Session P1A
MEDICAL IMAGING
Chair: L. Masotti
University of Firenze


P1A-9 Elevation Beamforming Performance of a 1.75D Array. P. Guo, S. Yan, and Q. Zhu, University of Connecticut

P1A-10 Experimental Study of Second Harmonic Imaging With A Weighted Chirp Signal. D.-Y. Lee*, J.-C. Lee, B.-H. Kim, and T.-K. Song, Sogang University, Seoul, South Korea

P1B-4 A Method for Flow Speed Measurement using a Pair of Multiplexed Chirp Signals. M. Yoshizawa*, T. Moriya*, and Y. Tanahashi*, Tokyo Metropolitan College of Technology, Tokyo, Dept. of Electrical Engr., Tokyo Metropolitan Univ., Tokyo, Tohoku Kohsai Hospital, Sendai

P1B-5 Velocity Estimation Using Synthetic Aperture Imaging. S. Nikolov* and J. A. Jensen, Center for Fast Ultrasound Imaging, Oersted*DTU

P1B-6 Quantitative Assessment of the Artery Dilation Measurements with an Arterial Phantom. L. Germond*, O. Bonnefous*, and T. Loupas*, Laboratoires d'Electronique Philips, France, ATL, Washington, USA

P1B-7 Optimizing Focal Position in Measurement of Small Change in Arterial Wall Thickness. M. Watanabe*, H. Hasegawa, and H. Kanai, Tohoku University Graduate School of Engineering


P1D-2 Modelling of a Wireless SAW Tire Pressure Monitoring System. V. Kalinin*, D. N. Sinha, and G. Kaduchak, Los Alamos National Labs

P1D-3 Ultrasonic Methods for Characterization of Liquids and Surfaces. R. A. Pappas*, L. J. Bond, M. S. Greenwood, P. D. Panetta, and D. M. Pfund, Battelle, Pacific Northwest Division, Richland, WA/USA

P1D-4 Time Frequency and Wavelet Transform Applied to Ultrasounds NDE. R. Draj, M. Khelli, and A. Benchala, Research Center in NDT

*Author presenting paper.
P1A-4 Integrated Circuit Implementation of a Matched-Cell Dynamic Focusing Architecture for a 5-channel, 50-MHz, Planar Annular Array. J.R. Talman* 1, C.E. Morton 2, S.L. Garverick 3, G.R. Lockwood 4, Cleveland Clinic Foundation, Queens University, Movaz Corporation, Case Western Reserve University.

P1A-5 Histology and Ultrasound Fusion of Excised Prostate Tissue using Surface Registration. B.C. Porter* 3, L. Taylor 3, R. Baggs 2, A. di Sant' Agnese 2, G. Nadasdy 2, D. Pasternack 2, D.J. Rubens 1, and K.J. Parker 1,3, 1Radiology Department, Strong Memorial Hospital, 2Pathology/Morphology/Imaging Core, Strong Memorial Hospital, 3Electrical and Computer Engineering, University of Rochester, Rochester, NY.

P1A-6 Optical Imaging of Absorbing Objects Hidden in Highly Scattering Medium by Use of Ultrasonic Echo Pulse Velocity Change Due to Light Illumination. H. Horinaka* 1, T. Matsunaka 2, T. Kiuchi 1, T. Kobayashi 1, K. Wada 1, S. Saimi 2, and Y. Cho 3, 1Department of Engineering, Osaka Prefecture University, 2Aloka Co., Ltd. Tokyo, 3Okayama Prefecture University.

P1B-1 Joint Probability Discrimination between Stationary Tissue and Blood Velocity Signals. M. Schlaikjer* and J.A. Jensen, Center for Fast Ultrasound Imaging, Oersted*DTU, Technical University of Denmark.

P1B-2 Spectral Doppler Flow Velocity and Doppler Angle Estimations for Small Vessels by Large Sample Volume. H.K. Chiang*, B.-R. Lee 1, T.-T. Pan 1, and C.-D. Kuo 2, 1Institute of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan, 2Department of Teaching and Clinical Research, Veteran General Hospital-Taipei, Taiwan.

P1B-3 Experimental Investigation of Transverse Velocity Estimation Using Cross-Correlation. R.T. Bjerngaard* and J.A. Jensen, Center for Fast Ultrasound Imaging, Oersted*DTU, Technical University of Denmark.

P1C-1 An Efficient Method Combined the Douglas Operator Scheme to Split-Step Pade Approximation of Higher-Order Parabolic Equation. T. Anada*, T. Tsuchiya 1, N. Endoh 1, and T. Nakamura 2, Kanagawa University, JAMSTEC.

P1C-2 An Experimental Study of the Acoustic Emissions Generated by Cavitation. B. Zeqiri*, P. N. Gelat, M. Hodnett, and N. D. Lee, National Physical Laboratory.

P1C-3 Spatial Mapping of the Ultrasonic Back-Scattering Field and Sound Velocity Assessment in Low Acoustic Contrast Gel-Based Emulsions. J.J. Ammann* and B.A. Galaz Donoso, Universidad de Santiago de Chile, Santiago, Chile.


P1D-2 Solidly Mounted BAW Filters for the 6 to 8 GHz Range Based on AIN Thin Films. R. Lanz, M.-A. Dubois, and P. Murati*, Ceramics Laboratory, EPFL, Lausanne, Switzerland.

P2A-1 A 2.4GHz VCO with an Integrated Acoustic Solidly Mounted Resonator. S. Park*, S. Pinkett, J. S. Kenney, and W. D. Hunt, Georgia Institute of Technology, Atlanta, GA.

P2A-2 Novel Multi-Channel SAW Tool for the Analysis of Gas-Phase Adsorption. I. V. Anisimkin*, F. S. Hickerell*, and V. I. Anisimkin 1, RAS-Institute of Radioengineering and Electronics, Moscow, Russia, 'Motorola Inc. and the University of Central Florida, Scottsdale, Arizona.

P2A-3 Resonance Analysis of RF Film Bulk Acoustic Wave Resonator using Finite Element Method. J.-H. Jung* 1, and H.-C. Choi*, Electronic Telecommunication Research Institute, South Korea, ‘Kyoungpook National University, South Korea.
P2A-4 The Effect of Ultrasound on Radiation Damages in Implanted Silicon. J. Olikh*, B. Romanjuk*, V. Melnik*, and D. Kruger*, "Inst. of Semiconductor Physics of NASU, Kyiv, Ukraine, "IHP, Frankfurt(Oder), Germany

P2A-5 Expression by Scalar and Vector Velocity Potentials of Thin Square Plate Contour Vibrations. M. Sato*, Y. Takahata, M. Tahara, and I. Sakagami, Faculty of Engineering, Toyama University, Toyama, Japan

P2A-6 Simulation of Generation of Bulk Acoustic Waves by Interdigital Transducers. M. Deng*, Department of Physics, Logistics Engineering University, Chongqing 400016, P. R. China

P2A-7 Ultrasonically Stimulated Diffusion of Impurities in Dislocation Free Silicon at Room Temperature. I.V. Ostrovskii*, A.B. Nadtochij, L.P. Siebelnko, and A.A. Podolyan, Kiev Shevchenko University, Kiev, Ukraine

P2B-3 Exact Analysis of Dispersive SAW Devices on ZnO/Diamond/Si Layered Structures. T. T. Wu and Y. Y. Chen*, Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan

P2B-4 A SAW Basetestation Filter on Langasite. L. Solie* and J. Bracewell, Sawtek, Inc.

P2B-5 Triple-Band RF SAW Filter for Mobile Phone using Surface Mount Plastic Package. S. Yoshimoto*, Y. Yamamoto, Y. Takahashi, and E. Otsuka, NEC Corporation


P2B-7 Ultrasonically Stimulated Diffusion of Impurities in Dislocation Free Silicon at Room Temperature. I.V. Ostrovskii*, A.B. Nadtochij, L.P. Siebelnko, and A.A. Podolyan, Kiev Shevchenko University, Kiev, Ukraine

P2B-8 A SAW Basetestation Filter on Langasite. L. Solie* and J. Bracewell, Sawtek, Inc.

Session P2C

SAW SYSTEM APPLICATIONS

Chair: S. Jen
Crystal Photonic, Inc.

P2C-1 Balanced Front-End Hybrid SAW Modules For 145 - 174 MHz Handheld Transceivers. S. A. Dobrestein*, I. A. Kuchenko, and V. K. Razgonyaev, ONIP, Omsk, Russia


Session P2D

TRANSDUCER MODELING I

Chair: R. Tancrell
Airmar Technology


P2D-2 Domain Decomposition and Partitioned Analysis Techniques for the Finite Element Simulation of Ultrasonic Transducers. E. Heikkola*, University of Jyvaskyla

Session P2E

TRANSDUCER MODELING II

Chair: R. Tancrell
Airmar Technology

P2E-1 Versatile Analysis of Multilayer Piezoelectric Transducers Using a Matrix Approach. T.F. Johansen* and B.A. Angelisen, Depart- ment of Physiology and Biomedical Engineer- ing, Norwegian University of Science and Technology

P2E-2 Incorporation of Diffraction Effects in Simulations of Ultrasonic Systems using PSpice Models. J. Johansson* and E. Martinsson, Lulea University of Technology, Lulea, Sweden

P2E-3 Ultrasound Probe-Performance Vari- ation with Coax Parameters. J. M. Griffith*, EdH Resources, Inc.
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| P2B-1 Complete Extraction of the COM Parameters for EWC SPUDT in a Simple Way with Periodic Green’s Function Method. | J. Lin, N. Wang, H. Chen, and Y. Shui, Key Laboratory of Modern Acoustics, Institute of Acoustics, Nanning University, Nanning, P. R. China |
| P2B-3 Application of Normal Mode Theory to Modelling of Cross-Coupling in 1D Piezocomposite Arrays. J. Guyomarch1*, D. Certon1, L. Ratsimandresy1, F. Patat1, and M. Lethiecq1, 1GIP ULTRASONS/LUSSI, 2VERMONSA |
| P2B-4 A Plane-Wave-Expansion Approach for Modelling Acoustic Propagation in 2D and 3D Piezoelectric Periodic Structures. M. Wilm1*, V. Laude1, S. Kamiseki1, and T. Chiba1, 1Japan Radio Co., Ltd., 2Meisei University |
| P2B-5 Characterization of Novel Flextensional Transducers Designed by Using Topology Optimization Method. G. Nader, E. C. N. Silva, and J. C. Adamowski1*, 1Escuela Politecnica da Universidade de Sao Paulo |
| P2B-6 Analytical Modeling of a Piezoelectric Actuator. D. Vasici1*, E. Sarratea, and F. Costa, 1LESIR ENS de Cachan |

| P2B-7 Optimization of Slanted Finger Interdigital Transducer (SFIT). B. Steiner, Vectron International |

| P2B-8 Application of Modified P-matrix Model to the Simulation of Radio Frequency LSAW Filters. A. N. Rusakov1, V. S. Orlov1, B. Chap1, and V. Lee2, 1Moscow Radiocommunication Research Institute, 2TAI SAW Technology Co Ltd |
| P2B-9 Calculation and Measurement of SAW Diffraction Pattern of Slanted Finger SAW Filters on YZ LiNbO3 and 128 YX LiNbO3. H. Yasuda1, S. Kamiseki1, and T. Chiba1, 1Japan Radio Co., Ltd., 2Meisei University |
| P2B-10 Experimental Study of SAW Resonators Operating at 7.5 GHz. S. Lehtonen1*, M. T. Honkanen1, V. P. Piispanen1, J. Jurunen1, and M. M. Honkanen1, 1Helsinki University of Technology, Espoo, Finland, 2University of Joensuu, Joensuu, Finland, 3Thales Microelectronics SA |

| P2B-11 Optimization of Slanted Finger Interdigital Transducer (SFIT). B. Steiner, Vectron International |

| P2B-12 Improved Noise Characteristics of a SAW Artificial Neural Network RF Signal Processor for Modulation Recognition. D. A. Kalavov1* and V. A. Kalinin1, 1Fujitsu Laboratories Ltd., 2Fujitsu Media Devices Ltd |
| P2B-13 Application of Normal Mode Theory to Modelling of Cross-Coupling in 1D Piezocomposite Arrays. J. Guyomarch1*, D. Certon1, L. Ratsimandresy1, F. Patat1, and M. Lethiecq1, 1GIP ULTRASONS/LUSSI, 2VERMONSA |
| P2B-14 A Plane-Wave-Expansion Approach for Modelling Acoustic Propagation in 2D and 3D Piezoelectric Periodic Structures. M. Wilm1*, V. Laude1, S. Ballardas1, G. Pierre1, and W. Steichen1, 1Laboratoire de Physique et Metrologie des Oscillateurs, CNRS, Besancon, France, 2Framatome ANP, Saint-Marcel, France, 3Thales Microelectronics, Sophia-Antipolis, France |
| P2B-16 Analytical Modeling of a Piezoelectric Actuator. D. Vasici1*, E. Sarratea, and F. Costa, 1LESIR ENS de Cachan |

| P2B-17 A Trial for Integrating Front End Circuits on a Substrate of SAW Device Employing ELO. S. Nam1*, Y. Aoki, C. Kaneshiro, K. Koh, and K. Hohkawa, Advanced Technology Research Center, Kanagawa Institute of Technology |
| P2B-18 Analysis of a PWEM Apprach for Modeling Acoustic Propagation in 2D and 3D Piezoelectric Periodic Structures. M. Wilm1*, V. Laude1, S. Ballardas1, G. Pierre1, and W. Steichen1, 1Laboratoire de Physique et Metrologie des Oscillateurs, CNRS, Besancon, France, 2Framatome ANP, Saint-Marcel, France, 3Thales Microelectronics, Sophia-Antipolis, France |
| P2B-20 Experimental Study of SAW Resonators Operating at 7.5 GHz. S. Lehtonen1*, M. T. Honkanen1, V. P. Piispanen1, J. Jurunen1, and M. M. Honkanen1, 1Helsinki University of Technology, Espoo, Finland, 2University of Joensuu, Joensuu, Finland, 3Thales Microelectronics SA |
| P2B-21 Application of Normal Mode Theory to Modelling of Cross-Coupling in 1D Piezocomposite Arrays. J. Guyomarch1*, D. Certon1, L. Ratsimandresy1, F. Patat1, and M. Lethiecq1, 1GIP ULTRASONS/LUSSI, 2VERMONSA |
| P2B-22 A Plane-Wave-Expansion Approach for Modelling Acoustic Propagation in 2D and 3D Piezoelectric Periodic Structures. M. Wilm1*, V. Laude1, S. Ballardas1, G. Pierre1, and W. Steichen1, 1Laboratoire de Physique et Metrologie des Oscillateurs, CNRS, Besancon, France, 2Framatome ANP, Saint-Marcel, France, 3Thales Microelectronics, Sophia-Antipolis, France |

<p>| P2B-23 Complete Extraction of the COM Parameters for EWC SPUDT in a Simple Way with Periodic Green’s Function Method. J. Lin, N. Wang, H. Chen, and Y. Shui, Key Laboratory of Modern Acoustics, Institute of Acoustics, Nanning University, Nanning, P. R. China |
| P2B-25 Application of Normal Mode Theory to Modelling of Cross-Coupling in 1D Piezocomposite Arrays. J. Guyomarch1*, D. Certon1, L. Ratsimandresy1, F. Patat1, and M. Lethiecq1, 1GIP ULTRASONS/LUSSI, 2VERMONSA |
| P2B-26 Analytical Modeling of a Piezoelectric Actuator. D. Vasici1*, E. Sarratea, and F. Costa, 1LESIR ENS de Cachan |</p>
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<td>Two-Dimensional Myocardial Strain Rate Estimation Using &quot;Snakes&quot;</td>
<td>J. D'hooge<em>1, B. Bijnens2, M. Kowalski2, L. Barrios3, J. Thoen4, F. Van de Werf</em>, G.R. Sutherland*1, and P. Suetens1, 1Medical Image Computing, Dept. of Electrical Engineering, Catholic Univ. Leuven, Leuven, Belgium, 2Dept. of cardiology, Catholic Univ. Leuven, Leuven, Belgium, 3Dept. of cardiology, Universidad Nacional de Asuncion, Asuncion, Paraguay, 4Dept. of physics, Catholic Univ. Leuven, Leuven, Belgium</td>
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<td>1A-2</td>
<td>Detection of Rapid Velocity Components in Myocardium.</td>
<td>H. Kanai* and Y. Koiwa, Tohoku University</td>
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<th>University of Linz</th>
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<td>An RF Filter Design Using LTCC And Thin Film Bat Technology.</td>
<td>D. Penunuri*1 and K. M. Lakin2, 1Motorola Labs, Tempe, AZ, USA, 2TFR Technologies, Bend, OR, USA</td>
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<td>4A-2</td>
<td>Using SPUDT Structure to Design High Selective W-CDMA Base Station Filters.</td>
<td>E. Furgason*, J. Deacon*1, W. Gibson1, R. Bain1, J. Galipeau1, T. Lindemayer1, and F. Bi1, 1Micro Networks, Unit S, Dorcan Business Village, Dorcan, Swindon, UK, 2Micro Networks, Bloomfield, CT, USA, 3Micro Networks, Worces-ter, MA, USA</td>
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<th>Session 5A</th>
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<th>Chair: E. Furgason</th>
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<td>5A-1</td>
<td>Data Compression and Noise Suppression of Ultrasonic NDE Signals Using Wavelets.</td>
<td>G. Cardoso* and J. Sanie, Department of Electrical and Computer Engineering, Illi-nois Institute of Technology, Chicago, IL</td>
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*Author presenting paper.
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<th>Title</th>
<th>Authors/Institutions</th>
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<td>11:00 a.m.</td>
<td>1A-3</td>
<td>Subject Age at Time of Infarction Differentially Affects the Remodeling Responses in Viable Cardiac Tissue in Young vs. Old Rats.</td>
<td>F. Ngo, S. Handley, C. Hall, J. Allen, M. McLear, G. Lanza, J. Miller, and S. Wickline, Departments of Physics, Washington University, and Washington University School of Medicine</td>
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<td>11:15 a.m.</td>
<td>1A-4</td>
<td>Evaluation of Transmural Myocardial Deformation and Reflectivity Characteristics.</td>
<td>J. D'hooge, J. Schlegel, P. Claus, B. Bijnens, B. Thoen, F. Van de Werf, H. R. van der Velden, and P. Suetens, Departments of Physics, Catholic University Leuven, and Department of Cardiology, Catholic University Leuven, Belgium</td>
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<td>11:30 a.m.</td>
<td>1A-5</td>
<td>Real Time 3D Intracardiac Echo for Guidance of Cardiac Ablation.</td>
<td>S. W. Smith, E. D. Light, S. F. Idriss, W. Lee, E. Dixon-Tulloch, and P. D. Wolf, Duke University, Durham, NC</td>
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<td>11:45 a.m.</td>
<td>1A-6</td>
<td>Identification of Reperfused Infarcted Myocardium from High-Frequency Intracardiac Ultrasound Imaging Using Homodyne K Distribution.</td>
<td>X. Hao, C. Bruce, C. Pislaru, and J. Greenleaf, Mayo Clinic</td>
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<td>11:00 a.m.</td>
<td>2A-3</td>
<td>Characterization of Micromachined Silicon Nitride Membranes Using Resonant Ultrasound Spectroscopy.</td>
<td>H. Guo and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison</td>
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<td>11:15 a.m.</td>
<td>2A-4</td>
<td>Characterization of Micromachined Silicon Nitride Membranes Using Resonant Ultrasound Spectroscopy.</td>
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<td>11:30 a.m.</td>
<td>2A-5</td>
<td>Silicon Ultrasonic Horns for Thin Film Accelerated Stress Testing.</td>
<td>C.-H. Lee, A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison</td>
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<td>11:45 a.m.</td>
<td>2A-6</td>
<td>Microacoustic Viscosity Sensor for Automotive Applications.</td>
<td>B. Jakoby, M. Scherer, M. Buskies, and H. Eisenschmid, Robert Bosch GmbH, Corporate Research</td>
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<td>11:00 a.m.</td>
<td>3A-3</td>
<td>Low Frequency Emission by Means of Nonlinear Interaction of Phase Conjugate Ultrasound Waves in Water.</td>
<td>Y. P. Novikov, P. Pernod, and V. Preobrazhensky, Moscow Institute of Radio Engineering and Electronics, and Institute of Electromagnetics and Microelectronics of the North, and Institute of Electromagnetics and Acoustics, France, and Wave Research Center, GPI RAS, Moscow, Russia</td>
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<td>11:15 a.m.</td>
<td>3A-4</td>
<td>Bleustein-Gulyaev Surface Waves in Superconductors.</td>
<td>Yu. V. Gulyaev, I. Polzikova, and A. O. Raevskii, Institute of Radiophysics and Electronics RAS, Moscow, Russia</td>
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<td>11:30 a.m.</td>
<td>3A-5</td>
<td>Computer Simulation of Forward Wave Propagation in Non-linear, Heterogeneous, Absorbing Tissue.</td>
<td>T. Varslo, T. Johansen, and B. Angelsen, NTNU - Department of Mathematical Sciences, Trondheim, Norway, NTNU - Department of Physiology and Biomedical Engineering, Trondheim, Norway, SINTEF Telecom and Informatics, and Acoustics, Trondheim, Norway</td>
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<td>3A-6</td>
<td>Characterization of Acoustomigration with On-Wafer Measurement System.</td>
<td>G. Raml, W. Ruiter, R. Weigel, and A. Springer, Johannes Kepler University Linz, Austria, and EPCOS AG, Munich, Germany</td>
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<td>4A-3</td>
<td>Recent Advances on SAW Packaging.</td>
<td>P. Gruendel, F. McPherson, P. Selmeier, H. Krueger, G. Feiertag, and C. Ruppel, EPCOS AG, Munich, Germany</td>
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<td>11:15 a.m.</td>
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<td>Distortion Cancellation Performance of Miniature Delay Filters for Feed-Forward Linear Power Amplifiers.</td>
<td>M. Roy, Motorola</td>
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<td>Artificial Neural Networks Application on Interface Evaluation in IC Packaging.</td>
<td>C. Jian, N. Guo, Jaleel Abdul, and H. C. Yeo, Nanynag Technological University, MPE</td>
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<td>4A-6</td>
<td>Ultrasonic Characterization of Imperfect Interface in IC Packaging.</td>
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<td>2:00 p.m.</td>
<td>VASCULAR 1B</td>
<td>Rutherford</td>
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<td>L. Zeroug</td>
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**Session 1B VASCULAR**

- Chair: J. Miller
- Washington University

**Session 2B**

**Session 3B** BULK WAVE EFFECTS
- Chair: L. Zeroug
- Schlumberger-Doll Research

**Session 4B** SAW FILTERS
- Chair: K. Hashimoto
- Chiba University

**Session 5B** ARRAY TRANSDUCERS I
- Chair: H. Kunkel
- Philips Medical Systems/ATL

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**1B-1 Sensitivity and Specificity of IVUS Elastography to Detect the Vulnerable Plaque.**

- J. A. Schaar, C. L. de Korte, F. Mastik, C. Strijder, G. Pasterkamp, and A. F. W. van der Steen
- Exp. Echo, Thoraxcenter, Erasmus University Rotterdam
- Exp. Cardiology Lab, University Medical Center Utrecht
- "Interuniversity Cardiology Institute of the Netherlands"

**1B-2 In vivo Validation of Intravascular Elastography: An Atherosclerotic Yucatan Study.**

- C. L. de Korte, M. Stereogel, F. Mastik, C. Strijder, A. F. W. van der Steen
- Exp. Echo, Thoraxcenter, Erasmus University Rotterdam
- Exp. Cardiology Lab, University Medical Center Utrecht
- "Interuniversity Cardiology Institute of the Netherlands"

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**2B-1 Rheological Constraints of the Analysis of Industrial Oils with the Droplet Quartz Crystal Microbalance (QCM).**

- D. C. Ash, M. J. Joyce, G. Garnham, C. Barnes, and A. C. Jefferyes
- University of Lancaster, Lancaster University Medical Center Utrecht
- "Interuniversity Cardiology Institute of the Netherlands"

**2B-2 Wave Propagation in Inhomogeneous Media, Phenomena and Potential Applications.**

- J. Vollmann, D. Profunser, and J. Dual
- ETH Zurich, Switzerland

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**3B-1 Development of Industrial Models of High-power Stepped-plate Sonic and Ultrasonic Transducers for Use in Fluids.**

- Instituto de Acustica, Madrid, Spain

**3B-2 Wave Propagation in Inhomogeneous Media, Phenomena and Potential Applications.**

- J. Vollmann, D. Profunser, and J. Dual
- ETH Zurich, Switzerland

---

**4B-1 Transversal SAW Filters Using a BDT and a SPUDT.**

- J. A. Hossack, S. Zhou, and D. J. Powell
- University of Virginia, "Weidlinger Associates Inc."
1B-3 Classification of Atherosclerotic Plaque Composition by Spectral Analysis of Intravascular Ultrasound Data. A. Nair1,2, B. Kuban1, N. Obuchowski1, and D. Vince1, 1The Cleveland Clinic Foundation, Cleveland, Ohio, USA, 2Case Western Reserve University, Cleveland, Ohio, USA

1B-4 Forward-looking Ring-annular Array for Intravascular Ultrasound Imaging. Y. Wang1, D. N. Stephens2, and M. O'Donnell1, 1University of Michigan, Ann Arbor MI, 2Jomed Inc., Rancho Cordova, CA

1B-5 Optimal Waveform Design for the Measurement of Diameter and Wall Thickness of Blood Vessels. Y. Ai1, and J. S. Jaffe, Marine Physical Lab, Scripps Institution of Oceanography, University of California, San Diego

2B-2 (Invited) Recent Development of Ultrasonic Actuators. S. Ueha1, Tokyo Institute of Technology

3B-3 Temperature Characteristics of Acoustic Waves Propagating in Thin Piezoelectric Plates. I.E. Kuznetsova1, B.D. Zaitsev1, and S.G. Jost1, 1Saratov Department of Institute of Radio Engineering and Electronics of RAS, Saratov, Russia, 2Marquette University, Milwaukee, WI/USA

4B-3 SAW Filters Including One-Focus Slanted Finger Interdigital Transducers. G. Martin1 and B. Steiner1, 1Institute for Solid State and Materials Research, Dresden, Germany, 2Vectron International-Telefilter, Teltow, Germany

5B-3 Resonance Frequency Tuning of Two-Dimensional PZT array Using Laser Trimming. J. Ochoco1, O. J. Sigurdsson, and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison

2B-4 Ultrasonic Spectroscopy Characterization of Silicate Glasses in the VHF Range. J. Kushibiki, M. Arakawa1, and R. Okabe, Tohoku University, Sendai, Japan

4B-4 Combined Polarity/Capacity Weighting of IDTs with Constant Length of Electrodes for Broadband SAW Filters. E.V. Bausk*, Institute of Semiconductor Physics of Russian Academy of Sciences, Novosibirsk, Russia

3B-1 Temperature Characteristics of Acoustic Waves Propagating in Thin Piezoelectric Plates. I.E. Kuznetsova1, B.D. Zaitsev1, and S.G. Jost1, 1Saratov Department of Institute of Radio Engineering and Electronics of RAS, Saratov, Russia, 2Marquette University, Milwaukee, WI/USA

3B-2 Temperature Characteristics of Acoustic Waves Propagating in Thin Piezoelectric Plates. I.E. Kuznetsova1, B.D. Zaitsev1, and S.G. Jost1, 1Saratov Department of Institute of Radio Engineering and Electronics of RAS, Saratov, Russia, 2Marquette University, Milwaukee, WI/USA

4B-5 Study of Novel Love Wave Surface Acoustic Wave Filters. K. Kalantar-zadeh1,2, W. Wlodarski1,2, A. Trinci1,2, and K. Galtsis1,2, 1RMIT University, School of Electrical and Computer Engineering, 2CRC for Microtechnology, Australia

3B-6 Maxwell-Wagner Piezoelectric Relaxation in Ferroelectric Heterostructures. D. Damjanovic1, M. Demartin-Maeder, P. Duran Martin, V. Voisard, and N. Setter, Swiss Federal Institute of Technology - EPFL, Lausanne, Switzerland

3B-7 Glass Capillary/PZT Transverse Wave Actuator for Microfluidic Radiation Force Assay. C. H. Lee1 and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison
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<th>4:00 p.m. – 5:30 p.m.</th>
<th>Monday, October 8, 2001</th>
<th>Omni Hotel, Atlanta, GA</th>
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<td><strong>Session 1C</strong></td>
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<td><strong>Session 3C</strong></td>
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<td><strong>VASCULAR ELASTICITY</strong></td>
<td><strong>BONE</strong></td>
<td><strong>BULK WAVE ANALYSIS AND DESIGN</strong></td>
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<td>Chair: S. Foster</td>
<td>Chair: G. Berger</td>
<td>Chair: K. Lakin</td>
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<td>University of Toronto</td>
<td>CNRS</td>
<td>TFR Technologies, Inc.</td>
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<td><strong>Rutherford</strong></td>
<td><strong>Mimosa</strong></td>
<td><strong>Glenmar</strong></td>
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**Session 1C**

**3 Dimensional Intravascular Palpography: Feasibility in Phantoms and in vivo.**
C.L. de Korte*, F. Mastik, J.A. Schaaij, M.M. Doyley, and A.F.W. van der Steen, 'Exp. Echo, Thoraxcenter, Erasmus University Rotterdam, Interuniversity Cardiology Institute of the Netherlands

**1C-1**

### 1C-1 3 Dimensional Intravascular Palpography: Feasibility in Phantoms and in vivo.

#### Chair: S. Foster

- University of Toronto

**1C-1**

#### 3 Dimensional Intravascular Palpography: Feasibility in Phantoms and in vivo.

**C.L. de Korte***, **F. Mastik** 1, **J.A. Schaaij** 1, **M.M. Doyley** 1, **A.F.W. van der Steen** 1,2

1. Exp. Echo, Thoraxcenter, Erasmus University Rotterdam, Interuniversity Cardiology Institute of the Netherlands

**1C-2**

#### Vascular Compliance Using Elasticity Imaging.

**J.J. Mai***, **C. Pellot-Barakat** 1, **W.J. Hornof** 2, **Ch. Kargel** 1, **M.F. Insana** 1

1. Department of Biomedical Engineering, University of California Davis

**4:15 p.m.**

**1C-2 Vascular Compliance Using Elasticity Imaging**

**J.J. Mai***, **C. Pellot-Barakat** 1, **W.J. Hornof** 2, **Ch. Kargel** 1, **M.F. Insana** 1

1. Department of Biomedical Engineering, University of California Davis

**1C-2**

### 2C-1 Prediction of Ultrasound Attenuation in Cancellous Bones using Poroelasticity and Scattering Theories.

**C. Pellot-Barakat** 1, **W.J. Hornof** 2, **Ch. Kargel** 1, **M.F. Insana** 1

1. Department of Biomedical Engineering, University of California Davis

**2C-1**

#### Prediction of Ultrasound Attenuation in Cancellous Bones using Poroelasticity and Scattering Theories.

**C. Pellot-Barakat** 1, **W.J. Hornof** 2, **Ch. Kargel** 1, **M.F. Insana** 1

1. Department of Biomedical Engineering, University of California Davis

**2C-2**

#### Characterization of Bony Tissues from Ultrasonic Backscattering Using Statistical Models.

**S.-H. Wang** 1, **F.-C. Tsai** 1, **Y.-L. Hung** 1, **Chung Yuan Christian University, Chung Li, Taoyuan, Taiwan, ROC**

1. Min-Sheng Hospital, Ta Yuan, TaoYuan, Taiwan, ROC

**3C-1**

#### Analysis of Periodic Structures for BAW and SAW Resonators.

**J.-K. Yong** 1, **M. Takeuchi** 1, **K. Oishi** 1, **R. Adler** 1, **Elo TouchSystems, Inc., *Tamagawa University, Consultant***

1. Rutgers University, Piscataway, NJ, USA

**3C-1**

### 3C-1 Invited Analysis of Periodic Structures for BAW and SAW Resonators.

**J.-K. Yong** 1, **M. Takeuchi** 1, **K. Oishi** 1, **R. Adler** 1, **Elo TouchSystems, Inc., *Tamagawa University, Consultant***

1. Rutgers University, Piscataway, NJ, USA

**4C-1 Rayleigh Waves on Love-wave Substrates for Touch-Sensitive Panels.**

**J. Kent***, **M. Takeuchi** 1, **K. Oishi** 1, **R. Adler** 1, **Elo TouchSystems, Inc., *Tamagawa University, Consultant***

1. Rutgers University, Piscataway, NJ, USA

**4C-2 Simple Analytical Method to Estimate the Influence of Liquids Viscosity on Love Wave Chemical Sensors.**

**C. Depous**, **D. Rebiere**, **J. Pestre**, **Laboratoire IXL - CNRS UMR 5818 - ENSEIRB, Talence, France**

1. Georgia Tech Research Institute, Atlanta, GA

**5C-1 Finite Element Modeling of Arrays of Single Crystal Longitudinal Vibration Transducers.**

**H.C. Robinson***, **J.M. Powers** 1, **F. Nussbaum** 1, **S. Hassan** 1, **M.B. Moffett** 1, **AVSEA Undersea Warfare Center Division Newport, 1176 Howell Street, Newport RI, Georgia Tech Research Institute, Atlanta, GA**

1. Van der Stout Laboratories, Newport, RI

**5C-2 Finite Element Modeling of Single Crystal Relaxor Ferroelectrics for Medical Imaging Arrays.**

**M. Zipparo***, **C. Oakley**, and **M. Shepard**, **Tetrad Corporation, Englewood, CO**

*Author presenting paper.
4:30 p.m.
1C-3 3D RF Signal Local Compression Estimation
for Imaging Strains within a Vessel Mimicking
Cryogel Phantom and a Carotid Artery.
E. Brusseau*, P. Delachartre, and D. Vray,
CREATIS UMR CNRS 5515, affiliated to
INSERM, Lyon, France

4:35 p.m.
1C-4 A Modified Synthetic Aperture Focus-
ting Technique for the Correction of Geomet-
ric Artifacts in Intravascular Ultrasound
Elastography.
C. Perrey*, W. Wilkening, B. Brendel, and H. Ermert,
Ruhr University Bochum, Germany

5:00 p.m.
1C-6 An Applied PZNT Single Crystal Trans-
ducer to the Harmonic Imaging.
T. Takeuchi*1, Y. Mine1, Y. Muranaka1, K. Harada1, Y.
Hosono1, and Y. Yamashita1, Medical Sys-
tems R&D Center, Toshiba Corporation,
Medical Systems Company, Materials
and Devices Research Laboratories, R&D Cen-
ter, Toshiba Corporation

5:15 p.m.
1C-6 Ultrasound-Based Strain Rate Estima-
tion of Moving, Fully-Developed Speckle.
J. Jackson* and L. Thomas, Acuson, a Siemens
Company

4:45 p.m.
1C-4 Ultrasound Characterization of Cancel-
lous Bone: Theoretical and Experimental
analysis.
L. Cardoso*, F. Teboul, A. Meunier,
and C. Oddou, CNRS UPRES-A 7052
Universites Paris 7 et 12

2C-3 New Deal and Prospects in Long Bones
Ultrasonic Imaging.
P. Lasaygues* 1, E. Ouedraogo 2, J.P. Lefebvre 1,
M. Talmant 2, M. Gindre 2, and P. Laugier2,
Laboratoire de Mecanique et d'Acoustique - CNRS UPR 7051
- Marseille, Laboratoire d'imagerie
Parametrique - Universite Paris VI - CNRS
UMR 7623 - Paris

2C-4 4:30 p.m.
4C-4 A Novel Love Mode SAW Sensor with
ZnO Layer Operating in Gas and Liquid Me-
dia.
K. Kalantar-zadeh* 1,2, W. Wlodarski1,2, Y. Y.
Chen1, B. Fry1,2, and A. Trinch1,2, RMIT Uni-
versity, School of Electrical and Computer
Eng., 2CRC for Microtechnology, Australia,
3RMIT University, Biotechnology and Environ-
mental Biology

2C-5 Fast-MoM: Rigorous 3D Modeling of
BAW-Devices.
A. Baghai-Wadji* 1 and D. Penunuri2,
1Vienna University of Technology,
2Motorola, Inc

2C-6 55 MHz Ultrasound Evaluation of the
Effects of Anti-Inflammatory Drugs on Ar-
thritis Cartilage.
B. Jaffre* 1, A. Watrin 2, D. Loeuille2, P. Gillet2, P. Netter2, P. Laugier2,
and A. Saied 1, 1Laboratoire d'Imagerie Para-
metrique CNRS-Paris VI UMR 7623 Paris
France, 2Laboratoire de Pharmacologie CNRS-
UHP UMR 7651 Nancy France

3C-2 3D-Shape Estimation of Stress within a
Vessel Mimicking Cryogel Phantom and a
Carotid Artery.
E. Konofagou* 1, T. Harrigan 2, and S. Solomon3, 1Dept. of Radiology, Brigham
and Women's Hospital, Harvard Medical School, 2Expo-
nent, Failure Analysis Associates, Inc., 3Cardiovascular
Diseases, Brigham and Women's Hospital, Harvard Medi-
cal School

3C-3 Thickness Vibrations of a Rotating AT-
cut Quartz Plate.
J. A. Kosinski* 1, R. A. Pastore 1, H. Fang 2, and J. Yang 3, 1US Army
CECOM, 2CTS Wireless Components, 3Uni-
versity of Nebraska, Lincoln

3C-4 Edge Detection for B-mode Images.
C. Zhang and J. F. Vetelino*, Laboratory for Surface Science and
Technology, University of Maine, Orono, ME

3C-5 Flexural Plate Wave Excitation Using
Bulk Modes.
H. Guo* and A. Lal, SonicMEMS
Laboratory, University of Wisconsin-Madison

4C-3 Three-Dimensional Finite Elements and
their Relationships to Minldin Higher Order
Plate Theory in Quartz Crystal Plate Resona-
tors.
Y. K. Yung 1, M. Tanaka 1, and T. Imai2,
1Rutgers University, Piscataway, NJ, USA,
2Seiko Epson Corporation, Suwa-City, Nagano,
Japan

4C-4 A Mode Interference Study of Bulk Acous-
tic Wave Liquid Sensors. C. Zhang and J. F.
Vetelino*, Laboratory for Surface Science and
Technology, University of Maine, Orono, ME

4C-5 Vapor Phase SAW Immunoassay Sen-
sors.
D.D. Stubbs 1, W.D. Hunt* 2, S.H. Lee 2,
and D.F. Doyle 1, 1School of Chemistry and
Biochemistry, Georgia Tech, 2School of Elec-
trical and Computer Eng, Georgia Tech

5C-3 Fast-MoM: Rigorous 3D Modeling of
BAW-Devices.
A. Baghai-Wadji* 1 and D. Penunuri2,
1Vienna University of Technology,
2Motorola, Inc

5C-4 Determination of Piezoelectric Mate-
rials Parameters Using a Combined Measure-
ment and Simulation Technique. M.
Kaltenbacher*, R. Simkovics*, B. Kaltenbacher*, and R. Lerch*, Department of
Sensor Technology, University of Erlangen,
Germany, *Industrial Mathematics Institute,
University of Linz, Austria

5C-5 Flexural Plate Wave Excitation Using
Bulk Modes.
H. Guo* and A. Lal, SonicMEMS
Laboratory, University of Wisconsin-Madison

5C-6 Degassing a Liquid Stream using an
Ultrasonic Whistle.
A. Clark* 1, R. Dewhurst 1,
C. Ellwood 2, and P. A. Payne 1, 1UMIST,
2Capenhurst.tech

6C-3 A New Deal and Prospects in Long Bones
Ultrasonic Imaging.
P. Lasaygues* 1, E. Ouedraogo 2, J.P. Lefebvre 1,
M. Talmant 2, M. Gindre 2, and P. Laugier2,
Laboratoire de Mecanique et d'Acoustique - CNRS UPR 7051
- Marseille, Laboratoire d'imagerie
Parametrique - Universite Paris VI - CNRS
UMR 7623 - Paris

6C-4 Edge Detection for B-mode Images.
C. Zhang and J. F. Vetelino*, Laboratory for Surface Science and
Technology, University of Maine, Orono, ME

6C-5 Modeling of Piezoceramic Composite
Transducer Structures Generating Strong
Sound Pulses in Therapy. T. Dreyer* and R.
Riedlinger, Universitat Karlsruhe, Karlsruhe,
Germany

6C-6 Analysis and Reduction of the Cross
Talk in Ultrasonic Transducers. K. J. Kang*,
Y. S. Kim*, S. S. Lee 1, Y. R. Roh*, and B. T.
Khuri-Yakub*, Kyungpook National Univer-
sity, Taegu, Korea, 2Stanford University,
Stanford, CA, USA

5C-3 An Applied PZNT Single Crystal Trans-
ducer to the Harmonic Imaging.
T. Takeuchi1, Y. Mine1, Y. Muranaka1, K. Harada1, Y.
Hosono1, and Y. Yamashita1, Medical Sys-
tems R&D Center, Toshiba Corporation,
Medical Systems Company, Materials
and Devices Research Laboratories, R&D Cen-
ter, Toshiba Corporation
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<td>1D</td>
<td>CONTRAST AGENT - CHARACTERIZATION</td>
<td>K. Ferrara</td>
<td>University of California, Davis</td>
<td>G. Tickner*, J. Jackson¹, and R. Short¹, ¹Microsome, San Carlos, CA, 1Acuson, a Siemens Company; Mountain View, CA, ¹Point Biomedical, San Carlos, CA</td>
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<td>2D</td>
<td>PHASE ABERRATION</td>
<td>D. Liu</td>
<td>Siemens Ultrasound</td>
<td>2D-1 Statistically Significant Differences in the Spatial Coherence of Backscatter for Fundamental and Harmonic Portions of a Clinical Beam. R. J. Fedewa¹, K. D. Wallace¹, M. R. Holland¹, J. R. Jago¹, G. C. Ngi¹, M. R. Rielly¹, B. S. Robinson¹, and J. G. Miller¹, ¹Washington University, St. Louis, MO, ¹ATL Ultrasound, Bothell, WA</td>
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<td>3D</td>
<td>OPTICAL INTERACTIONS</td>
<td>D. Hecht</td>
<td>Palo Alto Research Center/XEROX</td>
<td>3D-1 Acousto-Optical Monochromator for the Planetary Imaging and the Red Shift. V. Ya. Molchanov¹, ¹Acousto-optical Research Center, Moscow Steel and Alloys Institute</td>
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<td>4D</td>
<td>NDE AND MATERIALS CHARACTERIZATION</td>
<td>G. Alers</td>
<td>NIST</td>
<td>4D-1 Accurate Localization of Rectangular Cracks Using Gaussian Acoustic Beams. J. Vandeputte¹, G. Shkerdin¹, and O. Leroy¹, ¹KULAK, Kortrijk, Belgium, ¹Russian Academy of Sciences, Moscow, Russia, ¹KULAK, Kortrijk, Belgium</td>
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<td>5D</td>
<td>HIGH FREQUENCY TRANSDUCERS</td>
<td>K. Shung</td>
<td>Pennsylvania State University</td>
<td>5D-1 (Invited) Development of High Frequency Medical Ultrasound Arrays. T.A. Ritter¹, T.R. Shrout¹, and K.K. Shung¹, ¹Department of Bioengineering, Penn State University, ¹Materials Research Laboratory, Penn State University</td>
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*Author presenting paper.
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<th>Title</th>
<th>Authors</th>
<th>Institution</th>
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<td>8:30 a.m.</td>
<td>1D-3</td>
<td>2D-3 Aberration Measurement and Correction with a High Resolution 1.75D Array</td>
<td>A. T. Fernandez*, J. J. Dahi, and G. E. Trahey, Duke University</td>
<td>Department of Physics, Moscow State University</td>
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<td>2D-4</td>
<td>3D-3 (Invited) Control of Optical Radiation by Means of Collinear and Non-Collinear Acousto-Optic Devices, Y.B. Voloshinov*, Department of Physics, Moscow State University</td>
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<td>2D-5</td>
<td>4D-3 Air-coupled Ultrasonic Evaluation of High Acoustic Impedance Materials, E. Blomme*, D. Bulcaen, and F. Declercq, KATHO, Kortrijk, Belgium</td>
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<td>2D-6</td>
<td>5D-2 Design of a 40 MHz Annular Array, C. E. Morton* and G. R. Lockwood, Queen’s University, Kingston, Canada</td>
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<td>8:45 a.m.</td>
<td>1D-4</td>
<td>2D-4 Evaluation of Backpropagation Methods for Transmit Focus Compensation, J.C. Lacefield* and R.C. Waag, University of Rochester, Rochester, NY</td>
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<td>3D-4</td>
<td>4D-4 Ultrasonic Transducer Design and Communications for Intelligent Monitoring of Structures, G. Benny*, G. Hayward*, R. Farlow*, B. Hailu*, D. Grima*, and J. Hendry*, The Centre for Ultrasonic Engineering, Communications Division, CASM, University of Strathclyde, Glasgow, Scotland</td>
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<td>3D-5</td>
<td>5D-3 20 MHz Ultrasound Array for Medical Imaging: From Design to Image Evaluation. E. Lacaze*, P. Mauchamp, and S. Michau, VERMON</td>
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<td>9:00 a.m.</td>
<td>1D-5</td>
<td>2D-5 Pulse Echo Imaging through a Human Skull: in vitro Experiments, J. F. Aubry*, M. Tanter, J. L. Thomas, and M. Fink, Laboratoire Ondes et Acoustique</td>
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<td>3D-3</td>
<td>3D-4 Characterization of Z-cut LiTaO3 with Domain-Inverted Layers Formed by Proton Exchange and Heat Treatment Using the Line-Focus-Beam Ultrasonic Material Characterization System, M. Miyashita* and J. Kushibiki, Tohoku University, Sendai, Japan</td>
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<td>4D-5</td>
<td>3D-5 Photoacoustic Study of Nonradiative Relaxation Processes in YAG:Cr3+ Crystals, A. Silwinski*, M. Grinberg*, and A. Sikorska*, Institute of Experimental Physics, University of Gdansk</td>
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<td>9:15 a.m.</td>
<td>2D-6</td>
<td>4D-6 Application of Theoretical Models of Nonlinear Boundaries to the Investigation of Adhesive Bonding Conditions, B. E. O'Neill, F. Severin, and R. Gr. Maeve, Centre for Imaging Research and Advanced Materials Characterization, University of Windsor, Canada</td>
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<td>3D-5</td>
<td>4D-5 Determination of Material Properties of Thin Layers Using Angle Beam Ultrasonic Spectroscopy, L. Adler*, B. Sorkin*, and A. Baltazar*, Adler Consultants Inc, Columbus, Ohio, Ohio State University Columbus, Ohio</td>
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<td>4D-6</td>
<td>3D-5 New Optoacoustic Miniaturized Devices for High Frequency Ultrasonic Generation and Detection for Virtual Biopsy Application, L. Masotti, B. E. O'Neill, and A. Menichelli, Engineer Faculty of Firenze</td>
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Session P1E
BONE
Chair: K. Wear
FDa CDRH

Session P1G
ELASTOGRAPHY
Chair: M. Fink
University Denis Diderot, Paris

P1I-8 Air-coupled Ultrasonic Scanner for Braille. T.E. Gomez* and F. Montero, Instituto de Acustica

P1I-1 Experimental Validation of a Theoretical Framework to Predict Radiation Force Displacement of Contrast Agents. P. Dayton*, J. Allen, D. Kruse, and K. Ferrara, University of California, Davis

Session P1F
CONTRAST
Chair: O. Basset
INSA, Lyon
P1F-1 Characterization of Vibration Propagation from Intima to Adventitia of Arterial Wall. K. Sunagawa*, H. Kanai 1, Y. Koiwa2, and M. Tanaka 3, 1Dept. of Electrical Engineering, Tohoku University, Sendai, Japan, 2Dept. of Internal Medicine, Tohoku University, Sendai, Japan, 3Miyagi-Branch of Japan Anti-Tuberculosis Association, Sendai, Japan

Session P1I
GENERAL NDE METHODS
Chair: M. Pappalardo
University of Roma TRE


P1E-9 Unexpected Anisotropic Behavior of Ultrasound Attenuation after Collagen Crosslinking in Porcine Tendons. S. Takuchi*, J.N. Marsh, C.S. Hall, and S.A. Wickline, Washington University School of Medicine, St. Louis, MO, USA


P1E-4 Axial Transmission of 1 MHz Ultrasonic Waves on Thin Cortical Bone Plates: A Simulation Study. E. Bossy*, M. Talman, and P. Laugier, Laboratoire d’Imagerie Paramétrique, CNRS UMR 7623-Universite Paris VI

Session P1H
ELASTOGRAPHY
Chair: M. Fink
University Denis Diderot, Paris

P1I-6 Air-coupled Ultrasonic Scanner for Braille. T.E. Gomez* and F. Montero, Instituto de Acustica


P1G-1 Uncertainty Relation in Elastography: New Approach to Explain for Errors of in vivo Elastography. K. M. Hiltawsky* and H. Ermert, Department of Electrical Engineering, Bochum, Germany

P1I-7 Modelling of Lamb Wave Generation for Application in Health Monitoring of Composite Plates. G. Sebastien*, P. Christopher, D. Christophe, A. Jamali, and L. Klas*, 1IMECN, UMR CNRS 8520, 2Aeronautics Division, FFA

P1E-3 Characterization of Vibration Propagation from Intima to Adventitia of Arterial Wall. K. Sunagawa*, H. Kanai 1, Y. Koiwa2, and M. Tanaka 3, 1Dept. of Electrical Engineering, Tohoku University, Sendai, Japan, 2Dept. of Internal Medicine, Tohoku University, Sendai, Japan, 3Miyagi-Branch of Japan Anti-Tuberculosis Association, Sendai, Japan

P1F-3 Characterization of Vibration Propagation from Intima to Adventitia of Arterial Wall. K. Sunagawa*, H. Kanai, Y. Koiiwa, and M. Tanaka*, Dept. of Electrical Engineering, Tohoku University, Sendai, Japan, 2Dept. of Medical Science, Tohoku University, Sendai, Japan, 3Miyagi-Branch of Japan Anti-Tuberculosis Association, Sendai, Japan

P1G-2 Application of Vibroacoustography in Bone Elasticity Imaging. S. Callie*, J.P. Remenieres*, O. Bou Matar1, M. Defontaine1,4, M.A. Gomez2,4, and F. Patat1,2, 1LUSSI/GIP ULTRASONS - EA 2102 (Tours, France), 2University Hospital - Bretonneau (Tours, France), 3Radiology Department - Trousseau Hospital (Tours, France)


P1F-1 Experimental Validation of a Theoretical Framework to Predict Radiation Force Displacement of Contrast Agents. P. Dayton*, J. Allen, D. Kruse, and K. Ferrara, University of California, Davis

P1G-3 Quantitative Assessment of the Phase Tracking Method for Measurement of the Elastic Characteristics of Arterial Wall. T. Suginouchi*, M. Kato1, M. Hashimoto1, Y. Tanaka1, and H. Kanai, 1Matsushita Electric Industrial Co., Ltd., 2Matsushita Communication Industrial Co., Ltd., 3Graduate School of Engineering, Tohoku University


*Author presenting paper.
P1E-4 Young’s Modulus Measurements of Human Liver and Correlation with Pathological Findings. W.-C. Yeh*, Y.-M. Jeng, H.-C. Hsu, P.-L. Kuo, M.-L. Li, P.-C. Li, National Taiwan University Hospital


Session P1H

MATERIAL AND DEFECT CHARACTERIZATION

Chair: F. Addison

Rockwell


Session P2F

SAW MATERIALS AND PROPAGATION

Chair: B. Abbott

Sawtek


P2F-2 Analysis of SAW Grating Waveguides using 2-D Coupling-of-Modes equations. K. Hirota* and K. Nakamura*, TOYO Communication Equipment Co., Ltd., Kanagawa, Japan; *Graduate School of Engineering, Tohoku University, Sendai, Japan

P1E-5 Calculation of Radiation Force on Cylinders Based on Diffraction and Ray Approximation. G. Silva*, M. Zeraati, and M. Fatemi, Mayo Foundation, Rochester, MN, USA

P1F-3 Effect of Monolayer Thickness and Gas Type on Stability of Lipid-Coated, Gas-Filled Microspheres. M. Borden* and M. Longo, University of California, Davis

P1H-1 Thermal Sensitivity of SH Plate Modes in Quartz. I. V. Anisimkin 1, V. I. Anisimkin 1, Yu. V. Gulyaev, and E. Verona*, 1RAS-Institute of Radioeengineering and Electronics, 2CNR-Institute of Acoustics

P1H-2 Temperature Distribution in HgCdTe Solid Solutions at Ultrasonic Loading. R.K. Savkina* and A.B. Smirnov, Institute of Semiconductor Physics NASU, Kiev, Ukraine

P1H-3 Ultrasound Influence on Structural Defects of the Initial and Radiation Origin of GaP Light Diodes. V. Khivrich, O. Gontaruk*, M. Pinkovska, and V. Tartachnyk, 1Scientific Center Institute for Nuclear Research, NASU, Kyiv, Ukraine; *Inst. of Semiconductor Physics of NASU, Kyiv, Ukraine

P1H-4 Behavior of Several-micron Microbubbles Exposed to Ultrasound and Its Mechanical Effects on a Cell. N. Kudo*, T. Miyaoka, J. Furuya, M. Natori, F. Moriyasu, and K. Yamamoto, 1Hokkaido University, 2National Okura Hospital, 3Tokyo Medical University


Session P2F

SAW MATERIALS AND PROPAGATION

Chair: B. Abbott

Sawtek


P2F-2 Analysis of SAW Grating Waveguides using 2-D Coupling-of-Modes equations. K. Hirota* and K. Nakamura*, TOYO Communication Equipment Co., Ltd., Kanagawa, Japan; *Graduate School of Engineering, Tohoku University, Sendai, Japan

P1E-6 Ultrasound Skin Characterization: An In Vivo Study of Intra and Inter-individual Variations. M. Lebertre1, F. Ossant*, J. Bouyer1, L. Vaillant1,2, S. Diridollou3, and F. Patat1,2, 1LUSSI/GIP Ultrasons, EA 2102, Faculté de Médecine, Tours, France, 2University Hospital, Tours, France, 3Institut de Recherche Pierre Fabre, CJA, Toulouse, France

P1F-4 Behavior of Several-micron Microbubbles Exposed to Ultrasound and Its Mechanical Effects on a Cell. N. Kudo*, T. Miyaoka, J. Furuya, M. Natori, F. Moriyasu, and K. Yamamoto, 1Hokkaido University, 2National Okura Hospital, 3Tokyo Medical University

P1H-4 Surface Roughness of Semiconductor Materials and Effect on Surface Acoustic Wave Propagation. C. M. Flannery and H. von Kiedrowski, Paul-Drude-Institut für Festkörperphysik, Berlin, Germany

P1I-3 Simulation of Nonlinear Rayleigh Wave Propagation through Minute Surface Crack. R. Omote*, K. Kawashima, and T. Ito, Nagoya Institute of Technology, Japan

P1I-4 Surface Roughness of Semiconductor Materials and Effect on Surface Acoustic Wave Propagation. C. M. Flannery and H. von Kiedrowski, Paul-Drude-Institut für Festkörperphysik, Berlin, Germany


P1I-6 Ultrasound Skin Characterization: An In Vivo Study of Intra and Inter-individual Variations. M. Lebertre1, F. Ossant*, J. Bouyer1, L. Vaillant1,2, S. Diridollou3, and F. Patat1,2, 1LUSSI/GIP Ultrasons, EA 2102, Faculté de Médecine, Tours, France, 2University Hospital, Tours, France, 3Institut de Recherche Pierre Fabre, CJA, Toulouse, France


P1I-1 Thermal Sensitivity of SH Plate Modes in Quartz. I. V. Anisimkin 1, V. I. Anisimkin 1, Yu. V. Gulyaev, and E. Verona*, 1RAS-Institute of Radioeengineering and Electronics, 2CNR-Institute of Acoustics


Session P2F

SAW MATERIALS AND PROPAGATION

Chair: B. Abbott

Sawtek


P2F-2 Analysis of SAW Grating Waveguides using 2-D Coupling-of-Modes equations. K. Hirota* and K. Nakamura*, TOYO Communication Equipment Co., Ltd., Kanagawa, Japan; *Graduate School of Engineering, Tohoku University, Sendai, Japan

P1E-7 The Magnitude of Transmural Heterogeneity as a Dominant Factor for LVEDP Elevation in HCM Patients. Y. Koiwa*, H. Kamada, J. Ikeda, K. Shirato, H. Honda, H. Kanai, H. Hasegawa, and Y. Saitoh, 1Graduate School of Medicine, Tohoku University, 2Department of Rehabilitation, Tohoku Bunka Gakuen University, 3Graduate School of Engineering, Tohoku University


P2F-3 Leaky Surface Acoustic Waves on Langasite with Thin Dielectric Films. S. Kakio*, T. Yamaguchi, and Y. Nakagawa, Faculty of Engineering, Yamashita University, Japan

P2F-4 Surface Roughness of Semiconductor Materials and Effect on Surface Acoustic Wave Propagation. C. M. Flannery and H. von Kiedrowski, Paul-Drude-Institut für Festkörperphysik, Berlin, Germany

P1I-7 The Magnitude of Transmural Heterogeneity as a Dominant Factor for LVEDP Elevation in HCM Patients. Y. Koiwa*, H. Kamada, J. Ikeda, K. Shirato, H. Honda, H. Kanai, H. Hasegawa, and Y. Saitoh, 1Graduate School of Medicine, Tohoku University, 2Department of Rehabilitation, Tohoku Bunka Gakuen University, 3Graduate School of Engineering, Tohoku University
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<th>Shear Elasticity Decrease in Thin Metallic Films and Its Influence on SAW Devices Characteristics.</th>
<th>S. Souchkov*, Saratov State University</th>
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<td>A Numerical Investigation of HVPSAW in LiTaO3 with Gold Uniform Film and Periodic Grating.</td>
<td>N. F. Naumenko*, Moscow Steel and Alloys Institute</td>
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<td>The Experimental SAW Propagation Characteristics of an Ion Assisted Deposited Boron Nitride Film on ST Quartz.</td>
<td>F. Hickernell*, Motorola Inc. (retired) and the University of Central Florida</td>
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<td>Dual Track Filters with Response Folding.</td>
<td>S.A. Zhgoon*, Moscow Power Engineering Institute</td>
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<td>A Novel IF SAW Filter Design for R-SPUUDT Filter Incorporating DWSF-SPUUDT Structure.</td>
<td>H. Nakamura*, T. Yamada 1, T. Ishizaki1, K. Matsunami2, and K. Nishimura2, Matsushita Electric Industrial Co., Ltd., Tokyo, Japan</td>
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<td>Session P2G-7</td>
<td>Evaluation of Surface Acoustic Wave Motor Using an Energy Circulation Driving Method.</td>
<td>S. Takeuchi*, T. Sato, and N. Kawashima, Toin University of Yokohama, Faculty of Engineering, Dept. of Biomedical engineering, BME Center</td>
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<td>Session P2G</td>
<td>Syntactic Foam for Air-Equivalent Solid Backing by Natural Origin Shirasu-Microballoon.</td>
<td>Y. Takeuchi*, Kagoshima University</td>
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<td>An Extension of the Electromechanical Coupling Coefficient to cMUT.</td>
<td>N. Lamberti*, A. Caronti, A. Carotenuto, and M. Pappalardo, Dip. di ing. Elettronica - University Roma Tre - Italy</td>
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<td>A Novel Optical Hydrophone Based on Quad...</td>
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<td>Session P2J</td>
<td>Radiated Fields of Rectangular Air-Coupled Micromachined Transducers.</td>
<td>T.J. Robertson1, D.A. Hutchins1, J.S. McIntosh1, D.R. Billson2, R.A. Noble3, and A.R.D. Jones4, University of Warwick UK, DERMA (Malvern) UK</td>
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<td>Session P2J</td>
<td>Development of Ultrasound Transducer with Double Peak Type Frequency Characteristics for Harmonic Imaging Ultrasound Diagnostic Equipment.</td>
<td>T. Takeuchi1, T. Sato, and N. Kawashima, Toin University of Yokohama, Faculty of Engineering, Dept. of Biomedical engineering, BME Center</td>
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*Author presenting paper.

P2G-2 Integration of SAW RF Filters on GaAs Substrate. T. Gryba, A. Haddou, V. Sadaune, V. Sadaune, V. Sadaune, V. Sadaune, V. Sadaune, V. Sadaune, V. Sadaune, V. Sadaune.


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<td>Queens University</td>
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<th>11:00 a.m.</th>
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<tr>
<td>1E-1 (Invited) Targeted Microbubble Contrast Agents: Diagnostic and Therapeutic Potential, J.D. Lindner*, University of Virginia</td>
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<td>2E-1 Analysis of Ultrasound Backscatter from Ensembles of Cells and Isolated Nuclei, M.C. Kolos*1,2, G.J. Czarnota1,2, M. Hussain1, J.W. Hunt1, F.S. Foster1, and M.D. Sherar1,3, *Ryaner University, 1University of Toronto, 2Ontario Cancer Institute / Princess Margaret Hospital, 3Sunnybrook Health Sciences Center</td>
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<td>3E-1 ZnO Based Thin Film Bulk Acoustic Wave Filters for GSM Band, J. Kaitila*, M. Ylilammi1, J. Molarius1, J. Ella1, and T. Makkonen1, *VTT Electronics, 1Nokia Mobile Phones Ltd., 2Materials Physics Laboratory, Helsinki University of Technology</td>
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<tr>
<td>4E-1 Local Phase Measurements with Focused Acoustic Transducer, S. Sathish*, R. Martin1, R. Reibel1, M. Rudolf1, and T. Morat1, 1University of Dayton Research Institute, 2AFRL/MLLP, 3Wright Patterson AFB</td>
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<tr>
<td>5E-1 PMUTS Design Optimization for Medical Probes Applications, J.L. Vernet*, R. Lardat1, 2George1, and J.F. Gelly*, 3Thales Microsonics, 4Consultant</td>
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<td>2E-2 B-mode Images of Spontaneous Rat Mammary Tumors Enhanced by Estimated Scatterer Parameters, M. L. Oelze*, J. F. Zachary, and W. D. O'Brien Jr., Bioacoustic Research Laboratory, University of Illinois at Urbana-Champaign</td>
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<td>3E-2 Piezoelectric Materials for Bulk Acoustic Wave (BAW) Resonators and Filters, H.P. Loebel*, M. Kleo*, C. Metzmacher1, W. Brand1, R. Milson2, and P. Lok3, 1Philips Research Laboratories Aachen, 2Philips Research Laboratories Redhill, 3Philips Semiconductors Nijmegen</td>
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<td>4E-2 High Power Acoustic Insult to Cells as Studied by Acoustic Microscopy, R. Halter, C. Miyasaka, B. Tittmann*, W. Hymer, and N. Nicholas, Penn State University, University Park, PA, USA</td>
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<td>5E-2 Piezoelectrically Actuated Flextensional MUTs, G. Percin1, and B. T. Khuri-Yakub*, 1ADEPTIENT, 2Edward L. Ginzton Laboratory, Stanford University</td>
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*Author presenting paper.
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<td>11:30 a.m.</td>
<td>1E-2</td>
<td>Detection of Ultrasound Generated Contrast Bubbles in a Refluxing Canine Model.</td>
<td>E. Y. Hwang*, J. B. Fowlkes, P. L. Carson, J. M. Rubin, and D. A. Bloom, University of Michigan, Department of Radiology, University of Michigan, Department of Surgery-Urology</td>
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<td>11:45 a.m.</td>
<td>1E-3</td>
<td>Contrast Agent-induced Cardiac Arrhythmias in Rats.</td>
<td>J. F. Zachary*, S. A. Hartlieb, L. A. Frizzell, and W. D. O’Brien, Jr., University of Illinois, Urbana, IL</td>
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<td>12:00 noon</td>
<td>1E-4</td>
<td>Subharmonic Phase Inversion for Tumor Perfusion Estimation.</td>
<td>J. E. Chomas*, R. E. Pollard, E. R. Wisner, and K. W. Ferrara, University of California, Davis, Riverside Research Institute, &quot;Columbia Pressy -fian Medical Center, &quot;D. C. Veterans Affairs Medical Center, &quot;Health Science Center, University of California, San Francisco, &quot;Institute of Biochemical Physics of Russian Academy of Science, Moscow, Russia</td>
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<td>12:30 p.m.</td>
<td>1E-6</td>
<td>High Performance Micromachined Unimorph Transducer Based on Electrostrictive P(VDF-TrFE)Polymer.</td>
<td>T.-B. Xu*, Z.-Y. Cheng, W. Chen, K. Uchino, and Q. M. Zhang, Materials Research Laboratory, The Pennsylvania State University, University Park, PA</td>
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<td>2E-6</td>
<td>3E-7</td>
<td>Improved 2D Speckle Images Account- ing for 3D Strain Effects. J. A. Hossack* and J. S. Ha, University of Virginia</td>
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<td>2:00 p.m. – 3:30 p.m.</td>
<td><strong>Session 1F</strong> CONTRAST AGENTS - NONLINEAR EFFECTS</td>
<td>N. de Jong</td>
<td>Erasmus University of Rotterdam</td>
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<td>2:00 p.m.</td>
<td>1F-1 Design and Acoustic Characterization of a Multi-Frequency Harmonic Array for Nonlinear Contrast Imaging.</td>
<td>F. Forsberg*1, W. T. Shi1, B. Jadidian1, and A. A. Winder1, Dept. of Radiology, Thomas Jefferson University, Philadelphia, PA, Layered Manufacturing Inc, Piscataway, NJ, Acoustic Sciences Associates, Westport, CT</td>
<td>1Dept. of Radiology, Thomas Jefferson University, Philadelphia, PA, 2Layered Manufacturing Inc, Piscataway, NJ, 3Acoustic Sciences Associates, Westport, CT</td>
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<td>2:15 p.m.</td>
<td>1F-2 Reduction of Nonlinear Contrast Agent Scattering due to Nonlinear Wave Propagation.</td>
<td>R. Hansen*, B.A.J. Angelsen, and T.F. Johansen, Dept. of Physiology and Biomedical Engineering, Norwegian University of Science and Technology</td>
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<td>2:00 p.m.</td>
<td><strong>Session 2F</strong> ELASTOGRAPHY I</td>
<td>H. Kanai</td>
<td>Tohoku University</td>
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<td>2:00 p.m.</td>
<td>2F-1 (Invited) Ultrasound Stimulated Vibro-acoustography.</td>
<td>J. Greenleaf* and M. Fatemi, Mayo Clinic</td>
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<td>2:15 p.m.</td>
<td>2F-2 Ultrasonic Monitoring of Materials during Extrusion Manufacture.</td>
<td>W. N. Cobb*1 and J. Johnson2, University of Denver Research Institute, Denver, Colorado, Naval Sea System Command, Indian Head, Maryland</td>
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<td><strong>Session 3F</strong> PROCESS MONITORING</td>
<td>D. Yuhas</td>
<td>Industrial Measurement Systems</td>
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<td>2:00 p.m.</td>
<td>3F-1 Ultrasonic Density Sensor - Higher Accuracy by Minimizing Error Influences.</td>
<td>N. Hoppe*1, G. Schoenfelder1, A. Puettmer1, and P. Hauptmann1, Otto-von-Guericke University Magdeburg Germany, 2Siemens AG Karlsruhe Germany</td>
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<td>2:00 p.m.</td>
<td><strong>Session 4F</strong> SAW ANALYSIS AND MODELING</td>
<td>V. Plessky</td>
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<td>2:00 p.m.</td>
<td>4F-1 Analysis of SAW Interdigital Transducers as Waveguides with N Acoustic Regions.</td>
<td>M. Jungwirth* and R. Weigel, Institute for Communications and Information Engineering</td>
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<td>4F-2 Modelling of Shear-Horizontal-Type Surface Acoustic Waves and Its Application to COM-Based Device Simulation.</td>
<td>K.-Y. Hashimoto*, T. Omori, and M. Yamaguchi, Faculty of Engineering, Chiba University</td>
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<td><strong>Session 5F</strong> CMT PROCESSING AND APPLICATIONS</td>
<td>L. Smith</td>
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<td>2:00 p.m.</td>
<td>5F-1 Capacitive Micromachined Ultrasonic Transducers with Asymmetric Membranes for Microfluidic Applications.</td>
<td>J. McLean* and F.L. Degertekin, Georgia Institute of Technology, Atlanta, GA</td>
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<td>2:15 p.m.</td>
<td>5F-2 Micromachined Capacitive Transducer Arrays for Imaging in Air.</td>
<td>J.S. McIntosh*, D.A. Hutchins1, T.J. Robertson1, A. Nield1, D.R. Billson1, R.A. Noble1, and A.R.D. Jones2, University of Warwick UK, DERA (Malvern) UK</td>
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1F-3 Nonlinear Coded Excitation Methods for Contrast Imaging. J. Borsboom*, C. T. Chin, A. Bouakaz, and N. de Jong, Erasmus University, Rotterdam, The Netherlands


3F-3 Monitoring Interfacial Biological Processes with use of TSM Piezoelectric Sensors: Case Study-Deposition of Collagen on Gold Surface. V. Devanji*, A. Fertala, and R. Lecue*, Drexel University, Thomas Jefferson Medical University

4F-3 An Accurate Modelling Tool for the Design of RF SAW Filters. S. Chamaly*, X. Perios, M. Doisy, and M. Solai, Thales Microtechnologies

2:45 p.m.


2F-3 Imaging Viscoelastic Properties of the Vitreous. F. Viola*, L. A. Negron, and W. F. Walker, University of Virginia, Charlottesville, VA

3F-3 Monitoring Interfacial Biological Processes with use of TSM Piezoelectric Sensors: Case Study-Deposition of Collagen on Gold Surface. V. Devanji*, A. Fertala, and R. Lecue*, Drexel University, Thomas Jefferson Medical University

3:00 p.m.


3F-5 (Invited) Ultrasonic Sensors for Process Applications. P. Hauptmann*, N. Hoppe, and A. Puettermann*, Otto-von-Guericke University Magdeburg, Germany, Siemens AG, Karlsruhe, Germany

3:15 p.m.

1F-6 Non-linear Scattering Properties of Contrast Agents Between 14-50 MHz. D. E. Goertz*, S. W. S. Wong, C. T. Chin, E. Cherin, P. N. Burns, and F. S. Foster, University of Toronto


4F-6 Optimal Design of SPUDT Filters Based on the Differential Model of Transducer. S. Shishkin*, Sawtek, Inc.

3F-4 Optimization of Buffer Rod Geometry using MATLAB. N. Hoppe*, A. Puettermann*, and P. Hauptmann*, Otto-von-Guericke University Magdeburg, Germany, Siemens AG, Karlsruhe, Germany

4F-5 Reflective Array Method for Analysis and Design of Weighted DART Transducers and Filters. D. P. Morgan*, Impulse Consulting

5F-3 (Invited) Capacitive Micromachined Ultrasonic Transducers and their Application. J. Binder*, A. Buhndorf, and O. Ahrens, University of Bremen, Bremen, Germany


5F-5 Micromachined Ultrasonic Si/PZT Transducer for Underwater Communications. E. Siwapornsathain* and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison
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<td>Chair: R. Addison, Jr.</td>
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**4:00 p.m. – 5:30 p.m.**

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<th>1G-2</th>
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<th>2G-2</th>
<th>3G-1</th>
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*Author presenting paper.
1G-3 On the Variance of Mean Integrated Backscatter from Moving Blood. Z. Cakareski1,2 and P.C. Pedersen1, 1Department of Electrical and Computer Engineering, Rice University, 2Department of Electrical and Computer Engineering, Worcester Polytechnic Institute

1G-4 Ultrasonic Measurement of Backscatter from Embryonic Mouse Red Blood Cells in Vivo. J. Le Floch1*, E. Cherin2, M. Zhang2, C. Kolb1, S.L. Adamson1, D. Vray1, and F.S. Foster1, INSA de Lyon, France, U of Toronto, Canada

1G-5 High Frequency Backscatter and Attenuation Measurements of Porcine Erythrocyte Suspensions Between 30-90 MHz. S. Maruvada1*, K.K. Shung2, and S.-H. Wang2, 1Brigham and Women’s Hospital, Dept. of Radiology, 2The Pennsylvania State University, Bioengineering Program

1G-6 Color Doppler Imaging of Acoustic Streaming for Hematoma Diagnosis. X. Shi1*, R. W. Martin, S. Vaezy, and P. Kaczkowski, University of Washington, Seattle, WA

2G-3 (Invited) Real Time Strain Imaging and in-vivo Applications in Prostate Cancer. A. Pesavento1*, A. Lorenz1, U. Schepers1, S. Siebers1, H. Ermert1, H. Sommerfeld1, M. Garcia-Schuermann1, K. Kuehne1, T. Seng1, and S. Philipoulou1, Lorenz & Pesavento IT, 1Department of Electrical Engineering, Ruhr-University Bochum, 2Department of Ultrasound, Ruhr-University Bochum, 3Department of Pathology, Ruhr-University Bochum.

2G-4 Noncontact Determination of the Bending Stiffness of Paper Using Laser Ultrasonics and Wavelet Analysis—Effect of Moisture Content and Temperature. D. Griggs1, Y. Bertheil1, M. Corwell1, and C. Habeger1, 1Georgia Institute of Technology, Atlanta, GA, USA, 2Institute of Paper Science and Technology, Atlanta, GA, USA

2G-5 Capacitive Micromachined Ultrasonic Transducer Arrays For Medical Imaging: Experimental Results. U. Demirci1*, Oralkan, J. Johnson, A. S. Ergun, M. Karaman, and B. T. Khuri-Yakub, Stanford University, Stanford, CA

3G-2 Noncontact Determination of the Bending Stiffness of Paper Using Laser Ultrasonics and Wavelet Analysis—Effect of Moisture Content and Temperature. D. Griggs1, Y. Bertheil1, M. Corwell1, and C. Habeger1, 1Georgia Institute of Technology, Atlanta, GA, USA, 2Institute of Paper Science and Technology, Atlanta, GA, USA

3G-3 Quantitative Subsurface Defects Detection in Composite Materials Using a Non-Contact Ultrasonic System. D. Cerniglia1*, B. B. Djordjevic1, and V. Nigrel1, 1University of Palermo, Palermo, Italy, 2‘Johns Hopkins University, Baltimore, MD, 3University of Cassino, Cassino, Italy

3G-4 Measurement on the Dispersion Relations of Leaky Lamb Waves with a Laser-Generation/LFB Detection Hybrid Technique. C. H. Yang1* and M. F. Huang, Chang Gung University

3G-5 Experimental Characterization of a 5 MHz CMUT Array Element in Air and Water. A. Caronti1*, A. Colli1, R. Carotenuto1, V. Nigrel1, and M. Pappalardo1, 1University of Cassino, Cassino, Italy

4G-3 SAW Resonators with Second Harmonic Reflectors on 128° LiNbO3. S. Lehtonen1*, V.P. Plessyk1, Y. Koskela1, and M.M. Saloma1, 1Helsinki University of Technology, Espoo, Finland, 2Thales Microsonics, SAW Design Bureau, Neuchatel, Switzerland

4G-4 Nonlinear Acoustoelectric and Acoustooptic Effects in Semiconductor Layered Systems. H.-J. Kutschera1*, A. Wixforth1, A.V. Kalameitsev1, and A.O. Govorov1, 1Center for NanoScience (CeNS), University of Munich, D-80339 Munich, Germany, 2Institute of Semiconductor Physics, RAS, 630090 Novosibirsk, Russia

4G-5 Fabrication of SAW Devices on Balls with Extremely High Sensitivity. Y. Tsukahara1*, N. Nakaso1, H. Cho2, and K. Yamanaka1, 1Toppan Printing Company, 2Tohoku University

5G-3 Capacitive Micromachined Ultrasonic Transducers with Improved Frequency Response, P.-C. Ecartt1*, Siemens AG

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<tr>
<td>FLOW AND TISSUE MOTION—NEW METHODS</td>
<td>THERAPY: BIOEFFECTS</td>
<td>ULTRASONIC MOTORS</td>
<td>SAW SYSTEMS AND OSCILLATORS</td>
<td>TRANSDUCER MATERIALS</td>
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<td>Chair: P. Tortoli</td>
<td>Chair: J. Greenleaf</td>
<td>Chair: A. Lal</td>
<td>Chair: D. Hauden</td>
<td>Chair: L. Brown</td>
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<td>University of Florence</td>
<td>Mayo Clinic</td>
<td>University of Wisconsin-Madison</td>
<td>LPMO-CNRS</td>
<td>South Dakota State University</td>
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**Wednesday, October 10, 2001**

**8:00 a.m. – 9:30 a.m.**

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<tr>
<th>Rutherford</th>
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<tr>
<td>8:00 a.m.</td>
<td>1H-1 High Frame Rate Tissue Doppler Imaging</td>
<td>2H-1 Enhancement of Ultrasonic Absorption by Microbubbles for Therapeutic Application</td>
<td>3H-1 A High Power Ultrasonic Linear Motor with a Longitudinal-Bending Hybrid Transducer for High-Speed and Precise Drive of a Heavy Stage</td>
<td>4H-1 (Invited) Passive Integration with SAW Filter</td>
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<tr>
<td>8:15 a.m.</td>
<td>1H-2 Dynamic Color Doppler Extended Field of View Imaging</td>
<td>2H-2 Effect of High Intensity Focused Ultrasound Induced Cavitation on Platelet Aggregation</td>
<td>3H-2 Optimization of a Bulk-driven Surface Micromachined Ultrasonic Micromotor</td>
<td>5H-1 Temperature Dependencies of Dielectric and Piezoelectric Properties of Pb(Zn_{1/3}Nb_{2/3})O_3-PbTiO_3 Single Crystals</td>
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*Author presenting paper.*
1H-3 Validation of a Theoretical Approach for Estimation of Velocity Error of a Vector Doppler System. R. Steel1, K. V. Ramnarine2, P. J. Fish1, and P. R. Hoskins*, 1University of Wales Bangor, Bangor, United Kingdom, 2University of Edinburgh, Edinburgh, United Kingdom

1H-4 A New Maximum Likelihood Blood Velocity Estimator Incorporating Spatial and Temporal Correlation. N. Schlakjer* and J.A. Jensen, Center for Fast Ultrasound Imaging, Oersted*DTU, Technical University of Denmark

1H-5 Visualization of Blood Flow in Small Blood Vessels by High Frame Rate Ultrasound Imaging. H. Torp*1 and S. Bjaerum 2, 1Norwegian University of Science and Technology, Trondheim, Norway, 2GE Vingmed Ultrasound, Horten, Norway

1H-6 A New High Resolution Color Flow Imaging System Using an Eigenspace-based Adaptive Filter for Clutter Rejection. D. E. Kroone* and K. W. Ferrara, University of California, Davis, CA

2H-2 (Invited) Acoustic Hemostasis. L. Crum*, Center for Industrial and Medical Ultrasound, Applied Physics Laboratory, University of Washington

2H-3 Load Characteristics of Ultrasonic Motor with a Longitudinal-Torsional Converter and Various Nonlinear Springs for Inducing Static Pressure. J. Tsujino* and Atsuyuki Suzuki, Kanagawa University

2H-4 An Acoustic Fiber Based Piezoelectric Motor. R. Karotenuto*1, A. Iula 1, G. Caliano 1, N. Lamberti*2, and A. Asai*, 1Research Center of Ultrasonic Motors at Nanjing Univ. of Aero. & Astro., Nanjing, P.R.China, 2Interdisciplinary Microsystems Group at University of Florida, Gainesville, Florida


3H-4 Age-dependent Threshold and Superthreshold Behavior of Ultrasound-induced Lung Hemorrhage in Pigs. W. D. O’Brien, Jr.*1, D. G. Simpson*2, L. A. Frizzell*, J. F. Zachary*3, 1BRL, Dept. of ECE, University of Illinois, Urbana, IL, 2Dept. of Statistics, University of Illinois, Urbana, IL, 3Dept. of Veterinary Pathobiology, University of Illinois, Urbana, IL

3H-5 Relationships Between Scattered Signals from Ultrasonically Activated Contrast Agents and Cell Membrane Damage in Vitro. A. Safari*, M. Allahverdi 1, F. Mohammadi2, and R. Panada 3, 1Rutgers University, 2Advanced Ceramatics, Inc., 3Agilent Technologies

4H-2 Wideband Programmable SAW Filters. T. T. Alexander*1, Y.C. Park 1, W.D. Hunt 1, J.S. Kenney*, T. Kachi 1, and A. Sumioka 2, 1Research Center of Ultrasonic Motors at Nanjing Univ. of Aero. & Astro., Nanjing, P.R.China, 2Interdisciplinary Microsystems Group at University of Florida, Gainesville, Florida


5H-3 Vibration Velocity Limitation of Transducer using High-thermal PZT Films. Y. Kobayashi1, T. Kanda 2, M. Kuribayashi Kurosawa*, and T. Higuchi*, 1Tokyo Institute of Technology, *The University of Tokyo

5H-4 Study on the Linear Ultrasonic Motor Based on the Vibration in Plane of the Thin Rectangular Plate. C. Zhao*1, J. Liu*, and M. Sheplak1, 1Research Center of Ultrasonic Motors at Nanjing Univ. of Aero. & Astro., Nanjing, P.R.China, *Interdisciplinary Microsystems Group at University of Florida, Gainesville, Florida


**Session P1J**

**THERAPY AND BIOEFFECTS**

Chair: E. Konofagou
Barrington (P1J–P1L), East Foyer (P2L–P2R), Jarrett (Student Competition)

**P1J-1** An Optical Interferometer for Characterising the High Acoustic Amplitude Pulses Generated by Shock-Wave Lithotripters. C. J. Bickley*, R. C. Preston, and D. R. Bacon, National Physical Laboratory

**P1J-2** Development and Characterization of an Innovative Synthetic Tissue-mimicking Material for High Intensity Focused Ultrasound (HIFU) Exposures. C. Lafon* 1, P. J. Kaczkowski 1, S. Vaezy 1, O. A. Sapozhnikov 2, and M. Noble 1, 1Applied Physics Laboratory, Seattle, WA, 2Moscow State University, Moscow, Russia

**P1J-3** Basic Study on the Effect of Ultrasound Exposure upon Suppression of Cancer Cell Proliferation. S. Takeuchi*, T. Watanabe, T. Sato*, H. Nishimura*, and N. Kawashima*, Toin University of Yokohama, Facul-

**Session P1K**

**MEDICAL BEAMFORMING**

Chair: S. Ueha
Tokyo Institute of Technology

**P1K-1** Advanced Beamforming Using Matched Filter Processing Based on Spatial Impulse Responses. J. A. Jensen* and P. Gori, Center for Fast Ultrasound Imaging, Densaiti-DTU, Technical University of Denmark

**P1K-2** Real-time Synthetic Aperture Beamforming: Practical Issues for Hardware Implementation. C. R. Hazard* 1,2  and G.R. Lockwood1,2,3, 1The Cleveland Clinic Foundation, Cleveland, Ohio, 2The Ohio State University, Columbus, Ohio, 3Queen’s University, Kingston, Ontario

**P1K-3** Simultaneous Multizone Focusing Method with Orthogonal Chirp Signals. Y. K. Jeong* and T.-K. Song, Songan University, Seoul, South Korea


**Session P1L**

**INDUSTRIAL APPLICATIONS**

Chair: J. Kushibiki
University of Tohoku

**P1L-1** Examining the Possibilities of a LiNbO3 Langevin Resonator without Bolting. T. Okuda* and N. Wakatsuki, Ishinomaki Senshu University, Japan

**P1L-2** Low-Power Acoustic Harvesting of Aerosol Particles. G. Kaduchak* and D. N. Sinha, Los Alamos National Laboratory

**P1L-7** Determination of the Transient Response of an Anisotropic Layer to an Impulsive Line Source by the Generalized-Ray Method. O. Poncelot* 1, M. Deschamps, and A. G. Every* University of Bordeaux, Talence, France, University of the Witwatersrand, Johannesburg, South Africa

**Session P1M**

**WAVE GENERATION AND PROPAGATION**

Chair: E. Furgason
Purdue University

**P1M-1** Calculation of Ultrasound Excited by a Pulsed Thermal Source Distributed Along the Depth Direction. J. He*, X. R. Zhang*, Y. Y. Huang, and D. C. Xian, 1Institute of Acoustics, Nanjing University, 2Institute of Acoustics, Nanjing University, 3Institute of High Energy Physics, Chinese Academy of Sciences

**P1M-2** Frequency Measurement of a Piezoelectric Resonator Using a Laser Light. S. Noge* and T. Uno, Kanagawa Institute of Technology

**P1M-7** Analysis of the Internal-loss-heating of Ultrasonic Vibrators by Infrared Ray Imaging. M. Zhang*, Y. Niu, and J. Ren, Shandong Normal University, Xi’an, P.R. China

**Session P1N**

**PHYSICAL ACOUSTICS II**

Chair: M. Levy
ML Consulting

**P1N-1** Surface Modification of Diamond Powders by Sonochemical Reaction. T. Uchida*, T. Satou, S. Takeuchi, N. Kuramochi, and N. Kawashima, Toin University of Yokohama, BME Center

**P1N-2** Evolution of Cavitation Field Excited by Periodic Sequence of Tone Bursts. V. G. Andreev*, V. L. Aleynikov, and M. A. Burnin, Acoustics Dept., Physics Faculty, MSU

**Session P2L**

**Session P2L**

**PHYSICAL ACOUSTICS II**

Chair: M. Levy
ML Consulting

**P2L-1** Surface Modification of Diamond Powders by Sonochemical Reaction. T. Uchida*, T. Satou, S. Takeuchi, N. Kuramochi, and N. Kawashima, Toin University of Yokohama, BME Center
P1J-4 High Speed Imaging of Acoustic Vaporization of Single Droplets. O. D. Kripfgans*, J. B. Fowlkes, and P. L. Carson, University of Michigan

P1K-4 Dynamic Focus Control for Imaging with 2D Arrays. P.-C. Li* and J.-J. Huang, Department of Electrical Engineering, National Taiwan University


P1M-3 Vibratory Gyroscopes Using Trapped-Energy Vibrators of Rotated Y-cut LiTiO₃. K. Nakamura and T. Abe*, Graduate School of Engineering, Tohoku University


P1J-6 A Practical Use of Low Frequency Ultrasound For A Rapid and Reproducible Transdermal Delivery of Insulin. A. Boucaud*1, L. Machet 1, M. A. Garrigue 3, L. Vaillant 1,2, and F. Patat1, 1LUSSI/GIP Ultrasons, University F. Rabelais, Tours, 2Dermatology Department, Tours Hospital, 3Biochemical Laboratory, Tours Hospital, France


P1L-6 Experimental Study of Ultrasonic Atomization Process for Manufacturing Metallic Powder. S.-J. Wu*, Z.-G. Wang, J.-L. Ren, and C.-R. Liu, Applied Acoustics Institute, Shaanxi Normal University, Xian, Shaanxi, 710062, P.R. China

P1M-5 Acoustic Modes in Cylindrically Orthotropic Hollow Cylinders. J.E. Lefebvre*, V. Zhang, A. Haddou, J. Gazalet, and T. Gryba, IEMN DOAE UMR CNRS 8520 Valenciennes France

P1J-7 A High Frequency Ultrasonic Histology Designed to Reduce Friction Trauma in Cystectomy Operations. A. Iula*, S. Pallini1, R. Carotenuto1, N. Lamberti, and M. Pappalardo1, University Roma Tre, Italy, 1University of Salerno, Italy

P1K-6 A New Architecture for a Single-Chip Multi-Channel Beam-Former Based on a Standard FPGA. S. G. Tomov* and J. A. Jensen, Center for Fast Ultrasound Imaging

P1L-7 A Novel Pulse Compression Technique Using Inverse Filtering in Frequency Domain. G. S. Jeng*, S. Huang, P.-C. Li, and J. Tsao, Dept. of Electrical Engineering, National Taiwan University

P1M-6 Sonic-Crystal Wave-Guides by Acrylic Cylinders in Air —Experimental Observations Based on Numerical Analyses. T. Miyashita*, and C. Inoue, Ryukoku University, Ohtsu Japan

P2L-2 Steering Efficiency of Acoustic-Beam for Additional and Multiplicative Acoustic Logging Transmission Networks. L. Fa*, J. P. Castagna1, D. Dong1, and J. Zhang1, X'Tan Petroleum Exploration Instrument Complex, Oklahoma University, *Northwest Polytechnic University, *X'Ian Petroleum Institute
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<td>P2N-1</td>
<td>Analysis of a Ceramic Thickness-shear Piezoelectric Transformer. J. S. Yang1, X. Zhang*, and W. Zhang, 1University of Nebraska-Lincoln, Lincoln, NE, 2CTS Wireless Components, Bloomingdale, IL</td>
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<td>P2N-2</td>
<td>Acoustic Pressure Measurement by an Acousto-Optic Tomography Method. J. P. Remenieras*, O. Bou Matar, S. Calle, and F. Patat, 1University of Ne- braska-Lincoln, Lincoln, NE, 2CTS Wireless Components, Bloomingdale, IL</td>
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<th>TRANSDUCER MATERIAL CHARACTERIZATION</th>
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<td>P2P-1</td>
<td>Characterizing the Thickness Shear Mode Properties of the Piezoelectric Thin Films Deposited on Substrates. M.-C. Chao*, B. Wu, Z. Wang, and C.-L. Wang, TXC Corporation</td>
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<tr>
<td>P2P-2</td>
<td>Low-impedance and Low-loss Custom- ized Materials for Air-coupled Piezoelectric Transducers. T.E. Gomez*, F. Montero, E. Molins*, and J. R. Rodriguez, 1Instituto de Acustica, 2Instituto de Ciencia de Materiales, 3Fisica Aplicada y Tecnologia Avanzada. Universidad Nacional Autonoma de Mexico</td>
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<td>P2O-1</td>
<td>An Experience of PNN-PT-PZ High-k Piezoelectric Ceramics Aiming for Medical Imaging Transducers. Y. Takeuchi*, M. Kondo, and K. Kurihara, 1Kagoshima University, 2Fujitsu Laboratories Ltd.</td>
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<th>Session P2Q</th>
<th>Resonant Properties of Fast Leaky Surface Acoustic Waves on Lithium Niobate. V.I. Grigorievski*, IRE RAS, Fryazino, Moscow Region, Russia</th>
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<tr>
<td>P2Q-1</td>
<td>Two Branches of Normal Surface Acoustic Modes on Rotated Cuts of KNbO3. V.G. Mozhaev and M. Weinhardt*</td>
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<th>Session P2R</th>
<th>Resonant Properties of Fast Leaky Surface Acoustic Waves on Lithium Niobate. V.I. Grigorievski*, IRE RAS, Fryazino, Moscow Region, Russia</th>
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<th>Session P2N</th>
<th>Resonant Properties of Fast Leaky Surface Acoustic Waves on Lithium Niobate. V.I. Grigorievski*, IRE RAS, Fryazino, Moscow Region, Russia</th>
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<td>P2N-1</td>
<td>P2N-7 The Peculiarity of Propagation of Ultra-sonic Waves in CdHg1-xTe under Ultrasonic Loading. I. Lysiuk*, Institute of Semiconductor Physics of NAS Ukraine</td>
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<td>Multi-Frequency Interstitial Ultrasound Applicator for Conformal Thermal Therapy. R. Chopra*, C. Lugnibu, J. A. Weymouth, F. S. Foster, and M. J. Bronskill, Sunnybrook and Women’s College Health Sciences Centre, Toronto, Canada</td>
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<td>11:15</td>
<td>4I-2</td>
<td>Chemical Composition Dependences of the Acoustical Physical Constants of LiNbO₃ and LiTaO₃ Crystals. J. Kushibiki*, I. Takanaga, S. Komatsuzaki, and T. Ujii, Tohoku University, Sendai, Japan</td>
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<th>Time</th>
<th>Session 4I</th>
<th>SAW MATERIALS</th>
<th>Chair: C. Ruppel</th>
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<th>NDE - MATERIAL CHARACTERIZATION</th>
<th>Chair: J. Saniee</th>
<th>Illinois Institute of Technology</th>
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*Author presenting paper.
11:30 a.m.
11-2 In vivo Lateral Flow Estimation with Spatial Quadrature. M. E. Anderson*, University of Rochester

2i-3 Comparison of Split-Beam Transducer Geometries and Excitation Configurations for Transrectal Prostate HIFU Treatments. R. Seip**, N. Sanghvi1, T. Uchida2, and S. Umemura3, 1Focus Surgery, Inc., Indianapolis, IN, 2Kitasato University School of Medicine, Sagamihara, Japan, 3Hitachi Ltd., Kokubunji, Tokyo, Japan

3i-2 High Frequency Silicon-Based Ultrasonic Nozzle*. S. Tsai1, T. K. Tseng2, Y. F. Chou3, H. Y. Tsai4, J. H. Yoo5, and C. Tsai6, 1California State University, Long Beach, CA, 2Institute for Applied Science and Engineering Research, Academia Sinica, Nankang, Taipei, Taiwan, 3National Taiwan University, Taipei, Taiwan, 4University of Irvine, CA, 5University of Switzerland, ETH, Zurich, Switzerland

4i-3 (Invited) Elastic, Theremoelastic and Piezoelectric Properties of La3Ga5SiO14 and Structurally Related Crystals - An Application of Resonant Ultrasonic Spectroscopy. J. Schreuer*, Laboratory of Crystallography, ETH, Zurich, Switzerland

5i-3 Stress Measurements Using A Point-Source/Point-Receiver Surface Wave Transducer. Y.-C. Lee* and S. H. Kuo, Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

11:45 a.m.
11-3 Lateral Blood Velocity Measurement in the Carotid Artery via Speckle Tracking. C.M. Gallippi* 1, L.N. Bohs 1, M.E. Anderson 2, A.N. Congdon 1, and G.E. Trahey 1, 1Duke University, Durham, NC, 2University of Rochester, Rochester, NY

2i-4 Ultrasound Guided Localized Detection of Cavitation during Lithotripsy in Pig Kidney In Vivo. O. A. Sapozhnikov*, M. R. Bailey, N. A. Miller, Y. A. Pishchalnikov, I. V. Pishchalnikova, J. A. McAteer, P. M. Blomgren, B. A. Conners, and A. E. Trahey, Moscow State University, Moscow, Russia, and University Washington, Seattle, WA, USA, 4Indiana Medical School, Indianapolis, USA

3i-3 Programmable Acoustic Streaming on a 2D PZT Pixel Array. J. Ochoco* and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison

3i-4 An Acoustic Vortex Generator for Microfluidic Particle Entrapment. A. Sathaye* and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison

4i-4 Investigation of Langanite and Langatate Materials for Use in SAW Device Applications. D. C. Malocha* 1 and M. Pereira da Cunha1, 1School of Electrical and Computer Science, University of Central Florida, and 2Dept. of Electrical and Computer Eng., University of Maine

5i-5 Ultrasonic Nondestructive Testing of Explosive Welds. Y. Fan* and A. N. Sinclair, University of Toronto, Toronto, ON, Canada

12:00 noon
11-4 Dynamic Noise Suppression in Blood during Measurement of Transverse Blood Flow along an Intravascular Array Catheter. F. A. Lupotti, F. Mastik, C. L. de Korte, and A. F. W. van der Steen, Erasmus University Rotterdam, Thoraxcenter

2i-5 Lesion Formation and Visualization Using Dual-Mode Ultrasonic Phased Arrays. E. S. Ebbini*, J. Bischoff, and J. Coad, University of Minnesota Twin Cities

3i-5 Actuation of Atomic Force Microscope Cantilevers by Acoustic Radiation Pressure. A. Sathaye1, B. Hadimioglu, F. L. Degertekin1, F. L. Lizzi*, and S. H. Kuo, Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

3i-6 Critical Properties of Nanoporous Aerogel Thin Films from Surface Acoustic Wave Spectroscopy. C.M. Flannery* 1, C. Murray 2, I. Streiter2, and S.E. Schulz 2, 1Paul-Drude-Institut fuer Festkoerperelektronik, Berlin, Germany, 2TU Chemnitz, Chemnitz, Germany

12:15 p.m.
11-5 On the Presence of Secondary Flow Components in the Common Carotid Artery. P. Tortoli*, G. Bambi1, F. Guidi1, A. Della Valle1, S. Ricci1, and V. Michelassi2, 1University of Florence, 2University of Roma III

2i-6 Ultrasound Sensing of Induced Motion for Monitoring Thermal and Mechanical Lesions Induced by Therapeutic Ultrasound. F. Lizzi*, R. Muratore, C. X. Deng, S. Mikaelian, J. Ketterling, and S. K. Alam, Riverside Research Institute, New York, NY

3i-5 Actuation of Atomic Force Microscope Cantilevers by Acoustic Radiation Pressure. A. Sathaye1, B. Hadimioglu, F. L. Degertekin1, F. L. Lizzi*, and S. H. Kuo, Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

5i-6 Ultrasonic Frequency Difference Generation to Characterize Fluids in Saturated Berea Sandstone and D.N. Sinha, Los Alamos National Laboratory, USA

12:30 p.m.
3i-6 Critical Properties of Nanoporous Aerogel Thin Films from Surface Acoustic Wave Spectroscopy. C.M. Flannery* 1, C. Murray 2, I. Streiter2, and S.E. Schulz 2, 1Paul-Drude-Institut fuer Festkoerperelektronik, Berlin, Germany, 2TU Chemnitz, Chemnitz, Germany

4i-5 SAW Propagation in LiNbO3 Damaged by E-Beam. R. G. Krysthal and A. V. Medved*, Institute of Radioengineering and Electronics of Russian Academy of Sciences

5i-6 Ultrasonic Frequency Difference Generation to Characterize Fluids in Saturated Berea Sandstone. C.S. Kwiatkowski1 and D.N. Sinha, Los Alamos National Laboratory, USA

5i-6 Ultrasonic Frequency Difference Generation to Characterize Fluids in Saturated Berea Sandstone. C.S. Kwiatkowski1 and D.N. Sinha, Los Alamos National Laboratory, USA
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<tr>
<th>Time</th>
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<tr>
<td>2:00 p.m.</td>
<td>MEDICAL IMAGING</td>
<td>THERAPY - DEVICES</td>
<td>WAVE PROPAGATION MODELING</td>
<td>SAW PROPAGATION</td>
<td>MATERIALS CHARACTERIZATION</td>
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<td>Chair: H. Ermert</td>
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<td>Chair: K. Batra</td>
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<td>Ruhr-University Bochum</td>
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<td>D. B. Plewes, C. Piron, C. Lugtenbuhle, P. Causer, and R. Shumak, Departments of Medical Biophysics and Medical Imaging, Sunnybrook and Women's College Health Science Center, University of Toronto, Canada</td>
<td>D. Melo de Lima, Y. Theillere, F. Prat, A. Arefiev, and D. Cathignol, INSERM unit 556, Dept of hepatogastroenterology, Bicetre Hospital</td>
<td>V. V. Krylov, Loughborough University</td>
<td>M. Pham-Thi, P. Gaucher, O. Lacour, and G. Van Der Brock, Thales Central Research Laboratory, Orsay, France, Thomson Marconi Sonars, Sophia Antipolis, France</td>
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*Author presenting paper.
2:30 p.m.
1J-2 Three-dimensional High-frequency Ultrasound for Planning and Long-term Monitoring of Ocular Tumor Therapy using Radiotherapy and Intense Ultrasound. F.L. Lizzi*1, R. Muratore 1, A. Kalisz 1, S. Ramachandran 1, D.J. Coleman 1, and R.H. Silverman 1, Riverside Research Institute, New York, NY. 2Weill Medical College of Cornell University, New York, NY.

2:45 p.m.
1J-3 Novel Ultrasound Methods for Visualizing Prostate Brachytherapy Seeds. E. J. Feleppa*1, S. Ramachandran 1, S. K. Alam 1, R. D. Ennis 1, S. Ramachandran 2, C. S. Wuu 2, and P. B. Schiff 2, 1Riverside Research Institute, 2Columbia Presbyterian Medical Center.

3:00 p.m.
1J-4 A System for Ultrasound-Based Intraoperative Navigation in Spine-Surgery. P. K. Weber*1, L. Peter 1, G. Voss 1, J.C. Schlegel 1, and U. Harland 1, 1IBMT, 2IGD, 3Toshiba Medical Systems Europe, 4Klinikum Saarbrücken.

2:30 p.m.
1J-5 A Novel Aperture Design Method for Improved Depth of Field in Ultrasound Imaging. K. Ranganathan* and W. F. Walker, University of Virginia.

2:45 p.m.
1J-6 Characterization of Transducers and Resonators at High Drive Levels. S. Sherrit*, D.A. Sigel, M.J. Gradziel, X. Bao, S.A. Askins, B.P. Dolgin, and Y. Bar-Cohen, Jet Propulsion Laboratory, California Institute of Technology.

3:00 p.m.

2:30 p.m.
1J-8 High-resolution Imaging of Surface Acoustic Wave Scattering. G. Behme 1,2, and T. Hesjedal* 1, 1Stanford University, Stanford, CA, 2Paul Drude Institute, Berlin, Germany.

2:45 p.m.
1J-9 Measurement of Large Ultrasonic Displacements with a Heterodyne Probe. C. Barriere* and D. Royer, Laboratoire Ondes et Acoustique, Paris, France.

3:00 p.m.
2J-2 Three-dimensional High-frequency Ultrasound for Planning and Long-term Monitoring of Ocular Tumor Therapy using Radiotherapy and Intense Ultrasound. F.L. Lizzi*1, R. Muratore 1, A. Kalisz 1, S. Ramachandran 1, D.J. Coleman 1, and R.H. Silverman 1, Riverside Research Institute, New York, NY. 2Weill Medical College of Cornell University, New York, NY.

2:30 p.m.
2J-3 Integrated Pressure and Flow Sensor in Silicon-Based Ultrasound Surgical Actuator. X. Chen* and A. Lal, SonicMEMS Laboratory, University of Wisconsin-Madison.

2:45 p.m.

3:00 p.m.

2:30 p.m.
3J-2 Three-dimensional High-frequency Ultrasound for Planning and Long-term Monitoring of Ocular Tumor Therapy using Radiotherapy and Intense Ultrasound. F.L. Lizzi*1, R. Muratore 1, A. Kalisz 1, S. Ramachandran 1, D.J. Coleman 1, and R.H. Silverman 1, Riverside Research Institute, New York, NY. 2Weill Medical College of Cornell University, New York, NY.

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2:30 p.m.
3J-5 Numerical Modeling of Finite Amplitude Sound Beams Radiated From Non Axisymmetric Plane Transducers. T. Nouri-Baranger* 1,2, E. Closset 1,2 , and D. Cathignol 2, 1Université Claude Bernard Lyon1, Villeurbanne, France, 2INSERM Research Unit U556, Lyon, France.

2:30 p.m.
3J-6 Characterization of Transducers and Resonators at High Drive Levels. S. Sherrit*, D.A. Sigel, M.J. Gradziel, X. Bao, S.A. Askins, B.P. Dolgin, and Y. Bar-Cohen, Jet Propulsion Laboratory, California Institute of Technology.

2:30 p.m.
4J-2 Three-dimensional High-frequency Ultrasound for Planning and Long-term Monitoring of Ocular Tumor Therapy using Radiotherapy and Intense Ultrasound. F.L. Lizzi*1, R. Muratore 1, A. Kalisz 1, S. Ramachandran 1, D.J. Coleman 1, and R.H. Silverman 1, Riverside Research Institute, New York, NY. 2Weill Medical College of Cornell University, New York, NY.

2:30 p.m.

2:30 p.m.

2:30 p.m.
4J-5 Imaging of Surface Acoustic Waves. C. Boedefeld* 1, H.-J. Kutschera 1, F. Beil1, A. Wixforth1, J. Toivonen1, M. Sopanen1, and H. Lipsanen1, 1Physics Dep., Ludwig-Maximilian-University, 2Optoelectronics Laboratory, Helsinki University of Technology, Otakaari 7A, FIN-02150 Espoo, Finland.

3:00 p.m.
4J-6 High-resolution Imaging of Surface Acoustic Wave Scattering. G. Behme 1,2, and T. Hesjedal* 1, 1Stanford University, Stanford, CA, 2Paul Drude Institute, Berlin, Germany.

3:00 p.m.
5J-2 Three-dimensional High-frequency Ultrasound for Planning and Long-term Monitoring of Ocular Tumor Therapy using Radiotherapy and Intense Ultrasound. F.L. Lizzi*1, R. Muratore 1, A. Kalisz 1, S. Ramachandran 1, D.J. Coleman 1, and R.H. Silverman 1, Riverside Research Institute, New York, NY. 2Weill Medical College of Cornell University, New York, NY.

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<th>Session 3K HIGH POWER ULTRASONIC PROCESSING</th>
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<td>GE Medical Systems</td>
<td>Hitachi Research Laboratory</td>
<td>University D. Roma</td>
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**Session 1K NOVEL IMAGING**


1K-2 Evaluation of Translating Apertures Based Angular Scatter Imaging on a Clinical Imaging System. M. J. McAllister*, K. W. Rigby†, and W. F. Walker*, Univ. of Virginia, GE Corp. R&D, Schenectady, NY

**Session 2K THERAPY: SURGERY**

2K-1 MR Guided Focused Ultrasound Surgery for the Treatment of Breast Cancer. J. W. Jenne‡, R. Rastert‡, I. Simantov‡, J. Debus‡, and P. E. Huber‡. *German Cancer Research Center, ‡University of Heidelberg

2K-2 Unblocking Cerebral Spinal Fluid Shunts Using Low Frequency Ultrasonic Cavitation. H. Ginsberg‡, J. Drake‡, and R. Cobbold‡. ‡Division of Neurosurgery, Hospital for Sick Children, University of Toronto, Toronto, Canada, ‡Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada

**Session 3K HIGH POWER ULTRASONIC PROCESSING**

3K-1 (Invited) Ultrasonic Separation of Suspended Particles. E. Benes*, M. Groeschi, F. Trampler, Ch. Deilouroy, H. Boehm, L. Gherardini, S. Radel, and H. Nowotny, Vienna University of Technology, Wiedner Hauptstr. 8/134, A-1040 Vienna, Austria

**Session 4K SAW THIN FILMS AND DEVICES**

4K-1 A New Piezoelectric Material: MgZnO. N. W. Emanetoglu*, S. Muthukumar, R. Wittstruck, S. Feng, and Y. Lu, School of Engineering, Rutgers University, Piscataway, NJ


*R Author presenting paper.
1K-3 A Pulse-Echo Beamformer with High Lateral and Temporal Resolution and Depth-Independent Lateral Response, K. Ustuner*, C. Bradley, and L. Thomas, Siemens Ultrasound

1K-4 Sidelobe Reduction of Images with Coded Limited Diffraction Beams, J.-Y. Lu*, J. Cheng, and H. Peng, The University of Toledo

1K-5 Simulations and Measurements of Harmonic Pressure Field Generated by Medical Phased Array Transducers, A. Bouakaz1*, 2, C. T. Lance3, and N. de Jong1*, 2, Department of Cardiology, Erasmus University Rotterdam, The Netherlands, 3Interuniversity Cardiology Institute Netherlands (ICIN), Utrecht, The Netherlands

1K-6 Performance of Sparse Arrays in a Nonlinear Medium, S. Holm*, H. Fjellestad, A. Austeng1, and K. Thøenius3, 1Department of Informatics, University of Oslo, 2Petroleum Geo-Services, PGS Services, 3GE Corporate R & D

2K-3 High-Intensity Focused Ultrasound Induced Hemostasis Leading to Venous Occlusion and Obliteration: Potential Implications for the Treatment of Esophageal and Gastric Varices, J.-H. Hwang*, M. M. Kim, R. W. Martin, M. Noble, and S. Vaezy, University of Washington, Seattle, WA

2K-4 Acoustic Fragmentation of Therapeutic Contrast Agents and Localized Drug Delivery, D. J. May, J. S. Allen*, J. E. Chomas, and K. W. Ferrara, Biomedical Engineering, University of California at Davis

2K-5 The Effects of Microbubbles on Single Pulse Duration in Non-Invasive Ultrasound Surgery, B. C. Tran*, J. B. Seo, J. B. Fowlkes, and C. A. Cain, University of Michigan, Ann Arbor, MI


3K-2 Development of a Bolt-Clamped Lavrin-Type Transducer for Operation at a High Frequency of 80KHz, K. Adachi* and H. Hasegawa, Yamagata University

3K-3 The Ultrasonic Hammer Transducer, M. Prokic*, J. Tapson*, and B. Mortimer*, MP Interconsulting Switzerland, 1University of Cape Town, 2Centre for Instrumentation Research, Cape Town

3K-4 Ultrasonic Complex Vibration Welding Systems of 100 kHz to 200 kHz with Large Welding Tip Area for Packaging in Microelectronics, J. Tsujino* and Y. Harada, Kanagawa University


4K-3 SAW Characteristics in Layered ZnO/Quartz Filters, V. Y. Zhang*, J. E. Lefebvre, and T. Gryba, IEMN/CNRS, Villeneuve d’Ascq, France


4K-5 Theoretical Studies on LiNbO3/Sapphire Layered Structures with SiO2 Over-Layer for Zero TCD SAW Device Applications, M. Tomar*, V. Gupta, and K. Sreenivas, Department of Physics and Astrophysics, University of Delhi, Delhi-110007, India

4K-6 SAW and AO Propagation Characteristics of LiNbO3/Spinel Thin Film Layered Structure, R. Naya*, V. Gupta, and K. Sreenivas, Dept. of Physics, University of Delhi, Delhi, India