<table>
<thead>
<tr>
<th>Time</th>
<th>Nov. 13 (Tue)</th>
<th>Nov. 14 (Wed)</th>
<th>Nov. 15 (Thu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>9:50 Opening Ceremony</td>
<td>8:50-9:50 Biomedical Ultrasound</td>
<td>8:50-9:50 Measurement Techniques, Imaging, Nondestructive Evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2E5-1-4, Chair: Shin-ichi Takeuchi (Toin University of Yokohama)</td>
<td>3J2-1-4, Tsuyoshi Mihara (Toyama University)</td>
</tr>
<tr>
<td>10:00</td>
<td>10:00-11:30 Measurement Techniques, Imaging, Nondestructive Evaluation</td>
<td>2P1-1-10, 2P2-1-13, 2P3-1-7, 2P4-1-11, 2P5-1-13, 2P6-1-5, Chair: Tatsuro Matsuoka (Nagoya University)</td>
<td>3P1-1-9, 3P2-1-12, 3P3-1-6, 3P4-1-9, 3P5-1-12, 3P6-1-5, Chair: Jun Kondoh (Shizuoka University)</td>
</tr>
<tr>
<td>11:00</td>
<td>11:55-12:05 Piezoelectric Devices</td>
<td>12:05-14:05 Lunch Time</td>
<td>12:00-14:05 Lunch Time</td>
</tr>
<tr>
<td>13:00</td>
<td>13:50-14:35 Physical Acoustics, Acousto-Optics</td>
<td>14:00-16:00 Poster Session</td>
<td>13:50-15:50 Poster Session</td>
</tr>
<tr>
<td>14:00</td>
<td>14:00-16:30 2E1-1-3 1P1-1-9, 1P2-1-12, 1P3-1-7, 1P4-1-9, 1P5-1-11, 1P6-1-5, Chair: Tadashi Yamaguchi (Chiba University)</td>
<td>14:35-15:20 2E3-1-2, 2E6-1 Piezoelectric Devices, Ocean Acoustics Chair: Jun-ichi Kushibiki (Tohoku University)</td>
<td>13:50-15:50 Poster Session</td>
</tr>
<tr>
<td>15:00</td>
<td>15:25-16:10 2E4-1-3 High Power Ultrasound, Sonochemistry</td>
<td>15:30-16:10 2E1-1-3 High Power Ultrasound, Sonochemistry, Nondestructive Evaluation Chair: Kentaro Nakamura (Tokyo Institute of Technology)</td>
<td>13:55-16:30 High Power Ultrasound, Sonochemistry Chair: Takenobu Tsuchiya (Kanagawa University)</td>
</tr>
<tr>
<td>16:00</td>
<td>16:10-16:55 2E2-1-3 Measurement Techniques, Imaging, Nondestructive Evaluation Chair: Mitsuaki Hikita (Kogakuin University)</td>
<td>16:55-17:25 Awards Ceremony</td>
<td>16:45-18:00 Biomedical Ultrasound, Ocean Acoustics Chair: Nobuyuki Endoh (Kanagawa University)</td>
</tr>
<tr>
<td>17:00</td>
<td>17:25-18:10 1J1-1-2, 1J3-1-4 Physical Acoustics, Acousto-Optics, Piezoelectric Devices Chair: Akira Harata (Kyushu University)</td>
<td>17:25-19:25 Banquet</td>
<td>18:00 Closing Session</td>
</tr>
<tr>
<td>18:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19:00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**USE2012 Schedule**
The 33rd Symposium on Ultrasonic Electronics (USE 2012) Program
† Speaker
* Applying to Young Scientists Award

Tuesday, November 13

9:50-10:00 OPENING

10:00-11:00 Measurement Techniques, Imaging, Nondestructive Evaluation
Chair: Yasuaki Watanabe (Tokyo Met. Univ.)

1J2-1* Flow-injection wireless-electrodeless QCM system combined with total internal reflection fluorescence microscopy
Masahiko Fukushima¹, Kentaro Uesugi, Hirotsugu Ogi, Hisashi Yagi, Yuji Goto, Masahiko Hirao (Osaka Univ.)

1J2-2 The trial of an array type acoustic impedance measuring device
Kazuki Higuchi¹, Kazuto Kobayashi (Honda Electronics)

1J2-3* Improvement of air temperature measurement accuracy on ultrasonic probe utilizing sound attenuation
Takahiro Motoegi¹, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

1J2-4 Optical tomographic imaging of picosecond pulses with 200 nm spatial resolution
Motonobu Tomoda¹, Hiroyuki Matsuo¹, Roberto Li Voti², Osamu Matsuda¹, Oliver B. Wright¹
(¹Hokkaido Univ.; ²Univ. of Roma)

11:00-11:05 Break

11:05-12:05 Piezoelectric Devices
Chair: Tomo Fujii (Chiba Univ.)

1Ja3-1 Ultra wide band resonators using SH type plate wave and their application
Michio Kadota¹, Takashi Ogami, Tetsuya Kimura (Murata Mfg.)

1Ja3-2* Reduction of transverse SAW leakage on the resonator based on Al/42° YX-LiTaO₃ substrate structure
Tomoya Komatsu¹, Hiroyuki Nakamura, Hidekazu Nakanishi, Tetsuya Turunari, Joji Fujiwara
(Panasonic Corp.)

1Ja3-3* MEMS-based varactor fabricated by gold electroplating for tunable SAW filter application
Akira Konno¹, Hideki Hirano¹, Mao Inaba², Ken-ya Hashimoto², Masayoshi Esashi¹, Shuji Tanaka¹
(¹Tohoku Univ.; ²Chiba Univ.)

1Ja3-4* Control of Zn- or O-polar c-axis oriented ZnO films by different ion bombardment conditions to the substrate
Ryo Ikoma¹, Takahiko Yanagitani², Shinji Takayanagi¹, Masashi Suzuki², Hiroyuki Odagawa¹, Mami Matsukawa¹
(¹Doshisha Univ.; ²Nagoya Inst. of Tech.; ³Kumamoto Natl. Coll. of Tech.)

12:05-13:05 LUNCH TIME

13:05-13:55 Invited Talk 1
Chair: Hirotsugu Ogi (Osaka Univ.)

1I-1 Ultrasonication-triggered amyloid fibrillation of proteins
Yuji Goto (Osaka Univ.)
13:55-14:00 Break

14:00-16:00 Poster Session  Chair: Tadashi Yamaguchi (Chiba Univ.)

1P1-1 Photoacoustic imaging of knee cartilage mouse using a semiconductor laser
Takuya Izumi¹, Yusuke Miida, Ryo Nagaoka, Mika Sato, Yuji Matsuura, Yoshihiro Hagiwara, Yoshifumi Saijo
(Tohoku Univ.)  19

1P1-2 Perfectly matched layers of elastic wave propagation in a piezoelectric solid in the frequency domain
Koji Hasegawa¹, Shingo Sato (Muroran Inst. of Tech.)  21

1P1-3 Phase deviation in switching of optical QPSK pulse train by collinear acoustooptic device
Nobuo Goto¹, Yasuniko Miyazaki ² (¹Univ. of Tokushima; ²Aichi Univ. of Tech.)  23

1P1-4* Numerical dispersion of elastic wave propagation in finite difference time domain analysis
Takao Shimada¹, Koji Hasegawa², Shingo Sato² (¹Tsuyama Natl. Coll. of Tech.; ²Muroran Inst. of Tech.)  25

1P1-5* Brillouin scattering study of glass transitions in glucose aqueous solution
Ayane Tominaga¹, Tomohiko Shibata, Haruki Takayama, Seiji Kojima (Univ. of Tsukuba)  27

1P1-6* Time-resolved imaging of negative refraction of surface acoustic waves in two-dimensional phononic crystals
Hiroaki Koga¹, Motonobu Tomoda¹, Osamu Matsuda¹, Ryota Chino¹, Hirotaka Sakuma¹, Paul H. Otsuka¹,
Istvan A. Veres², Oliver B. Wright³ (¹Hokkaido Univ.; ²Res. Center for Non-Destructive Testing)  29

1P1-7 Propagation of laser-induced emergent stress waves generated by high-energy nanosecond laser
pulse irradiation in confined structure
Koji Aizawa¹, Shoji Soda, Tomoya Makino, Yoshiaki Tokunaga (Kanazawa Univ. of Tech.)  31

1P1-8 Development of large size diamond wafer
Shinichi Shikata¹, Hideaki Yamada, Nobuteru Tsubouchi, Yoshiaki Mokuno, Akiyoshi Chayahara (AIST)  33

1P1-9* Sub-terahertz-frequency attenuation and sound velocity of GaN at cryogenic temperatures
studied by picosecond ultrasound spectroscopy
Akira Nagakubo¹,², Yuki Tsutsui¹, Hirotaka Ogi¹, Nobotomo Nakamura¹, Masahiko Hiro¹
(¹Osaka Univ.; ²JSPS Res. Fellow)  35

1P2-1* Real-time mode visualization system of micro piezoelectric devices by laser speckle interferometry
Keita Mochizuki¹, Naoki Yamagishi, Yasuyuki Watanabe, Takayuki Sato (Tokyo Met. Univ.)  37

1P2-2 Studies on the sedimentation dynamics of silica suspensions by means of dynamic ultrasound
scattering method
Kazuki Sugita¹, Tomohisa Norisuye, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)  39

1P2-3* Time-resolved imaging of GHZ surface acoustic waves in TeO₂ through the photoelastic effect
Atsuki Uetsuji¹, Osamu Matsuda, Motonobu Tomoda, Hirotaka Sakuma, Oliver B. Wright (Hokkaido Univ.)  41

1P2-4* Noncontact monitoring of temperature distributions of a rotating cylinder by laser ultrasound
Akira Kosugi¹, Yasuhiro Ono, Iwo Matsuura, Kuo Iwara (Nagakawa Univ. of Tech.)  43

1P2-5 Visualization of ultrasonic fields transmitted through inhomogeneous media and evaluation
of the degree of aberration
Masahiro Ohno¹, Takeshi Nagaishi, Akihiro Iwabuchi (China Inst. of Tech.)  45

1P2-6* Ultrasound open channel flow velocity profile measurement based on the lateral directional ultrasound echo observations
Mitsuhide Ishigamori¹, Ichiro Nishimura², Akira Yamada¹ (¹Tokyo Univ. of A&T; ²Tokyo Denki Univ.)  47

1P2-7 Frequency dependence analysis of ball SAW sensor’s responses
Toshihiro Tsuji¹, Satoshi Hagiwara, Toru Osumi¹, Nobuo Kakeda¹, Shingo Akao¹², Kosuke Takayanagi²,
Tsuneo Ohgi², Takayuki Yanagisawa³, Noritaka Nakasao³, Kazushi Yamakata³
(¹Tokohku Univ.; ²Toppan Printing)  49

1P2-8* Application of nondestructive inspection method to shape-distorted billet using simultaneous
measurement of multiple time-of-flight
Yoko Norose, Koichi Mizutani, Naoto Watahaswa (Univ. of Tsukuba)  51

1P2-9 Real time monitoring of the vortex wind field based on the transmission and reception of the coded
acoustic wave signals between parallel array elements
Haiyue Li¹, Naoki Ogawa, Takuya Hirasa, Akira Yamada (Tokyo Univ. of A&T)  53
1P2-10  Ultrasonic power measurement by calorimetric method by using water as heating material - Comparison with radiation balance method -  Takeyoshi Uchida†, Tsuneo Kikuchi (AIST)  

1P2-11  Basic study on the water stress of the plant using the vibration measurement of the leaf  Motoaki Sano†, Tsuneyoshi Sugimoto, Hiroshi Hosoya, Motoyoshi Obara, Sakae Shibusawa†  (Toin Univ. of Yokohama; ‡Tokyo Univ. of A&T)  

1P2-12*  GPGPU based high-speed visualization techniques for sound wave propagation  Naoki Kawada†, Kan Okubo, Norio Tagawa, Takao Tsuchiya†  (Tokyo Met. Univ.; ‡Doshisha Univ.)  

1P3-1  A fundamental study of piezoelectric plate type power generator for tire pressure monitoring systems  Ryo Sasaki, Subaru Kudo† (Ishinomaki Senshu Univ.)  

1P3-2  Simulation of liquid-level sensors operating in trapped-energy vibration modes by finite element method  Ken Yamada†, Taku Abe, Seiya Kudo, Ryo Ishizuka, Takahiro Oba (Tohoku Gakuin Univ.)  

1P3-3  Study on low-loss SAW gas sensor consisting of resonators with large spaces between IDTs and reflectors  Natsuki Tobita, Mitsutaka Hikita† (Kogakuin Univ.)  

1P3-4*  Combination of a surface acoustic wave device and classical sensor for detecting physical quantity 1- Simultaneous detection method of physical quantity and temperature -  Akihiro Narushima†, Takuma Genji, Jun Kondoh (Shizuoka Univ.)  

1P3-5*  Combination of a surface acoustic wave device and classical sensor for detecting physical quantity 2- Detection of strain by using force sensor -  Takuma Genji†, Akihiro Narushima, Jun Kondoh (Shizuoka Univ.)  

1P3-6*  Analysis of mass loading effect on SH-SAW biosensor  Mikihiro Goto†, Hiromi Yatsuda†, Jun Kondoh†  (Japan Radio; ‡Shizuoka Univ.)  

1P3-7*  Measuring of plasma clotting using shear horizontal surface acoustic wave sensor  Tatsuya Nagayama†, Jun Kondoh†, Tomoko Oonishi†, Kazuya Hosokawa†  (Shizuoka Univ.; ‡Fujimori Kogyo)  

1P4-1  Investigation of high-power properties of lead-free piezoelectric ceramics  Yutaka Doshida†, Hirokazu Shimizu†, Youichi Mizuno†, Hideki Tamura†  (Taiyo Yuden; ‡Tohoku Inst. of Tech.)  

1P4-2  Design for the resonant type SIDM (smooth impact drive mechanism) actuator  Takeshi Morita†, Takuma Nishimura†, Ryuichi Yoshida, Hiroshi Hosaka†  (Univ. of Tokyo; ‡Konica Minolta Tech. Center)  

1P4-3*  Configuration of an ultrasonic linear motor for use in a medical bed  Atsuyuki Suzuki†, Masaki Sunomoto†, Jiromaru Tsujino†  (Tokuyama Coll. of Tech.; ‡Kanagawa Univ.)  

1P4-4*  Two-dimensional noncontact transportation using near-field acoustic levitation  Souki Hoshina†, Manabu Aoyagi†, Hideki Tamura†, Takehiro Takano†  (Muroran Inst. of Tech.; ‡Tohoku Inst. of Tech.)  

1P4-5*  Non-contact dispensing of small droplets using ultrasonic levitation  Hiroki Tanaka†, Yosuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)  

1P4-6*  Noncontact mixing of droplets using ultrasonic levitation  Ryohei Nakamura†, Yosuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)  

1P4-7  Control of grain dispersion by using flexural standing wave vibration disks  Tsunehisa Suzuki†, Kazushi Yokoyama†, Yasuhiro Yamayoshi†  (Yamagata Res. Inst. of Tech.; ‡Yamagata Univ.)  

1P4-8*  Behavior of liquid in elongated pore under high-intensity aerial ultrasonic irradiation  Ryo Kato†, Ayumu Osumi, Youichi Ito (Nihon Univ.)  

1P4-9*  Basic study of measurement for fire damage level of concrete using high-intensity aerial ultrasonic waves  Ayumu Osumi†, Yasuhiro Nojima, Youichi Ito (Nihon Univ.)  

1P5-1  Comprehensive research on emergence of impulsive stress wave using a nano-second pulse laser  Yoshiaki Tokunaga†, Motoaki Nishiwaki, Koji Aizawa (Kanazawa Inst. of Tech.)
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1P5-2</td>
<td>Pressure estimation of laser-induced emergent stress wave in direct and confined geometry targets</td>
<td>Motoaki Nishiwaki¹, Shunsuke Orisaka, Naoya Yashiki, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)</td>
</tr>
<tr>
<td>1P5-3*</td>
<td>Photoacoustic spectral analysis of biological tissue for plaque diagnosis</td>
<td>Kazuaki Hashimoto¹, Kengo Kondo, Makoto Yamakawa, Tsuyoshi Shiina (Kyoto Univ.)</td>
</tr>
<tr>
<td>1P5-4</td>
<td>A study on transfection into the cells of optimal condition using laser induced emergent stress wave</td>
<td>Mieko Kogi¹, Koji Aizawa, Syun Nishimura, Tenue Takeuchi, Motoaki Nishiwaki, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)</td>
</tr>
<tr>
<td>1P5-5</td>
<td>Implementation of accurate tissue motion estimate via high-resolution synthetic aperture array signal processing</td>
<td>Motoki Katsuyama¹, Shin-ichi Yagi (Meisei Univ.)</td>
</tr>
<tr>
<td>1P5-6</td>
<td>Limitation of coded excitation for synthetic aperture focusing in measuring fast-moving tissues</td>
<td>Hirofumi Taki¹, Toru Sato (Kyoto Univ.)</td>
</tr>
<tr>
<td>1P5-7*</td>
<td>Synthetic aperture ultrasound imaging using pseudo-inversion operator</td>
<td>Hikaru Fukasawa¹, Hirota Yanaoda¹, Yasutaka Tamura¹, Tatsuhisa Takahashi² (Univ. of Yamaga; Asahikawa Medical Coll.)</td>
</tr>
<tr>
<td>1P5-8*</td>
<td>Image reconstruction of biological soft tissues by diffraction tomography</td>
<td>Tetsuya Kanagawa¹, Hirofumi Nakamura¹, Ryosuke Aoyagi¹, Takashi Azuma¹, Kiyoshi Yoshinaka², Akira Sasaki¹, Kazuyasu Sugiyama¹, Shu Takagi¹, Yoichiro Matsumoto¹ (Univ. of Tokyo; AIST)</td>
</tr>
<tr>
<td>1P5-9</td>
<td>Abdominal mechanical scanner for the acoustic tomographic measurement of the visceral fat area</td>
<td>Kensuke Sasaki¹, Toshihiko Yokoyama¹, Daichi Shimizu¹, Kei Li¹, Akira Yamada¹¹ (Tokyo Univ. of A&amp;T; Tokyo Denki Univ.)</td>
</tr>
<tr>
<td>1P5-10*</td>
<td>A study on speckle suppression by stochastic vibration of ultrasound transducer</td>
<td>Haruka Suzuki¹, Norio Tagawa, Kan Okubo (Tokyo Met. Univ.)</td>
</tr>
<tr>
<td>1P5-11*</td>
<td>Increasing bandwidth of ultrasound RF echoes using Wiener filter for speckle suppression</td>
<td>Sho Kageyama¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)</td>
</tr>
<tr>
<td>1P6-1*</td>
<td>Examination on absorbing boundary condition using method of characteristics on collocated orthogonal grid</td>
<td>Junpei Adachi¹¹, Kan Okubo¹, Norio Tagawa¹, Takao Tsuchiya² (Tokyo Met. Univ.; Doshisha Univ.)</td>
</tr>
<tr>
<td>1P6-2*</td>
<td>Sub-grid technique for numerical simulation of sound wave propagation combining constrained interpolation profile schemes</td>
<td>Yuta Ara¹¹, Kan Okubo¹, Norio Tagawa¹, Takao Tsuchiya², Takashi Ishizuka¹ (Tokyo Met. Univ.; Doshisha Univ.; Shimizu Inst. of Tech.)</td>
</tr>
<tr>
<td>1P6-3</td>
<td>Convergence characteristics of doublet with acrylic plano-concave lens and silicon-rubber Fresnel lens</td>
<td>Hiroshige Fukunaga¹, Yuki Bando¹, Yuji Sato¹, Koichi Mizutani¹, Toshihiko Nakamura¹¹ (Natl. Defense Academy; Univ. of Tsukuba)</td>
</tr>
<tr>
<td>1P6-4</td>
<td>Characteristics of incidence angle dependence of plate constructed with phononic crystal structures</td>
<td>Takenobu Tsuchiya¹¹, Tetsuo Anada¹, Nobuyuki Endoh, Sayuri Matsumoto², Kazuyoshi Mori³ (Kanagawa Univ.; Port and Airport Res. Inst.; Natl. Defense Academy)</td>
</tr>
<tr>
<td>1P6-5*</td>
<td>4-octave transducer</td>
<td>Yuka Mishima¹¹, Yoshinori Miyamoto¹, Toyoki Sasakura² (Tokyo Univ. of Marine Sci. and Tech.; Fusion)</td>
</tr>
</tbody>
</table>

16:00-16:05 Break

16:05-17:20 Biomedical Ultrasound

Chair: Koji Masuda (Tokyo Univ. of A&T)

1J5-1* A new ultrasonic imaging sensor using Fabry-Perot interferometer and high-speed camera | Bing Cong¹¹, Kengo Kondo¹, Makoto Yamakawa¹, Tsuyoshi Shiina¹, Takao Nakajima¹, Yasufumi Asao¹² (Kyoto Univ.; Canon) |

1J5-2* Optical phase contrast mapping of highly focused ultrasonic fields | Soichiro Harigane¹, Ryo Miyasaka, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.) |
1J5-3* Basic study for detection of microcalcification in soft tissue employing "twinkling sign"
Masayuki Tanabe¹, Hodaka Tamura¹, Masahiko Nishimoto¹, Liu Lei¹, Masafumi Ogasawara²
(Kumamoto Univ.; ²GE Healthcare Japan)

1J5-4* Focus control method aided by numerical simulation in heterogeneous media for HIFU treatment
Ryuta Narumi¹,², Kosuke Matsuki¹, Takashi Azuma¹, Kohei Okita³, Akira Sasaki¹, Kiyoshi Yoshinaka¹, Shu Takagi¹, Yoichiro Matsumoto¹ (¹Univ. of Tokyo; ²Nihon Univ.; ³AIST; ⁴RIKEN)

1J5-5* Improvement of automated identification of the heart wall by reducing stationary clutter in ultrasonic echoes
Hiroki Takahashi¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

17:20-17:25 Break

17:25-18:10 Physical Acoustics, Acousto-Optics, Piezoelectric Devices
Chair: Akira Harata (Kyushu Univ.)

1J1-1* Precise measurement of elastic constant of isotopically controlled diamond thin films using Brillouin oscillation method
Kenta Morigami¹, Akira Nagakubo¹, Hirotsugu Ogi¹, Masahiko Hirao¹, Hideyuki Watanabe², Shinichi Shikata² (¹Osaka Univ.; ²AIST)

1J1-2* Measurement of liquid physical properties in high frequency region by mode analysis of oscillating droplet
Tomoki Ishiwata¹, Tatsuya Yamada, Keiji Sakai (Univ. of Tokyo)

1Jb3-1* High-sensitive detection of C-reactive protein by oriented antibody using RAMNE-Q biosensor
Fumihito Kato¹, Keisuke Tsurimoto, Hirotsugu Ogi, Masahiko Hirao (Osaka Univ.)

Wednesday, November 14

8:50-9:50 Biomedical Ultrasound
Chair: Shin-ichi Takeuchi (Toin Univ. of Yokohama)

2E5-1* Color-encoded speckle imaging (CESI): A novel high frame rate approach to coherent visualization of complex flow dynamics
Alfred. C. H. Yu¹, Billy Y. S. Yiu (Univ. of Hong Kong)

2E5-2* Three-dimensional interactive detection and localization of small metastatic foci in human lymph nodes using high-frequency quantitative ultrasound
Jonathan Mamou¹, Emi Saegusa-Beecroft¹, Alain Coron¹,², Michael L. Oelze³, Masaki Hata¹, Junji Machi¹, Eugene Yanagihara¹, Pascal Laugier¹,², Tadashi Yamaguchi¹, Ernest J. Feleppa¹ (¹F. L. Lizzi Center for Biomedical Eng.; ²Univ. of Hawaii and Kuakini Medical Center; ³UPMC; ⁴CNRS; ⁵Univ. of Illinois; ⁶Chiba Univ.)

2E5-3* Intraventricular flow velocity vector visualization based on the continuity equation and measurements of vorticity and wall shear stress
Keiichi Itatani¹, Takashi Okada¹, Tokuhisa Uejima¹, Tomohiko Tanaka¹, Minoru Ono¹, Kagami Miyaji¹, Katsu Takenaka¹ (¹Kitasato Univ.; ²Hitachi Aloka Medical; ³The Cardiovascular Inst.; ⁴Hitachi; ⁵Univ. of Tokyo)

2E5-4* Quantitative diagnosis for liver fibrosis using co-occurrence matrix of echo signal
Yuki Tanaka¹, Shinnosuke Hirata¹, Tadashi Yamaguchi¹, Hiroyuki Hachiya¹ (¹Tokyo Inst. of Tech.; ²Chiba Univ.)

9:50-9:55 Break
### 9:55-11:55 Poster Session

**Chair: Tatsuro Matsuoka (Nagoya Univ.)**

<table>
<thead>
<tr>
<th>Poster Session</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2P1-1*</td>
<td>Numerical analysis for acoustic resonance of St. Venant-Kirchhoff hyperelastic sheet</td>
<td>Shinpei Yamada¹, Ryuichi Tarumi, Yoji Shibutani (Osaka Univ.)</td>
<td>149</td>
</tr>
<tr>
<td>2P1-2*</td>
<td>Accurate and rapid rheology measurement of complex fluids with EMS system</td>
<td>Maiko Hosoda¹, Keiji Sakai² (Tokyo Denki Univ.; Univ. of Tokyo)</td>
<td>151</td>
</tr>
<tr>
<td>2P1-3*</td>
<td>Fiber-optic ultrasonic hydrophone using short Fabry-Perot cavity with multilayer reflectors</td>
<td>Kyung-Su Kim¹, Yusuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)</td>
<td>153</td>
</tr>
<tr>
<td>2P1-4</td>
<td>Study on the birefringence of ultrasonic transverse wave in [110] silicon</td>
<td>Seho Kwon¹, Young H. Kim (Korea Sci. Academy)</td>
<td>155</td>
</tr>
<tr>
<td>2P1-5</td>
<td>Lamb wave characteristics of AlN/Diamond composite plates with distinct electrode arrangements</td>
<td>Yung Yu Chen¹ (Tatung Univ.)</td>
<td>157</td>
</tr>
<tr>
<td>2P1-6</td>
<td>Estimation of characteristics change on transverse mode PZT vibrator under space environment</td>
<td>Sanghoon Lee¹, Jungsun Kim², Kangyoun Ha², Moojoon Kim³</td>
<td>159</td>
</tr>
<tr>
<td>2P1-7*</td>
<td>Temperature dependence of Brillouin gain spectra in erbium-doped optical fibers with different concentrations</td>
<td>Mingjie Ding¹, Yusuke Mizuno, Neisei Hayashi, Kentaro Nakamura (Tokyo Inst. of Tech.)</td>
<td>161</td>
</tr>
<tr>
<td>2P1-8*</td>
<td>An AT-cut quartz phononic Lamb wave filter</td>
<td>Jia-Hong Sun¹, Tsung-Tsong Wu², Chia-Hao Hung² (Chang Gung Univ.; Natl. Taiwan Univ.)</td>
<td>163</td>
</tr>
<tr>
<td>2P1-9*</td>
<td>Photocoustic characterization of CdSe quantum dots adsorbed on different morphologies of nanostructured TiO₂ for photovoltaic applications</td>
<td>Witoon Yindeesuk¹, Masaya Akimoto¹, Daiki Tai¹, Qing Shen², Taro Toyoda¹ (Univ. of Electro-Comm.; PRESTO, JST)</td>
<td>165</td>
</tr>
<tr>
<td>2P1-10*</td>
<td>Two-dimensional modulation of surface acoustic wave in weighted piezoelectric phononic crystals</td>
<td>Hongliang Li¹, Jianguo Wei¹, Wei Luo¹, Shitang He³ (Chinese Academy of Sci.; Beijing Inst. of Tech.; Huazhong Univ. of Sci. &amp; Tech.)</td>
<td>167</td>
</tr>
<tr>
<td>2P2-1</td>
<td>Asymmetric-symmetric mode conversion of ultrasonic Lamb waves and negative refraction on thin steel plate</td>
<td>Jinsung Sung¹, Young H. Kim (Korea Sci. Academy of KAIST)</td>
<td>169</td>
</tr>
<tr>
<td>2P2-2*</td>
<td>Pipe inspection based on mode conversion of torsional waves generated by EMAT</td>
<td>Nurmalia Hardady¹, Nobutomo Nakamura, Hirotsugu Ogi, Masahiko Hiroa (Osaka Univ.)</td>
<td>171</td>
</tr>
<tr>
<td>2P2-3</td>
<td>Propagation phenomena of fundamental torsional guided waves at axisymmetric defects</td>
<td>Hideo Nishino¹, Hirofumi Saito (Univ. of Tokushima)</td>
<td>173</td>
</tr>
<tr>
<td>2P2-4*</td>
<td>Nonlinear ultrasonic characterization of creep damage in an austenitic stainless steel</td>
<td>Yuuki Kusanagi¹, Yutaka Ishii, Toshihiro Ohlami (Shonan Inst. Tech.)</td>
<td>175</td>
</tr>
<tr>
<td>2P2-5</td>
<td>Analysis of guided wave which propagates pipe or pipe with fluid attenuation</td>
<td>Harumichi Sato¹, Hisato Ogiso (IAIST)</td>
<td>177</td>
</tr>
<tr>
<td>2P2-6*</td>
<td>Analysis on nonlinear ultrasonic images of vertical closed cracks by damped double node model</td>
<td>Kentaro Jinno¹, Masako Ikeuchi, Akihiro Ouchi, Yoshikazu Ohara, Kazushi Yamanaka (Tohoku Univ.)</td>
<td>179</td>
</tr>
<tr>
<td>2P2-7*</td>
<td>Precise frequency control in the time-resolved 2D imaging of GHz surface acoustic waves</td>
<td>Shogo Kaneko¹, Osamu Matsuda, Motonobu Tomoda, Oliver B. Wright (Hokkaido Univ.)</td>
<td>181</td>
</tr>
<tr>
<td>2P2-8</td>
<td>Investigation of ultrasonic spatial temperature distribution measuring method with concise structure</td>
<td>Hirokazu Masuyama¹, Kazuya Sato (Toba Natl. Coll. Mar. Tech.)</td>
<td>183</td>
</tr>
<tr>
<td>2P2-9</td>
<td>Improvement of cross range resolution in B-mode image by US Doppler measurement with forced vibration</td>
<td>Takashi Miwa¹, Amane Kaneko (Gunma Univ.)</td>
<td>185</td>
</tr>
<tr>
<td>2P2-10</td>
<td>Refractive index evaluation of synthetic silica glass by the ultrasonic microspectroscopy technology</td>
<td>Mototaka Arakawa¹, Yui Ohashi¹, Yuko Maruyama¹, Jun-ichi Kishibiki¹, Kenji Moriyama¹, Hideharu Horikoshi¹ (Tohoku Univ.; Tosoh SGM)</td>
<td>187</td>
</tr>
</tbody>
</table>
Detection of microcrack tips in a plate using laser induced pulse waves under the Lamb wave excitation
Kazuki Nakata¹, Nobuki Hirose, Takaharu Kitamura, Mami Matsukawa (Doshisha Univ.)

Estimation of the propagation sequence of the bone-conducted ultrasound in the in vivo head by ultrasonic pulse wave responses
Takuya Hotehama¹, Seiji Nakagawa (AIST)

Non-contact inspection method for concrete structure by using LRAD—Study on angular dependence and crack model detection—
Ryo Akamatsu¹, Tsuneyoshi Sugimoto², Noriyuki Utugawa², Kageyoshi Katakura³
(¹Toin Univ. of Yokohama; ²Sato Kogyo; ³Meitoku Giken)

Relationship between ultrasonically induced aggregation phenomenon of amyloid β peptides and
with response surface methodology (RSM)

Widely tunable surface acoustic wave filters
Masahiro Inaba¹, Tatsuya Omori, Ken-ya Hashimoto (Chiba Univ.)

Structural study on high power application for small SAW duplexer
Osamu Kawachi¹, Takayuki Suzuki, Toshio Nishizawa, Tooru Takezaki (Taiyo Yuden)

Study of spurious response near the fast-shear-wave in the SiO₂/Al/LiNbO₃ structure
Rei Goto¹, Joji Fujiwara, Hiroyuki Nakamura, Tetsuya Turunari, Hidekazu Nakamichi, Yoshuke Hamaoka (Panasonic Corp.)

Solidly mounted Lamb wave resonators using LiNbO₃ thin plates
Tetsuya Kimura¹, Katsuya Daimon, Takashi Ogami, Michio Kadota (Murata Mfg.)

Longitudinal-type leaky SAW on LiNbO₃, with high-velocity thin film
Fumiya Matsukura¹, Masato Uematsu, Keiko Hosaka, Shoji Kakio (Univ. of Yamanashi)

Loss reduction of longitudinal-type leaky SAW by reverse proton exchange – Dependence of recovery of piezoelectricity on fabrication conditions –
Masaya Abe¹, Shoji Kakio (Univ. of Yamanashi)

New unidirectional IDT and OFC sersors and wide-band filters using UIDT
Kazuhiro Yamanouchi¹, Hiroyuki Odagawa (Tohoku Univ.; ²Kumamoto Natl. Coll. of Tech.)

Influence on Sol-Gel composite properties caused by piezoelectric powder phase with different dielectric constants
Makiko Kobayashi¹, Takuo Inoue, Mariko Sawada (Kumamoto Univ.)

The relationship between Q value and temperature ratio for the step-shape thermoacoustic system
Kenji Shibata¹, Shin-ichi Sakamoto², Yosuke Nakano¹, Yoshiaki Watanabe³
(¹Doshisha Univ.; ²Univ. of Shiga Pref.)

Numerical simulation of a thermoacoustic engine – Effects of gas mixture on the onset temperature ratio –
Yosuke Nakano¹, Shin-ichi Sakamoto², Kenji Shibata¹, Kohei Yanagimoto³, Takao Tsuchiya¹, Yoshiaki Watanabe³
(¹Doshisha Univ.; ²Univ. of Shiga Pref.)

Improving thermoacoustic system efficiency – Measurement of a sound field in the phase adjuster –
Shin-ichi Sakamoto¹, Kazuki Sahashi¹, Yoshiaki Watanabe³ (Univ. of Shiga Pref.; ³Doshisha Univ.)

Numerical simulation of compressible fluid flow on an ultrasonic suction pump
Yuji Wada¹, Daisuke Koyama¹, Kentaro Nakamura¹
(Tokyo Inst. of Tech.; ²Doshisha Univ.)

The analysis of sound field reproduced by a parametric loudspeaker in a rectangular duct
Shuaibing Wu¹, Ming Wu, Jun Yang (Chinese Academy of Sci.)

Controlled release of internal substances from pluronic micelles using ultrasound as trigger
Masahiro Karasawa¹, Daisuke Kobayashi¹, Tomoki Takahashi¹, Hideyuki Matsumoto², Chiaki Kuroda³, Katsuto Otake¹, Atsushi Shono²
(¹Tokyo Univ. of Sci.; ²Tokyo Inst. of Tech.)

Relationship between ultrasonically induced aggregation phenomenon of amyloid β peptides and pressure of ultrasonic harmonics
Kentaro Uesugi¹, Hirotugu Ogi, Masatomo So, Hisashi Yagi, Yuji Goto, Masahiko Hiroa (Osaka Univ.)

Optimization of the ultrasonic oxidation kinetics of diethyl phthalate using the factorial design with response surface methodology (RSM)
Pengpenng Qiu¹, Beomguk Park, Jeeyyehong Khim (Korea Univ.)

Ultrasonically enhanced effectiveness of various surfactants on diesel removal from contaminated soil
Young Uk Kim¹, Sang Hyun Park¹, Jun Ho Moon¹, Soon Mo Ho Jang²
(¹Myongji Univ.; ²Samsung C & T Corp.)
2P4-11* Influence of liquid height on the mechanical effects and chemical effects at 20 kHz sonication
Khuyen Viet Bao Tran1, Yoshiyuki Asakura2, Shinobu Koda3 (Nagoya Univ.; Honda Electronics)

2P5-1* Detection of arterial wall boundaries using an echo model composed of multiple ultrasonic pulses
Nabilah Ibrahim1, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2P5-2* Tissue analysis of electrically sealed vessels using an ultrasonic microscope
Terumasa Yamaoka1, Tadashi Yamaguchi, Masashi Sekine, Satoko Zenbutsu, Hisahiro Matsubara, Hideki Hayashi (Chiba Univ.)

2P5-3* Firming ultrasonic beam using Fresnel zone plate
Toshihito Sato1, Hirotaka Yanagida1, Yasutaka Tamura1, Tatsuhisa Takahashi2 (Yamagata Univ.; Asahikawa Medical Coll.)

2P5-4 Simultaneous observation of bubble cloud and micro hollows produced by bubble cloud cavitation
Yoshiki Yamakoshi1, Jun Yamaguchi, Tomoyuki Ozawa, Tomoaki Isono, Takuya Kanai (Gunma Univ.)

2P5-5* Shear wave imaging using phase modulation component of harmonic distortion in continuous shear wave excitation
Raj Kumar Parajuli1, Reisen Tei, Daisuke Nakai, Yoshiki Yamakoshi (Gunma Univ.)

2P5-6* Error correction for 3D reconstruction of artificial blood vessel from ultrasound volume data
Antoine Bossard1, Yuki Sugano, Tuan-Hung Phan, Shinya Onogi, Takashi Mochizuki, Kohji Masuda (Tokyo Univ. of A&T)

2P5-7* Three-dimensional behavior reproduction of microbubbles in flow under local ultrasound exposure
Takumi Ito1, Ren Koda, Takashi Mochizuki, Kohji Masuda (Tokyo Univ. of A&T)

2P5-8* Experimental study for active path block in a capillary flow by using microbubbles aggregation
Nobuhiko Shigehara1, Fumi Demachi1, Ren Koda1, Takashi Mochizuki1, Kohji Masuda1, Seiichi Ikeda2, Fumihito Arai2, Yoshitaka Miyamoto1, Toshih Chiba1 (Tokyo Univ. of A&T; Nagoya Univ.; Natl. Center for Child Health and Development)

2P5-9 Production and validation of acoustic field to enhance trapping efficiency of microbubbles by using a matrix array transducer
Naoto Hosaka, Ren Koda, Shinya Onogi, Takashi Mochizuki, Kohji Masuda1 (Tokyo Univ. of A&T)

2P5-10* Visualization of therapeutic ultrasound fields in small chamber using image subtraction schlieren technique
Hiroki Obara1, Nobuki Kudo, Koichi Shimizu (Hokkaido Univ.)

2P5-11 Suggestion of HIFU transducer with controllable curvature
Jungsoon Kim1, Moojoon Kim2, Kangleyol Ha3 (Tongmyong Univ.; Pukyong Natl. Univ.)

2P5-12* Effects of high-intensity ultrasound on the viability of streptococcus mutans
Seungmin Kim1, Kwangil Kang (Korea Sci. Academy of KAIST)

2P5-13 Wearable ultrasonic transducer for monitoring skeletal muscle contraction
Ibrahim AlMohimeed1, 2, Yuu Ono3 (Carleton Univ.; Majmaah Univ.)

2P6-1 Analysis on the time delay characteristics of acoustic wave according to the receiver depth in shallow water
Woojoong Kim1, HyunWook Moon1, Jungsoo Park2, Youngjoong Yoon1 (Yonsei Univ.; Agency for Defense Dev.)

2P6-2 Time-varying underwater acoustic channel characteristics in shallow water
HyunWook Moon1, Woojoong Kim1, Jungsoo Park2, Youngjoong Yoon1 (Yonsei Univ.; Agency for Defense Dev.)

2P6-3* Limit of convolutional code in multipath underwater acoustic channel
Jihyun Park, Chulwon Seo1, Kyu-Chil Park, Jong Rak Yoon (Pukyong Natl. Univ.)

2P6-4 Multipath effects on coherent underwater acoustic communication in shallow water
Su-Uk Son1, Jee Woong Choi1, Hyensu Kim2 (Hanyang Univ.; Inha Univ.)

2P6-5 Environmental effects on the channel estimate based equalizer performance in underwater acoustic communication
Kyu-Chil Park1, Jihyun Park1, Chulwon Seo1, Jungchae Shin2, Seung-Wook Lee2, Jin-Woo Jung2, Jong Rak Yoon1 (Pukyong Natl. Univ.; Hanwha Corp.)

11:55-12:55 LUNCH TIME

Chair: Kazushi Yamanaka (Tohoku Univ.)

2I-1 Low noise signal generation and verification techniques
Michael M. Driscoll (Northrop Grumman Electronic Systems)

13:45-13:50 Break

13:50-14:35 Physical Acoustics, Acousto-Optics

Chair: Oliver Wright (Hokkaido Univ.)

2E1-1* Large-strain dependence of acoustic velocity in polymer optical fiber estimated by Brillouin measurement
Neisei Hayashi¹, Yosuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)

2E1-2 Open acoustic resonator photoacoustic imaging
Tsutomu Hoshimiya¹, Jun Hoshimiya¹, Tetsuo Taniuchi² (¹Tohoku Gakuin Univ.; ²Tohoku Univ.)

2E1-3 Role of higher modes of guided waves in cylindrical rods and pipes
Morio Onoe² (Univ. of Tokyo)

14:35-15:20 Piezoelectric Devices, Ocean Acoustics

Chair: Jun-ichi Kushibiki (Tohoku Univ.)

2E3-1* Piezoelectric film fabrication by stencil printing method
Shinpei Otsuka¹, Kazuki Iwata, Makiko Kobayashi (Kumamoto Univ.)

2E3-2 (K,Na)NbO₃ micro-energy harvesters with multi-beam structure
Le Van Minh¹, Motoaki Hara, Hiroki Kuwano (Tohoku Univ.)

2E6-1 Sound speed profile estimation by single sonar
Hisashi Shiba² (NEC Corp.)

15:20-15:25 Break

15:25-16:10 High Power Ultrasound, Sonochemistry

Chair: Kentaro Nakamura (Tokyo Inst. of Tech.)

2E4-1 Trapping of microparticles in the cylindrical standing wave field
Jeongwon Yang², Haerang Hwang¹, Youngmin Bae¹, Moojoon Kim², Kanglyeol Ha²
(¹Korea Electrotechnology Res. Inst.; ²Pukyong Natl. Univ.)

2E4-2 Effect of the interference of sounds by two sound sources in the thermoacoustic system
Teruyuki Kozuka¹, Shinichi Sakamoto¹, Kyuichi Yasui¹ (¹AIST; ²Univ. of Shiga Pref.)

2E4-3 Applications of TiO₂/carbonnanotube in ultrasound system
Jongbok Choi¹, Beomguk Park¹, Jeongmin Park¹, Jeehyeong Khim¹
(¹Korea Univ.; ²Korean Minjok Leadership Academy)

16:10-16:55 Measurement Techniques, Imaging, Nondestructive Evaluation

Chair: Mitsutaka Hikita (Kogakuin Univ.)

2E2-1* Metamorphosis of bulk waves to Lamb waves in a Lithium Niobate crystal disc
Anowarul Habib¹, Amit Shelke², Tribikram Kundu¹, Ullrich Pietsch¹, Wolfgang Grill³
(¹Univ. of Siegen; ²Univ. of Arizona; ³Univ. of Leipzig)

2E2-2* Measurement of surface acoustic wave in soft material using swept-source optical coherence tomography
Yukako Kato¹, Yuji Wada, Yosuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)
2E2-3 Subharmonic generation at interfaces of a thin layer between metal blocks
Takahiro Hayashi†, Shiro Biwa (Kyoto Univ.)

16:55-17:25 Awards Ceremony
17:25-19:25 Banquet

Thursday, November 15

8:50-9:50 Measurement Techniques, Imaging, Nondestructive Evaluation
Chair: Tsuyoshi Mihara (Toyama Univ.)

3J2-1 Consideration for incident angle in aluminum plate by non contact air coupled ultrasonic testing
Masakazu Takahashi†, Yukio Ogura†, Hideo Nishino2, Kazuyuki Nakahata3
(1Japan Probe; 2Univ. of Tokushima; 3Ehime Univ.)

3J2-2 Dynamic model of hypocenter vibration and prevision of earthquake
Toshiaki Kikuchi†, Koichi Mizutani2 (1Natl. Defense Academy; 2Univ. of Tsukuba)

3J2-3* Study about accuracy and resolution of ultrasonic distance and velocity measurement for moving objects using M-sequence modulated signals
Shinnosuke Hirata†, Hiroyuki Hachiya (Tokyo Inst. of Tech.)

3J2-4 Nonlinear ultrasonic imaging of closed cracks by load difference phased array with global pre-heating and local cooling
Yoshikazu Ohara†, Satoru Murai, Kohji Takahashi, Kazushi Yamanaka (Tohoku Univ.)

9:50-9:55 Break

9:55-11:55 Poster Session
Chair: Jun Kondoh (Shizuoka Univ.)

3Pa1-1* Temperature dependence of thermal conductivity in quantum wires due to interaction between two-level systems and phonons
Katsunori Toda†, Yukihiro Tanaka, Norihiko Nishiguchi (Hokkaido Univ.)

3Pa1-2* Interfacial elastic waves propagating along the interface in a dual two-dimensional phononic-crystal system
Nobuharu Okashiwa†, Yukihiro Tanaka, Norihiko Nishiguchi (Hokkaido Univ.)

3Pa1-3* Direct measurement of surface displacement of metal thin films in picosecond laser ultrasonics
Shun Koiwa†, Osamu Matsuda, Ryan Beardsley, Motonobu Tomoda, Oliver B. Wright (Hokkaido Univ.)

3Pa1-4 Photoacoustic imaging with multiple-wavelength LEDs
Yoshitaro Adachi†, Tsutomu Hoshimiya (Tohoku Gakuin Univ.)

3Pa1-5 Measurement of internal friction of Bi2Sr2Ca2Cu2Ox/Ag composite tapes by vibrating reed technique
Kenta Kirimoto†, Masamichi Sakaino2, Fumio Morimoto1, Tsuyoshi Takase4, Yong Sun5
(1Kitakyushu Natl. Coll. Tech.; 2Nissan Motor; 3Kyushu Kyoritsu Univ.; 4Baiko Gakuin Univ.; 5Kyushu Inst. of Tech.)

3Pa1-6* Effects of Mn addition or substitution on high-power piezoelectric characteristics for (Bi1.5Na0.5)TiO3-based lead-free piezoelectric ceramics
Katsuhiro Yasunaga†, Hajime Nagata, Tadashi Takenaka (Tokyo Univ. of Sci.)

3Pa1-7* Computer experiments on generation and propagation of 1-Toda soliton in the nonlinear model crystals
Masanori Itaba†, Yuuki Yamada, Atsushi Minato, Satoru Ozawa (Ibaraki Univ.)

xxix
3Pa1-8* Propagation of sound wave in rarefied polyatomic gases based on extended thermodynamics I. longitudinal wave
Takashi Arima††, Shigeru Taniguchi†, Tommaso Ruggieri*, Masaru Sugiyama† (Nagoya Inst. of Tech.; †Univ. of Bologna)

3Pa1-9* Propagation of sound wave in rarefied polyatomic gases based on extended thermodynamics II. transverse wave
Yoko Mizuno†, Takashi Arima, Shigeru Taniguchi, Masaru Sugiyama (Nagoya Inst. of Tech.)

3Pa2-1 Measurement of pressure distribution on focusing source using a small reflector
Hirokazu Yanagisawa†, Jung-Ho Kim†, Shigemi Saito† (Tokai Univ.; †GW Corp.)

3Pa2-2 A hardware-oriented FDTD algorithm for sound field rendering
Tan Yiyu†, Yasushi Inoguchi†, Yukinori Sato†, Makoto Otani†, Yukio Iwaya†, Hiroshi Matsuoka†, Takao Tsuchiya†
(Japan Adv. Inst. of Sci. & Tech.; †Shinshu Univ.; †Tohoku Gakuin Univ.; †Tohoku Univ.; †Doshisha Univ.)

3Pa2-3 Development of an optical vibration sensor unit for underwater use
Jun Hasegawa† (Takushoku Univ.)

3Pa2-4* Detection of second harmonic components generated from crack in glass plate using Lamé mode of Lamb waves
Makoto Fukuda†, Taiki Hasebe, Kazuhiko Imano (Akita Univ.)

3Pa2-5* Improvement of selectivity of closed cracks in nonlinear ultrasonic imaging by using amplitude difference of fundamental wave
Masako Ikeuchi†, Kentaro Jinno, Yoshikazu Ohara, Kazushi Yamanaka (Tohoku Univ.)

3Pa2-6* Study on improvement of the estimated accuracy of the sound propagation time in the soil
Yutaka Nakagawa†, Tsuneo Sugimoto†, Takashi Hirakawa†, Motoaki Sano†, Motoyoshi Ohaba†, Sakae Shibasawa†
(Toin Univ. of Yokohama; †Tokyo Univ. of A&T)

3Pa2-7 Development of multi-color excitation photothermal lens microscope
Noriyuki Fujii†, Akira Harata (Kyushu Univ.)

3Pa2-8* Visualization for near-defect region in billet using ultrasonic CT method
Koichi Kakuma†, Yoko Norose, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

3Pa2-9* Coded signal pair for simultaneous ultrasound transmission in high-speed acoustic imaging
Takehiro Hayashi†, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.)

3Pa2-10* An analytical study of air-coupled ultrasonic flowmeter
Keisuke Tsukada†, Tomonori Ihara, Hiroshi Kikura (Tokyo Inst. of Tech.)

3Pa2-11* Fresnel diffraction pattern of laser passing through transient ultrasound fields
Naoki Kubota†, Takanobu Kuroyama, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

3Pa2-12* Accuracy evaluation of boundary interface in sound field simulation using high-order FDTD methods
Takeshi Yoda†, Kan Okubo†, Norio Tagawa*, Takaao Tsuchiya* (Tokyo Met. Univ.; †Doshisha Univ.)

3Pa3-1* Ultrasound optical lens array with variable focal length and pitch
Megumi Hatanaka†, Daisuke Koyama†, Kentaro Nakamura*, Mami Matsukawa* (Doshisha Univ.; †Tokyo Inst. of Tech.)

3Pa3-2* Piezoelectric film fabrication by electrospray deposition
Mihoko Sato†, Taka, Namihira, Makiko Kobayashi (Kumamoto Univ.)

3Pa3-3* Applications of langasite family crystals to piezoelectric devices
Hitoshi Yoshida†, Osamu Eguchi†, Yuji Ohashi†, Jun-ichi Kushibiki† (Kyocera Crystal Device; †Tohoku Univ.)

3Pa3-4* Phase-noise characteristics in Colpitts crystal oscillators using high Q filters
Hideo Nagashii†, Yasuaki Watanabe† (Nihon Dempa Kogyo; †Tokyo Met. Univ.)

3Pa3-5 Negative-resistance simulation in NMOS Colpitts crystal oscillators
Shigeoyoshi Murase†, Yasuaki Watanabe† (Nihon Dempa Kogyo; †Tokyo Met. Univ.)

3Pa3-6 An analysis of Lamé mode resonators by finite difference time domain method
Takashi Yasu†, Koji Hasegawa†, Koichi Hirayama (Kitami Inst. of Tech.; †Muroran Inst. of Tech.)

3Pa4-1 On the mist separation and the sonochemiluminescence under pulsed ultrasound
Toru Tuziuti† (AIST)

XXX
Addition effects of non-volatile compounds on the intensity of MBSL in aqueous solution using 2.4 MHz ultrasonic atomizer

Hisashi Harada
(Meisei Univ.)

A study on micro droplet generation by using an ultrasonic torsional transducer and a micropore plate

Toru Kishi, Yusuke Kiyama, Takefumi Kanda, Koichi Suzumori, Norihisa Seno (Okayama Univ.)

Development of an efficient method for producing standing cavitation bubbles

Koichi Sasaki, Yushi Iwata, Shusuke Nishiyama, Satoshi Tomioka, Noriharu Takada
(Hokkaido Univ.; Nagoya Univ.)

Measurement of instantaneous laser diffraction pattern by acoustic cavitation bubbles using two-dimensional image sensor

Takanobu Kuroyama, Koichi Mizutani, Naoto Wakatsuki, Takeshi Ohbuchi
(Univ. of Tsukuba; Natl. Defense Academy)

Effect of superposition of ultrasonic fields on sonochemical reaction rate

Keiji Yasuda, Zheng Xu, Kazumasa Matsuura, Yukihiro Goto (Nagoya Univ.)

Observation of spatial distribution of acoustic cavitation by ultrasound diagnostic equipment and consideration on application of cavitation sensor

Yuuki Uemura, Michihisa Shibata, Takeyoshi Uchida, Tsuneo Kikuchi, Minoru Kurosawa, Pak-Kon Choi, Shinichi Takeuchi
(Toin Univ. of Yokohama; AIST; Tokyo Inst. of Tech.; Meiji Univ.)

Flotation separation of bitumen from oil sand using ultrasound irradiation and mixed gases in aqueous solution

Tomonao Saito, Hirokazu Okawa, Youhei Kawamura, Tayfun Babadagli
(‘Akita Univ.; Curtin Univ.; Univ. of Alberta)

Effect of particle addition on degradation rate of methylene blue in an ultrasonic field

Chiemi Honma, Daisuke Kobayashi, Hideyuki Matsumoto, Tomoki Takahashi, Chiaki Kuroda, Katsuto Otake, Atsushi Shono
(Tokyo Univ. of Sci.; Tokyo Inst. Tech.)

Basic study for tissue characterization of carotid artery plaque using ultrasonic velocity-change imaging

Kazune Mano, Yu Izukawa, Ryouuke Kimura, Kenji Wada, Toshiyuki Matsunaka, Hiromichi Horinaka
(Univ. of Osaka Pref.)

Estimation of radial distribution of ultrasound scatterer diameter for assessment of red blood cell aggregation

Ryutaro Seki, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

Detection of RBC aggregation in blood flow based on ultrasonic echo correlation method

Toru Takahashi, Takayuki Sato, Yasuaki Watanabe (Tokyo Met. Univ.)

High sensitive detection of red blood cell aggregation with ultrasonic peak frequency

Takayuki Sato, Hiroyuki Tojo, Yasuaki Watanabe (Tokyo Met. Univ.)

Development of blood flow velocity estimation method from Doppler echocardiography and its validation by MRI data

Takanori Kojima, Hiroyuki Nakajima, Takafumi Kurokawa, Takeyoshi Kameyama, Haruna Tabuchi, Aiko Omori, Yoshifumi Saijo
(Tohoku Univ.; Tohoku Kosei Nenkin Hosp.; Miyagi Social Insurance Hosp.)

Influence of bubble flow in bubble enhanced HIFU

Kiyoshi Yoshinaka, Hiroshi Utashiro, Teruyuki Nishihara, Takashi Azuma, Akira Sasaki, Shu Takagi, Yoichiro Matsumoto
(AIST; The Univ. of Tokyo)

Large volume coagulation utilizing multiple cavitation clouds generated by 32 channel drive circuits

Kotaro Nakamura, Ayumu Asai, Keisuke Takada, Hiroshi Sasaki, Hiroki Okano, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

Efficient generation of cavitation bubbles in gel phantom by dual-frequency ultrasound exposure

Jun Yasuda, Ayumu Asai, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

Measurement and simulation of temperature rise distribution in phantom irradiated by weak nonlinear ultrasonic

Shin Tanaka, Suguru Sakuma, Takenobu Tsuchiya, Nobuyuki Endoh (Kanagawa Univ.)

Effect of BSA concentration on cavitation bubbles in gel phantom

Ayumu Asai, Jun Yasuda, Hiroki Okano, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)
3Pa5-11* Accuracy evaluation of quantitative estimation for hepatic fibrosis using phantom data
Atsushi Koriyama\textsuperscript{1}, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.) 393

3Pa5-12* Measurement of shear wave displacement in tissues using elasticity phantom
Hiromi Sasaki\textsuperscript{1}, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.) 395

3Pa6-1* Localization of acoustic reflective boundary using microphone array of small number of elements
Keiichi Zempo\textsuperscript{1}, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba) 397

3Pa6-2* A study of reciprocal sound propagation and water flow at Hashirimizu port
Hanako Ogasawara\textsuperscript{1}, Kazuyoshi Mori, Toshiaki Nakamura (Natl. Defense Academy) 399

3Pa6-3 An influence of frequency on sound propagation in a current rip region
Yoshiaki Tsurugaya\textsuperscript{1}, Toshiaki Kikuchi\textsuperscript{2}, Koichi Mizutani\textsuperscript{3} (\textsuperscript{1}Sanyo PT; \textsuperscript{2}Natl. Defense Academy; \textsuperscript{3}Univ. of Tsukuba) 401

3Pa6-4 Sound refocusing simulation using time reversal mirror in a shallow water environment
Bok Kyoung Choi\textsuperscript{1}, Byoung-Nam Kim, Seong Hyeok Shin, Yong-Kuk Lee, Bok Kyoung Choi, Bong-Chae Kim (Korea Inst. of Ocean Sci. and Tech.) 403

11:55-12:55 LUNCH TIME

Chair : Nobuki Kudo (Hokkaido Univ.)

3I-1 Enhancement of Focal Ultrasonic Treatment by Microbubbles
Shin-ichiro Umemura\textsuperscript{1}, Ken-ichi Kawabata\textsuperscript{1}, Shin Yoshizawa\textsuperscript{1} (\textsuperscript{1}Tohoku Univ.; \textsuperscript{2}Hitachi) 407

13:45-13:50 Break

13:50-15:50 Poster Session
Chair: Takenobu Tsuchiya (Kanagawa Univ.)

3Pb1-1* CuO-doped (K,Na)NbO\textsubscript{3} lead-free piezoelectric ceramics synthesized with hydrothermal powders
Yuriko Yokouchi\textsuperscript{1}, Takafumi Maeda\textsuperscript{1}, Peter Bornmann\textsuperscript{1}, Tobias Hemsel\textsuperscript{2}, Takeshi Morita\textsuperscript{1} (\textsuperscript{1}Univ. of Tokyo; \textsuperscript{2}Univ. of Paderborn) 409

3Pb1-2* Elastic stiffness of magnetic thin film at high temperatures monitored by picosecond ultrasound
Yohei Nakamichi\textsuperscript{1}, Nobutoshi Nakamura, Hirotsugu Ogi, Masahiko Hiroa, Masayoshi Nishiyama (Osaka Univ.) 411

3Pb1-3 Behavior of dielectric mode in complex series dynamics for electromechanical coupling systems
Michio Ohki\textsuperscript{1} (Natl. Defense Academy) 413

3Pb1-4* Giant electromechanical coupling in c-axis oriented ScAlGaN films
Kazuya Ito\textsuperscript{1}, Masashi Suzuki, Takahiko Yanagitani (Nagoya Inst. of Tech.) 415

3Pb1-5* Rectification of elastic waves in nanowires
Daichi Kono\textsuperscript{1}, Yukihiro Tanaka, Norihiko Nishiguchi (Hokkaido Univ.) 417

3Pb1-6 Measurements of acoustical physical constants and their temperature coefficients for langasite family crystals
Yuji Ohashi\textsuperscript{1}, Hitoshi Yoshida\textsuperscript{2}, Tomoaki Karaki\textsuperscript{2}, Tae Lv\textsuperscript{3}, Masatoshi Adachi\textsuperscript{1}, Jun-ichi Kushibiki\textsuperscript{1} (\textsuperscript{1}Tohoku Univ.; \textsuperscript{2}Kyocera Crystal Device; \textsuperscript{3}Toyama Pref. Univ.) 419

3Pb1-7* Formation of MPB in (Na\textsubscript{1-x}K\textsubscript{x})NbO\textsubscript{3}-BaZrO\textsubscript{3}-(Bi\textsubscript{1-x}Li\textsubscript{x})TiO\textsubscript{3} lead-free piezoelectric ceramics
Junta Zushi\textsuperscript{1}, Takuma Arizumi\textsuperscript{1}, Seiji Kojima\textsuperscript{1}, Ruiping Wang\textsuperscript{2}, Hiroshi Bando\textsuperscript{2} (\textsuperscript{1}Univ. of Tsukuba; \textsuperscript{2}AIST) 421

3Pb1-8* Measurement of thermal diffusivity by photopyroelectric method for the density controlled sintered SiC
Shin Watanabe\textsuperscript{1}, Yoichi Okamoto, Hisashi Miyazaki, Jun Morimoto (Natl. Defense Academy) 423

xxxii
3Pb4-2* Modeling and performance comparison of ultrasonic motors in dry and lubricated contact
Wei Qiu†, Yosuke Mizuno, Kentaro Nakamura (Tokyo Inst. of Tech.)

3Pb4-3* A study on the efficiency of multiple degrees of freedom ultrasonic motor using combination of travelling wave type stators
Takuo Umezawa†, Kensuke Shimizu, Hiroshi Hanyu, Toshinao Yamashina, Shunsuke Shimura, Yoshikazu Koike (Shibaura Inst. of Tech.)

3Pb4-4 Study on a rotary-linear 2-DOF micro ultrasonic motor
Jian Wang†, Yang Bai, Jifeng Guo (Zhejiang Univ.)

3Pb4-5 π shaped ultrasonic motor with multi-degree of freedom.
Takaaki Ishii, Ryota Inoue†, Tsuyoshi Shimizu (Univ. of Yamanashi)

3Pb4-6* Evaluation of a vibrator for a cryogenic ultrasonic motor using titanium
Dai Takeda†, Daisuke Yamaguchi, Takefumi Kanda, Koichi Suzumori†, Yuya Noguchi (Okayama Univ.)

3Pb4-7 Thermal characteristics of a PMN-PT single crystal and an ultrasonic motor in ultralow temperature environment
Daisuke Yamaguchi†, Takefumi Kanda, Koichi Suzumori, Yuya Noguchi (Okayama Univ.)

3Pb4-8* Ultrasonic power circulation-type quadratic excitation method for improvement in torque of coiled stator ultrasonic motor
Kyouhei Kato†, Masasumi Yoshizawa†, Norio Tagawa†, Takasuke Irie†, Tadashi Moriya†
('Tokyo Met. Coll. of Industrial Tech.; †Tokyo Met. Univ.; ‡Microsonic)

3Pb4-9 Development of a coiled stator miniature ultrasonic motor using a partially tapered rotor
Tadashi Moriya†, Takasuke Irie†, Masakazu Sato† ('Tokyo Met. Univ.; ‡Microsonic)

3Pb5-1* Estimation of QUS parameters in diffused liver disease
Wenli Wu†, Tatsuya Higuchi†, Jonathan Mamou†, Hiroyuki Hachiya†, Tadashi Yamaguchi†
('Chiba Univ.; †Tokyo Inst. of Tech.; ‡F. L. Lizzit Center for Biomedical Eng.)

3Pb5-2* Characterization of rat liver tissue by measuring the acoustic characteristics in high frequency
Kenta Inoue†, Jonathan Mamou†, Kazuto Kobayashi†, Yoshifumi Saito†, Tadashi Yamaguchi†
('Chiba Univ.; †F. L. Lizzit Center for Biomedical Eng.; ‡Honda Electronics; ‡Tohoku Univ.)

3Pb5-3 Estimation algorithm of multi-Rayleigh model parameters for quantitative diagnosis of liver disease
Tatsuya Higuchi†, Shinnosuke Hirata†, Tadashi Yamaguchi†, Hiroyuki Hachiya†
('Tokyo Inst. of Tech.; ‡Chiba Univ.)

3Pb5-4* Shear wave generation in living body by mode conversion of longitudinal wave at elasticity boundary
Kohei Nii†, Norio Tagawa†, Kan Ootubō†, Shin-ichi Yagi† ('Tokyo Met. Univ.; ‡Meisei Univ.)

3Pb5-5* Measurement of micro-displacement of polyvinyl alcohol induced by acoustic radiation force – comparison of laser-Doppler velocimetry and high frequency ultrasound
Ryo Nagaoka†, Takuya Izumi, Komatsu Yosuke, Kazuto Kobayashi†, Yoshifumi Saito†
('Tohoku Univ.; †F. L. Lizzit Center for Biomedical Eng.; ‡Honda Electronics)

3Pb5-6* Evaluation of a method for strain imaging in arterial wall by synthesizing ultrasonic echo based on strain distribution obtained by finite element analysis
Kazuki Shiratori†, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

3Pb5-7 Ultrasound backscatter measurement in cancellous bone using a membrane hydrophone
Atsushi Hosokawa† (Akashi Natl. Coll. Tech.)

3Pb5-8* Ultrasonic wave properties of bone marrow in human femur and tibia
Kazuki Fujimori†, Satoshi Kawasaki†, Takeshi Kawakami†, Teruhisa Mihata†, Mami Matsukawa†
('Doshisha Univ.; †Kita-Osaka Police Hospital; ‡Osaka Medical Coll.)

3Pb5-9* Effects of crosslinking condition of collagen on ultrasonic wave properties in bovine cortical bone
Daisuke Sugita†, Daiki Shiratori, Ryo Tsubota, Mami Matsukawa (Doshisha Univ.)

3Pb5-10 A trial of human bone cross-sectional imaging in vivo, using ultrasonic echo waves
Isao Mano†, Kaoru Horii†, Mami Matsukawa†, Takahiko Otani† ('Doshisha Univ.; ‡Oyo Electric)

3Pb5-11 Development of a bone-conducted ultrasonic hearing aid (BCUHA) for the profoundly deaf: Evaluation of sound quality using semantic differential method
Seiji Nakagawa†, Chika Fujiyuki, Takayuki Kagomiya (AIST)
Long-distance propagation of ultrasound in human body - experimental and numerical study using 3-D elastic human model
Yoshiki Nagatani† (Kobe City Coll. of Tech.)

Oceanic ambient noise generated by breaking surf in the sandy coast
Bong-Chae Kim†, Bok Kyoung Choi, Byoung-Nam Kim (Korea Inst. of Ocean Sci. & Tech.)

Detection of possible biogenic acoustic signals and ambient noise on deep seafloor in Sagami bay
Ryoichi Iwase† (JAMSTEC / JST, CREST)

A basic study of relationship between spatial distribution of noise sources and target scatterings observed in the sea trial of ambient noise imaging
Kazuyoshi Mori†, Hanako Ogasawara†, Toshiaki Nakamura, Takenobu Tsuchiya, Nobuyuki Endoh† (Natl. Defense Academy; Kanagawa Univ.)

High-speed underwater acoustic communication using orthogonal signal division multiplexing; A MIMO approach
Tadashi Ebihara† (Univ. of Tsukuba)

Alignment of micro particles on a flat plate in liquid using MHz-standing wave field
Jun-ichi Muraoka†, Tsunehisa Suzuki†, Kentaro Nakamura† (Yamagata Res. Inst. of Tech.; Tokyo Inst. of Tech.)

Concentration of OH radicals in the interfacial region of cavitation bubbles
Shin-ichi Hatanaka† (Univ. of Electro-Comm.)

Consideration on effect of backing material on receiving characteristics of hydrophone suitable for measurement of high intensity sound field with acoustic cavitation
Michihisa Shibata†, Yuuki Uemura, Nagaya Okada, Takeyoshi Uchida, Tsuneo Kikuchi†, Minoru Kurosawa, Shinichi Takeuchi (Toin Univ. of Yokohama; Honda Electronics; AIST; Tokyo Inst. of Tech.)

Experimental study to produce multiple focal points of acoustic field for active path selection of microbubbles through multi-bifurcation
Ren Koda†, Jun Koido†, Takumi Ito†, Takashi Mochizuki†, Kohji Masuda†, Seiichi Ikeda†, Fumihito Ara†, Yoshitaka Miyamoto†, Toshio Chiba† (Tokyo Univ. of A&T; Nagoya Univ.; Natl. Center for Child Health and Development)

Calibration method for elasticity evaluation of regenerating cartilage based on ultrasonic particle velocity
Naotaka Nitta†, Masaki Misawa†, Kazuhiro Homma†, Tsuyoshi Shiina† (AIST; Kyoto Univ.)

Characteristics of electromechanical response of bone in the MHz range
Masahiro Okino†, Katsunori Mizuno*, Takahiko Yanagitani†, Sabine Coutelou†, Mami Matsukawa† (Doshisha Univ.; Univ. of Tokyo; Nagoya Inst. of Tech.)

Acoustically stimulated electromagnetic response in bones
Natsumi Ohno†, Miki Uchihara†, Hisato Yamada†, Kenji Ikushima†, Nobuo Niimi†, Yosithugu Kojima† (Tokyo Univ. of A&T; Nippon Sigmax)

Application of cellular polypropylene to ultrasonic transducers in water
Toshikazu Horino†, Tomoo Kamakura†, Hideyuki Hideyuki†, Hideo Adachi†, Yoshinobu Yatsuno† (Univ. of Electro-Comm.; Kobayasi Inst. of Physical Res.)

18:00-18:10 CLOSING