remote or isolated locations where local long term power is unavailable or inside sealed or rotating systems where cabling and electrical commutation are problematic. This paper will look at some of the limitations of these systems.

Statement of Contribution/Methods: A variety of modes of harvesting electrical power from acoustic vibrations or impacts generated by machines, humans or nature will be presented. These modes can be configured to extract energy from longitudinal, transverse, bending, hydrostatic or shear waves at frequencies ranging from less than a Hz to 10's of kHz. In order to aid in the design and optimization of these devices we have identified common elements of these systems.

Results: These common elements are: the input mechanical power spectrum, the effective matching of mechanical loads, the conversion of the input mechanical energy into electrical energy using piezoelectric or biased electrostrictive transducers and matching the electrical load. Recent results on an acoustic electric feed-through device demonstrated 1 kW power conversions at power densities of 70 W/cm² and 25 W/cm³ using a pre-stressed stacked PZT ceramics operating at 16 kHz with an efficiency of 84%. In addition a variety of circuits have been designed and are currently available to optimize the electrical impedance matching. These results suggest the conversion and the electrical matching are not the limiting elements of these devices and we will show that the main impediment to increased power is the vibration source amplitude, frequency, inertia and the size limitations of the energy harvesting systems or in the case of human powered systems the requirement that the device remains unobtrusive.

Discussion and Conclusions: Although the power densities of these devices may be limited by the source and the matching of the mechanical loads there are plenty of applications that are feasible within the available power densities due to the wonders of CMOS.

Talk #5.5:

Title: Ultrasonic Thermoacoustic Energy Conversion

Orest G. Symko (Presenter) and Myra Flitcroft, Department of Physics, University of Utah, Salt Lake City, Utah, USA.

Abstract:

Background, Motivation and Objective: When heat is applied to one end of a stack of plates inside an acoustic resonator, sound can be generated. This is the basis of a thermoacoustic engine called a prime mover. It consists of a resonator with a working gas, a cold heat exchanger next to the stack and a hot heat exchanger against the other end of the stack; heat is injected to the hot heat exchanger. The device is driven by a temperature gradient across the stack; above a critical gradient the onset for oscillations occurs. Being a resonant system the device size scales inversely with frequency. Certain applications have advantages in reducing device size and hence to operate in the ultrasonic range. The development of the technology dealing with this frequency range and device characteristics is presented here. By coupling a piezoelectric device to the thermoacoustic engine, conversion from heat to electricity is achieved. The unit makes a compact energy converter with essentially no parts. It can be used in energy conversion applications, especially waste heat to electricity conversion.

Statement of Contribution/Methods: In developing such small devices for the ultrasonic range it is important to scale down the critical dimensions from working audio frequency devices. With air as the working fluid the resonator ($\frac{1}{4}$ - wave resonator) length is 4.1mm for an operating frequency of 21 kHz. Heat, generated by a flame or other source, is applied to the hot heat exchanger. Above a threshold temperature difference between the hot and cold heat exchangers, acoustic oscillations are generated. Coupled to a piezoelectric device; it converts sound to electricity. Thermal interaction between the sound field and the element of the stack provides the correct phasing for sound production. This is achieved when the condition $\omega\tau \approx 1$ is met; ω is the angular frequency of the sound and τ is a thermal relaxation time given by $d^2 / 2\alpha$ where d = an effective distance between stack elements and α = the thermal diffusivity.

Results:Scaling down in size thermoacoustic engines from the audio range led to miniature engines. The devices radiated sound when the injected heat created a temperature gradient above threshold. For devices 4.1mm long sound was radiated at 21kHz. Depending on the alignment of the cold and the hot parts, the temperature difference across the stack for onset of oscillations ranged from 85°C to 180°C.

Sound intensities outside the resonator varied with the ΔT across the stack; they reached levels of over 140dB. Generated acoustic energy is converted to electricity by means of a piezoelectric element.

Discussion and Conclusions:Since the acoustic devices are resonant systems, large power density can be achieved with ultrasonic devices for the 20kHz unit. At an acoustic intensity of 160dB, the power density would be ~2 Watts/cm³. To achieve high power levels, an array of such devices can be formed.

The results show the potential of a thermoacoustic-piezoelectric approach in the ultrasonic range for energy conversion from heat to electricity.

IX. Special Clinical Session

Overview of Clinical Session Topics:

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. (Note: This session is organized by Dr. Stuart Foster, University of Toronto, Canada.)

Notes: To quickly find where the invited clinical session talks are scheduled in the conference technical program, please check the [Condensed Program](#) and the [Floor Plan](#). You could also see more details of the technical program in the [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#). (Please use the labels such as "1E-1" to locate the corresponding sessions).

- **Talk #1 (1E-1):** *Peter Burns*, "Making Microbubbles Work for Ultrasound: Technical and Broader Challenges," Dept Medical Biophysics, University of Toronto, Toronto, ON, Canada. (Abstract ID: 957)
- **Talk #2 (1E-3):** *Yuxin Jiang*, "The Clinical Application of Ultrasound Contrast Imaging," Department of Diagnostic Ultrasound, Pekin Union Medical College Hospital, Beijing, China. (Abstract ID: 836)
- **Talk #3 (1E-2):** *Stephanie Wilson*, "The Role of Contrast Enhanced Ultrasound (CEUS) in Oncology," Department of Diagnostic Imaging, Foothills Medical Centre, Calgary AB, Canada. (Abstract ID: 1189)

Talk #1:

Title: Making Microbubbles Work for Ultrasound: Technical and Broader Challenges

Peter Burns, Dept Medical Biophysics, University of Toronto, Toronto, ON, Canada.

Abstract:

Background, Motivation and Objective: Although it has been 10 years since microbubble contrast agents were first approved for clinical use, adoption has been slow, in spite of considerable technical advances and many successful clinical studies.

Statement of Contribution/Methods: Methods for contrast specific imaging exploit the nonlinear response of bubbles at or near resonant excitation. Simple filtering for higher harmonics has given way to broadband methods using phase and/or amplitude modulation of a sequence of pulses. With suitable detection methods, linear, nonlinear, moving and stationary targets can all be segmented from the echo and shown in real time. The tendency of bubbles to disrupt at low peak negative pressures also offers a potential role for coded excitation on transmit. Deliberate disruption of bubbles with a few high MI pulses can clear the image plane and allow measurement of its replenishment by contrast offering a unique way to quantify microvascular flow and perfusion volume.

Results: At least 3 million clinical contrast studies have been performed: safety and tolerability have proven excellent. Clinical applications have focused on areas in which ultrasound already plays an important diagnostic role. In cardiology, contrast can aid visualisation of the endocardium, especially important in wall motion studies, and has been shown to improve the accuracy of stress echo. It can also image and measure myocardial perfusion in real time,

at rest and with stress, with spatial resolution superior to the current nuclear medicine standard, SPECT. In radiology, perfusion can be imaged in many organs, but work has concentrated on the liver, where contrast can help characterise focal lesions with an accuracy comparable to contrast CT and MRI. It also aids in lesion detection, in real time guidance of interventions such as RF ablation and in monitoring response to tumor therapy, especially using the new antiangiogenic agents.

Discussion and Conclusions: In spite of demonstrated efficacy and safety, widespread adoption into the clinic has been slow. Two reasons are proposed. First, although bubbles are approved for perfusion imaging in more than 60 countries, the US, which has approved no radiology indications, is not among them. Second, while contrast ultrasound is often less expensive than competing modalities, physician reimbursement may be less too, dampening enthusiasm among practitioners. We conclude that future clinical studies should focus on applications unique to microbubbles, exploiting, for example, their confinement to the blood pool and the ability to image them in real time. Approval of a perfusion indication by the US FDA is crucial. Widely available, robust contrast specific imaging modes are needed. The intriguing capacity of bubbles to potentiate therapies, including drug delivery, should be pursued. For diagnosis, translation of microbubble contrast applications to clinical practice may come more quickly in cost driven rather than profit-driven healthcare systems.

Dr. Peter Burns is Professor and Chairman of Medical Biophysics and Professor of Radiology at the University of Toronto and Senior Scientist at Sunnybrook Health Sciences Centre, Toronto. He received his degree in Mathematical Physics in 1973 and, following a postgraduate fellowship in History and Philosophy of Science, a PhD in Radiodiagnosis in 1983. He subsequently held faculty positions in Radiology at Yale University and Thomas Jefferson University in Philadelphia. He moved to Toronto in 1991. He was part early efforts to detect flow in small blood vessels with Doppler, including the first ultrasonic detection of tumor blood flow. He subsequently worked on Doppler methods for flow detection and hemodynamic measurement in the abdomen and pelvis. In 1988 he began research with microbubbles as ultrasound contrast agents, focusing on the development of nonlinear methods such as harmonic, pulse inversion and amplitude modulation imaging as well as their clinical applications in perfusion imaging of the heart, abdomen and tumors. He has published more than 130 papers, 4 books and holds several patents in diagnostic ultrasound. He received the World Federation of Ultrasound in Medicine and Biology Pioneer Award (1988); the Ian Donald Gold Medal for Technical Achievement (2002); Innovation and Excellence Trophy of the Société Canadienne de Radiologie (2002), was the Euroson Lecturer of the European Society for Ultrasound in Medicine (2005); the Donald McVicar and Brown Lecturer of British Medical Ultrasound Society (2006) and is the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society Distinguished Lecturer for 2008.

Talk #2:

Title: The Clinical Application of Ultrasound Contrast Imaging

Yuxin Jiang, Department of Diagnostic Ultrasound, Pekin Union Medical College Hospital, Beijing, China.

Abstract:

Background, Motivation and Objective: Contrast-enhanced ultrasound imaging is the area of greatest interest in ultrasound medicine currently. The recent improvements of contrast agent and the contrast specific scanning techniques have given new possibilities for the further research and clinical application. We are having researches in the basic theory study and further clinical applications in China, so that ultrasound contrast imaging can be better recognized and widely applied in the clinical practice.

Statement of Contribution/Methods: The introduction of second-generation microbubble contrast agents, such as SonoVue and self-made perfluorocarbon ultrasound contrast agent, and the advent of specialized imaging techniques enabled real-time contrast-enhanced imaging. In our study, Sonovue and the gray scale harmonic imaging technique

were adopted to evaluate the characteristic contrast enhanced pattern of liver, kidney, gynecology, breast and thyroid lesions, etc.

Results: Our clinical research shows that contrast enhanced ultrasounographic imaging can improve the diagnostic potential of sonographic examinations in different clinical applications, including the better observation of small vessels, the real-time assessment of the blood perfusion pattern in an organ or area of interest, with a significantly higher detection rate and diagnostic accuracy especially for the tumor of liver, kidney and gynecology. Otherwise, contrast enhanced ultrasound imaging holds the potential for a better visualization and diagnosis of peripheral vascular and some deep-located vessels, such as carotid, brain arteries and renal arteries, etc. The area of great promise and growth also lies in the clinical research of breast and thyroid.

Discussion and Conclusions: With the fast development and the intrinsic advantages of contrast enhanced ultrasound imaging, it is gaining more and more popularity. Ultrasound doctors should pay efforts to do further research in this state of art technique, which may open a new prospect for the ultrasound medicine.

Dr. Yuxin Jiang is a director of the Department of Diagnostic Ultrasound, Peking Union Medical College Hospital, Beijing, China; Professor of the Chinese Academy of Medical Sciences & Peking Union Medical College in Beijing, China; President of the Society of Ultrasound in Medicine of Chinese Medical Association. Dr. Jiang has lead a team from China to present at ASUM ASM 2006 on topics relating to ultrasound guided therapy, e.g., use of contrast in ultrasound, and various interventional techniques. Dr. Jiang will discuss topics relating to ultrasound guided therapy, e.g., HIFU and Radio Frequency, use of contrast agents in ultrasound, and various interventional techniques now used in China.

Talk #3:

Title: The Role of Contrast Enhanced Ultrasound (CEUS) in Oncology

Stephanie Wilson, Department of Diagnostic Imaging, Foothills Medical Centre, Calgary AB, Canada.

Abstract:

Background, Motivation and Objective: The oncology patient is susceptible to the development of tumor masses in many locations and their detection and diagnosis is usually within the realm of diagnostic imaging. While ultrasound may show tumors, additional imaging with CT and or MR scan is generally required for their confident diagnosis. We address the tremendous contribution of contrast enhanced ultrasound (CEUS) in the imaging of this population.

Statement of Contribution/Methods: Contrast agents for ultrasound are comprised of tiny bubbles of gas in a supporting shell. Their intravenous injection results in tissue perfusion, analogous to that seen on contrast enhanced CT and MR, and also incredible vessel visualization more similar to that seen with angiography. These attributes allow for improved detection and characterization of tumors in many parts of the body.

Results: Characterization of tumors of the liver is the most accepted indication for CEUS where it is complimentary to CT and MR scan. Liver lesion detection and also the difficult question of diagnosis of hepatocellular carcinoma are further accepted strategies for the use of CEUS as the detection of small nodules in the cirrhotic liver on screening sonography is enhanced by the performance of CEUS at the time of nodule detection. Detection of liver masses is also improved by CEUS as the addition of contrast agent increases the conspicuity of liver masses on sonography such that more and smaller masses may be detected than at baseline.

CEUS is also valuable when added to intraoperative liver ultrasound, contributing to management decisions for the patient undergoing surgery. Further, CEUS is a critical component of radiofrequency ablation (RFA) techniques especially when performed at the time of the procedure where it may reduce the requirement for repeat procedures

performed for incomplete ablation. CEUS is suitable for monitoring patients with prior RFA or transarterial chemoembolization (TACE).

CEUS contributes to the characterization of renal masses, especially cystic RCC, where vascularity in septae and nodules is shown with a sensitivity surpassing both CT and MR scan. Further, in other locations such as the pancreas, spleen, ovary, prostate and breast, CEUS may show the presence of vascularity in real-time with the resolution of standard gray-scale ultrasound.

Discussion and Conclusions: CEUS changes totally the role of ultrasound in the evaluation of the patient with cancer. CEUS may be performed on any organ with a suitable acoustic window where the addition of vascular information may contribute to diagnosis. Its performance is independent of renal function making it a perfect first choice for the characterization of all masses in the oncology patient. To confirm that a mass is a malignant tumor or to confirm that it is not, CEUS is an easily performed and readily available technique. For these reasons, CEUS deserves a fundamental role in the future of oncological diagnosis.

Dr. Stephanie R. Wilson was born and educated in Western Canada but has made Toronto her home for the duration of her professional life. In 2007, she relocated to her home province where she is now Professor of Radiology at the University of Calgary and a member of the department of Diagnostic Imaging at Foothills Medical Centre, Calgary, CANADA. Dr Wilson has invested her research, academic and practice pursuits on imaging of the gastrointestinal tract, pancreas and liver. Since 1992, Dr Wilson has collaborated with Dr. Peter Burns from University of Toronto/Medical Imaging Research on the investigation of microbubble contrast agents for the evaluation of their use in Medical Imaging. Their major accomplishments to date include their investigation of the diagnosis and characterization of tumors of the liver. Burns and Wilson shared a grant from the Canadian Institute for Health Research (CHIR) for these investigations.

Apart from her research pursuits, Dr. Wilson has been the recipient of annual prestigious University of Toronto Faculty of Medicine teaching awards including the Colin R. Woolf Award for Excellence in Continuing Education Teaching in 1992, and the Wightman-Berris Academy Award for Individual Teaching Excellence in 2005. She has authored over 100 peer reviewed publications and many book chapters and is an editor of the highly successful two volume reference on ultrasound, entitled Diagnostic Ultrasound, often referred to as the “Bible of Ultrasound”, now in its third edition. Dr Wilson served as the first woman president of the Canadian Association of Radiologists and was also the recipient of their Gold Medal for her contribution to radiology.

X. Short Courses (12 in Total)

Overview of Short Courses:

Notes: To find the short course rooms and their locations, please check the [Condensed Program](#) and the [Floor Plan](#). Detailed technical program of the conference can be found in the [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

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

- [Short Course 1A](#) (**Conference Room 311A/B**): **Medical Ultrasound Transducers**, *Douglas G. Wildes* and *L. Scott Smith*, GE Global Research Center, Niskayuna, NY, USA.
- [Short Course 2A](#) (**Conference Room 307**): **Ultrasound Imaging Systems: from Principles to Implementation**, *Kai E. Thomenius*, GE Global Research Center, Niskayuna, NY, USA.
- [Short Course 3A](#) (**Conference Room 308**): **Photoacoustic Imaging and Sensing**, *Stanislav Emelianov*, Biomedical Engineering Department, University of Texas at Austin, USA.
- [Short Course 4A](#) (**Conference Room 311C**): **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](#) (**Conference Room 311A/B**): **Ultrasound Elastography: Quantitative Approaches**, **Jeffrey Bamber* and ***Paul Barbone*, **Institute of Cancer Research and Royal Marsden Hospital, UK.* ***Boston University, USA.*
- [Short Course 2B](#) (**Conference Room 307**): **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 3B](#) (**Conference Room 308**): **Therapeutic Ultrasound**, *Lawrence A. Crum*, Applied Physics Laboratory, University of Washington, Seattle, WA, USA.
- [Short Course 4B](#) (**Conference Room 311C**): **SAW Modeling Techniques**, *Victor P. Plessky*, GVR Trade SA, Bevaix, Switzerland.

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

- [Short Course 1C](#) (**Conference Room 311A/B**): **Ultrasound Contrast Agents: Theory and Experiment**, **Nico de Jong* and ***Michel Versluis*, **Erasmus MC, The Netherlands.* ***University of Twente, The Netherlands.*
- [Short Course 2C](#) (**Conference Room 307**): **CMUTs: Theory, Technology, and Applications**, *B.T. Khuri-Yakub*, *Ömer Oralkan*, and *Mario Kupnik*, E.L. Ginzton Laboratory, Stanford University, USA.
- [Short Course 3C](#) (**Conference Room 308**): **Time Reversal Acoustics**, *Mathias Fink*, École Supérieure de Physique et de Chimie de la Ville de Paris, France.
- [Short Course 4C](#) (**Conference Room 311C**): **Acoustical Near-Field Imaging**, *Walter Arnold*, Fraunhofer Institute for Non-Destructive Testing, Saarbrücken, Germany.

Short Course Evaluation Form:

If you are going to attend the short course(s), please download the Short Course Evaluation Form below, fill it out after each short course, and then return it to the conference registration desk to help us to improve the courses in the future.

Short Course Evaluation Form for Short Course Attendees:
(Posted October 21, 2008)
(Please click on the icon below to download the PDF version and print it out)



Short Course 1A (8:00 A.M. - 12:00 Noon, Sunday, November 2, 2008):

Course Title: Medical Ultrasound Transducers

Douglas G. Wildes and **L. Scott Smith**, GE Global Research Center, Niskayuna, NY, USA.

Course Description: This course will provide an introduction to the design, fabrication, and testing of medical ultrasound transducers. Starting from an overview of the basic types of phased-array transducers (linear, convex, sector), we will discuss how the design for a probe is derived from its target application and how equivalent-circuit, finite-element, and acoustic field models can be used to optimize the design and accurately predict performance. A discussion of the structure of an ultrasound probe will lead to a survey of the different types of materials used in probes and their critical properties. Typical fabrication processes will be introduced and common problems in probe manufacturing will be summarized. Methods for evaluating completed transducers will be discussed. The course will highlight recent developments in probe technology, including single crystal piezoelectrics, cMUT transducers, catheters, multi-row and 2D arrays, and electronics in probes, and will discuss performance advantages and fabrication difficulties which may be associated with each.

Douglas G. Wildes is a physicist with GE Global Research. He earned an A.B. in physics and mathematics from Dartmouth College and a Ph.D. in low-temperature physics from Cornell University, then joined GE in 1985. Since 1991, Dr. Wildes' research has focused on aperture design, fabrication processes, and high-density interconnect technology for multi-row and 4D imaging transducers for medical ultrasound. Dr. Wildes has 23 issued patents and 19 external publications. He is a member of the American Physical Society and a Senior Member of the IEEE.

L. Scott Smith is a physicist with GE Global Research. He earned B.S. and Ph.D. degrees in physics from the University of Rochester and the University of Pennsylvania respectively. Joining GE in 1976, he developed phased array probes for medical ultrasound. More recently, he examined novel probe materials and led projects on pediatric endoscopes and adaptive acoustics. Dr. Smith has 43 issued patents and over 35 refereed publications. He is a member of the American Physical Society and a Senior Member of the IEEE where he serves as Vice Chair for Transducers on the Ultrasonics Symposium's Technical Program Committee.

Short Course 2A (8:00 A.M. - 12:00 Noon, Sunday, November 2, 2008):

Course Title: Ultrasound Imaging Systems: from Principles to Implementation

Kai E. Thomenius, GE Global Research Center, Niskayuna, NY, USA.

Course Description: The design of medical ultrasound imagers is undergoing important changes brought about by advances in semiconductors and signal/image procession technologies coupled with changes in medical practice and the utilization of medical imaging in general. Unique aspects of data acquisition and processing in the ultrasound scanner enable opportunities not available to other imaging modalities. The goal of this course is to review the system design of ultrasound scanners from a linear systems point of view including transduction, beam formation, and image formation functions. We will discuss analytical methods used in developing the design of a scanner in use today. The key points to be covered deal with methods of analysis of array data, the interaction of transmit and receive beams with clinically relevant targets, and how this interaction is used in the generation of clinically useful images. The means by which these analytical methods contribute to a system design and the trade-offs involved are reviewed. The last several years have seen steady migration of functionality into software; this has enabled significant miniaturization of scanners. The impact of this on system design and the size of ultrasound scanners of the future will be discussed.

Kai E. Thomenius is a Chief Technologist in the Imaging Technologies Organization at General Electric's Global Research facility in Niskayuna, NY, USA. His focus is on Ultrasound and Biomedical Engineering. Previously, he has held senior R&D roles at ATL Ultrasound Inc., Interspec Inc., Elscint Inc., as well as several other ultrasound companies. In addition, he is currently an Adjunct Professor in the Electrical, Computer, and Systems Engineering Department at Rensselaer Polytechnic Institute where he teaches a course in general imaging. Dr. Thomenius' academic background is in electrical engineering with a minor in physiology; all of his degrees are from Rutgers University. His long-term interests have been in ultrasound beam formation and miniaturization of ultrasound scanners, propagation of acoustic waves in inhomogeneous media, and determination of physiological information from the echoes that arise from such beams. Dr. Thomenius is a Fellow of the American Institute of Ultrasound in Medicine.

Short Course 3A (8:00 A.M. - 12:00 Noon, Sunday, November 2, 2008):

Course Title: Photoacoustic Imaging and Sensing

Stanislav Emelianov, Biomedical Engineering Department, University of Texas at Austin, USA.

Course Description: This course is designed to provide both a broad overview and a comprehensive understanding of photoacoustic (also known as optoacoustic and, more generally, thermoacoustic) imaging, sensing and spectroscopy. With a brief historical introduction, we will begin the course by examining the foundations of photoacoustics, including derivations and a discussion of governing equations. We will also review relevant optical properties of the tissues and related topics of laser-tissue interaction. The experimental aspects of photoacoustic imaging and sensing will then be discussed with emphasis on system hardware and signal/image processing algorithms. Techniques to increase contrast and to differentiate various tissues in photoacoustic imaging will be presented. The course will

conclude with an overview of several experimental systems capable of photoacoustic imaging, and discussion of current and potential biomedical and clinical applications of photoacoustics.

Stanislav Emelianov received B.S. and M.S. degrees in Physics and Acoustics in 1986 and 1989, respectively, from the Moscow State University, and a Ph.D. degree in Physics in 1993 from the Moscow State University and the Institute of Mathematical Problems of Biology of the Russian Academy of Science. In 1989, he joined the Institute of Mathematical Problems of Biology, where he was engaged in both mathematical modeling of soft tissue biomechanics and experimental studies of noninvasive visualization of the mechanical properties of tissue. Following his graduate work, he moved to the University of Michigan, Ann Arbor, as a post-Doctoral Fellow in the Bioengineering Program and in the Electrical Engineering and Computer Science Department. From 1996 to 2002, Dr. Emelianov was a Research Scientist at the Biomedical Ultrasonics Laboratory of the Biomedical Engineering Department at the University of Michigan. During his tenure at Michigan, Dr. Emelianov was involved primarily in the theoretical and practical aspects of elasticity imaging using ultrasound and MRI. Dr. Emelianov is currently teaching and conducting research in the Department of Biomedical Engineering at the University of Texas at Austin. His research interests are in medical imaging and therapeutics, including ultrasound, photoacoustic, elasticity and multi-modality imaging, photothermal therapy, cellular/molecular imaging and therapy, functional imaging, etc.

Short Course 4A (8:00 A.M. - 12:00 Noon, Sunday, November 2, 2008):

Course Title: 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.

Course Description: This course provides a basic understanding of the physical principles and signal processing methods for estimation of blood and tissue motion. The course begins with an overview of currently used techniques for velocity estimation using pulsed- and continuous-wave Doppler, and color flow imaging. Statistical models for the received signal, as well as commonly used velocity estimators will be developed. Simulation methods for ultrasound signals from moving blood and tissue will be discussed and examples in Matlab will be shown. The suppression of clutter from slowly moving targets is central to all processing schemes and will be given special attention. Also, current methods of tissue velocity and strain rate imaging will be given special elaboration. More advanced topics will also be covered. An overview of current adaptive filter schemes for attenuating clutter will be given, and 2-D / 3-D vector velocity estimation techniques will also be presented. The principles and practical limitations of these methods will be discussed, and potential applications in blood velocity imaging and myocardial velocity- and strain imaging will be shown.

Hans Torp received the MS degree in mathematics in 1978, and the Dr. Techn. Degree in electrical engineering in 1992; both from the University of Trondheim, Norway. Since 1980 he has been working with ultrasound technology applied to blood flow measurements and imaging at the University of Trondheim, in cooperation with GE-Vingmed Ultrasound. He is currently professor of medical technology at the Norwegian University of Science and Technology, and has since 1987 given courses on ultrasound imaging and blood flow measurements for students in electrical engineering and biophysics. His research interests include statistical signal- and image processing with application in medical ultrasound imaging.

Lasse Lovstakken received the Masters degree in Engineering Cybernetics in 2002 and a PhD in Medical Technology in 2007, both at the Norwegian University of Science and Technology, in Trondheim, Norway. He is currently working as a post doctoral research fellow at the Department of Circulation and Medical Imaging at the Norwegian University of science and Technology. His research interests include signal and image processing with applications in ultrasound imaging, with a special focus on imaging of blood and tissue movement.

Short Course 1B (1:00 P.M. - 5:00 P.M., Sunday, November 2, 2008):

Course Title: Ultrasound Elastography: Quantitative Approaches

Jeffrey Bamber* and *Paul Barbone*, *Institute of Cancer Research and Royal Marsden Hospital, UK. **Boston University, USA.

Course Description: There is evidence that ancient cultures extending back thousands of years used palpation to assess the mechanical properties of tissues, and thus detect and characterise disease or injury. Simple palpation continues to be of value in modern medicine, both practiced by doctors and as a technique for self-examination, but palpation is limited to a few accessible tissues and organs, and the interpretation of the information sensed by the fingers is highly subjective. Ultrasound elastography aims to display images that are related to a broad range of parameters that describe the spatial and temporal variations in tissue viscoelasticity. It does so by processing time-varying echo data to extract the spatial and/or temporal variation of a stress-induced tissue displacement or strain. In recent years the method early form has emerged as a real-time imaging modality available as an option on several commercial ultrasound systems, and is starting to prove clinically valuable, for example in breast cancer diagnosis. Nevertheless, in its present form it remains a strongly subjective technique and continues, as with palpation, to require considerable interpretive skills to be learnt. There are good reasons to believe that a more quantitative and objective analysis will lead to clinically more valuable measures of tissue composition, function or state, with images that are easier to interpret. This short course will outline some of the limitations and pitfalls of current elastographic methods, and will then introduce the opportunities for, potential value of and challenges for making elastography more quantitative. It will then review work on modeling tissues and their mechanical behavior, the fundamentals of ultrasound elastographic experimental techniques required for quantitative imaging, the use of static, vibrational and impulsive loads, the inverse methods for measurement and image reconstruction, methods for stress measurement, and shear wave propagation methods. This will lead to a discussion of the likely consequences for medical applications and future instrumentation. Examples of results will be presented for a range of medical application areas and for various mechanical characteristics such as shear modulus, nonlinearity, anisotropy, friction at mechanical discontinuities, as well as properties that determine viscoelastic and poroelastic behavior.

Jeffrey Bamber is head of the Ultrasound and Optics Physics Team, and is Senior Tutor for the Research Degrees Program at The Institute of Cancer Research Sutton, U.K. He has an honorary position as a Medical Physicist within the Royal Marsden Hospital, Sutton. He received a BSc in Physics from the University of Kent at Canterbury in 1972, an MSc in Biophysics and Bioengineering from the University of London in 1974, and a PhD in Biophysics in 1980, also from the University London. He continued as a research scientist following his PhD at the Institute of Cancer Research, becoming a team leader in 1986. His research interests have included: acoustic characteristics of tissues, ultrasound image speckle and texture, speckle reduction, ultrasound aberration, psychophysics of perception of information in ultrasound images and movies, ultrasonic methods in breast cancer, measurement of tumor volume and blood flow, ultrasound tissue motion tracking, tissue elasticity imaging, temperature imaging, high frequency ultrasonic imaging and tissue characterization, ultrasound and optical methods in skin cancer, microbubble contrast agents, ultrasound guidance of focused ultrasound therapy and radiotherapy, ultrasound in radiation dosimetry, microbubbles as gene therapy vectors, and molecular imaging. Prizes for work to which he has contributed include 5 best paper awards in peer reviewed journals and 2 book publishing awards for excellence. He is a past vice-president of the International Society for Skin Imaging, a past president of the International Association for Breast Ultrasound, and currently serves on the Council of the British Medical Ultrasound Society.

Paul E. Barbone is Associate Professor of Mechanical Engineering at Boston University. He received Bachelors of Engineering Science and Mechanics from Georgia Institute of Technology in 1986, a Masters of Mechanical Engineering in 1987 from Stanford University, and a PhD in Mechanical Engineering from Stanford University in 1992. He did postdoctoral research at the University of Cambridge (1992-1993) in the Department of Applied Mathematics and Theoretical Physics, served as lecturer at School for Advanced Studies in Industrial and Applied Mathematics, Valenzano, Italy (1992), and was Haddow Fellow and visiting Researcher at the Institute of Cancer Research, Sutton, UK (2000-2001). His research approach is mathematical and theoretical analysis. He works mainly on forward and inverse problems in acoustics and solid mechanics, and sidelines in the analysis of computational formulations. Over the past several years, his research focus has been inverse problems in "Biomechanical Imaging:"

imaging the mechanical properties of tissues in situ and in vivo. His research work has been recognized through prizes from US National Science Foundation, US Office of Naval Research, Acoustical Society of America, and the J. William Fulbright Foundation.

Short Course 2B (1:00 P.M. - 5:00 P.M., Sunday, November 2, 2008):

Course Title: 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.

Course Description: The goal of this course is to introduce the fundamentals and major principles of scanning acoustic microscopy. This course aims to describe advanced acoustic microscopy methods for investigating the microstructure and physical mechanical properties of materials of different nature, from crystalline to biomaterials. The materials discussed during this course cover most aspects of physical principles and applications of high-resolution acoustic microscopy and reflects the modern research status in this field. Included are different topics in physical acoustics, ultrasound, solid state physics, materials characterization and nondestructive evaluation. Special attention will be paid to the principle and application of several types of scanning acoustic microscopes for medical and biological use. Progress in digital measurement and pulse technology has remarkably upgraded the performance of these types of microscopes and this will be described within the course. The sound speed microscope which conventionally used tone-burst and analog phase detector was improved in accuracy, stability and operation ability. It can be used for characterization of tissue sliced and mounted on a slide glass. It can visualize not only acoustic impedance but bulk modulus, attenuation constant and density. The acoustic impedance microscope can visualize the acoustic impedance of a cross section in touch with a plastic substrate by transmitting an acoustic beam from the rear side of the substrate. This type of microscopy has an advantage that the measurement can be performed in vivo, introducing no contamination into the target system. With a wide frequency range up to 400 MHz, both types of microscopes can observe with a special resolution as fine as cell structure. Discussed will be the principle of the sound speed and acoustic microscopes driven by a wide band pulse and several examples of observation of cerebella tissue and cultured cells will be shown. In addition, there will be a presentation of recent results in acoustic microscopy technology development achieved by Honda Electronics (Japan) and Tessonics (Canada). The detail of the hardware and software of those microscopes that are commercially available will be described. The prototype microscopes have been improved a lot after being commercialized. The hardware, software and biomedical applications of these microscopes will be described with a large number of examples as additional illustrations. This course will conclude with an overview of the future perspectives of the general principles of microscopic observation using various ultrasound waves as well as the most promising future applications.

Roman Gr. Maev received his Ph.D. from the Physical Institute of the Russian Academy of Sciences in 1973 and his D.Sc. in acoustic microscopy from the Russian Academy of Sciences, Moscow, in 2002. From 1994 to 1997, he held a post as Director of the Acoustic Microscopy Center of the Russian Academy of Sciences, then established a Centre for Imaging Research and Advanced Material Characterization at the University of Windsor, Canada. He is currently a Full Faculty Professor at the Physics Department of the same University and since 2001 the Chairholder of the NSERC/DaimlerChrysler/Industrial Research Chair in Applied Solid State Physics and Material Characterization. Professor Maev's research interests focus on the fundamentals of condensed matter, physical acoustics, ultrasonic imaging, and acoustic microscopy. He has published numerous books, more than 300 scientific papers, and holds twenty patents.

Naohiro Hozumi was born in Kyoto, Japan on April 2, 1957. He received his B.S., M.S. and Ph.D. degrees in 1981, 1983 and 1990 from Waseda University. He was engaged in Central Research Institute of Electric Power Industry (CRIEPI) from 1983 to 1999. He was an associate professor of Toyohashi University of Technology from 1999 to

2006. Since 2006, he has been a professor of Aichi Institute of Technology. He has been engaged in the research in insulating materials and diagnosis for high voltage equipment, acoustic measurement for biological and medical applications, etc. He was awarded in 1990 and 1999 from IEE of Japan for his outstanding research papers. He is a member of IEEE, IEE of Japan and the Acoustic Society of Japan.

Kazuto Kobayashi was born in Aichi, Japan on June 8, 1952. He received B.S. degree in electrical engineering from Shibaura Institute of Technology, Tokyo, Japan in 1976. He is currently a director of Department of Research and Development at Honda Electronics Co. Ltd. in Toyohashi, Japan. His research activities and interests include medical ultrasound imaging, signal processing and high frequency ultrasound transducers.

Yoshifumi Saijo was born in Yokohama, Japan on July 21, 1962. He received the M.D. and the Ph.D. degrees in 1988 and 1993 from Tohoku University. He is currently a Professor of the Department of Biomedical Imaging at the Graduate School of Biomedical Engineering of Tohoku University. He is concurrent with Institute for International Advanced interdisciplinary Research of Tohoku University and the Department of Cardiovascular Surgery of Tohoku University Hospital. His main research interests are assessment of biomechanics of cells and tissues by high frequency ultrasound and clinical ultrasonic evaluation of cardiovascular system with intravascular ultrasound and transesophageal echocardiography. He was awarded in 1997 for his outstanding research paper in Ultrasound in Medicine and Biology, the official journal of the World Federation of Ultrasound in Medicine and Biology. He is a member of The Japan Society of Ultrasonics in Medicine, Japanese Society of Echocardiography and Japan Circulation Society.

Short Course 3B (1:00 P.M. - 5:00 P.M., Sunday, November 2, 2008):

Course Title: Therapeutic Ultrasound

Lawrence A. Crum, Applied Physics Laboratory, University of Washington, Seattle, WA, USA.

Course Description: The use of ultrasound in medicine is now quite commonplace, especially with the recent introduction of small, portable and relatively inexpensive, hand-held diagnostic imaging devices. Moreover, ultrasound has expanded beyond the imaging realm, with methods and applications extending to novel therapeutic and surgical uses. These applications broadly include: Tissue ablation, acoustocautery, body contouring, site-specific and ultrasound mediated drug activity, extracorporeal lithotripsy, and the enhancement of natural physiological functions such as wound healing and tissue regeneration. A particularly attractive aspect of this technology is that diagnostic and therapeutic systems can be combined to produce totally non-invasive, image-guided therapy. This general lecture will review a number of these exciting new applications of ultrasound and address some of the basic scientific questions and future challenges in developing these methods and technologies for general use in our society. We shall particularly emphasize the use of High Intensity Focused Ultrasound (HIFU) in the treatment of benign and malignant tumors as well as the introduction of acoustic hemostasis, especially in organs which are difficult to treat using conventional medical and surgical techniques.

Lawrence A. Crum is currently Principal Physicist in the Applied Physics Laboratory and Research Professor of Bioengineering and Electrical Engineering at the University of Washington. He has held previous positions at Harvard University, the U. S. Naval Academy and the University of Mississippi, where he was F. A. P. Barnard Distinguished Professor of Physics and Director of the National Center for Physical Acoustics. He has published over 300 articles in professional journals, holds an honorary doctorate from the Universite Libre de Bruxelles, and was recently awarded the Helmholtz-Rayleigh Silver Medal of the Acoustical Society of America. He is Past President of the Acoustical Society of America, the World Council on Ultrasonics, and of the Board of the International Commission for Acoustics.

Short Course 4B (1:00 P.M. - 5:00 P.M., Sunday, November 2, 2008):

Course Title: SAW Modelling Techniques

Victor P. Plessky, GVR Trade SA, Bevaix, Switzerland.

Course Description: This course provides introduction to the design techniques of SAW devices. The course includes and will discuss: a) SAW excitation on piezoelectrics by linear charges, elementary theory of the Interdigital Transducer (IDT) with non-reflecting electrodes, design of typical IDTs on quartz and LiNb, delay lines characteristics and matching issues. b) Single Phase Unidirectional Transducer (SPUDT)- design and applications. c) Propagation of SAW in periodic structures, coupling of modes (COM) model, and simulation with COM model of IDTs and reflectors. d) Modeling of SAW devices based on Green's function software. e) CRF/DMS filter design – examples of device simulation; optimization software f) Synchronous resonators, extraction of COM parameters, and ladder filters design. g) Design of SAW-tags. During the lecture, the attendee will see demonstrations of design processes for typical filter specifications. The COM model will be presented in details sufficient for practical use. The course will conclude with a review of unsolved problems and challenges in the SAW devices design area.

Victor P. Plessky was born near Gomel, Belarus. He now lives and works in Switzerland. Before leaving the USSR in 1991, he worked as a head of laboratory in IRE of Academy of Sciences in Moscow region in Russia. He received his Ph.D. degree from the Moscow Institute of Physics and Technology in 1978, and received his Doctor of Science degree in physics and mathematics from the Institute of Radio-engineering and Electronics (IRE RAS, 1987). He received the Full Professor title from the Russian Government in 1995. For the last 16 years he has worked in Switzerland, first as a Principal Scientist at the company Micronas SA. He now is an owner and CEO of the consulting company GVR Trade SA. His main spheres of interest are theory of microacoustics, surface acoustic waves (SAW) theory and devices, devices for signal filtering and frequency control, SAW sensors and SAW-tags. A few of his works in periodic structures have received wide recognition. Dr. V. Plessky worked as Visiting Professor in HUT (Finland), Freiburg University (Germany), Uppsala University (Sweden), EPFL (Switzerland). He has authored or co-authored over 200 papers and many patents. For many years he serves as TPC member of the IEEE Ultrasonics Symposium.

Short Course 1C (6:00 P.M. - 10:00 P.M., Sunday, November 2, 2008):

Course Title: Ultrasound Contrast Agents: Theory and Experiment

Nico de Jong** and *Michel Versluis**, *Erasmus MC, The Netherlands. **University of Twente, The Netherlands.

Course Description: The course consists of 6 topics: a) An overview will be presented of the (clinical and pre-clinical available) contrast agents, including the properties and characteristics of the gas inside the bubble and the shell surrounding it. b) Models of the behavior of small bubbles in an ultrasound field will be discussed. Simple models based on a one dimensional mass-spring system and more complicated models including gas and shell properties. c) Experimental acoustic methods for UCA will be presented for characterizing the bubbles in suspension, including harmonic and sub-harmonic scattering, absorption and attenuation. Also the influence of ambient pressure, temperature and gas concentration will be discussed. d) Experimental optical and acoustical methods for characterizing individual bubbles. e) Imaging methods for contrast agents, e.g. fundamentals, harmonic, subharmonic and superharmonic and multi-pulse methods like the pulse inversion, power modulation etc. and new methods including chirp excitation and radical modulation. f) Molecular imaging and ultrasound mediated drug delivery: Interaction between mammalian cells and ultrasound in the presence of (targeted) bubbles will be discussed.

Nico de Jong graduated from Delft University of Technology, The Netherlands, in 1978. He got his M.Sc. in the field of pattern recognition. Since 1980, he has been a staff member of the Thoraxcenter of the Erasmus University Medical Center, Rotterdam, The Netherlands. At the Dept. of Biomedical Engineering, he developed linear and phased array ultrasonic probes for medical diagnosis, especially compound and transesophageal transducers. In 1986 his interest in ultrasound applications shifted toward the theoretical and practical background of ultrasound contrast agents. In 1993

he received his Ph.D. for “Acoustic properties of ultrasound contrast agents.” His current interests are 3D (matrix) transducers, bubble behavior and fast framing camera systems. Since 1996 he organizes, together with the cardiologist Dr. Folkert ten Cate, the annual European Symposium on Ultrasound Contrast Imaging, held in Rotterdam and attended by approximately 175 scientists from all over the world. Since 2003 Nico de Jong is part-time professor at the University of Twente.

Michel Versluis graduated in Physics in 1988 at the University of Nijmegen, the Netherlands, with a special interest in Molecular Physics and Astrophysics. Later, he specialized in the application of intense tunable UV lasers for flame diagnostics resulting in a successful defense of his PhD thesis in 1992. Michel Versluis is now a lecturer at the University of Twente, the Netherlands, in the Physics of Fluids group working on the experimental study of bubbles and jets in multiphase flows and granular flows. He also works on the use of microbubbles as a tool for medical diagnosis and therapy. Dr. Versluis teaches various courses in Fluid Mechanics, one of them focusing on the physics of bubbles.

Short Course 2C (6:00 P.M. - 10:00 P.M., Sunday, November 2, 2008):

Course Title: CMUTs: Theory, Technology, and Applications

B.T. Khuri-Yakub, **Ömer Oralkan**, and **Mario Kupnik**, E.L. Ginzton Laboratory, Stanford University, USA.

Course Description: This course provides basic knowledge and understanding of capacitive micromachined ultrasonic transducers (CMUTs) and their applications. After a short background discussion of previous implementations of capacitive ultrasonic transducers, we will provide all the information necessary for the successful design of a CMUT: The simple parallel plate capacitor transducer and its electrical equivalent circuit model will be explained in detail, including the derivation of all essential design equations, and the theoretical device performance limits. An approximate analytical model, that better represents the realizable membrane of a CMUT, will be presented next. By discussing a possible beyond pull-in point operation regime (collapse mode), the motivation for a more sophisticated finite element model is given, and the key techniques of finite element analysis based CMUT designs are explained and demonstrated using brief examples. After explaining these techniques, we compare the two main domains in which a CMUT can operate, i.e. as an airborne device and in immersion. Only for immersed operation the periodic structure of a CMUT array needs to be considered to minimize parasitic cross-talk effects. Two acoustic cross-talk modeling techniques will be discussed for that purpose. Then, the two main CMUT fabrication techniques, i.e. sacrificial release and direct wafer bonding, are explained and compared to each other. Next, we discuss device characterization which will cover optical displacement, electrical input impedance, then acoustical measurements of output pressure, receive sensitivity, impulse response and dynamic range. Then, non-conventional CMUT designs are addressed, such as piston CMUTs, CMUTs with various cell-shapes, and CMUTs with non-uniform cavities. Besides an overview of several CMUT applications, we conclude the course by giving two detailed design examples, one for an airborne device for chemical/biological sensing applications and one for medical imaging applications. A comprehensive copy of the presentation will be made available to the course participants.

Butrus (Pierre) T. Khuri-Yakub is a Professor of Electrical Engineering at Stanford University. He received the BS degree in 1970 from the American University of Beirut, the MS degree in 1972 from Dartmouth College, and the Ph.D. degree in 1975 from Stanford University, all in electrical engineering. He was a Research Associate (1965-1978) then Senior Research Associate (1978-1982) at the E. L. Ginzton Laboratory of Stanford University and was promoted to the rank of Professor of Electrical Engineering in 1982. His current research interests include medical ultrasound imaging and therapy, micromachined ultrasonic transducers, smart bio-fluidic channels, microphones, ultrasonic fluid ejectors, and ultrasonic nondestructive evaluation, imaging and microscopy. He has authored over 400 publications and has been principal inventor or co-inventor of 76 US and International issued patents. He was awarded the Medal of the City of Bordeaux in 1983 for his contributions to Nondestructive Evaluation, the Distinguished Advisor Award of the School of Engineering at Stanford University in 1987, the Distinguished Lecturer

Award of the IEEE UFFC society in 1999, a Stanford University Outstanding Inventor Award in 2004, and a Distinguished Alumnus Award of the School of Engineering of the American University of Beirut in 2005.

Ömer Oralkan received his B.S. degree from Bilkent University, Ankara, Turkey, in 1995, his M.S. degree from Clemson University, Clemson, SC, in 1997, and his Ph.D. degree from Stanford University, Stanford, CA, in 2004, all in electrical engineering. He joined the research staff at the E. L. Ginzton Laboratory of Stanford University in 2004 as an Engineering Research Associate. He was promoted to the rank of Senior Research Engineer in 2007. His past and present research interests include analog and digital circuit design, semiconductor device physics and fabrication, micromachined sensors and actuators, and medical imaging. His current research focuses on the design and implementation of integrated systems for catheter-based medical imaging applications, photoacoustic imaging, and chemical and biological sensor arrays. Dr. Oralkan has authored and co-authored over 80 publications and received the 2002 Outstanding Paper Award of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society. He is a member of the IEEE, SPIE, and AIUM.

Mario Kupnik is a research associate of electrical engineering at Stanford University. He received his Diplom Ingenieur degree in electronics engineering from Graz University of Technology, Austria in 2000. After working as an Analog Design Engineer for Infineon Technologies AG, he received his Ph. D. in physical measurement techniques at the University of Leoben, Austria in 2004, and then completed a two-year PostDoc at the Khuri-Yakub Ultrasonics Group, Stanford University in February 2007. Mario Kupnik has more than five years teaching experience in the field of electrical engineering, two of these years at the graduate level. His present research interests include the design, modeling, fabrication, and application of micromachined sensors and actuators, with a main focus on capacitive micromachined ultrasonic transducers mainly for air-coupled applications. Examples are transit-time gas flowmeters for hot and pulsating gases, ultrasonic nondestructive evaluation using noncontact ultrasound, nonlinear acoustics, and bio/chemical gas sensing applications (electronic nose). He holds several patents relating to analog front-end circuits for contactless smart card systems, ultrasonic transit-time gas flowmeters, and CMUT fabrication techniques. He serves as a technical program committee member of the IEEE Ultrasonics Symposium.

Short Course 3C (6:00 P.M. - 10:00 P.M., Sunday, November 2, 2008):

Course Title: Time Reversal Acoustics

Mathias Fink, École Supérieure de Physique et de Chimie de la Ville de Paris, France.

Course Description An acoustic Time Reversal Mirror (TRM) refocuses an incident acoustic field to the position of the original source regardless of the complexity of the medium between this "probe" source and the TRM. TRM's have now been implemented in a variety of physical scenarios from MHz ultrasonics with order centimeter aperture size to hundreds/thousands of Hz in ocean acoustics with order hundred meter aperture size. Common to this broad range of scales is a remarkable robustness exemplified by observations at all scales that the more complex the medium between the probe source and the TRM, the sharper the focus. The potential for applications in many areas of acoustics is quite high. The objective of this course is to provide the acoustical physics overview and description of the experimental implementation of time reversal and phase conjugate processes as related to ultrasonics and imaging, nondestructive testing, medical ultrasonics, propagation in random media, room acoustics, waveguides, and ocean acoustics.

Mathias Fink is a Professor of Physics at the École Supérieure de Physique et de Chimie de la Ville de Paris (ESPCI) and at Paris 7 University (Denis Diderot), France. In 1990 he founded the laboratory Ondes et Acoustique at ESPCI. In 2002, he was elected at the French Academy of Engineering and in 2003 at the French Academy of Science. His area of research is concerned with the propagation of waves in complex media and the development of numerous instruments based on this basic research. The domain of applicability of these instruments is vast: medical imaging and therapy, non-destructive testing, underwater acoustics, seismology, telecommunications and instrumentation. He has a long history of collaboration with industry. He works with companies in a wide variety of sectors including

medical, aeronautics, underwater acoustics, nuclear, metallurgy, and instrumentation. He pioneered many innovative approaches based on time-reversal mirrors and on the development of a new imaging concept: transient elastography. He has over 40 patents, 300 publications, edited 2 books and supervised 48 PHD students.

Short Course 4C (6:00 P.M. - 10:00 P.M., Sunday, November 2, 2008):

Course Title: Acoustical Near-Field Imaging

Walter Arnold, Fraunhofer Institute for Non-Destructive Testing, Saarbrücken, Germany.

Course Description: Acoustical imaging modes can be classified into near-field, focusing techniques, and holographic techniques. This four hour course discusses, in particular, near-field imaging modes. Examples are ultrasonic force microscopy, atomic force acoustic microscopy, and impedance imaging such as Fokker-bond tests. Their resolution in terms of the antenna size (i.e. probe size) and wavelength employed both at the surface and in the depth of the component to be imaged, are discussed. Besides the underlying contrast mechanism, the course also covers the signal analysis and capture techniques. Finally a comparison is made to classical acoustical imaging based on focusing probes, holographic imaging, and phased arrays principles. The examples are underlined by applications in non-destructive testing.

Walter Arnold has authored and co-authored about 300 publications (200 in Non-Destructive Testing, others in Solid State and Applied Physics and Materials Science), holds 10 patents and has edited two books besides organizing several conferences both on a national and international level. He has guided 140 master theses and 27 PhD theses. Dr. Arnold was the head of the research department at Fraunhofer-Institute for Non-Destructive Testing (IZFP) in Saarbrücken, Germany until his retirement at the end of 2007. Parallel to his position at the IZFP, Dr. Arnold was and still is professor of Materials Science at the Saarland University, Dept. Materials. He is an Honorary Fellow Indian Institute of Non-Destructive Testing, Fellow Institute of Physics, London.

XI. Exhibits

Introduction:

The 2008 IEEE IUS has arranged exhibition booths in the same area as the conference on-site registration, coffee breaks, and poster presentations to attract a maximum traffic to the exhibition booths. To find where the exhibition booths are located and the technical program, please check the [Condensed Program](#) and the [Floor Plan](#). (The detailed technical program of the conference can be found in the [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).) Due to a space constraint, only a limited number of exhibition booths will be available on the "first come, first serve" basis. Therefore, please register as soon as possible. To include your company name in our Advance Program book and Abstract book that will be distributed to each attendee at the conference, prospective exhibitors should have their registration confirmed by **July 15, 2008**. In any case, exhibition registration will not be accepted after the final deadline, **September 15, 2008**.

Notes: In the afternoon of Sunday, November 2, 2008, during the exhibition setup on the [2nd floor foyer](#) of the Beijing International Convention Center (BICC), exhibitors (with exhibitor badges) will be provided a couple of wines by the [Organizing Committee](#) for them to enjoy. In addition, on Wednesday, November 5, from 7:10 a.m. - 8:00 a.m. in the [Conference Room 311C](#) (on the third floor of BICC), exhibitors (with exhibitor badges) will be provided a breakfast. The breakfast would be a good opportunity for exhibitors to provide feedbacks to the [Organizing Committee](#) to help future IEEE IUS to provide better services for exhibitors.

Booth Reservation and Fees:

The official exhibition reservation website provided by the China International Conference Center for Science and Technology ([CICCST](#)) for the 2008 IEEE IUS is given below. Please notice that the exhibition registration is not the same as the "[Conference Registration](#)" that is for the conference technical program, short courses, and guests. CICCST will help exhibitors to get all their needs for the exhibition. All questions regarding exhibition arrangements (such as equipment shipment, Chinese Custom clearance, selection of booths, special requirements, booth reservation fees, [payment methods](#), and [cancellation policy](#), etc.) should be directly addressed to CICCST with the contacts listed in the links below. (Please REFRESH your browser to view an updated page that contains correct links!)

CICCST Exhibit Registration for the 2008 IEEE IUS: <http://cast-meeting.cn/exhibition.htm> (Closed)

CICCST Payment Methods: <http://cast-meeting.cn/payment.html>

CICCST Cancellation Policy: <http://cast-meeting.cn/Cancellation.html>

CICCST Contact Information for Questions: Phone/Fax: 011-86-10-82116226; Email: bjsjcenter@sina.com

Exhibition Schedule:

- The schedule of the exhibition of the 2008 IEEE International Ultrasonics Symposium is as follows:

Monday, November 3, 2008: 8:00 a.m. - 5:00 p.m.

Tuesday, November 4, 2008: 8:00 a.m. - 5:00 p.m.

Wednesday, November 5, 2008: 8:00 a.m. - 12:00 noon.

List of Exhibitors of the 2008 IEEE International Ultrasonics Symposium (IUS), Beijing, China, November 2-5, 2008:

Exhibitors of the 2008 IEEE IUS, Beijing, China, November 2-5, 2008 (A total of 20, including IEEE booth):

- Beijing Zhongxun Sifang Science & Techonolgy CO. LTD: <http://www.bjzsf.net>
- Bossa Nova Technologies: <http://www.leepipe.com> and <http://www.bossanovatech.com/>
- DASEL: <http://www.daselsistemas.com> and <http://ultrasound.info/index.asp>
- Electronics Innovation Ltd: <http://www.eandiltd.com/>
- Ferroperm Piezoceramics A/S: <http://www.ferroperm.net>
- IEEE: <http://www.ieee.org>
- Imasonic: <http://www.imasonic.com> and <http://www.imasonic.fr/>
- Lecoeur Electronique: <http://www.lecoeur-electronique.com/>
- Onda Corporation: <http://www.ondacorp.com/index1.html>
- Polytec GmbH: <http://www.polytec.com/>
- Precision Acoustics Ltd.: <http://www.acoustics.co.uk>
- Prosonic: <http://www.prosonic.co.kr/>
- Shanghai Apex Electronics Technology Co. Ltd: <http://www.apex-ultrasound.com>
- Sonora Medical Systems: <http://www.4sonora.com/>
- Sound Technology Inc.: <http://www.sti-ultrasound.com>
- Tegal Corporation: <http://www.tegal.com/>
- Terason Ultrasound, Division of Teratech: <http://www.terason.com/index.asp>
- Texas Instruments Semiconductor Technologies (Shanghai) Co. Ltd: <http://www.ti.com.cn>
- The Piezo Institute: <http://www.piezoinstitute.com>
- TRS Technologies, Inc.: <http://www.trstechnologies.com>

List of Exhibitors of the Past IEEE International Ultrasonics Symposia (IUS) from 1996-2007:

Exhibitors of the 2007 IEEE IUS, New York, NY, U.S.A. (A total of 24, not including IEEE-UFFC booth):

- aixAACT Systems GmbH <http://www.aixACCT.com>
- BERCLI , Ultrasonic Phased-Array Solutions <http://www.bercli.net>
- Bossanova Tech. <http://www.bossanovatech.com>
- CTS Electronic Components, Inc. <http://www.ctscorp.com>
- EBL Products Inc. <http://www.eblproducts.com>
- Electronics & Innovation Ltd. <http://www.EandIltd.com>
- Ferroperm Piezoceramics A/S <http://www.ferroperm.net>
- Honda Electronics <http://www.honda-el.co.jp>
- Imasonic <http://www.imasonic.com>
- LeCoeur-Electronique <http://www.lecoeurlectronique.com>
- Nihon Dempa Kogyo Co. Ltd. <http://www.ndk.com>
- Onda Corporation <http://www.ondacorp.com>
- Polytec Inc. <http://www.polytec.com>
- Precision Acoustics Ltd. <http://www.acoustics.co.uk>
- Sonora Medical Systems Inc. <http://www.4sonora.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Tegal Corporation <http://www.tegal.com>
- The Piezo Institute <http://www.piezoinstitute.net>
- TRS Technologies Inc. <http://www.trstechnologies.com>
- Ultrasonix Medical Corporation <http://www.ultrasonix.com>
- University of Michigan, Biomedical Engineering <http://www.bme.umich.edu>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>

- Weidlinger Associates Inc. <http://www.wai.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 2006 IEEE IUS, Vancouver, Canada (A total of 17, not including IEEE-UFFC booth):

- Advanced Modular Sputtering <http://www.amsincorp.com>
- CTS Electronic Components Inc. <http://www.ctscorp.com>
- Ferroperm Piezoceramics <http://www.ferroperm-piezo.com>
- H.C. Materials Corporation <http://www.hcmat.com/Crystal/Crystal.htm>
- Imasonic <http://www.imasonic.com>
- Lecoer Electronique <http://www.lecoeur-electronique.com>
- Nihon Dempa Kogyo Co. Ltd. <http://www.ndk.com/en/index.cfm>
- North Crystals America <http://www.northcrystals.com>
- Onda Corporation <http://www.ondacorp.com>
- Precision Acoustics Ltd. <http://www.microfine-piezo.com>
- Sonora Medical Systems, Inc. <http://www.4sonora.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- TRS Technologies <http://www.trsceramics.com>
- Ultrasonics Medical Corporation
- Valpey Fisher Corp. <http://www.valpeyfisher.com>
- VisualSonics <http://www.visualsonics.com>
- W.L. Gore & Associates <http://www.wlgore.com>

Exhibitors of the 2005 IEEE IUS, Rotterdam, The Netherlands (A total of 20, including IEEE-UFFC booth):

- Advanced Modular Sputtering <http://www.amsincorp.com>
- Acqiris SA-Data Conversion Instruments <http://www.acqiris.com>
- Epion Corporation <http://www.epion.com>
- HITACHI Medical Systems <http://www.hitachi-medical-system.de>
- HONDA Electronics Co. Ltd. <http://www.dynamic-bv.nl>
- Ferroperm Piezoceramics <http://www.ferroperm-piezo.com>
- IEEE-UFFC Society <http://www.ieee-uffc.org>
- Imasonic <http://www.imasonic.com>
- Lecoer Electronique <http://www.lecoeur-electronique.com>
- Microfine Materials Technologies Pte Ltd. <http://www.microfine-piezo.com>
- Onda Corporation <http://www.ondacorp.com>
- Precision Acoustics Ltd <http://www.microfine-piezo.com>
- Smart Material GmbH <http://www.smart-material.com>
- Sonora Medical Systems, Inc. <http://www.4sonora.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Trikon Technologies, Inc. <http://www.trikon.com>
- Twist Semiconductor <http://www.twistsemi.com>
- Ultrasons Technologies <http://www.ultrasons-technologies.com>
- Valpey Fisher Corp <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.wlgore.com>

Exhibitors of the 2004 IEEE IUS - A Joint of 3 Conferences, Montréal, Canada (A total of 37, including IEEE-UFFC booth):

- Advanced Modular Sputtering <http://www.amsincorp.com>

- Agilent Technologies <http://www.agilent.com>
- CCI/USA Inc. <http://www.cyberstreet.com/cci/cci.htm>
- EFG International <http://www.efg-berlin.de>
- Ferroperm Piezoceramics <http://www.ferroperm-piezo.com>
- Fotofab <http://www.fotofab.com>
- Frequency Electronics, Inc. <http://www.fregelec.com>
- Fujitsu/Senko <http://www.senko.com>
- IEEE-UFFC Society <http://www.ieee-uffc.org>
- Imasonic <http://www.imasonic.com>
- Kolinker Industrial Equipment <http://www.kolinker.com>
- LanFang CDC Dacheng Elect. Co., Ltd. <http://www.zddc.com.cn>
- Legacy Technologies Inc. <http://www.legacytechnologies.com>
- Locus, Inc. <http://www.locusinc.com>
- Microbridge Technologies <http://www.mbridgetech.com>
- NoFech Electronics Ltd. <http://www.nofech.co.il>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- Polaris Electronics Corp. <http://www.polariselectronics.com>
- Poseiden Scientific Instr. <http://www.psi.com.au>
- Precise Time and Frequency <http://www.ptfinc.com>
- Saunders & Assoc. <http://saunders-assoc.com>
- Sawyer Technical Materials <http://sawyerLLC.com>
- Sensor Technology Ltd <http://sensortech.ca>
- Smart Material Corp. <http://www.smart-material.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Spectra Dynamics, Inc. <http://www.Spectradynamics.com>
- Stavely Sensors, Inc. <http://www.staveleyndt.com>
- Symmetricom <http://www.symmetricom.com>
- Tetrad Corp. <http://www.tetradcorp.com>
- Timing Solutions Corp. <http://www.timing.com>
- Trikon Technologies, Inc. <http://www.trikon.com>
- TRS Technologies <http://www.trsceramics.com>
- Unitek Benchmark <http://www.unitekbenchmark.com>
- Valpey Fisher Corp <http://www.valpeyfisher.com>
- VC America <http://www.vcamerica.com>, <http://www.npcamerica.com>, <http://www.xeco.net>, <http://www.hoffmanmaterials.com/>
- VNISIMS <http://www.vniisims.ru>
- W.L. Gore & Associates <http://www.wlgore.com>

Exhibitors of the 2003 IEEE IUS, Honolulu, Hawaii, U.S.A. (A total of 12, not including IEEE-UFFC booth):

- Advanced Modular Sputtering, Inc. <http://www.amsincorp.com>
- Ferroperm Piezoceramics A/S <http://www.ferroperm-piezo.com>
- Fraunhofer IBMT http://www.ibmt.fhg.de/index_e.html
- Humanscan Co., Ltd. http://www.humanscan.co.kr/e_index/e-index_main.htm
- Imasonic <http://www.imasonic.com>
- JSR Ultrasonics <http://www.jsrultrasonics.com>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Silicon Light Machines <http://www.siliconlight.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Thales Microsonics <http://www.temex-tmx.com>
- TRS Technologies <http://www.trstechnologies.com>

- W.L. Gore & Associates, Inc. <http://www.gore.com>

Exhibitors of the 2002 IEEE IUS, Munich, Germany (A total of 17, including IEEE-UFFC booth):

- EPCOS AG <http://www.epcos.com/>
- Ferroperm Piezoceramics A/S <http://www.ferroperm.net>
- Fomos Technology <http://www.qsl.net/dk1ag/LGS.htm>
- iBule Humanscan Co., Ltd.
- IEEE-UFFC Society <http://www.ieee-uffc.org>
- Imasonic <http://www.imasonic.com>
- JSR Ultrasonics <http://www.jsrultrasonics.com>
- NIH Resource Center for Medical Ultrasonic Transducer Technology <http://bme.usc.edu/UTRC/>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Silicon Light Machines <http://www.siliconlight.com>
- Smart Material Corp. <http://www.smart-material.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Stavely NDT Technologies <http://www.staveleyndt.com>
- Thales Microsonics <http://www.temex-tmx.com>
- TRS Technologies Inc. <http://www.trstechnologies.com>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 2001 IEEE IUS - A Joint Meeting with the World Congress on Ultrasonics, Atlanta, Georgia, U.S.A. (A total of 15, not including IEEE-UFFC booth):

- MATEC Instruments, Inc. <http://www.matec.com/>
- Materials Systems, Inc. <http://www.matsysinc.com/>
- NIH Resource Center for Medical Ultrasonic Transducer Technology <http://bme.usc.edu/UTRC/>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Seacor Piezo Ceramics <http://www.seacorpiezo.com/>
- Smart Material Corp. <http://www.smart-material.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Specialty Engineering Associates <http://www.ultrasonic.com/index2.htm>
- Stavely Sensors, Inc. <http://www.staveleyndt.com>
- Sumitomo USA, Inc. <http://www.sumitomoelectricusa.com/>
- Sunic System, Ltd. <http://www.sunic.co.kr/>
- Thermshield/Goodwill, Laconia, NH
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 2000 IEEE IUS, San Juan, Puerto Rico (A total of 11, not including IEEE-UFFC booth):

- Crystal Technology, Inc. <http://www.crystaltechnology.com/>
- MATEC Instruments, Inc. <http://www.matec.com/>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- Precision Interconnect <http://www.precisionint.com/>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Sensat Corporation, San Jose, CA
- Smart Material Corp. <http://www.smart-material.com>

- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Sumitomo USA, Inc <http://www.sumitomoelectricusa.com/>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 1999 IEEE IUS, Lake Tahoe, Nevada, U.S.A. (A total of 13, not including IEEE-UFFC booth):

- Crystal Technology, Inc. <http://www.crystaltechnology.com/>
- MATEC Instruments, Inc. <http://www.matec.com/>
- Materials Systems, Inc. <http://www.matsysinc.com/>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- RITEC, Inc. <http://www.ritecinc.com/>
- Seacor Piezo Ceramics <http://www.seacorpiezo.com/>
- Sensor Technology Ltd <http://sensortech.ca>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- SPECS, U.S.A., Inc., Sarasota, FL
- Sumitomo USA, Inc <http://www.sumitomoelectricusa.com/>
- Tetrad Corp. <http://www.tetradcorp.com>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 1998 IEEE IUS, Sendai, Miyagi, Japan (A total of 9, not including IEEE-UFFC booth):

- Honda Electronics <http://www.honda-el.co.jp>
- Imaging Supersonic Laboratories Co., Ltd. <http://www1.kcn.ne.jp/~isl/index-e.html>
- Polytec Inc. <http://www.polytec.com>
- RITEC, Inc. <http://www.ritecinc.com/>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Sound Technology, Inc. <http://www.sti-ultrasound.com>
- Sumitomo USA, Inc <http://www.sumitomoelectricusa.com/>
- Toyo Techica, Japan
- Valpey Fisher Corporation <http://www.valpeyfisher.com>

Exhibitors of the 1997 IEEE IUS, Toronto, Canada (A total of 18, including IEEE-UFFC booth):

- Acoustic Imaging, Inc.
- ATS Laboratories, Inc. <http://www.atlabs.com/>
- Boston Piezo-Optics, Inc. <http://www.bostonpiezooptics.com/?D=3>
- Ferroperm Piezoceramics A/S <http://www.ferroperm.net>
- Hoffman Materials, Inc. <http://www.hoffmanmaterials.com/>
- IEEE-UFFC Society <http://www.ieee-uffc.org>
- MATEC Instruments, Inc. <http://www.matec.com/>
- Material Systems, Inc. <http://www.matsysinc.com/>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- Polytec Inc. <http://www.polytec.com>
- RITEC, Inc. <http://www.ritecinc.com/>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Sumitomo USA, Inc <http://www.sumitomoelectricusa.com/>
- Tetrad Corp. <http://www.tetradcorp.com>
- TRS Technologies Inc. <http://www.trstechnologies.com>

- Ultra OPTEC, Inc. <http://www.ultraoptec.com/>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

Exhibitors of the 1996 IEEE IUS, San Antonio, Texas, U.S.A. (A total of 14, including IEEE-UFFC booth):

- Boston Piezo-Optics, Inc. <http://www.bostonpiezooptics.com/?D=3>
- Echo Cath, Inc.
- Ferroperm Piezoceramics A/S <http://www.ferroperm.net>
- Hoffman Materials, Inc. <http://www.hoffmanmaterials.com/>
- IEEE-UFFC Society <http://www.ieee-uffc.org>
- INTEC Research Co. <http://www.intec-research.com/Interactive/>
- MATEC Instruments, Inc. <http://www.matec.com/>
- Material Sciences, Inc. <http://www.matsci.com/phoenix.zhtml?c=118547&p=irol-index>
- NASA Langley Research Center <http://www.nasa.gov/centers/langley/home/index.html>
- Panametrics-NDT <http://www.panametrics-ndt.com>
- RITEC, Inc. <http://www.ritecinc.com/>
- Sawyer Research Products, Inc. <http://www.sawyerresearch.com>
- Valpey Fisher Corporation <http://www.valpeyfisher.com>
- W.L. Gore & Associates <http://www.gore.com>

XII. Corporate Sponsors

The Following Companies Have Donated Money to the 2008 IEEE International Ultrasonics Symposium:

Thank You: Shanghai Apex Electronics Technology Co. Ltd.

<http://www.apex-ultrasound.com>

(Posted July 20, 2008)

(Please click on the icon below to enlarge)



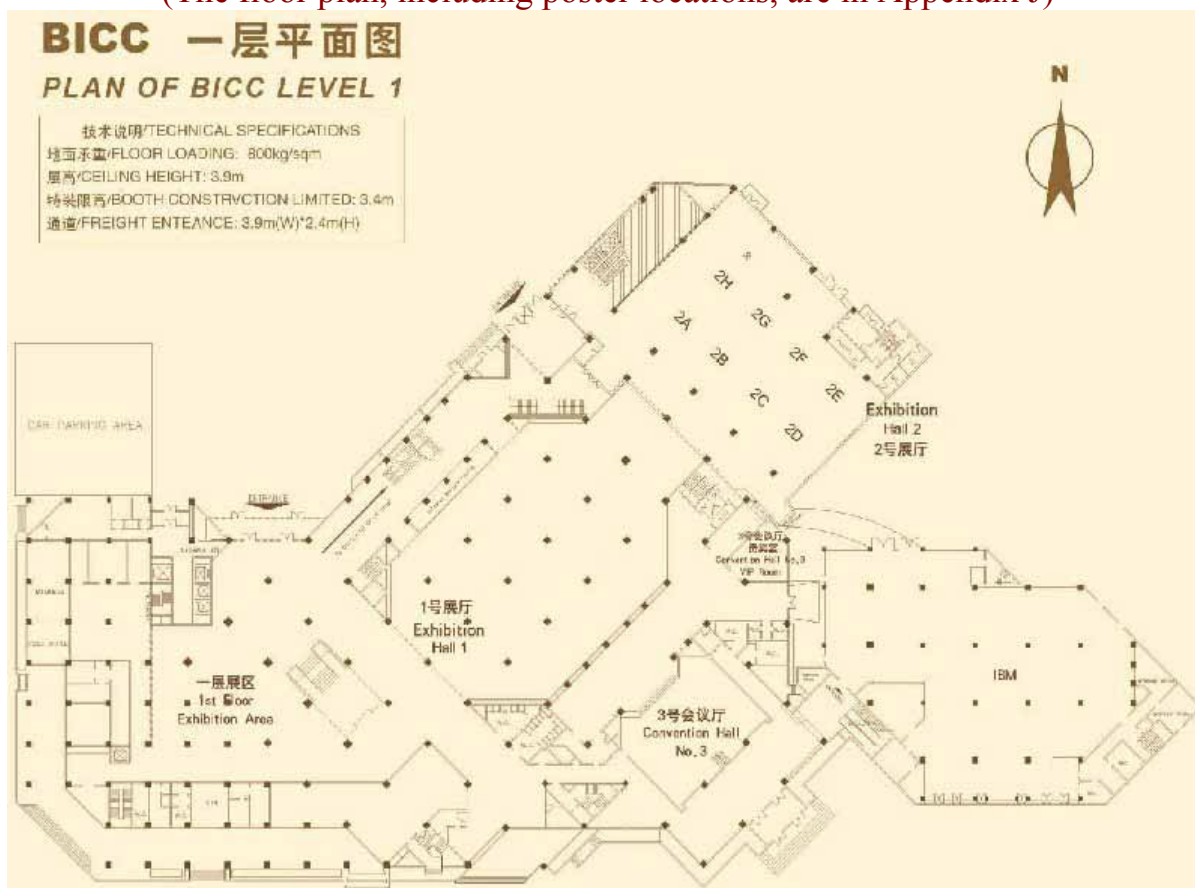
XIII. BICC Floor Plan

Conference Rooms:

A group of rooms of the Beijing International Convention Center (BICC - <http://www.bcg hotel.com/english/index.asp>) have been reserved for the technical program (please see the [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#)) of 2008 IEEE International Ultrasonics Symposium. These rooms will be located from the 1st to the 3rd floor of the BICC. The BICC is about 400 m from the [National Olympic Stadium](#) that will host the opening ceremony of the 2008 Beijing Olympics. The [floor plan](#) of the BICC is shown below (please click on images below to view all floors that contain poster board locations and registration desks).

BICC Floor Plan

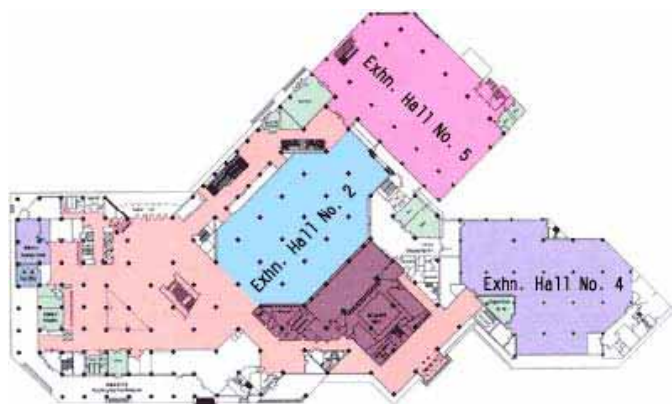
(The floor plan, including poster locations, are in Appendix J)



More Photos of BICC:

The following are some photos of BICC rooms. They were copied from:

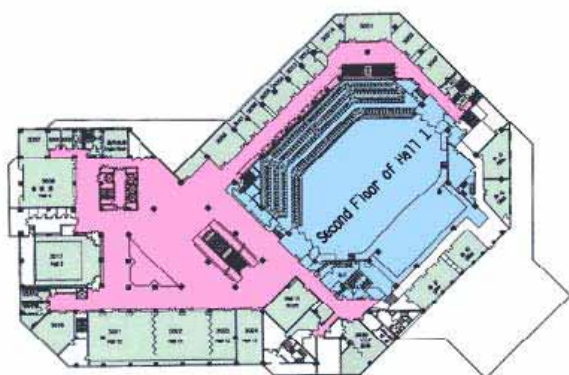
<http://www.bicc.com.cn/english/tsjieshao/pinmian.htm> and <http://www.bicc.com.cn/english/tsjieshao/jieshao.htm>.



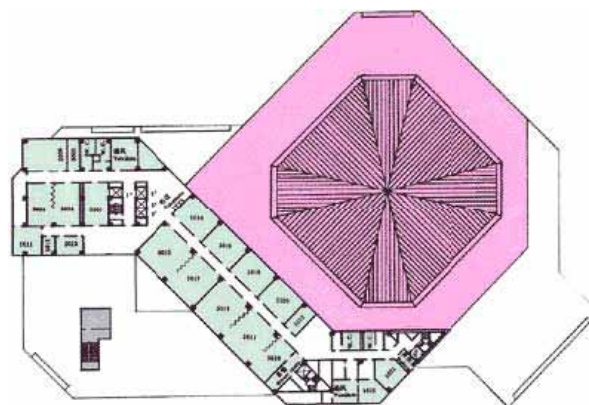
First Floor



Second Floor



Third Floor



Fifth Floor



Convention Hall #1 (old #1)



Convention Hall #3 (old #2)



Conference Room #201A-#201C (old #6-8)



Conference Room #201C (old #6)



Conference Room #201B (old #7)



Conference Room #201A (old #8)



Conference Room #305A-#305C (old #10-12)



Convention Hall #2 (old #17)



Conference Room #307 (old #3)



Conference Room #308 (old #4)



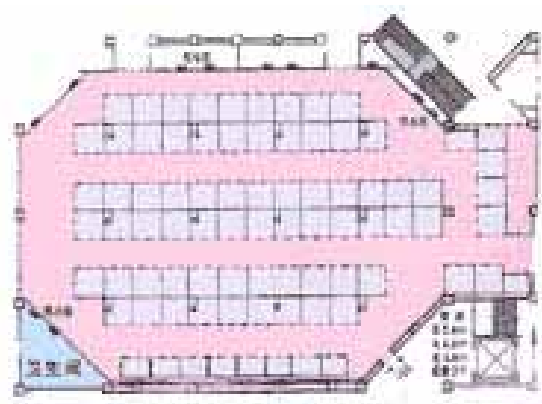
Convention Hall #5A-#5C
Exhibition Hall #2 (old #5)



Convention Hall #5A-#5C - Floor Plan
Exhibition Hall #2 (old #5) - Floor Plan



Exhibition Hall #1 (old #2)



Exhibition Hall #1 (old #2) - Floor Plan



IBM (old Exhibition Hall #4)



IBM (old Exhibition Hall #4) - Floor Plan



Small Meeting Rooms



VIP Room

XIV. Conference Registration

List of Registration Fees:

Registration Type	By September 12, 2008	After September 12, 2008
(1) IEEE Member:	\$600	\$700
(2) Non-IEEE Member:	\$750	\$850
(3) Student (Show Student ID at Conference):	\$150	\$150
(4) Retiree:	\$150	\$150
(5) Life IEEE Member (Show Life Member Card at Conference): **	\$0	\$0
(6) One-Day Registration (without DVD Proceedings): *	\$350	\$350
A Registrant above May Add:		
(1) Additional DVD Proceedings: ***	\$75 / Each	\$75 / Each
(2) <u>Short Courses</u> :	\$150 / Each	\$150 / Each
	\$50 / Each	\$50 / Each
(3) Guests:	(Student/Retiree) \$75 / Each	(Student/Retiree) \$75 / Each

Notes:

- **"" One-Day Registration** includes event tickets for the day of registration only.
- **"" Life Member** is defined by IEEE as at least 65-year old and the age plus years of IEEE membership should be equal or greater than 100. Life members should show their IEEE Life Member card or evidence of Life Membership when getting registration materials.
- **"" A Full Registration** (IEEE Member, Non-IEEE Member, Student, Retiree, or Life IEEE Member) will include one DVD conference proceedings. If you need additional DVD proceedings, you may order them when you register. A printed version of the Proceedings will only be available by ordering directly from the IEEE after the Symposium.
- A **Full Registration** will also include [Monday lunch](#) (November 3, 2008), [Monday evening buffet dinner](#) (November 3, 2008), and [Tuesday evening banquet with traditional Chinese shows](#) (November 4, 2008).
- **Guest Registration** includes three guest breakfasts in addition to the three meals above. Guests are NOT allowed to attend any technical sessions except for the Monday morning plenary session.
- For those who register for **Short Courses Only**, they will NOT get a badge or any conference materials such as books and meal/show tickets, and will NOT be allowed to register for guests or to attend any technical sessions. They can only register on-site on either Saturday, November 1, or Sunday, November 2, 2008.
- As indicated in the table above, **students** are required to show their valid identifications (IDs) to the registration desks to qualify for the student rates and get any registration materials.

Introduction:

The deadline for early conference registration with discount registration fees is ***Tuesday, September 12, 2008*** (midnight, [Pacific Standard Time](#)). After September 12, 2008, attendees with credit cards (Visa, Master, or American Express) can continue to register at higher fees until the conference ends on November 5, 2008. However, registrations via fax or mail will not be accepted after ***Friday, October 17, 2008*** (5:00 p.m., [Eastern Standard Time](#)), and these attendees are requested to register on-site with cash. A full conference registration will include [Monday lunch](#) (November 3, 2008), [Monday evening buffet dinner](#) (November 3, 2008), and [Tuesday evening banquet with traditional Chinese shows](#) (November 4, 2008). Each full conference registrant will also get a bag to hold the advance program and abstract books, and will receive a gift from the 2008 IEEE International Ultrasonics Symposium (IUS). Please pay attention to the "[Notes](#)" above for additional information on the conference registration.

To view our technical program, please visit the links, "[Condensed Program](#)", "[Floor Plan](#)", "[Full Program \(Program Book\)](#)", "[Abstract Book](#)", and "[Meeting Planner](#)".

Registration Cancellation and Refund Policy:

*There will be a **\$25.00 USD** service charge to process refunds for those who have pre-registered but who are unable, for whatever reason, to attend the conference, or those who would like to make changes to the registration resulting in a refund. A letter requesting the refund should state the registrant's name and to whom the refund check should be made payable. No refunds will be given for requests RECEIVED after ***Friday, October 17, 2008*** (5:00 p.m., [Eastern Standard Time](#)). FAX the letter to 2008 IEEE International Ultrasonics Symposium at **(410)559-2217** or send it via email to: 2008IEEEIUS@yesevents.com.*

Online Registration Link:

The official online registration website for the 2008 IEEE IUS is given below. All questions regarding the online registration should be addressed either to the contact below or the contact in the link. (Please REFRESH your browser to view an updated page that contains correct links!)

Important: Because all registration materials will be prearranged sequentially according to your ***Registration Number*** (i.e., the PIN number such as "IEEEIUS-398" in your automatic reply email when you register), to speed up the process for picking up the registration materials, please bring this Number with you to the conference.

Conference Registration of the 2008 IEEE IUS: <https://www.yesevents.com/ius/account.asp> (Closed)

Questions on Registration: Phone: (800)937-8728; Fax: (410)559-2217; Email: 2008IEEEIUS@yesevents.com

PDF Registration Form (via Fax or Mail):

If you do not have a credit card or prefer not to register online, you may download the fillable PDF registration form, fill it out, and then fax or mail it to the address given in the form with your payments. Please notice that registrations via fax or mail will not be accepted after ***Friday, October 17, 2008*** (5:00 p.m., [Eastern Standard Time](#)), and these attendees are requested to register on-site with cash. (Please REFRESH your browser to view an updated page that contains correct links!)

If you do not wish to register [online](#) above, please click on the icon below to download the PDF form:



On-Site Registration (only available from November 1-5, 2008 on the 2nd Floor of BICC):

Date	Beijing Time
Saturday, November 1, 2008:	6:00 p.m. - 9:00 p.m.
Sunday, November 2, 2008:	7:00 a.m. - 7:00 p.m.
Monday, November 3, 2008:	7:00 a.m. - 6:00 p.m.
Tuesday, November 4, 2008:	7:00 a.m. - 5:30 p.m.
Wednesday, November 5, 2008:	7:00 a.m. - 1:00 p.m.

For those register on-site, please follow the procedures below:

- The on-site registration window is from Saturday, November 1, to Wednesday, November 5, 2008, [Beijing Time](#). During this window, the online registration system (see the "[Online Registration Link](#)" above) will allow "Pay Cash On-Site" option, in addition to paying with credit cards.
- During the on-site registration hours shown in the table above, all attendees should register through computers that have dedicated internet connections at the registration desks or computers of their own via the "[Online Registration Link](#)" above to enter their personal data and order items such as short courses and additional DVD proceedings. The registration desks will only collect cash and/or distribute registration materials such as badges and tickets according to your registration items. Please make sure that your personal information entered is accurate because it will be used to send DVD proceedings to you.
- After personal data have been entered online, registration fees can be paid in Chinese Yuans (RMB) at the then prevailing exchange rates to the registration desks, or paid by a Visa, MasterCard, or American Express via on-line kiosks (computers) at the registration desks through the "[Online Registration Link](#)" above.
- Students are required to show their valid identifications (IDs) to the registration desks to qualify for the student rates and get registration materials.
- Life IEEE Members are required to show their Life IEEE Member Cards or evidence of Life Members to the registration desks to get registration materials.
- **Short Courses Only** registrants can only register on-site on either Saturday, November 1, or Sunday, November 2, 2008. These attendees will NOT receive a badge or any conference materials such as books and meal/show tickets, and will NOT be allowed to register for guests or to attend any technical sessions.
- Please check the "[Notes](#)" above for additional registration information.

XV. Conference Hotels

Table of Hotels:

Hotel Names (and Walking Time)	Prices	Deadlines
<u>Continental Grand Hotel</u> (4-star) (Connected to BICC):	Standard: RMB 828 * Suite: RMB 1,188	September 15, 2008
<u>Crowne Plaza Hotel Park View Wuzhou</u> (5-star) (5 minutes):	Standard: RMB 1,500 Luxury: RMB 1,700	October 5, 2008
<u>Grand Skylight Catic Plaza Hotel</u> (4-star) (8 minutes):	Standard: RMB 1,050 Suite: RMB 1,250	October 5, 2008
<u>Beijing Ao You Hotel</u> (3-star) (10 minutes):	Single: RMB 350 Standard: RMB 500 Suite: RMB 800	October 5, 2008
<u>Ya Yun Cun Hotel</u> (3-Star) (12 minutes):	Standard: RMB 380 Suite: RMB 480	October 5, 2008
<u>Celebrity International Grand Hotel</u> (5-Star) (18 minutes):	Standard: RMB 950 Suite: RMB 1,100	October 5, 2008
<u>Beijing Tibet Hotel</u> (3-Star) (18 minutes):	Standard: RMB 650 New Part: RMB 750	October 5, 2008

- "*" "RMB" means Chinese Yuan (CNY). The currency exchange rates will be determined at the time of transactions. To get a rough idea of the exchange rates of Chinese Yuan, one could check at <http://www.x-rates.com/d/CNY/table.html> or <http://www.xe.com/>.
- The prices in the table include *one breakfast* and *all taxes*. Special services such as laundry, room services, and mini-bars are the responsibilities of attendees.
- You could download the [addresses](#) (English-Chinese translation) of the hotels above for taxi drivers.
- Please notice that the tap water in China is not drinkable. Please drink water only from boiled thermal bottles, designated drinking buckets, or bottle water.

Introduction and Hotel Reservation:

The China International Conference Center for Science and Technology ([CICCST](#)) has prepaid and negotiated with a group of hotels listed in the table above for the 2008 IEEE International Ultrasonics Symposium (IUS) (the list is according to the distance from the hotel to the Beijing International Convention Center ([BICC](#)), where our conference will be held). Each hotel may have a different price. All the hotels are reserved on the "first come, first serve" principle. Because each hotel has agreed only to provide a limited number of rooms to the 2008 IEEE IUS, it is advised to book the hotel you would wish to stay as early as possible. (Note: New subway lines, [Lines #8, #10, #5, and Airport Lines](#), which connect BICC with the center of Beijing or the Beijing International Airport (PEK), and have stops in short walking distances from BICC have been built recently for the 2008 Beijing Olympics. Attendees who could not find a suitable room in one of the hotels listed above could find some hotel rooms vacated by the hundreds of thousands of Olympic visitors near the subway stops.)

To obtain the guaranteed hotel room rates listed in the table above, attendees should book the hotels through the hotel reservation website provided by CICCST below, "CICCST Hotel Reservation for the 2008 IEEE IUS". When booking hotels, please follow the procedures below (assuming you do not have password established with CICCST yet):

- Read through the information on the CICCST page regarding the details of hotels via the link "CICCST Hotel Reservation for the 2008 IEEE IUS" below.
- Click the link "here" near the bottom of the CICCST page. (You should also see the "[Payment Methods](#)" and "[Cancellation and Refund](#)" policy of CICCST before coming back and clicking "here".) The next page will be a "Login" page.
- If you have not established an account on the CICCST page through this page, "[Three Local Guest Tours](#)", or "[China Tours](#)" before, please click the button "registration" on the page. The next page will be "Your Account" page. (If you have already had the password through the prior registration via CICCST, simply enter your email address and the password. Then, you could proceed directly to fill out the hotel registration form below.)
- On the "Your Account" page, enter your email address, select your password, and then retype your password. Click the "Registration" button at the bottom of the page when you are done. If successful, a message box, "Login Success!", will popup. Click "OK" will return you to the "Login" page.
- Enter your email address and password you have just selected during the "Registration" process. If successful, a message box, "Login Success!", will popup. Click "OK".
- A form will appear after you have clicked "OK" button above. Provide your personal information and fill out this form. If you also need to book tours via CICCST (please follow the links "[Three Local Guest Tours](#)" and "[China Tours](#)" of the conference web for details), you could also enter information into the form here instead of entering the information in those pages.
- After you have finished with the form, please click "Submit" button near the bottom of the page. Then, a message box, "Success!", will popup after you have successfully submitted the form. An email confirmation of receiving this form will be sent to you within 48 hours (the email will be sent manually to you from CICCST, instead of automatically).
- Then, please send a deposit of \$200 USD for each room you have reserved to CICCST using the "[Payment Methods](#)" and you will receive another notice after CICCST has received your deposit to confirm that you rooms are now guaranteed.

To check the information you have submitted, you could login to the form page again with your email address and password that you have used when you fill out the form (the form may also contain information of your [Beijing local tours](#) and [China tours](#) if you have booked them via CICCST). Please notice that the submission of the form only completes part of the hotel booking process. A deposit of \$200 USD per room should be paid to and received by CICCST before the rooms can be guaranteed (you will receive another notice when your hotel rooms are guaranteed). Please also notice that CICCST does not take any credit cards when you book hotels (only personal checks, certified bank checks, or wire transfers are acceptable). However, all the hotels listed above will accept major credit cards such as Visa/Master cards when you check out. Your \$200 USD deposit will be deducted from your final payments to the hotels. If you experience any problems when booking hotels via the CICCST website, please address your questions directly to CICCST with the contacts listed in the links below (including [payment methods](#) and [cancellation policy](#)). (Please REFRESH your browser to view an updated page that contains correct links below!)

Alternatively, if you could find lower room rates via internet or other sources than those listed in the table above, you could book hotels directly through your own sources. If you would like to pay credit cards to book hotels, you could search internet or find some travel agencies to book hotels through them directly. Please be advised that due to the Beijing Olympics, hotels that normally have a room rate under \$100 USD could be \$1,000 to \$2,000 USD per room/night during the Olympics, and there will be no guarantee that the room rates will return to normal shortly after the Olympics.

Notes: Please notice that sometimes Macintosh (Apple) computers do not work well with the CICCST websites. In addition, [Firefox browser](#) (a free community-based open source software) in Microsoft (MS) Windows might work better than MS Internet Explorer in MS Windows for the CICCST websites. If you experience any technical problems, please do not hesitate to contact CICCST directly.

CICCST Hotel Reservation for the 2008 IEEE IUS: <http://cast-meeting.cn/hotel.htm> (Closed)

CICCST Payment Methods: <http://cast-meeting.cn/payment.html>

CICCST Cancellation Policy: <http://cast-meeting.cn/Cancellation.html>

CICCST Contact Information for Questions: Phone/Fax: 011-86-10-82116226;

Email: bjsjcenter@sina.com

Within 48 hours after submitting the hotel reservation form successfully, you should receive an email confirmation. If not, please contact CICCST via email or phone above.

1. Beijing Continental Grand Hotel (4-Star):

The [Beijing Continental Grand Hotel](#) (This link is for information only, not for reservation!) is **connected** directly to BICC through an indoor walkway and thus would be most convenient to attendees. It is a 4-star hotel with a total capacity of 527 guest rooms and suites (13 floors with 42000 square meters). However, the hotel has only agreed to provide a limited number of standard rooms for the conference attendees at a discount rate for nights between October 31, 2008 and November 8, 2008. The deadline for this discount rate is **September 15, 2008**. After the deadline, the rate will not be guaranteed. Attendees who could not get rooms at this hotel could check other hotels listed in the table above.

The address of the Beijing Continental Grand Hotel or the Beijing International Convention Center (BICC) is as follows:

Beijing Continental Grand Hotel or Beijing International Convention Center (BICC)

No. 8, East Beichen Road

Andingmen Wai

North Sihuan Road

Chaoyang District

Beijing 100101, China

Tel. 011-86-10-84985588 or 011-86-10-84980248 or 011-86-10-84973060

Fax: 011-86-10-84970107 or 011-86-10-84980256

Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)

Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)

Web (Not for Reservation): <http://www.bcg hotel.com/english/index.asp>

2. Crowne Plaza Hotel Park View Wuzhou (5-star):

The Crowne Plaza Hotel Park View Wuzhou is next to the Continental Grand Hotel and is about **5 minutes** walk from BICC. Its address is as follows:

Crowne Plaza Hotel Park View Wuzhou

NO. 8 North Si Huan Zhong Road

Chaoyang District

Beijing 100101, China

Tel. 011-86-10-84982288

Fax: 011-86-10-84992933

Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)

Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)

Web (Not for Reservation):

http://www.ichotelsgroup.com/h/d/cp/1/en/hotel/pegpv?_requestid=395833

3. Grand Skylight Catic Plaza Hotel (4-star):

The Grand Skylight Catic Plaza Hotel is about **8 minutes** walk from BICC. Its address is as follows:

The Grand Skylight Catic Plaza Hotel
No. 18 Beichen East Road
Chaoyang District
Beijing 100101, China
Tel. 011-86-10-64921188
Fax: 011-86-10-64940958 or 011-86-10-64940887
Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)
Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)
Web (Not for Reservation): <http://www.hoteltravel.com/china/beijing/catic.htm>

4. Beijing Ao You Hotel (3-star):

Beijing Ao You Hotel is located in the Asian Games Village sports complex. It is about **10 minutes** walk from BICC. Its address is as follows:

Beijing Ao You Hotel
Entrance 11, Tower B, Huiyuan Apartment, Asian Games Village
Chaoyang District
Beijing 100101, China
Tel. 011-86-10-84105566
Fax: 011-86-10-84105666
Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)
Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)
Web (Not for Reservation): http://www.aoyouhotel.com/introduce_en-us.php

5. Ya Yun Cun Hotel (3-Star):

Ya Yun Cun Hotel is about **12 minutes** walk from BICC. Its address is as follows:

Ya Yun Cun Hotel
No. 8 East Beichen Road, Yayun Village
Chaoyang District
Beijing 100101, China
Tel. 011-86-10-64991199, 011-86-10-64993172, or 011-86-10-64992828
Fax: 64991199
Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)
Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)
Web (Not for Reservation): <http://www.huiyuangongyu.com.cn/eng/jianjie.htm>
Web (Chinese) (Not for Reservation): <http://www.huiyuangongyu.com.cn>

6. Celebrity International Grand Hotel (5-Star):

Celebrity International Grand Hotel is nicely decorated and has comfortable rooms with city-views, in addition to its well-known Aegean Western Restaurant and Minghuang Restaurant. It is about **18 minutes** walk from BICC. Its address is as follows:

Celebrity International Grand Hotel
No. 99 Anli Road

Chaoyang District
Beijing 100101, China
Tel. 011-86-10-58651166 or 011-86-10-64981166
Fax: 011-86-10-64962522
Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)
Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)
Web (Not for Reservation): <http://celebrityintl.warwickhotels.com/>

7. Beijing Tibet Hotel (3-Star):

Beijing Tibet Hotel is about **18 minutes** walk from BICC. Its address is as follows:

Beijing Tibet Hotel
118 Bei Si Huan Dong Road
Chaoyang District
Beijing 100029, China
Tel. 011-86-10-64981133
Fax: 011-86-10-69181904
Link to Hotel Reservation via CICCST: [Please Click Here for Hotel Reservation](#)
Taxi Ride Help: [Handout to Taxi Driver for This Hotel \(English-Chinese Translations\)](#)
Web (Not for Reservation): http://www.beijinghotelchina.com/tibet_hotel/beijing.html

XVI. Shopping and Food near the Beijing International Convention Center (BICC)

Introduction:

Beijing has more than 100 shopping centers. One of them is the North Star Shopping Center that is located near BICC. The map below may help you navigate around BICC.

Some useful links are provided below for your information (note: if the links below become invalid over time, you could find similar pages with Google search for "Beijing shopping and food"):

Beijing Travel Highlights: <http://www.beijingshighlights.com/cityguide/shopping.htm>

Food and Shopping around Beijing: <http://www.icsst07.buct.edu.cn/html/about%20beijing.html>

XVII. Wired and Wireless Internet Access

Internet Access:

Wireless internet will be available to attendees during the conference in the 2nd and 3rd floor foyers of the Beijing International Convention Center (BICC). Tables and chairs will be available on the 2nd floor foyer of BICC for attendees to place their laptops. There will also be a designated internet café that allows attendees to connect Ethernet cables to their computers or use internet-ready conference computers in [Conference Room 303](#) at the third floor of BICC. Since only a few computers are available in the internet café, there may be lines if many people need to use them.

XVIII. Policy on Photography / Recording

Photography or Recording:

To respect the privacy of presenters and minimize interruptions to the conference, photography and sound recording are not allowed in any technical sessions (both oral and poster) except the plenary session.

XIX. Message Boards

Message Boards for Attendees:

There will be message boards for attendees near the registration area. Please check the “[BICC Floor Plan / Location](http://ewh.ieee.org/conf/ius_2008)” link at the conference website or the floor plan at the end of this booklet for details: http://ewh.ieee.org/conf/ius_2008.

Appendix C:

Getting Around

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

2008 IEEE International Ultrasonics Symposium Proceedings

I: Visa Application	C.2
II: Cheaper Air Tickets to China	C.4
III: Taxi and Bus Help	C.7
IV: Beijing City and Subway Maps	C.8

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IEEE Catalog No.: CFP08ULT-PRT (For Softbound); CFP08ULT-DVD (For DVD)

I. Visa Application

Obtaining Visa Application Document (Formal Letter of Invitation):

The following is an official link to obtain a supporting document for those attendees who need a visa to travel to the People's Republic of China. This document will be a formal Letter of Invitation recognized by the Chinese government for the 2008 IEEE International Ultrasonics Symposium. After you have filled out and then submitted the form via the link, a confirmation email will be sent to you within 48 hours (the email will be sent to you manually after receiving your information, not automatically). If your information submitted is complete, the formal Letter of Invitation will be sent to you via fax or regular letter (if it is not urgent) as soon as it is ready. Please be advised that due to the 2008 Beijing [Olympics](#), the Chinese Embassies and Consulates around the world will be busy with the Olympic visitors and your visa applications could be delayed or misplaced if they are applied during this period. In addition, during this period, more documents from you than normal may be required for you to get visas and multiple-entry visas could be eliminated. The Olympics will be from August 8-24, 2008, and the Paralympics will be from September 6-17, 2008.

Thus, it is advised to wait near the end of August 2008 to actually submit your visa applications (or follow advices from travel agencies, Chinese Embassies, or Chinese Consulates). To save time (without having the applications been sent back due to incomplete applications), you could collect all information that is needed to apply for visas before you actually submit the visa applications to the Chinese Embassies or Consulates. Often, obtaining the information, such as your itineraries of travels, hotel confirmations, tour confirmations, round-trip air tickets, renewing passports when necessary, official invitation letters, completed Chinese visa application forms, and your photos is more time consuming than actually getting visas, which could often be expedited within one day if extra fees are paid. Therefore, please check with your travel agencies, local Chinese Embassies, or local Chinese Consulates to find out what documents are needed for your visa applications first. This is especially necessary since new visa regulations may be in place due to the Beijing Olympics.

The link below is provided by the China International Conference Center for Science and Technology ([CICCST](#)) and any questions regarding the visa application document should be directly addressed to CICCST with the contacts listed in the links below. To ensure a timely delivery of the visa application document, the request for the document should be sent via the following link before the deadline, **September 30, 2008**. After the deadline, a timely the document may not be guaranteed. (Please REFRESH your browser to view an updated page that contains correct links!)

Notes: Please notice that sometimes Macintosh (Apple) computers do not work well with the CICCST websites. In addition, [Firefox browser](#) (a free community-based open source software) in Microsoft (MS) Windows might work better than MS Internet Explorer in MS Windows for the CICCST websites. If you experience any technical problems, please do not hesitate to contact CICCST directly.

Visa Document from CICCST for the 2008 IEEE IUS:

<http://cast-meeting.cn/VisaApplicationMethod.asp> (Closed)

CICCST Contact Information for Questions: Phone/Fax: 011-86-10-82116226; Email: bjsjcenter@sina.com

Within 48 hours after submitting required information successfully, you should receive an email confirmation. If not, please contact CICCST via email or phone above.

After getting the official document from CICCST, you could proceed to actually apply for a visa by various methods. One of the easier ways to get a visa is to use a commercial company who will bring your application to the Chinese

Embassy or Consulate so that you do not have to be there in person. The normal processing time for getting a visa is about 5-15 working days depending on the country you are in. Rush services such as one-day service may be available with additional fees. A USA national needs a visa to enter China. Please check the FAQ (Frequently Asked Questions) and contact one of the commercial companies below to get answers for any questions you may have.

To view our technical program, please follow the links, [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

Companies to Assist Nationals of the United States to Get Visa:

There are many companies to assist visa applications with a fee (check www.google.com/ with key words such as "Chinese visa application company"). These companies make visa application easier. Links to some companies are listed below for the convenience of attendees only. The 2008 IEEE IUS committee does not endorse any particular company.

Chinese Visa Office: <http://www.visa-chinese.com/>
ChinaServices.us: <http://www.uschinavisa.com/>
China Visa Service Center: <http://www.mychinavisa.com/>
VISA EXPRESS: <http://www.visaexpress.net/china/index.htm>
China Visa Bureau: <http://www.chinavisabureau.com/>
China Visa Service Center: <http://www.mychinesevisa.com/>
BCV Visa and Passport Service: <http://www.bcvisa.com/>
MD Visa Plus: <http://www.mdvisaplus.com/>
Passport Plus: <http://www.passportsplus.com/>
Chinese Service Center of America: <http://www.visamailservice.com/>
It's Easy Services: <http://www.itseasy.com/>
ApplyChineseVisa: <http://www.applychinesevisa.com/>

Frequently Asked Questions (FAQ) for Visa from the Chinese Embassy in USA:

FAQ: <http://www.china-embassy.org/eng/hzqz/faqv/t170583.htm>

A Link to the Chinese Embassy in USA:

Embassy: <http://www.china-embassy.org/eng/>

Visa Application Form from the Chinese Embassy in USA:

Application Form: <http://www.china-embassy.org/chn/hzqz/zgqz/P020070611087242661716.pdf>

II. Cheaper Air Tickets to China

Beijing Airport Code:

There is only one commercial international airport in Beijing, China, [The Beijing Capital International Airport](#). The airport code is **PEK**, which can be used for you to book flights.

Air Tickets by Consolidators:

There are many companies who provide cheaper air tickets to China. These companies purchase a large number of air tickets from airlines at a substantial volume discount, and thus could offer a much lower rate for people who travel to China as compared to purchasing the tickets from regular travel agencies or directly from the airlines. These discounted rates may be available about 3 months or longer before your travel. However, the cheaper seats could be sold out quickly and thus it is advised to purchase the tickets as soon as the low rates are available (you could check frequently with the agencies to find out when the discounted rates would be available). The following is a list of such companies for the convenience of attendees only. The 2008 IEEE International Ultrasonics Symposium (IUS) does not endorse any specific company.

TravelSuperLink.com: http://www.travelsuperlink.com/china_air/

Consolidator List: http://www.travelsuperlink.com/china_air/airtravel_us_china_agent.htm

Links below connect you to other websites that provide contacts of a large number of travel agencies doing businesses related to the China air travel. The links are provided for your convenience:

Auburn University: http://www.auburn.edu/student_info/peoples_republic_cso/travels.htm

A Collection of Chinese Travel Agencies: <http://www.cs.cmu.edu/~yang/airchina-agencies.html>

Other travel agencies that are specialized in China air travel are listed below. Again, there is no endorsement from the 2008 IEEE IUS for any of the agencies:

Great China Tour: Tel. (800)227-3624

Da Zhong: Tel. (800)872-4882

Yang Sheng (Triple C): Tel. (800)638-9580; (301)279-7650; (301)762-3887(Fax)

Li Zhi: Tel. (800)345-1688

East West Travel Inc. (Korean Company): Tel. (800)233-7603

Liu Fu Travel (Chicago): Tel. (800)886-8580; (800)887-6883; (800)536-2828

Gate Way Travel (Michigan): Tel. (800)536-2828; (810)626-8881; (810)737-5585;

Oceania Tour (in Chicago): Tel. (800)621-4685; (800)786-1688

Yang Ming: Tel. (800)889-0007

Fang Hua (Los Angeles): Tel. (800)371-7888

Gui Bin: Tel. (800)782-6888

Jia Xing: Tel. (800)292-1688

Xi An: Tel. (800)628-8899

Phoenix Travel: Tel. (800)889-0007

Other Links for Cheaper Air Tickets:

FlyChina.com: <http://www.flychina.com/>

Asia Deals: <http://www.bt-store.com/>

Phone Numbers to Airlines (52 in Total):

The following is a list of direct phone numbers to various airlines. They are listed for your convenience only. They were collected long time ago and thus may or may not be accurate any longer:

Aer Lingus: Tel. 800-223-6537
Aerolineas Argentinas: Tel. 800-333-0276
Aeromexico: Tel. 800-237-6639
Air Canada: Tel. 800-776-3000
Air France: Tel. 800-237-2347
Air India: Tel. 800-223-2250
Air Jamaica: Tel. 800-523-5585
Air New Zealand: Tel. 800-262-1234
Alitalia: Tel. 800-223-5730
All Nippon Airways: Tel. 800-235-9262
America West Airlines: Tel. 800-247-5692
American Airlines: Tel. 800-433-7300
Avianca: Tel. 800-284-2622
British Airways: Tel. 800-247-9297
BWIA International: Tel. 800-233-2742
Cathay Pacific Airways: Tel. 800-223-5730
Continental Airlines: Tel. 800-525-0280
Delta Airlines: Tel. 800-221-1212
Dominicana Airlines: Tel. 800-327-7240
Ecuadoriana: Tel. 800-328-2367
Egyptair: Tel. 800-334-6787
El Al Israel Airlines: Tel. 800-223-6700
Finnair: Tel. 800-950-5000
Iberia: Tel. 800-772-4642
Icelandair: Tel. 800-223-5500
Japan Air Lines: Tel. 800-525-3663
KLM: Tel. 800-777-5553
Korean Air: Tel. 800-421-8200
Lufthansa: Tel. 800-645-3880
Malev Hungarian: Tel. 800-223-6884
Mexicana: Tel. 800-531-7921
Midway Airlines: Tel. 800-621-5700
Midwest Express Airlines: Tel. 800-452-2022
Northwest Airlines: Tel. 800-225-2525
Olympic Airways: Tel. 800-223-1226
Philippine Airlines: Tel. 800-435-9725
Polish Air-Lot: Tel. 800-223-0593
Qantas Airways: Tel. 800-227-4500
Royal Jordanian: Tel. 800-223-0470
Sabena: Tel. 800-955-2000
SAS Scandinavian Airlines: Tel. 800-221-2350
Saudia Arabian Airlines: Tel. 800-472-8342
Singapore Airlines: Tel. 800-742-3333
SKY BUS: Tel. 800-755-9287

Southwest Airlines: Tel. 800-531-5601

Swissair: Tel. 800-221-4750

TAP Air Portugal: Tel. 800-221-7370

TWA: Tel. 800-221-2000

United Airlines: Tel. 800-241-6522

USAir: Tel. 800-428-4322

Varig: Tel. 800-468-2744

Virgin Atlantic: Tel. 800-862-8621

III. Taxi and Bus Help

Taxi Fare from Beijing Capital Airport:

Beijing Advisor: <http://www.beijing-visitor.com/index.php?cID=413&pID=993>

China Advisor: http://www.chinaadviser.com/beijing_airport.html

Notes to Taxi Drivers:

The following are notes to taxi drivers in both Chinese and English for the Conference Hotels. Please click on the image of the note of a selected hotel to download a high-resolution PDF file and then show the note to a taxi driver in Beijing (to book any of the following hotels, please follow the link "[Conference Hotels](#)"):



Airport Shuttle Buses and Subways:

There are several shuttle buses operating from the Beijing International Airport to some hotels in Beijing (see the link below). Information on shuttle buses to the Continental Grand Hotel and other conference hotels could also be available in the future.

A subway ([Airport Line](#)) has been built recently for the 2008 Beijing Olympics and is connected to Beijing International Convention Center (BICC) and the conference hotels through other newly built subway [lines #10, #8, and #5](#).

Shuttle Buses: <http://www.elong.net/flights/BjAirportBus.aspx>

Subway Lines (Airport Line, #10, and #8): <http://www.beijing-visitor.com/map-of-beijing-subway.htm>

IV. Beijing City and Subway Maps

Beijing Page:

Beijing Page: <http://www.beijingpage.com/>

Beijing Tour Maps:

China Highlights: <http://www.chinahighlights.com/beijing/map.htm>

Links to PDF Version of Beijing City Maps:

Beijing City Map: <http://www.cityofnanaimo.com/asia/China/Beijing.pdf>

More Beijing City Map: http://www.ezconf.net/docs/ICVES'07/map_of_Beijing.pdf

Beijing Subways:

A few subway lines ([Lines #8, #10, #5, and Airport Lines](#)) have been built for the 2008 Beijing Summer Olympics and Paralympics, which will be held from August 8-24, 2008 and from September 6-17, 2008, respectively. These subways connect BICC (the conference site) to the center of Beijing and will make it easier for attendees to visit the city center without traffic jams and to find cheaper accommodations vacated by the hundreds of thousands of Olympic visitors:

Subway Maps: <http://www.beijing-visitor.com/map-of-beijing-subway.htm>

Additional Subway Maps: <http://www.chinahighlights.com/beijing/map/beijing-subway-map.htm>

More Beijing Maps:

More Maps: <http://www.drben.net/ChinaReport/Beijing/MapsofBeijing/BeijingMapsMenu-All.html>

Appendix D:

Social Programs

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

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IEEE Catalog No.: CFP08ULT-PRT (For Softbound); CFP08ULT-DVD (For DVD)

I. Monday-Noon Lunch (November 3, 2008)

Lunch:

A lunch from 12:00 noon - 2:00 p.m. on Monday, November 3, 2008, will be provided by the 2008 IEEE International Ultrasonics Symposium for all registered conference attendees (including all guests and exhibitors with appropriate badges, but not for those who only register for short courses). The lunch will provide an additional networking opportunity for all conference attendees while they enjoy the Chinese food. The lunch will be held in the elegant theater-style [Convention Hall #1](#) of the Beijing International Convention Center ([BICC](#)). Cash bars will be provided for drinks.

Notes:

- A lunch ticket will be issued and required for the lunch. Thus, it is advised to keep the ticket with your badge to avoid misplacing or losing it.
- To view the technical program of the conference, please follow the links, [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

II. Monday-Evening Buffet Dinner (November 3, 2008)

Buffet Dinner:

A Chinese buffet dinner for social networking will be provided by the 2008 IEEE International Ultrasonics Symposium from 6:30 p.m. - 10:00 p.m. on Monday, November 3, 2008, for all registered conference attendees (including all guests and exhibitors with appropriate badges, but not for those who only register for short courses). The dinner will be held in the elegant theater-style [Convention Hall #1](#) of the Beijing International Convention Center ([BICC](#)). Two free tickets for drinks will be provided for each registrant. Cash bars will be available for additional drinks.

Notes:

- In addition to the drink tickets, a dinner ticket will be issued and required for the dinner. Thus, it is advised to keep the tickets with your badge to avoid misplacing or losing them.
- To view the technical program of the conference, please follow the links, [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

III. Tuesday-Evening Dinner/Shows (November 4, 2008)

Banquet Dinner with Traditional Chinese Shows (also see photos below):

A banquet dinner with Chinese food and traditional Chinese shows will be provided by the 2008 IEEE International Ultrasonics Symposium from 6:30 p.m. - 10:00 p.m. on Tuesday, November 4, 2008, to entertain all registered conference attendees (including all guests and exhibitors with appropriate badges, but not for those who only register for short courses). The shows will expose conference attendees with traditional Chinese culture. The banquet will be held in the elegant theater-style [Convention Hall #1](#) of the Beijing International Convention Center ([BICC](#)). Cash bars will be available for drinks.

Notes:

- The seven [Student Paper Competition Winners](#) will be announced and honored during the banquet and shows.
- A banquet/shows ticket will be issued and required for this event. Thus, it is advised to keep the ticket with your badge to avoid misplacing or losing it.
- To view the technical program of the conference, please follow the links, [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

IV. Coffee Breaks

Coffee Breaks:

There will be coffee breaks for both short courses on Sunday (November 2, 2008) and for the conference from Monday (November 3, 2008) to Wednesday (November 5, 2008). The schedule and locations of the coffee breaks can be found from either the “Condensed Program” link at the conference website: http://ewh.ieee.org/conf/ius_2008, or sheets near the end of this booklet.

V. Guest Breakfasts

Three Guest Breakfasts:

The 2008 IEEE International Ultrasonics Symposium will provide three guest breakfasts (Monday-Wednesday, November 3-5, 2008) for all registered conference guests (admitted with Guest badges). The breakfasts will provide an additional networking opportunity among the guests. Please check the message boards near the conference registration desks to find the room and time of the breakfasts before you go. (The time and room listed in the [Full Program \(Program Book\)](#) and [Abstract Book](#) are tentative and may subject to changes.)

Note:

- More information of the conference can be found in the [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#).

VI. Three Beijing Local Tours for Guests of the Conference

Beijing Local Tours during the Conference:

The China International Conference Center for Science and Technology ([CICCST](#)) has organized three Beijing local tours from November 3-5, 2008 (one for each day), for guests of attendees during the 2008 IEEE International Ultrasonics Symposium (IUS). CICCST will be fully responsible for these tours and thus both the 2008 IEEE IUS and IEEE are not liable to any accidents or any parts of the tours. Individual tours may be cancelled if there are not enough participants for the tours.

When booking tours via CICCST, please follow the procedures below (assuming that you have not had a password established with CICCST yet):

- Read through the information on the CICCST page regarding the details of Beijing local tours via the link "Three Local Conference Tours by CICCST" below.
- Click the link "here" near the bottom of the CICCST page. (You should also see the "[Payment Methods](#)" and "[Cancellation and Refund](#)" policy of CICCST before coming back and clicking "here".) The next page will be a "Login" page.
- If you have not established an account on the CICCST page through this page, "[Conference Hotels](#)", or "[China Tours](#)" before, please click the button "registration" on the page. The next page will be "Your Account" page. (If you have already had the password through the prior registration via CICCST, simply enter your email address and the password. Then, you could proceed directly to fill out the hotel registration form below.)
- On the "Your Account" page, enter your email address, select your password, and then retype your password. Click the "Registration" button at the bottom of the page when you are done. If successful, a message box, "Login Success!", will popup. Click "OK" will return you to the "Login" page.
- Enter your email address and password you have just selected during the "Registration" process. If successful, a message box, "Login Success!", will popup. Click "OK".
- A form will appear after you have clicked "OK" button above. Provide your personal information and fill out this form. If you also need to book hotels and China tours via CICCST (please follow the links "[Conference Hotels](#)" and "[China Tours](#)" of the conference web for details), you could also enter information into the form here instead of entering the information in those pages.
- After you have finished with the form, please click "Submit" button near the bottom of the page. Then, a message box, "Success!", will popup after you have successfully submitted the form. An email confirmation of receiving this form will be sent to you within 48 hours (the email will be sent manually to you from CICCST, instead of automatically).
- Then, please send an appropriate amount of money for your tours to CICCST using the "[Payment Methods](#)" and you will receive another notice after CICCST has received your money to confirm that your tours are now reserved.

To check the information you have submitted, you could login to the form page again with your email address and password that you have used when you fill out the form (the form may also contain information of your [China tours](#) and [hotel reservation](#) if you have booked them via CICCST). Please notice that the submission of the form only completes part of the tour booking process. Correct amount of money (given in the link below) should be paid to and received by CICCST before the tours can be guaranteed (you will receive another notice when your money is received and the tours are confirmed). Please also notice that CICCST does not take any credit cards when you book tours

(only personal checks, certified bank checks, or wire transfers are acceptable). In China, major hotels and large shopping centers accept major credit cards such as Visa and Master cards. Automatic Transaction Machines (ATM) are available in many hotels to obtain cash. In small shops and restaurants, it is advised to use cash.

Alternatively, if you could find lower prices of similar tours via internet or other sources than those listed in the link below, you could book tours directly through your own sources. If you would like to pay credit cards to book tours, you could search internet or find some travel agencies to book tours for you directly.

If you decide to book the Beijing local tours via CICCST, all questions regarding the tours should be directly addressed to CICCST with the contacts listed in the links below (including [payment methods](#) and [cancellation policy](#)). (Please REFRESH your browser to view an updated page that contains correct links!)

Notes: Please notice that sometimes Macintosh (Apple) computers do not work well with the CICCST websites. In addition, [Firefox browser](#) (a free community-based open source software) in Microsoft (MS) Windows might work better than MS Internet Explorer in MS Windows for the CICCST websites. If you experience any technical problems, please do not hesitate to contact CICCST directly.

Three Local Conference Tours by CICCST: <http://cast-meeting.cn/tour.htm> (Closed)

CICCST Payment Methods: <http://cast-meeting.cn/payment.html>

CICCST Cancellation Policy: <http://cast-meeting.cn/Cancellation.html>

CICCST Contact Information for Questions: Phone/Fax: 011-86-10-82116226;

Email: bjsjcenter@sina.com

Within 48 hours after submitting the tour reservation form successfully, you should receive an email confirmation. If not, please contact CICCST via email or phone above.

VII. China Tours

Links to China Tours:

There are many commercial companies who provide China tours. Conference attendees could use the key words such as "China Tours" in Google to find a large list of companies who provide such tours. For the convenience of attendees, some links are provided below. The 2008 IEEE International Ultrasonics Symposium and IEEE do not endorse any particular tours and are not liable for any of the tours.

The China International Conference Center for Science and Technology ([CICCST](#)) has organized some China tours for the conference attendees of the 2008 IEEE International Ultrasonics Symposium. CICCST will be fully responsible for these tours and thus both the 2008 IEEE IUS and IEEE are not liable to any accidents or any parts of the tours. Individual tours may be cancelled if there are not enough participants for the tours.

When booking tours via CICCST, please follow the procedures below (assuming that you have not had a password established with CICCST yet):

- Read through the information on the CICCST page regarding the details of China tours via the link "CICCST Post-Conference Tours" below.
- Click the link "here" near the bottom of the CICCST page. (You should also see the "[Payment Methods](#)" and "[Cancellation and Refund](#)" policy of CICCST before coming back and clicking "here".) The next page will be a "Login" page.
- If you have not established an account on the CICCST page through this page, "[Three Local Guest Tours](#)", or "[Conference Hotels](#)" before, please click the button "registration" on the page. The next page will be "Your Account" page. (If you have already had the password through the prior registration via CICCST, simply enter your email address and the password. Then, you could proceed directly to fill out the hotel registration form below.)
- On the "Your Account" page, enter your email address, select your password, and then retype your password. Click the "Registration" button at the bottom of the page when you are done. If successful, a message box, "Login Success!", will popup. Click "OK" will return you to the "Login" page.
- Enter your email address and password you have just selected during the "Registration" process. If successful, a message box, "Login Success!", will popup. Click "OK".
- A form will appear after you have clicked "OK" button above. Provide your personal information and fill out this form. If you also need to book hotels and Beijing local tours via CICCST (please follow the links "[Conference Hotels](#)" and "[Three Local Guest Tours](#)" of the conference web for details), you could also enter information into the form here instead of entering the information in those pages.
- After you have finished with the form, please click "Submit" button near the bottom of the page. Then, a message box, "Success!", will popup after you have successfully submitted the form. An email confirmation of receiving this form will be sent to you within 48 hours (the email will be sent manually to you from CICCST, instead of automatically).
- Then, please send an appropriate amount of money for your tours to CICCST using the "[Payment Methods](#)" and you will receive another notice after CICCST has received your money to confirm that you tours are now reserved.

To check the information you have submitted, you could login to the form page again with your email address and password that you have used when you fill out the form (the form may also contain information of your [Beijing local tours](#) and [hotel reservation](#) if you have booked them via CICCST). Please notice that the submission of the form only completes part of the tour booking process. Correct amount of money (given in the link below) should be paid to and

received by CICCST before the tours can be guaranteed (you will receive another notice when your money is received and the tours are confirmed). Please also notice that CICCST does not take any credit cards when you book tours (only personal checks, certified bank checks, or wire transfers are acceptable). In China, major hotels and large shopping centers accept major credit cards such as Visa and Master cards. Automatic Transaction Machines (ATM) are available in many hotels to obtain cash. In small shops and restaurants, it is advised to use cash.

Alternatively, if you could find lower prices of similar tours via internet or other sources than those listed in the CICCST link below, you could book tours directly through your own sources. If you would like to pay credit cards to book tours, you could search internet or find some travel agencies to book tours for you directly.

If you decide to book the China tours via CICCST, all questions regarding the tours should be directly addressed to CICCST with the contacts listed in the links below (including [payment methods](#) and [cancellation policy](#)). (Please REFRESH your browser to view an updated page that contains correct links!)

Notes: Please notice that sometimes Macintosh (Apple) computers do not work well with the CICCST websites. In addition, [Firefox browser](#) (a free community-based open source software) in Microsoft (MS) Windows might work better than MS Internet Explorer in MS Windows for the CICCST websites. If you experience any technical problems, please do not hesitate to contact CICCST directly.

CICCST Post-Conference Tours: <http://cast-meeting.cn/posttour.html> (Closed)

CICCST Payment Methods: <http://cast-meeting.cn/payment.html>

CICCST Cancellation Policy: <http://cast-meeting.cn/Cancellation.html>

CICCST Contact Information for Questions: Phone/Fax: 011-86-10-82116226; Email: bjsjcenter@sina.com

Within 48 hours after submitting the tour reservation form successfully, you should receive an email confirmation. If not, please contact CICCST via email or phone above.

Betchart Expeditions Inc. (specialized in natural history expeditions worldwide including Asia):

http://www.betchartexpeditions.com/ius/asia_ius_china.htm

<http://www.betchartexpeditions.com/>

China Tours Company: http://www.chinaspree.com/?gclid=CKvl0I-_8ocCFRWaIgoddVA2gg

VIII. Other Beijing Tours

Links to Other Beijing Tours:

There are many commercial companies who provide Beijing tours. Conference attendees could use the key words such as "Beijing Tours" in Google to find a large list of companies who provide such tours. For the convenience of attendees, some links are provided below. The 2008 IEEE International Ultrasonics Symposium and IEEE do not endorse any particular tours and are not liable for any of the tours.

Beijing Pages: <http://www.beijingpage.com/>

Beijing Tours Starting from Beijing International Convention Center (BICC):

http://www.beijingservice.com/beijingdiscover/conference_internationalconventioncenter.htm

IX. A Mini Photo Gallery of Beijing

Note: To view [photos](#) and [videos](#) taken between November 2-6, 2008, during the 2008 IEEE International Ultrasonics Symposium, please follow the link "[Conference Photos/Videos](#)". To have an overview of the conference through [statistics](#), please visit the link "[Conference Statistics](#)".

Note: Photos (38 in total) below were provided by Dr. Oliver Keitmann-Curdes and edited by the web master.



Forbidden City



Tiananmen



Great Wall



Summer Palace



Temple of Heaven



Ming Tomb



Confucius Temple



Yonghe Gong



Acrobat



Pagoda



Tianning Shi

X. Beijing Olympics

Beijing Olympics Dates:

Olympics: August 8-24, 2008.

Paralympics: September 6-17, 2008.

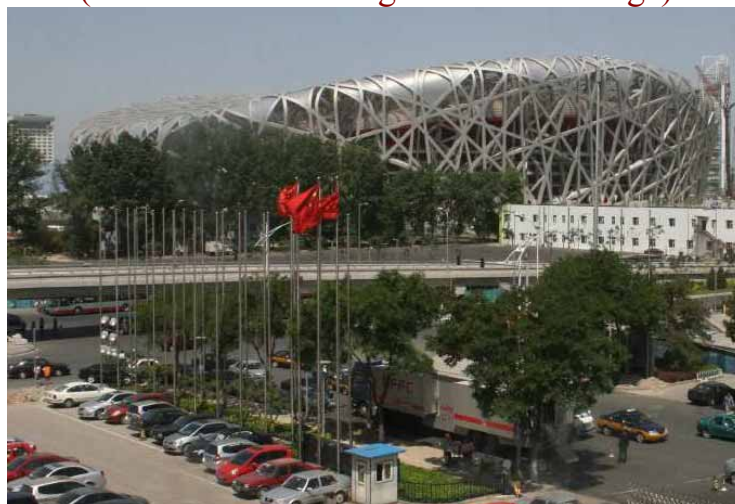
An Official Link to Beijing Olympics:

Beijing Olympics: <http://en.beijing2008.com/>

The National Olympic Stadium:

A View of the National Olympic Stadium that is nearly complete (on May 29, 2008) from the Beijing International Convention Center (BICC) is shown below. The National Olympic Stadium will host the opening ceremony of the 2008 Beijing Olympics and is about 400 m to the northwest of BICC.

National Olympic Stadium
(Please click the image below to enlarge)



XI. Beijing Weather

Links to Beijing Weather:

Beijing Weather: <http://intellicast.com/Local/Weather.aspx?location=CHXX0008>

More Beijing Weather: <http://www.wunderground.com/global/stations/54511.html>

Beijing Weather on Yahoo: http://weather.yahoo.com/climo/CHXX0008_f.html

Beijing Weather and Clothing: <http://www.beijinghighlights.com/tools/weather.htm>

Weather of Major Cities in China: <http://www.travelchinaguide.com/climate/beijing.htm>

Appendix E:

Technical Programs

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

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IEEE Catalog No.: CFP08ULT-PRT (For Softbound); CFP08ULT-DVD (For DVD)

II. Meeting Planner (Opened August 13, 2008)

Reminders for Conference Attendees:

- **Conference Registration:** Please follow the link "[Conference Registration](#)" to register for the conference as soon as possible if you have not done so yet so that we could prepare your registration materials early to avoid long lines and congestions around registration area during the conference.
- **Visa Application:** For attendees who need a visa to enter China should request an official Letter of Invitation via the link "[Visa Application](#)" on the left pane of the conference website: http://ewh.ieee.org/conf/ius_2008/. This letter is necessary when you apply for a Business Visa. The United States nationals and people from many countries need a visa to enter China. Please prepare your visa application documents early since more documents than normal may be required due to the [Beijing Olympics](#). Please notice that the deadline for you to request the Letter of Invitation is: **Tuesday, September 30, 2008**. After the deadline, you may still request the letter but a timely delivery of the letter is not guaranteed.
- **Hotel Reservation:** Rooms of a group of hotels with discount rates have been blocked for attendees of the 2008 IEEE International Ultrasonics Symposium. These hotels are within a walking distance from the conference venue, the Beijing International Convention Center (BICC). Please notice that **Sunday, October 5, 2008** is the absolute deadline after which none of the hotels would guarantee to honor the discount rates. Please follow the link "[Conference Hotels](#)" to book hotels. All hotels are reserved on the "first come, first serve" basis. Attendees who could not find a suitable room in these hotels could take advantage of some rooms vacated by the hundreds of thousands of [Olympic](#) visitors through new subway routes, [Lines #8, #10, #5, and Airport Lines](#), that are built for the Olympics and connect BICC to the Center of Beijing.
- **Technical Program of the Conference:** The [Condensed Program](#), [Full Program \(Program Book\)](#), and [Abstract Book](#) are now available.

Meeting Planner:

The Meeting Planner will help attendees to personalize or individualize their conference programs. The individualized programs can be printed out and brought to the conference. Combined with the [Condensed Program](#) and the [Floor Plan](#), it would make it easier for attendees to navigate through the conference. Attendees could also check the [Full Program \(Program Book\)](#) and/or the [Abstract Book](#) for the entire program. (Please notice that the Floor Plan not only shows the locations of rooms, but also contains a map of the location of each poster with a serial number. The serial number, such as "003", is also contained in the poster label, such as PS003-03, whose meaning is described in detail in the "[Poster Presentation Guide](#)".)

Note: The deadline, **Friday, August 1, 2008**, to resolve with your employers or any other concerned body for any intellectual property rights of the researches in the abstracts (please see "[Abstract Results](#)" for detail) has passed. The Meeting Planner is now available below, allowing an access to the abstracts.

If you have submitted an abstract through our "[Abstract Submission](#)" website, your user name and password created there will be the same for the Meeting Planner. If you forget your user name and password, you could get them by clicking on "I forgot my password". If you do not have user name and password, you can create them through the "New User" button. (Please **REFRESH** your browser now to view an updated page that contains correct links!)

Attendee Meeting Planner: <http://submissions.miracd.com/ius2008/Itinerary> (Closed)

Questions on Meeting Planner: Phone: (866)341-9589; Email: IUS2008@mirasmart.com

III. Abstract Submission

(Absolute Deadline: *Midnight, Sunday, May 4, 2008*, [Pacific Standard Time](#))

Reminders for Conference Attendees:

- **Conference Registration:** Please follow the link "[Conference Registration](#)" to register for the conference as soon as possible if you have not done so yet so that we could prepare your registration materials early to avoid long lines and congestions around registration area during the conference.
- **Visa Application:** For attendees who need a visa to enter China should request an official Letter of Invitation via the link "[Visa Application](#)" on the left pane of the conference website: http://ewh.ieee.org/conf/ius_2008/. This letter is necessary when you apply for a Business Visa. The United States nationals and people from many countries need a visa to enter China. Please prepare your visa application documents early since more documents than normal may be required due to the [Beijing Olympics](#). Please notice that the deadline for you to request the Letter of Invitation is: *Tuesday, September 30, 2008*. After the deadline, you may still request the letter but a timely delivery of the letter is not guaranteed.
- **Hotel Reservation:** Rooms of a group of hotels with discount rates have been blocked for attendees of the 2008 IEEE International Ultrasonics Symposium. These hotels are within a walking distance from the conference venue, the Beijing International Convention Center (BICC). Please notice that *Sunday, October 5, 2008* is the absolute deadline after which none of the hotels would guarantee to honor the discount rates. Please follow the link "[Conference Hotels](#)" to book hotels. All hotels are reserved on the "first come, first serve" basis. Attendees who could not find a suitable room in these hotels could take advantage of some rooms vacated by the hundreds of thousands of [Olympic](#) visitors through new subway routes, [Lines #8, #10, #5, and Airport Lines](#), that are built for the Olympics and connect BICC to the Center of Beijing.
- **Technical Program of the Conference:** The [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#) are now available.

Abstract Rights Transfer to IEEE:

- **IMPORTANT:** When authors submit abstracts via the linked abstract submission site below, it is understood that the authors have resolved their intellectual property right issues with their employers and other parties involved, and have transferred their abstract rights to [IEEE](#). Authors who have concerns on their intellectual property rights of their abstracts could consult their attorneys for legal advices (for example, filing provisional patent applications). The abstracts will be kept confidential until they have been accepted and placed in the conference program. After that time (around the end of June this year), the abstracts may be published both online and in print, or be accessible through the "[Meeting Planner](#)" to help attendees to prepare and/or individualize their conference programs.

Abstract Submission Notes:

- **Abstract Format:** Each abstract has to be broken down into the following four sections when you submit it: (1) Background, Motivation and Objective; (2) Statement of Contribution/Methods; (3) Results; and (4) Discussion and Conclusions. In addition, the total number of characters excluding spaces, title, author names, and affiliations are limited to **2500**.
- **Figures and Tables:** Figures and tables are allowed as long as they are in [Joint Photographic Experts Group](#) (JPEG or .jpg) or [Graphic Interchange Format](#) (GIF or .gif) file format. Each figure or table will count for 500

characters towards the allowed total of 2500 characters. An abstract will also be limited to one page, including all figures.

- **Reducing Size of Figures and Tables:** Since all figures and tables need to fit into one abstract page, they will not be displayed big in size in your submitted abstracts. If your figures and/or tables are big, please reduce their sizes so that both the width and height of these items do not exceed 800 pixels before you upload them during abstract submissions (in Microsoft (MS) Windows, you could place your mouse on the figure file for a few seconds to find both the width and height of the figure in unit of pixels and see if they are over 800 pixels). Smaller figure and table sizes will ensure us to produce an electronic abstract book with a reasonable file size, which would also be helpful in the abstract review process and be convenient for users when they download hundreds of abstracts of the entire conference later. There are multiple ways to reduce size of figures. One way is to use the Microsoft Paint program that comes with your MS Windows to open the file. Then, in the "Image" menu, select "Stretch/Skew" and enter appropriate percentage (<100%) for both the horizontal and vertical dimensions relative to the original sizes. Finally, save your figure with "Save As" from the "File" pull-down menu in a .jpg or .gif format.
- **Production of Figure and Table Files:** There are multiple ways to produce figure and table files in the JPEG or GIF format. The following shows you one way as an example. If you have a Microsoft (MS) Windows Operating system, you could have your figures or tables shown on your computer screen first and then use the "Print Screen" key on your keyboard to capture the entire screen into an invisible "Clip Board" image. Then you could open the Microsoft Paint program that comes with your MS Windows. From the "Edit" menu, you could paste the captured screen image into the program. Select your figures and tables by drawing a box around them using a rectangular selecting tool and then click "Copy To ..." in the "Edit" menu. This will bring up a popup window to allow you save the selection into a ".bmp" file. Open the ".bmp" file first with the Microsoft Paint from the "File" menu, and then select "Save As". When a popup dialog appears, select the file type as "JPEG" or "GIF" to produce the desired file format for your use during the abstract submissions.
- **Student Abstracts:** If you are a student, the conditions to participate in the [Student Paper Competition](#) and request for [Student Travel Support](#) are given in the respective links (please see the "Student" section on the left pane of the web: http://ewh.ieee.org/conf/ius_2008/). If you request for the Student Travel Support,

please make selection "Yes" to the question "Do you require travel support?" during your abstract submissions. Otherwise, your requests will not be considered even though you have provided information such as lab name, advisor's name, IEEE membership number, and graduation date, etc. Please notice that you could not select "Yes" to request for the Student Travel Support unless you are an IEEE UFFC member. If you are not a member, please join [IEEE UFFC](#) by following the link: "[Join IEEE UFFC - Students](#)". A discount membership fee is available for students.

- **Oral or Poster Preference:** For 2008 IEEE International Ultrasonics Symposium, the presentation type that can be selected by authors during the abstract submission is either "Oral" or "Poster". Although the [Technical Program Committee](#) (TPC) will consider the authors' presentation preferences during the abstract evaluation process, the final decision on "Oral" or "Poster" of an abstract will be made by the TPC. Please notice that whether an abstract is accepted or not by the conference will solely depend on the quality of the abstract, not on authors' "Oral" or "Poster" selection.
- **Abstract Evaluations:** Your abstract will be evaluated by the TPC. The decision by the TPC whether an abstract is accepted, rejected, or combined with other abstracts is final. In addition, whether an abstract is selected for an oral or poster presentation by the TPC is also final. As stated in the [Call for Papers](#): "Prospective authors should note that poster sessions provide an alternative format which allows for greater flexibility and expanded audience interaction."
- **Presentation Guides:** If your abstracts are accepted, please check the [Oral Presentation Guide](#) and/or [Poster Presentation Guide](#) as appropriate to prepare your presentations.
- **Missed Emails:** The following abstract submission site also contains a copy of all emails that the site sent to you automatically regarding both your abstract submissions and review results (the review results will be available at the beginning of July 2008). If your email spam filters delete the emails sent to you, you would

always be able to access these emails using your usernames and passwords (see the "Email History" link after you log in). If you have more than one account, please check emails in all of your accounts.

Abstract Submission Link:

IMPORTANT: Please notice that after you have proofread your abstract, you should click the button, "**Submit My Abstract**", and then get an automatic confirmation email containing your abstract ID. If you do not receive such an email, your abstract has not been transmitted to us and you should login to the system to complete your submission. (Please **REFRESH** your browser now to view an updated page that contains correct links!)

The abstract submission deadline has now passed and no new submissions would be possible. However, you could still log in to existing accounts to check emails sent to you. To submit full papers to the conference proceedings, you should submit it via [Paper Submission](#) link after the site is open (please check the table on the Home page for the opening date).

Online Abstract Submission: http://submissions.miracd.com/ius2008_Abstract/ (Closed)

Questions on Abstract Submission: Phone: (866)341-9589; Email: IUS2008@mirasmart.com

IV. Abstract Results (Announced July 2, 2008)

Reminders for Conference Attendees:

- **Conference Registration:** Please follow the link "[Conference Registration](#)" to register for the conference as soon as possible if you have not done so yet so that we could prepare your registration materials early to avoid long lines and congestions around registration area during the conference.
- **Visa Application:** For attendees who need a visa to enter China should request an official Letter of Invitation via the link "[Visa Application](#)" on the left pane of the conference website: http://ewh.ieee.org/conf/ius_2008/. This letter is necessary when you apply for a Business Visa. The United States nationals and people from many countries need a visa to enter China. Please prepare your visa application documents early since more documents than normal may be required due to the [Beijing Olympics](#). Please notice that the deadline for you to request the Letter of Invitation is: **Tuesday, September 30, 2008**. After the deadline, you may still request the letter but a timely delivery of the letter is not guaranteed.
- **Hotel Reservation:** Rooms of a group of hotels with discount rates have been blocked for attendees of the 2008 IEEE International Ultrasonics Symposium. These hotels are within a walking distance from the conference venue, the Beijing International Convention Center (BICC). Please notice that **Sunday, October 5, 2008** is the absolute deadline after which none of the hotels would guarantee to honor the discount rates. Please follow the link "[Conference Hotels](#)" to book hotels. All hotels are reserved on the "first come, first serve" basis. Attendees who could not find a suitable room in these hotels could take advantage of some rooms vacated by the hundreds of thousands of [Olympic](#) visitors through new subway routes, [Lines #8, #10, #5, and Airport Lines](#), that are built for the Olympics and connect BICC to the Center of Beijing.
- **Technical Program of the Conference:** The [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#) are now available.

Abstract Rights Transfer to IEEE:

- **IMPORTANT:** When authors submitted abstracts via the linked abstract submission site below (deadline was May 4, 2008), it was understood that the authors had resolved their intellectual property right issues with their employers and any other parties involved, and have transferred their abstract rights to [IEEE](#). Authors who have concerns on their intellectual property rights of their abstracts should consult their employers and/or attorneys for legal advices.
- Since the abstract statuses (Accept/Reject) have been determined by the [Technical Program Committee](#) (TPC) and the abstracts accepted have been assembled into the final conference program ([Condensed Program](#), [Full Program \(Program Book\)](#), and [Abstract Book](#)), all accepted abstracts will be published both electronically and in print before the conference. The abstracts will also be accessible to attendees before the conference in the "[Meeting Planner](#)" to help attendees to prepare and/or individualize their conference programs, and to encourage more people to attend the conference.

Therefore, please notice that if some authors whose abstracts have been accepted but have not resolved their intellectual property issues regarding their abstracts yet, it is authors' responsibility to get legal advices from their employers, attorneys, and/or other resources to find a solution, such as filing a [provisional patent application](#) or obtaining other low-cost legal protections for researches to be published in their abstracts before **Friday, August 1, 2008**. For any abstracts that are rejected, withdrawn, or not successfully submitted, they will be kept confidential.

Notes on Abstract Results:

- **Oral or Poster Preference:** For 2008 IEEE International Ultrasonics Symposium, the presentation type that could be selected by authors during the abstract submission was either "Oral" or "Poster". Although the [Technical Program Committee](#) (TPC) has considered the authors' presentation preferences during the abstract evaluation process, the final decision on "Oral" or "Poster" of an abstract was made by the TPC. Please notice that whether an abstract is accepted or not by the conference depends solely on the quality of the abstract, not on authors' "Oral" or "Poster" selection.
- **Abstract Evaluations:** Your abstract has been evaluated by the TPC. The decision by the TPC whether an abstract is accepted, rejected, or combined with other abstracts is final. In addition, whether an abstract is selected for an oral or poster presentation by the TPC is also final. As stated in the [Call for Papers](#): "Prospective authors should note that poster sessions provide an alternative format which allows for greater flexibility and expanded audience interaction."
- **Presentation Guides:** If your abstracts are accepted, please check the [Oral Presentation Guide](#) and/or [Poster Presentation Guide](#) as appropriate to prepare your presentations. Please also prepare your proceedings papers (and multimedia contents if there are any) by checking the information in the link "[Paper Submission](#)" when it is available in late September or early October 2008.
- **Reasons for Rejections:** If your abstracts are rejected, the reasons for rejections, if there are any, have been included in the abstract result notification emails to you.
- **Missed Emails:** The following abstract result site also contains a copy of all emails that the site sent to you automatically regarding both your abstract submissions and review results. If your email spam filters delete the emails sent to you, you would always be able to access these emails using your usernames and passwords (see the "Email History" link after you log in). If you have more than one account, please check emails in all of your accounts.

Link to the Abstract Evaluation Results:

Please notice that the following linked site is the same as your "[Abstrac Submission](#)" site when you submitted your abstracts and thus your user names and passwords are the same as those when you submitted the abstracts. Please **REFRESH** your browser now to view an updated page that contains correct links!

Link to the Abstract Evaluation Results: http://submissions.miracd.com/ius2008_Abstract/ (Closed)

If you have trouble for your accounts, please contact: Phone: (866)341-9589; Email:

IUS2008@mirasmart.com

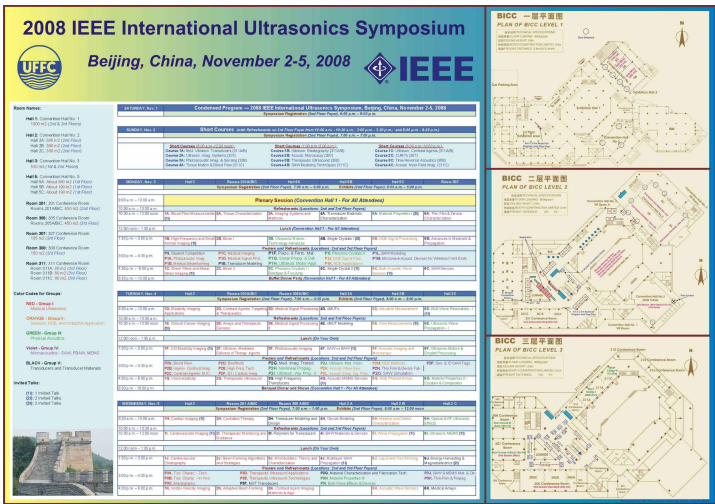
V. Condensed Program

Introduction: The PDF version of the Condensed Program can be viewed or downloaded below by clicking on the image. The Program provides a convenient overview of the entire technical program. Attendees can also get information of the conference program through the [Full Program \(Program Book\)](#) and the [Abstract Book](#), and navigate through the conference using the [Floor Plan](#). (In addition to room locations, the Floor Plan contains a map of the location of each poster. The label of each poster has a serial number for you to locate the poster. Please check the "[Poster Presentation Guide](#)" for the relationship between the serial number and the poster location.) Attendees can also personalize or individualize their conference program using the [Meeting Planner](#).

Condensed Program:
(Posted July 4, 2008)
(Please click on icon below to view PDF version)



Program Sheet:
(Posted July 4, 2008)
(Please click on icon below to view details)



VI. Full Program

Introduction: The PDF version of the Full Program (Program Book) can be viewed or downloaded below by clicking on the image of the book. Attendees can also get information of the conference program through the [Condensed Program](#) and the [Abstract Book](#), and navigate through the conference using the [Floor Plan](#). (In addition to room locations, the Floor Plan contains a map of the location of each poster. The label of each poster has a serial number for you to locate the poster. Please check the "[Poster Presentation Guide](#)" for the relationship between the serial number and the poster location.) Attendees can also personalize or individualize their conference program using the [Meeting Planner](#).

Full Program (Program Book):

(Posted August 17, 2008 and updated December 6, 2008; 10.9 MB)

(Please click on icon below to view or download PDF file)



VII. Abstract Book

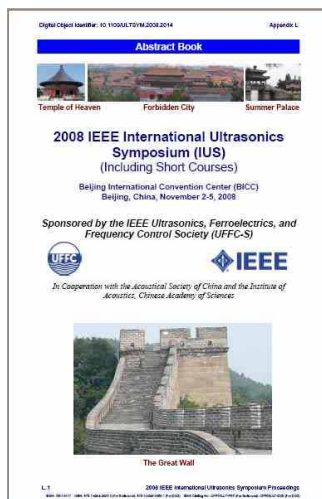
Introduction: The PDF version of the Abstract Book can be viewed or downloaded below by clicking on the image of the book. Attendees can also get information of the conference program through the [Condensed Program](#) and the [Full Program \(Program Book\)](#), and navigate through the conference using the [Floor Plan](#). (In addition to room locations, the Floor Plan contains a map of the location of each poster. The label of each poster has a serial number for you to locate the poster. Please check the "[Poster Presentation Guide](#)" for the relationship between the serial number and the poster location.) Attendees can also personalize or individualize their conference program using the [Meeting Planner](#).

Note: The deadline, *Friday, August 1, 2008*, to resolve with your employers or any other concerned body for any intellectual property rights of the researches in the abstracts (please see "[Abstract Results](#)" for detail) has passed. The Abstract Book is now available below, allowing an access to all accepted abstracts.

Abstract Book (674 Abstracts):

(Posted August 17, 2008 and updated December 6, 2008; 56.0 MB)

(Please click on icon below to view or download PDF file)



VIII. Guidelines for Oral Presentations and Speaker Ready Room

Observing Your Allotted Time:

- The total time allotted to each speaker is 15 minutes. You should plan to speak for 12 minutes and leave 3 minutes for questions.
- Invited speakers have twice this time, 30 minutes in total.
- There is NO EXCUSE for using more than your allotted time. Rehearse your presentation several times; projecting slides and doing anything else you would otherwise expect to do at the meeting. It is a discourtesy to your audience, the [Session Chair](#) and the other speakers to exceed your allotted time. The [Session Chairs](#) are instructed to adhere to the printed schedule for the session. With parallel sessions this is critical to the overall success of the conference.

Organization of Oral Sessions:

- There are six parallel sessions in the conference and an abstract label (in either the Program or Abstract Book) includes information of a session. For example, the abstract label "*1A-1*" has the following meaning: The number "1" before the letter "A" represents the first of the 6 parallel sessions and the session will stay in the same room during the three days of the conference (please notice that the parallel sessions "3-6", which will be in different rooms on the first day, Monday, November 3, 2008, of the conference, are an exception to this rule). The letter "A" (A-Z) is a session label that may indicate a different research topic (each session will be one-and-a-half hour long). The number "1" after the dash is the abstract sequence number within the session. Best efforts are made by the [Technical Program Committee](#) to minimize conflicts of topics among the parallel sections.

Avoiding Technical Problems:

- **Audio and Video Equipment Provided at the Conference:** The conference will be equipped with a computer video projector and a computer that is connected to the projector for each oral presentation room. A manual video switch will be provided to allow several computers to be hooked before each session starts. Normal audio equipment such as microphones will be provided.
- **Software Used in the Conference:** The computers at the Beijing International Convention Center (BICC) are equipped with *Windows XP* as well as *Microsoft Office 2002 (Office Xp)*, which includes the *PowerPoint 2002 (Xp)*. The PowerPoint is the preferred projection software offered at the conference. If the PowerPoint versions in your computers are newer than that used in the conference, please save your presentations in the older version for compatibility. Otherwise, your PowerPoint files may NOT be readable by the conference computers!
- **Avoid Font Problems:** Since your computer may have sophisticated fonts (such as special equation symbols) that the conference computers do not have, it is suggested that when you save your PowerPoint presentations, use "Save As" from your "File" pull-down menu. When a dialog box pops up, click on the "Tools" menu on that dialog box and select "Save Options". Then, check the option "Embed true type fonts". Click "OK" and then click "Save". This allows you to include the fonts you are using in your presentations to minimize the font incompatibility problems. Otherwise, any fonts that are not recognized by the conference computers would be incomprehensible. In addition to the default ".ppt" file format, we suggest that you also save a copy of your presentations in the ".pps" (PowerPoint Show) format for safe (the ".pps" version may also include

some of the special fonts in your presentations). If you have a full version of [Adobe Acrobat](#), we suggest you also save (or print) your presentations into a ".pdf" format and thus you will be able to use the free [Adobe Reader](#) software to present in case nothing else would work.

- **Movies or Videos:** If you have movies or videos, the best way to present them properly is to use your own laptop computers since the conference computers may not have the [Code/Decode](#) (Codec) software that is necessary to play your movies or videos. If you do not wish to bring your own computers, you may have to convert all of your movies and videos to the [Moving Picture Experts Group 1 \(MPEG1\)](#) format to ensure a cross-platform compatibility. In addition, the movie or video files should be placed where the links in your presentations are pointing to. To make it easy, you could place the movies and videos in the same folder as your ".ppt" or ".pps" files when you prepare your presentations and then copy all these files together to a folder or the desktop of the conference computers.
- **USB Thumb Drives:** Nowadays it is convenient to save your PowerPoint presentations in a [USB 2.0](#) thumb drive. The conference computers will be equipped with the [USB 2.0 interfaces](#). However, some USB drives may have security or driver issues that may prevent the drives from being recognized by the conference computers. Please scan your USB drives to remove [viruses](#) if there are any before you bring them to the conference.
- **CD or DVD Backup:** You could also save a copy of your presentation on a [CD-R, CD-RW, DVD+/-R, or DVD+/-RW](#) as a backup in case your USB thumb drives do not work with the conference computers (such as missing drivers or having security protections). When you use CD or DVD media, you should "close" (not be able to add any more files) them to increase the chance that these media could be read by the conference computers. If you use DirectCD to save your presentations, please make sure they are readable in a computer without DirectCD software installed.
- **VGA Adapters:** The conference computer projectors will be equipped only with a standard 15-pin analog [Video Graphic Array \(VGA\)](#) connector. If you decide to bring your laptop computers that do not have a VGA port, it is your responsibility to bring all necessary video output adapters with you so that your computers can be connected to the projectors (your computer vendors usually sell or ship such converters with your computers). In addition, the highest resolution of the computer projectors is [1024 x 768](#) pixels and the resolution of your laptop computers may need to be adjusted properly.
- **110V-220V Voltage Converters:** China uses 220V/50Hz as its power standard. If your laptop computers do not work with 220V/50Hz, it is your responsibility to bring all necessary power converters. In addition, please plug the power adapters into the [power strips](#) so that your laptop computers will not run out of power during your presentations. Please also notice that the plug of the power adapter of your laptop computer may not necessarily fit with the 220V power strip. In this case, [international converters/adaptors](#) ([1](#), [2](#), [3](#)) may be needed for you to use the power strips.
- **Backup Your Laptop Computers:** We suggest you make a copy of your presentations on a USB thumb drive in case your computers are damaged, lost, or cannot be used for whatever reasons.

Things Must Be Done or Notice before Your Presentations:

- The schedule of the [Speaker Ready](#) room ([Conference Room 310](#)) is as follows:

Saturday, November 1: 2:00 p.m. - 5:00 p.m. (for short courses speakers).

Sunday, November 2: 7:30 a.m. - 12:00 noon; 1:00 p.m. - 5:00 p.m.

Monday-Wednesday (November 3-5): 7:30 a.m. - 5:00 p.m.

- One day before your presentation, please go to the Speaker Ready room located at [Conference Room 310](#) at the [3rd floor](#) of the Beijing International Convention Center (BICC) to test the compatibility between your USB thumb drives and the conference computers (check if the drivers for the USB thumb drives could be installed properly), if your CD or DVD will work, if the PowerPoint software of the conference computers is compatible with your presentations, if your movies or videos will play on the conference computer, and/or test the compatibility between your laptop computers and the computer projectors. To avoid last-minute

technical issues of your presentations, please prepare backups of the presentations in different storage media and formats as mentioned above, "Avoiding Technical Problems". Please notice that it is the presenters' responsibility to be familiar with the operations of their own laptop computers.

- On the day of your presentation, please plan to arrive at your session at least fifteen minutes before the start of the session. This will give you time to introduce yourself to the [Session Chair](#), familiarize yourself with the podium controls, the session computers, and other equipment, and verify that your presentation projects correctly. It is distracting and wastes precious time when a speaker fumbles with or misuses the Audio/Visual (A/V) equipment.
- AN ORAL PRESENTATION THAT IS NOT PRESENTED DURING THE SCHEDULED TIME SLOT AND SESSION BY YOURSELF OR BY SOMEONE DESIGNATED BY YOU WILL NOT BE INCLUDED IN THE CONFERENCE PROCEEDINGS, ALTHOUGH YOU MAY HAVE SUBMITTED THE PAPER TO THE CONFERENCE. TALKS SHOULD NOT BE MOVED TO ANY OPEN SLOTS. THIS WILL ALLOW ATTENDEES TO SWITCH AMONG PARALLEL SESSIONS.

Good Practices:

- Show no more than 1 slide per minute of speaking time. This means approximately 10-12 slides MAXIMUM for the 12 minutes of presentation at the symposium. Remember, the last three minutes of the presentation are for questions from the audience. It detracts from the quality of the presentation to flash numerous graphs, equations, or tables on the screen in rapid sequence in an effort to squeeze a presentation into its allotted time.
- Make the letters on your slides BIG ENOUGH. Suggested minimum font is 14.
- Put no more than 12 lines of text or 4 curves on any slide.
- Avoid lengthy tabulations of numerical data and limit equations to those for which the terms can be properly defined.
- When you display a curve, tell the audience what they should be looking for in order to grasp the point you are trying to make. The audience will not have time to figure it out for themselves.
- Use repetition in your talk to ensure the facts are understood by the audience.
- In addition to the body of the talk, present an introduction and a summary or conclusion.
- Include only information or data that can be properly explained in the allotted time.
- Your audience needs time to interpret the data that you present. While you are very familiar with the data displayed, the audience is not. Describe the abscissa, coordinates, units and the legend for each curve.
- Repeat any questions that are posed to you.
- If a question requires a lengthy reply, suggest that you and the person asking the question meet after the presentation. Then take the discussion out of the meeting room.

IX. Guidelines for Poster Presentations

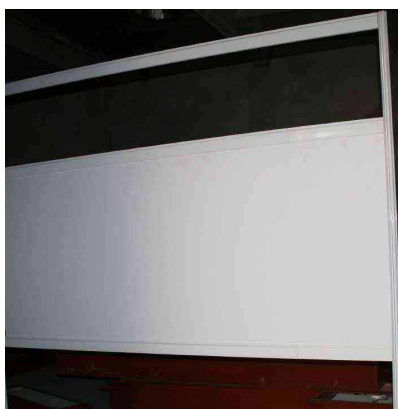
Locate Your Poster Boards:

- Posters are arranged in the foyers of both the 2nd and the 3rd floors of the Beijing International Convention Center (BICC).
- To locate your poster board, understanding the format of the poster label of your abstract is a key. For example, the poster label, "**P2A123-01**", has the following meaning: "PS", "P1", "P2", and "P3" represent the [Student Competition Finalist](#), the first, the second, and the third day posters, respectively; "123" after the letter "A" means the Poster Board Location #123 (each side of a double-sided board is counted as one board location), which you can use to locate the board with the poster map (see the link "[Condensed Program](#)") that will be included in both the [Full Program \(Program Book\)](#) and [Abstract Book](#) (the *poster map* can also be found via the link, "[BICC Floor Plan / Location](#)", and will be shown in the Beijing International Convention Center (BICC)); the letter "A" (A-Z), after "P1", "P2", or "P3" is a session number, which is different for a different research topic; the number "01" after the dash "-" is your poster sequential number within Session A.

Please notice that the 21 posters of the [Student Competition Finalists](#) should be displayed for the duration of the conference (3 days), although they will be defended only on the first day, Monday, November 3, 2008, from 3:00 p.m. - 4:30 p.m.

Important Information for Presenters:

- The area (excluding frames) of the poster board in BICC is about **94 cm (37") high x 190 cm (75") wide**. Your poster should not exceed **165 cm** (about 65") wide to allow poster board location # and labels (such as 050 and P1A050-003) to be placed on a top corner of the board. Two such poster areas may be available for an invited poster presenter (for 2008 IEEE IUS, there will be no invited posters).
- Posters may be mounted using **double-sided thin tape**. (The board is made of laminated three-layer hard wood with white hard plastic coating. The surfaces of the board are **glossy** with a fine texture. See the photos below. Therefore, pins should not be used to avoid damaging the boards.) The tapes will be available from the conference registration desk. Please do not use a foam tape that would be difficult to clean after the conference.



A Sample Poster Board (Click Image to Enlarge!)



Poster Board Surface (Click Image to Enlarge!)

- The designated poster presentation time is from 3:00 p.m. to 4:30 p.m. every day from Monday, November 3, to Wednesday, November 5, 2008. Each poster presenter is required to defend his/her poster during this time for the paper to be included in the conference proceedings.
- There is only one poster session per day and the poster board is available from 8:00 a.m. to 6:30 p.m. Therefore, we recommend that you post your poster around 8:00 a.m. and take it off shortly before 6:30 p.m. This will maximize the exposure of your research results since some attendees, for various reasons, may not have a chance to view your posters during the designated poster presentation time.
- Posters (except for the [Student Competition Finalists](#)) should not be left overnight. The Conference Organizing Committee will not be responsible for lost posters if they are left overnight. Posters left on the boards after 6:30 p.m. will be removed.
- Please plan to arrive at least 15 minutes before the start of your poster session.
- Please introduce yourself to the [Session Chair](#). If you have someone else defending your poster presentation, please have that person introduce himself or herself to the [Session Chair](#). POSTER PRESENTATIONS THAT ARE NOT DEFENDED (MEANING THEY DO NOT HAVE SOMEONE KNOWLEDGEABLE OF THE CONTENT OF THE PRESENTATION PRESENT) WILL NOT BE INCLUDED IN THE CONFERENCE PROCEEDINGS, ALTHOUGH YOU MAY HAVE SUBMITTED THEM TO THE CONFERENCE.

Good Practices:

- Simply posting the pages of your written version of the proceedings paper is NOT an effective Poster Paper Presentation. Posters need to be prepared specifically according to the following for effective presentations.
- The title of your poster paper should be done in block letters which are AT LEAST 8 to 10 cm (3 to 4 inches) high.
- All text must be easily readable from a distance of 1 to 2 meters. Make the lettering at least 1 cm high, smaller lettering will not be legible from a distance of 1 to 2 meters.
- All graphs and charts should be AT LEAST 25 X 30 cm (approximately 8.5 x 11 inches) or larger.
- It is a good idea to sequentially number your materials in the poster. This will indicate to the viewer a logical progression through your Poster Paper Presentation.
- Provide an introduction (outline) and a summary or conclusion for your Poster Paper Presentation.
- Prepare your Poster Paper Presentation carefully so that it can be used as the basis to explain and answer questions from the viewers.
- It is helpful to have copies of the written version of your paper available for those viewers who may want to study specifics of your work in more detail.
- Have your business cards available for those who may wish to contact you at a later date.
- Bring along a tablet of blank paper that you may use for a discussion of technical details relating to your poster paper.

X. Session Chairs

Duties of Session Chairs of ORAL Sessions (a list of [session chairs](#) is available below):

Preparation:

- Arrive at your session approximately 15-20 minutes early and familiarize yourself with the equipment (computer projector, video switch, microphone, pointer, timer, and lighting, etc). The "[Condensed Program](#)" and the "[Floor Plan](#)" may help you to locate the sessions at the Beijing International Convention Center (BICC).
- Introduce yourself to the authors, make sure all authors are present.
- Introduce yourself to the projectionist if there is any. Make sure there is a proper setup of the computer projector with computers.

Handling Session Summary Form:

- Bring with you copies of the [Session Summary Form](#) that can be downloaded by clicking on the link and fill the form out at the end of your session (the number of copies of the form you need depends on the number of sessions you will chair, please click the link [session chairs](#) and search your last name to find how many sessions you will chair). This is very important because any paper that is not presented at the allotted date and time by the presenter or by someone who is knowledgeable on the subject of the presentation and is designated by the presenter will **NOT** be included in the conference Proceedings. If you have forgotten to bring the form with you, please pick up a copy at the conference registration desk.
- Submit the [Session Summary Form](#) to the conference registration desk.

Presentation Timing:

- Contributed Papers: 12 minutes for each presentation, 3 minutes for questions and answers.
- Invited Papers: 25 minute for each presentation, 5 minutes for questions and answers.
- Keep the session on time to allow participants to "session hop" and catch other papers of interest to them.

Notes:

- Make any appropriate announcements such as authors should not distribute preprints during the session.
- Please inform the [Technical Program Chair](#) or the [General Chair](#) for any problems if necessary.

Duties of Session Chairs of POSTER Sessions (a list of [session chairs](#) is available below):

Preparation:

- Arrive at your session approximately 15-20 minutes early and familiarize yourself with the poster area. The poster layout and your session location can be found with the presentation labels in your session. The presentation labels (such as "P1A025-03") are shown in both "[Full Program \(Program Book\)](#)" and "[Abstract Book](#)", and the numbering rule of the presentation labels is described in detail in the "[Guidelines for Poster Presentations](#)". The "[Condensed Program](#)" and the "[Floor Plan](#)" may also help you to locate the sessions at the Beijing International Convention Center (BICC).
- Introduce yourself to the authors, make sure all authors are present.

- Make sure that each author has located and setup his/her poster board. If an author needs poster hardware such as removable double-sided tapes, please direct them to the conference registration desk for help.

Handling Session Summary Form:

- Bring with you copies of the [Session Summary Form](#) that can be downloaded by clicking on the link and fill the form out at the end of your session (the number of copies of the form you need depends on the number of sessions you will chair, please click the link [session chairs](#) and search your last name to find how many sessions you will chair). This is very important because any paper that is not presented at the allotted date and time by the presenter or by someone who is knowledgeable on the subject of the presentation and is designated by the presenter will **NOT** be included in the conference Proceedings. If you have forgotten to bring the form with you, please pick up a copy at the conference registration desk.
- Submit the [Session Summary Form](#) to the conference registration desk.

Notes:

- There is only one poster session per day and the poster boards are available from 8:00 a.m. to 6:30 p.m. Therefore, we recommend that authors post their poster around 8:00 a.m. and take it off shortly before 6:30 p.m. This will maximize the exposure of the research results of the poster since some attendees, for various reasons, may not have a chance to view the posters during the designated poster presentation time. Authors are requested to be present at their posters at the times indicated in the program (for at least 90 minutes).
- Remind the authors that posters (except for the [Student Competition Finalists](#)) should not be left overnight. The Conference Organizing Committee will not be responsible for lost posters if they are left overnight. Posters left on the boards after 6:30 p.m. will be removed.
- Please inform the [Technical Program Chair](#) or the [General Chair](#) for any problems if necessary.

Session Summary Form:

Session Summary Form for Session Chairs:

(Posted July 19, 2008)

(Please click on the icon below to download the PDF version and print it out)

The image shows a thumbnail of a PDF form titled "2008 IEEE International Ultrasonics Symposium (Including Short Courses & Tutorials) November 2-5, 2008". The form is for session chairs and includes fields for session label, chair name, signature, and a list of papers to be presented. It also has a section for comments or suggestions.

List of Session Chairs (Use Search to Find Your Name) - Total 105 Sessions:

Color Codes for Technical Groups:

- **Group I (RED):** Medical Ultrasonics.
- **Group II (ORANGE):** Sensors, NDE & Industrial Applications .
- **Group III (GREEN):** Physical Acoustics .
- **Group IV (VIOLET):** Microacoustics – SAW, FBAR, MEMS .
- **Group V (BLACK):** Transducers & Transducer Materials .

Oral Sessions:

Monday, November 3, 2008 (10:30 a.m. - 12:00 noon):

- **1A. Blood Flow Measurements:** Jorgen Arendt Jensen, *Technical University of Denmark, Denmark.*
- **2A. Tissue Characterization:** Shin-ichiro Umemura, *Tohoku University, Sendai, Japan.*
- **3A. Imaging Systems and Methods:** Jeff Ketterling, *Riverside Research Institute, NY, USA.*
- **4A. Transducer Materials Characterization:** Yongrae Roh, *Kyungpook National University, South Korea.*
- **5A. Material Properties I:** Jan Brown, *JB Consulting, MA, USA.*
- **6A. Thin Film & Device Characterization:** Jidong Dai, *RF Monolithics, USA.*

Monday, November 3, 2008 (1:30 p.m. - 3:00 p.m.):

- **1B. High-Frequency and Small Animal Imaging:** Yoshifumi Saijo, *Tohoku University, Sendai, Japan.*
- **2B. Bone I:** Keith Wear, *US Food and Drug Administration, USA.*
- **3B. Ultrasonic Motors - Technology Advances:** Ji Wang, *Ningbo University, Ningbo, China.*
- **4B. Single Crystals I:** Sandy Cochran, *Univ. of Dundee, UK.*
- **5B. NDE Signal Processing:** Ramazan Demirli, *Canfield Scientific, USA.*
- **6B. Advances in Materials & Propagation:** Jan H. Kuypers, *University of California Berkeley, CA, USA.*

Monday, November 3, 2008 (4:30 p.m. - 6:00 p.m.):

- **1C. Shear Wave and Shear Strain Imaging:** James Greenleaf, *Mayo Clinic College of Medicine, MN, USA.*
- **2C. Bone II:** Pascal Laugier, *Université Paris VI, Paris, France.*
- **3C. Phononic Crystals I - Bandgap & Focusing:** Yook-Kong Yong, *Rutgers University, NJ, USA.*
- **4C. Single Crystal II:** Clyde Oakley, *W. L. Gore, USA.*
- **5C. Bulk Acoustic Wave Sensors:** John Vetelino, *University of Maine, ME, USA*
- **6C. SAW Devices:** Victor Plessky, *GVR Trade SA, Switzerland.*

Tuesday, November 4, 2008 (8:30 a.m. - 10:00 a.m.):

- **1D. Elasticity Imaging: Applications:** Matthew O'Donnell, *University of Washington, WA, USA.*
- **2D. Contrast Agents: Targeting and Therapeutics:** Tom Matula, *Applied Physics Laboratory, University of Washington, USA .*
- **3D. Medical Signal Processing I:** Ton van der Steen, *Erasmus Medical Center, The Netherlands.*
- **4D. cMUTs:** Omer Oralkan, *Stanford University, CA, USA.*
- **5D. Industrial Measurement:** Jiromaru Tsujino, *Kanagawa University, Yokohama, Japan.*
- **6D. Bulk Wave Resonators - I:** John D. Larson III, *Avago Technology, USA.*

Tuesday, November 4, 2008 (10:30 a.m. - 12:00 noon):

- **1E. Clinical Cancer Imaging:** Stuart Foster, *University of Toronto, Canada.*
- **2E. Arrays and Therapeutic Devices:** Shin Umemura, *Kyoto University, Japan.*

- **3E. Medical Signal Processing II:** Pai-Chi Li, *National Taiwan University, Taipei, Taiwan.*
- **4E. cMUT Modeling:** Paul Reynolds, *Weidlinger Associates Inc, USA.*
- **5E. Flow Measurements:** Edward Haeggstorm, *Institute of Physics, University of Helsinki, Finland.*
- **6E. Ultrasonic Wave Propagation - I:** Georg Mansfeld, *Russian Academy of Sciences, Russia.*

Tuesday, November 4, 2008 (1:30 p.m. - 3:00 p.m.):

- **1F. 3-D Elasticity Imaging:** Anne Hall, *General Electric Medical Systems, USA.*
- **2F. Ultrasound Mediated Delivery of Therapeutic Agents:** Larry Crum, *University of Washington, WA, USA.*
- **3F. Photoacoustic Imaging:** Georg Schmitz, *Ruhr-Universität Bochum, Germany.*
- **4F. SAW vs BAW:** Rich Ruby, *Avago Technologies, USA.*
- **5F. Acoustic Imaging and Microscopy:** David Greve, *Carnegie Mellon, USA.*
- **6F. Ultrasonic Motors & Droplet Processing:** Takefumi Kanda, *Okayama University, Japan.*

Tuesday, November 4, 2008 (4:30 p.m. - 6:00 p.m.):

- **1G. Visco-elasticity:** Mickael Tanter, *Laboratoire Ondes et Acoustique, ESPCI, France.*
- **2G. Therapeutic Ultrasound:** Kullervo Hynynen, *University of Toronto, Canada.*
- **3G. High Frequency Transducers:** Jian Yuan, *Boston Scientific, USA.*
- **4G. Acoustic MEMS Devices:** Daniel Hauden, *FEMTO-ST Besancon, France.*
- **5G. NDE Phased Arrays:** Robert Addison, *Rockwell Science Center, USA.*
- **6G. Material Properties II - Crystals & Composites:** Bikash Sinha, *Schlumberger Inc., USA.*

Wednesday, November 5, 2008 (8:30 a.m. - 10:00 a.m.):

- **1H. Cardiac Imaging:** James Miller, *Washington University in Saint Louis, USA.*
- **2H. Cavitation Therapy:** Zhen Xu, *University of Michigan, MI, USA.*
- **3H. Transducer Modeling and Design:** Reinhard Lerch, *Univ Erlangen, Germany*
- **4H. Device Modelling :** Clemens Ruppel, *EPCOS AG, Germany.*
- **5H. Material and Defect Characterization:** Roman Maev, *University of Windsor, Canada.*
- **6H. Optical & RF Ultrasonic Effects:** Robert Aigner, *TriQuint Semiconductor, USA*

Wednesday, November 5, 2008 (10:30 a.m. - 12:00 noon):

- **1I. Cardiovascular Imaging:** Chris de Korte, *Radboud University Nijmegen Medical Centre, The Netherlands.*
- **2I. Therapeutic Monitoring and Guidance:** Emad Ebbini, *University of Minnesota, USA.*
- **3I. Polymers for Transducers:** K Shung, *University of Southern California, CA, USA.*
- **4I. BAW Materials & Devices:** Gernot Fattinger, *SAWTEK, USA.*
- **5I. Wave Propagation:** Massimo Pappalardo, *University di Roma TRE, Italy.*
- **6I. Ultrasonic MEMS:** Amit Lal, *Cornell University, USA.*

Wednesday, November 5, 2008 (1:30 p.m. - 3:00 p.m.):

- **1J. Cardiovascular Elastography:** Jan D'hooge, *Catholic University of Leuven, Belgium.*
- **2J. Beam Forming Algorithms and Strategies:** Kai Thomenius, *GE Global Research, USA.*
- **3J. Microbubbles: Theory and Characterization:** Ayache Bouakaz, *INSERM, Université Tours, France.*
- **4J. Multilayer SAW Propagation:** Mauricio Pereira da Cunha, *University of Maine, ME, USA.*
- **5J. Liquid and Gas Sensing:** Mario Kupnik, *Stanford University, USA.*
- **6J. Energy Harvesting & Magnetoelectrics:** Mark Schafer, *Sonic Tech, PA, USA.*

Wednesday, November 5, 2008 (4:30 p.m. - 6:00 p.m.):

- **1K. Vector Velocity Imaging:** Hans Torp, *Norwegian University of Science and Technology, Norway.*
- **2K. Adaptive Beam Forming:** Sverre Holm, *University of Oslo, Norway.*
- **3K. Contrast Agent Imaging: Methods and Applications:** Nico de Jong, *Erasmus Medical Centre and University of Twente, The Netherlands.*
- **5K. Acoustic Wave Sensors:** Pierre Khuri-Yakub, *Stanford University, CA, USA.*
- **6K. Medical Arrays:** L. Scott Smith, *GE Global Research, USA.*

Poster Sessions:**Monday, November 3, 2008 (3:00 p.m. - 4:30 p.m.):**

- **P1A. Photoacoustic Imaging:** Xueding Wang, *University of Michigan, MI, USA.*
- **P1B. Medical Beamforming:** John Hossack, *University of Virginia, USA.*
- **P1C. Medical Imaging:** Olivier Basset, *CREATIS, Université Lyon I, France.*
- **P1D. Medical Signal Processing:** Svetoslav Nikolov, *Technical University of Denmark, Denmark.*
- **P1E. Transducer Modelling:** Levent Degertekin, *Georgia Institute of Technology, GA, USA.*
- **P1F. Piezoelectric & Ferroelectric Materials:** Levent Degertekin, *Georgia Institute of Technology, GA, USA.*
- **P1G. Sonar Propagation and Detection:** Valery Proklov, *IRE RAS, Russia.*
- **P1H. Ultrasonic Motor Applications:** Takefumi Kanda, *Okayama University, Japan.*
- **P1I. Phononic Crystals II:** Jan Brown, *JB Consulting, MA, USA.*
- **P1J. NDE Signal Processing:** Jafar Saniie, *Illinois Institute of Technology, IL, USA.*
- **P1K. NDE Applications:** Larry Kessler, *Sonoscan, USA.*
- **P1L. BAW Modeling:** Alexandre Volatier, *TriQuint Semiconductor, USA.*
- **P1M. Microwave Acoustic Devices for Wireless Front Ends:** Robert Weigel, *University of Erlangen, Germany.*

Tuesday, November 4, 2008 (3:00 p.m. - 4:30 p.m.):

- **P2A. Blood Flow:** Jorgen Arendt Jensen, *Technical University of Denmark, Denmark.*
- **P2B. Improvements in Contrast Imaging:** Piero Tortoli, *Università degli Studi di Firenze, Italy.*
- **P2C. Contrast Agents: Modeling and Characterization:** Jonathan Mamou, *Riverside Research Institute, New York, USA.*
- **P2D. Bioeffects:** Chris Hall, *Philips Research North America, USA.*
- **P2E. High Frequency Techniques:** K Shung, *University of Southern California, CA, USA.*
- **P2F. 3D / Cardiac Imaging:** Hiroshi Kanai, *Tohoku University, Japan.*
- **P2G. Medical Imaging Transducers:** K Shung, *University of Southern California, CA, USA.*
- **P2H. Nonlinear Propagation:** Valery Proklov, *IRE RAS, Russia.*
- **P2I. Ultrasonic Wave Propagation II:** Ji Wang, *Ningbo University, Ningbo, China.*
- **P2J. Ultrasonic Motor Innovations:** Oliver Kripfgans, *University of Michigan, MI, USA.*
- **P2K. Acoustic Wave Sensors:** Jacqueline Hines, *Applied Sensor Research and Development Corporation, USA.*
- **P2L. Acoustical Imaging and Signal Processing:** Erdal Oruklu, *Illinois Institute of Technology, IL, USA.*
- **P2M. NDE Methods:** Kentaro Nakamura, *Tokyo Institute of Technology, Japan.*
- **P2N. Thin Film & Device Fabrication:** Bob Potter, *Vectron International, USA.*
- **P2O. SAW Simulation :** Ken-ya Hashimoto, *Chiba University, Japan.*
- **P2P. Sensors and ID-Tags Based on SAW:** Victor Plessky, *GVR Trade SA, Switzerland.*

Wednesday, November 5, 2008 (3:00 p.m. - 4:30 p.m.):

- **P3A. Tissue Characterization - Technologies:** James Miller, *Washington University in Saint Louis, USA*.
- **P3B. Tissue Characterization - In Vivo Applications:** Stanislav Emelianov, *University of Texas at Austin, TX, USA*.
- **P3C. Elastography:** Chris de Korte, *Radboud University Nijmegen Medical Centre, The Netherlands*.
- **P3D. Therapeutic Ultrasound Applications:** Greg Clement, *Brigham & Women's Hospital, USA*.
- **P3E. Therapeutic Ultrasound Technologies:** Nobuki Kudo, *Hokkaido University, Japan*.
- **P3F. MUT Transducers:** Qifa Zhou, *University of Southern California, CA, USA*.
- **P3G. Material Characterisation and Fabrication Technology:** Qifa Zhou, *University of Southern California, CA, USA*.
- **P3H. Material Properties III:** Yook-Kong Yong, *Rutgers University, NJ, USA*.
- **P3I. Bulk Wave Effects & Devices:** John D. Larson III, *Avago Technologies, USA*.
- **P3J. BAW & MEMS Materials & Devices:** Dave Feld, *Avago Technologies, USA*.
- **P3K. Thin-Film & Propagation:** Don Malocha, *University of Central Florida, FL, USA*.

XI. Browsing Full Papers via Oral and Poster Sessions

Browse Papers According to Sessions:

NOTES:

- Full papers and abstracts of papers can be browsed from the sessions below by clicking on the "[Full Paper PDF]" and "[Abstract]" (please notice that abstracts will be opened in a separate browser window) links respectively. If a paper has multimedia contents, there will be a link "[Multimedia_zipped]" also for you to download the entire multimedia package (for multimedia package or any ZIP files in other pages, please right click your mouse and then select "Save Target As" or "Save Link As" to save the file to your hard drive because the contents of the ZIP files are not designed to work on the screen - please see "[Paper Submission](#)" for details of multimedia ZIP files). The layout of this page is similar to the "[Full Program](#)" of the 2008 IEEE International Ultrasonics Symposium (IUS) and the "[Session Chairs](#)" page with features such as [color codes](#) to help users to have a faster overview of the papers of interest.
- Please notice that not all the authors whose abstracts are accepted for presentation in the 2008 IEEE IUS have submitted the full papers and some papers have been removed from the conference proceedings for various reasons (please see the "[Conference Statistics](#)" for the number of papers that are not included in the conference proceedings). For missing papers, you could visit the "[Abstract Book](#)" using the session information in the "[Condensed Program](#)" or the "[Full Program](#)".
- For other browsing and searching options (such as "Paper Title", "Author", "Session Title", "Presentation Type", "Key Words", and "Session Label") across all the papers in the DVD, please go back to the "[Mira indexSmart](#) [DVD Menu](#)" (this link is only available when you have the actual DVD)" and then check the browsing and searching frame near its top if it is not already shown on top of this page.
- If there are any discrepancies between the author list (or paper title) in this web page and the actual PDF paper (this may happen if authors have forgotten to update the paper titles or author lists during the online proceedings "[Paper Submission](#)" process), the correct order and list of authors (or paper title) should be according to the PDF paper. The symbols after an author name "*" and "***" represent presenting author and corresponding author indicated by submitting authors in the paper or abstract submission system.

XII. Conference Proceedings

Context-Sensitive Multimedia DVD Proceedings:

This will be the first year that the IEEE International Ultrasonics Symposium produces context-sensitive multimedia DVD proceedings, based on the experiences of our context-sensitive multimedia IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC). To prepare and submit proceedings papers, please follow the link, "Paper Submission" from the conference website at: http://ewh.ieee.org/conf/ius_2008.

Print Copy of the Proceedings:

The 2008 IEEE International Ultrasonics Symposium will not provide a print version of the conference proceedings. Attendees who need such proceedings can order them directly from IEEE after the DVD proceedings are produced.

Proceedings Paper Submission Deadline:

The submission deadline of proceedings papers is ***Midnight, Sunday, November 2, 2008, Beijing Time***, which is earlier than that of previous years. Please notice that the deadline is firm to ensure a timely publication of the proceedings.

XIII. Conference Proceedings Paper Submission

(Absolute Deadline: *Midnight, Sunday, November 2, 2008, [Beijing Time](#)*)

Reminders for Conference Attendees:

- **Conference Registration:** Please follow the link "[Conference Registration](#)" to register for the conference as soon as possible if you have not done so yet so that we could prepare your registration materials early to avoid long lines and congestions around registration area during the conference.
- **Visa Application:** For attendees who need a visa to enter China should request an official Letter of Invitation via the link "[Visa Application](#)" on the left pane of the conference website: http://ewh.ieee.org/conf/ius_2008/. This letter is necessary when you apply for a Business Visa. The United States nationals and people from many countries need a visa to enter China. Please prepare your visa application documents early since more documents than normal may be required due to the [Beijing Olympics](#). Please notice that the deadline for you to request the Letter of Invitation is: *Tuesday, September 30, 2008*. After the deadline, you may still request the letter but a timely delivery of the letter is not guaranteed.
- **Hotel Reservation:** Rooms of a group of hotels with discount rates have been blocked for attendees of the 2008 IEEE International Ultrasonics Symposium. These hotels are within a walking distance from the conference venue, the Beijing International Convention Center (BICC). Please notice that *Sunday, October 5, 2008* is the absolute deadline after which none of the hotels would guarantee to honor the discount rates. Please follow the link "[Conference Hotels](#)" to book hotels. All hotels are reserved on the "first come, first serve" basis. Attendees who could not find a suitable room in these hotels could take advantage of some rooms vacated by the hundreds of thousands of [Olympic](#) visitors through new subway routes, [Lines #8, #10, #5, and Airport Lines](#), that are built for the Olympics and connect BICC to the Center of Beijing.
- **Technical Program of the Conference:** The [Condensed Program](#), [Full Program \(Program Book\)](#), [Abstract Book](#), and [Meeting Planner](#) are now available.

Reminders for Presenting Authors:

- **Presenting Authors:** Presenting authors should follow closely the "[Oral Presentation Guide](#)" and "[Poster Presentation Guide](#)" as appropriate.

Introduction:

- **PDF-Based Context-Sensitive Multimedia Proceedings:** The 2008 IEEE International Ultrasonics Symposium (IUS) will publish PDF-based, context-sensitive multimedia conference proceedings based on the multimedia technique we developed for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control ([TUFFC](#)). The multimedia addition to the conference proceedings will be the first in the 46-year history of the [IEEE International Ultrasonics Symposia](#). To accommodate an anticipated increase of contents due to multimedia, DVD, instead of CD proceedings will be produced. The DVD will be designed to not only allow the traditional PDF-based navigation, but also take advantage of the power of the web-based browsing and searching capability of the indexSMART™ technology of [Mira Digital Publishing](#), St. Louis, MO, USA. The DVD will also be placed on the website of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society after the conference for IEEE UFFC members to access. On web, all the multimedia contents will be accessible online directly via links embedded in PDF papers (similar to accessing the [multimedia contents](#) (5.6 MB) of a [paper](#) published in IEEE [TUFFC](#)). The papers will also be included in [IEEE Xplore](#). The print version of the proceedings will only be available through IEEE directly after the conference.

If you plan to include multimedia contents in your papers, in addition to reading all the instructions in this introduction section, please also follow the additional instructions that are in a later part of this page via the link "[Multimedia Paper Submission Steps](#)". The following is a list of resources for you to prepare multimedia papers (these resources can also be accessed through the section "[Instructions, Templates, and Multimedia Examples](#)"):

- **IEEE Paper Template:** An "[IEEE Paper Template](#)" in Microsoft Word format is for you to prepare papers.
- **Information for Authors:** The "[Information for Authors](#)" contains useful information for you to prepare conference proceedings papers.
- **Metadata Spreadsheet:** A Microsoft Excel "[Metadata Spreadsheet](#)" is for you to provide metadata required by IEEE for each multimedia file. The spreadsheet has been populated with metadata that correspond to the multimedia files of the multimedia example below to show you the meaning of each field in the spreadsheet.
- **A Multimedia Example:** "[A Multimedia Example](#)" with all of its [multimedia contents](#) (12.9 MB) is useful for authors to prepare multimedia papers and control the sizes of multimedia files. Please click on each icon in the example to play multimedia contents.
- **A Multimedia Example in Microsoft Word Format:** A Microsoft Word [document](#) of the multimedia example above is provided to help authors to add multimedia icons to their papers and make Hyper links to the icons.
- **A Published Multimedia Paper:** A [paper](#) published in IEEE [TUFFC](#) along with its [multimedia contents](#) (5.6 MB) are used as an example.
- **Multimedia Icons:** Multimedia [icons](#) are needed when you prepare multimedia papers.
- **A Multimedia Paper (2J-5) Prepared for the 2008 IEEE IUS:** A multimedia paper ([PDF version](#)) prepared for the 2008 IEEE IUS Proceedings along with its multimedia contents ([ZIP package](#)) (3.8 MB) and word processing file ([MS Word version](#)) are for your reference.
- **A Multimedia Paper (2J-5) Published in the 2008 IEEE IUS Proceedings:** A multimedia paper ([PDF version](#)) published in the 2008 IEEE IUS Proceedings along with its multimedia contents ([ZIP package](#)) (2.6 MB) are for your reference.
- **Who Should Submit Paper(s):** Only authors whose abstracts are accepted for presentation at the 2008 IEEE International Ultrasonics Symposium are requested to submit proceedings papers through the website in the "Paper Submission Link" below (please notice that the online submission is the only way you could submit your papers). The software system will automatically exclude any abstracts that are not in either the "[Program Book](#)" or "[Abstract Book](#)".
- **Paper Submission Deadline:** The deadline for paper submission is *Midnight, Sunday, November 2, 2008, Beijing time*. THIS IS A FIXED DEADLINE. Please notice that this is the day BEFORE the Symposium starts and is a new requirement this year. No papers will be accepted for publication after this deadline (after the deadline, the website may automatically be turned off, making it impossible for you to submit a paper). The rigid deadline and moving the deadline to the beginning of the conference for 2008 IEEE IUS are a decision by related UFFC Committees. This would allow us to get the Symposium Proceedings to you in a timely manner as well as address concerns that there could be a potential that some works of others presented during the conference could be included in someone else's papers if the deadline were after the conference as in the previous years. *Warnings* of this change of deadline have also been included in the acceptance letters to authors on July 2, 2008 as well as given to authors in several other occasions, including this website (please see at the top of this page "Absolute Deadline" and the main page of the conference at "http://ewh.ieee.org/conf/ius_2008/"). (For 2008 IEEE IUS, a few papers have missed the deadline - please see the "Papers Not in Proceedings" chart in the "[Conference Statistics](#)" for detail.)
- **Eligibility for Publication of Submitted Papers:** Because the conference proceedings are a record of the conference papers that are actually presented, to have your papers included (published) in the proceedings, you must present AND defend the papers during the conference by yourself or by someone who is designated by you and is knowledgeable on the subjects of the papers. Please follow closely the "[Oral Presentation Guide](#)" and "[Poster Presentation Guide](#)" as appropriate, and introduce yourself to your "[Session Chairs](#)" so

that your presentations will be counted to allow the inclusion of your papers in the proceedings. This requirement is also in the abstract acceptance letters sent to you on July 2, 2008. (For 2008 IEEE IUS, there are a few papers that are submitted but not presented - please see the "Papers Not in Proceedings" chart in the "[Conference Statistics](#)" for detail.)

- **Acceptable Word Processing Files:** Your paper should have a paper size of 11 inches by 8.5 inches (11" by 8.5" - US Letter) so that print proceedings can be produced properly. Please notice that no page numbers should be entered in your paper since the page numbers will be assigned according to the print proceedings. Please also pay attention to the margins in the template since conference specific texts such as the Digital Object Identifier (DOI) and IEEE copyright notice will be inserted into the header and footer areas. The side margins will allow your papers to be bounded properly in the print proceedings.
 - **Microsoft Word Files:** The file type preferred for the 2008 IEEE International Ultrasonics Symposium is Microsoft (MS) Word. This is to allow a most efficient way to process your papers by our paper submission software. In addition, if you use MS Word 2007 or newer version, please make sure that you use the "Compatibility Mode" of Word 2007 so that your paper could be properly handled by our software, which is ".doc" file type based, instead of ".docx". To enter the "Compatibility Mode", you could open Word 2007 and then click the Office Button (icon) on the upper-left corner of the Word. Then, select "Save As" -> "Word 97-2003 Document" -> enter filename -> click "Save". Compose your paper this way will allow you to produce a paper that is compatible with earlier versions of MS Word. (If you use Word 2007 to open a file that was produced by an earlier version of MS Word, such as the "[IEEE Paper Template](#)", the Word 2007 will automatically enter the "Compatibility Mode" that you can verify by looking for the "Compatibility Mode" indicator on the top bar near the file name in Word 2007.) When you finish the paper in the "Compatibility Mode" in Word 2007, please save it as the "Word 97-2003 Document" format as mentioned above with the "Save As" option. (Please see the "[IEEE Paper Template](#)" below for tools for your paper preparation.)
 - **LaTeX Files:** If you have difficulty in submitting MS Word file, you could submit a LaTeX file (".dar", ".d gz", ".dvi", ".tex", ".tgz", ".dvz", ".gz", ".tar", or ".taz"). If you submit a LaTeX file, please follow closely IEEE LaTeX templates for instructions on styles, formatting, and other preparation information ("[IEEE Description of LaTeX Templates](#)" (63 KB), "[LaTeX Unix](#)" (655 KB), "[LaTeX Windows](#)" (674 KB), "[LaTeX Bibliography Unix](#)" (307 KB), "[LaTeX Bibliography Windows](#)" (309 KB)). Furthermore, your *final LaTeX paper* (printed out by a printer) should be of the same format, style, paper size, and fonts defined by IEEE in "[PDF template](#)" or "[Word template](#)" to be acceptable.
 - **Portable Document Files (PDF):** If neither MS Word nor LaTeX would work for you, as a final resort, you could submit a PDF file (avoid this option whenever possible because if there is an error in the PDF file, we will be limited to what we could do to help you fix the problem). If you have to submit a PDF file, you need to follow all instructions in the "[PDF template](#)", ensure proper margins (top 0.75", bottom 1", left 0.62", and right 0.62"), set correct paper size (11" by 8.5"), use proper fonts and font sizes (avoid using fonts such as "Traditional Chinese Fonts", "Japanese Fonts", and/or "Korean Fonts"), and MUST use IEEE PDF eXpress to convert your original documents to PDF before submitting it via the paper submission link in the later part of this page. Using IEEE PDF eXpress is important because it will ensure that your submitted PDF file is [IEEE Xplore](#) compatible. The IEEE PDF eXpress link is given by "<http://www.pdf-express.org/>" and there are detailed instructions in the link to help you do the file conversion. The Conference ID you need to use for the IEEE PDF eXpress is *ius08x* (please notice that this Conference ID will expire on December 2, 2008). The IEEE PDF eXpress can also be visited by clicking on the icon below:



- **Name the File of Your Paper Properly:** Your paper must use the program label in the "[Program Book](#)" or "[Abstract Book](#)" as the file name for a proper and automatic identification of your paper during the production of DVD. For example, if the program label of a paper is "2J-5", which means the 5th paper in the oral session

"2J. Beam Forming Algorithms and Strategies", the file name of your paper should be "[2J-5.doc](#)", where ".doc" means a Microsoft (MS) Word file. One way to name your file is to use the "Save As" command from the "File" (or Office Button in Word 2007) drop-down menu of the MS Word program. Similarly, if your paper has a program label of "P1A023-01", which means the first paper on Monday in a poster session "P1A. Photoacoustic Imaging", your paper should be named as "P1A023-01.doc". Please use capital letters for the program label part of your file name, and use the lower case for the file extension, such as ".doc". If you submit LaTeX or PDF papers, the filename requirements are the same as those for the Word file, except for the file extensions.




- **IEEE Paper Template in Microsoft Word Format:** The latest version of the template (11 inch by 8.5 inch) of proceedings papers from IEEE in Microsoft (MS) Word format can be downloaded via the link "[IEEE Paper Template](#)" below. The template will allow you to adhere to the correct formatting and styles, such as, margins, fonts, titles, footnotes, and references, required by an IEEE conference publication. The "[Information for Authors](#)" contains additional information for conference proceedings paper preparation and figure production. Templates for LaTeX and PDF papers are given in "[Acceptable Word Processing Files](#)" above.
- **Avoid Submitting Paper with Empty Figures:** When you insert any figures into your Microsoft Word paper, please do the following to include the figures instead of just placing links in your paper. In Microsoft Word program, click on the drop-down menu "Insert" -> "Picture -> "From File ...", an "Insert Picture" dialog box will pop up. On the right hand side of your "File Name" box, there will be an option called "Insert". Within the option, there are three choices: "Insert", "Link to File", and "Insert and Link". Please select the first choice. The second choice will only place in your paper a link to figures in your hard drive and the third will add a figure plus a link. Such links will be broken when you print your paper from another computer or submit your paper to a computer that do not have your original figures. (The links here mean that your original figures shown on the screen of your computer are not actually included in your paper and thus the figures could not be found and displayed once your paper is not in your computer.) Please notice that the instructions above are based on Microsoft Word Xp (Word 2002). If the version of your Word is different, the procedure above may be a little different.
- **Numbers of Pages Allowed without Charge:** Oral and poster authors may publish up to **4** pages (up to **10** pages for invited authors) without charge in the 2008 IEEE International Ultrasonics Symposium Proceedings. Up to **two extra pages** may be added at the author's expense (no page limits for invited authors as long as all pages over 10 are paid in full). Please pay **\$125** for each extra page. Please notice that the paper submission website may not allow you to complete the submission process without a correct amount of payment. Only a credit card (Visa, Master, American Express, or Discover) is acceptable for the payment. Any papers with a delinquent payment after the submission deadline will not be included in the proceedings.
- **Submission of Papers to IEEE TUFFC:** Authors are also encouraged to submit manuscripts expanded (more complete and with additional results) from the conference proceedings papers to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control ([TUFFC](#)). Unlike the conference proceedings, the IEEE TUFFC is peer-reviewed and thus would allow a wider dissemination of your research results. To learn more about TUFFC and its manuscript submission procedures, please follow the link "[IEEE TUFFC](#)" on the left pane of the conference website at: http://ewh.ieee.org/conf/ius_2008/. Please notice that the submission of a manuscript to TUFFC is independent of submitting papers to the conference proceedings, and thus the rules here, such as the deadline, instructions, and paper style and formatting, may not apply to TUFFC.
- **IEEE Copyright Form:** IEEE Electronic Copyright Form needs to be filled out during the paper submission. The submission process will not continue without completing the copyright form. Papers submitted without the IEEE copyright form will not be published in the proceedings.
- **Website to Submit Your Papers:** The website to submit your papers is the same as that you used to submit your abstracts a few months ago (see "[Abstract Submission](#)" or "[Abstract Results](#)"). Therefore, your username and password will be the same as those you used when you submitted your abstracts. However, you should use the link below in this page to submit your papers.
- **Five Steps for Paper Submission** (if your paper contains multimedia contents, please follow [Multimedia Paper Submission Steps](#) instead - please notice that if your paper only contains color figures and you do not

wish to include your original high-quality color arts through multimedia icon links, you could treat your paper as a regular paper without multimedia):

1. **Download Microsoft Word Template (or LaTeX or PDF Template as Appropriate):** Download the "[IEEE Paper Template](#)" for conference papers in Microsoft (MS) Word format. If you submit a LaTeX or PDF paper, please download appropriate templates from "[Acceptable Word Processing Files](#)" above.
2. **Prepare Your Paper:** Follow the instructions in the "[IEEE Paper Template](#)" (or other templates downloaded from the previous step) and the "[Information for Authors](#)" to prepare your paper. If you use MS Word 2007 or newer, please prepare the paper in the "Compatibility Mode" by following instructions in "[Acceptable Word Processing Files](#)" above.
3. **Save Your File:** When finish, if you use an MS Word 2003 or earlier version, save your file as you normally do. If you use Word 2007 or newer, please make sure that you have produced the paper in the "Compatibility Mode" and save the paper in the "Word 97-2003 Document" format with the "Save As" option (selecting the "Word 97-2003 Document" type from the "Save As Type" box). (Please see the "[Acceptable Word Processing Files](#)" above for using the "Compatibility Mode" and saving files in the "Word 97-2003 Document" format in Word 2007.) If you submit a LaTeX or PDF paper, please save your file in an appropriate format as shown in "[Acceptable Word Processing Files](#)" above.
4. **Name the File of Your Paper Properly:** In the "Save As" command above, enter the [program label](#) of your paper, such as "2J-5", "PS022-22", or "P1A023-01", etc, as the file name to avoid your paper being misplaced. If the program label of your paper is "2J-5", the file name of your paper should be "[2J-5.doc](#)". Please use capital letters for the program label part of your file name, and use the lower case for the file extension, such as ".doc". If you submit a LaTeX or PDF paper, please follow the same filename requirements (see "[Acceptable Word Processing Files](#)" above).
5. **Online Paper Submission:** Submit your paper via the "[Paper Submission Link](#)" below and follow instructions inside (the 8 main steps that you will go through on the paper submission website are: "Authors" -> "Paper Information" -> "Paper Upload" -> "Multimedia Files" -> "Proofread" -> "Payment" -> "Submit" -> "IEEE Electronic Copyright"). Please do not upload any file in the "Multimedia Files" step since your paper does not contain any multimedia contents. During the submission of your paper, the submission website will automatically convert your Microsoft Word file into an IEEE Xplore-compatible PDF format for you to "Proofread". If you submit a LaTeX or PDF paper, you will also be able to view your submitted or converted paper.

Multimedia Paper Submission Steps:

1. **General:** If your paper contains multimedia contents, please read all information in the "[Introduction](#)" section above and then complete the following steps. If your paper does not have multimedia contents, please read the "[Introduction](#)" and then follow the "[Five Steps for Paper Submission](#)" above to submit the paper. If you have more than one multimedia paper, please do not mix any files of different papers together (each paper should be prepared and submitted separately in the steps below). The following steps for creating multimedia papers are based on Microsoft Windows operating system. For other operating systems, you might need to modify the steps accordingly. Please notice that if your paper only contains color figures and you do not wish to include your original high-quality color arts through multimedia icon links, you could treat your paper as a regular paper without multimedia and follow the "[Introduction](#)" and "[Five Steps for Paper Submission](#)" above to submit your paper. Please also notice that, for the 2008 IEEE International Ultrasonics Symposium, multimedia papers are only acceptable in Microsoft Word file format. This allows us to gain some experiences in the first-year implementation of multimedia proceedings. In the future, this restriction could be removed and thus more authors could submit multimedia papers.
2. **Download Microsoft Word Template:** Download the "[IEEE Paper Template](#)" for conference papers in Microsoft (MS) Word format.

3. **Prepare Your Paper:** Follow the instructions in the "[IEEE Paper Template](#)" and the "[Information for Authors](#)" to prepare your paper. If you use MS Word 2007 or newer, please prepare the paper in the "Compatibility Mode" by following instructions in "[Acceptable Word Processing Files](#)" above.
4. **Save Your File:** When finish, if you use an MS Word 2003 or earlier version, save your file as you normally do. If you use Word 2007 or newer, please make sure that you have produced the paper in the "Compatibility Mode" and save the paper in the "Word 97-2003 Document" format with the "Save As" option (selecting the "Word 97-2003 Document" type from the "Save As Type" box). (Please see the "[Acceptable Word Processing Files](#)" above for using the "Compatibility Mode" and saving files in the "Word 97-2003 Document" format in Word 2007.)
5. **Name the File of Your Paper Properly:** In the "Save As" command above, enter the [program label](#) of your paper, such as "2J-5", "PS022-22", or "P1A023-01", etc, as the file name to avoid your paper being misplaced. If the program label of your paper is "2J-5", the file name of your paper should be "[2J-5.doc](#)". Please use capital letters for the program label part of your file name, and use the lower case for the file extension, such as ".doc".
6. **Produce Multimedia Files:** Please follow the guidelines in the "Multimedia Addition" section of the "[Information for Authors](#)" to prepare your multimedia files to be linked to your paper.
7. **Create a Folder for Multimedia Files:** Create a folder that has exactly the same name as your MS Word file. For example, if your Word file name is "[2J-5.doc](#)", your multimedia folder should be named "2J-5". Place all multimedia files inside the folder you have just created. Thus, in your computer hard drive, you should see two names in the SAME place (or folder): one is the Microsoft Word file, such as "[2J-5.doc](#)", and the other is a folder with the same name "2J-5". A proper naming of your folder for multimedia files is important to link your multimedia files to your paper such as "[2J-5.doc](#)" and avoid your files being misplaced during the DVD proceedings production.
8. **Acceptable File Types of Your Multimedia Files:** To minimize difficulties of playing your multimedia contents, the types of your multimedia files are limited to ".jpg", ".gif", ".mp3", and ".mpg". A detailed explanation of these file types are in the "Multimedia Addition" section of the "[Information for Authors](#)".
9. **Total Size of Your Multimedia Files:** To avoid a long downloading time via internet and to fit all contents into a single DVD, the total size of your multimedia files for each paper should not exceed 15 MB ("MB" means megabytes, and 1 MB is about 1000 KB). Both "[Information for Authors](#)" and "[A Multimedia Example](#)" contain information on how to control the sizes of your multimedia files.
10. **Downloading Multimedia Icons:** Download the three different multimedia icons ("Icon for color figures" , "Icon for sound only" , and "Icon for movies or animations with or without sound" ) from the link "[Multimedia Icons](#)" or http://www.ieee-uffc.org/tr/mexample_icons.zip.
11. **Adding Icons to Microsoft Word File:** After downloading the three types of multimedia icons from the previous step, please unzip the file first and then insert the icons into your Word document at desired locations of the texts (you could click your left mouse button at where you would like to insert an icon), at the end of figure legends, or at the end of table legends (see a published [multimedia paper](#) as an example for icon placement). To insert the icons, you could select "Picture" and "From File ..." from the pull-down menu "Insert" of your Word program, and then browse your hard drive to find the icons you have downloaded. After an icon is inserted, please double click on the icon to bring up a dialog, "Format Picture", and then resize (under the "Size" tab) the icon to a height of 0.15 inch and a width of 0.15 inch for the "Icon for color figures" and 0.17 inch width for both the "Icon for sound only" and "Icon for movies or animations with or without sound". This step would ensure having uniform icon sizes for all papers in the conference proceedings.
12. **Linking Multimedia Files to Icons:** To access your multimedia contents (files) from your paper, links have to be added to the icons you have placed in your Word document. To add a link, please click on the icon with the right button of your mouse and select "Hyperlink ...". Then, under "Link To" select "Existing File or Web Page" and browse through the multimedia folder (such as "2J-5") you have created in a previous step to find the file you would like to link to. The icons should represent the types ("Color Figure", "Sound Only", and "Movie or Animation") of multimedia files to be linked to respectively. Once you have made a link, the name of your corresponding multimedia file or folder should not be changed. Otherwise, the link you have just created will be broken. Please make sure all icons are linked. (If you use Word 2007 or newer version, please

use the "Compatibility Mode" and save your paper in the "Word 97-2003 Document" format as described in "[Acceptable Word Processing Files](#)" above.)

13. **Check the Links in Your Word File:** After you have made the Word file with embedded links to icons, please place your mouse over each multimedia icon that contains a link for a few seconds to see where the icon is linked to. Then click the left button of your mouse on the icon while pressing down the "CTRL" key, you should be able to play a multimedia file if the link is made properly.
14. **Examples of Files with Linked Icons:** A [zip-compressed package](#) (12.9 MB) of the "[A Multimedia Example](#)" can be downloaded. After unzipping, in the folder, "mexample/", there will be a Microsoft Word file, "mexample.doc". All the multimedia icons in this file have been linked to files in a multimedia folder. Placing your mouse over the icons, you will be able to see where the icons are linked to. When click on the icons while pressing down the "CTRL" key, you can play the multimedia contents. In the unzipped folder, you can also find a PDF file, "mexample.pdf". Clicking on each icon in the file, you can also play the multimedia contents. If you have not downloaded the multimedia icons yet, from the file, "mexample.doc", you could copy the icons to your paper directly and then resize them as mentioned in a previous step. To see how the linked icons work in a published multimedia paper in IEEE [TUFFC](#), please download a [zip-compressed package](#) (5.6 MB) of the paper and then play the multimedia contents after you have unzipped it. A multimedia paper prepared for the 2008 IEEE IUS can be downloaded from "[2J-5.zip](#)" (3.8 MB) and a version that will appear in the 2008 IEEE IUS proceedings is at "[IUS2008-000003.zip](#)" (2.6 MB), where "000003" is the Paper ID corresponding to the Program Label "2J-5". All of the files above can also be downloaded from the section "[Instructions, Templates, and Multimedia Examples](#)" below.
15. **Copy the Linked Word File to the Folder Containing Multimedia Files:** Make a copy of your linked Word file, such as, "[2J-5.doc](#)" into your multimedia folder, such as, "2J-5" as a backup so that we could recover your original "[2J-5.doc](#)" file if the "[2J-5.doc](#)" is corrupted during your paper submission process. (In the future, if in addition to the Word file, LaTeX or PDF files are allowed for multimedia papers, this step to save the original files would be helpful to find out how you have linked your multimedia icons during the DVD production because the links in your LaTeX or PDF papers could be altered by the software of the paper submission website.)
16. **Metadata Collection Required by IEEE for Each Multimedia File:** IEEE requires metadata for each multimedia file. An [example](#) of such metadata file in Microsoft Excel spreadsheet format has been made for you based on the [zip-compressed package](#) (12.9 MB) of the "[A Multimedia Example](#)". Please use the spreadsheet example to produce metadata for each of your multimedia file. When finish, please save the spreadsheet in "Excel 97-2003" format if you use Excel 2007 or newer version. Please use the same file name as that of your Word file to avoid a misplacement of your spreadsheet (for example, if your Word file name is "[2J-5.doc](#)", please use "2J-5.xls" for your metadata spreadsheet). After the metadata spreadsheet is completed, please move or cut/paste it into your multimedia folder. The spreadsheet has the following 7 columns:
 - A. **PDF File Name:** If your Word file name is "[2J-5.doc](#)", type in "[2J-5.pdf](#)".
 - B. **Multimedia Summary:** This is just a shortened version of the title of your paper that summarizes the entire paper as well as the multimedia files in the paper. For example, if the title of your paper is "Effects of data density of echo Fourier domain on quality of high frame rate imaging", the summary could be "Echo data density and high frame rate imaging".
 - C. **Multimedia File Name:** This is the name of your multimedia file such as "heart.mpg".
 - D. **Multimedia Size:** This is the size of your multimedia file such as "80 KB", where KB means kilobytes. In Windows, you could find the file size by right click on the file and then select "Properties" to see the file size in "KB" (not the file size on disk).
 - E. **Multimedia Type:** If your multimedia file name is "heart.mpg", the file type should be "MPG".
 - F. **Platform:** If your multimedia file is mainly run on Microsoft Windows, enter "Windows". In addition to Windows, other popular computer platforms are "Macintosh" and "Linux".
 - G. **Multimedia title:** If this multimedia file is linked to, say, Fig. 1 in the Word file, the title could be "movie for Fig. 1". If it is related to a paragraph in your Word file, you could enter, for example, "animation for the 5th paragraph on the second page".
17. **ZIP Compress Your Multimedia Folder:** After you have finished your paper and all steps above, please zip-compress your multimedia folder (such as "2J-5") into a single ".zip" file with the same name, such as,

"2J-5.zip". When you finish, in your computer, you should see the following three names in the same folder: "[2J-5.doc](#)", "2J-5" folder, and "2J-5.zip". Please notice that the metadata spreadsheet ("2J-5.xls") is in the multimedia folder "2J-5".

18. **Check Your ZIP-Compressed File:** Double click on the ".zip" file you have created in the previous step to open it and then check to make sure all files you intend to submit are included to avoid submitting an empty zip package without noticing it.
19. **Software for ZIP-Compression:** There are many zip-compression software you could use to produce the ".zip" file. [QuickZip](#) is a free software for Windows systems. Alternatively, you could purchase [PKZIP](#), [WinZip](#), or [WinRAR](#). Please notice that the [StuffIt Expander](#) is a freeware but it only decompresses ".zip" files (in both Windows and MacOS operating systems).
20. **Online Paper Submission:** Submit both your Word file, such as, "[2J-5.doc](#)" and zip-compressed file, such as, "2J-5.zip" via the "[Paper Submission Link](#)" below and then follow the instructions inside (the 8 main steps that you will go through on the paper submission website are: "Authors" -> "Paper Information" -> "Paper Upload" -> "Multimedia Files" -> "Proofread" -> "Payment" -> "Submit" -> "IEEE Electronic Copyright"). During the submission of your paper, you will be asked to submit the paper (such as "[2J-5.doc](#)") first in the "Paper Upload" step, and then in "Multimedia Files" page, you should upload the multimedia file (such as "2J-5.zip"). Then, the submission website will automatically convert your Word file into an IEEE Xplore-compatible PDF format for you to "Proofread". Your submitted ".zip" file will be used to produce the multimedia DVD and be submitted to IEEE Xplore as well as to the IEEE UFFC Society "Digital Archive".

Instructions, Templates, and Multimedia Examples (Posted September 25, 2008):

- **IEEE Paper Template:**

Please click on icon below to download the MS Word template: :



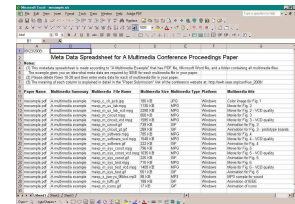
- **Information for Authors:**

Please click on icon below to download the PDF file: :



- **Metadata Spreadsheet:**

Please click on icon below to download the MS Excel Spreadsheet:



- **A Multimedia Example:**

[Multimedia Zipped](#) (12.9 MB).
[Microsoft Word File](#).

Please click on icon below to play multimedia online via links in PDF: :

- **A Published Multimedia Paper:**

[Multimedia Zipped](#) (5.6 MB).

Please click on icon below to play multimedia online and see how a published multimedia paper looks like:

- **Multimedia Icons:**

[Icon Zipped](#) package.

After inserting icons into your MS Word document, double click on them to set their height to 0.15 inches. :



- **A Multimedia Paper Prepared for the 2008 IEEE IUS (2J-5):**
[ZIP Package \(2J-5.zip\)](#) (3.8 MB).
[MS Word Document \(2J-5.doc\)](#).
 Multimedia contents can be played online via links in PDF:

- **A Multimedia Paper Published in the 2008 IEEE IUS Proceedings (2J-5):**
[ZIP Package](#) (2.6 MB).
 Multimedia contents can be played online via links in PDF:



Paper Submission Link:

IMPORTANT: Please notice that after you have proofread your paper, you should click the button, "**Submit My Paper**", and then get an automatic confirmation email containing your paper ID (the same ID number as your submitted abstract). If you do not receive such an email, your paper has not been transmitted to us and you should login to the system to complete your submission. (Please **REFRESH** your browser now to view an updated page that contains correct links!)

Online Paper Submission: <http://submissions.miracd.com/ius2008/> (Closed)

Questions on Paper Submission: Phone: (866)341-9589; Email: IUS2008@mirasmart.com

Appendix F:

Students

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

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I. Notes to Students to Join IEEE UFFC Society

The Ultrasonics, Ferroelectrics, and Frequency Control ([UFFC](#)) Society of the Institute of Electrical and Electronics Engineers ([IEEE](#)) covers areas of ultrasonics, ferroelectrics, and frequency control among others. It will be very beneficial to join this excellent Society for your future professional careers. You will be able to interact with other members and contribute to the growth of the IEEE UFFC society. You will also be eligible for consideration to receive travel supports to various IEEE UFFC national and international conferences. The future of the society is in your hands. Please click on the [link](#) to join today and you will also be able to access the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control ([TUFFC](#)) journal among other publications that will benefit your entire professional life. A discount membership fee is available for students.

--- Jian-yu Lu, General Chair, 2008 IEEE International Ultrasonics Symposium (IUS), and past Editor-in-Chief (EIC), IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC)

IEEE and IEEE UFFC Societies

A link to the IEEE Ultrasonics, Ferroelectrics, and Frequency Control ([UFFC](#)) Society, which is one of the IEEE societies.

A link to the Institute of Electrical and Electronics Engineers ([IEEE](#)). A brief introduction and history of IEEE can be found in [Wikipedia](#).

IEEE UFFC Digital Archive

A link to the IEEE UFFC [Digital Archive](#) (IEEE UFFC members can visit full texts): The site includes "Proceedings of the IEEE International Ultrasonics Symposia (IUS), from 1970-present"; "IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, from 1954-present"; Nine books; All UFFC newsletters, from 1953-present; Three special issues; Reports; and more.

II. Student Travel Support Award

Introduction:

The 2008 IEEE International Ultrasonics Symposium (IUS) will have a limited amount of funds to support student travels. If you are a student and are interested in getting such a support, please pay attention to the criteria in "[The Criteria for Student Travel Support](#)" for qualification. In addition, when submitting abstracts through our [abstract submission website](#) that is accessible from http://ewh.ieee.org/conf/ius_2008/, please make appropriate selections, provide all the information, and answer all the questions requested there (this may include basic information about your lab, your advisor, expected thesis completion date, and expected graduation date, etc). If you are submitting more than one abstract, you should provide the information for each of the abstracts submitted. If your request is approved, the money will be available at the Symposium registration desk. The amount of money for each student awarded may be different depending on the geographical location of the student. Awards will be made on a competitive basis (please see the criteria below). Award winners will be notified at about the same time as that of the abstract status notification (about two weeks after the end of the 2nd [Technical Program Committee](#) meeting, which will be held from June 14-15, 2008).

Please notice that the decisions on student travel support award are final. The awards are intended to partially defray the cost of the travel and are not intended to be sufficient to cover your entire travel expenses.

We look forward to your participation of the conference. See you in Beijing in November 2008.

The Criteria for Student Travel Support:

- Abstract is *accepted* and the student is the *presenter* of the abstract at the conference ([Student Paper Competition](#) Finalists may get a higher priority in getting the award given all other conditions are the same)
- The student is an IEEE as well as IEEE UFFC member (a valid IEEE membership # of the student should be provided during the abstract submission for verification). If you are not a member, please click the link, [Join IEEE UFFC](#), to join the IEEE UFFC society.
- The student has not previously received a travel support from any of the IEEE International Ultrasonics Symposia (the student must provide correct information during [abstract submission](#) to avoid the award being retracted later)
- Is still a student at the time of the conference (a valid student ID is needed to get the award money)
- Only one student from each lab or advisor could be supported

Students Approved for the Travel Support Award from the 2008 IEEE IUS:

The following students have been approved for the travel support award by the 2008 IEEE International Ultrasonics Symposium. The award notification emails have been sent to the students or the submitting authors on July 2, 2008. To actually receive the award money, students should show clear evidence of both IEEE and IEEE UFFC memberships (such as receipts of both IEEE and IEEE UFFC memberships from an IEEE web account), present the IEEE membership card, and show valid student identification (ID). In addition, students should meet all the conditions listed above, "[The Criteria for Student Travel Support](#)", such as, the student must be a presenter of the abstract and have not received any travel support from any previous IEEE International Ultrasonics Symposia. The 2008 IEEE IUS reserves the right to retract the award for any student who does not meet the stated requirements above. When all the conditions above are met, the money will be available for the students to pick up on the registration desks in Beijing during the conference.

1. **4I-4: Alvaro Artieda (Presenter) and Paul Muralt, "Growth of AlN on SiO₂ for high-Q composite Thin Film Bulk Acoustic Wave Resonators,"** Ecole Polytechnique Federale de Lausanne, Switzerland. (Abstract ID: 534)
2. **2E-6 and PS009-09: John Ballard (Presenter) and Emad Ebbini, "Image-Guided Refocusing of Dual-Mode Ultrasound Arrays(DMUAs),"** University of Minnesota, USA. (Abstract ID: 384)
3. **4A-3: A.L. Bernassau (Presenter), D. Hutson, C.E.M. Démore, and S. Cochran, "Characterisation of an Epoxy Composite Filler Suitable for Microfabrication Processes,"** Institute of Medical Science and Technology, United Kingdom. (Abstract ID: 290)
4. **3E-1: Cormac Cannon (Presenter), John Hannah, and Steve McLaughlin, "Mirrored Motion-Compensation for Complementary-Coded Medical Ultrasonic Imaging,"** Institute of Digital Communications, University of Edinburgh, Edinburgh, Lothians, United Kingdom. (Abstract ID: 373)
5. **2D-4: *Charles Caskey (Presenter), *Shengping Qin, **Paul Dayton, and *Katherine Ferrara, "Parameter space for microbubble wall interaction estimated from gel phantom,"** *Biomedical Engineering, University of California at Davis, USA, **Biomedical Engineering, University of North Carolina, USA. (Abstract ID: 614)
6. **2D-3 and PS004-04: Hong Chen (Presenter), Andrew A. Brayman, Michael R. Bailey, and Thomas J. Matula, "Microbubble dynamics in microvessels: Observations of microvessel dilation, invagination and rupture,"** Center for Industrial and Medical Ultrasound, Applied Physics Laboratory, University of Washington, Seattle, WA, USA. (Abstract ID: 609)
7. **P2A024-02: *Ruimin Chen (Presenter), **Dong-Guk Paeng, ***Naoki Matsuoka, ***Hossein Ameri, *Qifa Zhou, ***Mark Humayun, and *K. Kirk Shung, "Ultrasonic Doppler Measurements of Blood Flow Velocity of Rabbit Retinal Vessels with High-Frequency Angled Needle Transducer,"** *Department of Biomedical Engineering, University of Southern California, USA, **Marine Industrial Engineering, Cheju National University, Korea, Republic of, ***Doheny Eye Institute, University of Southern California, USA. (Abstract ID: 652)
8. **P3H081-02: *Peter Davulis (Presenter), **Amit Shyam, **Edgar Lara-Curzio, and *Mauricio Pereira da Cunha, "High Temperature Elastic Constants of Langatate from RUS Measurements up to 1100 deg-C,"** *Electrical and Computer Engineering, University of Maine, Orono, ME, USA, **High Temperature Materials Laboratory, Oak Ridge National Laboratory, Oak Ridge, TN, USA. (Abstract ID: 166)
9. **3F-2 and PS001-01: Bo Wang (Presenter) Andrei Karpiouk, and Stanislav Emelianov, "Design of Catheter for Combined Intravascular Photoacoustic and Ultrasound Imaging,"** Biomedical Engineering, University of Texas at Austin, Austin, TX, USA. (Abstract ID: 309)
10. **6G-6: *Sergeev Fedor (Presenter), **Georgy Mansfeld, *Sergey Alekseev, **Natalia Polzikova, and **Iosif Kotelyanskii, "VISCOSITY TENSOR COMPONENTS OF THE LANGATATE AND LANGASITE,"** *Moscow Institute of Physics and Technology, Moscow, Russian Federation, **Institute of Radioengineering and Electronics RAS, Moscow, Russian Federation. (Abstract ID: 970)
11. **2I-5 and PS006-06: *Jerome GATEAU (Presenter), **Laurent MARSAC, *Mathieu PERNOT, *Jean-Francois AUBRY, *Mickael TANTER, and *Mathias FINK, "Reaching the optimal focusing and steering capabilities of transcranial HIFU arrays based on time reversal of acoustically induced cavitation bubble signature,"** *Laboratoire ondes et Acoustique, INSERM, CNRS UMR 7587, ESPCI, PARIS, France, **SUPERSONIC IMAGINE, Aix-en-Provence, France. (Abstract ID: 248)
12. **P2C043-03: *Francesco Guidi (Presenter), *Riccardo Mori, **Hendrik Vos, **Nico de Jong, and *Piero Tortoli, "Ultrasound Induced Deflation: a method to study the behavior of single bubbles with varying diameter,"** *Electronic and Telecommunication, University of Florence, Florence, FI, Italy, **Biomedical Engineering, Erasmus University, Rotterdam, Netherlands. (Abstract ID: 810)
13. **4D-5: *Gokce Gurun (Presenter), *Muhammad Shakeel Qureshi, *Mujdat Balantekin, *Rasim Guldiken, *Jaime Zahorian, *Sheng-Yu Peng, *Arindam Basu, **Mustafa Karaman, *Paul Hasler, and *Levent Degertekin, "Front-end CMOS electronics for monolithic integration with CMUT arrays: Circuit design and initial experimental results,"** *Georgia Institute of Technology, USA, **Isik University, Turkey. (Abstract ID: 616)

14. **5F-5: Sevan Harput (Presenter)**, Ayhan Bozkurt, and Feysel Yalcin Yamaner, **"Ultrasonic Phased Array Device for Acoustic Imaging in Air,"** Acoustic Group, Sabanci University, Istanbul, Turkey. (Abstract ID: 1043)
15. **6F-1: Kevin Haworth (Presenter)** and Oliver Kripfgans, **"Initial Growth of Ultrasonically Vaporized Perfluorocarbon Microdroplets,"** Radiology, University of Michigan, Ann Arbor, MI, USA. (Abstract ID: 1119)
16. **1K-5 and PS008-08: *Torbjørn Hergum (Presenter)**, *Thomas Renhult Skaug, **Knut Matre, and *Hans Torp, **"Estimation of Valvular Regurgitation Area by 3D HPRF Doppler,"** *Department of circulation and medical imaging, Norwegian University of Science and Technology, Trondheim, Norway, **Institute of Medicine, University of Bergen, Bergen, Norway. (Abstract ID: 1040)
17. **2K-3: *Iben Kraglund Holfort (Presenter)**, **Fredrik Gran, and *Joergen Arendt Jensen, **"Investigation of Sound Speed Errors in Adaptive Beamforming,"** *Center for Fast Ultrasound Imaging, Technical University of Denmark, Kgs. Lyngby, Denmark, **GN ReSound A/S, Ballerup, Denmark. (Abstract ID: 302)
18. **P1B031-04: *Fong Ming Hooi (Presenter)**, **Kai Thomenius, **Rayette A. Fisher, and *Paul L. Carson, **"Optimization of Beams with Nonspherical Extended Depths of Focus for Reconfigurable 2D Arrays,"** *University of Michigan, Ann Arbor, MI, USA, **GE Global Research, Niskayuna, NY, USA. (Abstract ID: 844)
19. **1J-5: *Congxian Jia (Presenter)**, *Ragnar Olafsson, **Kang Kim, ***Theodore J Kolias, ****Jonathan M Rubin, *****Hua Xie, *****Matthew O'Donnell, **"2D Speckle Tracking vs DTI-derived Elasticity Imaging on an Isolated Rabbit Heart,"** *Biomedical Engineering, University of Michigan, Ann Arbor, MI, USA, **Cardiovascular Institute, University of Pittsburgh, Pittsburgh, PA, USA, ***Internal Medicine, University of Michigan, Ann Arbor, MI, USA, ****Radiology, University of Michigan, Ann Arbor, MI, USA, *****Philips Research North America, Briarcliff Manor, NY, USA, *****Bioengineering and Mechanical Engineering, University of Washington, Seattle, WA, USA. (Abstract ID: 966)
20. **2D-1: *Klazina Kooiman (Presenter)**, **Marcel R. Böhmer, *Marcia Emmer, *Hendrik J. Vos, **Ceciel Chlon, ***William T. Shi, ***Christopher S. Hall, **Suzanne H.P.M. de Winter, ****Karin Schroën, *****Michel Versluis, *Nico de Jong, and *Annemieke van Wamel, **"Oil-filled polymeric ultrasound contrast agent as local drug delivery system for lipophilic drugs,"** *Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands, **Biomolecular Engineering, Philips Research Laboratories Eindhoven, Eindhoven, Netherlands, ***Philips Research North America, Briarcliff Manor, USA, ****Food and Bioprocess Engineering Group, Department of Agrotechnology and Food Sciences, Wageningen University, Wageningen, Netherlands, *****Applied Physics, Physics of Fluids, University of Twente, Enschede, Netherlands. (Abstract ID: 220)
21. **3A-4: *Muyinatu Lediju (Presenter)**, *Michael Pihl, *Stephen Hsu, *Jeremy Dahl, **Caterina Gallippi, and *Gregg Trahey, **"Magnitude, Origins, and Reduction of Abdominal Ultrasonic Clutter,"** *Biomedical Engineering, Duke University, Durham, NC, USA, **Biomedical Engineering, University of North Carolina, Chapel Hill, NC, USA. (Abstract ID: 396)
22. **P2P139-05: Hyunjoo Lee (Presenter)**, Kwanky Park, Omer Oralkan, Mario Kupnik, and Butrus (Pierre) Khuri-Yakub, **"The effect of parallelism of CMUT cells on phase noise for chem/bio sensor applications,"** E. L. Ginton Laboratory, Stanford University, Stanford, CA, USA. (Abstract ID: 817)
23. **1J-6: Wei-Ning Lee (Presenter)**, Jean Provost, Shougang Wang, Kana Fujikura, Jie Wang, and Elisa E. Konofagou, **"In Vivo Validation of Myocardial Elastography at Variable Levels of Ischemia,"** Columbia University, New York, NY, USA. (Abstract ID: 1039)
24. **6K-4: Mathieu Legros (Presenter)**, Guillaume Férin, Cyril Meynier, and Rémi Dufait, **"Piezocomposite and CMUT Arrays Assessment Trough In Vitro Imaging Performances,"** Vermon S.A., Tours, France. (Abstract ID: 579)
25. **2K-5 and PS007-07: Shun-Li Wang (Presenter)** and Pai-Chi Li, **"High Frame Rate Adaptive Imaging Using Coherence Factor Weighting and the MVDR Method,"** National Taiwan University, Taipei, Taiwan. (Abstract ID: 1083)
26. **PS021-21: Andrew Logan (Presenter)** and John Yeow, **"1-D CMUT Imaging Arrays Fabricated Using a Novel Wafer Bonding Process,"** Systems Design Engineering, University of Waterloo, Waterloo, Ontario, Canada. (Abstract ID: 418)

27. **1J-2: *Richard G.P. Lopata (Presenter), *Maartje M. Nillesen, *Inge H. Gerrits, **Livia Kapusta, *Johan M. Thijssen, and Chris L. de Korte, "BiPlane Cardiac Strain Imaging: A Study on Valvular Aortic Stenosis,"** *Clinical Physics Laboratory, Department of Pediatrics, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands, **Children's Heart Centre, Radboud University Nijmegen Medical Centre, Netherlands. (Abstract ID: 227)
28. **P2M125-08: Dharshanie Mahadeva (Presenter), Roger C Baker, and Jim Woodhouse, "Clamp-on Ultrasonic Flowmeters,"** University of Cambridge, United Kingdom. (Abstract ID: 412)
29. **2H-4 and PS005-05: *Adam Maxwell (Presenter), *Charles Cain, **Hitinder Gurm, ***J. Brian Fowlkes, and *Zhen Xu, "Non-invasive thrombolysis induced by histotripsy pulsed cavitation ultrasound therapy,"** *Department of Biomedical Engineering, University of Michigan, Ann Arbor, Michigan, USA, **Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan, USA, 3Department of Radiology, University of Michigan, Ann Arbor, Michigan, USA. (Abstract ID: 68)
30. **5C-2 and PS010-10: Donald McCann (Presenter), Mitchell Wark, Paul Millard, David Neivandt, and John Vetelino, "The Detection of Chemical and Biological Analytes Using a Monolithic Spiral Coil Acoustic Transduction Sensor,"** University of Maine, Orono, ME, USA. (Abstract ID: 131)
31. **3E-5 and PS003-03: Egon J.W. Merks (Presenter), Nicolaas Bom, Nico de Jong, and Antonius F.W. van der Steen, "Quantitative Bladder Volume Assessment on the Basis of Nonlinear Wave Propagation,"** Biomedical Engineering, ErasmusMC, Rotterdam, Netherlands. (Abstract ID: 291)
32. **5F-3: *Jun-ichi Kushibiki, *Mototaka Arakawa, and **Kenji Otsu (Presenter), "Measurement Model for Attenuation of Leaky Surface Acoustic Waves by the Line-Focus-Beam Ultrasonic Material Characterization System,"** *Electrical Engineering, Tohoku University, Sendai, Japan, **Biomedical Engineering, Tohoku University, Sendai, Japan. (Abstract ID: 972)
33. **2C-1: Thiên-Ly Pham (Presenter), Maryline Talmant, and Pascal Laugier, "How Ultrasound Bidirectional Axial Transmission Reflects Geometry of Long Bones?"** Université Pierre et Marie Curie Paris 6, CNRS, Laboratoire d'Imagerie Paramétrique, Paris, France. (Abstract ID: 583)
34. **2F-6 and PS002-02: *Linsey C. Phillips (Presenter), *Alexander L. Klibanov, **Doug K. Bowles, *Brian R. Wamhoff, and *John A. Hossack, "Intra-Vascular Ultrasound (IVUS) Delivery of DNA Via Microbubble Carriers to an Injured Artery In vivo,"** *University of Virginia, Charlottesville, VA, USA, **University of Missouri, Columbia, MO, USA. (Abstract ID: 1094)
35. **5J-2: *Christian Riesch (Presenter), **Erwin K. Reichel, *Franz Keplinger, and **Bernhard Jakoby, "Frequency response of a micromachined doubly-clamped vibrating beam for the measurement of liquid properties,"** *Institute of Sensor and Actuator Systems, Vienna University of Technology, Vienna, Austria, **Institute for Microelectronics and Microsensors, Johannes Kepler University, Linz, Austria. (Abstract ID: 46)
36. **4H-6: Thierry AUBERT (Presenter), Frederic SARRY, Omar Elmazria, Laurent BOUVOT, Badreddine ASSOUAR, and Pascal NICOLAY, "Extraction of COM parameters on Pt/LGS for high temperature SAW sensor,"** Laboratoire de Physique des Milieux Ionisés et Applications UMR 7040, Nancy University-CNRS, Vandoeuvre les Nancy, France. (Abstract ID: 530)
37. **2J-6: Chi Hyung Seo (Presenter) and Jesse T. Yen, "The effect of cross-correlation method on the dual apodization with cross-correlation algorithm,"** University of Southern California, USA. (Abstract ID: 657)
38. **3K-1: *Michael R. Sprague (Presenter), *David E. Goertz, **Emmanuel Chérin, *Raffi Karshafian, and *F. Stuart Foster, "Acoustic Characterisation of Individual Targeted Microbubbles with High-Frequency Ultrasound,"** *Department of Medical Biophysics, University of Toronto, Canada, **Sunnybrook Health Sciences Centre, Toronto, Canada. (Abstract ID: 991)
39. **2F-3: *Kun-Che Tsai (Presenter), **Lih-Hwa Hwang, *Shu-Jyuan Yang, **Che-kang Liao, *Win-Li Lin1, Ming-Jium Shieh, ***Wen-Shiang Chen, "Enhancement of Antiangiogenic Gene Therapy on Hepatocellular Carcinoma by Endostatin and Sonoporation,"** *Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan, **Institute of Microbiology, National Taiwan University, Taipei, Taiwan, ***Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Taipei, Taiwan. (Abstract ID: 447)
40. **2C-3: *Maria Vavva (Presenter), **Vasilios Protopappas, ***Leonidas Gergidis, ***Antonios Charalambopoulos, **Dimitrios Fotiadis, and ****Demos Polyzos, "A theoretical and experimental study**

- of bone's microstructural effect on the dispersion of ultrasonic guided waves,"** *Material Science and Engineering, University of Ioannina, Ioannina, Greece, **Unit of Medical Technology and Intelligent Information Systems, University of Ioannina, Greece, ***Material Science and Engineering, University of Ioannina, Greece, ****Mechanical Engineering and Aeronautics, University of Patras, Greece. (Abstract ID: 551)
41. **P1D065-07: Bo Wang (Presenter) and Dong C. Liu, "Semi-Implicit Scheme based Nonlinear Diffusion Method in Ultrasound Speckle Reduction,"** 1Computer Science College, Sichuan University, Chengdu, Sichuan, China. (Abstract ID: 687)
 42. **P2O133-04: *Hao Wang (Presenter), **Weibiao Wang, ***Jiming Lin, *Xianglong Shi, *Haodong Wu, and *Yongan Shui, "Precise Extraction of P-matrix as Frequency Dependent Function for Leaky Surface Acoustic Wave,"** *Key Laboratory of Modern Acoustics, Institute of Acoustics, Nanjing University, Nanjing, Jiangsu, China, **Shoulder Electronics Limited, Wuxi, Jiangsu, China, ***Information and Communication College, Guilin University of Electronic Technology, Guilin, Guangxi, China. (Abstract ID: 964)
 43. **1A-2: *Mengli Wang (Presenter), *Jingkuang Chen, *Xiaoyang Cheng, **Tongsheng Zhang, and ***Xueyuan Liu, "A Bi-directional, Real-time Blood Flowmeter using an Implantable CMUT Array,"** *Electrical Engineering, university of new mexico, USA, **Department of Neurology, university of new mexico, USA, ***The Eastman Kodak Company, USA. (Abstract ID: 628)
 44. **4J-2 and PS017-17: Yiliu Wang (Presenter), Ken-ya Hashimoto, Tatsuya Omori, and Masatsune Yamaguchi, "A Full-Wave Analysis of Surface Acoustic Waves Propagating on a SiO2 Overlay/Metal Grating/Rotated YX-LiNbO3 Substrate Structure,"** Graduate School of Engineering, Chiba University, Chiba, Chiba, Japan. (Abstract ID: 217)
 45. **P1I099-08: Derek Wright (Presenter) and Richard Cobbold, "Properties of a Phononic Crystal with Band-Gaps and Anomalous Ultrasound Refraction,"** Inst. Biomat. Biomed. Eng., University of Toronto, Toronto, Ontario, Canada. (Abstract ID: 1051)
 46. **3G-4 and PS020-20: *Dawei Wu (Presenter), *Qifa Zhou, **Changgeng Liu, **Frank Djuth, *K Kirk Shung, "High-frequency (>100MHz) Piezoelectric PZT Film Micromachined Ultrasonic Arrays,"** *NIH Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, USA, **Geospace Research, Inc, USA. (Abstract ID: 858)
 47. **5D-6: *Kuo-Ting Wu (Presenter), **Makiko Kobayashi, and **Cheng-Kuei Jen, "Smart Screws as Load and Temperature Probes,"** *Electrical and Computer Engineering, McGill University, Canada, **Industrial Materials Institute, National Research Council Canada, Canada. (Abstract ID: 1066)
 48. **P3B036-07: *Yuichiro Yaoi (Presenter), **Kazufumi Yamamoto, *Takaaki Koizumi, *Mami Matsukawa, **Kaoru Yamazaki, **Akira Nagano, "Anisotropy of ultrasonic longitudinal wave in the cortical bone of bovine femur,"** *Doshisha University, Kyotanabe, Kyoto, Japan, **Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan. (Abstract ID: 597)
 49. **1F-2: Liang Zhai (Presenter), Jeremy Dahl, and Kathy Nightingale, "Towards Three-dimensional Acoustic Radiation Force Impulse (ARFI) Imaging of Human Prostates in vivo,"** Biomedical Engineering, Duke University, USA. (Abstract ID: 978)
 50. **1A-4: *Fuxing Zhang (Presenter), **Craig Lanning, *Luciano Mazzaro, *Bryan Rech, *Jiusheng Chen, ***S. James Chen, *Robin Shandas, and **Robin Shandas, "Systematic Validation of the Echo Particle Image Velocimetry Technique using a Patient Specific Carotid Bifurcation Model,"** *Dept. of Mechanical Engineering, University of Colorado at Boulder, Boulder, CO, USA, **Dept. of Pediatric Cardiology, The Children's Hospital, Aurora, CO, USA, ***Division of Cardiology, Univ. of Colorado Health Science Center, Aurora, CO, USA. (Abstract ID: 637)

III. Student Paper Competition

Introduction:

This is the 8th year of the student paper competition (started from the [2001 IEEE International Ultrasonics Symposium](#) in Atlanta, Georgia, USA). The awards consist of a certificate, and are a prestigious addition to the student's CV. Students who are submitting abstracts for presentation are also invited to participate in this Student Paper Competition (see "Qualifications for Competition" below for conditions).

Abstracts submitted by students for the Student Paper Competition will be reviewed as usual by the Technical Program Committee (TPC). At that time the TPC will select [21 finalists](#) (9 from Group I, and 3 from each of Groups II to V) for the Student Paper Competition (roughly in proportion to the number of student abstracts submitted in each group). The finalists will be notified and asked to produce a poster of their papers to be displayed during a special student poster session that will be located in the foyer of the [2nd floor](#) of the Beijing International Convention Center (BICC). The poster is required independent of whether the student's paper has been selected as an oral presentation. The students should check the link, [Poster Presentation Guide](#), for the preparations of their posters. On the first day of the symposium, Monday, November 3, 2008, from 3:00 p.m. to 4:30 p.m., all Student Finalist Posters will be presented in a special section for judging by a panel of judges representing the paper's technical group. The posters will remain on display for the duration of the symposium (from Monday, November 3 to Wednesday, November 5, 2008).

[Seven awards](#) will be given and the winners will be honored during the [Tuesday Dinner/Shows](#) on November 4, 2008.

Qualifications for Competition:

- Student is first author
- Work is of high quality and done by the student
- Abstract clearly describes the work and includes results
- Student has not won the student prize award previously from any of the IEEE International Ultrasonics Symposia (correct information must be provided during the [abstract submission](#) to avoid problems later such as removal of the student from the competition finalists or retraction of the award)

Evaluation Criteria Used by Judges:

- Clarity of student's presentation
- Depth of student's knowledge
- Degree of the student's contribution to the project
- Relevancy of the work to the field

Prizes (Total 7) Will Be Given in the Following Five Areas of the Technical Program Committee:

- Medical Ultrasonics ([3 Awards](#))
- Sensors, NDE & Industrial Applications ([1 Award](#))
- Physical Acoustics ([1 Award](#))
- Microacoustics – SAW, FBAR, MEMS ([1 Award](#))
- Transducers & Transducer Materials ([1 Award](#))

IV. Student Paper Competition Finalists (21 in Total)

Student Paper Competition Finalists:

21 Student Paper Competition finalists have been selected during the 2nd [Technical Program Committee](#) meeting that was held from June 14-15, 2008 in Chicago, Illinois, USA. The finalists should check the award selection criteria and the requirements for their presentations at the link: [Student Paper Competition](#).

Photos and videos of the Student Paper Competition Finalists and the award winners are now available via ["Conference Photos/Videos"](#).

Note: The deadline, *Friday, August 1, 2008*, to resolve with your employers or any other concerned body for any intellectual property rights of the researches in the abstracts (please see ["Abstract Results"](#) for detail) has passed. The full abstracts of all the Student Paper Competition finalists are now available through the links below.

Group 1: Medical Ultrasonics (9 finalists):

- [Finalist #1.1 \(PS001-01\) \(3F-2\) \(Winner\)](#): *Bo Wang (Presenter), Andrei Karpiouk, and Stanislav Emelianov, "Design of Catheter for Combined Intravascular Photoacoustic and Ultrasound Imaging,"* Biomedical Engineering, University of Texas at Austin, Austin, TX, USA. (Abstract ID: 309)
- [Finalist #1.2 \(PS002-02\) \(2F-6\)](#): **Linsey C. Phillips (Presenter), *Alexander L. Klibanov, **Doug K. Bowles, *Brian R. Wamhoff, and *John A. Hossack, "Intra-Vascular Ultrasound (IVUS) Delivery of DNA Via Microbubble Carriers to an Injured Artery In vivo,"* *University of Virginia, Charlottesville, VA, USA, **University of Missouri, Columbia, MO, USA. (Abstract ID: 1094)
- [Finalist #1.3 \(PS003-03\) \(3E-5\)](#): *Egon J.W. Merks (Presenter), Nicolaas Bom, Nico de Jong, and Antonius F.W. van der Steen, "Quantitative Bladder Volume Assessment on the Basis of Nonlinear Wave Propagation,"* Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands. (Abstract ID: 291)
- [Finalist #1.4 \(PS004-04\) \(2D-3\) \(Winner\)](#): *Hong Chen (Presenter), Andrew A. Brayman, Michael R. Bailey, and Thomas J. Matula, "Microbubble dynamics in microvessels: Observations of microvessel dilation, invagination and rupture,"* Center for Industrial and Medical Ultrasound, Applied Physics Laboratory, University of Washington, Seattle, WA, USA. (Abstract ID: 609)
- [Finalist #1.5 \(PS005-05\) \(2H-4\)](#): **Adam Maxwell (Presenter), *Charles Cain, **Hitinder Gurm, ***J. Brian Fowlkes, and *Zhen Xu, "Non-invasive thrombolysis induced by histotripsy pulsed cavitation ultrasound therapy,"* *1Department of Biomedical Engineering, University of Michigan, Ann Arbor, Michigan, USA, **Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan, USA, ***Department of Radiology, University of Michigan, Ann Arbor, Michigan, USA. (Abstract ID: 68)
- [Finalist #1.6 \(PS006-06\) \(2I-5\)](#): **Jerome GATEAU (Presenter), **Laurent MARSAC, *Mathieu PERNOT, *Jean-Francois AUBRY, *Mickael TANTER, *Mathias FINK, "Reaching the optimal focusing and steering capabilities of transcranial HIFU arrays based on time reversal of acoustically induced cavitation bubble signature,"* *Laboratoire ondes et Acoustique, INSERM, CNRS UMR 7587, ESPCI, PARIS, France, **SUPERSONIC IMAGINE, Aix-en-Provence, France. (Abstract ID: 248)
- [Finalist #1.7 \(PS007-07\) \(2K-5\)](#): *Shun-Li Wang (Presenter) and Pai-Chi Li, "High Frame Rate Adaptive Imaging Using Coherence Factor Weighting and the MVDR Method,"* National Taiwan University, Taipei, Taiwan. (Abstract ID: 1083)
- [Finalist #1.8 \(PS008-08\) \(1K-5\) \(Winner\)](#): **Torbjørn Hergum (Presenter), *Thomas Renhult Skaug, **Knut Matre, and Hans Torp, "Estimation of Valvular Regurgitation Area by 3D HPRF Doppler,"*

*Department of circulation and medical imaging, Norwegian University of Science and Technology, Trondheim, Norway, **Institute of Medicine, University of Bergen, Bergen, Norway. (Abstract ID: 1040)

- **Finalist #1.9 (PS009-09) (2E-6): John Ballard (Presenter) and Emad Ebbini, "Image-Guided Refocusing of Dual-Mode Ultrasound Arrays(DMUAs),"** University of Minnesota, USA. (Abstract ID: 384)

Group 2: Sensors, NDE, and Industrial Application (3 finalists):

- **Finalist #2.1 (PS010-10) (5C-2): Donald McCann (Presenter), Mitchell Wark, Paul Millard, David Neivandt, and John Vetelino, "The Detection of Chemical and Biological Analytes Using a Monolithic Spiral Coil Acoustic Transduction Sensor,"** University of Maine, Orono, ME, USA. (Abstract ID: 131)
- **Finalist #2.2 (PS011-11) (5G-5) (Winner): *Sean Mc Sweeney (Presenter) and **WMD Wright, "Improving the Bandwidth of Air Coupled Capacitive Ultrasonic Transducers Using Selective Networks,"** *Electrical and Electronic Engineering Dept, University College Cork, National University of Ireland, Mallow, Cork, Ireland, **Electrical and Electronic Engineering, University College Cork, National University of Ireland, Cork, Cork, Ireland. (Abstract ID: 589)
- **Finalist #2.3 (PS012-12): Montserrat Parrilla (Presenter), Jose Brizuela, Jorge Camacho, Alberto Ibañez, Patricia Nevado, and Carlos Fritsch, "Dynamic focusing thorough arbitrary geometric interfaces,"** Instituto de Automática Industrial (CSIC), La Poveda (Arganda), Madrid, Spain. (Abstract ID: 154)

Group 3: Physical Acoustics (3 finalists):

- **Finalist #3.1 (PS013-13) (6E-5): Satyanarayan Bhuyan (Presenter) and Junhui Hu, "Wireless Drive of a Piezoelectric Plate by Dipole Antenna,"** Nanyang Technological University, Singapore. (Abstract ID: 72)
- **Finalist #3.2 (PS014-14) (6H-5) (Winner): Pierre-Adrien Mante (Presenter), Arnaud Devos, and Jean-François Robillard, "Towards thin film complete characterization using picosecond ultrasonics,"** IEMN-CNRS, France. (Abstract ID: 593)
- **Finalist #3.3 (PS015-15) (6H-6): *Taisuke Yoshida (Presenter), *Mami Matsukawa, and **Takahiko Yanagitani, "Simultaneous observation of induced longitudinal and shear acoustic phonons by Brillouin Scattering,"** *Faculty of Engineering, Doshisha University, Kyotanabe, Japan, **Department of Applied Physics, Nagoya Institute of Technology, Nagoya, Japan. (Abstract ID: 1015)

Group 4: Microacoustics - SAW, FBAW, MEMS (3 finalists):

- **Finalist #4.1 (PS016-16): Gunilla Wingqvist (Presenter), Lilia Arapan, Ventsislav Yantchev, and Ilia Katardjiev, "Temperature Compensation of Thin AlN Film Resonators utilizing the Lowest order Symmetric Lamb mode,"** Solid State Electronics, Uppsala University, Uppsala, Sweden. (Abstract ID: 620)
- **Finalist #4.2 (PS017-17) (4J-2): Yiliu Wang (Presenter), Ken-ya Hashimoto, Tatsuya Omori, and Masatsune Yamaguchi, "A Full-Wave Analysis of Surface Acoustic Waves Propagating on a SiO2 Overlay/Metal Grating/Rotated YXLiNbO3 Substrate Structure,"** Graduate School of Engineering, Chiba University, Chiba, Chiba, Japan. (Abstract ID: 217)
- **Finalist #4.3 (PS018-18) (4I-5) (Winner): Evgeny Milyutin (Presenter), and Paul Muralt, "Shear mode BAW resonator based on c-axis oriented AlN thin film,"** Ecole Polytechnique Federale de Lausanne, Switzerland. (Abstract ID: 522)

Group 5: Transducers and Transducer Materials (3 finalists):

- **Finalist #5.1 (PS019-19) (4D-3) (Winner): Hanne Martinussen (Presenter), Astrid Aksnes, and Helge E. Engan, "Investigation of charge diffusion in Capacitive Micromachined Ultrasonic Transducers (CMUTs) using optical interferometry,"** Electronics and Telecommunications, Norwegian University of Science and Technology, Trondheim, Norway. (Abstract ID: 274)

- **Finalist #5.2 (PS020-20) (3G-4):** **Dawei Wu (Presenter), *Qifa Zhou, **Changgeng Liu, **Frank Djuth, and *K Kirk Shung, "High-frequency (>100MHz) Piezoelectric PZT Film Micromachined Ultrasonic Arrays,"* *NIH Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, USA, **Geospace Research, Inc, USA. (Abstract ID: 858)
- **Finalist #5.3 (PS021-21):** *Andrew Logan (Presenter) and John Yeow, "1-D CMUT Imaging Arrays Fabricated Using a Novel Wafer Bonding Process,"* Systems Design Engineering, University of Waterloo, Waterloo, Ontario, Canada. (Abstract ID: 418)

Finalist #1.1 (PS001-01) (3F-2):

Title: Design of Catheter for Combined Intravascular Photoacoustic and Ultrasound Imaging

Bo Wang (Presenter), Andrei Karpouk, and Stanislav Emelianov, Biomedical Engineering, University of Texas at Austin, Austin, TX, USA. (Abstract ID: 309)

Abstract:

Background, Motivation and Objective: Intravascular photoacoustic (IVPA) imaging is a promising imaging tool for detecting and differentiating the atherosclerotic plaques. Previously, we have demonstrated the utility of intravascular photoacoustic imaging using a laboratory system where the excised arterial tissue sample was irradiated with the laser beam from the outside while the intravascular ultrasound (IVUS) imaging catheter, inserted into the lumen, was used to receive the photoacoustic signal. However, for in-vivo IVUS and IVPA imaging, a combined catheter consisting of IVUS transducer and light delivery system is needed. In this paper we report our initial experience towards design and fabrication of a catheter capable of simultaneous IVPA and IVUS imaging.

Statement of Contribution/Methods: The combined IVUS/IVPA imaging catheter was built based on a clinical, 40 MHz, single element IVUS catheter (Boston Scientific, Inc.). A 0.6 mm diameter optical fiber was used for light delivery. The proximal end of the fiber was coupled with a laser system. The distal tip of the optical fiber was polished at a 45 degree angle and placed inside a quartz tube. Both ends of the tube were sealed with epoxy to retain air around the fiber tip. As a result, such fiber assembly, when submersed into water, was irradiating the light sideway. The IVUS catheter was then attached to the optical fiber such that the ultrasound beam from the transducer and the laser beam from the optical fiber were aligned. To test the combined IVUS/IVPA imaging catheter, a model of the atherosclerotic vessel was fabricated. Specifically, within the otherwise homogeneous polyvinyl alcohol background, three 0.4% graphite inclusions of 1 mm diameter were positioned at different depths inside of the approximately 6-mm thick vessel wall to simulate various plaques in the artery. During imaging studies, the catheter was inserted into the lumen, and the phantom was rotated using a stepper motor. At each angular position, both photoacoustic and ultrasound A-lines were collected by a 14-bit GAGE A/D card operating at 200 MHz sampling rate. The IVUS and IVPA images were formed off-line from 256 equally spaced beams.

Results: The IVPA images of the phantom obtained using the combined IVUS/IVPA catheter clearly identifies the inclusions located at specific depths. At the same time, co-registered IVUS images visualized the structure of the phantom. Finally, combined IVUS/IVPA images further outlined the location and extent of the inclusions within the vessel wall.

Discussion and Conclusions: Overall, IVPA and IVUS images of sufficient quality were obtained using the initial prototype of the combined IVUS/IVPA catheter. Using optical fibers of smaller diameter, the size of the combined catheter can be further reduced. Therefore, our studies suggest that optical fibers can be used to deliver enough optical

fluence for intravascular photoacoustic imaging of the vessel. Furthermore, other approaches in design of IVUS/IVPA imaging catheter will be discussed.

Finalist #1.2 (PS002-02) (2F-6):

Title: Intra-Vascular Ultrasound (IVUS) Delivery of DNA Via Microbubble Carriers to an Injured Artery In vivo

**Linsey C. Phillips (Presenter), *Alexander L. Klibanov, **Doug K. Bowles, *Brian. R. Wamhoff, and *John A. Hossack, *University of Virginia, Charlottesville, VA, USA, **University of Missouri, Columbia, MO, USA. (Abstract ID: 1094)*

Abstract:

Background, Motivation and Objective: The most common therapy for narrowed, atherosclerotic arteries is balloon angioplasty and is often followed by stent placement. This procedure causes injury to the vessel wall and over time, cells from the artery wall (primarily smooth muscle cells) proliferate in response to injury and re-occlude the vessel (restenosis). A novel therapy to prevent restenosis involves the use of delivering an anti-proliferative gene via microbubbles which are ruptured via catheter-based intravascular ultrasound at the site of vessel injury. Insonation of microbubbles by ultrasound has been shown to increase gene delivery at low frequencies. We hypothesize that plasmid DNA encoding a reporter gene (red fluorescent protein, RFP) can be delivered to a pig carotid artery wall in vivo using cationic microbubble carriers and intravascular ultrasound.

Statement of Contribution/Methods: Cationic microbubbles were formed during ultrasonic dispersion of decafluorobutane gas in an aqueous micellar mixture of phosphatidylcholine, PEG stearate, and distearyl trimethylammonium propane. Negatively charged DNA plasmids expressing red fluorescent protein (CMV-RFP) were electrostatically coupled to microbubbles.

A modified IVUS catheter (Boston Scientific) was positioned 1mm away from cells and translated over an area of 2cm². In vitro application of 5 or 11 MHz Gaussian pulses at a PNP of 120 kPa, and PRF of 5kHz was applied to cultured smooth muscle cells exposed to CMV-RFP plasmid bearing microbubbles for a total of 6 minutes.

Balloon angioplasty was performed on pig right carotid vessels (n=2) in vivo. (The pig is the gold standard for restenosis studies.) Following angioplasty, microbubbles were infused through a port hole in a catheter located 2cm upstream of the IVUS transducer. 5 MHz unipolar pulses (PRF = 5 KHz, PNP =120 kPa) were emitted from the IVUS catheter at the location of vascular injury (2cm in length) for a total of 4 minutes during plasmid conjugated-microbubble infusion. Three days following insonation, arteries were excised and processed for frozen sectioning and nuclei staining. Successful plasmid transfection was measured by fluorescent microscopy and quantified as % of vessel perimeter cells expressing RFP.

Results: Ultrasound mediated gene delivery from microbubbles using IVUS in vitro resulted in 11.5 fluorescent cells/cm² (<1%). (Previously reported ultrasound / bubble mediated gene delivery are typically low ~1-5%.) Cells exposed to plasmid microbubbles without US resulted in 0% transfection. Injured pig arteries exposed to microbubbles and ultrasound resulted in 23.3± 6.0% transfection whereas contralateral controls resulted in 3.6±2.6% transfection.

Discussion and Conclusions: To the authors' knowledge, this is the first example of in vivo cationic gene delivery via IVUS, which has promise for localized intra-vascular gene therapy for preventing restenosis.

Finalist #1.3 (PS003-03) (3E-5):

Title: Quantitative Bladder Volume Assessment on the Basis of Nonlinear Wave Propagation

Egon J.W. Merks (Presenter), Nicolaas Bom, Nico de Jong, and Antonius F.W. van der Steen, Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands. (Abstract ID: 291)

Abstract:

Background, Motivation and Objective: Catheterization is the gold standard for bladder volume assessment, but it is invasive and introduces the risk of infections and trauma. To reduce the need for a urinary catheter, a new method has recently been introduced that non-invasively and instantaneously measures the volume of liquid filled cavities on the basis of nonlinear wave propagation with a single diverging acoustic beam. The method exploits the relatively higher nonlinear behavior of liquid compared to tissue.

Previously obtained results from using a fast-rotating phased array probe and high end echo system have proven the feasibility of the method. A 15 dB increase of the 2nd harmonic was observed on a 500 ml bladder phantom relative to a tissue-only phantom. In-vivo measurements on a bladder containing 450 ml urine showed an increase of 10 dB at the 2nd harmonic compared to an empty bladder. The objective of this study is to design a simple transducer that generates a single diverging acoustic beam and to obtain a calculation method that quantitatively relates the spectral contents of the received RF-data to the insonified liquid volume.

Statement of Contribution/Methods: Progressive volume pulse-echo measurements were performed on healthy volunteers. The experimental setup included a custom multilayer transducer that is capable of generating sine wave bursts with centre frequency of 2 MHz and peak amplitudes of 500 kPa at the transducer surface, which could induce significant nonlinear wave propagation. The transducer bandwidth enabled receiving up to the 4th harmonic. To create the diverging acoustic beam, a defocusing lens was applied to the transducer. Volumes between 0 and 600 ml with 100 ml increments were measured. Reference measurements were performed with a commercial bladder volume instrument. Subject-specific acoustic loss and nonlinearity of the region anterior to the bladder influenced the volume estimation. A calculation scheme was applied that subtracted the nonlinear behavior of the anterior bladder region from the nonlinear behavior of the posterior bladder region, leaving only the fraction of nonlinearity (FON) contributed by the liquid region.

Results: Linear regression analysis on the data obtained from the progressive volume measurements resulted in a slope of 4.6 L/FON and an intercept of 118 ml. The 95% confidence interval of the slope was $[4.6 \pm 0.7]$. By correcting for the nonlinear behavior of the anterior bladder region and looking at only the fraction of nonlinearity contributed by the liquid region, the relative standard deviation of the slope was reduced from 19.3% to 8.4% for the individual progressive measurements. Hence, the repeatability of the method increased significantly.

Discussion and Conclusions: A calculation method was developed that quantitatively relates the spectral contents of the received RF-data to the liquid volume present within a single diverging acoustic beam in-vivo.

This work was supported by the Dutch Technology Foundation (STW) under Grant 06652.

Finalist #1.4 (PS004-04) (2D-3):**Title: Microbubble dynamics in microvessels: Observations of microvessel dilation, invagination and rupture**

Hong Chen (Presenter), Andrew A. Brayman, Michael R. Bailey, and Thomas J. Matula, Center for Industrial and Medical Ultrasound, Applied Physics Laboratory, University of Washington, Seattle, WA, USA. (Abstract ID: 609)

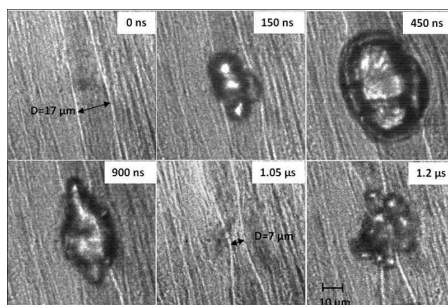
Abstract:

Background, Motivation and Objective: The fundamental interaction of an acoustically activated microbubble with small blood vessels is poorly understood. Understanding this interaction is important for designing better imaging schemes, and for targeting and drug delivery applications. High speed microscopy provides a tool to study interaction and response mechanisms.

Statement of Contribution/Methods: Following an approved U.W. IACUC protocol, ultrasound contrast agent microbubbles, Evan's blue and fluorescent dyes were perfused into the rat mesentery. These tissue samples were harvested for ex vivo observation. Evan's blue was used to facilitate identification of microvessels and also as an indicator of blood vessel permeability changes. Fluorescence images were taken to examine the integrity of blood vessels. Tissue samples were exposed to short pulses of 1 MHz ultrasound. 14 high-speed microphotographic images were acquired for each experiment with shutter speeds of 50 ns and each image separated by 150 ns.

Results: At low acoustic negative pressure (~ 1.5 MPa), bubble expansion caused microvessel dilation by approximately 1.2x. During bubble collapse, the vessel invaginated to approximately 0.9x of its original diameter (11 μ m). At high negative pressure (near 11 MPa), the vessel dilated by approximately 2.5x, followed by invagination of 0.4x of its original diameter (17 μ m). Vessel dilation and invagination were correlated temporally with bubble growth and collapse. At high pressure, the bubble and/or its fragments could be observed outside the original vessel, suggesting that the vessel had ruptured at some point. Vessel damage was also inferred by observation of fluorescent dye extravasation. An example of vessel dilation, invagination, and rupture can be seen in the following figure (pixel intensity values in the region around the blood vessel wall have been enhanced).

Discussion and Conclusions: Our observations confirm some aspects of previous modeling and observational findings. However, direct observation of ultrasound-induced vessel invagination appears novel, and may be an important mechanism related to vessel damage. It remains uncertain if the vessel was damaged during dilation, invagination, or from a violent bubble collapse. It's possible that both dilation and invagination contribute to vascular rupture. Work supported by NIH (5R01EB000350 and P01DK43881).



Finalist #1.5 (PS005-05) (2H-4):

Title: Non-invasive thrombolysis induced by histotripsy pulsed cavitation ultrasound therapy

Adam Maxwell (Presenter), *Charles Cain, **Hitinder Gurm, *J. Brian Fowlkes, and *Zhen Xu, *1Department of Biomedical Engineering, University of Michigan, Ann Arbor, Michigan, USA, **Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan, USA, ***Department of Radiology, University of Michigan, Ann Arbor, Michigan, USA. (Abstract ID: 68)*

Abstract:

Background, Motivation and Objective: Blood clot formation is an essential response to injury but can be the cause of many cardiovascular diseases. Current treatments to remove blood clots (thrombolysis) include thrombolytic drugs and/or catheter-based techniques, both of which have significant drawbacks including risks of excessive bleeding and infection. Our goal is to develop a noninvasive thrombolysis method based on Histotripsy, a technique that mechanically fractionates soft tissue using controlled ultrasound cavitation. This paper investigates the feasibility and efficacy of this new approach to thrombolysis.

Statement of Contribution/Methods: Blood clots were formed in-vitro from whole porcine blood by adding CaCl₂ solution. Clots were placed in a 6 mm diameter LDPE tube and treated by histotripsy. The treatment targeting and monitoring were guided by ultrasound imaging. The histotripsy treatment consisted of 5 cycle ultrasound pulses delivered at a 1 kHz pulse repetition frequency and peak negative pressures of up to 14 MPa. Clots were treated until completely dissolved. Acoustic backscatter during treatment was collected for cavitation detection. Clots were also treated under flow rates up to 50 cm/sec in a circulatory model. To evaluate possible vascular damage, clots were treated in excised canine aorta and vena cava and histology of the vessels was examined for damage.

Results: Histotripsy can completely fractionate a clot weighing 300 mg (4 mm in diameter and 2 cm in length) in ~0.5 – 5 minutes (mean = 2.7 minutes, n = 32 clots). Histotripsy thrombolysis was initiated at peak negative pressures ≥ 8 MPa, and only after initiation of a cavitating bubble cloud was detected. The thrombolysis rate (clot weight/treatment time) increased with increasing pressure. Histotripsy fragmented the clot into debris no larger than 60 μ m in diameter, with over 90% (by volume) of the debris having diameters $< 8 \mu$ m. The treated vessels were intact upon initial histological evaluation. Histotripsy thrombolysis was effective both in high flow and static environments. The treatment targeting and progress can be clearly seen on an ultrasound image. Moreover, we observed that clot fragments are attracted to the vicinity of the bubble cloud, and can be trapped and further fragmented at the focus.

Discussion and Conclusions: Our results suggest that histotripsy is an effective and efficient non-invasive method for thrombolysis guided by real-time imaging. Most clot debris fragments generated are smaller than red blood cells. Large clot fragments can be trapped near the bubble cloud and further fractionated. This phenomenon is possibly due to a particular fluid flow pattern created by cavitation-induced microstreaming. We plan to use this property to create a Non-invasive Embolization Trap (NET) to prevent embolization caused by escaping clot fragments. These results suggest that histotripsy has the potential to emerge as a safe and effective non-invasive thrombolytic.

Finalist #1.6 (PS006-06) (2I-5):

Title: Reaching the optimal focusing and steering capabilities of transcranial HIFU arrays based on time reversal of acoustically induced cavitation bubble signature

**Jerome GATEAU (Presenter), **Laurent MARSAC, *Mathieu PERNOT, *Jean-Francois AUBRY, *Mickael TANTER, *Mathias FINK, *Laboratoire ondes et Acoustique, INSERM, CNRS UMR 7587, ESPCI, PARIS, France, **SUPERSONIC IMAGINE, Aix-en-Provence, France. (Abstract ID: 248)*

Abstract:

Background, Motivation and Objective: Brain treatment with High Intensity Focused Ultrasound (HIFU) can be achieved through the skull by multichannel arrays using time-reversal focusing. Such a method requires a reference signal either sent by a real source embedded in brain tissues or computed from a virtual source, using CT based simulations. This non-invasive computational method allows precise focusing, but discretization and modeling errors can result in a reduction of the accessible acoustic pressure at focus in comparison with real experimental time-reversal using an implanted hydrophone. The goal of this study is to demonstrate the feasibility of reaching the optimal focusing based on the initial corrections obtained from CT-scan simulations. The optimal acoustic pressure at focus is recovered by inducing a cavitation bubble through the skull bone and using its ultrasonic emission for time-

reversal transcranial focusing. The potential of this technique for improving both transcranial focusing and electronic beamsteering performances is investigated.

Statement of Contribution/Methods: Ex vivo experiments are performed on a half skull immersed in a degassed water tank maintained at 37 °C. The ultrasound array is composed of 136 high-power individual transducers (central frequency 1 MHz) mounted on a spherical surface with a semi random distribution. The simulation uses a 3D finite differences code and a model of the half skull based on CT data. Cavitation events occur in an agar gel, phantom for in vivo bubble formation. The pressure field at 1 MHz is scanned at low amplitude levels with a hydrophone mounted on a 3D gantry.

Results: Ex vivo CT guided simulations allowed us to reach, at the geometrical focus of the array, 83% of the optimal pressure (hydrophone based time reversal). Cavitation bubbles were then created transcranially at this location with computed emission pulses. The 1 MHz component of a single bubble acoustic emission was selected, time reversed and reemitted, restoring a mean pressure ratio of 96% (+/- 2%). The new focal peak, i.e the location of the cavitation event, was localized in the -2 dB focal area of the initial pulse corresponding to a 0.5 mm uncertainty. When performing electronic steering from a reference signal optimally focusing at the geometrical focal point, 90% of the optimal pressure is still reached up to 8 mm away to the initial position in the focal plane. With six reference signals from cavitation bubble spots equally distributed on a 6 mm radius circle, this area was extended to 12 mm. Such cavitation bubbles were generated using electronic steering.

Discussion and Conclusions: A new non-invasive method to correct skull aberrations has been validated. From CT images based simulations, the focusing was restored through the skull by inducing a cavitation bubble at the targeted location, and the corrected zone was extended by electronic beam steering and discrete bubbles generation. This method should greatly benefit transcranial brain therapy.

Finalist #1.7 (PS007-07) (2K-5):

Title: High Frame Rate Adaptive Imaging Using Coherence Factor Weighting and the MVDR Method

Shun-Li Wang (Presenter) and Pai-Chi Li, National Taiwan University, Taipei, Taiwan. (Abstract ID: 1083)

Abstract:

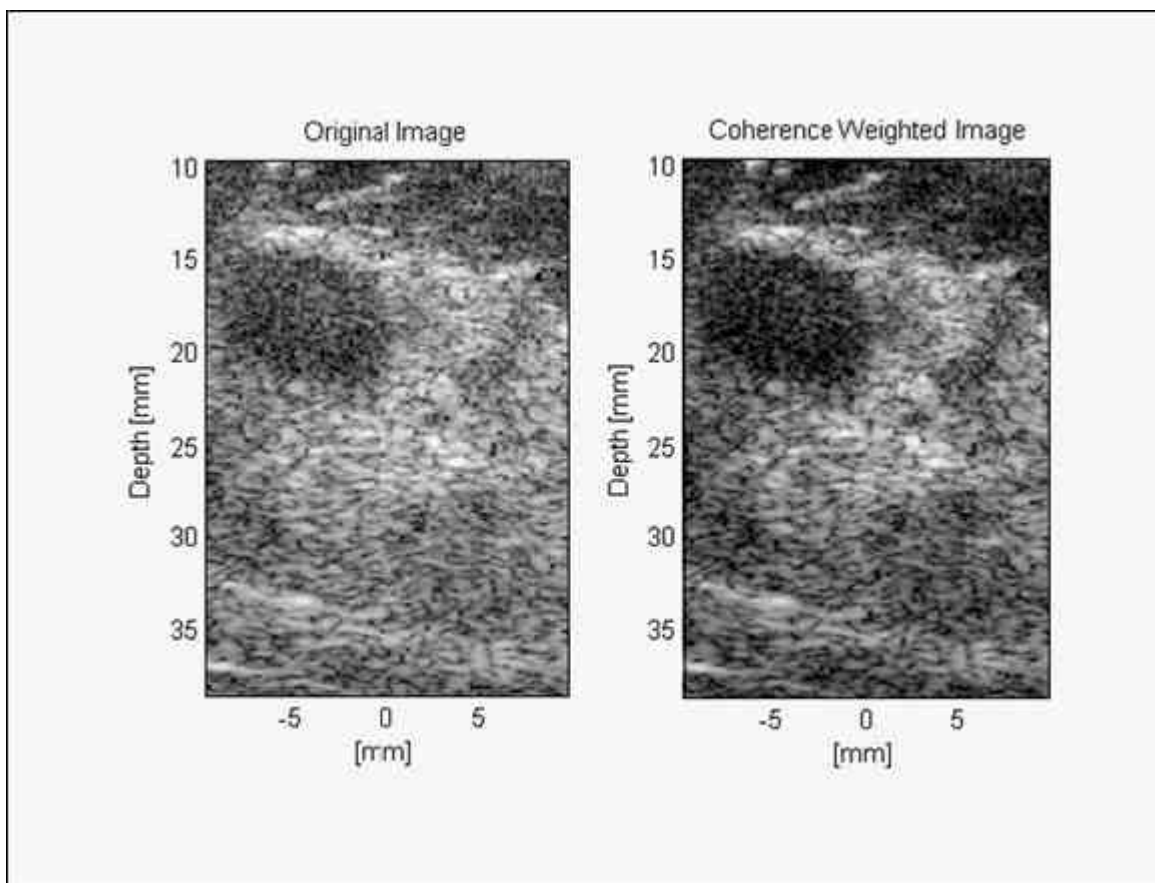
Background, Motivation and Objective: Adaptive imaging has been extensively studied. Although some success has been demonstrated, these approaches generally are not suitable for high frame rate (HFR) imaging where broad transmit beams are required. In this study, we propose an effective adaptive imaging method suitable for HFR imaging based on coherence factor (CF) weighting and the minimum variance distortionless response (MVDR) method.

Statement of Contribution/Methods: The CF is a focusing quality index estimated from receive-channel data. It is the ratio between the energy of the coherent sum to the total incoherent energy. This method is an adaptive weighting technique in which the amplitude of each image pixel is weighted by the corresponding CF such that the unwanted sidelobes are reduced. Direct implementation of the CF weighting in HFR imaging does not provide satisfactory results because broad transmit beams required for HFR imaging affect accuracy of CF calculations. In this study, we solve this problem by applying the MVDR method to the delayed channel data. Specifically, the MVDR method is used for angle of arrival estimation. The beam sum data are then weighted by the estimated CF.

Results: A synthetic transmit aperture method is used for HFR imaging. Only 8 firings are required to form an image. Both simulations and clinical breast imaging data are used. In the simulations, an anechoic cyst phantom is imaged with a maximum $\lambda/2$ near field phase screen. The correlation-based method proposed by Flax/O'Donnell is also implemented for performance benchmarking. The contrast and the contrast-to-noise ratio (CNR) improvements are

7.7 dB and 39.2% with the proposed method, respectively. Only 2.1 dB and 21.4% improvements are achieved using the correlation-based method. Clinical breast data are also acquired using a programmable array system. The following figures show images of a fibroadenoma lesion (left: original image, right: with the proposed method). With the proposed data, the contrast enhancement is 3.3 dB and the CNR enhancement is 13.4%.

Discussion and Conclusions: The proposed method combines CF weighting with the MVDR method. Simulations and clinical breast data are used to demonstrate the image quality improvement. Even for HFR imaging with only 8 firings per image, effective contrast enhancement and better lesion boundary can be achieved. Efficacy of the proposed method is clearly demonstrated.



Finalist #1.8 (PS008-08) (1K-5):

Title: Estimation of Valvular Regurgitation Area by 3D HPRF Doppler

**Torbjørn Hergum (Presenter), *Thomas Renhult Skaug, **Knut Matre, and Hans Torp, *Department of circulation and medical imaging, Norwegian University of Science and Technology, Trondheim, Norway, **Institute of Medicine, University of Bergen, Bergen, Norway. (Abstract ID: 1040)*

Abstract:

Background, Motivation and Objective: Determining the severity of leakage through a heart valve is important, but difficult. Two of the parameters which are clinically interesting in this regard are the area and the geometry of the

lesion. Current practice for non-invasive measurement of the severity of valvular regurgitation is qualitative, and based upon using color flow- and spectral Doppler techniques.

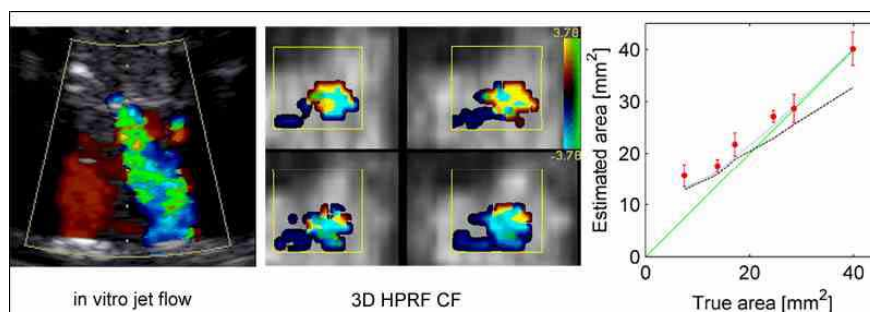
Statement of Contribution/Methods: In search for quantitative measurements of regurgitant severity we used 3D high pulse repetition frequency (HPRF) color flow imaging to measure the Doppler signal from multiple beams distributed over the laminar vena contracta region near the orifice. A steep clutter filter was used to separate the jet flow Doppler signals from the Doppler signals of the slowly moving blood of the ambiguous sample volumes.

The power from the closely spaced ultrasound beams are summed to yield the total Doppler power, which is known to be proportional to the amount of blood moving above the clutter-filter cutoff velocity. The cross sectional area of the jet was found by scaling the summed Doppler power from these beams using both a-priori knowledge of the lateral extent of the beams and a reference beam which is completely covered by the orifice.

Both in vitro trials and computer simulation have been used for validation. The in vitro measurements were made using a pulsatile flow phantom holding porcine valves with six different holes, ranging from mild to severe mitral regurgitation. The method can be applied to other high-velocity valvular jets.

Results: The mean value and standard deviation from the in vitro trials are plotted as red in the figure showing true area vs. estimated area. Two computer simulations are also included in the figure, the dashed and dotted lines are simulations respectively with- (blue) and without (black) stochastic variation.

Discussion and Conclusions: Small holes of sizes comparable to a single ultrasound beam are overestimated as expected from simulations, and the estimates of the larger holes fits well with the line of identity (green). According to the stochastic simulations the method should underestimate the area of large orifices, but this is not seen in the in vitro data. Regardless of this the in vitro data enables us to distinguish between the different regurgitation degrees.



Finalist #1.9 (PS009-09) (2E-6):

Title: Image-Guided Refocusing of Dual-Mode Ultrasound Arrays(DMUAs)

John Ballard (Presenter) and Emad Ebbini, University of Minnesota, USA. (Abstract ID: 384)

Abstract:

Background, Motivation and Objective: A major advantage of imaging with dual-mode ultrasound arrays (DMUAs) is their inherent registration between imaging and therapeutic modes during image-guided surgery which allows for image-based feedback for refocusing the therapeutic beam. Specifically, this capability is critical in image-guided thoracic surgeries where the target is partially obstructed by the rib cage, thus limiting the access and distorting the geometrically-focused high-intensity focused ultrasound (HIFU) therapeutic beam.

Statement of Contribution/Methods: Images obtained with single-transmit focus (STF) imaging, in which the therapeutic beam is used at diagnostic levels, allow the user to select target and critical locations for optimizing the power deposition. We have developed an optimal refocusing method that takes advantage of the acoustic window of the intercostals spacing in order to minimize the power deposition over the critical regions (ribs) while maintaining or improving the power deposition at the target location (tumor).

Results: The algorithm is verified experimentally with a 64-element 1MHz DMUA, in an attenuating tissue mimicking phantom (~ 0.5 dB/cm/MHz) with embedded Plexiglas ribs. Thermocouples are used to measure sub-therapeutic temperatures across the ribs and at the target location before, during and after 5 seconds of HIFU exposure for both the geometric focusing and the optimized refocusing while normalizing the driving power for both cases. An increase of normalized temperature (per watt of input power) greater than 20% was observed at the target after refocusing. At the same time, a reduction in normalized temperature rise across the ribs was greater than 60%. Statistics showed that the maximum variance between measurements when the experiment was rerun a minimum of 5 times for each case was approximately 5%. In addition, STF images taken with the refocused HIFU beam showed increased echogenicity at the target and reduced echogenicity at the ribs. This can be quantified by the intensity of the grayscale images. These images show a typical improvement of 5 dB at the focus with a reduction of 2dB across the ribs.

Discussion and Conclusions: The results show that STF DMUA imaging provides suitable feedback for refocusing the HIFU beam in the presence of strongly scattering targets. The robustness and repeatability of the algorithm were demonstrated by embedding the ribs within a block tissue-mimicking phantom to approximate realistic conditions and repeating each experiment multiple times. The results also show that grayscale STF images themselves provide useful feedback on the improvement in the quality of the refocusing beam, i.e. the relative echogenicity of the ribs is reduced upon refocusing indicating reduction in incident power. These results are generally consistent with the directly measured temperatures at the target and rib locations.

Finalist #2.1 (PS010-10) (5C-2):

Title: The Detection of Chemical and Biological Analytes Using a Monolithic Spiral Coil Acoustic Transduction Sensor

Donald McCann (Presenter), Mitchell Wark, Paul Millard, David Neivandt, and John Vetelino, University of Maine, Orono, ME, USA. (Abstract ID: 131)

Abstract:

Background, Motivation and Objective: The monolithic spiral coil acoustic transduction (MSCAT) sensor platform is a novel bulk acoustic wave (BAW) device which is excited by a gold spiral coil antenna photolithographically deposited on one side of an AT-quartz wafer. The MSCAT platform can operate at very high frequencies by efficiently exciting high harmonic transverse shear modes with the application of a high frequency RF signal to the spiral coil. Since one surface of the MSCAT device is bare, this device can be used as a sensing platform upon which one deposits analyte selective chemical or biological films. The bare surface allows the detection of analyte induced mechanical (mass and viscoelasticity) and electrical (conductivity and dielectric constant) property changes in the film. In order to demonstrate the applicability of a MSCAT device as a sensor, the MSCAT platform is coated with biological and chemical films selective to *Escherichia coli* (*E. coli*) O157:H7 (hereafter referred to as *E. coli*), the *E. coli* strain most often responsible for serious illnesses in humans, and saxitoxin (STX), the most dangerous neurotoxin associated with shellfish poisoning stemming from red tide, respectively.

Statement of Contribution/Methods: A method for optimizing the number of turns and coil width and spacing of the MSCAT's antenna was developed using the Box-Behnken design method. MSCAT sensing platforms were then coated with biological films selective to *E. coli* based on antibody-antigen interactions and chemical films selective to

STX based on the 18-crown-6 ether. Each MSCAT sensor was the exposed to E. coli and STX and the changes in resonant frequency were monitored.

Results: It was found that the most critical parameter in achieving efficient operation of the MSCAT device was the coil width. The MSCAT sensor operating at its fundamental frequency (5 MHz) was exposed to E. coli and exhibited a frequency shift approximately five times greater than similar tests performed with quartz crystal microbalance (QCM) sensors. In order to determine the lower detection limit and resolution of the MSCAT sensor, the sensor was operated at its 11th harmonic (55 MHz) and exposed to decreasing concentrations of E. coli. The resonant frequency was then monitored to obtain a dose response curve. The MSCAT sensor was able to detect E. coli in concentrations as low as 104 microbes/mL, 2 orders of magnitude lower than the QCM sensor. Similar results relating to the detection limit and resolution were also obtained for STX.

Discussion and Conclusions: A method for optimizing the MSCAT sensors' spiral coil antenna geometry was performed and it was shown that the coil width was the most critical parameter. The MSCAT was found to be significantly more sensitive than the QCM sensor due to the fact that it can detect both electrical and mechanical property changes and operate at high frequencies. Since the MSCAT has been excited up to the 81st harmonic, the MSCAT device may also be used in high frequency resonator applications.

Finalist #2.2 (PS011-11) (5G-5):

Title: Improving the Bandwidth of Air Coupled Capacitive Ultrasonic Transducers Using Selective Networks

**Sean Mc Sweeney (Presenter) and **WMD Wright, *Electrical and Electronic Engineering Dept, University College Cork, National University of Ireland, Mallow, Cork, Ireland, **Electrical and Electronic Engineering, University College Cork, National University of Ireland, Cork, Cork, Ireland. (Abstract ID: 589)*

Abstract:

Background, Motivation and Objective: One of the key limitations on using CUT (Capacitive Ultrasonic Transducers) and cMUTs[1] (Capacitive Micromachined Ultrasonic Transducers) in air is their relatively narrow bandwidth which although superior to that of current piezoceramic devices[2] could be improved. Most air coupled capacitive devices could benefit hugely through the use of selective networks[3] for bandwidth expansion, resonance reinforcing, or a combination of both. This work has investigated the application of pole/zero manipulation techniques to modify and enhance the transmission characteristics of capacitive transducers through front end mounted components. The main objective was to positively enhance the performance characteristics of capacitive transducers.

Statement of Contribution/Methods: A modified electrical equivalent circuit for CUTs to include the selective networks used was developed. The work assessed the effects of a tuned amplifier on the passband of the devices studied and then focused on more complicated network designs for enhancement. Simulations of the effects of the networks on the devices using equivalent circuit models were carried out and the response curves to pulsed operation were calculated and compared to experimental measurements from a pair of fixed CUTs with a combined centre frequency of 280kHz and 3dB bandwidth of 160kHz.

Results: Increases in centre frequency of 25% and 3dB bandwidth of 77% using a single tuned amplifier were obtained. Resonance reinforcing, resonance shifting and ripple suppression were also studied through the manipulation of the q factor and pole location of such an amplifier. Performance enhancements were studied for a number of CUT aperture sizes and membrane thicknesses and a comparative study of the theoretical and experimental effect of these variations was conducted. With the appropriately designed network, enhancement of peak resonance with a simultaneous bandwidth expansion was obtained at the expense of other operating parameters such as stopband ripple. Simulations of more complicated circuit designs using equivalent circuit models of capacitive devices[4,5]

showed that the maximum level of passband ripple observed for the bandwidth expansion method using a single tuned amplifier was reduced while achieving simultaneously the same 3dB results.

Discussion and Conclusions: The implication for bandwidth expansion of a capacitive transducer through selective network design is significant, allowing increased resolution in imaging systems, ultrasonic ranging and non destructive evaluation. Significant improvements have been observed without additional signal manipulation, through digital means or otherwise, in certain transmission properties of the devices. Future work will expand on the enhancement of capacitive transducers through the use of hybrid resonator circuits and other related methods.

Finalist #2.3 (PS012-12):

Title: Dynamic focusing thorough arbitrary geometric interfaces

Montserrat Parrilla (Presenter), Jose Brizuela, Jorge Camacho, Alberto Ibañez, Patricia Nevado, and Carlos Fritsch, Instituto de Automática Industrial (CSIC), La Poveda (Arganda), Madrid, Spain. (Abstract ID: 154)

Abstract:

Background, Motivation and Objective: The use of array technology in Non-Destructive-Testing (NDT) applications requires setting the focal laws in emission and in reception for every array element. Frequently wedges are inserted or the inspection of the part is carried out by immersion. In these cases, the presence of interfaces complicates the focal law computing task due to refraction effects. If the number of foci is limited (i.e., single focus in emission and in reception), the Fermat's principle can be applied to accurately compute the focal laws.

However, state-of-the art equipment allows dynamic focusing, which provides increased resolution, signal to noise ratio and contrast. With dynamic focusing, the number of focal laws to be computed increases by two or three orders of magnitude and the computing time by the Fermat's principle increases accordingly.

The main objective of this work is to present new methods which provide the dynamic focusing focal laws with the required accuracy and less computing burden.

Statement of Contribution/Methods: Several methods of focal law computing thorough arbitrary geometry interfaces are analyzed. As a background, the general purpose method based on the Fermat principle is described. Then, a new approach, the Fast Focal Law Computing (FFLC) technique is presented. It is based in solving an equation by an iterative method. It is shown that, for most applications and following the proposed processing method, no iterations are required, being nearly as fast as a closed formula method. The Fermat and the FFLC methods are compared with regard to accuracy and computing time for dynamic focusing of a diversity of interface shapes. Then, both methods are applied to compute the dynamic focal laws into aluminum parts with artificial flaws, using a 5 MHz transducer. Wedges are applied for planar interfaces and water immersion is used for shaped parts with an irregular geometry.

Results: It is shown that the proposed FFLC algorithm obtains the dynamic focal laws in about 1/20 the computing time required by the conventional Fermat's principle application. This represents getting the equipment ready for inspection in a few seconds, instead of several minutes. Furthermore, focusing errors of the FFLC are very small and comparable to those produced by the standard method. Thus, image quality is not impaired in spite of the low time spent in computing the focal laws.

Discussion and Conclusions: The FFLC is presented and analyzed. It provides a fast method to compute focal laws for dynamic focusing into parts of arbitrary shape. Images obtained with the computed focal laws are of the same quality that those obtained with more costly methods. This is due to the very low timing errors produced by the FFLC technique.

Finalist #3.1 (PS013-13) (6E-5):**Title: Wireless Drive of a Piezoelectric Plate by Dipole Antenna**

Satyanarayan Bhuyan (Presenter) and Junhui Hu, Nanyang Technological University, Singapore. (Abstract ID: 72)

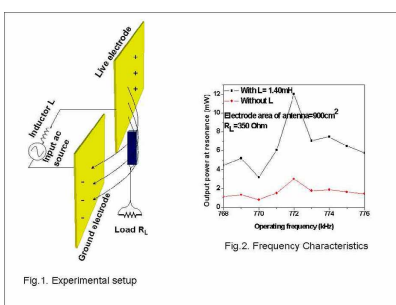
Abstract:

Background, Motivation and Objective: In most applications of piezoelectric devices, electric energy is applied to the devices via lead wires soldered on the electrodes of piezoelectric components. But the lead wires may fall off at large vibration and high input voltage, and this causes the breakdown of piezoelectric devices. Thus, there is a need to introduce a wireless approach to apply electric energy to the piezoelectric devices. Wireless drive of a piezoelectric plate using an electric dipole antenna is explored in this work.

tatement of Contribution/Methods: To transmit relatively large electric energy to a piezoelectric plate, an electric dipole antenna in series with an inductor is used as shown in Fig. 1. The ac electric field, produced by plate-shaped live and ground electrodes of the antenna is transmitted to the piezoelectric plate placed 6 mm away from antenna plane. The separation between antenna electrodes is 5 cm. The electric resonance of dipole antenna with an inductor generates a large voltage across the dipole antenna.

Results: Fig. 2 shows the frequency characteristic of the output power of the piezoelectric plate operating in the thickness mode. At resonance frequency 772 kHz of the plate, a maximum output power of 12mW is achieved when the dipole antenna is in series electric resonance with an inductor because of the large voltage 1436Vrms across the antenna for an input voltage source of 150Vrms. The power transmitted to the load drops as the plate is detuned from resonance. An equivalent circuit of the wirelessly driven piezoelectric plate operating in the thickness mode has been developed. It is known that the circuit has a current source, resulting from the electric field which is different from the conventional piezoelectric plate driven by a voltage applied via lead wires.

Discussion and Conclusions: A piezoelectric plate operating in the thickness mode is wirelessly driven by the electric field generated by a dipole antenna. At resonance a maximum output power of 12mW is achieved with an electrode area of 900 cm², input source voltage of 150Vrms, and 6mm from the antenna plane. An equivalent circuit of the wirelessly driven piezoelectric plate is derived which has a current source, resulting from the external electric field.

**Finalist #3.2 (PS014-14) (6H-5):****Title: Towards thin film complete characterization using picosecond ultrasonics**

Pierre-Adrien Mante (Presenter), Arnaud Devos, and Jean-François Robillard, IEMN-CNRS, France. (Abstract ID: 593)

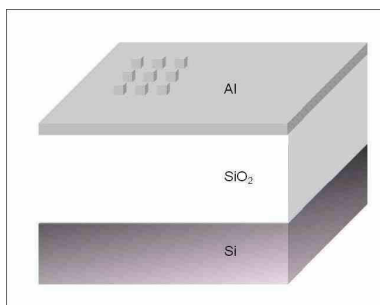
Abstract:

Background, Motivation and Objective: Mechanical characterization of thin films is a main issue in the microelectronic industry. The knowledge of these properties is necessary in many fields such as copper line interconnection and bulk acoustic wave resonators. A few techniques are reliable at this scale. Nano indentation or conventional laser-ultrasonic techniques can't be effective in film thinner than 500 nm. Picosecond ultrasonics can also be used for thin film characterization. It is an efficient method to excite and detect vibrations within a thin film. A strong optical pulse warms a material surface, which leads to the creation of an acoustic wave propagating at the sound velocity. The waves propagation is longitudinal and it modifies the optical properties of the material. These modifications can be detected by a second time-shifted optical pulse.

Statement of Contribution/Methods: In this technique we use a metallic very thin film as a transducer and only longitudinal waves can be generated. Due to that the full mechanical properties of thin layer cannot be measured. Here we show that thanks to a nanostructuration of the transducer, in-plane propagating waves are added using the same experimental setup. In the case of an isotropic medium, we have now access to all the acoustic properties.

Results: We realized and studied 2D lattices of metallic nanocubes using e-beam lithography deposited onto the thin film to be characterized. In a first experiment we will present results obtained on a 600nm-thick silica film.

Discussion and Conclusions: Experiments were performed both on the lattices and out of the array of nanocubes. We respectively obtained the Rayleigh's velocity and the longitudinal velocity of silica. Then we can deduce Poisson's ratio and Young's modulus of silica: $E=72\text{GPa}$ and $\nu=0.16$, which is in very good agreement with literature. This first result demonstrates that we are able to extract longitudinal sound velocity, Rayleigh's velocity, Young's modulus and Poisson's ratio in submicronic layers. Further results obtained on other materials isotropic and anisotropic will be also presented.

**Finalist #3.3 (PS015-15) (6H-6):**

Title: Simultaneous observation of induced longitudinal and shear acoustic phonons by Brillouin Scattering

**Yasuhiro Yoshida (Presenter), *Mami Matsukawa, and **Takahiko Yanagitani, *Faculty of Engineering, Doshisha University, Kyotanabe, Japan, **Department of Applied Physics, Nagoya Institute of Technology, Nagoya, Japan.* (Abstract ID: 1015)

Abstract:

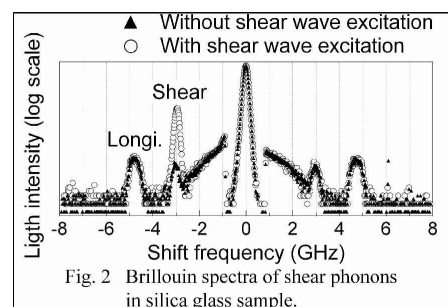
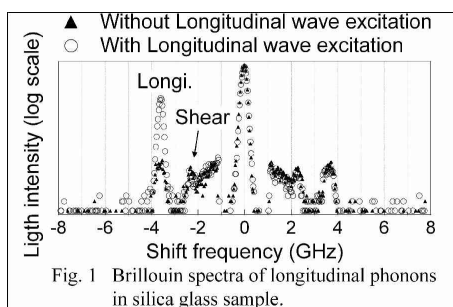
Background, Motivation and Objective: Brillouin scattering measurement is a nondestructive method for measuring acoustic wave velocity at minute part of the material. This technique also enables us to measure longitudinal and shear wave velocities simultaneously. However, the measurement accuracy of the velocities is lower

than those of other method such as pulse-echo measurement. This is mainly due to the weak Brillouin light scattering from the thermal phonons. In this study, we propose the use of induced longitudinal and shear waves for solving this problem.

Statement of Contribution/Methods: A c-axis tilted ZnO thin film transducer was deposited on side of the silica glass bar with the size of 3x10x35 mm³. Thus, excited continuous longitudinal and shear waves were propagated in the silica glass sample. Brillouin spectrum from silica glass sample were measured using RI?A scattering geometry [1].

Results: Figure 1 shows the Brillouin spectrum of longitudinal mode phonons observed without and with longitudinal and shear waves excitation. A pair of peaks observed at 3.6 GHz corresponds to the scattering from longitudinal mode phonons. This frequency is near the thickness extensional third overtone mode resonant of the film transducer. Strongly amplified Stokes peak is observed due to the excited longitudinal wave propagating in one direction. Also for shear mode phonons, amplified Stokes peak at 3 GHz (thickness shear fifth overtone mode resonant frequency) is observed as shown in Fig. 2.

Discussion and Conclusions: This technique is useful for the sample which is easy to deteriorate because this technique realizes larger scattering even the use of lower laser power. Ref. [1]: J. K. Krüger et al., J. Phys. D: Appl. Phys 31 (1998) 1913.



Finalist #4.1 (PS016-16):

Title: Temperature Compensation of Thin AlN Film Resonators utilizing the Lowest order Symmetric Lamb mode

Gunilla Wingqvist (Presenter), Lilia Arapan, Ventsislav Yantchev, and Ilia Katardjiev, Solid State Electronics, Uppsala University, Uppsala, Sweden. (Abstract ID: 620)

Abstract:

Background, Motivation and Objective: Micromachined Thin film plate acoustic wave resonators (FPAR) utilizing the lowest order symmetric Lamb wave (S₀) propagating in highly textured 2 μ m thick Aluminum Nitride (AlN) membranes were successfully demonstrated [1]. The proposed devices had a SAW-based design and demonstrated Q factors of up to 3000 at a frequency of 900MHz as well as design flexibility with respect to the required motional resistance. A drawback of the proposed devices was the negative TCF of -20 ppm/K. Thus despite the promising features demonstrated, further device optimization is required.

Statement of Contribution/Methods: In this work composite membrane employing the opposite temperature coefficients of delay of the DC sputtered AlN and the thermally grown SiO₂ is used as a platform for the design of

temperature compensated FPAR. The theoretical analysis, based on the Adler's algorithm, revealed the possibility to achieve temperature compensation retaining the device electromechanical coupling. Further, the 1D equivalent model analysis suggested the use of Mo electrodes as a higher reflective alternative to the typically used Al in SAW-type reflecting gratings. Thus Mo being a material sustainable to electro-migration and with significantly smaller TCD, enables further device minimization as well.

Results: The zero TCF devices demonstrated in here are synchronous type resonators fabricated on to composite AlN/SiO₂ membrane consisting of relative thicknesses of $d/\lambda=0.166$ and $D/\lambda\sim 0.07$, respectively. $\lambda=12\mu\text{m}$ is the acoustic wavelength. The number of strips used in the reflectors is as small as 30 due to high reflectivity of the Mo electrodes. Q factors of around 1000 have been measured at a frequency of 850 MHz.

Discussion and Conclusions: The latter is sufficient but slightly lower than the $Q=1800$ achieved for the synchronous noncompensated FPAR [1]. The observed reduction in Q is due to a slight non-uniformity of the thermally grown SiO₂ layer caused by the limited selectivity of the Si/SiO₂ Reactive Ion etching used for the membrane micromachining. Solutions of the problem are further suggested. In conclusion temperature compensated FPARs with reduced size and high Q are designed and micromachined on to low resistive silicon wafers. Their potential applications include integrated frequency sources as well as narrow band filters and gas sensors

Finalist #4.2 (PS017-17) (4J-2):

Title: A Full-Wave Analysis of Surface Acoustic Waves Propagating on a SiO₂ Overlay/Metal Grating/Rotated YXLiNbO₃ Substrate Structure

Yiliu Wang (Presenter), Ken-ya Hashimoto, Tatsuya Omori, and Masatsune Yamaguchi, Graduate School of Engineering, Chiba University, Chiba, Chiba, Japan. (Abstract ID: 217)

Abstract:

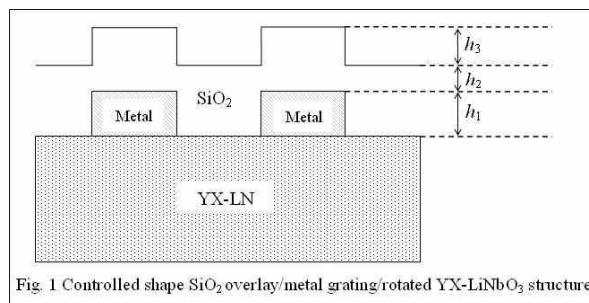
Background, Motivation and Objective: The authors have recently reported a full wave analysis of piezoelectric boundary acoustic waves (PBAWs) propagating in a SiO₂ overlay/Cu grating/rotated YX-LN substrate structure [1]. In the analysis, the finite element method is used for the grating region, while the spectral domain analysis is applied to an isotropic overlay region as well as a piezoelectric substrate region. The paper discusses in detail how the excitation and propagation characteristics of the shear-horizontal (SH) and Rayleigh-type PBAWs are dependent upon the Cu grating thickness, substrate rotation angle and metallization ratio.

The structure consisting of a SiO₂ overlay of finite thickness is also directly applicable to the development of high performance SAW filters [2]-[3]. To the best of authors' knowledge, however, it seems that detailed discussions have not yet been made on the propagation characteristics of the SH- and Rayleigh-type SAWs.

Statement of Contribution/Methods: This paper describes a full wave analysis of the SH- and Rayleigh-type SAW propagation in a finite SiO₂ overlay/metal grating/rotated YX-LN substrate structure shown in Fig. 1.

Results: It is shown that the structure supports four types of propagation modes. Two modes concentrate their energy near the metal grating, and become the PBAWs when h_2 gets infinite. Their electromechanical coupling is relatively strong even when h_2 is large. One of the other two modes concentrates its energy near the top surface of the SiO₂ layer. With an increase in h_2 , its propagation characteristics approach to those for the non-piezoelectric Rayleigh-type SAW on a semi-infinite SiO₂ layer, rapidly losing its piezoelectric coupling. The remaining mode is the basis of a series of guided modes bounded in the SiO₂ layer, in which the SiO₂ layer behaves as a waveguide because of its low acoustic wave velocities.

Discussion and Conclusions: Detailed discussions are made on the dependence of the propagation characteristics of these four modes on the design parameters such as the layer and grating thickness. It is also discussed how the propagation characteristics are affected by the SiO₂ flatness denoted by h_3 in Fig. 1.



Finalist #4.3 (PS018-18) (4I-5):

Title: Shear mode BAW resonator based on c-axis oriented AlN thin film

Evgeny Milyutin (Presenter), and Paul Muralt, Ecole Polytechnique Federale de Lausanne, Switzerland. (Abstract ID: 522)

Abstract:

Background, Motivation and Objective: Thin film bulk acoustic wave resonators (TFBAR's) also showed potential as gravimetric sensors. In contrast to RF filters working with longitudinal modes, bio-medical applications usually require detection in a liquid, thus must employ shear modes. The principle has recently been successfully demonstrated with TFBAR devices employing tilted c-axis growth of ZnO [1, 2]. In this work, we show that it is also possible to use non-tilted AlN thin films when interdigitated (ID) electrodes (IDE) are used. A true shear BAW thickness mode can be excited. Parasitic Lamb waves are avoided by the use of acoustic reflectors.

Statement of Contribution/Methods: Performance and design of shear modes in AlN(001) films excited by ID electrodes were simulated by finite element modeling using the boundary element method (FEM-BEM). Devices have been fabricated with 1.5 microns thick (001)-textured AlN thin films on top of a Bragg reflector composed of 5 double layers of SiO₂/AlN. The Al electrode system was defined by photolithography along with a lift-off process.

Results: The performances of resonators were assessed in air and silicon oil. Typically resonance frequency of the devices was between 1.8-1.9GHz. By using different electrode periodicities, the BAW nature of the resonance was confirmed through the absence of a shift. A quality factor of about 1000 was achieved when operated in air. Under immersion, the Q-factor decreased to 260. Experimental results are in a good agreement with simulations, when we consider acoustic emission through the Bragg grating as the only loss factor.

Discussion and Conclusions: The achieved results and the simplicity of fabrication of proposed device show their potential as gravimetric sensors for immersed applications. The achieved Q-factor is higher than reported in literature for tilted c-axis resonators [3]. Further optimization of design and materials is going on. The integration of an immobilization layer is in development.

1. Link, M., M. Schreiter, J. Weber, R. Gabl, D. Pitzer, R. Primig, W. Wersing, M.B. Assouar, and O. Elmazria, C-axis inclined ZnO films for shear-wave transducers deposited by reactive sputtering using an additional blind. J.Vac.Sci.Techn. A, 2006. 24: p. 218-222.

2. Weber, J., W.M. Albers, J. Tuppurainen, M. Link, R. Gabl, W. Wersing, and M. Schreiter, Shear mode FBAR as highly sensitive liquid biosensors. *Sensors and Actuators A*, 2006. 128: p. 84-88.
3. G. Wingqvist, J. Bjurstrom, L. Liljeholm, V. Yantchev, I. Katardjiev, Shear mode AlN thin film electro-acoustic resonant sensor operation in viscous media, *Sensors and Actuators B* 123 (2007), 466-473.

Finalist #5.1 (PS019-19) (4D-3):

Title: Investigation of charge diffusion in Capacitive Micromachined Ultrasonic Transducers (CMUTs) using optical interferometry

Hanne Martinussen (Presenter), Astrid Aksnes, and Helge E. Engan, Electronics and Telecommunications, Norwegian University of Science and Technology, Trondheim, Norway. (Abstract ID: 274)

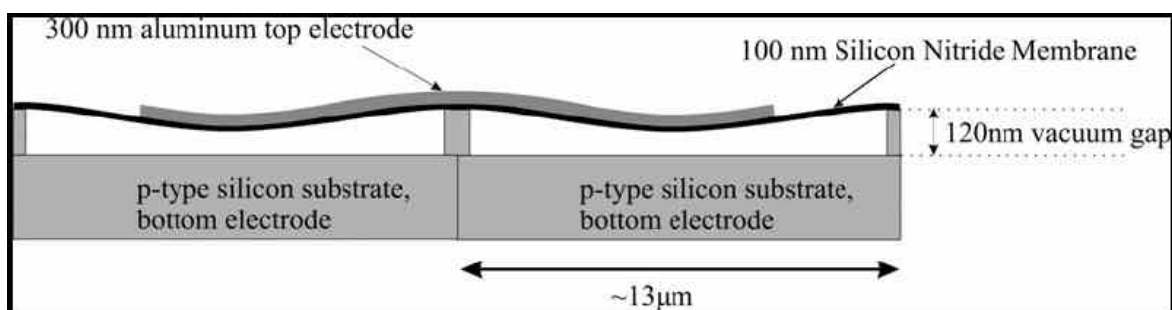
Abstract:

Background, Motivation and Objective: Capacitive Micromachined Ultrasonic Transducers (CMUTs) have been developed and fabricated at our department. The main goal is to use an improved version of these structures to perform medical imaging to detect unstable plaque in the coronary arteries. Unstable plaques are fatty lipid pools contained in the wall of the coronary arteries by a thin fibrous cap. A rupture of this cap can lead to an infarction. The CMUTs have a radius of 5.7 μ m and a center frequency of about 30MHz in air. When an RF voltage is applied in addition to a DC bias the membrane will vibrate and generate ultrasound waves. This DC bias is in the order of 30V and leads to a charge diffusion in the CMUTs. This work investigates this process in detail.

Statement of Contribution/Methods: A heterodyne interferometer has been built in order to characterize the CMUTs. The setup can measure absolute phase and amplitudes. By using two acousto-optic modulators in the reference arm of the interferometer we can measure acoustic frequencies in the range 10kHz-1.2GHz. The results from the interferometer are supplemented with measurements from a network analyzer. The network analyzer takes the mean of all currents generated by CMUTs whereas the interferometer inspects individual CMUT elements.

Results: The vibrating membrane in the CMUT is made of silicon nitride, which ideally is an insulator. However, we observe a charge diffusion through this membrane influencing the response of the CMUTs. There are two possible mechanisms. One is that positive charges diffuse from the bottom electrode through the silicon substrate and into the silicon nitride membrane. The other is that negative charges from the top electrode diffuses into the silicon nitride membrane. An experiment investigating the resonance frequency as a function of time indicated that the latter mechanism is dominant. Measurements from both the interferometer and the network analyzer supported this conclusion.

Discussion and Conclusions: The measurements presented here are performed in air. Under loading conditions such as water or tissue the frequency bandwidth of the CMUT increases substantially. The charge diffusion problem may therefore not be a major problem when the CMUT is operated in water.



Finalist #5.2 (PS020-20) (3G-4):

Title: High-frequency (>100MHz) Piezoelectric PZT Film Micromachined Ultrasonic Arrays

**Dawei Wu (Presenter), *Qifa Zhou, **Changgeng Liu, **Frank Djuth, and *K Kirk Shung, *NIH Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, USA, **Geospace Research, Inc, USA. (Abstract ID: 858)*

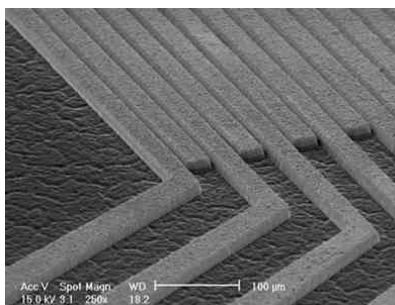
Abstract:

Background, Motivation and Objective: High frequency (>30 MHz) ultrasonic imaging has been extensively used for imaging of the eye, blood vessel, skin and small animals. Fabrication of the transducers, which is the most critical component of the ultrasound imaging system, becomes especially challenging when very high frequency (>100 MHz) is required. Conventional lapping-and-dicing methods with bulk piezoelectric materials are no longer a viable approach. During recent years, the advance of microelectromechanical system (MEMS) methods has offered significant opportunities for miniaturized devices. This paper presents the latest development of high-frequency (>100MHz) micromachined ultrasonic linear arrays with highquality PZT thick films.

Statement of Contribution/Methods: Both kerfless and kerfed arrays were fabricated with the PZT thick films which were prepared by spin-coating PZT composite solution. To fabricate the kerfless array, a layer of Cr/Au was patterned onto PZT film surface by using photolithographic techniques. A conductive epoxy, E-solder 3022, was used as a backing material after the silicon substrate was removed. One major problem with the kerfless arrays is their large crosstalk. To decrease the crosstalk, Inductively coupled plasma-Reactive ion etching (ICP-RIE) SF₆ based dry etching was selected to etch the PZT thick films into kerfed arrays. The kerfs of the array were next filled with non conductive epoxy; the front surface of the array elements were coated with Cr/Au electrodes. E-solder was poured in as the backing material after etching away the silicon substrate.

Results: A representative element of the kerfless array was found to have a center frequency of 120 MHz, -6 dB bandwidth of 40% and an insertion loss of around -40 dB. Its bandwidth increased to 60% after a layer of parylene was deposited as a matching layer. The etched PZT film array has a thickness of 15 μm and etched profile angle of 75° as shown below. Characterization of the array has been carried out. Results show great promise for this technology in fabricating linear arrays at a frequency higher than 50 MHz.

Discussion and Conclusions: High-frequency (>100 MHz) PZT linear kerfless arrays are fabricated and tested. Preliminary results of the etched linear kerf array are promising. The results show that integrating PZT films into MEMS devices can serve as a feasible solution to high-frequency ultrasonic array fabrication.



Finalist #5.3 (PS021-21):

Title: 1-D CMUT Imaging Arrays Fabricated Using a Novel Wafer Bonding Process

Andrew Logan (Presenter) and John Yeow, Systems Design Engineering, University of Waterloo, Waterloo, Ontario, Canada. (Abstract ID: 418)

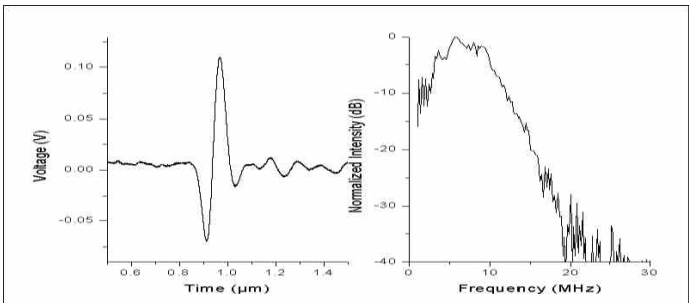
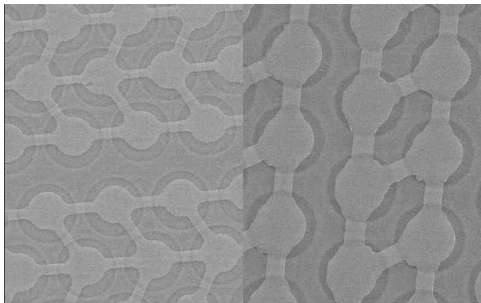
Abstract:

Background, Motivation and Objective: Capacitive micromachined ultrasonic transducers (CMUTs) are a promising alternative to conventional piezoelectric transducers for medical imaging and diagnostics. They have demonstrated image quality on par with commercial piezoelectric transducers, while the use of semiconductor fabrication technologies to manufacture ultrasonic imaging arrays has a number of advantages such as batch fabrication, reduced element lay-out constraints and the potential for onchip electronic circuit integration.

Statement of Contribution/Methods: Here we report the fabrication and testing of 1-D CMUT arrays using a novel wafer bonding process whereby the membrane and the insulation layer are both silicon nitride. The use of a user-grown insulating membrane layer avoids the need for expensive SOI wafers, reduces parasitic capacitance, and allows more freedom in selecting the membrane thickness while also enjoying the other benefits of wafer bonding fabrication.

Results: A 128x1 element array with a center frequency of 16 MHz in air and 7 MHz in immersion and a 64x1 element array with a center frequency of 40 MHz in air 25 MHz in immersion are discussed. Figure 1 is an SEM image of the 128 element device (left) and 64 element device (right). Figure 2 is the transmission pulse of the 128 element device (left) and the Fourier transform of the transmission (right). The device is biased at 100 V and a voltage spike is applied using a commercial ultrasonic pulser/receiver. Signal is detected using a commercial hydrophone. The device has a -6 dB bandwidth of 105%.

Discussion and Conclusions: The devices discussed here are suitable for phased array imaging without grating lobes. The element dimensions are 100 μm x 5 mm and 30 μm x 2 mm for the 128 and 64 element devices respectively. The devices will be used for biological imaging purposes.



V. Student Paper Competition Winners (7 in Total)

Student Paper Competition Winners:

Seven winners of student paper competition were selected on Monday, November 3, 2008, from the 21 "[Student Paper Competition Finalists](#)" during the 2008 IEEE International Ultrasonics Symposium. The winners were also announced and honored during the [Banquet and Shows](#) of Tuesday evening, November 4, 2008.

Photos and videos of the ceremony of the winners of the student paper competition award are now available via "[Conference Photos/Videos](#)". The following is list of the award winners.

Group 1: Medical Ultrasonics (3 winners):

- [Finalist #1.1 \(PS001-01\) \(3F-2\)](#): *Bo Wang (Presenter), Andrei Karpiouk, and Stanislav Emelianov, "Design of Catheter for Combined Intravascular Photoacoustic and Ultrasound Imaging,"* Biomedical Engineering, University of Texas at Austin, Austin, TX, USA. (Abstract ID: 309)
- [Finalist #1.4 \(PS004-04\) \(2D-3\)](#): *Hong Chen (Presenter), Andrew A. Brayman, Michael R. Bailey, and Thomas J. Matula, "Microbubble dynamics in microvessels: Observations of microvessel dilation, invagination and rupture,"* Center for Industrial and Medical Ultrasound, Applied Physics Laboratory, University of Washington, Seattle, WA, USA. (Abstract ID: 609)
- [Finalist #1.8 \(PS008-08\) \(1K-5\)](#): **Torbjørn Hergum (Presenter), *Thomas Renhult Skaug, **Knut Matre, and Hans Torp, "Estimation of Valvular Regurgitation Area by 3D HPRF Doppler,"* *Department of circulation and medical imaging, Norwegian University of Science and Technology, Trondheim, Norway, **Institute of Medicine, University of Bergen, Bergen, Norway. (Abstract ID: 1040)

Group 2: Sensors, NDE, and Industrial Application (1 winner):

- [Finalist #2.2 \(PS011-11\) \(5G-5\)](#): **Sean Mc Sweeney (Presenter) and **WMD Wright, "Improving the Bandwidth of Air Coupled Capacitive Ultrasonic Transducers Using Selective Networks,"* *Electrical and Electronic Engineering Dept, University College Cork, National University of Ireland, Mallow, Cork, Ireland, **Electrical and Electronic Engineering, University College Cork, National University of Ireland, Cork, Cork, Ireland. (Abstract ID: 589)

Group 3: Physical Acoustics (1 winner):

- [Finalist #3.2 \(PS014-14\) \(6H-5\)](#): *Pierre-Adrien Mante (Presenter), Arnaud Devos, and Jean-François Robillard, "Towards thin film complete characterization using picosecond ultrasonics,"* IEMN-CNRS, France. (Abstract ID: 593)

Group 4: Microacoustics - SAW, FBAW, MEMS (1 winner):

- [Finalist #4.3 \(PS018-18\) \(4I-5\)](#): *Evgeny Milyutin (Presenter), and Paul Mural, "Shear mode BAW resonator based on c-axis oriented AlN thin film,"* Ecole Polytechnique Federale de Lausanne, Switzerland. (Abstract ID: 522)

Group 5: Transducers and Transducer Materials (1 winner):

- **Finalist #5.1 (PS019-19) (4D-3):** *Hanne Martinussen (Presenter), Astrid Aksnes, and Helge E. Engan, "Investigation of charge diffusion in Capacitive Micromachined Ultrasonic Transducers (CMUTs) using optical interferometry,"* Electronics and Telecommunications, Norwegian University of Science and Technology, Trondheim, Norway. (Abstract ID: 274)

VI. Student Breakfast

Student Breakfast:

All students (with valid student IDs) attending the 2008 IEEE International Ultrasonics Symposium are invited to attend a complimentary breakfast on *Tuesday, November 4, 2008, from 7:30 a.m. - 9:00 a.m., in Conference Rooms 311B and 311C* (3rd floor) (tentatively) of the Beijing International Convention Center (BICC). You can locate the room through the [Condensed Program](#) or the [Floor Plan](#). The final date, time, and room assignments might change and thus please check with the conference registration desk at BICC to confirm before you go. The breakfast will be a good opportunity for students to directly ask questions to the IEEE UFFC society president and the members of the IEEE UFFC Administrative Committee, as well as for students to network with each other.

Appendix G:

Society Officials and Other Information

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

2008 IEEE International Ultrasonics Symposium Proceedings

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I. IEEE UFFC Society (UFFC-S) Officials

UFFC Society Officials:

Title	Name	Affiliation
President:	Susan Troler-McKinstry	<i>The Pennsylvania State University</i>
President-Elect:	R. Michael Garvey	<i>Symmetricon, Beverly, MA</i>
VP, Ferroelectrics:	Thomas R. Shrout	<i>The Pennsylvania State University</i>
VP, Frequency Control:	Samuel Stein	<i>Timing Solutions Corp., Boulder, CO</i>
VP, Ultrasonics:	Jacqueline H. Hines	<i>Applied Sensor R&D Corp., Annapolis, MD</i>
VP, Publications:	Donald Yuhas	<i>Industrial Measurement Systems Inc., IL</i>
Secretary-Treasurer:	Daniel S. Stevens	<i>Vectron International - Hudson, NH</i>

II. UFFC-S Elected Administrative Committee (AdCom) Members

Elected AdCom Members:

Term	Name	Affiliation
2008 - 2010	Rich Ruby	<i>Avago Technologies, San Jose, CA, USA</i>
2008 - 2010	Wilko Wilkening	<i>Siemens Medical Solutions, Mountain View, CA</i>
2008 - 2010	Yoonkee Kim	<i>U.S. Army Communications-Electronics RD&E Center, Ft. Monmouth, NJ, USA</i>
2008 - 2010	David Cann	<i>Oregon State University, Corvallis, OR, USA</i>
2007 - 2009	Roman Maev	<i>Windsor Institute for Diagnostic Research, Canada</i>
2007 - 2009	Dragan Damjanovic	<i>Swiss Federal Institute of Technology, Lausanne</i>
2007 - 2009	Mike Driscoll	<i>Northrup Grumman Corp., Baltimore, MD</i>
2007 - 2009	Ken-ya Hashimoto	<i>Chiba University, Japan</i>
2006 - 2008	Manfred Weihnacht	<i>IFW Dresden (retired), Dresden, Germany</i>
2006 - 2008	Sorah Rhee	<i>Boston Scientific, Fremont, CA</i>
2006 - 2008	Amit Lal	<i>Cornell University/DARPA, Arlington, VA</i>
2006 - 2008	Tadashi Takenaka	<i>Tokyo University of Science, Japan</i>

III. Newly Elected AdCom Members

Newly Elected AdCom Members:

The following 4 people have been elected as members of the Administrative Committee (AdCom) of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control society (UFFC-S) for the term from January 1, 2009 to December 31, 2011:

<p>Ultrasonics:</p> <p><i>Jian-yu Lu</i> Department of Bioengineering The University of Toledo Toledo, Ohio 43606, USA Email: jilu@eng.utoledo.edu</p>	<p>Frequency Control:</p> <p><i>Gregory L. Weaver</i> Space Department Applied Physics Laboratory The Johns Hopkins University Laurel, Maryland, USA Email: gregory.weaver@jhuapl.edu</p>
<p>Ferroelectrics:</p> <p><i>Glen Fox</i> 1850 Ramtron Dr. Ramtron International Corporation Colorado Springs, CO 80921, USA Email: glen_fox_pa@msn.com</p>	<p>Regions 8-10 Representative:</p> <p><i>Andrew J. Bell</i> Institute for Materials Research University of Leeds United Kingdom, LS2 9JT Email: A.J.Bell@leeds.ac.uk</p>

IV. UFFC-S Standing Committee Chairs and Vice Chairs

Committee Chairs and Vice Chairs:

Chair	Name	Affiliation
Ultrasonics	Jacqueline H. Hines	<i>Applied Sensor R&D Corp., Arnold, MD</i>
Ultrasonics Vice-Chair*	Mauricio Pereira da Cunha	<i>University of Maine, Orono, ME</i>
Ferroelectrics	Thomas R. Shrout	<i>The Pennsylvania State University, PA</i>
Ferroelectrics Vice-Chair*	Bruce A. Tuttle	<i>Sandia National Laboratories, NM</i>
Frequency Control	Samuel Stein	<i>Symmetricon, Boulder, CO</i>
Publications	Donald Yuhas	<i>Industrial Measurement Systems Inc. IL</i>
Awards	Helmut Ermert	<i>Ruhr-Universität Bochum, Germany</i>
Awards Vice-Chair*	Bernhard R. Tittmann	<i>The Pennsylvania State University, PA</i>
Fellows*	Fred S. Hickernell	<i>Motorola (retired), Phoenix, AZ</i>
Finance	Herman van de Vaart	<i>Honeywell (Retired), Plymouth, MA</i>
Finance Vice-Chair*	Jan Brown	<i>JB Consulting, West Whatley, MA</i>
Membership Services	Rajesh K. Panda	<i>Philips Medical Systems, Andover, MA</i>
Chapters Vice-Chair*	Elizabeth H. Schenk	<i>STERIS Corporation, Mentor, OH</i>
Nominations	Peter Smith	<i>McMaster University</i>
Nominations Vice-Chair*	Ray Filler	<i>US Army CERDEC, Fort Monmouth, NJ</i>
Newsletter Editor*	Jan Brown	<i>JB Consulting, West Whatley, MA</i>
Web Editor-In-Chief*	Kendall Waters	<i>SVMI, Fremont, CA</i>
Standards	Don Malocha	<i>University of Central Florida, Orlando, FL</i>
Standards Vice-Chair*	Robert W. Schwartz	<i>University of Missouri - Rolla, MO</i>
Transactions EIC*	Marjorie P. Yuhas	<i>Industrial Measurement Systems Inc. IL</i>
Sr. Past President	Gerald V. Blessing	<i>NIST (retired), Gaithersburg, MD</i>
Jr. Past President	Art Ballato	<i>US Army CERDEC, Fort Monmouth, NJ</i>
Sr. Student Member*	Yinbo Li	<i>University of Virginia</i>
Jr. Student Member*	Christian Hansen	<i>Ruhr-Universität Bochum, Germany</i>

Jr. Student Member*	Daniel Tinberg	<i>Pennsylvania State University</i>
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V. More on IEEE UFFC Society Officers

A Link to the IEEE UFFC Society Officers:

UFFC Officers: <http://www.ieee-uffc.org/about/AdCom07.htm>

VI. IEEE Office Open in Beijing, China

IEEE Beijing Office Open (December 7, 2007):

IEEE Beijing Office Open:

http://www.theinstitute.ieee.org/portal/site/tionline/menuitem.130a3558587d56e8fb2275875bac26c8/index.jsp?&pName=institute_level1_article&TheCat=2202&article=tionline/legacy/inst2007/dec07/chinaoffice.xml&

VII. 2007 IEEE IUS - New York City, New York, USA

A Link to the 2007 IEEE IUS:

2007 IEEE IUS: http://ewh.ieee.org/conf/ius_2007/

VIII. IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society

A Link to the IEEE UFFC Society:

IEEE UFFC: <http://www.ieee-uffc.org/>

IX. The Institute of Electrical and Electronics Engineers (IEEE)

A Link to the IEEE Homepage and an Introduction to IEEE:

IEEE: <http://www.ieee.org/>

IEEE in Wikipedia: http://en.wikipedia.org/wiki/Institute_of_Electrical_and_Electronics_Engineers

X. Past Proceedings of IEEE International Ultrasonics Symposium (IUS)

A Link to the Past IEEE IUS Proceedings:

Past IEEE IUS Proceedings: <http://www.ieee-uffc.org/archive/ul/ulprendx.htm>

XI. Other UFFC Society Conferences

A Link to Other UFFC Society Meetings:

Other UFFC Society Meetings: <http://www.ieee-uffc.org/meetings.asp>

XII. Future Ultrasonics Symposia

2009 IEEE International Ultrasonics Symposium:

Location: Rome, Italy.

General Chair: Massimo Pappalardo, *Università degli Studi de Roma Tre, Italia.*

2010 IEEE International Ultrasonics Symposium:

Location: San Diego, California, USA.

General Chair: Bob Potter, *Vectron International - Hudson, NH*

XIII. UFFC CD Archive

Ordering UFFC CD Archive:

The Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Digital Archive is a membership benefit, i.e., it is for IEEE UFFC Society *members only*. The Digital Archive may be purchased by members as a set of over 30 CD-ROMs. The articles, in PDF format, are fully searchable across the entire collection. The collection contains all material through the year 2006. The cost for this collection is \$100. To learn more, please visit the UFFC Digital Archie website below:

UFFC Digital Archive: <http://www.ieee-uffc.org/digarchive.asp>

The easiest way to get the UFFC CD Archive is to order online:

Order UFFC CD Archive Online: <http://www.ieee-uffc.org/archive2/cdorder.asp>

You could also order by downloading a form and then mail or fax it to the address provided on the form:

UFFC CD Archive Order Form: http://www.ieee-uffc.org/archive/UFFC_order_form.pdf

If you have already ordered the UFFC CD Archive before (contents are older than 2006), you can get a free upgrade after your previous orders are verified. Please use the following link for your upgrade:

UFFC CD Archive Upgrades: <http://www.ieee-uffc.org/daupdateform.asp>

XIV. IEEE Xplore

A Link to the IEEE Xplore to Access Journals, Proceedings, Magazines, and More:

IEEE Xplore: <http://ieeexplore.ieee.org/>

XV. Join IEEE UFFC Society

A Link to Join the IEEE UFFC Society:

Join IEEE UFFC: <http://www.ieee.org/web/membership/societies/index.html>

XVI. Join IEEE

A Link to Join the IEEE:

Join IEEE: <http://www.ieee.org/web/membership/join/join.html>

XVII. IEEE and IEEE UFFC-S Enrollment at the Conference

Get Free UFFC-S Membership by Joining IEEE on Site:

The 2008 IEEE International Ultrasonics Symposium has a discount conference registration fee for IEEE members. If you are not an IEEE member and wish to receive a member discount when registering on-site, you should join IEEE through the IEEE booth near the registration desks. As a bonus, we will be able to provide you a free UFFC membership for one year (notice that the UFFC membership can only be offered to IEEE members and it normally requires a small amount of fee on top of the IEEE membership fee). The UFFC membership will allow you to have an on-line access to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) and to receive all UFFC Newsletters for one year. Special IEEE/UFFC-S forms should be filled out in the IEEE booth. Students are not eligible for this offer.

Free UFFC-S Membership for Some IEEE Members:

If you are already an IEEE member in good standing but would like to join the UFFC society the first time when registering the conference during the on-site registration, you will also be eligible to receive a one-year free UFFC membership by filling out the IEEE/UFFC-S forms in the IEEE booth.

XVIII. Conference Management / Acknowledgments

The 2008 IEEE International Ultrasonics Symposium (IUS) acknowledges the support from the following organizations:

Conference Management in China:

China International Conference Center for Science and Technology (CICCST – <http://www.cicst.org.cn/>) has been contracted by the 2008 IEEE IUS to perform various local arrangements such as on-site registration, negotiations of venue, audio/visual, logistics, hotels, visa, exhibits, local tours, post-conference China tours, and arrangements for poster boards, meals, book printing, and entertainments, etc. CICCST is a division under the China Association of Science and Technology (CAST – <http://english.cast.org.cn/>).

Other Companies:

Mira Digital Publishing, St. Louis, Missouri, USA. – For technical programs (abstract submission, review, conference program, meeting planner, the 2nd Technical Program Committee (TPC) meeting support, and conference books) and the production of the context-sensitive multimedia DVD conference proceedings – <http://www.miracd.com/>.

YesEvents, Baltimore, Maryland, USA. – For online conference registration with real-time reporting and administration system that also supports the on-site registration – <http://www.yesevents.com/>.

Doubletree Hotel Chicago O'Hare Airport-Rosemont, USA. – For 2nd TPC meeting of the 2008 IEEE IUS in Chicago, Illinois, USA. – http://doubletree1.hilton.com/en_US/dt/index.do

Industrial Measurement System, Inc., Aurora, Illinois, USA, headed by Dr. Don Yuhas, Vice President for Publication of the UFFC Society. – For sending blast emails for publicity such as announcing deadlines of the conference – <http://www.imsysinc.com/>.

Cooperation:

The Acoustical Society of China (<http://www.i-ince.org/membership/china.htm>), and the **Institute of Acoustics** (<http://www.ioa.ac.cn/english/default.asp>), Chinese Academy of Sciences.

Appendix H:

Photos and Videos of the Conference

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
 (The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

2008 IEEE International Ultrasonics Symposium Proceedings

I: Photos and Videos Taken during the Conference (405 photos and 14 videos in total)	H.2
II: Videos of the Conference (14 Videos)	H.4
III: Photos of AdCom Meeting of the UFFC-S (27 Photos)	H.7
IV: Photos of Summer Palace Boating, Art Gallery, Dinner, and Shows (48 Photos)	H.12
V: Photos of Plenary Session (55 Photos)	H.20
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VII: Photos of Buffet Lunch of All Attendees (4 Photos)	H.33
VIII: Photos of Buffet Dinner of All Attendees (10 Photos)	H.34
IX: Photos of the Conference Center (BICC) (53 Photos)	H.36
X: Photos of Oral Sessions (6 Photos)	H.45
XI: Photos of Student Paper Competition Finalist Posters (Missing 5) (16 Photos)	H.46
XII: Photos of Other Posters (8 Photos)	H.49
XIII: Photos of Exhibits (36 Photos)	H.51
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ISSN: 1051-0117

ISBN: 978-1-4244-2428-3 (For Softbound); 978-1-4244-2480-1 (For DVD)

IEEE Catalog No.: CFP08ULT-PRT (For Softbound); CFP08ULT-DVD (For DVD)

I. Photos and Videos Taken during the Conference (405 photos and 14 videos in total)

Introduction:




We would like to thank the members of the Conference [Organizing Committee](#), Technical Program Committee ([TPC](#)), Administrative Committee (AdCom) of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society, officials of the UFFC Society, Acoustical Society of China, Institute of Acoustics of Chinese Academy of Sciences, staff and volunteers, and all attendees, for their efforts and support on a successful 2008 IEEE International Ultrasonics Symposium (IUS), which was held from November 2-5, 2008, in Beijing, China.

The videos that are accessible via the link below were taken during the 2008 IEEE International Ultrasonics Symposium and were adapted and edited by the web master (they are in MPEG2 format at 640x480 resolution with about 3000Kbits/s data rate for backward compatibility and a compromise on file sizes). These videos have captured some of the conference activities and you may find yourself and/or your friends and colleagues in the videos. Conference activities that are not in the videos may be found in the photos. Because the video files are usually large in size, it is advised to download them to your computer hard drive for a smooth play back (if your internet speed is greater than about 512KBytes/s, you should be able to play the videos directly).

Some photos taken during the conference are also accessible via the links below. It is likely that you will find yourself and/or your friends and colleagues in the photos. (Note: the photos were contributed by various individuals including the photographer of CICCST, Dr. Kirk D. Wallace, Dr. Shitang He, Mr. Sunil Bhawe, and others, and have been edited by the web master.)

Index of Photos and Videos:

1. ( [14 Videos](#)): **Conference Videos** --- Monday-Wednesday, November 3-5, 2008, Beijing, China.
2. ( [27 Photos](#)): **Administrative Committee (AdCom) Meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)** --- 7:30 a.m. - 3:00 p.m., Sunday, November 2, 2008, Beijing, China.
3. ( [48 Photos](#)): **Summer Palace Boating, Art Gallery, Dinner, and Shows** --- 3:30 p.m. - 10:00 p.m., Sunday, November 2, 2008, Beijing, China (committee members and their guests).
4. ( [55 Photos](#)): **Plenary Session** --- 8:00 a.m. - 10:00 a.m., Monday, November 3, 2008, Beijing, China.
5. ( [18 Photos](#)): **Presidential Reception** --- Monday, 5:30 p.m. - 6:30 p.m., November 3, 2008, Beijing, China (committee members and their guests).
6. ( [4 Photos](#)): **Buffet Lunch of All Attendees** --- 12:00 noon - 2:00 p.m., Monday, November 3, 2008, Beijing, China.
7. ( [10 Photos](#)): **Buffet Dinner of All Attendees** --- 6:30 p.m. - 10:00 p.m., Monday, November 3, 2008, Beijing, China.
8. ( [53 Photos](#)): **The Conference Center (BICC)** --- Monday-Wednesday, November 3-5, 2008, Beijing, China.
9. ( [6 Photos](#)): **Oral Sessions** --- Monday-Wednesday, November 3-5, 2008, Beijing, China.
10. ( [16 Photos](#)): **Student Paper Competition Finalist Posters (Missing 5)** --- Monday, November 3, 2008, Beijing, China.
11. ( [8 Photos](#)): **Other Posters** --- Monday-Wednesday, November 3-5, 2008, Beijing, China.
12. ( [36 Photos](#)): **Exhibits** --- Monday-Wednesday, November 3-5, 2008, Beijing, China.
13. ( [9 Photos](#)): **Exhibitor Breakfast** --- 7:10 a.m. - 8:00 a.m., Wednesday, November 5, 2008, Beijing, China.

14. ( [20 Photos](#)): **Student Paper Award Ceremony** --- 6:30 p.m. - 10:00 p.m., Tuesday, November 4, 2008, Beijing, China.
15. ( [84 Photos](#)): **Banquet Dinner and Shows of All Attendees** --- 6:30 p.m. - 10:00 p.m., Tuesday, November 4, 2008, Beijing, China.
16. ( [11 Photos](#)): **Miscellaneous** --- Sunday-Thursday, November 2-6, 2008, Beijing, China.

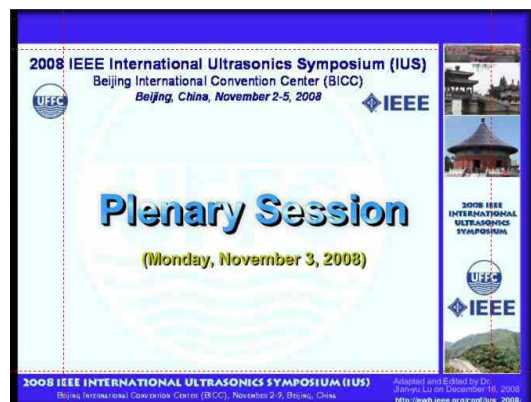
II. Videos of the Conference (14 Videos)



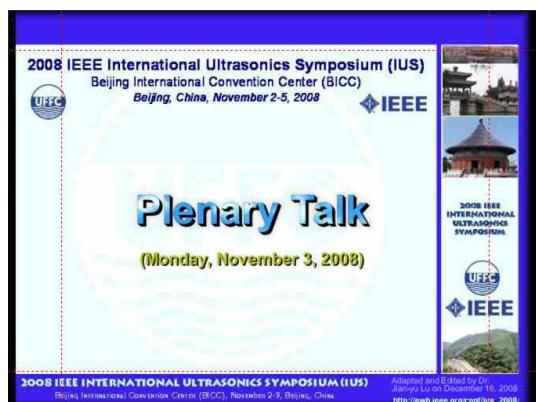
1. Conference Videos --- Monday-Wednesday, November 3-5, 2008, Beijing, China:



(1) Summer Palace (Committee Members/Guests Only)
(18.6MB, 50 seconds)



(2) Plenary Session
(134.0MB, 349 seconds)



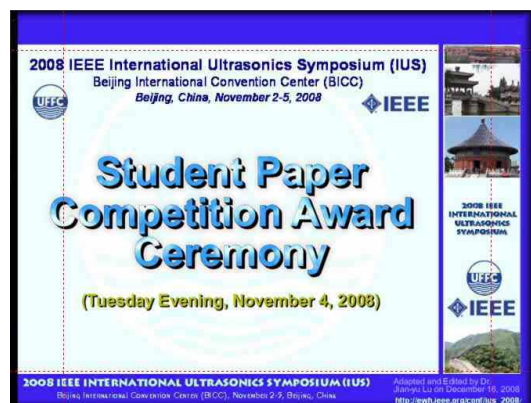
(3) Plenary Talk
(72.9MB, 190 seconds)



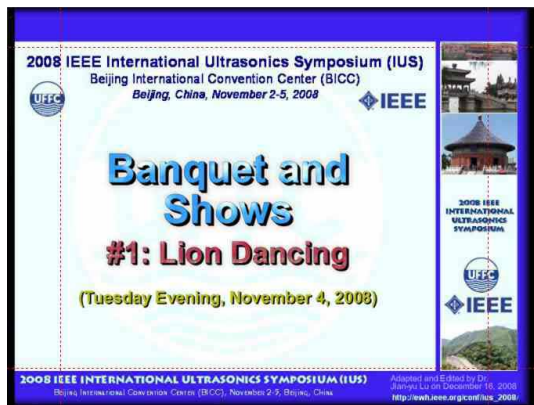
(4) Monday Lunch
(21.9MB, 59 seconds)




(5) Inside the Conference Center
(15.0MB, 39 seconds)



(6) Student Paper Competition Awards
(123.2MB, 315 seconds)



(7) Banquet and Shows - Lion Dancing 
(33.4MB, 86 seconds)



(8) Banquet and Shows - Dance with Attendees 
(30.6MB, 79 seconds)




(9) Banquet and Shows - Acrobat 
(52.3MB, 135 seconds)



(10) Banquet and Shows - Chinese Martial Arts 
(46.0MB, 118 seconds)



(11) Banquet and Shows - Chinese Taichi 
(5.3MB, 15 seconds)



(12) Banquet and Shows - Magic 
(97.8MB, 250 seconds)



(13) Banquet and Shows - Chinese Folk Dance 
(33.2MB, 86 seconds)



(14) Banquet and Shows - Soft Skills 
(96.8MB, 248 seconds)

III. Photos of Administrative Committee (AdCom) Meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) (27 Photos)



2. Administrative Committee (AdCom) Meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)  --- 7:30 a.m. - 3:00 p.m., Sunday, November 2, 2008, Beijing, China:



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



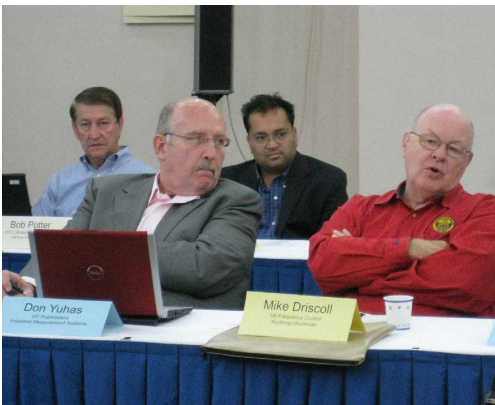
AdCom Meeting



AdCom Meeting



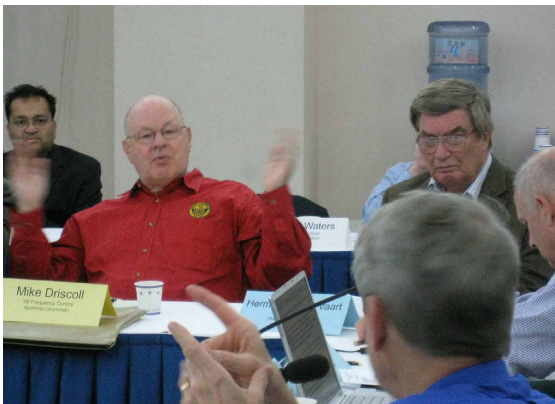
AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting



AdCom Meeting




AdCom Meeting



AdCom Meeting

IV. Photos of Summer Palace Boating, Art Gallery, Dinner, and Shows (48 Photos)

3. Summer Palace Boating, Art Gallery, Dinner, and Shows --- 3:30 p.m. - 10:00 p.m., Sunday, November 2, 2008, Beijing, China (committee members and their guests):



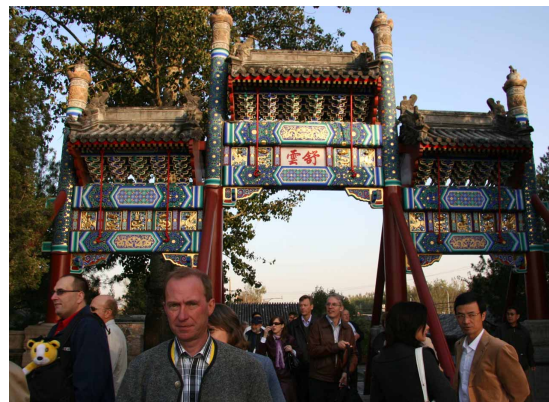
Summer Palace



Summer Palace



Summer Palace



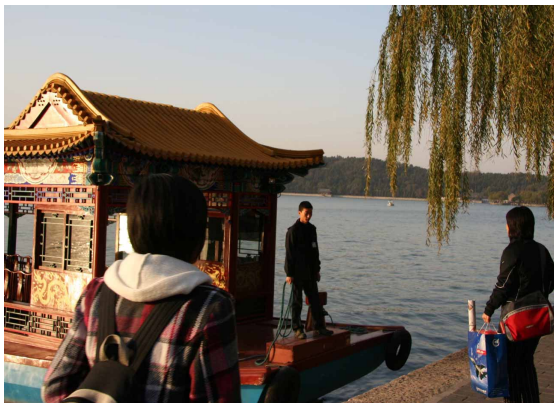
Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



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Summer Palace



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Summer Palace



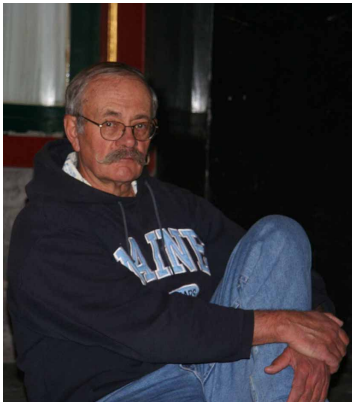
Summer Palace



Summer Palace



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Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace



Summer Palace

V. Photos of Plenary Session (55 Photos)

4. Plenary Session --- 8:00 a.m. - 10:00 a.m., Monday, November 3, 2008, Beijing, China:



Dr. Jian-yu Lu



Drs. Jacqueline (Jackie) Hines and Jian-yu Lu



Dr. Keith Wear



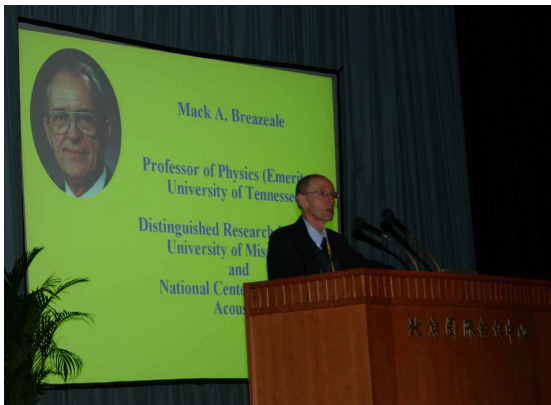
Dr. Keith Wear



Dr. Susan Trolier-McKinstry



Dr. Helmut Ermert



Dr. James (Jim) Miller



Jim, Jan, Susan, and Helmut



Jim, Jan, Susan, and Helmut



Drs. Susan Trolier-McKinstry and Helmut Ermert



Dr. Helmut Ermert



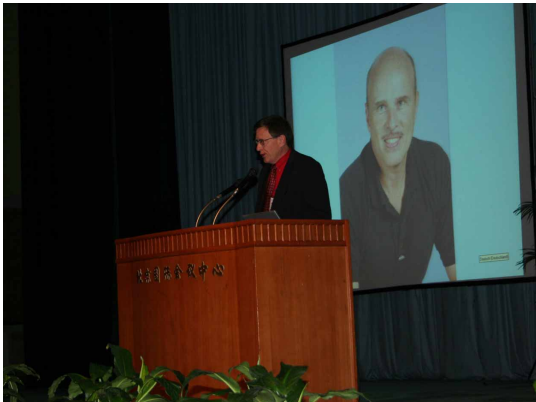
Dr. Susan Trolier-McKinstry



Plenary Session



Susan, Ahmad, and Helmut



Dr. Gerald (Gerry) Blessing



Susan, Gerry, Don, and Helmut



Dr. Donald (Don) Malocha



Dr. Donald (Don) Malocha



Dr. James (Jim) Greenleaf



Dr. James (Jim) Greenleaf



Dr. K. Kirk Shung



Dr. K. Kirk Shung



Susan, Kirk, Jim, and Helmut



Dr. Helmut Ermer



Susan, Clark, and Helmut



Dr. Clark T.-C. Nguyen



Susan, Pai-Chi, Jian-yu, and Helmut



Susan, Peter, and Helmut



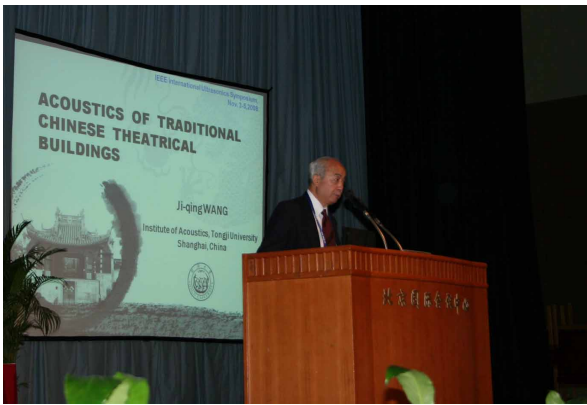
Dr. Susan Trolier-McKinstry



Dr. Jian-yu Lu



Professor Jiqing Wang



Professor Jiqing Wang



Professors Jian-yu Lu and Jiqing Wang



Professors Jian-yu Lu and Jiqing Wang



Dr. Jian-yu Lu



Drs. Keith Wear and Jan Brown



Professor Jiqing Wang and students



Susan, Jan, Jian-yu, Jim, and Helmut



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



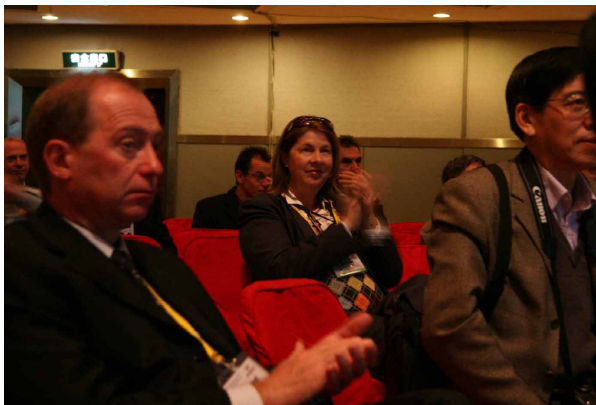
Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session



Plenary Session




Plenary Session



Plenary Session

VI. Photos of Presidential Reception (18 Photos)

5. Presidential Reception --- Monday, 5:30 p.m. - 6:30 p.m., November 3, 2008, Beijing, China (committee members and their guests):



Drs. Susan Trolier-McKinstry and Jian-yu Lu



Drs. Susan Trolier-McKinstry and Hailan Zhang



Drs. Susan Trolier-McKinstry and Jan Brown



Drs. Susan Trolier-McKinstry and Roman Maev



Drs. Susan Trolier-McKinstry and Mark Schafer



Drs. Susan Trolier-McKinstry and Sorah Rhee



Drs. Susan Troler-McKinstry and L. Scott Smith



Drs. Susan Troler-McKinstry and Gerry Blessing



Presidential Reception



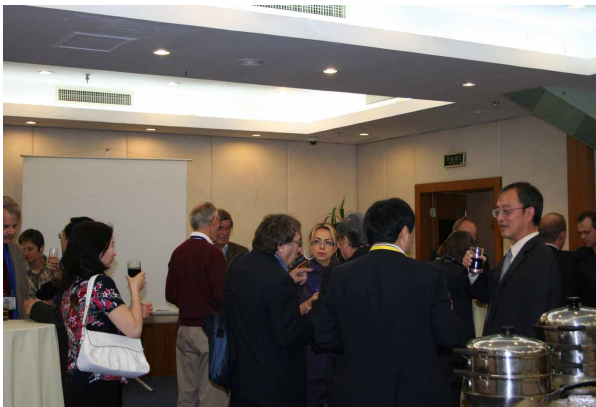
Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception



Presidential Reception

VII. Photos of Buffet Lunch of All Attendees (4 Photos)

6. Buffet Lunch of All Attendees --- 12:00 noon - 2:00 p.m., Monday, November 3, 2008, Beijing, China:



Buffet Lunch



Buffet Lunch



Buffet Lunch



Buffet Lunch

VIII. Photos of Buffet Dinner of All Attendees (10 Photos)

7. Buffet Dinner of All Attendees (10 Photos) --- 6:30 p.m. - 10:00 p.m., Monday, November 3, 2008, Beijing, China:



Drs. Jian-yu Lu and Mark Schafer



Buffet Dinner



Buffet Dinner



Buffet Dinner



Buffet Dinner



Buffet Lunch and Dinner



Buffet Lunch and Dinner



Buffet Lunch and Dinner



Buffet Lunch and Dinner



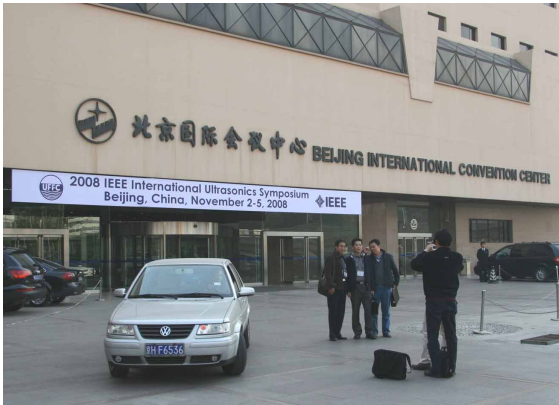
Buffet Lunch and Dinner

**IX. Photos of the Conference Center (BICC) (53
Phots)**

8. The Conference Center (BICC) --- Monday-Wednesday, November 3-5, 2008, Beijing, China:



The Conference Center (BICC)



The Conference Center (BICC)



The Conference Center (BICC)



IEEE Booth



Internet Cafe



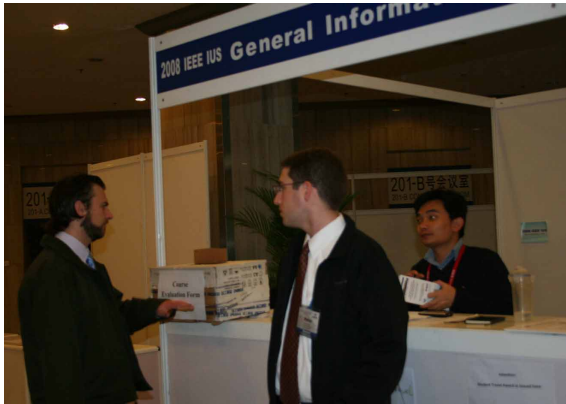
A Sign to Conference Registration



Conference Registration Booths



Conference Registration Booths



Conference Registration Booths



Conference Registration Booths



Conference Registration Booths



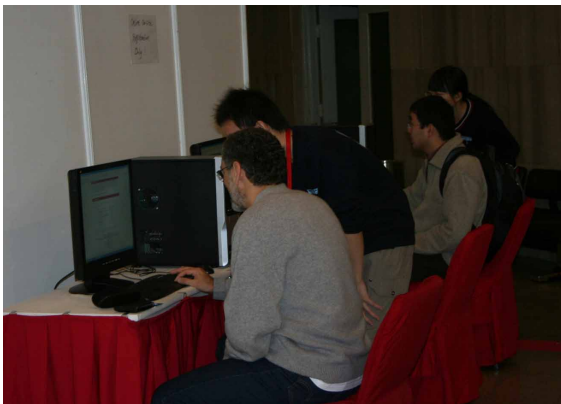
Information Boards



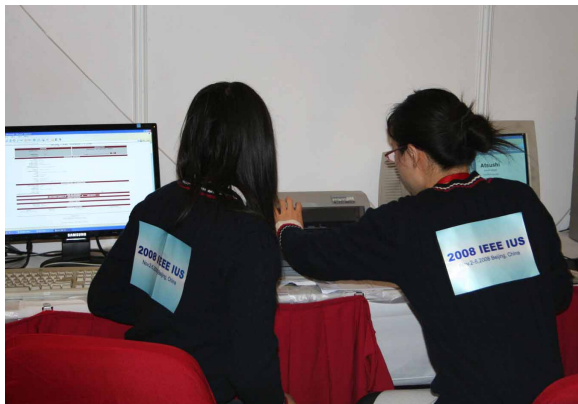
Information Boards



Registration Computer Kiosk



Registration Computer Kiosk



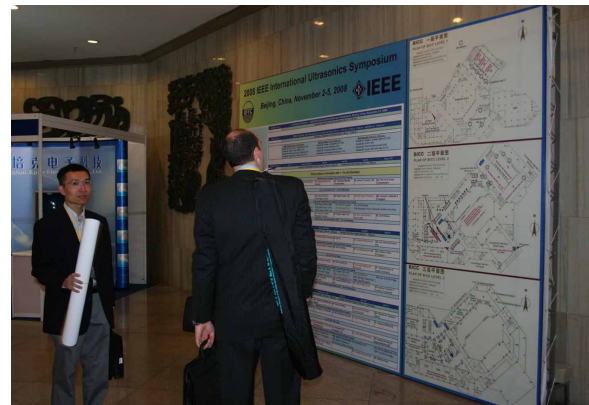
Registration Computer Kiosk



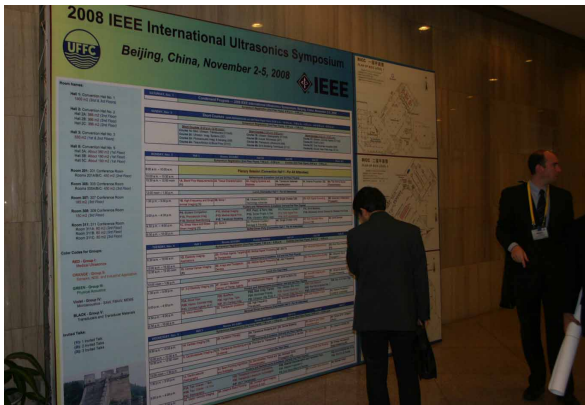
The Conference Center



The Conference Center



'Conference at a Glance' Sheet



'Conference at a Glance' Sheet



The Conference Center



The Conference Center



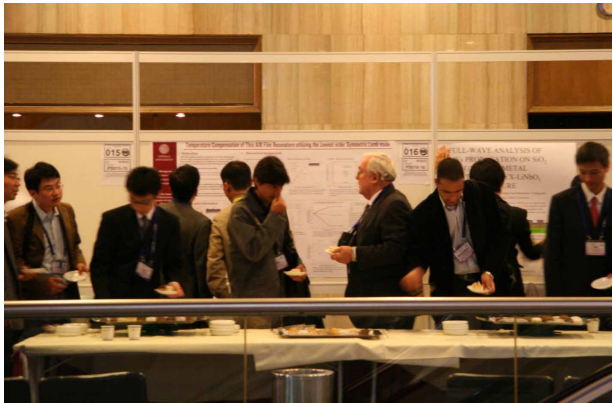
The Conference Center



The Conference Center



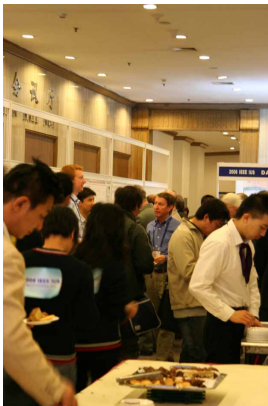
The Conference Center



Coffee Break



Coffee Break



Coffee Break



Conference Registration Area



Conference Registration Area



Conference Registration Area



Registration Computer Kiosk



The Conference Center



Registration Computer Kiosk



The Conference Center



The Conference Center



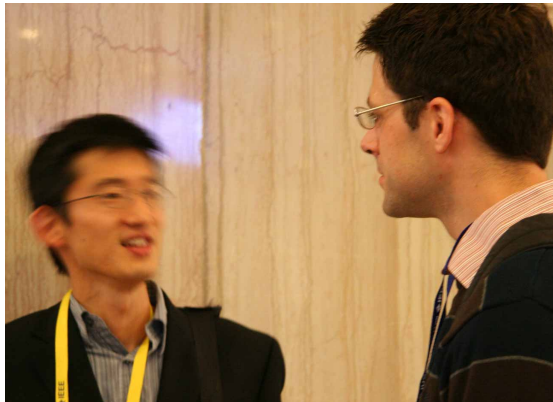
The Conference Center



The Conference Center



The Conference Center



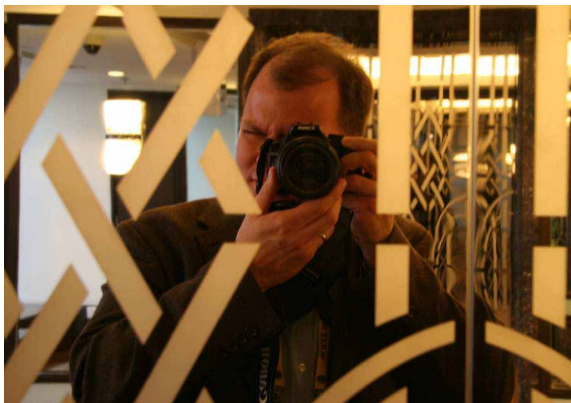
The Conference Center



The Conference Center



The Conference Center



The Conference Center



The Conference Center



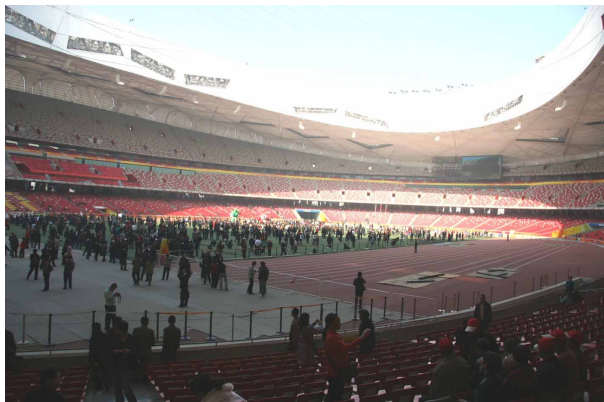
2008 Beijing Olympic Water Cube



2008 Beijing Olympic Water Cube



2008 Beijing Olympic Bird's Nest



2008 Beijing Olympic Bird's Nest



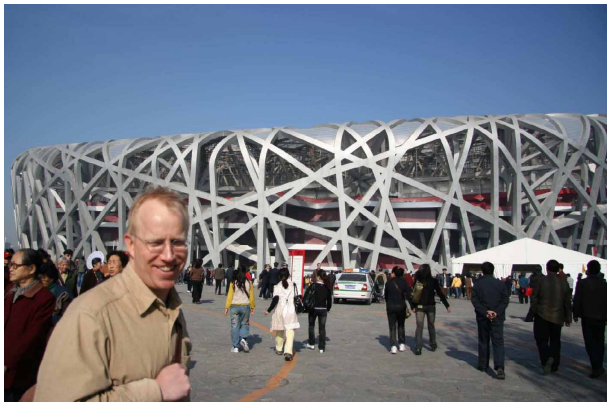
2008 Beijing Olympic Bird's Nest



2008 Beijing Olympic Mascots in Bird's Nest



2008 Beijing Olympic Bird's Nest



2008 Beijing Olympic Bird's Nest



2008 Beijing Olympic Bird's Nest

X. Photos of Oral Sessions (6 Photos)

9. Oral Sessions --- Monday-Wednesday, November 3-5, 2008, Beijing, China:



Oral Sessions



Oral Sessions



Oral Sessions



Oral Sessions



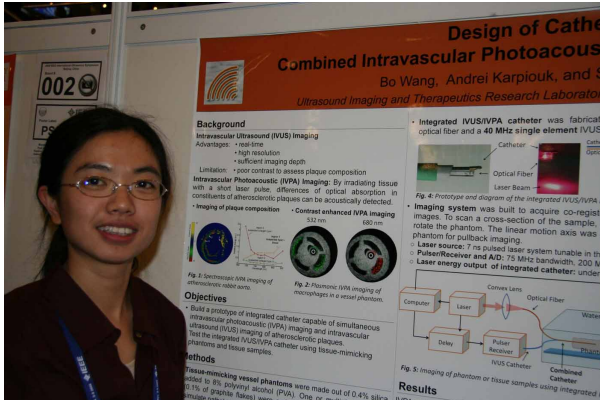
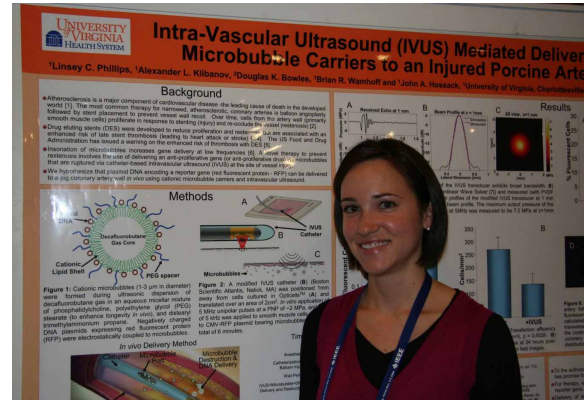
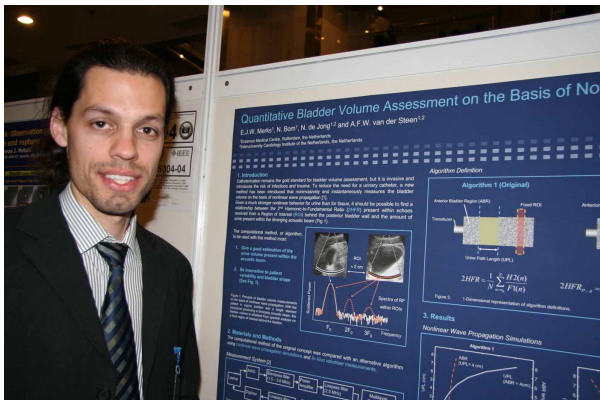
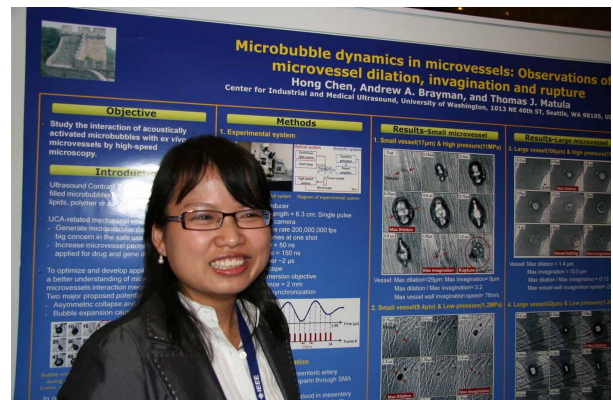
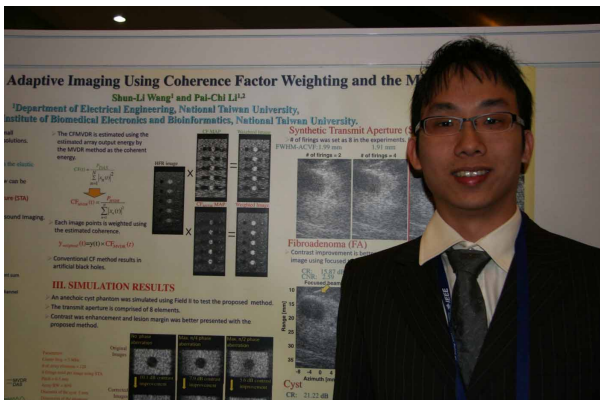
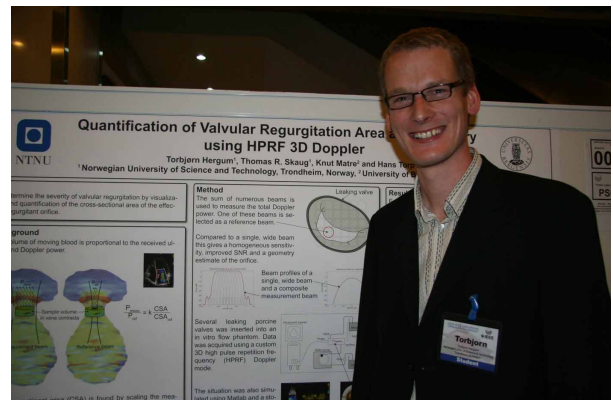
Oral Sessions

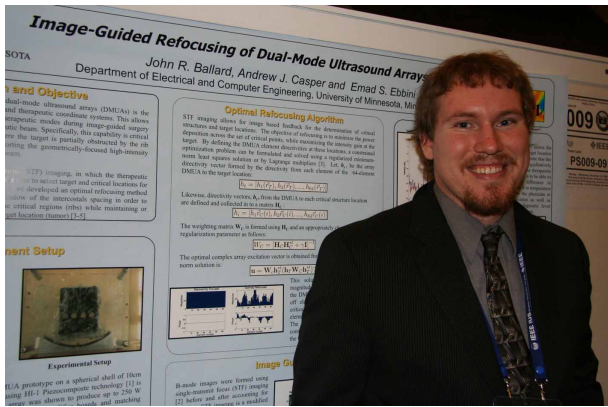
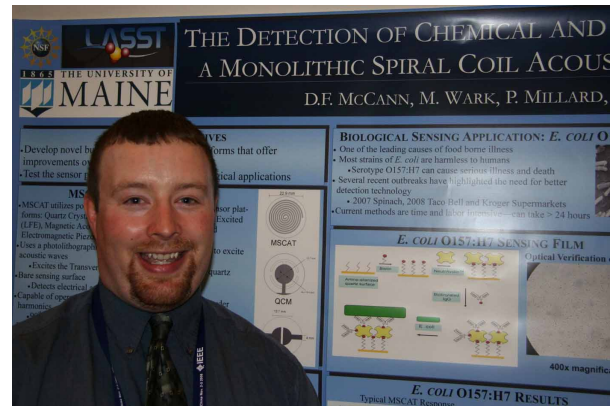
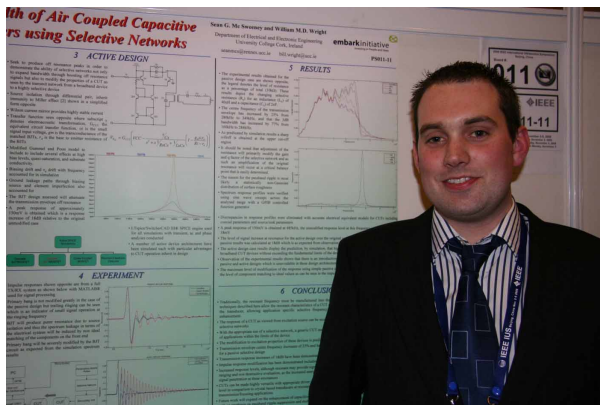
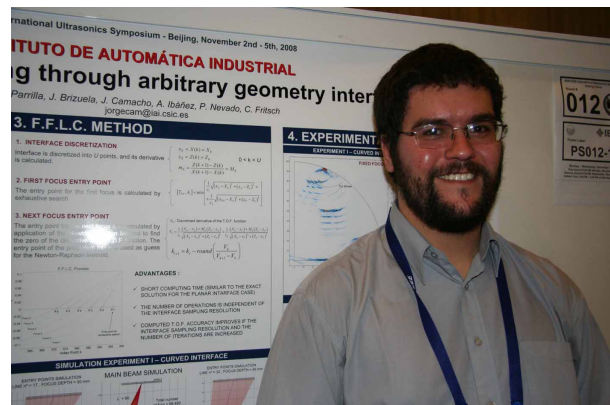
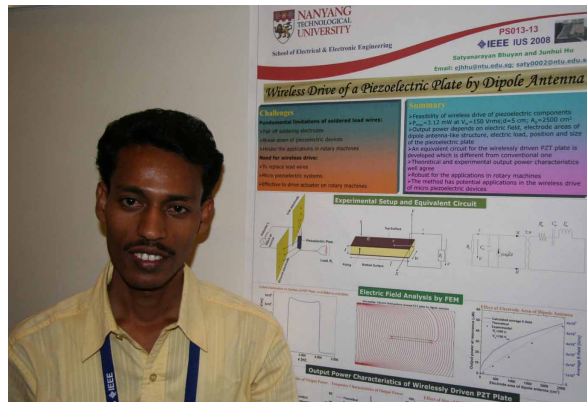
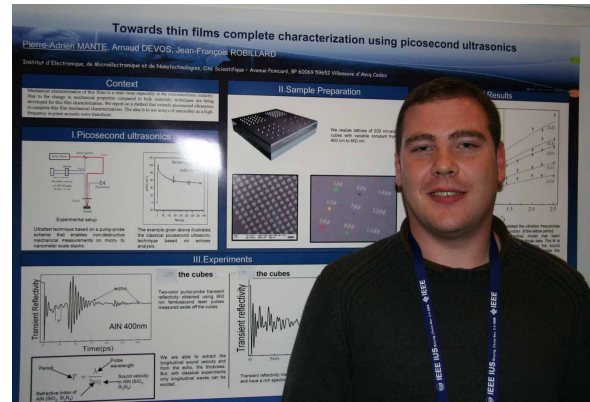


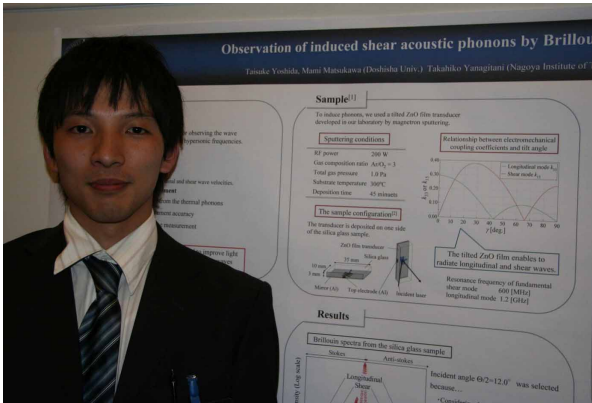
Oral Sessions

XI. Photos of Student Paper Competition Finalist Posters (Missing 5) (16 Photos)

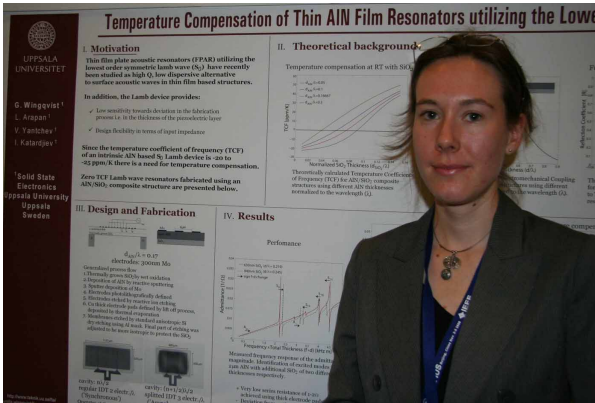
10. Student Paper Competition Finalist Posters (Missing 5) --- Monday, November 3, 2008, Beijing, China:

Student Competition Finalist ([PS001-01](#))Student Competition Finalist ([PS002-02](#))Student Competition Finalist ([PS003-03](#))Student Competition Finalist ([PS004-04](#))Student Competition Finalist ([PS007-07](#))Student Competition Finalist ([PS008-08](#))

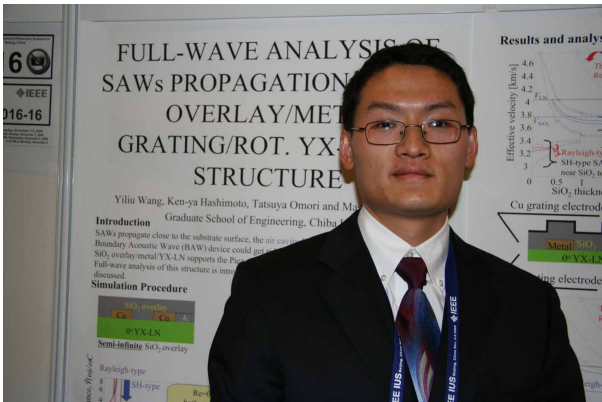
Student Competition Finalist ([PS009-09](#))Student Competition Finalist ([PS010-10](#))Student Competition Finalist ([PS011-11](#))Student Competition Finalist ([PS012-12](#))Student Competition Finalist ([PS013-13](#))Student Competition Finalist ([PS014-4](#))



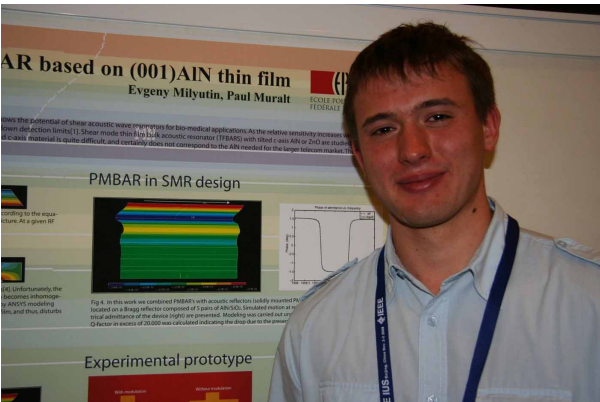
Student Competition Finalist ([PS015-15](#))



Student Competition Finalist ([PS016-16](#))



Student Competition Finalist ([PS017-17](#))



Student Competition Finalist ([PS018-18](#))

XII. Photos of Other Posters (8 Photos)

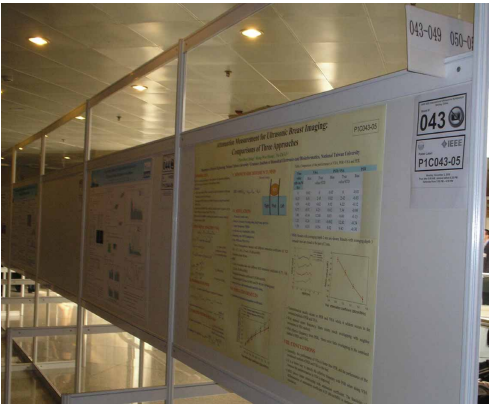
11. Other Posters --- Monday-Wednesday, November 3-5, 2008, Beijing, China:



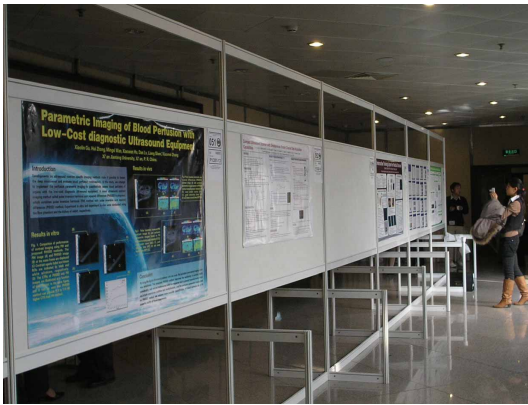
Poster Sessions



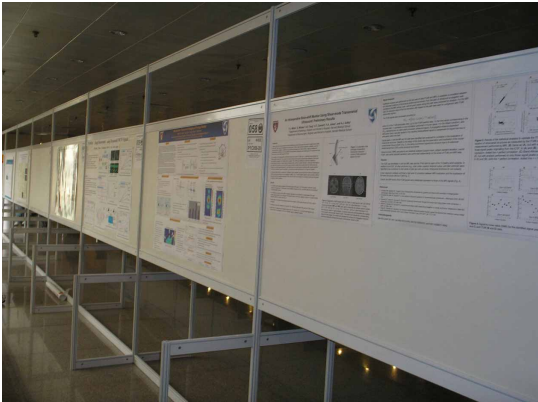
Poster Sessions



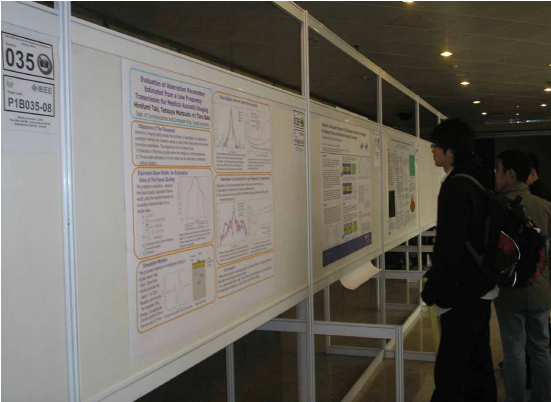
Poster Sessions



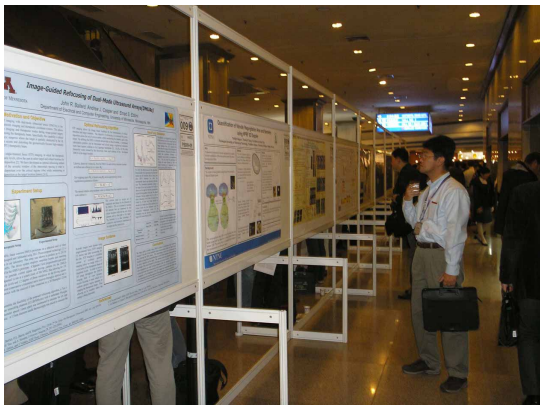
Poster Sessions



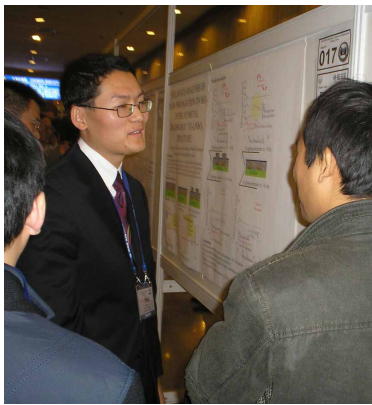
Poster Sessions



Poster Sessions



Poster Sessions



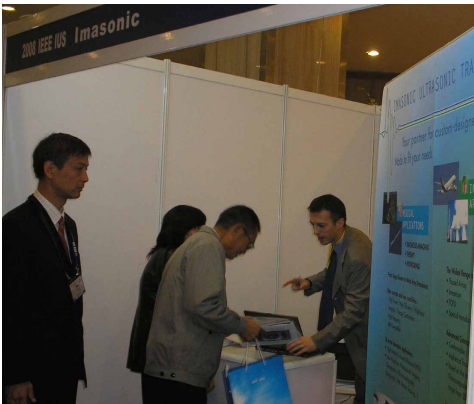
Poster Sessions

XIII. Photos of Exhibits (36 Photos)

12. Exhibits --- Monday-Wednesday, November 3-5, 2008, Beijing, China:



Exhibits



Exhibits



Exhibits



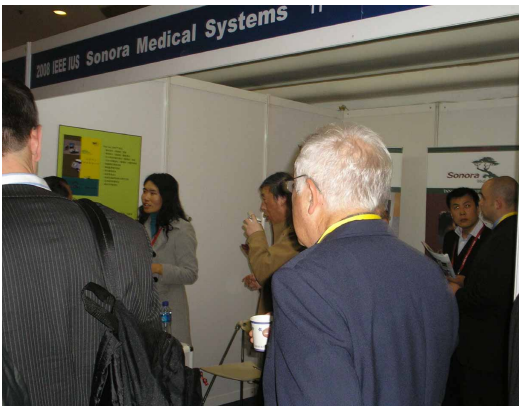
Exhibits



Exhibits



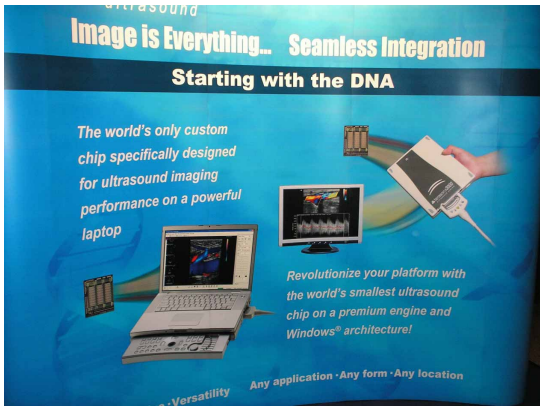
Exhibits



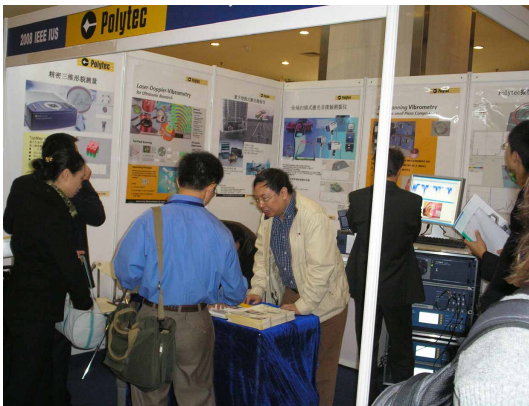
Exhibits



Exhibits



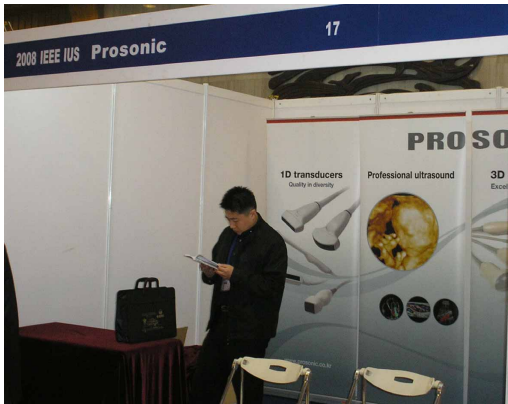
Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



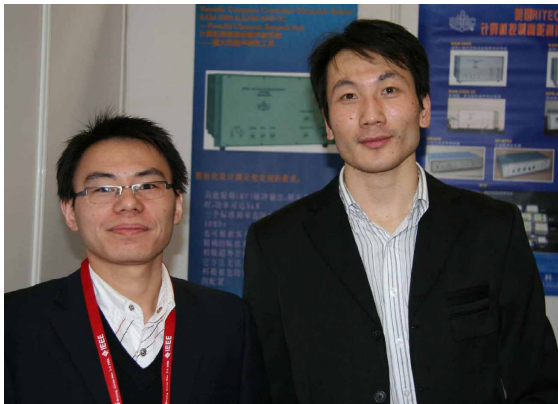
Exhibits



Exhibits



Exhibits



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Exhibits



Exhibits



Exhibits



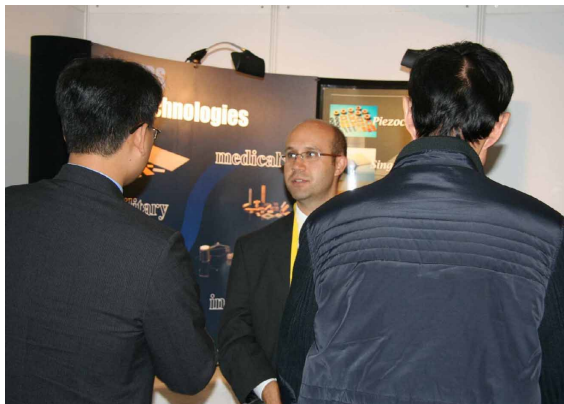
Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits



Exhibits

XIV. Photos of Exhibitor Breakfast (9 Photos)

13. Exhibitor Breakfast --- 7:10 a.m. - 8:00 a.m., Wednesday, November 5, 2008, Beijing, China:



Exhibitor Breakfast



Exhibitor Breakfast



Exhibitor Breakfast



Exhibitor Breakfast



Exhibitor Breakfast



Exhibitor Breakfast



Exhibitor Breakfast




Exhibitor Breakfast



Exhibitor Breakfast

XV. Photos of Student Paper Award Ceremony (20 Photos)

14. Student Paper Award Ceremony --- 6:30 p.m. - 10:00 p.m., Tuesday, November 4, 2008, Beijing, China:



Student Paper Awards



Student Paper Awards



Student Paper Awards



Student Paper Awards



Student Paper Awards ([PS001-01](#)) ([Poster](#))



Student Paper Awards ([PS001-01](#)) ([Poster](#))



Student Paper Awards ([PS001-01](#)) ([Poster](#))



Student Paper Awards ([PS004-04](#)) ([Poster](#))



Student Paper Awards ([PS004-04](#)) ([Poster](#))



Student Paper Awards ([PS011-11](#)) ([Poster](#))



Student Paper Awards ([PS011-11](#)) ([Poster](#))



Student Paper Awards ([PS019-19](#)) ([Poster](#))



Student Paper Awards ([PS019-19](#)) ([Poster](#))



Student Paper Awards ([PS008-08](#)) ([Poster](#))



Student Paper Awards ([PS008-08](#)) ([Poster](#))



Student Paper Awards ([PS018-18](#)) ([Poster](#))



Student Paper Awards ([PS018-18](#)) ([Poster](#))



Student Paper Awards ([PS018-18](#)) ([Poster](#))



Student Paper Awards ([PS014-14](#)) ([Poster](#))



Student Paper Awards ([PS014-14](#)) ([Poster](#))

XVI. Photos of Banquet Dinner and Shows of All Attendees (84 Photos)

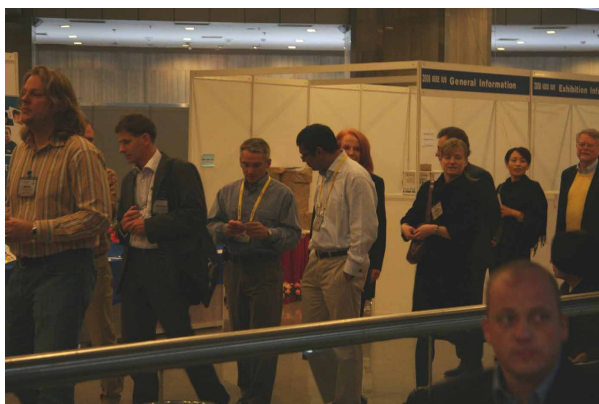
15. Banquet Dinner and Shows of All Attendees  --- 6:30 p.m. - 10:00 p.m., Tuesday, November 4, 2008, Beijing, China:



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



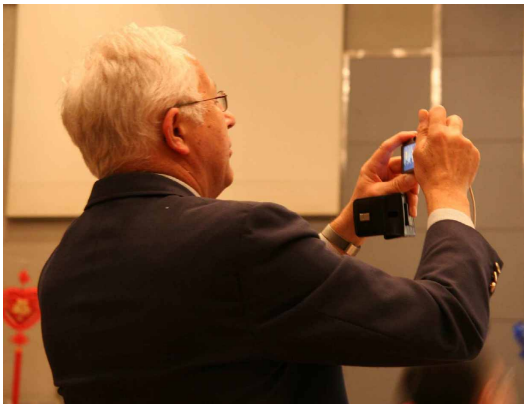
Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Banquet Dinner and Shows



Jian-yu, Paul, and Li



Banquet Dinner and Shows



Jian-yu, Li, Jan, Jingwen, and Min



Banquet Dinner and Shows

XVII. Miscellaneous Photos (11 Photos)

16. Miscellaneous --- Sunday-Thursday, November 2-6, 2008, Beijing, China:



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



The Great Wall



Appendix I:

Submit Papers to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) and Information of TUFFC

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

2008 IEEE International Ultrasonics Symposium Proceedings

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ISBN: 978-1-4244-2428-3 (For Softbound); 978-1-4244-2480-1 (For DVD)
IEEE Catalog No.: CFP08ULT-PRT (For Softbound); CFP08ULT-DVD (For DVD)

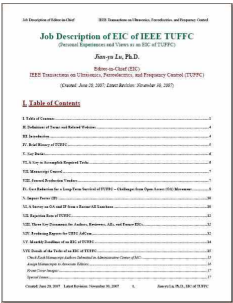
Part I: Submit Papers to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC)

Authors are encouraged to submit manuscripts expanded (more complete and with additional results) from the conference proceedings papers to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC). Unlike the conference proceedings, IEEE TUFFC is peer-reviewed and thus would allow a wider dissemination of your research results. The three documents below will give you more information on the IEEE TUFFC including its history, *impact factors* (IF) over the past 10 years, and its ranking among acoustical and electrical engineering journals:

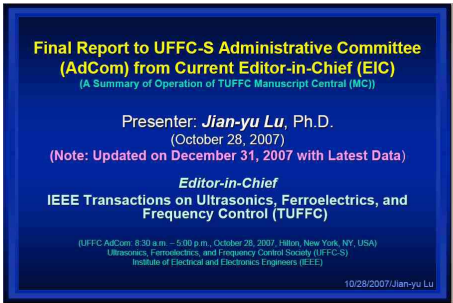
A Link to the IEEE TUFFC: <http://www.ieee-uffc.org/tr/>

Three Documents to Help You Learn More about IEEE TUFFC (see the included documents in this Appendix on the remaining pages):

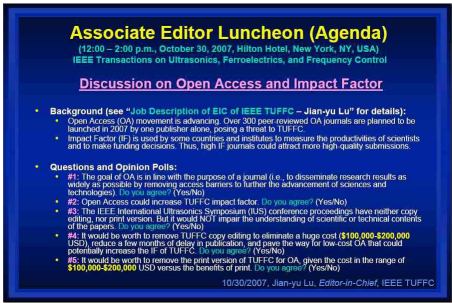
- **Open Access, Impact Factor, and Manuscript Central Tricks:**
Please click on icon below to download the PDF file



- **TUFFC Operation Statistics and Trend:**
Please click on icon below to download the PDF file



- **Recent Associate Editor Luncheon Agenda:**
Please click on icon below to download the PDF file



Part II: Job Description of EIC of IEEE TUFFC

(Personal Experiences and Views as an EIC of TUFFC)

Jian-yu Lu, Ph.D.

Editor-in-Chief (EIC)

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC)

(Created: June 20, 2007; Latest Revision: November 30, 2007)

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II. Definitions of Terms and Related Websites

The Institute of Electrical and Electronics Engineers (**IEEE**), Inc. is an international organization of hundreds of thousands of members worldwide. It covers many multi-disciplinary engineering fields as well as all traditional electrical engineering areas. Its website is at:

<http://www.ieee.org/>

The Ultrasonics, Ferroelectrics, and Frequency Control (**UFFC**) society is one of the dozens of societies that form the IEEE. It includes not only ultrasonics, but also ferroelectrics and frequency control. Its website is accessible at:

<http://www.ieee-uffc.org/>

The IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (**TUFFC**) is the only archival journal that the IEEE UFFC society publishes. Its website is at:

<http://www.ieee-uffc.org/tr/>

The IEEE UFFC **Digital Archive** is a digital depository containing the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (1954-present), Proceedings of the IEEE International Ultrasonics Symposia (IUS) (1970-present), Proceedings of IEEE International Symposia on Applications of Ferroelectrics (1986-present), Proceedings of the Annual Symposium on Frequency Control (1956-present), nine books, all UFFC newsletters (1953-present), three special issues, reports, and more. This archive is a valuable tool for the editors of TUFFC for their jobs (only IEEE UFFC members have an access to the full-text articles in this archive). It is accessible at:

<http://www.ieee-uffc.org/archive/>

III. Introduction

I have been asked to write a description of the job that an Editor-in-Chief (EIC) of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) is expected to do to help future EICs, prospective applicants of EICs, and transitions from one EIC to another. This is necessary because after January 1, 2002, a new bylaw of the Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society has been established to limit the maximum number of terms of an EIC could serve to two, each of which is three years. I have had the pleasure to serve as an EIC of TUFFC for the UFFC Society since January 1, 2002. By December 31, 2007, I will have served the maximum of two terms and thus a new EIC will be needed starting January 1, 2008. According to the plan, the current Associate Editor-in-Chief (AEIC) will serve as the new EIC and the UFFC Society will need a new AEIC who could eventually become an EIC of TUFFC.

The job of an EIC has many details which are difficult to document completely. In the following, I will only describe some of the tasks and details, and focus exclusively on the TUFFC operations using an electronic system, which will be most relevant to future EICs. Discussions on two critical issues, the challenge of the open access (OA) movement (related to the TUFFC financial stability and the purpose of a journal) and the

impact factor (IF), that could affect the future of TUFFC are also included. In addition, “**Some ‘Tricks’ for AEs to Use MC**” are provided in a later section of the document to help Associate Editors to use the Manuscript Central electronic system more effectively.

Note: This PDF document could be navigated by [bookmarks](#) (click the first tab named “Bookmark” on your left to show it) or the link-enabled [Table of Contents](#).

IV. Brief History of TUFFC

The IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) was founded in June 1954 with the name of “Transactions of IRE”, where IRE was short for the Institute of Radio Engineering. It underwent several name changes. In May 1955, the name was changed to “IRE Transactions on Ultrasonics Engineering”, in 1963, it adopted the name “IEEE Transactions on Ultrasonics Engineering”, and in 1964, the name became “IEEE Transactions on Sonics and Ultrasonics”. Beginning 1986, the current name “IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control” has been used until present.

During the 53-year journey, TUFFC has served its research communities by publishing archival papers and other manuscripts and has evolved to become one of the leading journals in our disciplines. Four Editor-in-Chiefs including the present one have served for the TUFFC so far. Today, TUFFC has grown from a journal that published 35 pages in 1954 to one that publishes nearly 3000 pages (expected) in 2007. It has expanded from a journal that published semiannually (1954-1965), quarterly (1966-1974), bi-monthly (1975-2001), to one that publishes monthly (2002-present).

The four Editor-in-Chiefs of TUFFC in chronological sequence are:

Oskar E. Mattiat (June 1954 – May 1971)
Clevite-Brush Development Co.
Cleveland, Ohio, USA

S. Wanuga (July 1971 - September 1985)
General Electric Co.
Syracuse, New York, USA

William D. O’Brien, Jr., Ph.D. (November 1985 – December 2001)
Professor
University of Illinois
Urbana, Illinois, USA

Jian-yu Lu, Ph.D. (January 2002 – December 2007)
Professor
The University of Toledo
Toledo, Ohio, USA

The evolution of the journal name, publisher, and publication frequency of TUFFC is as follows:

Journal Title: *Transactions of IRE* (June 1954 – November 1954)

Publisher: Published by the Institute of Radio Engineering, Inc., for the Professional Group on Ultrasonics Engineering

Publication Frequency: Semi-Annually

Journal Title: *IRE Transactions on Ultrasonics Engineering* (May 1955 - December 1962)

Publisher: Published by the Institute of Radio Engineering, Inc., for the Professional Group on Ultrasonics Engineering

Publication Frequency: Semi-Annually

Journal Title: *IEEE Transactions on Ultrasonics Engineering* (July 1963 – December 1963)

Publisher: Published by the Institute of Electrical and Electronics Engineers, Inc., for the Professional Technical Group on Ultrasonics Engineering

Publication Frequency: Semi-Annually

Journal Title: *IEEE Transactions on Sonics and Ultrasonics* (July 1964 – November 1985)

Publisher: Published by the Institute of Electrical and Electronics Engineers, Inc., for the Sonics and Ultrasonics Group

Publisher: Published by the Institute of Electrical and Electronics Engineers, Inc. (starting July 1966)

Publication Frequency: Quarterly (1966-1974)

Publication Frequency: Bi-Monthly (1975-1985)

Journal Title: *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* (January 1986 – Present)

Publisher: Published by the Institute of Electrical and Electronics Engineers, Inc.

Publication Frequency: Bi-Monthly (1985-2001)

Publication Frequency: Monthly (January 2002 – Present)

V. Key Duties

The key duties of an EIC of TUFFC are to make TUFFC a high-*quality* archival journal in our disciplines and shorten the *time* from submission to publication as much as possible through a smooth daily operation, *strategic* planning, technological innovations, *personal dedication*, and last but not least, answering the needs of *readers*. Detailed tasks of an EIC of TUFFC are described in a later section, *Details of the Tasks of an EIC of TUFFC*, of this document.

VI. A Key to Accomplish Required Tasks

A key to accomplish the required tasks of an EIC without burdening or costing the UFFC society financially by hiring a human secretary is to be very familiar with the operation of the Manuscript Central (MC) software (MC is a product of ScholarOne, now part of the Thomson Corporation). This could be accomplished by reading the MC “TUFFC Site Evaluation Guide (produced by ScholarOne on March 25, 2002, with 82 pages)”, training through IEEE technical support, practicing through IEEE MC Demo (demonstration) website, testing all the operation functions of the website, and then checking to see if MC

produces desired results. This process will make an EIC efficient in using the modern software so that he/she could do more in less time without the need of a human secretary.

It is important that each time one tries something that he/she has not done before in MC, make sure to follow up and check if the results are what he/she expects. For example, when a manuscript is withdrawn upon the request of authors, if only one version is withdrawn, other versions of the same manuscript could float around and thus may show up as a manuscript that is being revised by authors or being handled by an AE, which is incorrect. Thus, a search through the Administrator Center of MC is required to withdraw all versions of the same manuscript.

VII. Manuscript Central

The Manuscript Central (MC) software was produced by ScholarOne and has been used by TUFFC since June 1, 2002, after the current EIC has customized it to suit for the TUFFC operations with the help of IEEE staff and inputs from UFFC Society officials. MC allows a complete paperless operation from author submission, peer-review, to journal production. The software has also been used by most of the IEEE societies for journal operations.

The use of MC has been very beneficial for TUFFC. It has reduced the operation cost of TUFFC significantly and has contributed to the long-term financial stability of the UFFC Society. For example, since the MC was established for TUFFC on June 1, 2002, the current EIC has used it as a “secretary”, which currently costs about a few thousand dollars per year versus tens of thousands of dollars if a full-time human secretary were to be employed. Compared to a human secretary, MC has the advantage of providing reliable services 24 hours a day and 7 days a week, even when the EIC is traveling. Without MC, the current EIC would have difficulty to handle paper-based manuscripts while having a full teaching and research load at a University, in addition to being a father of two young kids and having been a General Chair since 2004 to prepare for the 2008 IEEE International Ultrasonics Symposium to be held from November 2-5, 2008, in Beijing, China. MC has not only made the job of the EIC more efficient and convenient in a higher quality (various statistical data are readily available from MC), it has also great benefits to our authors, Associate Editors (AEs), reviewers, and journal production staff. Technological innovations are also made easier with MC. For example, the TUFFC context-sensitive multimedia would be difficult to implement without MC.

To use MC more effectively, future EICs could check “**Some ‘Tricks’ for AEs to Use MC**” in a later section of this document. For a complete understanding of all aspects of MC operations, the “TUFFC Site Verification Guide” in MC could be helpful.

VIII. Journal Production Vendors

Working with the Federation of Animal Science Societies (FASS) for the TUFFC production has been efficient and satisfactory. FASS responds promptly to our various requests for improvements. Although I have not worked with the IEEE journal production services, I was told by some IEEE societies' EICs during annual IEEE Panel of Editors' meetings that they do not have good experiences, which make their jobs more difficult. The reasons could be that IEEE journal production services have to take care of many IEEE societies and each of which may have a different need. The large IEEE production services would require more regulations and thus could be less flexible.

Since TUFFC uses FASS, it has taken a full advantage of MC from the beginning. For example, right from the start (June 1, 2002), TUFFC has used the electronic journal production capability of MC to produce the journal directly from authors' electronic files rather than requesting a few paper copies to be submitted after an electronic manuscript has been accepted for publication in MC. This has reduced authors' chores and speeded up the publication. However, the IEEE publication services didn't use this electronic approach until two to three years later; after the current EIC has explained to the IEEE staff the TUFFC approach during a visit to the IEEE headquarter in late 2003. In addition, it could be difficult to implement TUFFC context-sensitive multimedia if we were using the IEEE publication services that might be lack of flexibility.

IX. Cost Reduction for a Long-Term Survival of TUFFC – Challenges from Open Access (OA) Movement

In addition to a high technical quality and a short "time from submission to publication", *financial* sources to sustain the TUFFC production are crucial.

Although, currently, TUFFC has generated a sizable surplus for the UFFC Society to sustain the journal production, continue to lower the expenses of TUFFC is a key to its long-term survival in the growing "hostile" environment of open access (OA). Two major production costs of TUFFC are: copy-editing by FASS and printing the copy-edited TUFFC to produce a paper journal. As is seen from the trend, the next generation of researchers will favor more an electronic version than the print version of TUFFC. In a not-too-distant future, one could expect the print version would be phased out (for example, recent and future IEEE International Ultrasonics Symposia no longer provide attendees print proceedings). If this happens, it will save about a half of the expenses of TUFFC.

The other major cost of the TUFFC operation is copy editing, which occurs after a manuscript is accepted for publication. If this cost could also be removed, the production costs of TUFFC would be dramatically reduced since the remaining costs would only be a fraction of that of the copy editing. As mentioned before, the current cost of using MC is about a few thousands of US dollars per year and hosting portable document format (PDF) files on both the FASS web server and IEEE Xplore has a relatively low cost. The removal of the copy-editing process might be feasible because according to the statistics of IEEE Xplore, the downloading (usage) of PDF papers of conference proceedings are comparable to those of journals, although typically, conference proceedings are not copy edited. In addition, as the computer technology, word processing, and graphics processing software advance, many authors could produce PDF files that would be indistinguishable in format from IEEE journals (for example, automatic formatting features of modern word processing software have helped me to produce this document and other documents that I produced for TUFFC). Besides the cost saving, a removal of paper journal (print version) and copy editing may also reduce the time from submission to publication significantly (currently, a few months may be needed for copy editing and printing after a manuscript is accepted for publication).

The essential (core or intellectual) part of TUFFC is produced through the efforts of authors, Associate Editors, reviewers, and EICs. As we know, the AEs, reviewers, and EICs of TUFFC are all volunteers who donate an enormous amount of time to create the treasure of TUFFC. If the time of volunteers were counted in a monetary term, TUFFC would be an extremely expensive journal. However, the purpose of the work of volunteers is to create a high-quality knowledge base to advance the sciences and technologies of our disciplines to serve our members and readers in the entire world. This purpose is in line with what is

promoted by the OA movement that argues the information created by the authors (in many cases funded by government agencies with public tax dollars) and volunteers should be freely available to anyone who has the need to access it, instead of being slowed by the barriers of access control.

Imagining if the annual expenses of TUFFC could be below twenty thousands of dollars with online-only version without copy editing, each author would need only to pay about a hundred dollars or less per manuscript (assuming TUFFC publishes about 250 papers a year) to sustain the production of TUFFC to accommodate an open access. Without an access control, there would be more readers and more citations, and thus could increase the impact factor (IF) of TUFFC further, as is reported for the journal of Optics Express (<http://www.opticsexpress.org/Issue.cfm>), which is an open access journal that has the highest impact factor among all the journals published by the Optical Society of America (<http://www.osa.org/journals/news/default.aspx>). Optics Express was started in 1997. It has an IF of 2.331, 3.219, 3.797, 3.764, and 4.009 for 2002, 2003, 2004, 2005, and 2006, respectively. It charges authors \$700 for manuscripts between 1-6 pages and \$1200 for those between 7-15 pages. (Although the IF might not be a perfect measure of the quality of a journal, it could affect the decision of some authors where to submit their high-quality manuscripts, which in term, might increase the quality of the journal. This may have happened to the Optics Express since I have heard that it is getting more and more difficult to get a paper accepted for publication by this journal. In addition, widen the accessibility of a journal would always serve the purpose of a journal – to disseminate research results.) Without open access, some authors might have to skip papers that require them to pay to gain an access, which could reduce the number of citations to these journals, even in developed countries such as U.S.A.

In summary, if TUFFC could reduce its major costs mentioned above, when the OA movement forces TUFFC to go open access, TUFFC would be in a good long-term financial standing to sustain its publication to serve our community. If the OA becomes a reality, financially, the UFFC Society might have to rely more on the surpluses of our current three annual international conferences and membership fees.

For your information, I include in **Appendix 1 “An Email from Bentham Science Publishers for Open Access Journals”** that was sent to me on August 30, 2007 regarding “*The Open Acoustics Journal*”. I assume many of you may have received similar emails. From the web site provided in that email, <http://www.bentham.org/>, one finds a news announcement “Welcome to Bentham Open Access: Bentham Publishers are launching more than 300 peer-reviewed open access journals during this year, under the banner of ‘Bentham OPEN’. The journals will cover all major disciplines and are exclusively open access publications.” Their manuscript submission and instructions webpage is included in **Appendix 2 “Open-Access Manuscript Submission and Instructions of Bentham Science Publishers.”** With this magnitude of expansion of peer-reviewed OA journals, if the cost could be further lowered for OA authors, the non-OA world, including IEEE journals, could be challenged soon.

One can also find numerous open access journal titles at: <http://www.bentham.org/open/a-z.htm>. For the “The Open Applied Physics Journal” at <http://www.bentham.org/open/toapi/index.htm>, it is interesting that there is a minimum page limit of 10 pages and unlimited maximum number of pages for research articles. In addition, “There is no restriction on the number of figures, tables or additional files such as video clips, animation and datasets, that can be included with each article online.” The publication fee for each research article is currently \$800.

X. Impact Factor (IF)

Definition: Impact factor (IF) of a journal for a year, say, 2006, is defined as the number of citations in the current year (2006) from all Institute for Scientific Information (ISI)-recognized archival journals to articles of the journal in the most recent two years (2004 and 2005) divided by the number of articles published during the same period (2004 and 2005) by the journal. The impact factor is viewed by some to have a correlation with the quality of a journal and is known highly discipline dependent. However, others may be quite skeptical of the impact factor. Nevertheless, some countries and institutions use it to measure the productivity of a scientist.

The history of the Impact Factor of TUFFC over the past 10 years is given below:

Acoustic Ranking: *Ranking among acoustic journals*

EE Ranking: *Ranking among Engineering, Electrical, & Electronic*

Acoustic Range: *Acoustic journal impact factor range*

EE Range: *Engineering, Electrical, & Electronic impact factor range*

History (Year)	Impact Factor	Acoustic Range	EE Range	Acoustic Ranking	EE Ranking
2006:	1.729	0.000-2.288	0.000-4.500	#5 among 28 (Top 18%)	#34 among 206 (Top 17%)
2005	1.819	0.088-2.430	0.000-5.176	#4 among 27 (Top 15%)	#35 among 208 (Top 17%)
2004	1.545	0.128-2.167	0.006-4.352	#4 among 26 (Top 15%)	#35 among 209 (Top 17%)
2003	1.421	0.154-2.033	0.004-4.241	#6 among 28 (Top 21%)	#46 among 205 (Top 22%)
2002	1.595	0.025-1.806	0.004-3.400	#3 among 28 (Top 11%)	#29 among 203 (Top 14%)
2001	1.372	0.025-1.862	0.007-5.000	#5 among 27 (Top 19%)	#31 among 200 (Top 16%)
2000	1.640	0.050-1.822	0.007-4.909	#4 among 27 (Top 15%)	#17 among 202 (Top 8%)
1999	1.713	0.035-2.196	0.003-5.357	#5 among 27 (Top 19%)	#17 among 205 (Top 8%)
1998	1.051	0.026-2.182	0.016-2.230	#5 among 25 (Top 20%)	#36 among 208 (Top 17%)
1997	1.058	0.084-1.853	0.008-4.000	#6 among 20 (Top 30%)	#28 among 193 (Top 15%)

In late 2006, I did an investigation for TUFFC on the ISI database (cumulative citations to TUFFC papers):

<http://portal.isiknowledge.com/portal.cgi/>

At that time, I found that TUFFC published a total of about 2830 papers from 1990-2006 (for a period of about 17 years), **5.8%** (or 164) received 25 or more cumulative citations, **1.7%** (or 48) received 50 or more cumulative citations, **0.5%** (or 15) received 100 or more cumulative citations, and **0.14%** (or 4) received 150 or more cumulative citations.

For future EICs, the debate over the IF is likely to continue. To facilitate any future discussion on the IF and its impact on TUFFC, comments from many colleagues responded to my email sent to Associate Editors and other officials of UFFC regarding the IF on December 5, 2006 are given in “**Appendix 3 – Comments on Impact Factor**”.

XI. A Survey on OA and IF from a Recent AE Luncheon

A brief survey with the following five questions has been conducted in a recent Associate Editor Luncheon (12:00 – 2:00 p.m., October 30, 2007, Hilton Hotel, New York, NY, USA), which was held in conjunction with the 2007 IEEE International Ultrasonics Symposium. Associate Editors of TUFFC and many UFFC society officers have attended the luncheon.

- **Question #1:** The goal of OA is in line with the purpose of a journal (i.e., to disseminate research results as widely as possible by removing access barriers to further the advancement of sciences and technologies). Do you agree? (Yes/No)
- **Question #2:** Open Access could increase TUFFC impact factor. Do you agree? (Yes/No)
- **Question #3:** The IEEE International Ultrasonics Symposium conference proceedings have neither copy editing, nor print version. But it would NOT impair the understanding of scientific or technical contents of the papers. Do you agree? (Yes/No)
- **Question #4:** It would be worth to remove TUFFC copy editing to eliminate a huge cost (\$100,000-\$200,000), reduce a few months of delay in publication, and pave the way for low-cost OA that could potentially increase the IF of TUFFC. Do you agree? (Yes/No)
- **Question #5:** It would be worth to remove the print version of TUFFC for OA, given the cost in the range of \$100,000-\$200,000 versus the benefits of print. Do you agree? (Yes/No)

The results of the survey are as follows:

- For **Question #1:** --- Generally agree.
- For **Question #2:** --- Generally agree.
- For **Question #3:** --- Generally agree.
- For **Question #4:** --- Some people disagree. Reasons: (1) Some manuscripts may be incomprehensible without copy editing. (2) An archival journal may need to have a professional looking.
- For **Question #5:** --- Some people mentioned that the print is still in demand.

A solution has been suggested by some AEs for Questions #4 above, i.e., to have some authors pay for the copy-editing services of their manuscripts. This could work because: (1) most authors have satisfactory English language skills to make their manuscripts technically understandable and thus do not need professional language services; (2) for a small number of manuscripts that may be technically acceptable for publication but would need professional language services in order for the manuscripts to be comprehensible by most readers (judged by AEs, reviewers, and EIC), the authors could be asked to pay an extra (say, paying \$800 USD that is similar to other OA journals instead of paying less than \$100 USD) for copy editing of their manuscripts by a trusted service provider (such as, FASS or IEEE) before the manuscripts could be published.

In addition, given the rapid advancement of word processing software and web technologies, good templates and tools (text formatting, on-line reference formatting and checking, and figures) could be developed by IEEE for authors to produce good enough “camera ready” papers to address the issue of “professional looking”. Notice that authors of conference papers nowadays are routinely using templates and tools provided by IEEE. If authors do not follow proper guidelines of paper formatting, their manuscripts could be subject to professional copy-editing services that would charge the authors an extra.

XII. Rejection Rate of TUFFC

TUFFC were criticized to have a low rejection rate as compared to other IEEE journals in its last five-year review by IEEE a few years ago (currently, the rejection rate is around **30%**). We had discussion of this during our annual AE meetings. Most of the AEs and the society officials felt that TUFFC should not do anything to artificially increase the rejection rate without actually increasing the quality of TUFFC. Therefore, the future changes for TUFFC could be focused on increasing its **quality**. In addition, programs could be developed with the help of IEEE to honor our **anonymous heroes** – the **reviewers**, especially, those who have contributed significantly, to help us to further increase the quality and timeliness of TUFFC.

XIII. Three Key Documents for Authors, Reviewers, AEs, and Future EICs

The following three documents were modified and expended from previous versions when the current EIC took office on January 1, 2002. These documents contain TUFFC MC screen shots that provide step-by-step operations for users to navigate through MC and have been updated from time to time. They have been very useful in guiding Associate Editors, reviewers, and authors. Therefore, future EICs would need to review these documents carefully and update them as necessary. When new AEs are appointed, they should review these documents first before starting their duties.

Guide for Associate Editors:

http://www.ieee-uffc.org/tr/guide_for_ae.pdf

Guide for Reviewers:

http://www.ieee-uffc.org/tr/rev_instr.pdf

Information for Contributors:

<http://www.ieee-uffc.org/tr/contrib.pdf>

XIV. Producing Reports for UFFC AdCom

During the past six years, UFFC Administrative Committee (AdCom) had two meetings per year. In each meeting, a report for the operations of TUFFC was required from the EIC. In the reports, many aspects of the TUFFC operations have been included and data have been presented in a historical perspective to see the trend where TUFFC is heading. Many of you may already have a copy of these reports.

To produce the data more easily for the AdCom reports, needs of IEEE committees, requests from UFFC officials, and managing daily TUFFC operations, I have developed a computer program using the Microsoft Visual Basic language for the Microsoft Excel spreadsheet to automatically produce various statistics of MC operations and the operations of each AE. This program is available to future EICs. Since the program is developed for the popular Microsoft Excel, it is portable and easy to use. In case any future EIC has difficulty to use it or would like to expand or develop new programs based on it, I will be happy to explain and demonstrate. The program can do the following among other things: (1) automatically calculate most of

the statistic tables that I have presented in each report for the UFFC AdCom (notice that some statistics were obtained directly from MC and some were calculated manually), (2) detailed performance and manuscript processing status of each AE, (3) detailed status of each in-progress manuscript (manuscripts that have not reached a final decision yet), and (4) all of the statistical charts of manuscripts for each AE.

Complete data of the TUFFC operations can be obtained from the following items in the Report Menu of MC (note that the Report Menu in the AE Center is quite restrictive and thus is not the same as the one shown below). Some of the items (started with “*”) have been useful for me to produce the reports. However, ScholarOne is continuing to expand the list and more data may be available in the future.

- Manuscripts Status by Date Submitted
- Manuscripts In Process
- Manuscripts Pending Associate Editor Decision
-
- Manuscripts Accepted
- * Manuscripts Accepted by Type
- * Manuscripts Accepted by Country
- Manuscripts Rejected
- * Manuscripts Received by Type
- Manuscripts Received by Custom Field (cust1)
- * Manuscripts Received by Country
- * Manuscripts Received by Decision
- * Manuscripts Received by Associate Editor
-
- Pending Reviews
- Late Reviews
-
- * Time from Submission to Decision
- * Time from Submission to Acceptance
- * Time from Submission to Reject
- * Time for EIC to Assign Associate Editor
- * Time for Associate Editor to Assign Reviewer
-
- * Turnaround Time by Associate Editor
- * Accept/Reject Ratio by Associate Editor
- * Reviewer Statistics and History
- * Reviewer Agreed List
- * Manuscripts With Final Decisions (Export)
- * Reviewer History Agreed Listing
- Manage Outstanding Revisions
- * Decision Ratio Report-Display Export
- * Decision Ratio Report-Data Export
-
- Users With Duplicate E-mail Addresses
- Potential Duplicate Users (by e-mail address)
- Users with Duplicate User ID

- Merge Users Tool
- Correct Duplicate Reviewer Assignments (S1 Migration Use)
- Match Authors (S1 Migration Use)
- Journal User Permission Level Report
- Periodicals Committee Report

Note: The Excel spreadsheet downloaded from “[Decision Ratio Report-Data Export](#)” is used as an input to the Visual Basic program that I developed to produce various reports automatically. Other spreadsheets downloaded from “[Manuscripts With Final Decisions \(Export\)](#)” and “[Reviewer History Agreed Listing](#)” may also be used to manage TUFFC operations.

Note: The “Periodicals Committee Report” is an item newly added by ScholarOne and could be of use for future EICs to provide data specifically for the IEEE Periodicals Review Committee. This committee reviews every IEEE journal once every five years. During the last report, data were collected from other items of the Report Menu above.

XV. Monthly Deadlines of an EIC of TUFFC

One of the responsibilities of an EIC is to follow the monthly deadlines closely. Deadlines of some major tasks are listed below:

- Receive a list of accepted manuscripts available for publication in a current issue from FASS around the 20th-25th of each month. For example, the list for [January 2008 issue](#) will be available around [December 20-25, 2007](#).
- Arrange the Table of Contents of each issue of TUFFC according to the [seven major technical areas](#) of UFFC. Such arrangement will save readers’ time when they browse the Table of Contents of TUFFC monthly for each issue. In the era of information explosion, many people may not have a lot of free time to make extra efforts to find information they need. Our efforts to help readers, although they might seem little, will be [magnified](#) by the number of readers. I have also suggested a future version of IEEE Xplore to accommodate subtitling in the Table of Contents of each issue of TUFFC similar to what we have on the FASS website. The seven technical areas for each Table of Contents in an alphabetical order are as follows:
 - *Ferroelectrics*
 - *Frequency Control*
 - *Medical Ultrasound*
 - *Physical Acoustics*
 - *Sensors, NDE, and Industrial Applications*
 - *Surface Acoustic Waves*
 - *Transducers and Transducers Materials*
- Send the arranged Table of Contents back to FASS.
- Check the blueline from the “Printer” for each issue of TUFFC (the “Printer” is a company that produces the print version of TUFFC and the blueline is a proof of each issue of TUFFC). Although FASS is responsible for including all the information in each issue, often, they make mistakes. When checking, pay special attention to all multimedia contents and those contents you have asked FASS to add, delete, or change. After checking, give your approval to FASS with a list of errors to be corrected, if there is any.

- Check the on-line PDF files on the FASS TUFFC website. Correct any errors by communicating with the TUFFC production staff. Pay special attention to multimedia files and changes you have requested. Once the files are checked, FASS will send an announcement to all TUFFC subscribers.
- Download each issue of TUFFC from FASS protected website for IEEE Xplore. Check all the files carefully and make sure that there is no discrepancy between files in this package and those on the FASS TUFFC website. Correct any mistakes if there are any with FASS and download and recheck the updated files FASS produced if needed.
- Compress the checked package into a single zip file and then upload it to the IEEE file server via FTP (file transfer protocol) for IEEE staff to load the issue into Xplore. Send an email to notify IEEE staff for the upload.
- Check IEEE Xplore to make sure they have correctly posted the issue as much as the Xplore software could accommodate (IEEE Xplore software has many limitations and inflexibilities, and improvements could be slow because IEEE has to take care of all of its societies and many of their staff members are overloaded). Pay special attention to the multimedia files and their links in PDF papers as well as their functionality (compare them to those on the FASS TUFFC website since IEEE staff may handle this inconsistently from one TUFFC issue to another). Also pay attention to errors that might be introduced by IEEE PitStop software that IEEE uses when uploading TUFFC issues to Xplore. These errors could randomly strip off a paragraph, a figure, a title, some symbols in an equation, and sometime authors' names within a PDF file due to the limitations of the IEEE PitStop software (PitStop may have problems with font substitutions and thus produce a string of strange errors in PDF files). Correct any problems found with IEEE staff. (The current Vice President for Publications of UFFC, Dr. Don Yuhas, has helped to have IEEE correct some of the problems of Xplore, but solving other problems may need to wait until IEEE Xplore becomes more flexible and accommodating, which could take some time.)

XVI. Details of the Tasks of an EIC of TUFFC

Check Each Manuscript Authors Submitted in Administrative Center of MC:

- Make sure the PDF file of the manuscript authors submitted is on the top of the file list. If not, move it to the top.
- Move any Microsoft Word document, if it exists, that corresponds to the PDF manuscript immediately below the PDF file to allow reviewers to write comments directly into the Word file (second from the top).
- If only a Microsoft Word file of the manuscript is submitted, save the file to a local hard drive and then upload it back to MC. The file will be automatically converted to PDF format. If the conversion produces errors, such as, only the first few pages are converted, then do the conversion directly from Microsoft Word to PDF file on the local hard drive and then upload the PDF file into MC.
- Open each PDF file to check for any irregularities in the manuscript.
- If authors use Japanese, Chinese, or Korean fonts in the PDF file, ask authors to email a new file in Microsoft Word format or some other formats that the EIC could handle. Then, create a new PDF file and update MC for the authors. This is important because not all AEs and reviewers have these font packages installed in their computers and many users of computers do not have an administrative privilege to install or modify installed software. (The custom default letter "Additional Word Processing Files Needed" in "**Appendix 5 - Other Default Letters**" could be used to notify the authors.)

- If authors submit manuscripts in a zip package, download the package and then unpack it in your computer. Upload the necessary files back into MC to make it easier for AEs and reviewers.
- Check multimedia files to make sure they can be opened properly and are viewable with a common program such as Windows Media Player that is bundled with Microsoft operating systems. Check the size of files as specified in the “Information for Contributors” to make sure they are not too large to ensure a reasonable downloading time for AEs, reviewers, and readers.
- Make sure the subject classification of the manuscript is correctly selected by authors according to the seven technical areas of TUFFC. In the process of submission of manuscripts, authors are prompted to select the classifications defined when the TUFFC MC was established. If the selection by the authors is incorrect, make a note to yourself so that statistics can be produced more accurately for the reports to UFFC society.
- Copy the “Authors Notes to Editor-in-Chief” to the “Notes” area as appropriate so that AEs could see the same notes, which may be necessary for AEs to conduct the peer-review process. Please remember to click the button “Save Notes” when the operation is done so that the changes are effective in MC.
- After checking carefully for all of the above, select “Yes” in “Send on to Editor-in-Chief” box, and then click “Update Information” to forward the manuscript to the EIC Center in MC.

Assign Manuscripts to Associate Editors:

- Assign Manuscripts to Associate Editors according to the contents of the manuscripts. This is an essential step to ensure the quality of TUFFC because AEs who are knowledgeable on the subjects of the manuscripts would handle the peer-review process better and more efficiently, and would enjoy more while doing their jobs. On the other hand, one tries to avoid overloading AEs and thus compromises may sometimes be necessary. TUFFC currently has about 50 AEs. This helps to cover a wide range of areas. Although we try to balance the loads of AEs, some AEs will still have a heavier load than others due to the nature of the research areas.
- When assigning manuscripts, take care of all special requests that AEs have asked for so that in some periods of time, do not assign manuscripts to particular AEs. Sometimes, AEs are sick, in travel for an extended period of time, and in sabbatical, etc.
- Some authors request that their manuscripts not be handled by some AEs for various reasons. When assigning manuscripts, try to honor authors’ requests. If authors put some AEs in the list of non-preferred reviewers, try to avoid assigning the manuscripts to those AEs whenever possible.
- After assigning manuscripts, if some AEs request not to handle particular manuscripts, assign those to other AEs whenever possible. (So far, I have accommodated all such requests from AEs.)
- Pay attention to those manuscripts that are resubmitted as Correspondence after the decision “Resubmit as Correspondence” has been made for their original manuscripts. As far as MC is concerned, such a decision means the termination of the peer-review process of the manuscripts. Therefore, when these manuscripts are resubmitted, they are assigned new manuscript numbers (IDs) and may be difficult to distinguish from other new submissions. However, authors always have a note to EIC to indicate that these are resubmissions and they have uploaded responses to reviewers’ comments with their manuscripts. For these manuscripts, it is desirable to assign them back to the original AEs for handling if the AEs are still available. In the letters to the AEs, make a note on the top of the letter: “This manuscript is a resubmission as Correspondence of the original manuscript, TUFFC-0XXXX-XXXX, which was handled by you.”
- Sometimes, authors may have new manuscripts related to earlier submissions. Such relationships should be established for proper assignments and tracking of these manuscripts.

Front Cover Images:

- During the past six years, the current EIC has handled the peer-review process of all front cover images. When handling the front cover images, an EIC should ensure an adequate supply of the images while avoiding a huge backlog (only 12 images can be published per year). Because the peer-review process of front cover images has been taken into consideration when TUFFC MC was established, it should be straightforward and efficient for future EICs to handle them if they choose to do so. However, it would be easier to ensure an adequate supply of images if an EIC handles the front cover images.
- The criteria for accepting a front cover image for TUFFC and the procedure for submissions have been described clearly in the “Information for Contributors”.
- Because front cover images are different from regular manuscripts, different default letters have been produced (“[Appendix 5 - Other Default Letters](#)”).

Special Issues:

After TUFFC MC system was established, in 2003, Special Issue (SI) publications in TUFFC restarted and now we have 11 Special Issues (9 of them have been published, one of them will be published before the end of the term of the current EIC, and the remaining one has almost finished its peer-review process and is likely to be published in early 2008). Special Issues bring papers of current interest together in single issues, and are important tools for research. Since the peer-review process for the publications of SIs has also been taken into consideration when TUFFC MC was established, the publications of SIs have been smooth and automatic, even for the SI “Applications for Ferroelectrics” that has as many as 150 submissions and for the SI “Diagnostic and Therapeutic Applications of Ultrasound in Bone” that has a submission of 42 manuscripts. The following are some steps for the publications of SIs:

- To develop Special Issues, an EIC needs to work with AEs and/or experts in the fields to decide suitable topics. In many cases, Special Issues are initiated by AEs and Guest Editors.
- Once the topic of an SI is determined, Guest Editor(s) should develop an announcement of the SI a few months (around 6 months) before the manuscript submission deadline and submit the announcement to the EIC to review and publish in TUFFC. The approved announcement should run continuously in TUFFC until the deadline expires to solicit as many manuscripts as possible. Usually, most of the submissions occur within 10-20 days before the deadline.
- If the SI is handled by more than one Guest Editor, designate one of them as a grand Guest Editor to whom all manuscripts are assigned. After the grand Guest Editor check through all the manuscripts, he/she should let the EIC know which Guest Editor should handle the peer-review process for which group of manuscripts. Then, the EIC will reassign the manuscripts to various Guest Editors. If some Guest Editors are not existing AEs, temporarily add an AE privilege for these Guest Editors in their MC accounts. Once the Guest Editors have finished the peer review process and the SI is published, remember to add [a termination date](#) to the AE privilege of them. Please do not simply remove them from the AE privilege because it may mess up the statistics in MC (MC could not find corresponding entries if any person who once had an editorial role is removed).
- If a Guest Editor has never served as an AE of TUFFC after the start of the TUFFC MC in 2002, it is important to have him/her review the three documents, “Guide for Associate Editors”, “Guide for Reviewers”, and “Information for Contributors” before his/her handling of manuscripts. This will

help to ensure a consistent high quality of TUFFC among the Guest Editors and help the Guest Editors to navigate through MC (step-by-step guides and screen shots are available in these documents). It is very important to emphasize to all Guest Editors that the *quality* of manuscripts is the most important factor when they accept manuscripts for publication in TUFFC. Since Guest Editors may be new to the TUFFC MC system, they often need more help from the EIC. (Please notice that it will never be too much to constantly emphasize the quality of TUFFC to the Guest Editors and remind them of the IEEE peer-review *policies* and *procedures* that they need to follow during the courses of SIs. Even if you think you have asked Guest Editors to review the three documents above before starting their duties and you think they should have been clear, you may still find problems in their following these procedures because they may be too busy and thus finding problems and helping them to solve the problems may be necessary, especially for SIs that are large and have many Guest Editors. Because the Grand Guest Editors may not have a clear view of the statuses and the entire operations of SIs once some manuscripts are reassigned from them to other Guest Editors, it is important for an EIC to periodically produce statistics of operations of SIs for them.)

- Once the peer-review process is completed for all manuscripts of an SI, the EIC should ask the grand Guest Editor to write an introduction to the SI. The grand Guest Editor should also submit Biographies, photos, affiliations, and addresses of all Guest Editors to the EIC. After checking through all of the submitted materials, the EIC should submit them to the publisher (FASS).
- As soon as the peer-review process is completed for the SI, the grand Guest Editor should also be asked to select a candidate of the front cover image of the SI. If there is a suitable image, after consulting with the EIC, the grand Guest Editor should send out an invitation to the authors to submit a front cover image for peer-review. After improvements of the image through the peer-review process, the cover image may be used for the SI. If there is no suitable image, the EIC should use one of the available images accepted previously.
- To avoid delay of publication of regular issues due to the SI, an SI is usually published as a part of a TUFFC regular issue. This removes the scheduling pressure due to the SI and would even allow TUFFC to publish one SI in each issue.
- More instructions on the handling of an SI can be found in the “Guide for Associate Editors”.

Withdraw Un-submitted Revisions and Withdraw Other Manuscripts:

It is the policy of TUFFC to withdraw any manuscripts that have been returned to authors for revisions for more than 90 days. This policy was established by UFFC AdCom and has been clearly written in the automatic decision letters AEs send to authors. The policy may avoid inappropriate claims to priorities of some patent applications and greatly reduce the delay due to authors. However, for various reasons, authors may either ignore the policy or have difficulty to follow it in extenuating situations.

- Periodically, say, once every half month, I check the “Withdraw Un-submitted Revision” in MC to find manuscripts that have a revision time over 90 days and send emails to those authors to remind them of the policy. In the reminder, one more month is given to authors to resubmit their manuscripts. If we do not hear from the authors after the deadline, the manuscripts will be withdrawn. In most cases, authors simply resubmit their manuscript before the deadline. In rare cases where authors request additional time and could justify their delays, their requests could be granted after establishing new deadlines with the authors. (A default letter “Reminder for

Submission of Revision” has been developed for this purpose in “[Appendix 5 - Other Default Letters](#)”).

- When withdrawing an un-submitted manuscript, first withdraw it in “Withdraw Unsubmitted Revision” screen. Then, search for part of the Manuscript ID to find all versions of the same manuscript. For example, if the Manuscript ID is TUFFC-01234-2007.R1, type in only “1234” to search for the manuscripts in the Administration Center of MC. This allows for manuscript, TUFFC-01234-2007, with all suffixes to be displayed. Then, withdraw the manuscripts one by one. This is necessary because other versions of the manuscript are still regarded active by MC and statistics produced by MC may not be accurate if this is not done properly.
- There are other reasons to withdraw a manuscript. These include: (1) withdraw upon the request of authors, (2) manuscript “A” has been merged with manuscript “B”, (3) English of a submitted manuscript is not satisfactory for review, and (4) the manuscript is not properly prepared for TUFFC, and so on. When withdrawing such a manuscript, it is also necessary to withdraw all versions of the manuscript. (See the default letter “Withdraw” in “[Appendix 4 - Default Letters in TUFFC MC](#)” for details.)

Merging Duplicate User’s Accounts:

- Merging duplicate user’ accounts in MC is very important. Duplicate user accounts are produced either by AEs when they add new reviewers “on the fly” without checking if the accounts already exist, or by users themselves. Duplicate user accounts prevent reviewers from getting the manuscripts to review and are one of the reasons that AEs do not get responses from reviewers. For example, if MC has an account called [John A. Smith](#) with an email of [jasmith@aaa.bbb](#), if an AE enters a name [Jon A. Smith](#) with the same email address due to a typo, MC may be confused as to which account to send the manuscript and the reviewer John or Jon will not get the manuscript.
- Occasionally, two different user accounts could be marked by MC as duplicates if they have the same first and last name, although middle names may be different. Therefore, it should be careful not to merge such accounts that may actually belong to two different users.
- When merging one duplicate account into another, if the email addresses of the accounts are different, an email should be sent to both of the email addresses so that the user is notified the activities of the accounts (sometimes one of the email addresses is no longer valid, or, in rare cases, these accounts belong to different users and are merged by mistake). The email should provide users a method to retrieve the password of their accounts using their email addresses that are associated with the user names of the accounts. In addition, the email should also be sent to the AEs who may have produced the duplicate accounts so that they could check with the reviewers to avoid delays. (A default letter “MC Account Merged” in “[Appendix 5 - Other Default Letters](#)” has been produced for merging duplicate accounts.) In case accounts of different users are merged by mistake, IEEE technical support can help to separate them.
- When sending account information to MC users, it is very important not to reveal any user password. Password should only be obtained by the account holder. Otherwise, the integrity of the peer-review process could be damaged. For example, if “A” would like to find out the password of “B”, “A” could simply assign “B” as a reviewer. Later, when “B” is handling a manuscript of “A”, “A” could log into the account of “B”.
- During the past 6 years, the EIC has merged accounts periodically (about once every two weeks) for nearly 1000 users in MC and thus one could see the magnitude of the problem. Sometimes, the EIC merges accounts due to complaints from reviewers who could not find the manuscripts to review.

Miscellaneous Tasks:

There are other tasks pertinent to the job of an EIC:

- Attend the annual IEEE Panel of Editors (POE) meeting to exchange experiences with editors of other IEEE societies. The POE meeting is a good forum to update EICs with new developments in IEEE and helps to improve the operation of TUFFC.
 - Organize the annual AE meetings (usually it is a luncheon in conjunction with the annual IEEE International Ultrasonics Symposia).
 - Produce statistics of TUFFC operations and present reports for the twice-a-year UFFC AdCom meetings. Produce additional statistics and reports when requested by IEEE committees and UFFC officials.
 - Ask IEEE staff to provide information regarding the impact factor of TUFFC when it is available each year.
 - Inform the UFFC Awards Chair to publish award results in the July issue of TUFFC each year so that authors could find the award announcements easily in a single and fixed issue.
 - Send information of retired AEs, if there is any, to the UFFC Awards Chair to make plaques for these AEs three months before the annual AE meeting, and present the plaques to these AEs in the meeting to honor their contributions to the TUFFC. Do the same for Guest Editors also.
 - Update the information of officials of both IEEE and UFFC Society in the Inside Front Cover of TUFFC at the beginning of each calendar year.
 - Also update the Inside Front Cover of TUFFC whenever an AE is retired, a new AE is added, or other information is changed.
 - Update the Inside Back Cover of TUFFC for AdCom members and UFFC standing committee members when there are changes.
 - Publish the Call for Papers of the annual UFFC conferences in TUFFC continuously until the abstract submission deadlines expire when requested by conference chairs.
 - Publish the Call for Papers of Special Issue Papers continuously in TUFFC until the manuscript submission deadline expires.
 - Publish other announcements appropriate for TUFFC. These announcements should be checked before sending to the TUFFC production staff in FASS.
 - Update the TUFFC website through FASS whenever it is needed.
 - Always check if the change has been implemented properly whenever you have made a request of such change that is not a part of the routine production procedure of the Publisher. Often, you may be surprised that either your request is not implemented or it is not done in a way expected for various reasons.
-
- Promptly return all the phone calls from the authors, reviewers, and AEs.
 - Provide guidance and help AEs to make decisions on some manuscripts.
 - Perform an initial investigation and then form a committee to handle any plagiarism, misconduct, or ethic violations according to the rules and instructions in the IEEE Operations Manual.
 - Investigate and report any allegations on AEs to the Vice President for Publications of the UFFC Society.
-
- Contact the AE who has a long delay of manuscripts via emails and/or phone calls to find out the specifics and the cause of the delay. (The current AEIC, Dr. Marj Yuhas, has helped on this task.)

- Answer questions from authors, AEs, reviewers, and TUFFC production staffs of FASS promptly to avoid delays. When authors have complaints on a long delay of their manuscripts or disputes on the handling of their manuscripts, EIC should check each incidence and give an appropriate response to the authors. (The current AEIC, Dr. Marj Yuhas, has helped on this task.)

Default Letters for MC:

- Default letters in MC have played a central role for an efficient operation of TUFFC. They are organized logically and consistently and allow the flow of necessary information to authors, reviewers, AEs, EIC, and the journal production staff. The letters were written or customized to suit for the needs of TUFFC when TUFFC MC was established in 2002. In addition, many thoughts for improving the quality of the peer-review process have been integrated into these letters. Suggestions for improvements from AEs and UFFC Society officials have also been incorporated. Future EIC could continue to use these letters or make changes to them as the operation of TUFFC changes over the time. (All default letters and their usages are provided in “[Appendix 4 - Default Letters in TUFFC MC](#)”.)

Other Default Letters:

- Other default letters have been developed for the convenience of the EIC. Future EICs could use them independently or in conjunctions with the automatic letters in MC. (These letters are provided in “[Appendix 5 - Other Default Letters](#)”.)

Important Notes:

- Do not delete (uncheck the selections for) any Associate Editor, Guest Editor, or other Editors' roles in MC. Otherwise, it may automatically change the history that may affect all the statistics (or MC database) caused by missing editors. Be sure only set the beginning and ending dates for editors who resigned or term ended. Beyond the ending date, these editors will not have the corresponding editorial assesses in MC.
- Make use of MC Report Menu in the Administration Center as a powerful tool to manage the operation of each AE and Reviewer, and find areas that need more attention of EIC by checking the status of each manuscript.

Works to Be Completed:

- The first step of porting all of the UFFC digital archive contents (all three UFFC conferences, TUFFC since 1954, newsletters, and others) has been completed. However, some part of these contents (1988 and beyond) in IEEE Xplore may still have a lower quality and is less complete compared to what we have in the UFFC digital archive. Since electronic versions of the archive will be more and more important in the future, the contents in Xplore should be replaced with the best possible quality available. The current EIC will continue to work with IEEE staff to complete this work, although working with IEEE staff may take some time and thus require our patience. In addition, the presentation of TUFFC in Xplore is not ideal. For example, the table of contents of Xplore does not have any subject headings that are important for our society since UFFC covers a wide range of areas. In addition, the quality on presenting multimedia contents in Xplore is not consistent from issue to issue and thus needs to be improved with the help of IEEE staff. The front

cover images are also not presented in Xplore the way we expected due to the inflexibility of IEEE Xplore. Nevertheless, the current EIC will continue the effort to work with IEEE staff to make improvements.

- The current EIC will also continue to work with IEEE to establish multimedia standard for all IEEE journals (IEEE would like to use TUFFC to test the context-sensitive multimedia for PDF files with embedded linking via DOI).

XVII. Some ‘Tricks’ for AEs to Use MC

I have sent multiple emails to AEs for “tricks” to use MC to help on some routine tasks. Some AEs may still not be aware of these tricks and may have experienced difficulties. Therefore, this section could benefit these AEs of TUFFC, especially, new AEs.

Trick #1 – Find Manuscripts That Have Been Returned to Authors for Revision:

For the manuscripts that are outstanding for revisions, they will not show up in your regular places in the AE Center. However, they will show up when you do the following steps:

Main Menu -> Associate Editor Center -> Outstanding Revisions -> Click "All" and Type in "100" in "Show" and Then Click "Go". You will find all manuscripts that have been returned to authors for revisions. The same option is also available in the Report Menu of your AE Center.

Trick #2 – How to Find Reviewers and Their Information Quickly:

You could get a list of all reviewers with the information on the number of manuscripts each reviewer has reviewed and the average turn around time of each reviewer from the file "reviewer_history_export_443.csv". This file is very easy to use and can be downloaded as follows:

Main Menu -> Associate Editor Center -> Report Menu -> Export Reviewer Statistics -> Then, Right Mouse Click on "Export File Link" and then click "Save Link Target As ..." with Netscape 7.1, or click "Save Target As" when using Microsoft Internet Explorer 6.0 or later.

After you have downloaded the file, you could use Microsoft Excel to sort it according to the "D" column, "Average Turnaround Time in Days", or search within the file. This information may help you to see which reviewers are fast in your area. The list could also remind you of some familiar names who may do a better job.

You could also get the reviewers' contact information as follows:

Main Menu -> Associate Editor Center -> Report Menu -> Click "Reviewer Contact Information"

Often, there are phone numbers listed in addition to the email addresses of reviewers. Then, you could pick up the phone and give them a call to find out more.

Trick #3 – Dr. John Kosinski's Experience to Find Reviewers:

For your reference, the following is the experience of finding relevant reviewers and checking for similar papers published:

Dr. John Kosinski, a retired AE of TUFFC, has given his experience as follows during an AdCom meeting: "When I was assigned a manuscript to conduct the peer-review process, the first thing I did was to scan through it quickly and then go to the UFFC Digital Archive website

<http://www.ieee-uffc.org/digarchive.asp>

and did a search with proper keywords picked up from the manuscript or from the references. Often, this resulted in a list of similar papers published either in the previous conference proceedings or in TUFFC. Then, some reviewers were picked up from there." Such a search helped John a lot since one could not be possible to read every paper in his/her areas nowadays. (www.google.com could be of help too.)

Trick #4 - How to Update Reviewer Email Addresses:

Keeping email address current in MC is most important for the operation of TUFFC MC. If you need to correct any account information of reviewers, please do the following to bring up the reviewer information:

Main Menu -> Associate Editor Center -> Add Reviewer.

Then, on the right hand side of your screen, in the "User Search" column, type in part of the reviewer's name you're searching (please notice that the more information you type in, the less likely you will find the reviewer because any entry that is even slightly different from what MC has in the record will result in a NULL return). For example, if the reviewer is Dr. L. Scott Smith, please type in "smi" (it is not case sensitive) in the "Last Name" row, and then click "BEGINS WITH Search" button. You will find a list of names whose last names start with "Smi" and then you could click on the name L. Scott Smith. After correcting the information of the reviewer (most important information is the email address), IMPORTANT, please do not forget to click the button "Update Information" at the end of the screen (sometimes you need to scroll down to find the button). This updates reviewer's information in MC that will not only be available to you but to all AEs. You could enter keywords for the reviewer in the same way so that it will be easier for later search for all AEs. Currently, we have about 50 AEs for TUFFC. If each AE updates 20 email addresses a year, there would be around 1000 corrections a year (often, when AEs send out invitations to reviewers and get no responses, then they may notice that the email addresses of reviewers could be wrong).

Trick #5 – How to Avoid Producing Multiple Reviewer Accounts:

MC does not know which account to send a manuscript to if the reviewer has multiple accounts with the same email address. Therefore, always do the following to check if the reviewers are already in the MC system before adding new one:

For new manuscripts do: Main Menu -> Associate Editor Center -> New Manuscripts: Manage Reviewers and Make Decisions -> Manuscript Details -> Assign or Remove Reviewer

For revised manuscripts do: Main Menu -> Associate Editor Center -> Revised Manuscripts: Manage Reviewers and Make Decisions -> Manuscript Details -> Assign or Remove Reviewer

Then, on the right hand side of your MC screen, in the "Reviewer Search" column, type in part of the reviewer's name (please notice that the more information you type in, the less likely you will find the reviewer because any entry that is even slightly different from what MC has in the record will result in a NULL return). For example, if the reviewer is Dr. L. Scott Smith, please type in only "smi" (it is not case sensitive) in the "Last Name" row, and then click "BEGINS WITH Search" button. You will find a list of names whose last names start with "Smi" and then you could click on the name L. Scott Smith to bring the reviewer in. If the reviewer's email address is outdated, you could update by using the method given "Trick 4 – How to Update Reviewer Email Addresses" above.

Currently, MC has 3,443 potential reviewers. Thus the chance is great that the reviewers you would like to invite are in the MC system. Simply use the "Add New Reviewer" or "Add Reviewer on the Fly" button without checking first if the MC system has already had the reviewers will cause a problem that will prevent the reviewers from accessing the manuscripts you assigned. Therefore, always check MC system before adding new reviewers.

Trick #6 – How to Invite More Than Five Reviewers:

The TUFFC MC only has 5 spaces for reviewers for each manuscript. If you already have 5 reviewers on your reviewer list, you cannot add more unless you drag some of them (those who are not responsive) into the trash cans beside their names.

Trick #7 – How to Avoid Breaching Confidentiality of Reviewers:

Many of the electronic files (such as Microsoft Word and PDF) sent to AEs or EICs from reviewers contain reviewers' personal information such as names among others. This information is inserted automatically into the files by the software without reviewers' notice. When these files are sent to authors accidentally by AEs via emails, this information is readily accessible by simply placing a mouse over the file name in a Personal Computer (PC) running a Microsoft operating system, or by checking the "properties" of the files.

If reviewers submit attachment files for authors using MC, the hidden reviewer information is stripped off before sending them to authors. However, attachment files sent privately to AEs via MC may still contain reviewers' information. In case AEs need to send reviewers' files transmitted to them by email attachments or sent privately to them via MC attachments, AEs should create new Microsoft Word files or PDF files to copy the contents of the reviewers' files into the new files and then send the new files to authors, or, modify the "Properties" tabs of these files to remove reviewers' names and affiliations before sending them to authors.

Trick #8 – Invite Reviewers for Revised Manuscripts:

For the convenience of AEs, MC automatically places the reviewers of original manuscripts as “already been invited” for all revised manuscripts as soon as authors submit them. However, this is confusing because MC has never sent out any automatic emails to invite these reviewers. Therefore, if AEs would like to invite the same reviewers for the revised manuscripts, they should either send emails to the reviewers without using MC and then wait for their responses, or, assuming the AEs are confident that these reviewers will agree to review the revised manuscripts, simply click the “Agreed” buttons beside the reviewers’ names in the MC. Otherwise, the AEs will never get responses from the reviewers and such confusion could greatly delay the handling of revised manuscripts.

XVIII. Appendix 1 – An Email from Bentham Science Publishers for Open Access Journals

----- Original Message -----

Subject: Invitation Letter

Date: Thu, 30 Aug 2007 10:12:42 +0500

From: TOACOFJ toacofj@bentham.org

To: jilu@eng.utoledo.edu

The Open Acoustics Journal

Dear Dr. Lu

Bentham Science Publishers have gained a longstanding international reputation for their excellent standards and top quality science publications. Many journals published by Bentham Science Publishers have received high impact factors in their respective fields. For the current list of publications, please visit <http://www.bentham.org/>. Seven Nobel Laureates have endorsed a number of Bentham Science’s journals; please read their quotes at <http://www.bentham.org/Nobel.htm>.

The publishers are now undertaking a new publication venture by launching a number of Open Access journals in 2007, devoted to varied disciplines in the fields of science and technology.

Open Access Journals are freely accessible via the Internet for immediate worldwide, open access to the full text of articles in the best interest of the scientific community. All interested readers can read, download, and/or print any Open Access article at no cost. There are no subscription fees for Open Access journals. The modest Open Access publication costs are usually covered by the author's institution or research funds. Moreover, authors who publish in our Open Access journals retain the copyright of their article. Open Access journals are no different from traditional subscription-based journals; they undergo the same peer-review and quality control as any other scholarly journal.

We are to launch this year an exciting Open Access Journal entitled “The Open Acoustics Journal”.

The Open Acoustics Journal, a peer-reviewed Open Access Journal, aims to publish original research articles, review articles and short communications/letters.

The journal aims to provide the most complete and reliable source of information on current developments in the field. The emphasis will be on publishing quality articles rapidly and openly available to researchers worldwide. All published articles will be deposited immediately upon publication in at least one widely and internationally recognized open access repository. Moreover, all articles are indexed by Google and Google Scholar, therefore providing the maximum exposure to the articles.

The journal will be essential reading for scientists and researchers who wish to keep abreast of the latest developments in the field. The publishers are confident of the journal's rapid success.

Based on your eminent contributions in the field of acoustics, I would like to invite you to join us as an Editorial Board Member of the journal. As an editorial board member, you will be required to occasionally review research papers, review articles and letters and solicit articles from your colleagues/acquaintances and help promote the journal at conferences and meetings that you attend. Submissions of manuscripts to the journal from Editorial Board Members will receive a discount of 50% off the total publication charges.

In case you accept this invitation to join the editorial board of the journal, kindly send us your reply along with your curriculum vitae and list of publications by e-mail to toacoj@bentham.org or alternatively to sidra@benthamsience.org.

I look forward to hearing from you soon.

With kind regards,

Yours sincerely,

Matthew Honan, PhD
Editorial Director
Bentham Science Publishers

XIX. Appendix 2 – Open-Access Manuscript Submission and Instructions of Bentham Science Publishers

From <http://www.bentham.org/ManSubInst.htm>, one finds:

“Online Manuscript Submission:

To facilitate speedy and cost-effective submission of abstracts and manuscripts, an online submission and tracking service via Internet is being offered. Once the Editor-in-Chief of the journal has accepted your abstract, we would prefer that you submit your full manuscript online via our online submission service available at www.bentham-mps.org.

For online submission, please provide your complete manuscript in the form of a single zipped folder containing all the material (main text, figures/ illustrations, scanned photographs, tables,

chemical structures drawn in ChemDraw) as separate files and a PDF version of the entire manuscript with all the figures / illustrations / tables / chemical structures etc., embedded in the text exactly in the manner as they should appear in printing.

Authors are required to proofread the PDF version of their manuscript before submission. The article will be published exactly as received and the Publishers will not be responsible for any error occurring in the manuscript in this regard.

For online submission of manuscripts, these should be submitted via our online manuscript submission service available at www.bentham-mps.org or by FTP submission at www.bentham-ftp.org.

You may, however, still submit your abstracts and manuscripts through conventional surface mail.”

XX. Appendix 3 – Comments on Impact Factor

Comments from AEs and UFFC Officials:

The following are comments from many colleagues responded to my email sent to Associate Editors and other officials of TUFFC regarding the impact factor (IF) on December 5, 2006.

(1) “Very, very interesting - esp. referring to comment (6) below: reference, reference, and reference again papers published in the journal (and authors) you want to make look good. This is some of the game I was afraid we could succumb to in order to get a better grade - and not necessarily better publications.

And the point that comment (7) and others make: there are areas of research where manuscripts, for better or for worse, exhibit a prolific authorship. An area that comes to my mind from the past was nuclear physics - you could hardly publish a note in the physics journals on the subject without 30 or more authors. I often wondered . . . (and was jealous!) of the lengthy list of pubs. these folks could put on their resume's.

Now we're focused, not on the number of publications, but the number of citations. Interesting - I feel it is a step in the right direction, but obviously also subject to abuse.

How do we avoid cheapening our profession while remaining competitive? Is it possible when we reduce value to a single criterion, a single number? Jian-yu, tell us: where is the 'perfect' world??”

(2) "This is an important matter - I think it would be good to have a discussion in person with as many as could attend an upcoming meeting (with AdCom or another forum).

I guess one could start with the recommendations from Kevin in your attachment. A lot of this will be distasteful to many of us, but we should talk about it. I say 'distasteful' because this is (at least partially) operating in the mode of doing something just for the sake of getting a better grade - not necessarily because it is right."

- (3) "I looked at Kevin's list of recommended "best practices" - I do not feel comfortable with some of them, e.g. hiring professional staff. I do not know that our Society could afford that."
- (4) "I would like to recommend that we do not become too complacent about this. Many of the people that could consider publishing in IEEE TUFFC also have the option to publish in physics journals, many of which have significantly higher impact factors. The concern I would have is that if we are short-sighted in this area, we may lose the "science-oriented" papers, and retain only the "engineering-oriented" papers. I think this would be a loss to the transactions."
- (5) "I would like to emphasize the importance of this point. I think in most of Asia, as well as Europe, the emphasis on high impact factor journals is increasing dramatically. A single paper in Science or Nature guarantees tenure in many institutions around the world."
- (6) "Some physics journals have a high impact factor because they encourage lots of references. For example Phys. Rev. D, it is common to have more than one hundred. Associate editors should encourage authors to highly cite other work, especially we should put all papers in historical context and reference other papers. Engineers tend to ignore other papers in the field or not reference papers well enough."
- (7) "Impact factor (IF) only measures short-term effects and its significant is highly questionable. Some journals manipulated it and now have higher IF but their reputations are worse. We should have confidence that we are doing good work. The journal needs to be very cautious to do anything about the IF."
- (8) "Often very good papers that have great applicability and "even change the world" are not read or even understood by the bulk of the readership. And hence they would have very few citations, if any. An example that comes to mind is the case of the Theory of Special Relativity published by Einstein in 1905. Nobody but a handful of people knew what he was taking about for years and years. And Einstein was an unknown then. Obviously this was a paper with a very low impact factor. At least at the time of its publication."
- (9) "I read the material that you sent concerning the "impact of impact factors" with dismay. I had been aware of the fact that researchers in many countries were being encouraged to publish only in high impact factor journals. However, I did not know that impact factors were often the sole criterion and that such Draconian measures were being taken concerning budgeting."
- (10) "I am very well aware of the questions you raise with respect to the impact factors of the IEEE publications. We have already entered into similar discussions within the Dielectrics and Electrical Insulation Society (DEIS). Unfortunately, it is true that the impact factors become more and more important in funding and publishing decisions. Even within our university, we now have to use a mild form of impact-factor ranking for the distribution of some of the money. This causes quite a lot of discussion, especially since some theory groups have very high impact factors. The German funding agencies do officially not use impact factors, but I am sure that the reviewers of project applications are strongly influenced by impact factors."

Personally, I have a very strong and very negative opinion about impact factors. I like to tell my colleagues about a recent visit to the Federal Institute of Materials Research and Testing where I saw

a testing machine for concrete slabs that are used in nuclear power plants. The testing is done by dropping a 120-ton mass from several meters onto the test slab. This is the only "real" impact factor I have ever seen in my life.

Publication impact factors, and especially the version introduced and exploited by ISI, measure something like the convolution of the "sexiness" of a topic, of the use of "buzz" words, of the number of good friends, and of the size of the respective community. It causes problems because it is a very strong instrument to control behavior and to influence economic decisions. It also directs publications into very expensive and sometimes questionable commercial journals such as Nature or Science. In essence, impact factors contribute strongly to a pseudo-rational, or in fact irrational, system of evaluating scientific "quality". This system helps some publishers to make quite a lot of money, and we dumb scientists pay large chunks of our research money for accessing our own output.

Personally, I am now very much in favor of publishing only in non-profit journals such as the ones published by the APS. In view of the ever-increasing costs of good libraries, I even prefer open-access journals over other non-profit journals. The APS now offers authors the possibility to pay a one-time fee for making their paper openly accessible forever (world-wide open access for everyone all the time). This is probably the only way to enable all scientists worldwide to access world-class journals.

One of the main problem with IEEE publications is their very high cost for libraries. Therefore, only large engineering universities have good access. Even for individual IEEE members, it is often prohibitively expensive to buy access to all or at least to selected IEEE publications. Even as Associate Editor (Digest Editor) for the IEEE TDEI, I do not obtain free access to this journal, but have to buy an individual subscription. Because of my research team, I have opted for the printed version, but this means strongly delayed delivery.

In my opinion, it is essential for the IEEE journals to provide unrestricted open access at least to all IEEE members if they want to stay in business. If I can access all Transactions I will also quote them more often so that the impact factor will go up. Unfortunately, the IEEE has now become a commercial enterprise which funds its huge central staff via the profit from publications and conferences. They even force the various societies to publish with them which is much more expensive than to publish with small local companies. If we do not go back to open access of our publications (in the old days, libraries could provide such an open access, but today you have to order special literature from one of the few libraries that can still afford to buy it) the system will eventually collapse.

Furthermore, a special IEEE impact factor could be defined. This could take care of the special situation in some IEEE communities where papers are often quoted only rarely during the first one or two years after publication, but more and more often in later years. Elsevier has come up with its own impact statistics via the Scopus system, and the results are sometimes surprisingly different from the ISI statistics for the very same papers. This demonstrates that the system does not only have bad consequences for science, but also severe flaws.

I am very strongly against editorial decisions that are based on anything but the scientific quality of a paper. Therefore, I find it frivolous to ask reviewers about the expected "impact factor" of a

manuscript. Most of Einstein's seminal contributions would not have made it if this criterion had been in place!

(When I requested permission to cite Reimund's remarks, he sent me this additional comment)

You have my full permission to use my thoughts on impact factors etc. in whichever way you deem appropriate. The important thing is that the situation is improved in the long run, and I do not care much about who made the suggestions as long as they lead to real improvements. My experience with the local politics here in Potsdam is that ideas have to be circulated as much as possible so that finally some politician can claim them for himself or herself. This is the best way to get ideas implemented, since politicians are very keen on authorship and the related media attention. If we can achieve the same here it is not at all important that my name is mentioned.

At a later point in time, it would be good if the results of your discussions within the T-UFFC editorial board could be communicated to the T-DEI editorial board (of which I am a member) as well. Since both our societies are "small societies" by the standards of the IEEE, it would be good if we had similar policies."

Memo from Professor Kevin O'Grady:

The following is a Memo from Dr. Kevin O'Grady (I got it on November 30, 2006), who initiated the discussion of the impact factor (IF) [Kevin allowed us to publish his memo.]:

IMPACT FACTOR ISSUES IN EUROPE AND BEYOND

Threats to publishing by IEEE

Kevin O'Grady, The University of York, Past President of IEEE Magnetics Society, Member of TAB

INTRODUCTION AND BACKGROUND

At the recent TAB meeting in New Orleans a general issue relating to impact factor of Transactions and other publications of IEEE was raised. This issue has been of major interest in Europe for the last five years and appears not to have come onto the radar in the US generally and specifically with IEEE Transactions journals. What is happening in Europe is that academics and workers in both industrial and government sponsored laboratories are being pressurised to publish only in journals with the highest impact factor.

This has been driven by direct instructions from government funding bodies, certainly in Italy, Spain and France, but also in the UK by the fact that research is assessed every five years by a process known as the Research Assessment Exercise (RAE) which impacts every academic in the country. The Research Assessment rating which is quantified numerically determines the level of government funding for an individual school within a university. The RAE is supposed to assess the quality of four publications which the academic signifies are an example of his or her best work during the period. However in practice it is accepted that the assessors will judge the work by the quality of the journal. In turn the quality of the journal is assessed by the impact factor. In some instances as

detailed below the impact factor of the journal is used as an arbitrary measurement of the quality of an individual in job selection. Hence impact factors have become a critical issue when selecting where to publish one's work, and particularly one's best work.

Given the above, the impact factor can lead to a major negative feedback process and the IEEE needs to be aware of this when looking at how it addresses its policies relating to publication. Many European journals, both commercial and published by learned bodies, have adopted strict quality measures, focused on improving their impact factor, to deal with this. Many IEEE journals have not responded, however other journals such as the Journal of Applied Physics and other AIP publications have responded in a similar way.

Below appears a series of anecdotal practices, which can be verified, so that IEEE can consider what actions it needs to take. I would point out that I have been urging the Transactions of my own Society (IEEE Transactions on Magnetics) to adopt some of these practices but there seems to be a lack of urgency among the editorial board, who are dominated by people from the US, to initiate some best practice. I would also point out that I am told that US government funding agencies are now operating similar requirements. The limited information I have is given below.

IMPACT FACTOR REQUIREMENTS

In certain countries within Europe the majority of scientific research is undertaken within government sponsored labs not dissimilar to the major national laboratories in the United States such as Argonne, Brookhaven etc. In France this is undertaken by the CNRS, Italy, (CNR) and Spain (CSIC). I have particular knowledge of the practices in CSIC as I collaborate with a number of laboratories in Spain and also serve on their National Council for Nanotechnology which allocates funding across a wide range of technical areas.

In assessing grants and the quality of the individuals applying for grants in all these countries a resume of recent published work is required. The assessment takes as a major component the impact factor of the journal in which the researcher has published their most recent work. This is taken at face value as being an indicator of the likely research quality. In Spain workers in the CSIC are specifically instructed to publish all their work in journals having an impact factor greater than 2. They are allowed to publish work in journals having low impact factors but they are expected to first try to submit their work to a "better" journal and only to submit it to journals such as the IEEE Transactions on Magnetics if they fail.

In the UK the Research Assessment Exercise affects all university workers and in our case the majority of government funded research is undertaken in the universities as we do not have an infrastructure of large national laboratories. The process works by asking each individual to nominate their four best papers in the previous five years and 60% of the assessment is then based upon the so called "quality" of these papers. A committee of about 20 senior academics for each subject area is appointed and asked to numerically assess the research output quality of the individual academics. This assessment, together with the research environment and measures of esteem, is then used to assign a numeric assessment of the quality of the academic on a scale of 1-4 with 4 indicating work that is internationally leading, 3 representing work that is internationally competitive, 2 representing work that is nationally competitive and 1 representing work of limited quality. Special arrangements are made for younger people and workers who may have had a career break for some reason. Once all the academics from within a school or faculty have been assessed a

number called the “J” number is assigned to each department. Research funding for that department is then calculated by taking the J number, subtracting 2 on a scale of 1-6, and then multiplying by the number of staff in the faculty and a certain amount of money to be allocated each year. This is a highly regressive arithmetic formula since a school with a research rating of 2 will have no money at all for research, one with 3 will have a certain amount but one with 4 will have twice as much. This assessment is then used bluntly to give money to the university which is only allowed limited discretion to reallocate the research funds between its higher ranking and lower ranking schools. Hence the assessment of the publications is an absolutely critical factor. We have been doing this for some 20 years in the UK with the result that many of the small liberal arts college schools no longer undertaken government funded research at all and have very limited access to competitively awarded research grants from the Science Foundation as their work is deemed to be of poor quality.

It is clear that a panel of 20 cannot have sufficient knowledge to assess the quality and the importance of a research output. Hence the quality of the journal often forms a dominant part of the assessment. In Physics schools generally academics are instructed where ever possible to publish their work in PRL, APL and similar high impact journals and again to avoid any journal with an impact factor less than 2. In my field the IEEE Transactions on Magnetism would be an important publication vehicle but many people working magnetism, including the senior person in the UK, no longer consider us for publication because the impact factor is only about 1. In fact the individual concerned has said that he will not even publish invited papers from our Intermag conference in the Transactions because he feels obligated to send his work to APL. This is a disaster.

The good news is that many engineering schools and the engineering panels for electrical and electronic engineering regard IEEE Transactions journals as the quality indicator. Indeed the Physics school in which I work has suggested that I might be submitted for the RAE through the engineering panel for fear that the physicists will not assess the IEEE Transactions on Magnetism as a high quality journal.

In Spain, where the majority of scientific research is conducted through an organisation known as the Consejo Superior de Investigaciones Científicas, selections of individuals for interview for what are highly competitive posts asks the candidates to assess the quality of their papers by a similar blunt formula. They are required to take the impact factor of the journal, multiply it by the number of pages for each article and divide by the number of authors on the paper. This then gives a figure of merit for each paper. They are required to total the figures of merit for all their publications and a cut-off for people to be selected for interview will be determined based on this total figure of merit. Obviously impact factor here is a direct driver.

Similar practices are believed to be used in both France and Italy and certainly in Germany academics and workers in Fraunhofer institutes are selected based on the quality of journals in which they publish which are assessed solely by impact factor.

More recently I have been told that the US Department of Energy is using similar practices and is insisting that institutions such as Ames Lab at Iowa State University only publish work deriving from DoE funding in journals with an impact factor greater than 2. Given this, it is obvious that these practices are spreading far and wide whether we like it or agree with it or not. If we fail to react to these changes in the real world a downward spiral in IEEE Transactions journals will result. I believe it is already resulting for the IEEE Transactions of Magnetism.

REMEDYING ACTIONS

There is little immediately that any journal can do to address the issue of its impact factor. However in my capacity as an editor of the British Journal of Applied Physics (J Phys D) we have instigated a number of practices which has raised our impact factor from about 1.2 to the critical value of 2 in the last five years. I have been intimately involved in these practices and can therefore validate which practices work and which do not. Below are itemised what I believe are the critical actions that we took and that were successful.

1. Quality assessment.

The philosophy of the IOPP journals is that for a paper to be original and technically sound are necessary but not sufficient criteria to be accepted for publication in our journals. We regard our journals as being internationally leading journals in the field of physics and hence we require a quality assessment. This is achieved by setting down quality ratings on a scale of 1-5 with 1 as best, which are clearly defined for the referees, rating from internationally leading through internationally competitive down to pedestrian work. The editorial board can then determine its own quality standards which for the Journal of Physics D are that we only publish papers that are internationally leading or internationally competitive. Hence papers are rejected and returned to authors if the two referees do not agree that the work falls into these high categories. This has led to a rejection rate of about 60% for all our journals and a rise in the impact factor from an average of about 1 to an average of over 2.

2. Citation Likelihood

Referees can also be asked to assess the level of citation that the paper would be expected to achieve in the subsequent 2 years. This is directly related to impact factor and they are asked to rate papers on the scale of 1-2, 2-5, 5-10 or more than 10. Papers that are not likely to be cited in the scale 2-5 can then be rejected on quality grounds. The bar is set deliberately high because referees who want to see a paper accepted will always over-estimate the likely number of citations.

3. Receipt to Publication

In the modern world where science and technology is moving ever faster the need to get work published quickly is essential. We have a target at IOPP of receipt to publication in 90 days. Publication here means publication on the website but nonetheless a volume and page number will be assigned to the paper at that time. This seems a very high standard indeed and so it is. Nonetheless we have achieved it and it has become a major factor in attracting the best work.

4. Refereeing Database

We have established a refereeing database that assesses the validity of referees reports and their speed of response. When a paper comes in its PACS numbers or key words can be typed into a database which throws up a list of potential referees. This in turn is linked to a database of the referees performance which is assessed firstly on response time and secondly on the validity of their assessment. We add new referees every year and delete those which do not meet our criteria. This has made a major impact not only on receipt to publication but also in quality assessment and we now have a database of referees that we trust.

5. Use of Editorial Board

It is essential to have an editorial board that understands the aims and objectives of the journal globally as well as the requirement for the authors. The policy is that split decisions from two referees are judged automatically by professional staff in our offices who handle all refereeing matters whenever possible. However when there are split decisions that they feel they cannot resolve these are sent to editorial board members who are required to respond within one working week. In this way we get rapid Yes/No decisions or well defined enumerated requirements for the authors to correct their paper with a time limit so that delays to publication do not occur.

6. Use of Professional Staff

Perhaps the most important factor is to use professional staff for manuscript handling. The days where volunteers act as editors they do not have time to do this work when they are gainfully employed as senior scientists. Also much of this work is purely administrative and does not require qualified scientists to undertake it. A good example of this is maintaining and monitoring the refereeing of papers. Many IEEE Transactions papers still rely on amateur volunteers which inevitably slows down publication and reduces quality as there is a lack of consistency between editors and between journals.

7. Commissioning of Reviews

The most highly cited papers in IOPP journals are often high quality reviews. These can have literally hundreds of citations. We have developed best practices to commissioning reviews such as not asking world leading people to write them. They are simply too busy. A better strategy is to ask world leading people to recommend a post doc or young worker within their group who will write the review and they will correct it and put their name on it so as to give it the stamp of authority. This helps the young person develop their CV whilst at the same time assists the journal by having the authority of the senior person. The other critical thing is for the editorial board to be forward looking as reviews of old subjects are rarely cited.

THE WAY FORWARD

Individual IEEE journals may be reluctant to implement these policies, as indeed were the different editorial boards on the range of journals published by IOPP. However a new overall Editor in Chief of all our journals was appointed and got together the editors of the various journals and convinced them to adopt these best practices some five years ago. The consequence of this has been an overall improvement in impact factor.

My concern is that if the IEEE Transactions do not adopt some radical measures urgently to keep up with the rest of the world we may well find ourselves becoming “bargain basement” publishers. To a limited extent this has happened to the IEEE Transactions on Magnetics but in fairness the Transactions does publish engineering designs which are rarely highly cited. Obviously a policy needs to be developed through the Publication committee in consultation with the Editors in Chief so that everyone comes on board and that a clear direction is developed.

XXI. Appendix 4 - Default Letters in TUFFC MC

The following default letters are an integral part of the peer-review process of TUFFC. They provide necessary information to authors, reviewers, AEs, journal production staff, and EIC. These letters have been specifically tailored for TUFFC MC operations and many thoughts (from the standing point of view of authors, reviewers, AEs, journal production staff, and *system security*) have been integrated into the development of the letters when the current EIC established the TUFFC MC system with the help of IEEE staff and inputs of UFFC Society officials in 2002. Future EICs could benefit their jobs by reviewing these letters.

“Send Account Information”

When a user of TUFFC MC forgets or does not know their username and password and thus requests MC to send the account information, the following letter will be sent automatically to the email address that is provided by the user and is also associated with the account (my name and email addresses will be replaced by those of the user(s)):

To: jilu@eng.utoledo.edu
From: Support@ScholarOne.com
CC:

Subject: Account Info for TUFFC at Manuscript Central

Dear Prof. Jian-yu Lu,

This e-mail has been automatically generated per your request. Your user ID and password for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) at Manuscript Central (<http://tuffc-ieee.manuscriptcentral.com>) are as follows:

Web Site: <http://tuffc-ieee.manuscriptcentral.com>
USER ID: username
PASSWORD: user-password

Please notice that the Password is case sensitive. If the password is not selected by you, please change it because others may be able to access your account.

After you have logged into TUFFC Manuscript Central, you may update your personal information by clicking on "Edit Your Information" and change password by clicking on "Change Your Password".

Sincerely,

IEEE Manuscript Central Support
e-mail: Support@ScholarOne.com
phone: 732-465-5861

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Account Creation”

When a user of TUFFC MC creates a new account, the following email will be sent to the user automatically (my name and email addresses will be replaced by those of the user(s)):

To: jilu@eng.utoledo.edu
From: Support@ScholarOne.com
CC:

Subject: Account Created for TUFFC at Manuscript Central

Dear Prof. Jian-yu Lu,

You are now registered for access to the ScholarOne Manuscript Central (MC) site for manuscript submission and review for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

An account has been created for you on this site. Your User ID and email address associated with this User ID are as follows:

TUFFC MC Site: <http://tuffc-ieee.manuscriptcentral.com>
USER ID: username
Password: user-password

Email Address Associated with the User ID: jilu@eng.utoledo.edu

If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the Manuscript Central login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you need technical help, please click on the "?" icon on the upper-right corner of any screen of MC.

After you have logged into TUFFC Manuscript Central, you may update your personal information by clicking on "Edit Your Information" and change password by clicking on "Change Your Password".

Please notice that the Password is case sensitive. If the password is not selected by you, please change it because others may be able to access your account.

Thank you for your participation.

IEEE Manuscript Central Support
e-mail: Support@ScholarOne.com
phone: 732-465-5861

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Paper Submitted Corresponding Author”

When a manuscript is submitted successfully via TUFFC MC, authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, myuhas@imsysinc.com

Subject: Manuscript Submitted (Corresponding Author) – TestID

Dear Prof. Jian-yu Lu:

The Editor-in-Chief and the Associate Editor-in-Chief of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control acknowledges receipt of the following manuscript on Sep 3, 2007:

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Please notice that the order of authors is in your submitted manuscript. The list here has no particular order.

It is understood that this manuscript is entirely original, has not been copyrighted, published, submitted, or accepted for publication elsewhere, and all necessary clearances and releases have been obtained. If the material in this paper has been published before in any form, it is imperative that you inform us immediately.

Your manuscript will be assigned to an Associate Editor who will conduct the review process. You will be notified by email from the Associate Editor when the review of this manuscript is completed. Please refer to the manuscript number in any communications regarding your manuscript. You may check the review status of your manuscript via the Manuscript Central website of IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control: <http://tuffc-ieee.manuscriptcentral.com>. When the review of your manuscript has been completed, you will be notified of its disposition by email and at that time reviewer comments will also be made available to you.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

Sincerely,

Professor Jian-yu Lu, Ph.D.
Editor-in-Chief
Email: jilu@eng.utoledo.edu

And

Marjorie Yuhas, Ph.D.
Associate Editor-in-Chief
Email: myuhas@imsysinc.com

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control
(Manuscript Central website: <http://tuffc-ieee.manuscriptcentral.com>)

“Paper Submitted for Revisions - to Submitting Author”

When a revised manuscript is submitted successfully via TUFFC MC, authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, myuhas@imsysinc.com

Subject: Revised Manuscript Submitted (Corresponding Author) – TestID

Dear Prof. Jian-yu Lu:

The Editor-in-Chief and the Associate Editor-in-Chief of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control acknowledges receipt of the following revised manuscript (with suffix '.R1', '.R2', ..., for first, second, ..., revision) on Sep 3, 2007:

MANUSCRIPT NO: TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Please notice that the order of authors is in your submitted manuscript. The list here has no particular order.

It is understood that this manuscript is entirely original, has not been copyrighted, published, submitted, or accepted for publication elsewhere, and all necessary clearances and releases have

been obtained. If the material in this paper has been published before in any form, it is imperative that you inform us immediately.

You will be notified by email from the Associate Editor when the review of this revised manuscript is completed. Please refer to the manuscript number in any communications regarding your manuscript. You may check the review status of your manuscript via the Manuscript Central website of IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control: <http://tuffc-ieee.manuscriptcentral.com>. When the review of your manuscript has been completed, you will be notified of its disposition by email and at that time reviewer comments will also be made available to you.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

Sincerely,

Professor Jian-yu Lu, Ph.D.
Editor-in-Chief
Email: jilu@eng.utoledo.edu

And

Marjorie Yuhas, Ph.D.
Associate Editor-in-Chief
Email: myuhas@imsysinc.com

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control
(Manuscript Central website: <http://tuffc-ieee.manuscriptcentral.com>)

“Paper Submitted Contributing Authors”

The following default letter has never been used since it is redundant. It is the original undeveloped template provided by MC. When a manuscript is submitted successfully via TUFFC MC, authors will automatically receive the following letter:

To:
From:
CC:

Subject:

“Paper Submitted for Revisions - to all authors on co-author list”

The following default letter has never been used since it is redundant. It is the original undeveloped template provided by MC. When a revised manuscript is submitted successfully via TUFFC MC, authors will automatically receive the following letter:

To:
From:
CC:

Subject:

“Paper Submitted Admin”

When a manuscript is submitted successfully via TUFFC MC, the EIC will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: jilu@eng.utoledo.edu
From: Support@ScholarOne.com
CC:

Subject: Manuscript Submitted (Admin) – TestID

Dear Prof. Jian-yu Lu

The following manuscript has been submitted to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control on Sep 3, 2007:

MANUSCRIPT NO: TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Other information about the manuscript:

Special Issue Paper: Special Issue Paper
Companion Paper: Companion Paper
Author Agreement: Author Agreement
Author Invited to Submit: Author Invited to Submit
Author is Associate Editor: Author is Associate Editor
Color Images: Color Images
Color Image Fee Agreement: Color Image Fee Agreement

IEEE Manuscript Central Support
e-mail: Support@ScholarOne.com
phone: 732-465-5861

“Revised Paper Submitted to Associate Editor”

When a revised manuscript is submitted successfully via TUFFC MC, the AE will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: editor@journal.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Revision Submitted – TestID

Dear Prof. Edwardo Editor,

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): 1) Fred Correspondent, 2) Diane Contributor 3) Ana Ng 4) William Supporter

The revision you requested from Prof. Jian-yu Lu for the above mentioned manuscript has been submitted Sep 3, 2007 and is waiting for your assessment.

Sincerely,

Professor Jian-yu Lu
Editor-in-Chief
Email: jilu@eng.utoledo.edu
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Paper Submitted EIC”

The following default letter has never been used since it is redundant. When a manuscript is submitted successfully via TUFFC MC, the EIC will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: jilu@eng.utoledo.edu, myuhas@imsysinc.com
From: Support@ScholarOne.com
CC:

Subject: Manuscript Submitted (EIC and AEIC) – TestID

Dear Jian-yu and Marj

The following manuscript has been submitted to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control on Sep 4, 2007:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

Other information about the manuscript:

Special Issue Paper: Special Issue Paper

Companion Paper: Companion Paper

Author Agreement: Author Agreement

Author Invited to Submit: Author Invited to Submit

Author is Associate Editor: Author is Associate Editor

Color Images: Color Images

Color Image Fee Agreement: Color Image Fee Agreement

IEEE Manuscript Central Support

e-mail: Support@ScholarOne.com

phone: 732-465-5861

“Assign Associate Editor”

When a manuscript is assigned to an Associate Editor to handle the peer-review process via TUFFC MC, the AE will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: editor@journal.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu, ... all authors emails ...

Subject: Associate Editor Assignment – TestID

Dear Prof. Edwardo Editor:

Sep 4, 2007

The manuscript

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): 1) Fred Correspondent, 2) Diane Contributor 3) Ana Ng 4) William Supporter

has been submitted to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control and has been moved to your Associate Editor Center at the Manuscript Central (MC) (<http://tuffc-ieee.manuscriptcentral.com>). Unless you have a strong professional objection to doing so, we would greatly appreciate it if you would conduct the review process for this manuscript.

By way of this letter, the corresponding author is informed that you will be responsible for the review process and that further communications will be with you.

The "Guide for Associate Editors" is located at:

http://www.ieee-uffc.org/tr/guide_for_ae.pdf

which contains a step-by-step guide for you to conduct the peer-review process in MC. Please notice the following tricks when using your Associate Editor Center:

(1) All the underlined items contain a link and thus can be clicked. (2) When you click on the title (underlined) of a manuscript, a window will popup showing filename (underlined) of the manuscript. To view the manuscript, you need to click on the filename in the popup window. (3) Authors' suggested and non-preferred reviewers can only be found after clicking on "Assign or Remove Reviewers". (4) To invite a reviewer, please don't forget to click on "Send Letter" button near the bottom of the letter (otherwise the letter is not sent and the reviewer is not invited). Sometimes, one of the two scroll bars on the right hand side of the MC window needs to be dragged down to find the "Send Letter" button. (5) After reviewers agree to review the manuscript, please click on the button "Agreed", edit the letter, and then click on the "Send Letter" button (otherwise the reviewers will not see any manuscripts in their Reviewer Center).

NOTE for AUTHORS: The IEEE TUFFC is striving to shorten the time between submission and publication. To help expedite the peer-review process of your manuscript, it would be extremely helpful if you could suggest possible reviewers. If you have not done so during the manuscript submission, please contact the Associate Editor immediately to recommend 5 reviewers who you feel are qualified to review your manuscript. For example, identifying authors from your manuscript's reference list might be ideal. The suggested reviewers must be from outside your institution.

NOTE for ASSOCIATE EDITORS: If the type of manuscript below is LETTERS, please process it as either accept or reject (poor English may also be a reason for rejection) after the first review cycle to speed up the process (see the "Guide for Associate Editors" at http://www.ieee-uffc.org/tr/guide_for_ae.pdf for details - the latest revision date of this document was October 13, 2005).

Many thanks for conducting the review process for this manuscript.

Sincerely,

Professor Jian-yu Lu

Editor-in-Chief

Email: jilu@eng.utoledo.edu

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“De-Assign Associate Editor”

When a manuscript is de-assigned from an Associate Editor via TUFFC MC, the AE will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: editor@journal.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu, ... all authors emails ...

Subject: De-Assign Associate Editor – TestID

Sep 4, 2007

RE:

Manuscript No. TestID

Manuscript Type: Manuscript Type

Title: This is a test

Author(s): 1) Fred Correspondent, 2) Diane Contributor 3) Ana Ng 4) William Supporter

Dear Prof. Edwardo Editor:

Due to certain circumstances, we have found it necessary to assign the above referenced manuscript, which has been submitted to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, to another Associate Editor to manage its review.

You are no longer required to manage manuscript TestID.

We apologize for any inconvenience this may have caused.

Best Regards,

Sincerely,

Professor Jian-yu Lu

Editor-in-Chief

Email: jilu@eng.utoledo.edu

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Invite Reviewer”

When a reviewer is invited to review a manuscript via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu

Subject: Invite Reviewer – TestID

Dear Prof. Jane Reviewer:

The manuscript:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

ABSTRACT: See at the end of this email.

has been submitted to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control for publication consideration.

I would greatly appreciate your taking the time to review this manuscript.

We request that you review the manuscript within FOUR weeks. Please let me know by email to indicate your acceptance of my invitation to review this manuscript. After receive your acceptance email, I will send you a separate email that will provide the account information for you to login and to obtain the manuscript from the following Manuscript Central website.

To ease the burden on those asked to perform the review and to accelerate the review process, the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, in conjunction with IEEE Periodicals, has established an electronic web-based reviewing process (IEEE Manuscript Central) at the website: <http://tuffc-ieee.manuscriptcentral.com>.

If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are extremely busy and it represents an imposition on your time to perform this service. My primary objective is to obtain a high quality, fair review of the manuscript. If you are unable to perform the review, please inform me via e-mail. It would be extremely helpful if, at that time, you would suggest a colleague that could review the manuscript.

When the reviews are completed, I will inform you of the decision as to publication. Thanks in advance for your assistance.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

ABSTRACT: This is a test abstract
It's known to have multiple lines.
It contains a lot of information.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Custom Invite Reviewer”

This is similar to the “Invite Reviewer” letter. When a reviewer is invited to review a manuscript via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Invite Reviewer (Custom) – TestID

Dear Prof. Jane Reviewer:

The manuscript:

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here
ABSTRACT: See at the end of this email.

has been submitted to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control for publication consideration.

I would greatly appreciate your taking the time to review this manuscript.

We request that you review the manuscript within FOUR weeks. Please let me know by email to indicate your acceptance of my invitation to review this manuscript. After receive your acceptance email, I will send you a separate email that will provide the account information for you to login and get the manuscript from the following Manuscript Central website.

To ease the burden on those asked to perform the review and to accelerate the review process, the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, in conjunction with IEEE Periodicals, has established an electronic web-based reviewing process (IEEE Manuscript Central) at the website: <http://tuffc-ieee.manuscriptcentral.com>.

If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are extremely busy and it represents an imposition on your time to perform this service. My primary objective is to obtain a high quality, fair review of the manuscript. If you are unable to perform the review, please inform me via e-mail. It would be extremely helpful if, at that time, you would suggest a colleague that could review the manuscript.

When the reviews are completed, I will inform you of the decision as to publication. Thanks in advance for your assistance.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

ABSTRACT: This is a test abstract
It's known to have multiple lines.
It contains a lot of information.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Dis-Invite Reviewers”

When a reviewer is dis-invited from reviewing a manuscript via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Reviewer Disinvite – TestID

Sep 4, 2007

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Dear Prof. Jane Reviewer:

Due to unavoidable circumstances, I have found it necessary to find another reviewer for the above referenced manuscript which has been submitted to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

I hope that on a future occasion you will be available to serve the Transactions in the very important role of reviewer.

Best Regards,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Reminder Invite”

When a reviewer is invited to review a manuscript via TUFFC MC but does not reply the invitation in time, the reviewer will automatically be reminded by the following letter according to the reminder schedule (**10 days** after the reviewer is invited) currently set in the TUFFC MC (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Invite Reviewer (Reminder) – TestID

Dear Prof. Jane Reviewer :

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here
ABSTRACT: See at the end of this email.

It has been 10 days since our email invited you to review the above referenced manuscript for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. Could you please inform me of your decision with a return email as soon as possible?

Sincerely Yours,

Jian-yu Lu

Associate Editor

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

ABSTRACT: This is a test abstract

It's known to have multiple lines.

It contains a lot of information.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Agreed”

When a reviewer has agreed to review a manuscript and notified the AE, after the AE click the “Agreed” button beside the reviewer via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript – TestID

Dear Prof. Jane Reviewer,

Thank you for agreeing to review the manuscript that has been submitted to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control for publication consideration:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

To ease the burden on those asked to perform the review and to accelerate the review process, the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, in conjunction with IEEE

Periodicals, has established an electronic web-based reviewing process (IEEE Manuscript Central) at the website: <http://tuffc-ieee.manuscriptcentral.com>.

An account has been created for you on the site to access the manuscript. Your User ID and email address associated with this User ID are as follows:

USER ID: Userid

Email Address Associated with the User ID: reviewer@university.edu

For security, your password is not listed in this email. If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the above Manuscript Central (MC) login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you find the field in "USER ID" above is empty, please inform me immediately via email. If you need technical help, please click on the "?" icon on the upper-right corner of any screen of MC.

After you have logged into IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central, you may update your personal information by clicking on "Edit Your Information" and change password by clicking on "Change Your Password". You may view and download the manuscript via the "Reviewer Center." For reviewing purposes all papers have been converted to Adobe Acrobat Portable Document Format (PDF). In order to view the paper, you will need the Adobe Acrobat Reader. If you do not have the Reader, you may download it via a link on "Instructions and Forms" at <http://tuffc-ieee.manuscriptcentral.com>.

We request that you review the paper within FOUR weeks, if possible.

If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are extremely busy and it represents an imposition on your time to perform this service. My primary objective is to obtain a high quality, fair review of the manuscript. If you are unable to perform the review, please inform me via e-mail. It would be extremely helpful if, at that time, you would suggest a colleague that could review the manuscript.

Please submit your completed review via the "Reviewer Center" in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central (MC) Web site <http://tuffc-ieee.manuscriptcentral.com>. If you have printed out the manuscript on paper and made comments on the manuscripts, you can either use a scanner to scan the comments in as attachments in MC (preferred) or send me the corrections on the manuscripts via regular mail. In any case, please fill out the online review form. If you mail in your comments, please notify me in the box of the Confidential Recommendations for Associate Editors in MC. The Guide for Reviewers may be of help for you to review the manuscript in MC (it contains a step-by-step guide to navigate through MC). It is located at: http://www.ieee-uffc.org/tr/rev_instr.pdf

When the reviews are completed, I will inform you of the decision as to publication. Thanks in advance for your assistance.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

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“Reviewer Agreed Revision”

When a reviewer has agreed to review a revised manuscript and notified the AE, after the AE click the “Agreed” button beside the reviewer via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Review of Revised Manuscript – TestID

Sep 4, 2007

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Dear Prof. Jane Reviewer:

A revised version of the above mentioned manuscript has been submitted by the author.

Thank you for agreeing to review this revised manuscript for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

To ease the burden on those asked to perform the review and to accelerate the review process, the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, in conjunction with IEEE Periodicals, has established an electronic web-based reviewing process (IEEE Manuscript Central) at the website: <http://tuffc-ieee.manuscriptcentral.com>.

An account has been created for you on the site to access the manuscript. Your User ID and email address associated with this User ID are as follows:

USER ID: Userid
Email Address Associated with the User ID: reviewer@university.edu

For security, your password is not listed in this email. If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the above Manuscript Central (MC) login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you find the field in "USER ID" above is empty, please inform me immediately via email. If you need technical help, please click on the "?" icon on the upper-right corner of any screen of MC.

After you have logged into IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central, you may update your personal information by clicking on "Edit Your Information" and change password by clicking on "Change Your Password". You may view and download the manuscript via the "Reviewer Center." For reviewing purposes all papers have been converted to Adobe Acrobat Portable Document Format (PDF). In order to view the paper, you will need the Adobe Acrobat Reader. If you do not have the Reader, you may download it via a link on "Instructions and Forms" at <http://tuffc-ieee.manuscriptcentral.com>.

We request that you review the paper within FOUR weeks, if possible.

If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are extremely busy and it represents an imposition on your time to perform this service. My primary objective is to obtain a high quality, fair review of the manuscript. If you are unable to perform the review, please inform me via e-mail. It would be extremely helpful if, at that time, you would suggest a colleague that could review the manuscript.

Please submit your completed review via the "Reviewer Center" in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central (MC) Web site <http://tuffc-ieee.manuscriptcentral.com>. If you have printed out the manuscript on paper and made comments on the manuscripts, you can either use a scanner to scan the comments in as attachments in MC (preferred) or send me the corrections on the manuscripts via regular mail. In any case, please fill out the online review form. If you mail in your comments, please notify me in the box of the Confidential Recommendations for Associate Editors in MC. The Guide for Reviewers may be of help for you to review the manuscript in MC (it contains a step-by-step guide to navigate through MC). It is located at: http://www.ieee-uffc.org/tr/rev_instr.pdf

When the reviews are completed, I will inform you of the decision as to publication. Thanks in advance for your assistance.

Best Regards,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Late to Accept”

When a reviewer agrees to review a manuscript but never returns the review or does not accept the invitation from an AE and the AE has dragged the name of the reviewer to a trash can beside the reviewer to make room to invite other reviewers via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu

Subject: Reviewer Reassignment – TestID

Sep 4, 2007

RE:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

Dear Prof. Jane Reviewer:

This is to confirm that you are no longer requested to review the above referenced manuscript which has been submitted to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

Please contact me if you have any questions.

Best Regards,

Jian-yu Lu

Associate Editor

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Custom Reviewer Agreed”

This is similar to the “Reviewer Agreed” letter. When a reviewer has agreed to review a manuscript and notified the AE, after the AE click the “Agreed” button beside the reviewer via TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript (Custom) – TestID

Dear Prof. Jane Reviewer,

Thank you for agreeing to review the manuscript that has been submitted to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control for publication consideration:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

To ease the burden on those asked to perform the review and to accelerate the review process, the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, in conjunction with IEEE Periodicals, has established an electronic web-based reviewing process (IEEE Manuscript Central) at the website: <http://tuffc-ieee.manuscriptcentral.com>.

An account has been created for you on the site to access the manuscript. Your User ID and email address associated with this User ID are as follows:

USER ID: Userid

Email Address Associated with the User ID: reviewer@university.edu

For security, your password is not listed in this email. If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the above Manuscript Central (MC) login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you find the field in "USER ID" above is empty, please inform me immediately via email. If you need technical help, please click on the "?" icon on the upper-right corner of any screen of MC.

After you have logged into IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central, you may update your personal information by clicking on "Edit Your Information" and change password by clicking on "Change Your Password". You may view and download the manuscript via the "Reviewer Center." For reviewing purposes all papers have been converted to Adobe Acrobat Portable Document Format (PDF). In order to view the paper, you will need the Adobe Acrobat Reader. If you do not have the Reader, you may download it via a link on "Instructions and Forms" at <http://tuffc-ieee.manuscriptcentral.com>.

We request that you review the paper within FOUR weeks, if possible. If you are unable to meet this schedule, please advise me via e-mail of an approximate date that you can review the manuscript. I know you are extremely busy and it represents an imposition on your time to perform this service. My primary objective is to obtain a high quality, fair review of the manuscript. If you are unable to perform the review, please inform me via e-mail. It would be extremely helpful if, at that time, you would suggest a colleague that could review the manuscript.

Please submit your completed review via the "Reviewer Center" in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central (MC) Web site <http://tuffc-ieee.manuscriptcentral.com>. If you have printed out the manuscript on paper and made comments on the manuscripts, you can either use a scanner to scan the comments in as attachments in MC (preferred) or send me the corrections on the manuscripts via regular mail. In any case, please fill out the online review form. If you mail in your comments, please notify me in the box of the Confidential Recommendations for Associate Editors in MC. The Guide for Reviewers may be of help for you to review the manuscript in MC (it contains a step-by-step guide to navigate through MC). It is located at: http://www.ieee-uffc.org/tr/rev_instr.pdf

When the reviews are completed, I will inform you of the decision as to publication. Thanks in advance for your assistance.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Reminder Level1”

When a reviewer agreed to review a manuscript but has not returned the review in time according to the first reminder schedule (**four weeks** after the reviewer agreed) currently set in the TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript (Reminder) – TestID

Dear Prof. Jane Reviewer :

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

Four weeks ago, the above referenced manuscript was sent to you. Has your review been completed? Our goal is to provide authors with a review decision within 6 weeks of submission of a manuscript.

Please let me know if you need any assistance completing your review. We look forward to your comments being received at the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Reminder Level2”

When a reviewer agreed to review a manuscript but has not returned the review in time according to the second reminder schedule (**five weeks** after the reviewer agreed) currently set in the TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript (Reminder #2) – TestID

Dear Prof. Jane Reviewer :

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

The above referenced manuscript was assigned to you 5 weeks ago. A previous e-mail was sent to you as a reminder that your review was expected to be returned as soon as possible. We have not received it back from you. We would greatly appreciate your help in accomplishing our goal of having an expedited reviewing process. Please contact us if we can be of any assistance. We look forward to your comments being received at the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reviewer Reminder Level3”

When a reviewer agreed to review a manuscript but has not returned the review in time according to the third reminder schedule (**six weeks** after the reviewer agreed) currently set in the TUFFC MC, the reviewer will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript (Reminder #3) – TestID

Dear Prof. Jane Reviewer :

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

Six weeks ago, the above referenced manuscript was assigned to you for review. It is a stated goal of IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control to have reviewers complete and submit their reviews within 4 weeks after agreeing to review the manuscript. This is so that we maintain a short cycle and that authors receive a decision within a reasonable period of time.

Would you kindly complete your review within the next week so that we may provide the author with a review decision? We look forward to your comments being received at the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>.

Thank you in advance for attending to this and we look forward to receiving your review.

Sincerely,

Jian-yu Lu

Associate Editor

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Custom Reminder”

When a reviewer agreed to review a manuscript but has not returned the review in time and the delay has passed the third reminder schedule (**six weeks** after the reviewer agreed) currently set in the TUFFC MC, the AE could send out a custom reminder and the reviewer will receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: reviewer@university.edu

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu

Subject: Review of Manuscript (Reminder Again) – TestID

Sep 4, 2007

Dear Prof. Jane Reviewer:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

Your review of the above cited manuscript is now well overdue. Due to the need to maintain timeliness in the review and publication cycle, it is necessary for us to have a high-quality review within a fixed period of time after we receive a manuscript. Please inform us of when you will complete the review. When you complete your review please visit the "Reviewer Center" at the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central website at <http://tuffc-ieee.manuscriptcentral.com>.

Your User ID and email address associated with this User ID are as follows:

USER ID: Userid

Email Address Associated with the User ID: reviewer@university.edu

For security, your password is not listed in this email. If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the above Manuscript Central (MC) login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you find the field in "USER ID" above is empty, please inform me immediately via email.

Thank you for your assistance and attention in this matter.

Best Regards,

Jian-yu Lu
Associate Editor

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Review Submitted”

After a reviewer has submitted a review via the TUFFC MC, the AE will receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: jilu@eng.utoledo.edu
From: jilu@eng.utoledo.edu
CC:

Subject: Review Submitted – TestID

Dear Prof. Jian-yu Lu:

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

We would like to inform you that Prof. Jane Reviewer has submitted scores for above referenced manuscript. The scoresheet is available to you through the Associate Editor Center in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central website at <http://tuffc-ieee.manuscriptcentral.com>.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Invite Paper”

This letter has not been used so far. When inviting an author to submit a manuscript via the TUFFC MC, the author will receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: Author@ScholarOne.com
From: jilu@eng.utoledo.edu, myuhas@imsysinc.com
CC: jilu@eng.utoledo.edu, myuhas@imsysinc.com

Subject: Invitation to Submit a Manuscript

Dear Dr. John Author:

With the recommendation of an Associate Editor,

Dr. _____,

we would like to invite you to submit a manuscript to IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

The detailed information for submission of your manuscript can be found at: <http://www.ieee-uffc.org/tr/contrib.pdf>. The IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central website for your submission is at <http://tuffc-ieee.manuscriptcentral.com>.

If you have forgotten your User ID and Password, please click the button "Check for Existing Account" on the site, or click "Create a New Account" if you do not have one.

Thank you in advance.

Sincerely,

Professor Jian-yu Lu, Ph.D.
Editor-in-Chief
Email: jilu@eng.utoledo.edu

And

Marjorie Yuhas, Ph.D.
Associate Editor-in-Chief
Email: myuhas@imsysinc.com

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control
(Manuscript Central website: <http://tuffc-ieee.manuscriptcentral.com>)

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Withdraw”

When a manuscript is withdrawn via TUFFC MC, the authors will automatically receive the following letter. An “x” should be placed to indicate an appropriate choice (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Withdrawn - Manuscript TestID

Dear Dr. John Author

MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

The above referenced manuscript has been withdrawn from the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central website: <http://tuffc-ieee.manuscriptcentral.com>, for one of the following reasons:

- ☐ (1) Upon your request.
- ☐ (2) This manuscript has been merged into another manuscript, TUFFC-XXXXXX-XXXX.
- ☐ (3) English is not satisfactory for review.
- ☐ (4) You have not resubmitted your revised manuscript within 3 months of our request for revision. (It has been days for your manuscript. Please also see the note at the end of this email for more details.)
- ☐ (5) The manuscript is not properly prepared for TUFFC (please follow instructions in "Information for Contributors" at <http://www.ieee-uffc.org/tr/> to prepare your new submission).
- ☐ (6) Other reasons (the reasons will be given below).

If Item #(3) above is checked, please notice the following:

I apologize for what may have seemed to you as an inordinately long delay. I have taken much time to consider your manuscript above. Your manuscript appears to cover potentially interesting material, however, the English language presentation is simply too poor to conduct a proper technical review process. Proper English presentation is important to convey correct technical information. Therefore, I am placing your manuscript as Administratively Withdrawn at this time. We encourage you to find assistance with the English language presentation. After you have made corrections and improvement, please email your revised manuscript in either PDF or Microsoft Word format in an email attachment to me. After I have reviewed your revised manuscript and in my judgment, the English is satisfactory, I will notify you via email and then you may re-submit the revised manuscript through the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central website: <http://tuffc-ieee.manuscriptcentral.com>.

When you resubmit, in the FIRST paragraph of the "Comments to Editor-in-Chief", please enter MY NAME and THE MANUSCRIPT NUMBER (see above) assigned to your original submission. This will allow your manuscript to be assigned to me again for handling the review process whenever possible.

Please note that this action does not constitute any technical judgment or technical review of your work. Also, note that this situation is not uncommon for authors with other than English as a first language.

If Item #(4) above is checked, please notice the following:

In order to maintain a short time between submission and publication for all manuscripts in TUFFC, we would like to request those who have been asked to revise their manuscripts not to exceed 3 months for the revision and resubmission process (please also see this request in the decision letter sent to you previously). If you find it will take more than three months to revise your manuscript, we request you resubmit your manuscript via our Manuscript Central website <http://tuffc-ieee.manuscriptcentral.com> as a new manuscript after you receive this withdraw notice, and the same peer-review process will start over again.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Accept”

When a manuscript is accepted for publication via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Accept - Manuscript TestID

Dear Dr. John Author

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

We are pleased to inform you that the above referenced manuscript has been accepted for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. The publisher has been notified of this decision and all the files you have uploaded will be retrieved for journal production.

Please make sure you have submitted all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf> for production purpose:

High quality art work,
Signed copyright form,
Recent photos for all authors (for papers only),
Updated biosketches for all authors (for papers only).

If you have not properly uploaded any of the files mentioned above, please contact the publisher at ronk@assoqh.org for further instructions. All communications with the publisher should include your manuscript number indicated above.

IMPORTANT: Any changes other than minor ones such as corrections for typos or English for your accepted manuscript are not allowed. In case more significant corrections or changes are necessary, please submit your modified manuscript to me for review as early as possible with a clear indication where the changes are made so that I may grant final approval. Late changes may incur a heavy editorial cost and should therefore be avoided as much as possible.

You will receive the proof of your manuscript directly from the publisher via email.

Please refer to the policies regarding the Voluntary Page charges, Mandatory Page charges, and Color Illustration charges in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>. However, there is no charge for publishing front cover images.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>

“Major Revision”

When an Associate Editor makes a “Major Revision” decision via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Major Revision – TestID

Dear Dr. John Author

Your manuscript

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

REVIEWERS' COMMENTS: See at the end of this email

has been reviewed and publication is not recommended in its present form. Below are summary comments explaining major revisions from the reviewers. In order to speed up the publication process, we urge you resubmit your revised manuscript within the next THREE WEEKS.

Please resubmit your manuscript as revised in accordance with the reviewers' comments (see near the end of this email). You must submit your comments, detailing all the changes you have made, in the Response to Reviewers and the Response to Associate Editor boxes, accessible when the manuscript is resubmitted. Please mark up your responses to reviewers in your revised manuscript with a yellow highlight tool to help us to locate your modifications. If marking up the resubmission with a highlight tool is not practical, please clearly indicate the revisions you have made some other way.

Please electronically resubmit your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>. If the revision takes more than THREE MONTHS from today, your manuscript may be subject to administrative withdrawal unless you inform both the Editor-in-Chief (jilu@eng.utoledo.edu) and myself in advance. For detailed preparation of your resubmission, please refer to the document "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>.

[IMPORTANT: Please follow the instructions in the "Manuscripts to be Revised" box on the first screen of your Author Center and be sure to click on the "Submit Your Manuscript" button after uploading your revised files with the button "Use the File Manager" during the submission process. The next screen you see will be a confirmation. An automatic email will also be sent to you for the confirmation. If you do not receive the confirmation, your revised manuscript is not transmitted to us and we will not be able to continue to process your manuscript. If you have difficulties, please click "?" button on the upper-right corner of any screen of the Manuscript Central to get help.]

Upon resubmission, please make sure to include or update all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>:

PDF manuscript for review,
 Original word processing file of the manuscript,
 High quality art work,
 Signed copyright form,
 Recent photos for all authors (for papers only),
 Updated biosketches for all authors (for papers only).

Please refer to the policies regarding the Voluntary Page charges, Mandatory Page charges, and Color Illustration charges in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>. However, there is no charge for publishing front cover images.

Sincerely,

Jian-yu Lu
 Associate Editor
 IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Minor Revision”

When an Associate Editor makes a “Minor Revision” decision via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
 From: jilu@eng.utoledo.edu
 CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Minor Revision – TestID

Dear Dr. John Author

Congratulation! Your manuscript

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

REVIEWERS' COMMENTS: See at the end of this email

has been reviewed and it is suggested that it be accepted for publication after minor revisions. In order to timely publish your manuscript, we urge you resubmit your revised manuscript within the next THREE WEEKS.

Please resubmit your manuscript as revised in accordance with the reviewers' comments (see near the end of this email). You must submit your comments, detailing all the changes you have made, in the Response to Reviewers and the Response to Associate Editor boxes, accessible when the manuscript is resubmitted. Please mark up your responses to reviewers in your revised manuscript with a yellow highlight tool to help us to locate your modifications. If marking up the resubmission with a highlight tool is not practical, please clearly indicate the revisions you have made some other way.

Please electronically resubmit your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>. If the revision takes more than THREE MONTHS from today, your manuscript may be subject to administrative withdrawal unless you inform both the Editor-in-Chief (jilu@eng.utoledo.edu) and myself in advance. For detailed preparation of your resubmission, please refer to the document "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>.

[IMPORTANT: Please follow the instructions in the "Manuscripts to be Revised" box on the first screen of your Author Center and be sure to click on the "Submit Your Manuscript" button after uploading your revised files with the button "Use the File Manager" during the submission process. The next screen you see will be a confirmation. An automatic email will also be sent to you for the confirmation. If you do not receive the confirmation, your revised manuscript is not transmitted to us and we will not be able to continue to process your manuscript. If you have difficulties, please click "?" button on the upper-right corner of any screen of the Manuscript Central to get help.]

Upon resubmission, please make sure to include or update all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>:

- PDF manuscript for review,
- Original word processing file of the manuscript,
- High quality art work,
- Signed copyright form,
- Recent photos for all authors (for papers only),
- Updated biosketches for all authors (for papers only).

Please refer to the policies regarding the Voluntary Page charges, Mandatory Page charges, and Color Illustration charges in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>. However, there is no charge for publishing front cover images.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Reject”

When a manuscript is rejected via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)):

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Reject - Manuscript TestID

Dear Dr. John Author

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

I regret to inform you that we are unable to accept your above referenced manuscript for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. Below are summary comments from the reviewers for your information.

Thank you for submitting your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. We look forward to having the opportunity of publishing your work in the near future.

Sincerely,

Jian-yu Lu

Associate Editor

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Resubmit as Correspondence”

When an AE makes a “Resubmit as Correspondence” decision via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)). This decision terminates the peer-review process in MC. When authors resubmit the manuscript, which will be given a new Manuscript ID, EIC needs to assign the new manuscript back to the original AE if possible because the AE already has all the background information of the original manuscript.

To: All authors e-mail addresses listed here

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Resubmit as Correspondence – TestID

Dear Dr. John Author

Your manuscript

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

has been reviewed and publication is not recommended in its present form.

Below are summary comments explaining revisions from the reviewers. Please resubmit your manuscript as revised in accordance with the reviewers' comments. You must submit your comments, detailing all the changes you have made, with your resubmission. Please indicate in the "Author Comment" during the resubmission the manuscript number (of the format: TUFFC-XXXXX-XXXX)

so that your manuscript can be better tracked along with your original submission and can be assigned back to the original Associate Editor who handled your manuscript if possible.

It is requested that the manuscript type of this manuscript be changed to "Correspondence" upon resubmission. If you have difficulty to make this change, please let me know.

Please electronically resubmit your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>. For detailed preparation of your resubmission, please refer to the document "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>.

[IMPORTANT: An automatic email will be sent to you for confirmation after your successful resubmission. If you do not receive the confirmation, your revised manuscript is not transmitted to us. If you have difficulties, please click "?" button on the upper-right corner of any screen of the Manuscript Central to get help.]

Upon resubmission, please make sure to include or update all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>:

PDF manuscript for review,
Original word processing file of the manuscript,
High quality art work,
Signed copyright form.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Submit to Another Journal”

When an Associate Editor makes a “Submit to Another Journal” decision via TUFFC MC, the authors will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)). This decision terminates the peer-review process in MC.

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Submit to Another Journal – TestID

Dear Dr. John Author

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

In our judgment, the above referenced manuscript is not suitable for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. It is recommended that this manuscript is resubmitted to another journal. Below are summary comments from the reviewers for your information.

Thank you for submitting your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. We look forward to having the opportunity of publishing your work in the near future.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Decision and Thank You to Reviewers”

When an Associate Editor makes a “Major Revision”, “Minor Revision”, “Resubmit as Correspondence”, “Submit to Another Journal”, “Reject”, or “Accept” decision via TUFFC MC, all reviewers will automatically receive the following letter (my name and email addresses will be replaced by those of the user(s)).

To: reviewer@ScholarOne.com
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Decision on Manuscript – TestID

Dear Dr. John Reviewer:

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

A decision of The Decision made on this paper. has been rendered on the above referenced manuscript.

Thank you very much for your time and effort to review the manuscript.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWER'S Comments (please notice that any of your comments that are not directly in the box "Recommendation for Author" will not appear below):
These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Letter to Publisher on Acceptance”

When a manuscript is accepted for publication via TUFFC MC, the publisher of TUFFC (here is the FASS) will automatically receive the following letter so that the copy-editing process can start based on first-come-first-serve sequence (my name and email addresses will be replaced by those of the user(s)):

To: ronk@assoqh.org
From: jilu@eng.utoledo.edu
CC: susanp@assoqh.org

Subject: Accept (Production) - Manuscript TestID

Ron Keller
UFFC Technical Editor
Federation of Animal Science Societies (FASS)
1111 N. Dunlap Ave.
Savoy, IL 61874
Email: ronk@assoqh.org
Tel: (217)356-3182 (x53)
Fax: (217)398-4119

Dear Ron,

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

The above referenced manuscript has been accepted for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. It is in the Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com> for your retrieval.

Thank you for your prompt action.

Sincerely,

Jian-yu Lu
Associate Editor
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Outstanding Revision Reminder”

When an AE reminds authors to resubmit their manuscripts under revisions in the link “Outstanding Revisions” in the AE Center of TUFFC MC, the authors will automatically receive the following letter:

To:
From:
CC:

Subject: Outstanding Revision

You have an outstanding revision in your Author Center in Manuscript Central. Please submit your revised manuscript or notify the editorial office.

XXII. Appendix 5 - Other Default Letters

The following are some frequently used letters that I have produced for the convenience of an EIC. They could be used as stand-alone letters or used in combination with the automatic letters of TUFFC MC. Future EICs could also use them to simplify their jobs.

“MC Account Merged”

This is used to send an email to a TUFFC MC user who has more than one account in MC. If there is an indication that an AE has created such duplicate accounts, this email should also be sent to the AE so that the AE knows that there is an account problem with the reviewer they invited. When sending the email, email addresses of all duplicate accounts should be used to avoid confusion in case accounts merged belong to different users:

Subject: MC Account Merged

Dear User of Manuscript Central,

You have several accounts in the Manuscript Central (MC) of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) that may cause problems in the future or may have already caused problems. One of the causes of multiple accounts could be that an Associate Editor added you as a reviewer (if it is the case) before checking ("Searching Reviewer") to see if you have already had an account. I have merged your accounts into one as follows. Your User ID and email address associated with this User ID are as follows:

Website: <http://tuffc-ieee.manuscriptcentral.com/>

USER ID: xxxxxxxx

Email Address Associated with the User ID:

xxx@xxx.xxx

For security, your password is not listed in this email. If you forget or don't know your password, please use the email address above to find the password by clicking on the "Check for Existing Account" on the above Manuscript Central (MC) login screen. To avoid a typo, you may use copy/paste function of your computer to enter the email address when prompted. The PASSWORD will be emailed to you. If you need technical help, please click on the "?" icon on the upper-right corner of any screen of MC.

After you login, please recheck if any of your personal information is missing by clicking on the button "Edit Your Information". Please notice that the password is case sensitive. You may also change your password after you login by clicking on the button: "Change Your Password". If the password is not selected by yourself, for security reason, you should change your password.

If you have been assigned any manuscripts to review, you will be able to access the manuscripts in your "Reviewer Center" after this merge.

If you have any questions, please do not hesitate to let me know.

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For more information about the TUFFC, please visit:
<http://www.ieee-uffc.org/tr/>

“Additional Word Processing Files Needed”

This is an email requesting for a new word processing file from authors when there is a problem in the original file:

Subject: Additional Word Processing Files Needed

RE: Manuscript #: TUFFC-XXXXXX-XXXX (This number should be used for all your communications with us)

Dear Authors,

Thank you for submitting your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC). When I examined your manuscript, I found that the PDF file you submitted via the Manuscript Central (MC) requires special font packages:

KOREAN FONT PACKAGE

to view or print your manuscript correctly. From our experiences, the Associate Editor or reviewers who will help to review your manuscript usually do not have the font packages in their computers and may even have trouble to open the PDF file of your manuscript sometimes. To avoid any potential delays that may be caused by the special font packages required for your manuscript, would you please email to me as an attachment your file in Microsoft Word format or other popular word formats that could possibly avoid the special font package requirement? Or, make a PDF file yourself that do not need the special font packages and then send it to me if you have such capability in your computer.

If the sizes of your files are large, you could zip compress them before emailing to me. My email system will reject any single email that exceeds a total of 5MB.

Thank you very much for your help.

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For more information about the TUFFC, please visit: <http://www.ieee-uffc.org/tr/>

“Reminder for Submission of Revision”

This is used to remind authors who have not resubmitted their revision within 90 days:

Subject: Reminder for Submission of Revision

Date

Dear Authors,

A decision of MAJOR/MINOR REVISION was made xxx days ago for the manuscript indicated in the subject line of this email.

For your information, our policy is to withdraw any manuscript that is at the hands of authors for more than THREE MONTHS (90 days) from the date of our requested revision.

Please submit your revision within ONE MONTH from today by following the instructions for submitting revised manuscripts in your Author Center in MC. Otherwise, your manuscript will be administratively withdrawn, unless you inform both the Editor-in-Chief (jilu@eng.utoledo.edu) and the Associate Editor who is handling your manuscript that you have special extenuating circumstances that warrant the delay.

If you do not intend to submit the revised manuscript, please also notify me as soon as possible.

Thank you for your attention and thank you very much for submitting your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

Looking forward to hearing from you.

Sincerely,

Jian-yu Lu

Editor-in-Chief

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“First Manuscript Assigned”

This letter is used when an AE is assigned the first manuscript to handle the peer-review process (new AEs should be familiar with the three documents, “Information for Contributors”, “Guide for Reviewers”, and “Guide for Associate Editors” before their services):

Subject: First Manuscript Assigned

RE: TUFFC-XXXXX-XXXX

Dear AE-Name,

I just assigned the first manuscript to you via MC. All the process including reviewer invitations must be conducted in MC. All the email communications with authors or reviewers will also be within MC and will be automatically logged for your future references. When you invite reviewers, abstracts of the manuscript will be automatically included in your invitation letter. After reviewers agreed to review, you will need to send reviewers letters via MC so that manuscript can be uploaded to the Reviewer Center of the reviewers. A step-by-step guide is in the "Guide for Associate Editors" and is available to you at: http://www.ieee-uffc.org/tr/guide_for_ae.pdf

Your Account information is as follows:

MC Web Address: <http://tuffc-ieee.manuscriptcentral.com/>

USER ID: xxxx

Email address associated with the PASSWORD: xxxx@xxxx.xxx

If the password is assigned to you, please change it. You can do so after you login to MC and then click on "Change Your Password" button. If you have not updated your personal profile recently, please do so after you login to MC and then click on the button "Edit Your Information".

If you have any questions, please do not hesitate to let me know. I am glad to help (my phone number is: (419)530-8079).

Thanks.

Sincerely,

Jian-yu Lu

Editor-in-Chief

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Changes of Reviewer Contact Information”

This email helps AEs to change incorrect information in reviewer accounts in MC:

Subject: Changes of Reviewer Contact Information

Dear AE-Name,

You could do the following in your AE Center to correct information for reviewers: Main Menu -> Associate Editor Center -> Add Reviewer. Then on the right hand side pan, search for the reviewer's name (you could type in part of the reviewer's name and let the system return a list of valid names to choose from). When bringing up the reviewer's information, make changes and then remember to

click "Update Information" near the bottom. (This is important, otherwise the information you enter will not be changed.)

If you have any questions, please let me know.

Regards,

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Front Cover Image - Invite Reviewer”

This is used when inviting a reviewer for a front cover image:

Subject: Front Cover Image - Invite Reviewer

Dear Reviewer-Name,

Would you please let me know if you could review an image and judge if it is suitable for publication in the front cover of TUFFC?

If you agree to review, I will send you another email giving you details of the account information in the Manuscript Central (MC) where you could download and review the image.

A description of the image is at the end of this email.

If you have any questions, please let me know.

Looking forward to hearing from you.

Thanks.

Regards,

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

The following is an automatically produced form letter including the description of the image.

“Front Cover Image - Review of Manuscript”

This is used after the reviewer has agreed to review the front cover image:

Subject: Front Cover Image - Review of Manuscript

Dear Reviewer-Name,

Thank you very much for agreeing to review the front cover image. Since this is an image, it is different from reviewing a regular paper. The emphases will be aesthetics, presentation quality (such as image resolution and picture quality), and relevance to ultrasound. Novelty will also be considered.

The image itself does not contain abstract that gives a brief description of the image. The abstract is available in the previous email I sent to you: "Invite Reviewer".

After you have reviewed the image, please enter your "Comments to Authors" into Manuscript Central (MC) in your Reviewer Center. Please also fill out the on-line review form for those items that are relevant to the front cover images.

If you have any questions, please let me know.

Thanks.

Regards,

Jian-yu Lu

Editor-in-Chief

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

"Front Cover Image - Minor Revision"

This is used when sending a letter to authors regarding a "Minor Revision" decision:

To: All authors e-mail addresses listed here

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Front Cover Image - Minor Revision

Dear Dr. John Author

Congratulation! Your manuscript

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

REVIEWERS' COMMENTS: See at the end of this email

has been reviewed and it is suggested that it be accepted for publication after minor revisions. In order to timely publish your manuscript, we urge you resubmit your revised manuscript within the next THREE WEEKS.

Please resubmit your manuscript as revised in accordance with the reviewers' comments (see near the end of this email). You must submit your comments, detailing all the changes you have made, in the Response to Reviewers and the Response to Associate Editor boxes, accessible when the manuscript is resubmitted. Please mark up your responses to reviewers in your revised manuscript with a yellow highlight tool to help us to locate your modifications. If marking up the resubmission with a highlight tool is not practical, please clearly indicate the revisions you have made some other way.

Please electronically resubmit your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com>. If the revision takes more than THREE MONTHS from today, your manuscript may be subject to administrative withdrawal unless you inform both the Editor-in-Chief (jilu@eng.utoledo.edu) and myself in advance. For detailed preparation of your resubmission, please refer to the document "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>.

[IMPORTANT: Please follow the instructions in the "Manuscripts to be Revised" box on the first screen of your Author Center and be sure to click on the "Submit Your Manuscript" button after uploading your revised files with the button "Use the File Manager" during the submission process. The next screen you see will be a confirmation. An automatic email will also be sent to you for the confirmation. If you do not receive the confirmation, your revised manuscript is not transmitted to us and we will not be able to continue to process your manuscript. If you have difficulties, please click "?" button on the upper-right corner of any screen of the Manuscript Central to get help.]

Upon resubmission, please make sure you have submitted all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf> for production purpose:

High quality art work,
Signed copyright form

Sincerely,

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Front Cover Image – Accept”

This is used when sending a letter to authors regarding an “Accept” decision:

To: All authors e-mail addresses listed here
From: jilu@eng.utoledo.edu
CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Front Cover Image - Accept - Manuscript TestID

Dear Dr. John Author

RE:
MANUSCRIPT NO. TestID
MANUSCRIPT TYPE: Manuscript Type
TITLE: This is a test
AUTHOR(S): All authors with e-mail addresses first and last names listed here

We are pleased to inform you that the above referenced manuscript has been accepted for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. The publisher has been notified this decision and all the files you have uploaded will be retrieved for journal production.

Please notice that since there is a large number of Front Cover Images accepted for publication and there are only 12 images that can be published each year, accepted front cover images could take a long time before it appears in the Transactions. At the end of this email, paragraphs copied from the "Information for Contributors" are included for your information.

Please make sure you have submitted all necessary materials such as the following in accordance with the instructions in the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf> for production purpose:

High quality art work,
Signed copyright form

If you have not properly uploaded any of the files mentioned above, please contact the publisher at ronk@assoqh.org for further instructions. All communications with the publisher should include your manuscript number indicated above.

The relevant paragraphs copied from the "Information for Contributors" at <http://www.ieee-uffc.org/tr/contrib.pdf>:

FRONT COVER IMAGES of the IEEE Transactions on UFFC include a contributed image. When a manuscript is revised and resubmitted, authors are encouraged to submit the color version of an image in the manuscript as a front cover image. There is no publication charge to authors for front cover images. Front cover images will be subject to a peer-review process to judge their appropriateness. Images submitted independent of a manuscript will also be considered but preference will be given to those with manuscripts that are going to appear in the corresponding issue. Because there are only 12 images that can be published in the front covers each year, not all accepted images will appear on the front covers. When there is more than one image accepted for a particular issue, only one will be used for that issue. The remaining images plus others submitted independently may be used in a future issue where there is no suitable image for that issue. Recent front cover images can be found at: <http://www.ieee-uffc.org/tr/covers.htm>.

The Front Cover Images can be ultrasound images, illustrations of UFFC-related techniques, or images from modalities of UFFC-related phenomena. The image or illustration will be accompanied with a TITLE and up to fifty (50) words of ABSTRACT (text) describing the image or illustration, including noncommercial credits. Because we try to match the front cover image with the issue that contains the image, if possible, authors should include the manuscript number at the end of the title of the Front Cover Image, for example, TITLE – TUFFC-01234-2003, where “TUFFC-01234-2003” is the corresponding manuscript number produced by MC. When submitting an image, on the “Title” line in MC, provide a brief title of the image. In the “Abstract” space, type in up to 50 words description of the Front Cover Image.

Sincerely,

Jian-yu Lu
Editor-in-Chief
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

“Front Cover Image – Accept (Production)”

This is used when sending a letter to the publisher (FASS) regarding an “Accept” decision:

To: ronk@assochq.org
From: jilu@eng.utoledo.edu
CC: susanp@assochq.org

Subject: Accept (Production) - Manuscript TestID

Ron Keller
UFFC Technical Editor
Federation of Animal Science Societies (FASS)
1111 N. Dunlap Ave.
Savoy, IL 61874

Email: ronk@assoqh.org

Tel: (217)356-3182 (x53)

Fax: (217)398-4119

Dear Ron,

RE:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

The above referenced FRONT COVER IMAGE has been accepted for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. It is in the Manuscript Central at <http://tuffc-ieee.manuscriptcentral.com> for your retrieval.

Thank you for your prompt action.

Sincerely,

Jian-yu Lu

Editor-in-Chief

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

“Front Cover Image – Reject”

This is used when sending a letter to authors regarding a “Reject” decision:

To: All authors e-mail addresses listed here

From: jilu@eng.utoledo.edu

CC: jilu@eng.utoledo.edu, jilu@eng.utoledo.edu

Subject: Front Cover Image - Reject - Manuscript TestID

Dear Dr. John Author

RE:

MANUSCRIPT NO. TestID

MANUSCRIPT TYPE: Manuscript Type

TITLE: This is a test

AUTHOR(S): All authors with e-mail addresses first and last names listed here

I regret to inform you that we are unable to accept your above referenced manuscript for publication in the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. Below are summary comments from the reviewers for your information.

Thank you for submitting your manuscript to the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. We look forward to having the opportunity of publishing your work in the near future.

Sincerely,

Jian-yu Lu

Editor-in-Chief

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

REVIEWERS' COMMENTS (Authors: Please notice that attachments from reviewers, if there are any, will not be included in this letter. However, you should retrieve them from your Author Center in MC):

These are the Reviewer's comments to the author.

For information about the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, please visit the website: <http://www.ieee-uffc.org/>. The website of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control is at: <http://www.ieee-uffc.org/tr/>.

Part III: Final Report to the IEEE AdCom of UFFC-S

Final Report - Slide #1:

Final Report to UFFC-S Administrative Committee (AdCom) from Current Editor-in-Chief (EIC)

(A Summary of Operation of TUFFC Manuscript Central (MC))

Presenter: *Jian-yu Lu*, Ph.D.

(October 28, 2007)

(Note: Updated on December 31, 2007 with Latest Data)

Editor-in-Chief

**IEEE Transactions on Ultrasonics, Ferroelectrics, and
Frequency Control (TUFFC)**

(UFFC AdCom: 8:30 a.m. – 5:00 p.m., October 28, 2007, Hilton, New York, NY, USA)
Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)
Institute of Electrical and Electronics Engineers (IEEE)

10/28/2007/Jian-yu Lu

Final Report - Slide #2:

Forward

- This is my last report to the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) Administrative Committee (AdCom):
 - After the end of the previous editorial office of IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) on **December 31, 2001**, the UFFC-S Bylaws has been changed to limit an Editor-in-Chief (EIC) to a maximum of two terms with three years per term. By **December 31, 2007**, I will have served my two terms.

10/28/2007/Jian-yu Lu

Final Report - Slide #3:

Forward (Continue ...)

- I would like to take the opportunity to express my sincere thanks to all people who have supported and helped TUFFC. Without the efforts of all the Associate Editors (AEs), reviewers, and UFFC-S officials, TUFFC would not have been where it is today. I would also like to give special thanks to the UFFC-S AdCom, who has guided the TUFFC operations through a collective wisdom during the past six years.
- A “Job Description of EIC of IEEE TUFFC” that I was asked to write has been completed. It contains details of *operations of TUFFC* for future EICs, and *discussions* on two critical issues: the challenge of the open access (OA) movement (related to the TUFFC financial stability and the purpose of a journal) and the impact factor (IF), which could affect the future of TUFFC. In addition, “Some ‘*Tricks*’ for AEs to Use MC” are included to help AEs to use the Manuscript Central (MC) electronic system more effectively.

10/28/2007/Jian-yu Lu

Final Report - Slide #4:

Forward (Continue ...)

- I am also glad to report that due to the great efforts of the Guest Editors of the latest two Special Issues, which are the largest by far with **43** submissions for “*Special Issue on Diagnostic and Therapeutic Applications of Ultrasound in Bone*” and **150** submissions for “*Special Issue on Applications of Ferroelectrics*” respectively, the peer-review process is going well and the issues will be published in December 2007 and early 2008, respectively. I would like to take the opportunity to thank all Guest Editors, who have produced **11** Special Issues in the past few years. I am glad that MC has been a great help in executing and managing all Special Issues seamlessly and smoothly.

10/28/2007/Jian-yu Lu

Final Report - Slide #5:

Notes

- This report covers only data obtained from the IEEE Manuscript Central (MC) for the operation of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) (started **June 1, 2002**).
- Reports on the legacy paper-based system (**January 1, 2002 - June 1, 2002**) prior to the start of MC had been given previously by the Associate Editor-in-Chief (AEIC), Dr. Majorie Yuhas.
- Reports prior to the new editorial team took over (**before January 1, 2002**) was in a database maintained by Professor William D. O'Brien.

10/28/2007/Jian-yu Lu

Final Report - Slide #6:**Milestones to Date Since January 1, 2002**

- A new team chaired by **Dr. Jan Brown** made a smooth transition of editorial office: **January 1, 2002**
- Processed all legacy (paper-based) manuscripts by a team lead by the AEIC: **Dr. Marjorie Yuhas**
- Improved file quality of front cover images, table of contents, and the Potable Document Format (PDF) manuscripts on the TUFFC website (<http://www.ieee-uffc.org/tr/>): **February 2002**
- Established a streamlined electronic manuscript submission, peer-review, and journal production system: **June 1, 2002**
- Started to accept PDF-based context-sensitive multimedia manuscript submissions via MC: **August 1, 2003**

10/28/2007/Jian-yu Lu

Final Report - Slide #7:

Milestones to Date Since January 1, 2002 (Continue ...)

- **Restarted Special Issues after the transition to MC: July 2003**
- **IEEE Xplore Compatibility Accomplished: February, 2004**
 - The PDF version of TUFFC is now compatible with IEEE Xplore. IEEE Xplore no longer use scanners to produce low-quality PDF papers from our printed TUFFC journal.
- **Finished a computer script programming to produce statistical charts of each AE and to monitor MC system operation: April 14, 2004**
- **Emphasize to authors the importance to provide suggested reviewers for AEs (notes were added to both MC submission process and default letter): April 14, 2004**
- **Make more efforts to work with AEs to speed up the peer-review process: April 14, 2004**
- **Started to implement the policy set by the IEEE UFFC-S AdCom to withdraw manuscripts that have been returned to authors for revisions for over three months: May 1, 2004**

10/28/2007/Jian-yu Lu

Final Report - Slide #8:

Milestones to Date Since January 1, 2002 (Continue ...)

- **Ported Pre-1988 UFFC-S Digital Archive Contents to IEEE Xplore (December 16, 2005)**
 - Contents Posted:
 - Transactions (TUFFC): 1954-1987
 - International Ultrasonics Symposium (IUS) Proceedings: 1962-1987
 - Institute of Radio Engineering (IRE) International Convention Record: 1956-1962
 - International Symposium on Applications of Ferroelectrics (ISAF): 1986
 - International Symposium on Frequency Control (IFC): 1956-1987
 - IEEE Xplore revenue distribution to UFFC society formulas: 55% for usage by institution-subscription users, 35% for contents, and 10% across the board for all IEEE societies. (Individual IEEE member access does not count as usage.)

10/28/2007/Jian-yu Lu

Final Report - Slide #9:

**Milestones to Date Since January 1, 2002
(Continue ...)**

- Started publishing color figures online: **October 2006**
- Started assigning digital object identification (DOI) numbers directly on papers and digital objects before they go to print: **October 2006**
- Completed a “Job Description of EIC of TUFFC” to help future EICs, prospective applicants of EICs, and transitions from one EIC to another, in addition to help AEs and facilitate further discussions of the impact of the Open Access (OA) movement on TUFFC and the Impact Factor (IF) of TUFFC: **November 2007**

10/28/2007/Jian-yu Lu

Final Report - Slide #10:

Multimedia Manuscripts

- Starting date: **August 1, 2003**
- Number of manuscripts submitted so far: **91**
- Number of manuscripts published as follows: **64**
 - 2004 (total **5**):
 - 1 in April; 1 in June; 1 in July; 1 in September; 1 in October;
 - 2005 (total **18**):
 - 1 in March; 2 in April; 1 in May; 1 in July; 3 in August; 4 in October; 4 in November; 2 in December;
 - 2006 (total **23**):
 - 6 in January; 1 in February; 1 in March; 1 in April; 2 in May; 4 in June; 1 in July; 1 in August; 1 in September; 2 in October; 2 in November; 1 in December;
 - 2007 (total **18** in the first 11 months):
 - 1 in January; 2 in February; 3 in May; 3 in July; 3 in August; 2 in September; 1 in October; 2 in November; 2 in December;

10/28/2007/Jian-yu Lu

Final Report - Slide #11:

Special Issues

- A total of **11** Special Issues have been processed since **July 2003** using the Manuscript Central. So far, nine (**9**) of them have been published, one (**1**) of them is published in two parts (the first part has been published in December 2007 and the second will be in early 2008), and the remaining one (**1**) will be in early 2008.

10/28/2007/Jian-yu Lu

Final Report - Slide #12:

Special Issues (Continue ...)

- **Status of the 11 Special Issues:**
 - (1) Title: *Special 50th Anniversary Issue*
 - Guest Editor(s): Jack Kusters, Clemens C. W. Ruppel, Lute Maleki, and Susan TROLIER-MCKINSTRY
 - Submission deadline: January 31, 2004
 - Number of manuscripts submitted: 14
 - Published with 12 manuscripts in: May 2005
 - (2) Title: *Special Issue on Acoustic Wave Sensors and Applications*
 - Guest Editor(s): Robert Weigel and Robert Hauser
 - Submission deadline: January 31, 2004
 - Number of manuscripts submitted: 23
 - Published with 14 manuscripts in: November 2004
 - Note: When TUFFC MC was established in 2002, Special Issues have been integrated into the electronic process. This allows a smooth publication of all the Special Issues in MC.

10/28/2007/Jian-yu Lu

Final Report - Slide #13:

Special Issues (Continue ...)

- (3) Title: *Special Issue on Ultrasonic Transducers for High Temperature Applications*
 - Guest Editor(s): Gordon Hayward and Alistair McNab
 - Submission deadline: January 15, 2004
 - Number of manuscripts submitted: 10
 - Published with 7 manuscripts in: April 2005
- (4) Title: *Special Issue on Coded Waveforms in Ultrasonic Imaging*
 - Guest Editor(s): John Hossack
 - Submission deadline: February 29, 2004
 - Number of manuscripts submitted: 14
 - Published with 11 manuscripts in: February 2005

10/28/2007/Jian-yu Lu

Final Report - Slide #14:

Special Issues (Continue ...)

- (5) Title: *Special Issue on Micromachined Ultrasound Transducers*
 - Guest Editor(s): B. (Pierre) T. Khuri-Yakub
 - Submission deadline: July 31, 2004
 - Number of manuscripts submitted: 17
 - Published with 14 manuscripts in: December 2005
- (6) Title: *Special Issue on Novel Equipment for Ultrasound Research*
 - Guest Editor(s): Piero Tortoli and Jørgen Arendt Jensen
 - Submission deadline: July 31, 2005
 - Number of manuscripts submitted: 24
 - Published with 15 manuscripts in: October 2006

10/28/2007/Jian-yu Lu

Final Report - Slide #15:

Special Issues (Continue ...)

- (7) Title: *Special Issue on Nanoscale Ferroelectrics*
 - Guest Editor(s): Alexei Gruverman and Andrei Kholkin
 - Submission deadline: September 30, 2005
 - Number of manuscripts submitted: 26
 - Published with 16 manuscripts in: December 2006
- (8) Title: *Special Issue on Modeling, Optimization and Design of Acoustic Devices*
 - Guest Editor(s): Alireza Baghai-Wadji
 - Submission deadline: January 31, 2006
 - Number of manuscripts submitted: 24
 - Published with 18 manuscripts in: October 2007

10/28/2007/Jian-yu Lu

Final Report - Slide #16:

Special Issues (Continue ...)

- (9) Title: *Special Issue on High Resolution Ultrasonic Imaging in Industrial, Material and Biomaterial Applications*
 - Guest Editor(s): Roman Maev
 - Submission deadline: April 30, 2006
 - Number of manuscripts submitted: 17
 - Published with 15 manuscripts in: August 2007

10/28/2007/Jian-yu Lu

Final Report - Slide #17:

Special Issues (Continue ...)

- (10) Title: *Special Issue on Diagnostic and Therapeutic Applications of Ultrasound in Bone*
 - Guest Editor(s): Kendall R. Waters, Pascal Laugier, and Keith A. Wear
 - Submission deadline: May 31, 2007
 - Estimated publication date: Early 2008
 - Number of manuscripts submitted: 43
 - Number of manuscripts withdrawn so far: 4
 - Number of manuscripts accepted so far: 21
 - Number of manuscripts Rejected so far: 7
 - Number of manuscripts Changed to regular Correspondence so far: 2
 - Number of manuscripts In-Progress (to be processed): 9

10/28/2007/Jian-yu Lu

Final Report - Slide #18:

Special Issues (Continue ...)

- (11) Title: *Special Issue on Application of Ferroelectrics*
 - Guest Editor(s): Takaaki Tsurumi, Andrew J. Bell, Paul G. Clem, Alexei Gruverman, Andrei Kholkin, Sidney B. Lang, Sorah Rhee, Susan Trolier-McKinstry, and Kiyoshi Uchiyama
 - Submission deadline: May 28, 2007
 - Number of manuscripts submitted: 150
 - First Part published with 39 manuscripts in: December 2007
 - Second part estimated publication date: Early 2008
- Number of manuscripts withdrawn so far: 39
- Number of manuscripts accepted so far: 58
- Number of manuscripts rejected so far: 31
- Number of manuscripts to be submitted to other journals so far: 5
- Number of manuscripts Changed to regular Correspondence so far: 1
- Number of manuscripts in progress (to be processed): 16 10/28/2007/Jian-yu Lu

Final Report - Slide #19:

Quality of TUFFC (10-Year Impact Factor History)


- **Impact Factor:** # of cites in the current year to articles in the most recent two years / # of articles published during the same period (one of the quality indicators)
- **Acoustic Ranking:** Ranking among acoustic journals
- **EE Ranking:** Ranking among Engineering, Electrical, & Electronic
- **Acoustic Range:** Acoustic journal impact factor range
- **EE Range:** Engineering, Electrical, & Electronic impact factor range

History	Impact Factor	Acoustic Range	EE Range	Acoustic Ranking	EE Ranking
2006:	1.729	0.000-2.288	0.000-4.500	#5 among 28 (Top 18%)	#34 among 206 (Top 17%)
2005:	1.819	0.088-2.430	0.000-5.176	#4 among 27 (Top 15%)	#35 among 208 (Top 17%)
2004:	1.545	0.128-2.167	0.006-4.352	#4 among 26 (Top 15%)	#35 among 209 (Top 17%)
2003:	1.421	0.154-2.033	0.004-4.241	#6 among 28 (Top 21%)	#46 among 205 (Top 22%)
2002:	1.595	0.025-1.806	0.004-3.400	#3 among 28 (Top 11%)	#29 among 203 (Top 14%)
2001:	1.372	0.025-1.862	0.007-5.000	#5 among 27 (Top 19%)	#31 among 200 (Top 16%)
2000:	1.640	0.050-1.822	0.007-4.909	#4 among 27 (Top 15%)	#17 among 202 (Top 8%)
1999:	1.713	0.035-2.196	0.003-5.357	#5 among 27 (Top 19%)	#17 among 205 (Top 8%)
1998:	1.051	0.026-2.182	0.016-2.230	#5 among 25 (Top 20%)	#36 among 208 (Top 17%)
1997:	1.058	0.084-1.853	0.008-4.000	#6 among 20 (Top 30%)	#28 among 193 (Top 15%)

See

10/28/2007/Jian-yu Lu

Final Report - Slide #20:**General Statistics**

- The Manuscript Central (MC) has been running for about **five years and seven months** now, since it started on **June 1, 2002**.
- Distribution of **submitted** manuscripts among different manuscript types (**pink** – cumulative data; **yellow** – current cumulative data; light turquoise – annual data): **See** 

Manuscript Submission History	Papers (Incl. Invited, Errata)	Special Issue Papers	Correspondence	Letters	Front Cover Images	Withdrawn	Total
Current:	1525 (61%)	306 (12%)	226 (9%)	86 (3%)	68 (3%)	297 (12%)	2508
7 Months:	173 (58%)	22 (7%)	37 (12%)	6 (2%)	4 (1%)	58 (19%)	300
June 1, 2007:	1352 (61%)	284 (13%)	189 (9%)	80 (4%)	64 (3%)	239 (11%)	2208
Per Year:	294 (51%)	131 (23%)	54 (9%)	17 (3%)	8 (1%)	73 (13%)	577
June 1, 2006:	1058 (65%)	153 (9%)	135 (8%)	63 (4%)	56 (3%)	166 (10%)	1631
Per Year:	291 (60%)	69 (14%)	39 (8%)	22 (4%)	6 (1%)	62 (13%)	489
June 1, 2005:	767 (67%)	84 (7%)	96 (8%)	41 (4%)	50 (4%)	104 (9%)	1142
Per Year:	276 (64%)	28 (7%)	42 (10%)	17 (4%)	16 (4%)	51 (12%)	430
June 1, 2004:	491 (69%)	56 (8%)	54 (8%)	24 (3%)	34 (5%)	53 (7%)	712
Per Year:	251 (62%)	56 (14%)	27 (7%)	14 (3%)	15 (4%)	40 (10%)	403
June 1, 2003:	240 (78%)	0 (0%)	27 (9%)	10 (3%)	19 (6%)	13 (4%)	309
Per Year:	240 (78%)	0 (0%)	27 (9%)	10 (3%)	19 (6%)	13 (4%)	309

10/28/2007/Alan Yu Lu

Final Report - Slide #21:

General Statistics (Continue ...)

- Distribution of *submitted* manuscripts in the *seven* technical areas of the UFFC Society (Technical Interest Profiling System or TIPS) (Including withdrawn manuscripts):
 - I. Medical Ultrasound; II. Sensors, NDE, and Industrial Applications; III. Physical Acoustics; IV. Surface Acoustic Waves; V. Transducers and Transducers Materials; VI. Ferroelectrics; VII. Frequency Control:

History	I	II	III	IV	V	VI	VII
Current:	745 (30%)	369 (15%)	382 (15%)	219 (9%)	332 (13%)	283 (11%)	177 (7%)
7 Months:	101 (34%)	45 (15%)	42 (14%)	12 (4%)	43 (14%)	36 (12%)	21 (7%)
June 1, 2007:	644 (29%)	324 (15%)	340 (15%)	207 (9%)	289 (13%)	247 (11%)	156 (7%)
Per Year:	165 (29%)	77 (13%)	83 (14%)	39 (7%)	61 (11%)	129 (22%)	22 (4%)
June 1, 2006:	479 (29%)	247 (15%)	257 (16%)	168 (10%)	228 (14%)	118 (7%)	134 (8%)
Per Year:	159 (32%)	70 (14%)	73 (15%)	39 (8%)	62 (13%)	48 (10%)	38 (8%)
June 1, 2005:	320 (28%)	177 (15%)	184 (16%)	129 (11%)	166 (15%)	70 (6%)	96 (8%)
Per Year:	122 (28%)	65 (15%)	68 (16%)	41 (10%)	63 (15%)	28 (7%)	43 (10%)
June 1, 2004:	198 (28%)	112 (16%)	116 (16%)	88 (12%)	103 (14%)	42 (6%)	53 (7%)
Per Year:	106 (26%)	66 (16%)	68 (17%)	55 (14%)	59 (15%)	19 (5%)	30 (7%)
June 1, 2003:	92 (30%)	46 (15%)	48 (16%)	33 (11%)	44 (14%)	23 (7%)	23 (7%)
Per Year:	92 (30%)	46 (15%)	48 (16%)	33 (11%)	44 (14%)	23 (7%)	23 (7%)

See

10/26/2007/Jian-yu Lu

Final Report - Slide #22:**General Statistics (Continue ...)**

- **Accepted** manuscripts in different types:

See
↓

History	Papers (Include SI, Invited, and Errata)	Correspondence	Letters	Front Cover Image	Total
Current:	1093 (82%)	136 (10%)	42 (3%)	60 (5%)	1331
7 Months:	179 (87%)	24 (12%)	0 (0%)	2 (1%)	205
June 1, 2007:	914 (81%)	112 (10%)	42 (4%)	58 (5%)	1126
Per Year:	216 (80%)	32 (12%)	13 (5%)	10 (4%)	271
June 1, 2006:	698 (82%)	80 (9%)	29 (3%)	48 (6%)	855
Per Year:	209 (83%)	27 (11%)	11 (4%)	4 (2%)	251
June 1, 2005:	489 (81%)	53 (9%)	18 (3%)	44 (7%)	604
Per Year:	276 (84%)	26 (8%)	9 (3%)	18 (5%)	328
June 1, 2004:	213 (77%)	27 (10%)	9 (3%)	26 (9%)	276
Per Year:	139 (79%)	16 (9%)	5 (3%)	15 (9%)	176
June 1, 2003:	74 (74%)	11 (11%)	4 (4%)	11 (11%)	100
Per Year:	74 (74%)	11 (11%)	4 (4%)	11 (11%)	100

10/28/2007/Jian-yu Lu

Final Report - Slide #23:

General Statistics (Continue ...)

- Rejected, withdrawn, and in-progress manuscripts:

History	Rejected	Withdrawn	In-Progress
Current:	653	297	227
7 Months:	129	58	-92
June 1, 2007:	524	239	319
Per Year:	143	73	+90
June 1, 2006:	381	166	229
Per Year:	144	62	+32
June 1, 2005:	237	104	197
Per Year:	124	63	-85
June 1, 2004:	113	41	282
Per Year:	76	28	+123
June 1, 2003:	37	13	159
Per Year:	37	13	+159

See

10/28/2007/Jian-yu Lu

Final Report - Slide #24:

General Statistics (Continue ...)

- Acceptance Rate and Rejection Rate:

History	Acceptance Rate (total accepted / (total accepted + total rejected))	Rejection Rate (1.0 – Acceptance Rate)
Current:	67%	33%
7 Months:	61%	39%
June 1, 2007:	68%	32%
Per Year:	65%	35%
June 1, 2005:	72%	28%
Per Year:	73%	27%
June 1, 2004:	71%	29%
Per Year:	70%	30%
June 1, 2003:	73%	27%
Per Year:	73%	27%

See
←

10/28/2007/Jian-yu Lu

Final Report - Slide #25:

Performance Statistics

- **Abbreviations:**

- **TSD:** Time from Submission to Decision (including acceptance, rejection, and multiple major/minor revisions, etc) (Average Days).
- **TSA:** Time from Submission to Acceptance (Average Days).
- **TSR:** Time from Submission to Rejection (Average Days).
- **EIC_AE:** Time for EIC to Assign Associate Editor (Average Days).
- **AE_Rev:** Time for Associate Editor to Invite Reviewers (Average Days).
- **TAAI:** Time from Accept to Assign to an Issue (FASS editing) (Average Days) (Special Issues have made this to appear longer. Our original target with FASS was: 55 days, which may be too optimistic).
- **FASS Queue:** Number of manuscripts in FASS production queue.
- **TSP:** Time from Submission to Publication (Average Days)
($TSP = TSA + TAAI + 15$).

10/28/2007/Jian-yu Lu

Final Report - Slide #26:**Performance Statistics (Continue ...)**

- Note: The time from submission to publication: $TSP = TSA + TAAI + 15$. See



History	TSD (days)	TSA (days)	TSR (days)	EIC_AE (days)	AE_Rev (days)	TAAI (days)	FASS Queue	TSP (days)
Current:	107.9	189.9	121.99	4.44	19.65	122.8	135	327.7
7 Months:	None	None	None	None	None	99.06	None	None
June 1, 2007:	106.18	194.4	119.24	3.14	19.37	127.95	90	337.35
Per Year:	None	None	None	None	None	121.28	None	None
June 1, 2006:	112.04	194.57	118.04	3.71	18.71	130.68	102	340.25
Per Year:	None	None	None	None	None	145	None	None
June 1, 2005:	110.5	196.3	117.63	2.96	17.65	111.52	None	322.82
Per Year:	None	None	None	None	None	124.9	None	None
June 1, 2004:	109.67	176.51	115.54	2.53	19.93	97.42	None	288.93
Per Year:	None	None	None	None	None	99.5	None	None
June 1, 2003:	94.98	140.98	75.89	2.78	11.12	87.16	None	243.14
Per Year:	None	None	None	None	None	87.16	None	None
Old Paper System:	N/A	262	154	N/A	N/A	> 365	N/A	2 years

10/28/2007/Jian-yu Lu

Final Report - Slide #27:

Reviewer Statistics

- The total number of potential reviewers in MC is as follows:

History	Total # of Potential Reviewers in MC	# of Reviewers Agreed to Review
Current:	3504	1788 (51%)
7 Months:	+355 (increased)	+238 (increased)
June 1, 2007:	3149	1550 (49%)
Per Year:	+138 (increased)	+170 (increased)
June 1, 2006:	2570	1308 (51%)
Per Year:	+564 (increased)	+309 (increased)
June 1, 2005:	2006	999 (50%)
Per Year:	+520 (increased)	+279 (increased)
June 1, 2004:	1486	720 (48%)
Per Year:	+617 (increased)	+330 (increased)
June 1, 2003:	869	390 (45%)
Per Year:	+869 (increased)	+390 (increased)

10/28/2007/Jian-yu Lu

See

Final Report - Slide #28:

Reviewer Statistics (Continue ...)

- Reviewer Statistics (including only reviewers submitted at least one review or “RE” – used data “reviewer_history_443.csv” of different time frames):

History	# of Reviewers	# of RE Invited	# of RE Declined	# of RE Agreed	# of RE Submitted	Average (days)	Submitted /Reviewer
Current:	1652	7613	833	6639	6119	29.00	3.70
7 Months:	562	1110	62	1042	950	25.62	1.69
June 1, 2007:	1430	8744	691	5557	5108	30.87	3.64
Per Year:	592	1282	79	1192	1093	28.46	1.85
June 1, 2006:	1214	4963	541	4328	4019	30.31	3.31
Per Year:	660	1518	129	1374	1319	29.59	2.00
June 1, 2005:	925	3335	332	2936	2705	30.86	2.92
Per Year:	584	1344	96	1221	1137	30.78	1.95
June 1, 2004:	665	1923	189	1706	1592	31.81	2.93
Per Year:	507	1103	81	1008	959	31.05	1.89
June 1, 2003:	346	752	73	672	633	33.17	1.83
Per Year:	346	752	73	672	633	33.17	1.83
Old Paper System:	N/A	N/A	N/A	N/A	N/A	N/A	N/A

See

10/26/2007/Jian-yu Lu

Final Report - Slide #29:

Associate Editors

- We have a total of **47** Associate Editors (**33** of them joined after the transition of the EIC office on **January 1, 2002**). The following is a distribution of AEs (note: many AEs have interests in several areas):

 **See**

AE Areas	# of AEs (% of Total)	# of Submissions (% of Total)
I. Medical Ultrasound	12 (26%)	711 (29%)
II. Sensors, NDE, and Industrial Applications	5 (11%)	355 (15%)
III. Physical Acoustics	8 (17%)	367 (15%)
IV. Surface Acoustic Waves	4 (9%)	216 (9%)
V. Transducers and Transducers Materials	5 (11%)	319 (13%)
VI. Ferroelectrics	8 (17%)	281 (12%)
VII. Frequency Control	5 (11%)	172 (7%)
Total	47	2422

10/28/2007/Jian-yu Lu

Final Report - Slide #30:

Others

- **Rejection Rate:**
 - TUFFC were criticized to have a low rejection rate as compared to other IEEE journals in its last five-year review by IEEE a few years ago. We had discussions of this during our annual AE meetings. Most of the AEs and the society officials felt that TUFFC should not do anything to artificially increase the rejection rate without actually increasing the quality of TUFFC. Therefore, the future changes for TUFFC could be focused on increasing its *quality*. In addition, programs could be developed with the help of IEEE to honor our *anonymous heroes* – the *reviewers*, especially, those who have contributed significantly, to help us to further increase the quality and the timeliness of TUFFC.
 - So far, I have only got one letter from an author asking me to provide TUFFC rejection rate for his tenure evaluation.

10/28/2007/Jian-yu Lu

Final Report - Slide #31:

Others (Continue ...)

- **The MC system is maintained and operated smoothly. For example:**
 - Each manuscript as it comes in to MC is examined carefully for errors in electronic file format, missing files, and incorrect font usages, etc. Subsequent interactions with authors for corrections are handled before the peer-review process can start when problems are found.
 - Duplicate user and reviewer accounts in MC are merged from time to time to allow reviewers to access manuscripts and avoid confusions to authors, AEs, and reviewers.
 - Frequently, there are questions, inquiries, and problems from authors, reviewers, and AEs. However, questions are answered promptly and problems are solved timely.

10/28/2007/Jian-yu Lu

Final Report - Slide #32:

Others (Continue ...)

- **Miscellaneous:**

- Communicating periodically with AEs with statistical charts to identify problems and to shorten the **Time from Submission to Publication**.
- Developing more Special Issues in the areas of interests to the members of UFFC Society.
- Interacting with other Editor-in-Chiefs and publication staffs of IEEE to share experiences for the benefit of IEEE and stay informed.
- Encouraging research communities to serve as TUFFC reviewers by publishing pleas in UFFC-S Newsletters.
- Reminding AEs to handle “Letters” type manuscripts more quickly.
- Modifying MC default letters to make them more user friendly.
- Added “Review Papers” as a Manuscript type in MC and modified the “Information for Contributors” and computer script program accordingly.

10/28/2007/Jian-yu Lu

Final Report - Slide #33:

Others (Continue ...)

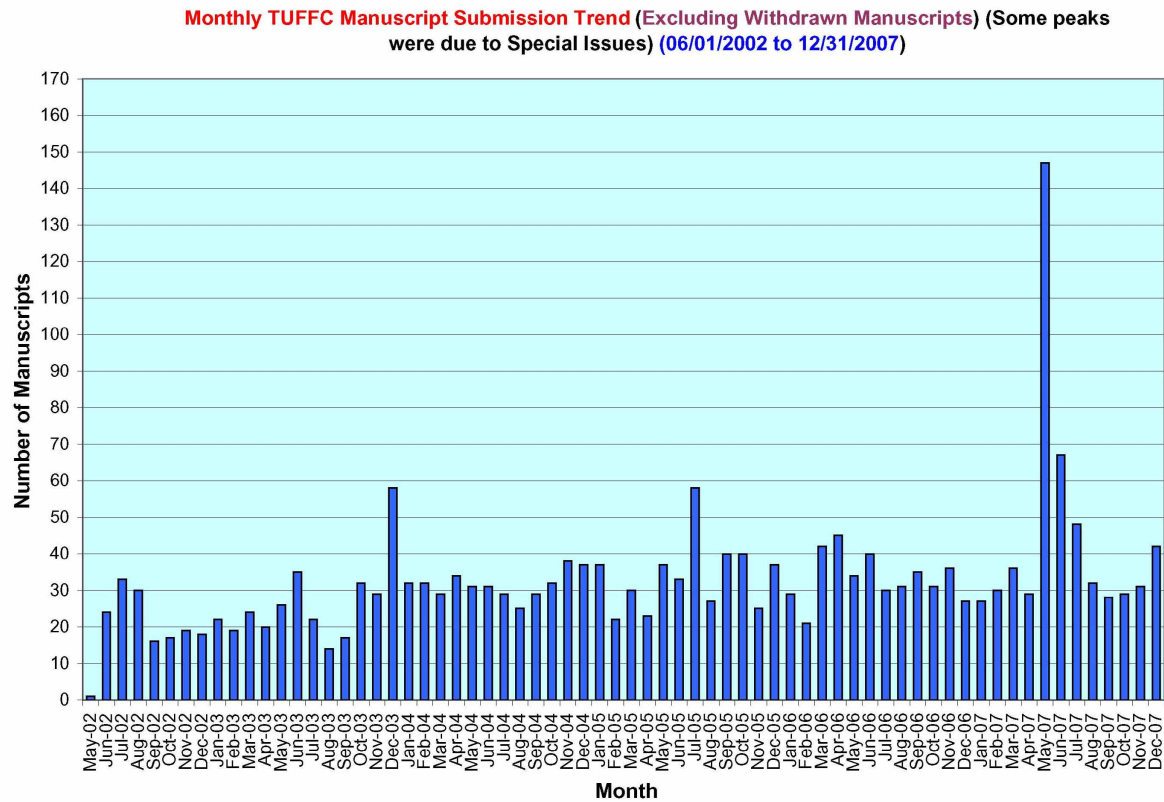
- **Page Budget Status:**
 - Year 2002: proposed 1874 \pm 5% pages, actual 1858 pages
 - Year 2003: proposed 1874 \pm 5% pages, actual 1866 pages
 - Year 2004: proposed 1874 \pm 5% pages, actual 1812 pages
 - Year 2005: proposed 2400 \pm 5% pages, actual 2538 pages
 - Year 2006: proposed 2400 \pm 5% pages, actual about 2600 pages
 - Year 2007: proposed 2700 \pm 5% pages, estimated about 2800 pages

10/28/2007/Jian-yu Lu

Final Report - Slide #34:

Submission Trend

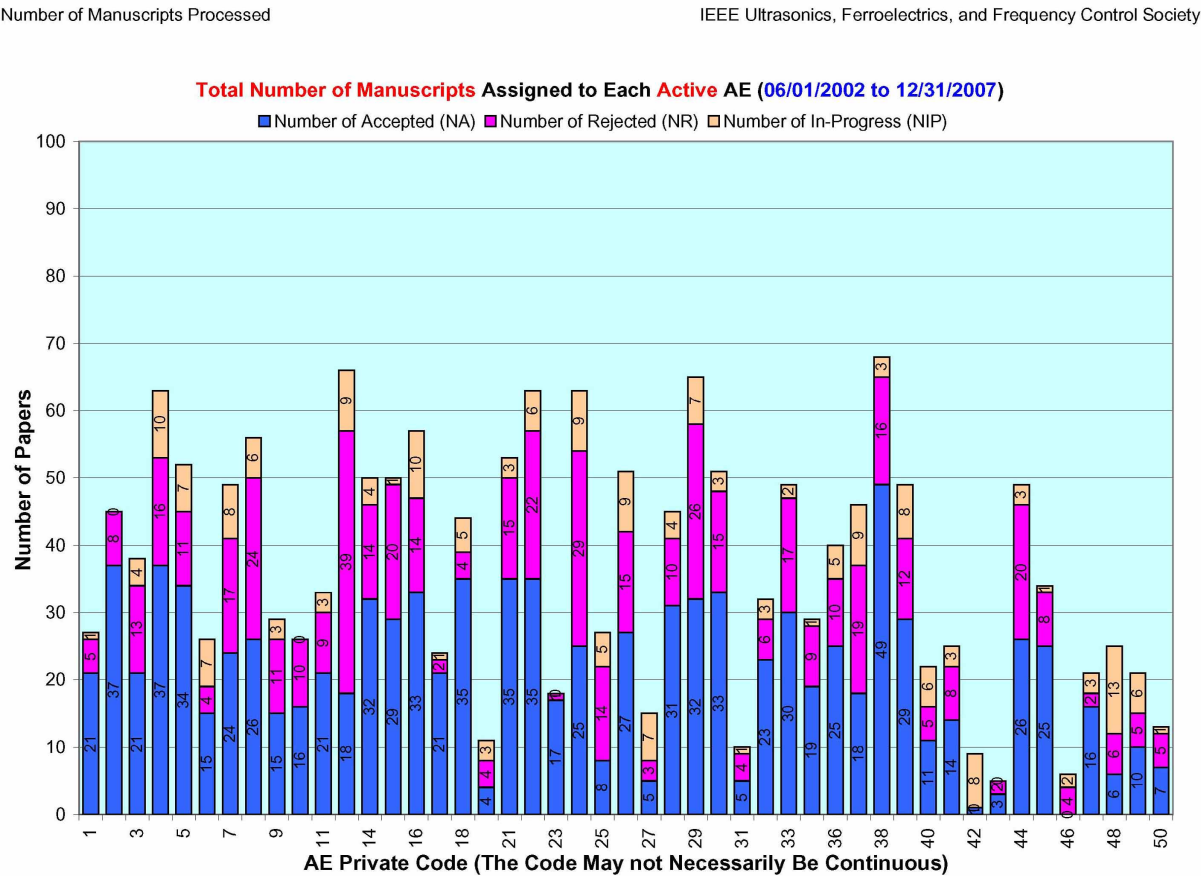
IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society



Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

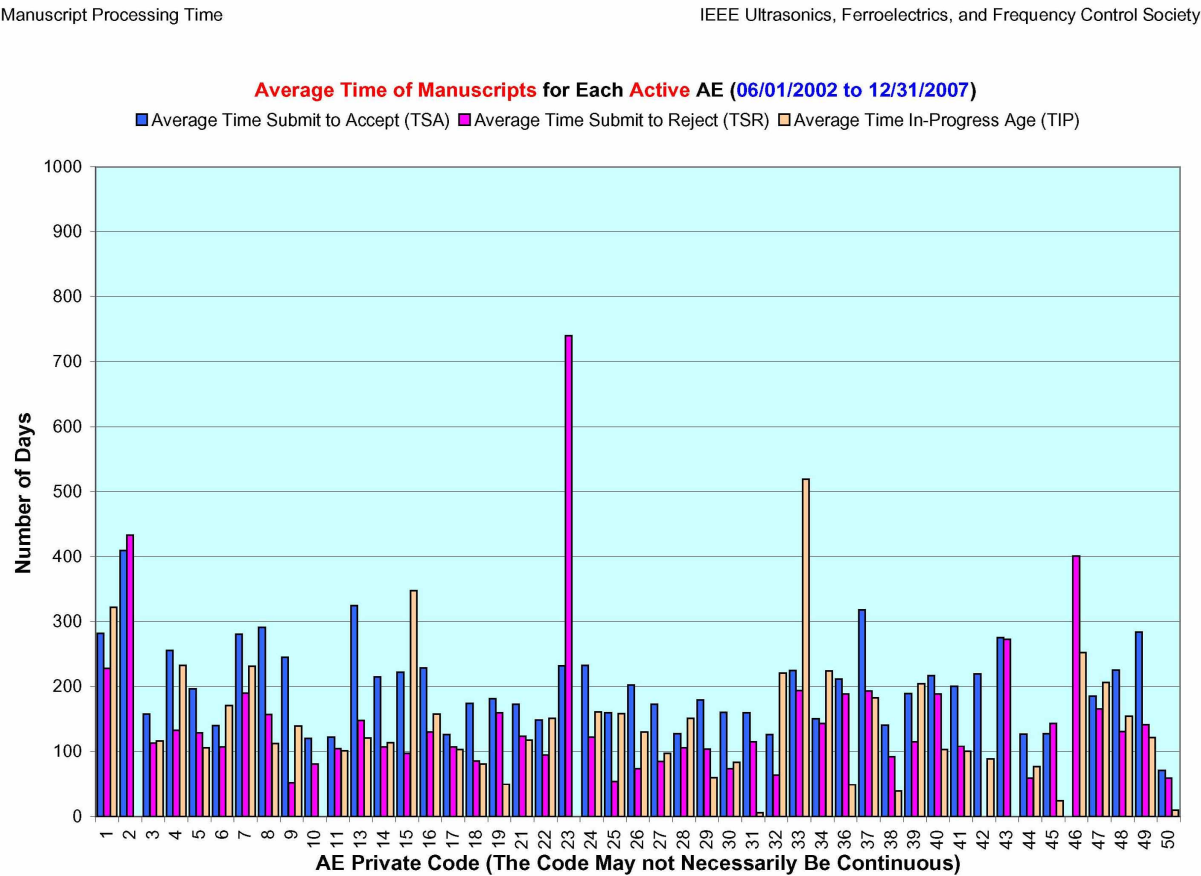
IEEE Transactions on Ultrasonics,
Ferroelectrics, and Frequency Control

Final Report - Slide #35:



Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

Final Report - Slide #36:



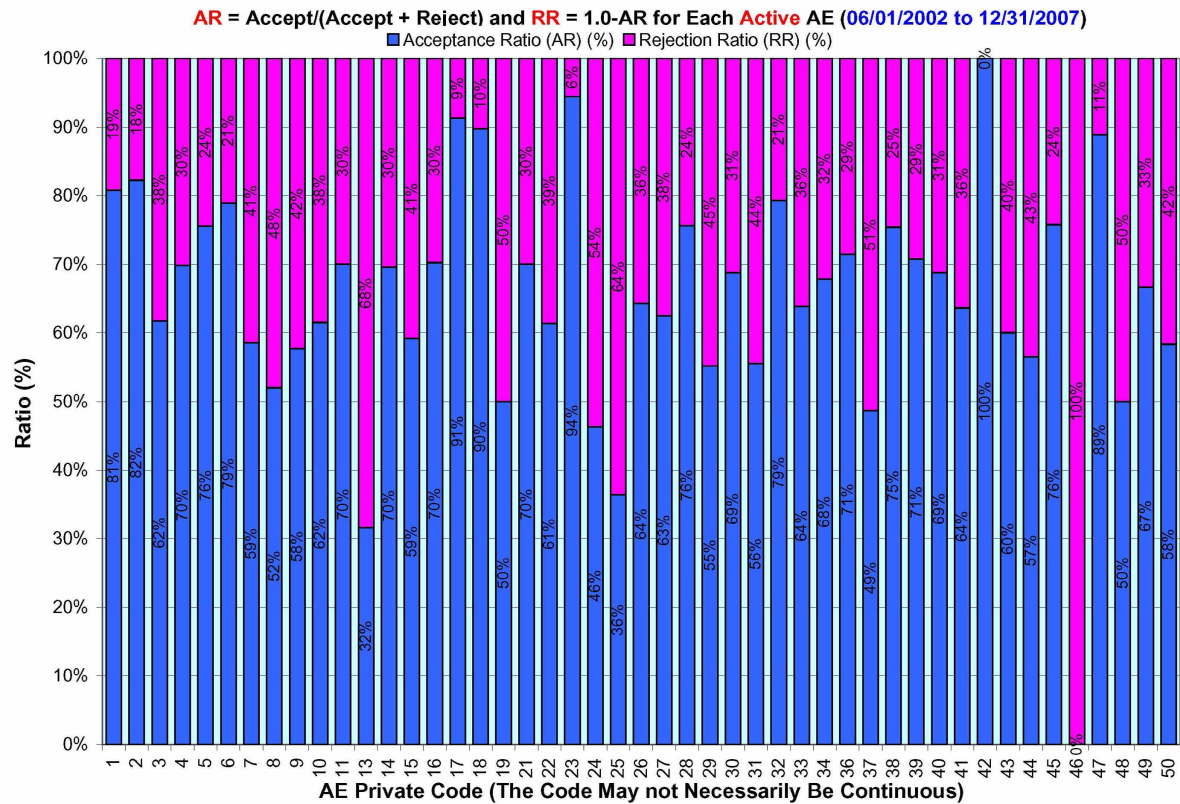
Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

IEEE Transactions on Ultrasonics,
Ferroelectrics, and Frequency Control

Final Report - Slide #37:

Acceptance and Rejection Ratio

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society



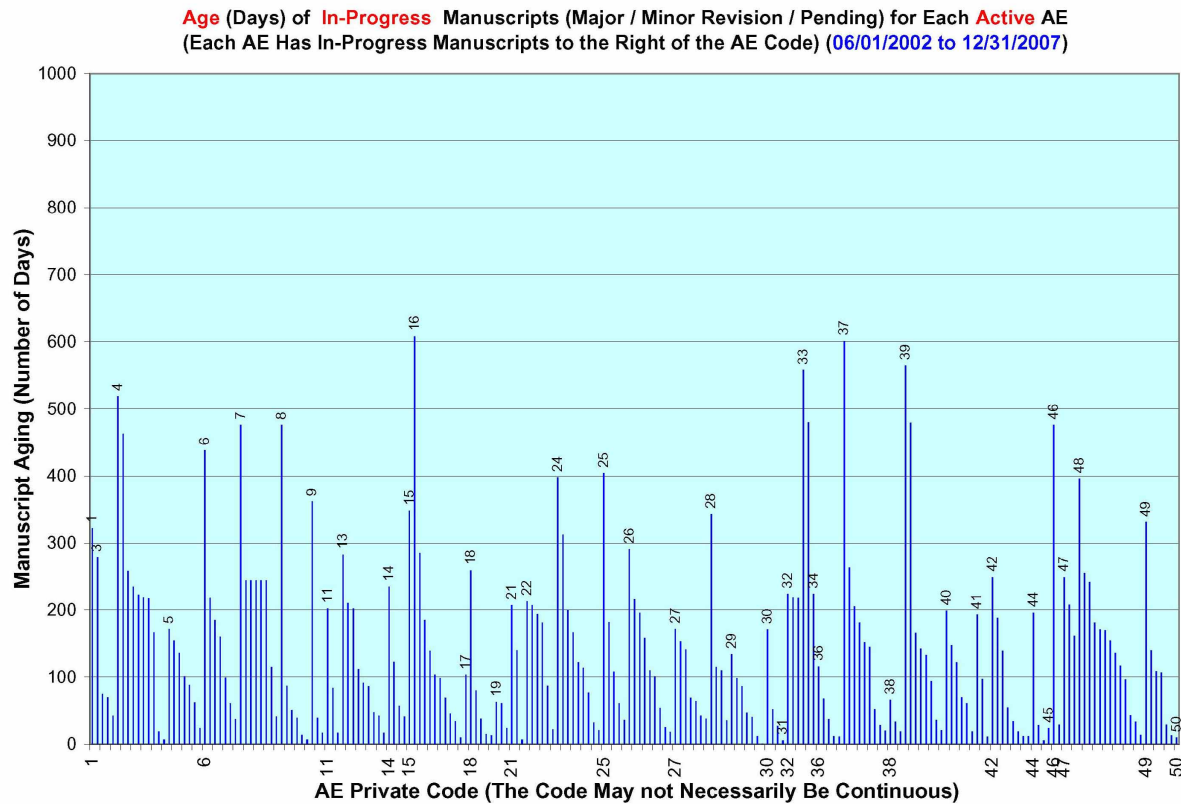
Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

IEEE Transactions on Ultrasonics,
Ferroelectrics, and Frequency Control

Final Report - Slide #38:

In-Progress Manuscripts

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society



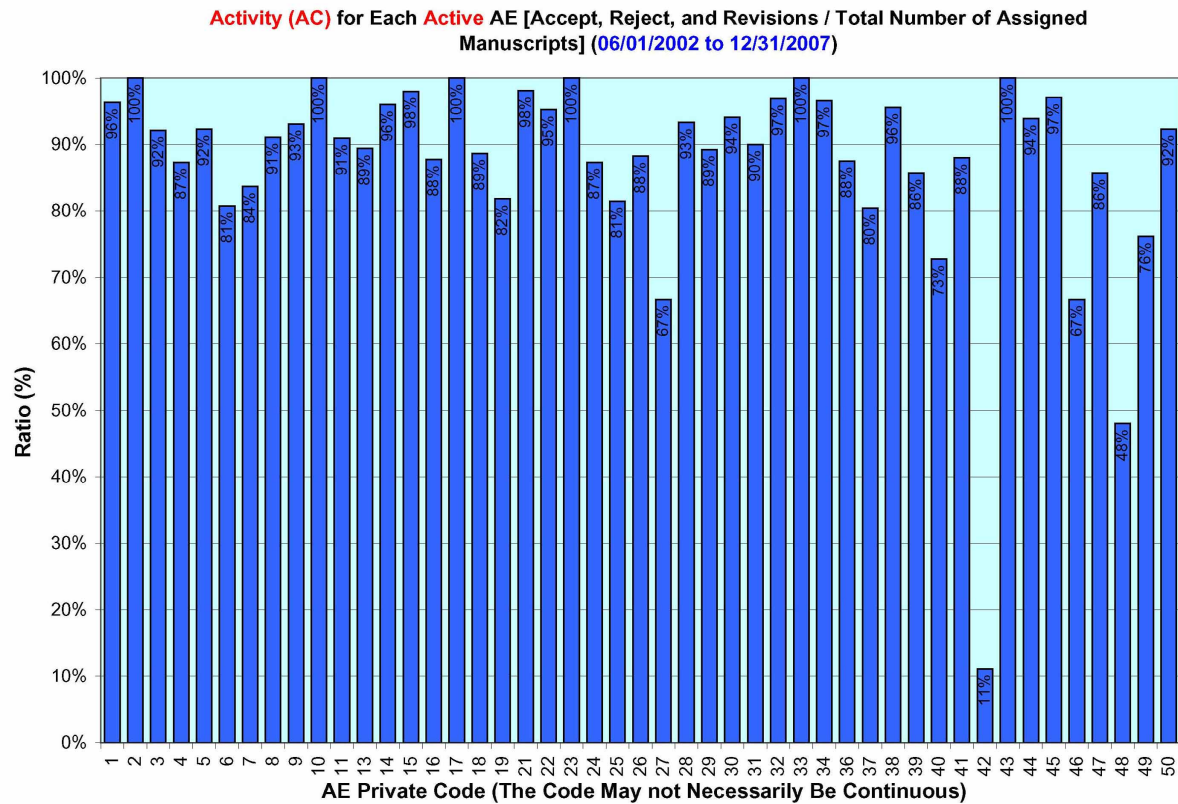
Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

IEEE Transactions on Ultrasonics,
Ferroelectrics, and Frequency Control

Final Report - Slide #39:

AE Activities

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society



Professor Jian-yu Lu, Editor-in-Chief;
Created: April 14, 2004; Latest Revision: December 31, 2007

IEEE Transactions on Ultrasonics,
Ferroelectrics, and Frequency Control

Final Report - Slide #40:

Suggestion for UFFC-S AdCom Consideration

- **Suggestion for UFFC-S AdCom Consideration:**
 - Increase the number of pages for voluntary page charge from 8 to 10 (or to 12 to be inline with other similar journals and the current electronic environment).
- **Current Overlength Page Charges**
 - TUFFC currently charge \$115 voluntary page charge for the first 8 pages.
 - For each page exceeding 8 pages, the overlength page charge is \$175 per page.
- **Rationale for the Change:**
 - The price structure above has not been changed since Dr. O'Brien was the Editor-in-Chief, but the world of journal publications has changed.
 - Online journals may have lower costs to attract authors. They are getting momentum, and are expected to be more popular in the future.
 - Competitive journals, such as, *The Journal of Acoustical Society of America*, assesses overlength page charge only after the first 12 pages
 - Currently the average number of pages per paper is about 10 for TUFFC.

10/28/2007/Jian-yu Lu

Final Report - Slide #41:

Improving the Peer-Review Process

- **Questions:**
 - Is it feasible to establish an **annual UFFC Best Reviewer Award** in addition to having editors sending out personal appreciation letters?
 - Logistic: The Manuscript Central has provided a detailed database for the performance of reviewers. In addition, AEs could recommend.
 - Best Reviewer Award could honor more than one individual.
- **Rationale:**
 - Current **time** from manuscript submission to publication for TUFFC needs to be shortened further
 - Reviewers are one of the keys to improve the peer-review quality and speed

10/28/2007/Jian-yu Lu

Final Report - Slide #42:

Future Work

- **Work to be completed (continue both before and after the expiration of my EIC term on December 31, 2007):**
 - The first step of porting all of the UFFC digital archive contents (all three UFFC conferences, TUFFC since 1954, newsletters, and others) has been completed. However, some part of these contents (1988 and beyond) in IEEE Xplore may still have a lower quality and is less complete compared to what we have in the UFFC digital archive. Since electronic versions of the archive will be more and more important in the future, the contents in Xplore should be replaced with the best possible quality available. The current EIC will continue to work with IEEE staff to complete this work, although working with IEEE staff may take some time and thus require our patience. In addition, the presentation of TUFFC in Xplore is not ideal. For example, the table of contents of Xplore does not have any subject headings that are important for our society since UFFC covers a wide range of areas. In addition, the quality on presenting multimedia contents in Xplore is not consistent from issue to issue and thus needs to be improved with the help of IEEE staff. The front cover images are also not presented in Xplore the way we expected due to the inflexibility of IEEE Xplore. Nevertheless, the current EIC will continue the effort to work with IEEE staff to make improvements.
 - The current EIC will also continue to work with IEEE to establish multimedia standard for all IEEE journals (IEEE would like to use TUFFC to test the context-sensitive multimedia for PDF files with embedded linking via DOI).

10/28/2007/Jian-yu Lu

Final Report - Slide #43:

Summary

- Since we started using MC about five years and 5 months ago for TUFFC, the system runs smoothly without major problems, despite of a growing database:
 - Total number of manuscripts in the system: 2508
 - Total number of Special Issues published or near completion in the system: 11
 - Total number of potential reviewers in the system: 3504 (1788 have agreed to review manuscripts and 1652 have returned at least one manuscript)

10/28/2007/Jian-yu Lu

Part IV: Discussions in Recent TUFFC Associate Editor's Luncheon

AE Luncheon - Slide #01:

Associate Editor Luncheon (Agenda)

(12:00 – 2:00 p.m., October 30, 2007, Hilton Hotel, New York, NY, USA)
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

Discussion on Open Access and Impact Factor

- **Background** (see “**Job Description of EIC of IEEE TUFFC – Jian-yu Lu**” for details):
 - Open Access (OA) movement is advancing. Over 300 peer-reviewed OA journals are planned to be launched in 2007 by one publisher alone, posing a threat to TUFFC.
 - Impact Factor (IF) is used by some countries and institutes to measure the productivities of scientists and to make funding decisions. Thus, high IF journals could attract more high-quality submissions.
- **Questions and Opinion Polls:**
 - **#1:** The goal of OA is in line with the purpose of a journal (i.e., to disseminate research results as widely as possible by removing access barriers to further the advancement of sciences and technologies). **Do you agree?** (Yes/No)
 - **#2:** Open Access could increase TUFFC impact factor. **Do you agree?** (Yes/No)
 - **#3:** The IEEE International Ultrasonics Symposium (IUS) conference proceedings have neither copy editing, nor print version. But it would NOT impair the understanding of scientific or technical contents of the papers. **Do you agree?** (Yes/No)
 - **#4:** It would be worth to remove TUFFC copy editing to eliminate a huge cost (**\$100,000-\$200,000** USD), reduce a few months of delay in publication, and pave the way for low-cost OA that could potentially increase the IF of TUFFC. **Do you agree?** (Yes/No)
 - **#5:** It would be worth to remove the print version of TUFFC for OA, given the cost in the range of **\$100,000-\$200,000** USD versus the benefits of print. **Do you agree?** (Yes/No)

10/30/2007, Jian-yu Lu, *Editor-in-Chief*, IEEE TUFFC

AE Luncheon - Slide #02:**Associate Editor Luncheon (Agenda) – Cont ...**

(12:00 – 2:00 p.m., October 30, 2007, Hilton Hotel, New York, NY, USA)

IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

Survey Results

- **Results of Questions and Opinion Polls:**
 - **#1:** --- Generally agree.
 - **#2:** --- Generally agree.
 - **#3:** --- Generally agree.
 - **#4:** --- Some people disagree. Reasons: (1) Some manuscripts may be incomprehensible without copy editing. (2) An archival journal may need to have a professional looking.
 - **#5:** --- Some people mentioned that the print is still in demand.
- **Proposed Solutions --- Have Some Authors Pay for Copy Editing of Their Manuscripts:**
 - Solutions suggested by some AEs for Questions #4 above: (1) Most authors have satisfactory English language skills to make their manuscripts technically understandable and thus do not need professional language services. (2) For a small number of manuscripts that may be technically acceptable for publication but would need professional language services in order for the manuscripts to be comprehensible by most readers (judged by AEs, reviewers, and EIC), the authors could be asked to pay an extra (say, paying **\$800** USD that is similar to other OA journals instead of paying less than **\$100** USD) for copy editing of their manuscripts by a trusted service provider (such as, FASS or IEEE) before the manuscripts could be published.
 - In addition, given the rapid advancement of word processing software and web technologies, good templates and tools (text formatting, on-line reference formatting and checking, and figures) could be developed by IEEE for authors to produce good enough “camera ready” papers to address the issue of “professional looking”. Notice that authors of conference papers nowadays are routinely using templates and tools provided by IEEE. If authors do not follow proper guidelines of paper formatting, their manuscripts could be subject to professional copy-editing services that would charge the authors an extra.

10/30/2007, Jian-yu Lu, *Editor-in-Chief*, IEEE TUFFC

AE Luncheon - Slide #03:**Associate Editor Luncheon (Agenda) – Cont ...**

(12:00 – 2:00 p.m., October 30, 2007, Hilton Hotel, New York, NY, USA)
 IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

Improvement for Timeliness

- **Time from Submission to Publication and Quality of TUFFC:**
 - The time from submission to publication is still long for TUFFC
 - TUFFC could lose high-quality submissions due to a longer time from submission to publication, which in term could reduce the quality of the journal or Impact Factor
- **Dr. James F. Greenleaf has the following comment:**
 - “I think there should be a clear description of the issues associated with the time from receipt to publication. I think it is too long, even Science can publish much faster and the Institute of Physics is trying for 90 days. We often publish elsewhere because T-UFFC takes a year, way too long. This is a major issue, more important than impact factor.”
- **Suggestions for Solution:**
 - Need AEs’ help
 - Need Reviewers’ help, establish **annual UFFC Best Reviewer Award**, free access to IEEE Xplore for some period of time for reviewers if feasible
 - Continue to reduce copy-editing time, or eliminate it when feasible

10/30/2007, Jian-yu LU, Editor-in-Chief, IEEE TUFFC

AE Luncheon - Slide #04:

Associate Editor Luncheon (Agenda) – Cont ...

(12:00 – 2:00 p.m., October 30, 2007, Hilton Hotel, New York, NY, USA)
IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

Honoring Recently Retired AEs and Guest Editors

- **Retired AEs:**
 - (1) Joergen Arendt Jensen, (2) Helmut Ermert, (3) Stephen Streiffer, (4) Paul J. Benkeser, (5) Kazuhiko Yamanouchi, and (6) Tai-Kyong Song
- **Past Guest Editors of Special Issues (for Completed Special Issues):**
 - (1) Jack Kusters, Clemens C. W. Ruppel, Lute Maleki, and Susan Troler-Mckinstry
 - (2) Robert Weigel and Robert Hauser
 - (3) Gordon Hayward and Alistair McNab
 - (4) John Hossack
 - (5) B. (Pierre) T. Khuri-Yakub
 - (6) Piero Tortoli and Jørgen Arendt Jensen
 - (7) Alexei Gruverman and Andrei Kholkin
 - (8) Alireza Baghai-Wadji
 - (9) Roman Maev

10/30/2007, Jian-yu Lu, *Editor-in-Chief*, IEEE TUFFC

Appendix J:

Forms and Documents Used in the 2008 IEEE International Ultrasonics Symposium

Appendix A to L are compiled from the conference web at: http://ewh.ieee.org/conf/ius_2008/
(The web is also in DVD with ISBN: 978-1-4244-2480-1 and IEEE Catalog No. CFP08ULT-DVD)

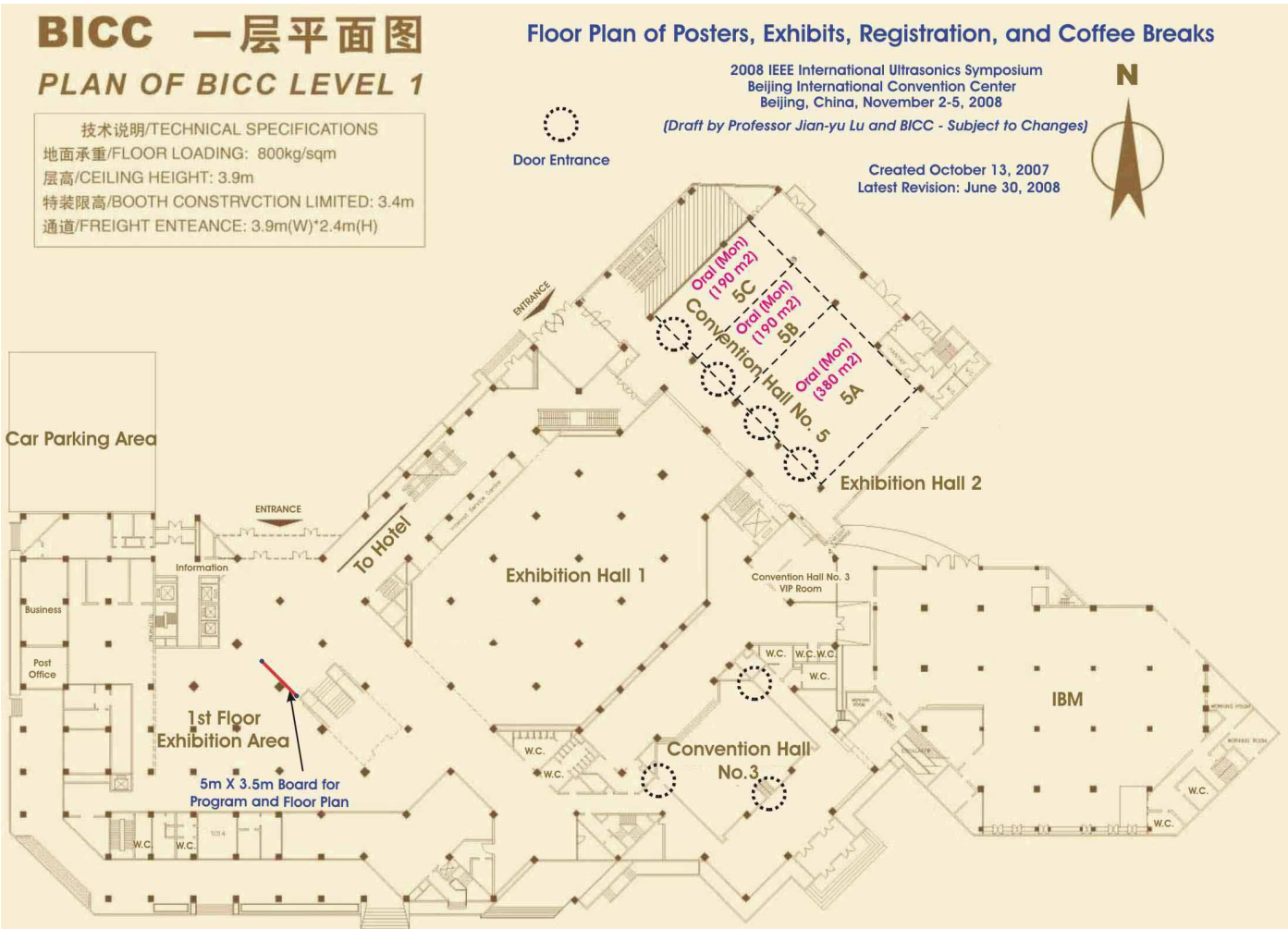
2008 IEEE International Ultrasonics Symposium Proceedings

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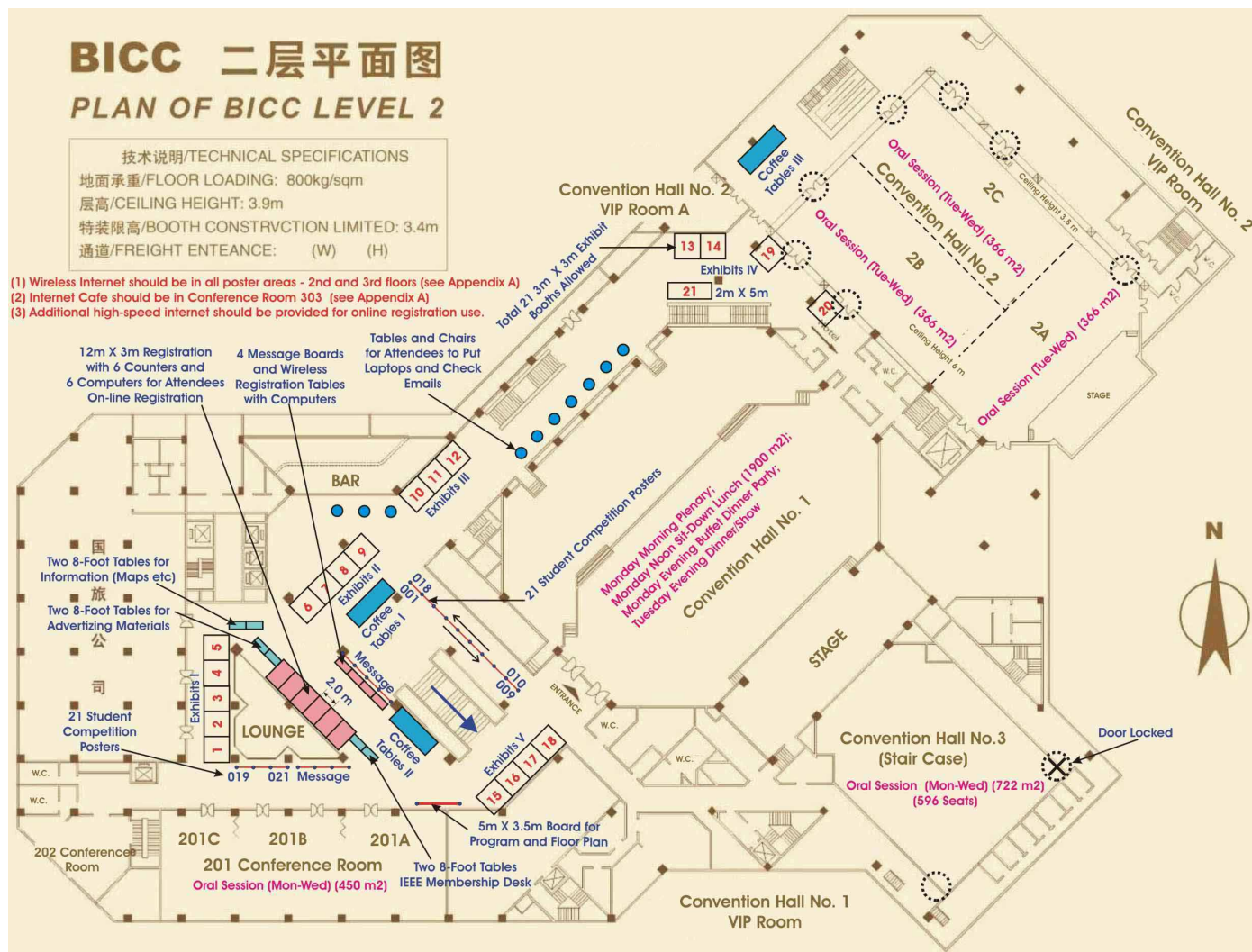
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I. Floor Plan

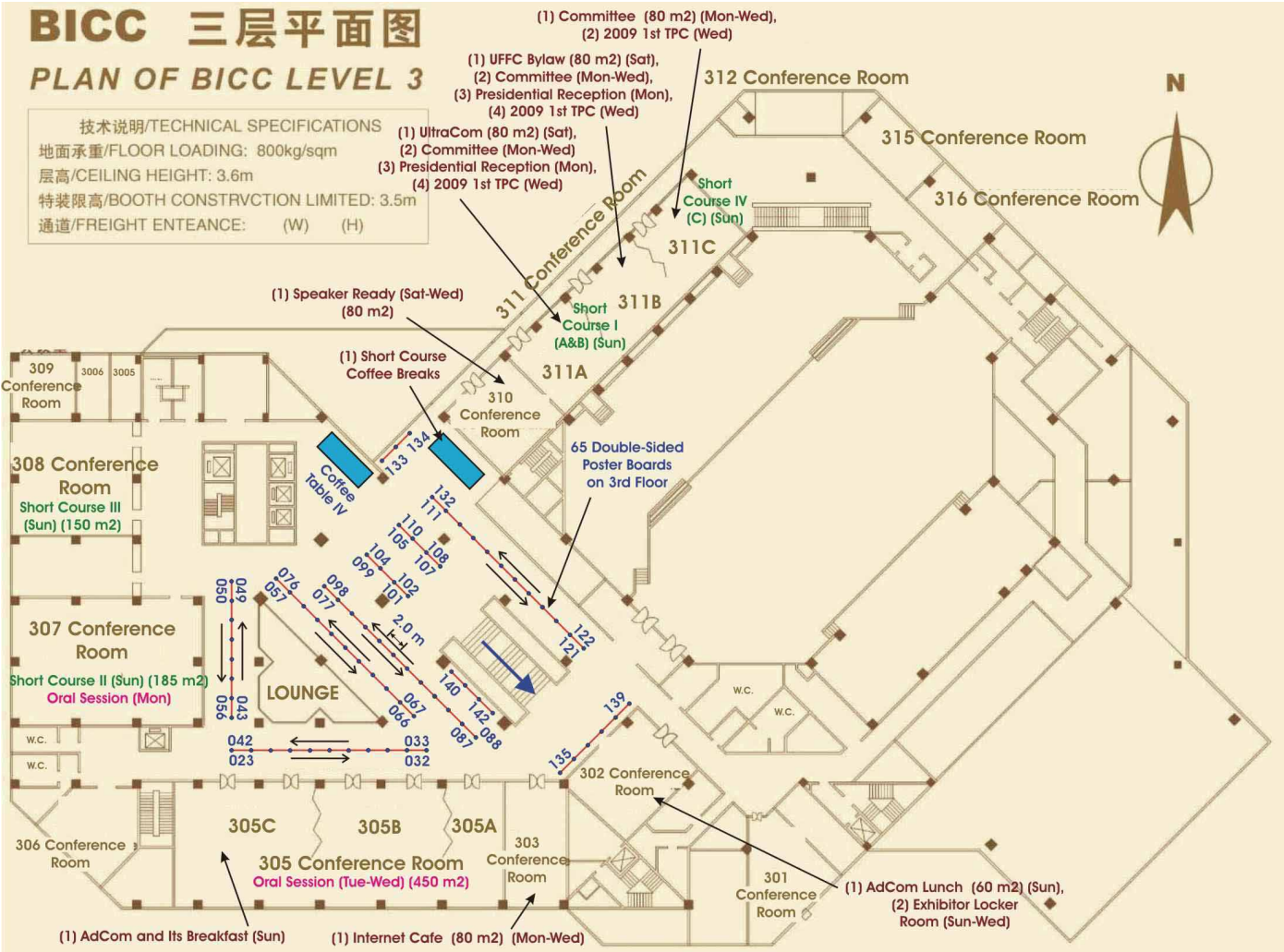
The First Floor of the Beijing International Convention Center (BICC):



The Second Floor of the Beijing International Convention Center (BICC):



The Third Floor of the Beijing International Convention Center (BICC):



II. Conference at a Glance Sheet

The Conference at a Glance Sheet:

The 2008 IEEE International Ultrasonics Symposium will place two 4 m x 2.8 m boards on the 1st and 2nd floors, respectively, of the Beijing International Convention Center (BICC). These boards will provide attendees information on technical program, floor plan, and poster locations in a single place. To locate the poster board of a particular poster, please use the poster label such as **PIA024-01**, where “024” after **PIA** represents the location of the poster.

For detailed description of poster labels and how to find the poster boards, please check the “[Poster Presentation Guide](http://ewh.ieee.org/conf/ius_2008)” at the conference website for detail: http://ewh.ieee.org/conf/ius_2008.

2008 IEEE International Ultrasonics Symposium

Beijing, China, November 2-5, 2008

Room Names:

Hall 1: Convention Hall No. 1
1900 m² (2nd & 3rd Floors)

Hall 2: Convention Hall No. 2
Hall 2A: 360 m² (2nd Floor)
Hall 2B: 360 m² (2nd Floor)
Hall 2C: 360 m² (2nd Floor)

Hall 3: Convention Hall No. 3
530 m² (1st & 2nd Floors)

Hall 5: Convention Hall No. 5
Hall 5A: About 380 m² (1st Floor)
Hall 5B: About 150 m² (1st Floor)
Hall 5C: About 190 m² (1st Floor)

Room 201: 201 Conference Room
Rooms 201A/B/C: 450 m² (2nd Floor)

Room 305: 305 Conference Room
Rooms 305A/B/C: 450 m² (3rd Floor)

Room 307: 307 Conference Room
180 m² (3rd Floor)

Room 308: 308 Conference Room
150 m² (3rd Floor)

Room 311: 311 Conference Room
Room 311A: 80 m² (3rd Floor)
Room 311B: 80 m² (3rd Floor)
Room 311C: 80 m² (3rd Floor)

Color Codes for Groups:

RED - Group I:
Medical Ultrasonics

ORANGE - Group II:
Sensors, NDE, and Industrial Application

GREEN - Group III:
Physical Acoustics

Violet - Group IV:
Microacoustics - SAW, FBAR, MEMS

BLACK - Group V:
Transducers and Transducer Materials

Invited Talks:
(1): 1 Invited Talk
(2): 2 Invited Talks
(3): 3 Invited Talks

SATURDAY, Nov. 1

Condensed Program — 2008 IEEE International Ultrasonics Symposium, Beijing, China, November 2-5, 2008

Symposium Registration (2nd Floor Foyer), 8:00 p.m. – 9:00 p.m.

SUNDAY, Nov. 2

Short Courses (with refreshments on 2nd floor foyer from 10:00 a.m. – 10:30 a.m., 3:00 p.m. – 3:30 p.m., and 6:00 p.m. – 6:30 p.m.)

Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 7:00 p.m.

MONDAY, Nov. 3

Plenary Session (Convention Hall 1 - For All Attendees)

Refreshments (Locations: 2nd and 3rd Floor Foyers)

Lunch (Convention Hall 1 - For All Attendees)

TUESDAY, Nov. 4

Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 8:30 p.m.

Exhibits (2nd Floor Foyer), 8:00 a.m. – 5:00 p.m.

WEDNESDAY, Nov. 5

Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 1:00 p.m.

Exhibits (2nd Floor Foyer), 8:00 a.m. – 12:00 noon

Condensed Program of 2008 IEEE International Ultrasonics Symposium

Beijing, China, November 2-5, 2008

Room Names:	Hall 1: Convention Hall No. 1 (2nd Floor)	Hall 5: Convention Hall No. 5 (1st Floor)	Room 307: 307 Conference Room (3rd Floor)
	Hall 2: Convention Hall No. 2 (2nd Floor)	Room 201: 201 Conference Room (2nd Floor)	Room 308: 308 Conference Room (3rd Floor)
	Hall 3: Convention Hall No. 3 (1st&2nd Floors)	Room 305: 305 Conference Room (3rd Floor)	Room 311: 311 Conference Room (3rd Floor)
Color Codes:	Group I:	Group II:	Group III:
	RED: Medical Ultrasound;	ORANGE: Sensor, NDE;	GREEN: Physical Acoust.;
			Violet: Microacoustics;
			Group V:
			BLACK: Transducers;
			(1): 1 Invited Talk;
			(2): 2 Invited; (3): 3 Invited

SATURDAY, Nov. 1	Condensed Program --- 2008 IEEE International Ultrasonics Symposium, Beijing, China, November 2-5, 2008
	Symposium Registration (2nd Floor Foyer), 6:00 p.m. – 9:00 p.m.

SUNDAY, Nov. 2	Short Courses (with Refreshments on 3rd Floor Foyer from 10:00 a.m. - 10:20 a.m.; 3:00 p.m. - 3:20 p.m.; and 8:00 p.m. - 8:20 p.m.)
	Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 7:00 p.m.
	Short Courses (8:00 a.m.-12:00 noon): Course 1A: Med. Ultras. Transducers (311A/B) Course 2A: Ultras. Imag. Systems (307) Course 3A: Photoacoustic Imag. & Sensing (308) Course 4A: Tissue Motion & Blood Flow (311C)
	Short Courses (1:00 p.m.-5:00 p.m.): Course 1B: Ultras. Elastography (311A/B) Course 2B: Acoust. Microscopy (307) Course 3B: Therapeutic Ultrasound (308) Course 4B: SAW Modeling Techniques (311C)
	Short Courses (6:00 p.m.-10:00 p.m.): Course 1C: Ultras. Contrast Agents (311A/B) Course 2C: CUMTs (307) Course 3C: Time Reversal Acoustics (308) Course 4C: Acoust. Near-Field Imag. (311C)

MONDAY, Nov. 3	Hall 3	Rooms 201A/B/C	Hall 5A	Hall 5B	Hall 5C	Room 307
	Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 6:00 p.m. Exhibits (2nd Floor Foyer), 8:00 a.m. – 5:00 p.m.					
8:00 a.m. – 10:00 a.m.	Plenary Session (Convention Hall 1 - For All Attendees)					
10:00 a.m. – 10:30 a.m.	Refreshments (Locations: 2nd and 3rd Floor Foyers)					
10:30 a.m. – 12:00 noon	1A. Blood Flow Measurements (1I)	2A. Tissue Characterization	3A. Imaging Systems and Methods	4A. Transducer Materials Characterization	5A. Material Properties I (2I)	6A. Thin Film & Device Characterization
12:00 noon – 1:30 p.m.	Lunch (Convention Hall 1 - For All Attendees)					
1:30 p.m. – 3:00 p.m.	1B. High-Frequency and Small Animal Imaging (1I)	2B. Bone I	3B. Ultrasonic Motors - Technology Advances	4B. Single Crystals I (2I)	5B. NDE Signal Processing	6B. Advances in Materials & Propagation
3:00 p.m. – 4:30 p.m.	Posters and Refreshments (Locations: 2nd and 3rd Floor Foyers)					
	PS. Student Competition	P1C. Medical Imaging	P1F. Piezo. & Ferro. Mat.	P1I. Phononic Crystals II	P1L. BAW Modeling	
	P1A. Photoacoustic Imag.	P1D. Medical Signal Proc.	P1G. Sonar Propa. & Det.	P1J. NDE Signal Proc.	P1M. Microwave Acoust. Devices for Wireless Front Ends	
	P1B. Medical Beamforming	P1E. Transducer Modeling	P1H. Ultras. Motor Appl.	P1K. NDE Applications		
4:30 p.m. – 6:00 p.m.	1C. Shear Wave and Shear Strain Imaging (1I)	2C. Bone 2	3C. Phononic Crystals I - Bandgap & Focusing	4C. Single Crystal II (1I)	5C. Bulk Acoustic Wave Sensors (1I)	6C. SAW Devices
6:30 p.m. – 10:00 p.m.	Buffet Dinner Party (Convention Hall 1 - For All Attendees)					

TUESDAY, Nov. 4	Hall 3	Rooms 201A/B/C	Rooms 305A/B/C	Hall 2A	Hall 2B	Hall 2C
	Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 5:30 p.m. Exhibits (2nd Floor Foyer), 8:00 a.m. – 5:00 p.m.					
8:30 a.m. – 10:00 a.m.	1D. Elasticity Imaging: Applications	2D. Contrast Agents: Targeting & Therapeutics	3D. Medical Signal Processing I	4D. cMUTs	5D. Industrial Measurement	6D. Bulk Wave Resonators - I (1I)
10:00 a.m. – 10:30 a.m.	Refreshments (Locations: 2nd and 3rd Floor Foyers)					
10:30 a.m. – 12:00 noon	1E. Clinical Cancer Imaging (3I)	2E. Arrays and Therapeutic Devices	3E. Medical Signal Processing II	4E. cMUT Modeling	5E. Flow Measurements (1I)	6E. Ultrasonic Wave Propagation - I
12:00 noon – 1:30 p.m.	Lunch (On Your Own)					
1:30 p.m. – 3:00 p.m.	1F. 3-D Elasticity Imaging (1I)	2F. Ultras. Mediated Delivery of Therap. Agents	3F. Photoacoustic Imaging	4F. SAW vs BAW (1I)	5F. Acoustic Imaging and Microscopy	6F. Ultrasonic Motors & Droplet Processing
3:00 p.m. – 4:30 p.m.	Posters and Refreshments (Locations: 2nd and 3rd Floor Foyers)					
	P2A. Blood Flow	P2D. Bioeffects	P2G. Med. Imag. Transd.	P2J. Ultras. Mot. Innov.	P2M. NDE Methods	P2P. Sen. & ID SAW Tags
	P2B. Improv. Contrast Imag.	P2E. High Freq. Tech.	P2H. Nonlinear Propag.	P2K. Acoust. Wave Sen.	P2N. Thin Film & Device Fab.	
	P2C. Contrast Agents: M./C.	P2F. 3D / Cardiac Imag.	P2I. Ultras. Wa. Prop. II	P2L. Acoust. Imag. Sig. Proc.	P2O. SAW Simulation	
4:30 p.m. – 6:00 p.m.	1G. Visco-elasticity	2G. Therapeutic Ultrasound	3G. High Frequency Transducers	4G. Acoustic MEMS Devices (1I)	5G. NDE Phased Arrays	6G. Material Properties II - Crystals & Composites
6:30 p.m. – 10:00 p.m.	Banquet Dinner and Shows (Convention Hall 1 - For All Attendees)					

WEDNESDAY, Nov. 5	Hall 3	Rooms 201 A/B/C	Rooms 305 A/B/C	Hall 2 A	Hall 2 B	Hall 2 C
	Symposium Registration (2nd Floor Foyer), 7:00 a.m. – 1:00 p.m. Exhibits (2nd Floor Foyer), 8:00 a.m. – 12:00 noon					
8:30 a.m. – 10:00 a.m.	1H. Cardiac Imaging (1I)	2H. Cavitation Therapy	3H. Transducer Modeling and Design	4H. Device Modeling	5H. Material and Defect Characterization	6H. Optical & RF Ultrasonic Effects
10:00 a.m. – 10:30 a.m.	Refreshments (Locations: 2nd and 3rd Floor Foyers)					
10:30 a.m. – 12:00 noon	1I. Cardiovascular Imaging (1I)	2I. Therapeutic Monitoring and Guidance	3I. Polymers for Transducers	4I. BAW Materials & Devices	5I. Wave Propagation (1I)	6I. Ultrasonic MEMS (1I)
12:00 noon – 1:30 p.m.	Lunch (On Your Own)					
1:30 p.m. – 3:00 p.m.	1J. Cardiovascular Elastography	2J. Beam Forming Algorithms and Strategies	3J. Microbubbles: Theory and Characterization	4J. Multilayer SAW Propagation (1I)	5J. Liquid and Gas Sensing	6J. Energy Harvesting & Magnetoelectrics (2I)
3:00 p.m. – 4:30 p.m.	Posters and Refreshments (Locations: 2nd and 3rd Floor Foyers)					
	P3A. Tiss. Charac. - Tech.	P3D. Therapeutic Ultrasound Applications	P3G. Material Characterisation and Fabrication Tech.	P3J. BAW & MEMS Mat. & Dev.		
	P3B. Tiss. Charac. - In Vivo	P3E. Therapeutic Ultrasound Technologies	P3H. Material Properties III	P3K. Thin-Film & Propag.		
	P3C. Elastography	P3F. MUT Transducers	P3I. Bulk Wave Effects & Devices			
4:30 p.m. – 6:00 p.m.	1K. Vector Velocity Imaging	2K. Adaptive Beam Forming	3K. Contrast Agent Imaging: Methods & Appl.	5K. Acoustic Wave Sensors	6K. Medical Arrays	

	Hall 3	Rooms 201A/B/C	Rooms 305A/B/C	Hall 2A	Hall 2B	Hall 2C
Sizes of Rooms:	530 m2 (1st & 2nd Floors)	450 m2 (2nd Floor)	450 m2 (3rd Floor)	366 m2 (2nd Floor)	366 m2 (2nd Floor)	366 m2 (2nd Floor)

		Hall 5A	Hall 5B	Hall 5C	Room 307
Note: Roughly 1 square meter (m2) per person.	Sizes of Rooms:	About 380 m2 (1st Floor)	About 190 m2 (1st Floor)	About 190 m2 (1st Floor)	185 m2 (3rd Floor)



2008 IEEE International Ultrasonics Symposium Beijing, China, 2-5 November, 2008



Registration Form

(Including Short Courses & Tutorials) - http://ewh.ieee.org/conf/ius_2008/

(This form and payment must be **received** on or before **12 September, 2008** EST to qualify for discount registration rates.)

REGISTRATION INFORMATION – Please print all information clearly. This information will also be used to send the Proceedings DVD, please ensure the accuracy of the mailing address.



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Last (Family) Name: _____ First (Given) Name: _____ Vegetarian - ☐

E-Mail: (Required. Confirmations are sent via email): _____

Company or Institution: _____

Street: _____

City: _____ State/Province: _____

Country: _____ Zip/Postal Code: _____

Telephone: _____ Fax: _____

MEMBERSHIP – A valid membership number is required to receive the member rates.

Member of (check all that apply): ☐- IEEE ☐- UFCF If a box is checked, indicate **IEEE MembershipNumber**: _____

SYMPOSIUM REGISTRATION

Registration fee includes DVD proceedings only*	By 12 Sept.	After 12 Sept.	Quantity	Subtotal
IEEE Member	<input type="checkbox"/> \$600	<input type="checkbox"/> \$700		\$ _____
Non-IEEE Member	<input type="checkbox"/> \$750	<input type="checkbox"/> \$850		\$ _____
Student (Show current student ID at Conference)	<input type="checkbox"/> \$150	<input type="checkbox"/> \$150		\$ _____
Retiree	<input type="checkbox"/> \$150	<input type="checkbox"/> \$150		\$ _____
One-Day Registration (without DVD Proceedings)	<input type="checkbox"/> \$350	<input type="checkbox"/> \$350, <input type="checkbox"/> Nov. 3, <input type="checkbox"/> Nov. 4, <input type="checkbox"/> Nov. 5		\$ _____
Life IEEE Member (Show Life Card at Conference)	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0		\$ _____
Additional DVD Proceedings	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75		\$ _____

Note: Registration includes **Monday lunch**, **Monday evening buffet dinner**, and **Tuesday dinner/show**.

One-Day Registration includes event tickets for the day of registration only.

* A printed version of the Proceedings will only be available by ordering directly from the IEEE after the Symposium.

SHORT COURSE REGISTRATION

Registration Fee per Course

Member/Non-member/Life-Member/One-Day: \$150/each
Student/Retiree: \$ 50/each

Sunday 8:00 a.m. – 12:00 noon:

1A. Medical Ultrasound Transducers
(Douglas G. Wildes and L. Scott Smith) \$ _____

2A. Ultrasound Imaging System
(Kai E. Thomenius) \$ _____

3A. Photoacoustic Imaging and Sensing
(Stanislav Emelianov) \$ _____

4A. Tissue Motion and Blood Velocity
(Hans Torp and Lasse Løvstakke) \$ _____

Sunday 1:00 p.m. – 5:00 p.m.:

1B. Ultrasound Elastography
(Jeffrey Bamber and Paul Barbone) \$ _____

2B. Acoustic Microscopy
(R Maev, N Hozumi, K Kobayashi, Y Saijo) \$ _____

3B. Therapeutic Ultrasound
(Lawrence A. Crum) \$ _____

4B. SAW Modeling Techniques
(Victor P. Plessky) \$ _____

Sunday 6:00 p.m. – 10:00 p.m.:

1C. Ultrasound Contrast Agents
(Nico de Jong and Michel Versluis) \$ _____

2C. CMUTs
(BT Khuri-Yakub, O. Oralkan, and M Kupnik) \$ _____

3C. Time Reversal Acoustics
(Mathias Fink) \$ _____

4C. Acoustical Near-Field Imaging
(Walter Arnold) \$ _____

GUEST REGISTRATION (does not include DVD proceedings) – *Only ages 10 or older need register*

Last (Family) Name: _____ First (Given) Name: _____ Vegetarian - ☐

Last (Family) Name: _____ First (Given) Name: _____ Vegetarian - ☐

Last (Family) Name: _____ First (Given) Name: _____ Vegetarian - ☐

	Quantity	Subtotal
Guest Registration Fee:	<input type="checkbox"/> \$75 / Each _____	\$ _____

Notes:

- (1) Guest registration includes *three guest breakfasts, Monday lunch, Monday evening buffet dinner, Tuesday night dinner/shows*. Guests are **NOT** allowed to attend any technical sessions except for the Monday morning plenary session.
- (2) If guests are interested in Beijing local tours, please register separately via the 2008 IEEE International Ultrasonics Symposium website at: http://ewh.ieee.org/conf/ius_2008/. China tours are also available from the web.

Total of All Charges Above: \$ _____

SOCIAL EVENTS

There will be three social events included in the conference registration this year: *Monday lunch (3 November, 2008), Monday evening buffet dinner (3 November, 2008), and Tuesday evening dinner/shows (4 November, 2008)*. Tickets to these events will be issued at registration desk for Symposium and guest registrants.

PAYMENT

Total Payment Enclosed: \$ _____

Off-Site Registration: The remittance is payable in **US Dollars** only, personal or company checks drawn on a US Bank, money orders, VISA, MASTERCARD, or AMERICAN EXPRESS CARD. Bank drafts, purchase orders, and foreign currency will not be accepted. The remittance must accompany this form. To pay by check or money order, make a single check or money order (\$US only) payable to the 2008 IEEE International Ultrasonics Symposium. This form and payment must be **received** by **12 September, 2008** to receive a reduced rate. For registration by **regular mail** or **fax**, the registration form has to be **received** by **17 October, 2008**. Otherwise your registration may not be valid unless you register on-site. If you pay **online** by one of the three types of credit cards above, you may register anytime before **5 November, 2008** (must register by 12 September, 2008 for a reduced rate).

On-Site Registration: Registration fee can be paid in Chinese Yuans (RMB) at the then prevailing exchange rates to the registration desk at the conference site, or by a Visa, MasterCard, or American Express via on-line kiosks (computers) at the conference site.

Please select your method of payment:	Charges to your credit card will appear as: 2008 IEEE IUS
<input type="checkbox"/> -Visa <input type="checkbox"/> -MasterCard <input type="checkbox"/> -American Express <input type="checkbox"/> -Check	Expiration Date: _____
Name On Card:	Card Number:
Card Security Code (CSV): _____	Billing Street Address:
Signature: _____	Billing Zip/Postal Code: _____

Mail (for off-site registration): Mail completed form and payment to: 2008 IEEE International Ultrasonics Symposium C/O YesEvents P.O. Box 32862 Baltimore, Maryland USA 21282	Fax (for off-site registration): Fax registration form (credit card payment only) to: 1-410-559-2217 (Fax)
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Do not submit this form by both mail and fax.



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

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Session Summary Form (for Session Chairs)

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

Please Submit the Form to the Conference Registration Desk

Session Label (1A, 1B, P1A, P1B, etc.): _____

Session Chair Name: _____

Session Chair Signature: _____

Estimated Maximum Number of People in the Session: _____

Indicate the papers (**name** of the first author and **Presentation Label** such as PS022-22) that are **NOT** presented in this session. These papers will not be included in the conference proceedings:

1. Label: _____ Name: _____ 2. Label: _____ Name: _____

3. Label: _____ Name: _____ 4. Label: _____ Name: _____

5. Label: _____ Name: _____ 6. Label: _____ Name: _____

Comments or Suggestions:



2008 IEEE International Ultrasonics Symposium
Beijing, China, 2-5 November, 2008



**Course Evaluation Form (can also be downloaded from web via
the link "Short Courses" at: http://ewh.ieee.org/conf/ius_2008/)**

General: Please take a couple of minutes to complete this course evaluation form to help us to improve in the future.

The Courses: Please check the box for the course(s) you have attended:



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<input type="checkbox"/> 1A: Medical Ultrason. Transd.	<input type="checkbox"/> 1B: Ultrasound Elastography	<input type="checkbox"/> 1C: Ultrason. Contr. Agents
<input type="checkbox"/> 2A: Ultrasound Imaging System	<input type="checkbox"/> 2B: Acoustic Microscopy	<input type="checkbox"/> 2C: CMUTs
<input type="checkbox"/> 3A: Photoacoustic Imag. Sensing	<input type="checkbox"/> 3B: Therapeutic Ultrasound	<input type="checkbox"/> 3C: Time Reversal
<input type="checkbox"/> 4A: Tissue Motion and Blood	<input type="checkbox"/> 4B: SAW Modeling Techniques	<input type="checkbox"/> 4C: Near-Field Imaging

Your Background (Select One): ☐ Student ☐ Academia ☐ Industry ☐ Other _____

Years of Experience in Ultrasound: _____

Questions:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The course was well organized	1	2	3	4	5
2. The course taught me new information	1	2	3	4	5
3. The course was well matched for my prior knowledge	1	2	3	4	5
4. This course exceeded my expectations	1	2	3	4	5
5. The course provided enough information on the topic	1	2	3	4	5
6. The course made me want to pursue more on the topic	1	2	3	4	5
7. The instructor(s) communicated information effectively	1	2	3	4	5
8. The instructor(s) was/were well prepared for this short course	1	2	3	4	5
9. The instructor(s) paced the course effectively and efficiently	1	2	3	4	5
10. The room/environment was adequate for learning	1	2	3	4	5
11. I would like to see this course made available next year	1	2	3	4	5
12. I would recommend this course to others next year	1	2	3	4	5
13. At this point in time, I feel the course has been of great value to me	1	2	3	4	5
14. What overall rating would you give this course? (5 = best)	1	2	3	4	5
15. What overall rating would you give the instructor(s)? (5 = best)	1	2	3	4	5
16. What short course topics would you suggest for next year?					
17. From the current topics offered, which courses would you want to take next year? (For example: 1A, 2A, 3A, ...)					

Comments: Please feel free to make additional comments in the box below:



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

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Proceedings

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The Great Wall

First Call for Papers

Abstract deadline: **May 4, 2008**

Abstract submission and conference website:

http://ewh.ieee.org/conf/ius_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, which will be held in August and September, 2008. 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 three sections: **I. Motivation/Background; II. Statement of the Contribution/Methods; III. Result/Discussion**. 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
MSP Medical Signal Processing
MTC Medical Tissue Characterization
MTH Therapeutics, Hyperthermia, Ultrasound in 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
NPM Wave Propagation
NSP Signal Processing
NTD Transducers: NDE and Industrial

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
TMO Transducer Modeling (Analytical & Numerical)
TMT Medical Transducers
TMU Micromachined Ultrasound 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 February 2008.



2008 IEEE International Ultrasonics Symposium

(Including Short Courses & Tutorials)



November 2-5, 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-yeong 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 Sheritt**, "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

(Please visit the symposium web site for more information: http://ewh.ieee.org/conf/ius_2008/)

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 *****Yoshitumi 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.