

USE2013 Schedule

	Nov. 20 (Wed)	Nov. 21 (Thu)	Nov. 22 (Fri)
9:00			
10:00	10:00 Opening Ceremony	9:10-9:55 2E5-1~3 Biomedical Ultrasound Chair: Iwaki Akiyama (Doshisha University)	9:10-10:10 3J5-1~4 Biomedical Ultrasound 1 Chair: Koji Masuda (Tokyo University of Agriculture and Technology)
11:00	10:10-10:55 1J2-1~3 Measurement Techniques, Imaging, Nondestructive Evaluation 1 Chair: Mitsutaka Hikita (Kogakuin University)	9:55-11:55 Poster Session 2P1-1~10, 2P2-1~20, 2P3-1~7, 2P4-1~19, 2P5-1~27, 2P6-1~5 Chair: Minoru Kurokawa (Tokyo Institute of Technology)	10:15-11:00 3J5-5~7 Biomedical Ultrasound 2 Chair: Hideuki Hasegawa (Tohoku University)
12:00	11:05-11:50 1J2-4~6 Measurement Techniques, Imaging, Nondestructive Evaluation 2 Chair: Tsuyoshi Mihara (Toyama University)	11:55-13:10 Lunch Time	11:10-11:55 3J1-1~3 Physical Acoustics-Acousto-Optics Chair: Jun Morimoto (National Defense Academy of Japan)
13:00	11:50-12:40 Invited Talk 1 II-1 Tsuyoshi Shiina (Kyoto University) Chair: Nobuki Kudo (Hokkaido University)	13:10-14:00 Invited Talk 2 2I-1 Takaaki Tsurumi (Tokyo Institute of Technology) Chair: Shin-ichiro Umemura (Tohoku University)	11:55-12:45 Invited Talk 3 3I-1 Yongrae Roh(Kyungpook National University) Chair: Pak-Kon Choi (Meiji University)
14:00	12:40-14:00 Lunch Time	14:05-15:05 2E2-1~4 Measurement Techniques, Imaging, Nondestructive Evaluation Chair: Hirotugu Ogi (Osaka University)	12:45-14:00 Lunch Time
15:00	14:00-16:00 Poster Session 1P1-1~11, 1P2-1~47, 1P3-1~20 Chair: Shoji Kakio (University of Yamanashi)	15:10-16:10 2E1-1~2, 2E3-1~2 Physical Acoustics-Acousto-Optics, Piezoelectric Devices Chair: Oliver B. Wright (Hokkaido University)	14:00-16:00 Poster Session 3P1-1~9, 3P4-1~30, 3P5-1~36, 3P6-1~10 Chair: Takenobu Tsuchiya (Kanagawa University)
16:00	16:00-16:30 1J2-7~8 Measurement Techniques, Imaging, Nondestructive Evaluation 3 Chair: Yasuaki Watanabe (Tokyo Metropolitan University)	16:15-17:15 2E4-1~2, 2E6-1~2 High Power Ultrasound, Sonochemistry, Ocean Acoustics Chairs: Tatsuro Matsuka (Nagoya University) Toshiaki Nakamura (National Defense Academy)	16:00-17:15 3J4-1~4, 3J6-1 High Power Ultrasound, Sonochemistry, Ocean Acoustics Chair: Kyuichi Yasui (Advanced Industrial Science and Technology)
17:00	16:30-17:30 1J3-1~4 Piezoelectric Devices Chair: Jun Kondoh (Shizuoka University)	17:15-17:35 Awards Ceremony	17:15 Closing Ceremony
18:00		18:00-20:00 Banquet	
19:00			

The 34th Symposium on Ultrasonic Electronics (USE 2013) Program

† Speaker

* Applying to Young Scientists Award

Wednesday, November 20

10:00-10:10 OPENING

10:10-10:55 Measurement Techniques, Imaging, Nondestructive Evaluation 1
Chair: Mitsutaka Hikita (Kogakuin Univ.)

- IJ2-1*** Effects of atmospheric pressure variation on temperature and humidity measurement using ultrasonic probe 1
Takahiro Motegi[†], Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)
- IJ2-2*** Viscoelastic properties of protein layers studied by RAMNE-Q biosensors 3
Tomohiro Shagawa[†], Keisuke Tsurimoto, Fumihito Kato, Hirotugu Ogi, Masahiko Hirao (Osaka Univ.)
- IJ2-3*** Magnetic measurements of iron steels by using ultrasonics 5
Hisato Yamada^{1†}, Kenji Ikushima¹, Junichi Yotsuji² (¹Tokyo Univ. of A&T, ²JFE Steel Corp.)

10:55-11:05 Break

11:05-11:50 Measurement Techniques, Imaging, Nondestructive Evaluation 2
Chair: Tsuyoshi Mihara (Toyama Univ.)

- IJ2-4** Higher harmonic imaging of crack tip plastic zone 7
Koichiro Kawashima^{1,2†}, Takumi Aida³
(¹Ultrasonic Materials Diagnosis Lab.; ²Nagoya Industrial Sci. Res. Inst.; ³Insight)
- IJ2-5*** Optimization of the measuring condition by the ultrasonic visualization 9
Shun Mikami[†], Yuusuke Tanaka, Katsumi Ohira, Yukio Ogura (Japan Probe)
- IJ2-6** Analysis and observation of sound wave field from finite aperture piezoelectric transducer - Fact-finding of misfit between conventional analysis and experiment observation - 11
Akira Yamada^{1†}, Yoshio Udagawa² (¹Tokyo Univ. of A&T; ²Imaging Supersonic Lab.)

11:50-12:40 Invited Talk 1 Chair: Nobuki Kudo (Hokkaido Univ.)

- II-1** Ultrasound elastography: Development of novel technologies and standardization 13
Tsuyoshi Shiina (Kyoto Univ.)

12:40-14:00 LUNCH TIME

14:00-16:00 Poster Session Chair: Shoji Kakio (Univ. of Yamanashi)

- 1P1-1*** Light scattering in rarefied polyatomic gases based on extended thermodynamics 15
Takashi Arima[†], Shigeru Taniguchi, Masaru Sugiyama (Nagoya Inst. of Tech.)
- 1P1-2** A comparison of the free-surface boundary conditions in the FD-TD method for elastic wave propagation analysis 17
Takashi Yasui^{1†}, Koji Hasegawa², Koichi Hirayama¹ (¹Kitami Inst. of Tech.; ²Muroran Inst. of Tech.)
- 1P1-3** High-power properties of lead-free piezoelectric ceramics under large-amplitude vibration 19
Yutaka Doshida^{1†}, Tomohiro Harada¹, Hiroyuki Shimizu¹, Sumiaki Kishimoto¹, Youichi Mizuno¹, Satoshi Tanaka², Hideki Tamura³
(¹Taiyo Yuden; ²Nagaoka Univ. of Tech.; ³Tohoku Inst. of Tech.)

1P1-4*	Gigahertz elastic properties of cryoprotective aqueous solutions of ionic liquid and trehalose	21
	Haruki Takayama [†] , Tomohiko Shibata, Yuto Kuroda, Shota Koda, Seiji Kojima (Univ. of Tsukuba)	
1P1-5*	Fabrication and high-power piezoelectric characteristics of textured (Sr_{0.7}Ca_{0.3})₂Bi₄Ti₅O₁₈ Ceramics	23
	Shun Endo [†] , Hajime Nagata, Tadashi Takenaka (Tokyo Univ. of Sci.)	
1P1-6	Measurement of elastic constants of a structural adhesive using pulse-echo method	25
	Shinobu Sugasawa [†] , Takahiro Ando, Shigeru Akiyama, Toshiaki Iwata (Natl. Maritime Res. Inst.)	
1P1-7*	A Study on high Temperature behavior of PZT/PZT piezoelectric composite	27
	Shota Fujimoto [†] , Takao Namihira, Makiko Kobayashi (Kumamoto Univ.)	
1P1-8*	Composition variation of elastic anomalies in uniaxial relaxor Ca_xBa_{1-x}Nb₂O₆ crystals	29
	Kohei Suzuki ^{1†} , Kazuya Matsumoto ¹ , J. Dec ² , T. Łukasiewicz ³ , W. Kleemann ⁴ , Seiji Kojima ¹ (¹ Univ. of Tsukuba; ² Univ. of Silesia; ³ Inst. of Electronic Materials Tech.; ⁴ Duisburg-Essen Univ.)	
1P1-9	Impulse response for electromechanical coupling system on a distributed-parameter basis	31
	Michio Ohki [†] (Natl. Defense Academy)	
1P1-10*	Mn-doped CaBi₄Ti₄O₁₅/PZT ultrasonic transducers at high temperature	33
	Yusuke Inada ^{1†} , Takuo Inoue ¹ , Hajime Nagata ² , Tadashi Takenaka ² , Makiko Kobayashi ¹ (Kumamoto Univ.; ² Tokyo Univ. of Sci.)	
1P1-11*	Characterization of poly-Si nanowire by photoacoustic spectroscopy	35
	Hisashi Miyazaki ^{1†} , Jun Morimoto ¹ , Shinya Kato ² , Tatsuya Yamazaki ³ Ryousuke Ishikawa ² , Shinsuke Miyajima ³ , Makoto Konagai ^{2,3} (¹ Natl. Defense Academy; ² JST; ³ Tokyo Inst. of Tech.)	
1P2-1	Nonlinearity of hypocenter vibration and prevision of earthquake	37
	Toshiaki Kikuchi ^{1†} , Koichi Mizutani ² (¹ Natl. Defence Academy; ² Univ. of Tsukuba)	
1P2-2	Open voltage measurement for reciprocity calibration of hydrophone using insert voltage technique	39
	Masahiro Yoshioka [†] (AIST)	
1P2-3	Study on measurement technique of ultrasonic power by calorimetric method in frequency range from 1 MHz to 3 MHz	41
	Takeyoshi Uchida [†] , Tsuneo Kikuchi (AIST)	
1P2-4	PIV analysis of acoustic streaming generated by a polyurea ultrasonic transducer	43
	Takahiro Aoyagi [†] , Marie Nakazawa, Masaya Tabaru, Kentaro Nakamura (Tokyo Inst. of Tech.)	
1P2-5*	Investigation of radiated ultrasound from electroacoustic transformation device -Thermophone-	45
	Takuya Nishioka ^{1†} , Yu Teshima ¹ , Takashi Mano ² , Ken Sakai ² , Takaaki Asada ² , Mami Matsukawa ¹ , Tetsuo Ota ¹ , Shizuko Hiryu ¹ (¹ Doshisha Univ.; ² Murata Mfg.)	
1P2-6	Numerical analysis of sound wave propagation by combination method using amplitude component of FDTD solution and phase component of CIP solution	47
	Takao Tsuchiya ^{1†} , Shouichi Sugimura ¹ , Kan Okubo ² (¹ Doshisha Univ.; ² Tokyo Met. Univ.)	
1P2-7	3D ultrasonic propagation analysis in flow field using finite element method	49
	Yasushi Ikegami [†] (ITOCHU Techno-Solutions Corp.)	
1P2-8	Investigation on arrangement of sound source element in reflection point search by rectangular sound source	51
	Hiroyuki Masuyama [†] (Toba Natl. Coll. Mar. Tech.)	
1P2-9*	Application of wavelet transforms to mode visualization by laser speckle interferometry	53
	Keita Mochizuki ^{1†} , Naoki Yamagishi ¹ , Hajime Kobayashi ² , Yasuaki Watanabe ¹ (¹ Tokyo Met. Univ.; ² Nihon Dempa Kogyo)	
1P2-10	Sound pressure measurement of the waveguide type ultrasonic cleaning machine using fiber optic probe hydrophone	55
	Yoshikazu Koike ^{1†} , Kei Kikuchi ¹ , Ryo Maeda ¹ , Kazunari Suzuki ² (¹ Shibaura Inst. of Tech.; ² Kaijo Corp.)	

1P2-11* A method for reduction of frequency dependent attenuation in tissue harmonic imaging	57
Takuya Hiraoka ^{1†} , Norio Tagawa ¹ , Kan Okubo ¹ , Iwaki Akiyama ² (¹ Tokyo Met. Univ.; ² Doshisha Univ.)	
1P2-12* Simultaneous ultrasonic measurements of temperature and heat flux in a heated medium	59
Akira Kosugi [†] , Shingo Isobe, Ikuo Ihara, Iwao Matsuya (Nagaoka Univ. of Tech.)	
1P2-13* Monitoring of deposition reaction of A β peptides on heterogenous nuclei by TIRF-QCM	61
Hiroki Hamada [†] , Kentaro Noi, Hirotugu Ogi, Hisashi Yagi, Yuji Goto, Masahiko Hirao (Osaka Univ.)	
1P2-14* Inspection of thick structure using beam steering phased array for complex surface	63
Setsu Yamamoto [†] , Jun Semboshi, Takahiro Miura, Makoto Ochiai, Tadahiro Mitsuhashi, Hiroyuki Adachi, Satoshi Yamamoto (Toshiba Corp.)	
1P2-15 Development of higher frequency laminated transducer with multi-channel pulser for subharmonic image inspection	65
Tsuyoshi Mihara [†] , Tetsuhiro Asakura, Hatsuzo Tashiro (Univ. of Toyama)	
1P2-16 Relationship between output impedance of pulse generator circuit and emitted ultrasound pressure waveform	67
Osami Kobori ^{1†} , Yoshio Udagawa ² (¹ Electron Sci. Inst.; ² Imaging Supersonic Lab.)	
1P2-17 Research of non-contact air coupled Lamb wave for thin plate testing and application	69
Junjie Chang ^{1,2†} , Katsumi Ohira ¹ , Yukio Ogura ¹ , Chao Lu ² (¹ Japan Probe; ² Nanchang Hangkong Univ.)	
1P2-18* Reflection coefficients of the A ₀ - and S ₀ -mode Lamb waves at precisely fabricated 2 dimensional incremental defects	71
Hikaru Kaneshima [†] , Yuta Watanabe, Hideo Nishino (Univ. of Tokushima)	
1P2-19 Guided waves propagating in a water-filled stainless steel pipe	73
Harumichi Sato [†] , Hisato Ogiso (AIST)	
1P2-20 Efficient defect detections in an elbow part of piping by guided waves using appropriate frequency 1-Reflection phenomena at defects and sensitivities of defect detections-	75
Hideo Nishino ^{1†} , Shohei Takamatsu ¹ , Toshihiro Yamamoto ² , Takashi Furukawa ² (¹ Univ. of Tokushima; ² Japan Power Eng. and Inspection Corp.)	
1P2-21 Efficient defect detections in an elbow part of piping by guided waves using appropriate frequency 2 -FEM analyses and a method for efficient defect detections-	77
Toshihiro Yamamoto ^{1†} , Takashi Furukawa ¹ , Hideo Nishino ² (¹ Japan Power Eng. and Inspection Corp.; ² Univ. of Tokushima)	
1P2-22 Evaluation of TiO ₂ -SiO ₂ glass thin films by the line-focus-beam ultrasonic material characterization system	79
Mototaka Arakawa ^{1†} , Yuji Ohashi ¹ , Kazuo Ishikawa ¹ , Eriko Kobayashi ¹ , Jun-ichi Kushibiki ¹ , Shoji Kakio ² , Keiko Hosaka ² (¹ Tohoku Univ.; ² Univ. of Yamanashi)	
1P2-23 Homogeneity evaluation of ultra-low expansion ceramics by the ultrasonic microspectroscopy technology	81
Yuji Ohashi ^{1†} , Jun-ichi Kushibiki ¹ , Mototaka Arakawa ¹ , Shun-ichi Sasaki ² , Mabito Iguchi ² (¹ Tohoku Univ.; ² Nihon Ceratec)	
1P2-24* Evolutions of microstructure and nonlinear ultrasonics in pure copper during fatigue damage	83
Yutaka Ishii [†] , Yuuki Kusanagi, Toshihiro Ohtani (Shonan Inst. of Tech.)	
1P2-25* Nonlinear ultrasonic characterizations of welded joint in high chromium ferritic steel during creep damage	85
Yuki Kusanagi [†] , Yutaka Ishii, Toshihiro Ohtani (Shonan Inst. of Tech.)	
1P2-26* Detection of second harmonic ultrasonic wave generated from weld defect	87
Tatsuya Sugiura [†] , Makoto Fukuda, Kazuhiko Imano (Akita Univ.)	
1P2-27* Second harmonic ultrasonic waves detection in glass plate with crack	89
Makoto Fukuda [†] , Taiki Hasebe, Kazuhiko Imano (Akita Univ.)	
1P2-28* Evaluation of crack closure stress by damped double nodes analyses of images obtained by global preheating and local cooling	91
Koji Takahashi [†] , Kentaro Jinno, Yoshikazu Ohara, Kazushi Yamanaka (Tohoku Univ.)	

1P2-29	Research for engineering applications of laser-induced thermal waves and emergence stress waves	93
	Akiyuki Minamide ^{1†} , Haruki Fukada ² , Atsushi Yamaguchi ² , Yoshiaki Tokunaga ² (¹ Kanazawa Tech. Coll.; ² Kanazawa Inst. of Tech.)	
1P2-30*	Detection of cracks using laser scanning PVDF transducer	95
	Kazuki Nakata [†] , Takaharu Kitamura, Mami Matsukawa (Doshisha Univ.)	
1P2-31*	Numerical study of defect detection in square billet by transmission method with linear scanning	97
	Ryusuke Miyamoto [†] , Yoko Norose, Koichi Mizutani, Naoto Wakatsuki, Tadashi Ebihara (Univ. of Tsukuba)	
1P2-32*	Basic study of an estimation method for fire damage within concrete using high-intensity ultrasonic waves and optical equipment	99
	Ayumu Osumi [†] , Masakatsu Enomoto, Youichi Ito (Nihon Univ.)	
1P2-33	Internal friction characterization of positive electrode of lithium ion battery by using vibrating reed technique	101
	Masamichi Sakaino ^{1†} , Jun Umemoto ¹ , Yusuke Hattori ¹ , Ryu Tateishi ¹ , Shuji Yasuda ¹ , Tsuyoshi Takase ¹ , Kenta Kirimoto ² , Yong Sun ¹ (¹ Kyushu Inst. of Tech.; ² Kitakyushu Natl. Coll. of Tech.)	
1P2-34	Mechanical contacts mapped by picosecond ultrasonic pulses and non-equilibrium electrons	103
	Motonobu Tomoda ^{1†} , Thomas Dehoux ² , Yohhei Iwasaki ¹ , Osamu Matsuda ¹ , Vitaliy E. Gusev ³ , Oliver B. Wright ¹ (¹ Hokkaido Univ.; ² Univ. of Bordeaux; ³ Univ. of Maine)	
1P2-35*	Study on the estimation of the volume water content in the culture soil during plant cultivation using sound vibration	105
	Yutaka Nakagawa ^{1†} , Tsuneyoshi Sugimoto ¹ , Motoaki Sano ¹ , Takashi Shirakawa ¹ , Toshiaki Sugihara ¹ , Kaoru Yamagishi ¹ , Motoyoshi Ohba ² , Sakae Shibusawa ² (¹ Toin Univ. of Yokohama; ² Tokyo Univ. of A&T)	
1P2-36	Study on health condition monitoring method of the plant by vibration measurement of leaf using acoustic radiation force	107
	Motoaki Sano ^{1†} , Yutaka Nakagawa ¹ , Tsuneyoshi Sugimoto ¹ , Takashi Shirakawa ¹ , Toshiaki Sugihara ¹ , Kaoru Yamagishi ¹ , Motoyoshi Ohba ² , Sakae Shibusawa ² (¹ Toin Univ. of Yokohama; ² Tokyo Univ. of A&T)	
1P2-37*	Easy setup clamp-on ultrasonic flowmeter	109
	Minako Terao [†] , Hiroaki Tanaka, Yoshiaki Tanaka (Yokogawa Electric)	
1P2-38*	Vortex detection in cross-section of a pipe flow using V-shaped ultrasonic probes	111
	Shusuke Hashimoto [†] , Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)	
1P2-39	Rapid measurement of ultra-high viscosity with EMS system	113
	Masanori Yasuda ^{1†} , Nami Kurauchi ¹ , Yasuhide Hara ¹ , Miki Nakamura ¹ , Taichi Hirano ² , Keiji Sakai ² (¹ Kyoto Electronics Mfg.; ² Univ. of Tokyo)	
1P2-40*	Auto-measurement of resonant photoacoustic detection and its frequency characteristics	115
	Jun Hoshimiya [†] , Tsutomu Hoshimiya (Tohoku Gakuin Univ.)	
1P2-41*	Study on movement detection using precise ultrasonic distance measurement - Application to care environments -	117
	Takeo Sato [†] , Natsuki Tobita, Mitsutaka Hikita (Kogakuin Univ.)	
1P2-42*	Real time monitoring of vortex wind field based on the multi-channel simultaneous transmission and reception of coded acoustic wave signals between parallel array elements	119
	Hiroki Terada [†] , Haiyue Li, Akira Yamada (Tokyo Univ. of A&T)	
1P2-43*	Sensitivity compensated transmitting signal for direction measurement using pulse compression	121
	Dai Chimura [†] , Ryo Toh, Seiichi Motoooka (Chiba Inst. of Tech.)	
1P2-44	Application of pulse compression technique to parametric difference frequency sound	123
	Hideyuki Nomura [†] , Hideo Adachi, Tomoo Kamakura, Gregory T. Clement (Univ. of Electro-Comm.)	
1P2-45	Comparison between theory and experimental data in development of thin catheter navigation using acoustic radiation force	125
	Takashi Mochizuki [†] , Nobuhiro Tsurui, Naoto Hosaka, Ren Koda, Kohji Masuda (Tokyo Univ. of A&T)	

1P2-46	Study on no-power-supply steerage for endoscope capsule - Combination of magnetic force and ultrasonic beacon -	127
	Tomohiro Sakata [†] , Mitsutaka Hikita (Kogakuin Univ.)	
1P2-47	Study on energy harvesting from living environment using dynamo with rotating vibrator	129
	Toru Haremaki [†] , Mitsutaka Hikita (Kogakuin Univ.)	
1P3-1*	Design and fabrication of a multimode ring vector hydrophone	131
	Youngsub Lim ^{1†} , Cheeyoung Joh ² , Heeseon Seo ² , Yongrae Roh ¹ (¹ Kyungpook Natl. Univ.; ² Agency for Defense Dev.)	
1P3-2	Ultrasonic 2D array transducer for volumetric imaging	133
	Jeongdong Woo, Yongrae Roh [†] (Kyungpook Natl. Univ.)	
1P3-3*	Three degree-of-freedom ultrasonic contact probe for imaging inside of solid material	135
	Masafumi Aoyanagi ^{1†} , Naoto Wakatsuki ¹ , Koichi Mizutani ¹ , Jun Takarada ² (¹ Univ. of Tsukuba; ² Tokyo Univ. of Sci.)	
1P3-4*	Analysis of the effect of non-piezoelectric bonding layer between electrodes on PVDF transducer performance	137
	Yonggang Cao ^{1†} , Kangyeol Ha ¹ , Moojoon Kim ¹ , Jungsoon Kim ² (¹ Pukyong Natl. Univ.; ² Tongmyong Univ.)	
1P3-5*	Development of small ultrasonic probe using KNbO₃ piezoelectric thin films	139
	Satomi Ishida ^{1†} , Daisuke Kameyama ¹ , Seiya Ozeki ¹ , Makoto Hosaki ¹ , Takahisa Shiraishi ² , Hiroshi Funakubo ² , Minoru Kurosawa ² , Tadashi Yamaguchi ³ , Mutsuo Ishikawa ¹ (¹ ToIn Univ. of Yokohama; ² Tokyo Inst. of Tech.; ³ Chiba Univ.)	
1P3-6*	Growth of epitaxial KNbO₃ thin films by hydrothermal method for ultrasonic transducers.	141
	Seiya Ozeki ^{1†} , Makoto Hosaki ¹ , Daisuke Kameyama ¹ , Satomi Ishida ¹ , Takahisa Shiraishi ² , Hiroshi Funakubo ² , Minoru Kurosawa ² , Mutsuo Ishikawa ¹ (¹ ToIn Univ. of Yokohama; ² Tokyo Inst. of Tech.)	
1P3-7*	c-axis tilted or c-axis parallel ScAlN films/substrate SAW devices with high electromechanical coupling	143
	Shinji Takayanagi ^{1†} , Takahiko Yanagitani ² , Mami Matsukawa ¹ (¹ Doshisha Univ.; ² Nagoya Inst. of Tech.)	
1P3-8*	Loss reduction of longitudinal-type leaky SAW by loading with high-velocity thin film	145
	Fumiya Matsukura [†] , Shoji Kakio (Univ. of Yamanashi)	
1P3-9	Analysis of a lateral field excited acoustic gas sensor based on 128°-rotated YX-LiNbO₃ plate	147
	Yung-Yu Chen [†] , Yen-Ting Lai, Yan-Ruei Lin (Tatung Univ.)	
1P3-10	Theoretical and experimental consideration of optimum gold film thickness for SH-SAW biosensor on quartz	149
	Mikihiro Goto ^{1,2†} , Hiromi Yatsuda ^{1,3} , Jun Kondoh ² (¹ Japan Radio; ² Shizuoka Univ.; ³ OJ-Bio)	
1P3-11*	Development of methanol sensor using shear horizontal surface acoustic wave devices for direct methanol fuel cell	151
	Takuya Nozawa [†] , Jun Kondoh (Shizuoka Univ.)	
1P3-12*	Digital microfluidic system using a surface acoustic wave device	153
	Kazuya Aoki [†] , Jun Kondoh (Shizuoka Univ.)	
1P3-13	Fast and sensitive ball SAW hydrogen sensor with porous Pd-Pt alloy film	155
	Toshihiro Tsuji ^{1†} , Satoshi Hagihara ¹ , Toru Oizumi ¹ , Nobuo Takeda ¹ , Tsuneo Ohgi ² , Takayuki Yanagisawa ² , Shingo Akao ^{2,1} , Noritaka Nakaso ² , Kazushi Yamanaka ¹ (¹ Tohoku Univ.; ² Toppan Printing)	
1P3-14	Development of RAMNE-Q biosensor with MEMS process for high-frequency measurements	157
	Fumihito Kato [†] , Keisuke Tsurimoto, Hirotugu Ogi, Masahiko Hirao (Osaka Univ.)	
1P3-15*	Design of liquid density and viscosity sensor using dual mode rhombus resonator	159
	Yumi Hososyama ^{1†} , Koichi Mizutani ¹ , Naoto Wakatsuki ¹ , Yuka Maeda ¹ , Jun Takarada ² (¹ Univ. of Tsukuba; ² Tokyo Univ. of Sci.)	
1P3-16	Construction of frequency-change-type two-axis acceleration sensor	161
	Sumio Sugawara, Yousuke Satou [†] , Kyouhei Takahashi (Ishinomaki Senshu Univ.)	

1P3-17	Analysis of quality factor of quartz-crystal tuning forks using L-shaped bar model with torsion spring	163
	Keisuke Sugiura [†] , Hideaki Itoh (Shinshu Univ.)	
1P3-18	Analysis of change in motional capacitance of quartz-crystal tuning-fork tactile sensor induced by viscoelastic materials in contact with its base	165
	Hideaki Itoh [†] , Naoki Hatakeyama (Shinshu Univ.)	
1P3-19	Development and measurement technique of the low-passive intermodulation device for mobile phone	167
	Osamu Kawachi [†] , Akira Moriya, Makoto Inoue (Taiyo Yuden)	
1P3-20	Development of the ultrasonic waves communication circuit for a wearable device	169
	Shin-nosuke Suzuki ^{1†} , Kazuki Takano ¹ , Manabu Ishihara ¹ , Yukio Kobayashi ¹ , Nagaya Okada ² , Kazuto Kobayashi ² (¹ Oyama Natl. Coll. of Tech.; ² Honda Electronics)	

16:00-16:30 Measurement Techniques, Imaging, Nondestructive Evaluation 3
Chair: Yasuaki Watanabe (Tokyo Met. Univ.)

1J2-7	Ultrasonic microspectroscopy of tempered glasses	171
	Jun-ichi Kushibiki [†] , Mototaka Arakawa, Yuji Ohashi, Kuniko Kawaguchi, Nobuo Takeda (Tohoku Univ.)	
1J2-8*	Anomalous electrostatic interactions on the velocity fluctuations of settling microspheres	173
	Kazuki Sugita [†] , Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)	

16:30-17:30 Piezoelectric Devices **Chair: Jun Kondoh (Shizuoka Univ.)**

1J3-1	Suppression of unwanted B-mode of SC-cut quartz resonator	175
	Morio Onoe ^{1†} , Takeru Mutoh ² , Takashi Yamaguchi ² (¹ Univ. of Tokyo; ² Nihon Dempa Kogyo)	
1J3-2*	Non-contact detection of external force using quartz crystal resonator	177
	Teppei Uchiho ^{1†} , Kazuo Uzuka ² , Hideyuki Suenaga ¹ , Takeshi Morita ¹ (¹ Univ. of Tokyo; ² TOK BEARING)	
1J3-3	Ultra wide band and high frequency resonators using SH type plate wave in LiNbO₃ thin plate	179
	Michio Kadota ^{1†} , Yasuhiro Kuratani ² , Tetsuya Kimura ² , Masayoshi Esashi ¹ , Shuji Tanaka ¹ (¹ Tohoku Univ.; ² Murata Mfg.)	
1J3-4	Investigation of polarization switching behavior in epitaxial PZT films by using GHz ultrasonic excitation characteristics	181
	Takahiko Yanagitani ^{1†} , Masashi Suzuki ¹ , Kiyotaka Wasa ² (¹ Nagoya Inst. of Tech.; ² Kyoto Univ.)	

Thursday, November 21

9:10-9:55 Biomedical Ultrasound **Chair: Iwaki Akiyama (Doshisha Univ.)**

2E5-1*	Transthoracic speckle motion imaging of blood flow in left ventricular cavity with high frame rate ultrasound	183
	Hiroki Takahashi [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	
2E5-2*	Evaluation of local velocity mapping for nonlinearity of shear elasticity	185
	Raj Kumar Parajuli [†] , Naoki Sunaguchi, Reisen Tei, Tomohiro Iijima, Yoshiki Yamakoshi (Gunma Univ.)	
2E5-3	Localized sonoporation: In-situ disruption of actin cytoskeleton at single-cell level	187
	Alfred C. H. Yu [†] , Xian Chen, Ruen Shan Leow, Yixin Hu (Univ. of Hong Kong)	

9:55-11:55 Poster Session **Chair: Minoru Kurosawa (Tokyo Inst. of Tech.)**

2P1-1	Relation between sharp resonance and bias voltage in CMOS-based resonator	189
	Kazuhide Abe [†] (Toshiba Corp.)	

2P1-2	High intensity ultrasound for the enhancement of water purification	191
	Seohui M. Bae [†] , Doyeong C. Ku, Gyeongwon Yun, Kwangil Kang, Man-Seok Chun, Jinho Oh, Young H. Kim (Korea Sci. Academy of KAIST)	
2P1-3	Study of surface acoustic waves in $\text{SiO}_2/\text{LiNbO}_3$ layered-structure phononic crystals	193
	Jia-Hong Sun [†] , Jyun-Hua Jhou (Chang Gung Univ.)	
2P1-4*	Monitoring of film growth on quartz by acoustic resonance method	195
	Naoto Yoshimura [†] , Nobutomo Nakamura*, Hirotugu Ogi, Masahiko Hirao (Osaka Univ.)	
2P1-5*	Experimental and theoretical study on SAW resonances and their dispersion relations in 1D phononic crystals	197
	Shoichi Masuda [†] , Hirotugu Ogi, Masahiko Hirao (Osaka Univ.)	
2P1-6	Comparison of acoustic anomalies between tetragonal and rhombohedral ferroelectric ($1-x$) $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_{3-x}\text{PbTiO}_3$	199
	Ghulam Shabbir ^{1†} , Seiji Kojima ² (¹ PINSTECH; ² Univ. of Tsukuba)	
2P1-7	Free-vibration acoustic resonance of two-dimensional hyperelastic material	201
	Ryuichi Tarumi [†] , Shinpei Yamada, Yoji Shibutani (Osaka Univ.)	
2P1-8*	Classification of nonlinear resonant vibration modes by magnetic point groups	203
	Yuta Yamaguchi [†] , Ryuichi Tarumi, Shinpei Yamada, Yoji Shibutani (Osaka Univ.)	
2P1-9*	Directivity patterns of ultrasound generated by evanescent light at the interface between prism and aluminum surface	205
	Iwao Matsuya [†] , Kento Matozaki, Ikuo Ihara (Nagaoka Univ. of Tech.)	
2P1-10	Vibrational modes and symmetry in a hexagonal cross- section nanowire	207
	Seiji Mizuno [†] (Hokkaido Univ.)	
2P2-1	Ultrasonic strain effects on Bi2223 cuprate superconductors	209
	Kunihiro Irie, Masaki Mito [†] , Takuma Nagano, Kazuki Tsuruta, Sho Nobukiyo (Kyushu Inst. of Tech.)	
2P2-2*	Effect of ultrasonic strain on p-type silicon wafers	211
	Kazuki Tsuruta ^{1†} , Masaki Mito ¹ , Takuma Nagano ¹ , Yuki Katamune ² , Tsuyoshi Yoshitake ² (¹ Kyushu Inst. of Tech.; ² Kyushu Univ.)	
2P2-3	dc-bias effect on phase transition instabilities in PMN-PT relaxor ferroelectric single crystals	213
	Ghulam Shabbir ¹ , Noman Zafar ¹ , Khurram Shahzad ¹ , Muhammad Tariq ^{2†} (¹ PINSTECH; ² Post Grad. Coll. for Comm. Islamabad)	
2P2-4*	Measurement of transient ultrasound fields on vibrating surface using optical phase retrieval	215
	Naoki Kubota [†] , Koichi Mizutani, Naoto Wakatsuki, Yuka Maeda (Univ. of Tsukuba)	
2P2-5*	Comparative study of pulse echo method and transmission method with computerized tomography for defect detection inside billet	217
	Yoko Norose [†] , Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)	
2P2-6*	Measurement of liquid viscosity near a wall using optoacoustic interaction	219
	Naoki Watanabe [†] , Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)	
2P2-7*	Non-contact inspection method for structure using high power sound source	221
	—Improvement of S/N ratio by time and frequency gating method—	
	Ryo Akamatsu ^{1†} , Tsuneyoshi Sugimoto ¹ , Noriyuki Utagawa ² , Kageyoshi Kataura ³ (¹ Toin Univ. of Yokohama; ² Sato Kogyo; ³ Meitoku Eng., Lab.)	
2P2-8	Non-contact inspection method for structure using high power sound source	223
	—Examination of detectable size and depth—	
	Kageyoshi Kataura ^{1†} , Ryo Akamatsu ² , Tsuneyoshi Sugimoto ² , Noriyuki Utagawa ³ (¹ Meitoku Eng., Lab.; ² Toin Univ. of Yokohama; ³ Sato Kogyo)	
2P2-9*	Measurement of breathing and heart rate in the standing position with clothes using airborne ultrasound	225
	Kotaro Hoshiba [†] , Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.)	

2P2-10* Non-contact measurement of acoustic characteristics in tissues using a pass-through airborne ultrasonic wave for ultrasonic bone assessment	227
Shinnosuke Hirata ^{1†} , Lalita Haritaipan ¹ , Kotaro Hoshiba ¹ , Hiroyuki Hachiya ¹ , Nobuo Niimi ² (¹ Tokyo Inst. of Tech.; ² NIPPON SIGMAX)	
2P2-11* Sound source localization using a pair of microphones with time reversal wave on multi-layer simulation	229
Keiichi Zempo [†] , Takuwa Aoki, Naoto Wakatsuki, Koichi Mizutani (Univ. of Tsukuba)	
2P2-12 Study on propagation characteristics of ultrasonic guided wave	231
Songsong Li ^{1†} , Xiaoming Chen ² , Wenqi Wu ² (¹ Dalian Ocean Univ.; ² Dalian Univ. of Tech.)	
2P2-13* Relationship between probing signal and visualization image for the defect detection of billet using ultrasonic CT method	233
Koichi Kakuma [†] , Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)	
2P2-14 A real-time sound rendering system based on the finite-difference time-domain algorithm	235
Tan Yiyu ^{1†} , Yasushi Inoguchi ¹ , Yukinori Sato ¹ , Makoto Otani ² Yukio Iwaya ³ , Hiroshi Matsuoka ⁴ , Takao Tsuchiya ⁵ (¹ Japan Adv. Inst. of Sci. & Tech.; ² Shinshu Univ.; ³ Tohoku Gakuin Univ.; ⁴ Tohoku Univ.; ⁵ Doshisha Univ.)	
2P2-15 Simulation and verification experiment of radiation sound pressure waveform from finite aperture piezoelectric transducer	237
Yoshio Udagawa ^{1†} , Akira Yamada ² (¹ Imaging Supersonic Lab.; ² Tokyo Univ. of A&T)	
2P2-16* PbTiO ₃ /PZT Sol-Gel composite for ultrasonic transducer around 300°C	239
Takuo Inoue [†] , Makiko Kobayashi (Kumamoto Univ.)	
2P2-17* Improvement of SNR in pulse-echo measurements with polygonal buffer rods	241
Foudzi Mohd Farhana [†] , Ikuo Ihara (Nagaoka Univ. of Tech.)	
2P2-18 Ultrasonic characterizations of iron casting with different heat treatment conditions	243
Sheng-Po Tseng ^{1†} , Che-Hua Yang ¹ , Sung-Mao Chiu ² , Cheng-Yen Wu ² (¹ Natl. Taipei Univ. of Tech.; ² Metal Industries Res. & Development)	
2P2-19* Characterization of skewed rough surface by air-coupled ultrasound	245
Muhammad Nur Farhan Saniman [†] , Ikuo Ihara (Nagaoka Univ. of Tech.)	
2P2-20* Measuring of vibrational distribution of piezoelectric device by speckle interferometry with pulsed laser	247
Naoki Yamagishi ^{1†} , Hajime Kobayashi ² , Keita Mochizuki ¹ , Yasuaki Watanabe ¹ (¹ Tokyo Met. Univ.; ² Nihon Dempa Kogyo)	
2P3-1* Bi ₄ Ti ₃ O ₁₂ based thick film fabrication by stencil printing	249
Tsukasa Kaneko [†] , Kazuki Iwata, Makiko Kobayashi (Kumamoto Univ.)	
2P3-2 Evaluation of piezoelectric Ta ₂ O ₅ thin films deposited on Ta oxide film	251
Shunsuke Iwamoto [†] , Shoji Kakio (Univ. of Yamanashi)	
2P3-3* Temperature coefficient of elastic and GHz piezoelectric properties in ScAlN films	253
Masashi Suzuki [†] , Takahiko Yanagitani (Nagoya Inst. of Tech.)	
2P3-4 Laser measurement and identification of vibration modes of AT-cut quartz crystal resonators	255
Shih-Yung Pao ^{1†} , Qiaoqiao Pan ² , Tingfeng Ma ² , Dejin Huang ² , Min-Chiang Chao ¹ , Ji Wang ² , Pei-Zen Chang ³ (¹ TXC (NGB) Corp.; ² Ningbo Univ.; ³ Natl. Taiwan Univ.)	
2P3-5 "1612" precision test fixture for measuring equivalent circuit parameters of quartz crystal units	257
Yasuaki Watanabe [†] (Tokyo Met. Univ.)	
2P3-6* Method for improving quality factor in crystal oscillators with duplicated quartz resonators	259
Ryou Suzuki ^{1†} , Katsuaki Sakamoto ² , Yasuaki Watanabe ¹ (¹ Tokyo Met. Univ.; ² Nihon Dempa Kogyo)	
2P3-7 Equivalent network representation for a backward-wave-type trapped-energy resonator with circular electrodes	261
Ken Yamada [†] , Daisuke Suzuki, Michihiro Sato (Tohoku Gakuin Univ.)	

2P4-1*	A study of ultrasonic transducer using lithium niobate at high temperature	263
	Toru Kishi [†] , Takefumi Kanda, Koichi Suzumori (Okayama Univ.)	
2P4-2	Relationship between performance of transducer and piezoelectricity at ultralow temperature	265
	Daisuke Yamaguchi [†] , Takefumi Kanda, Koichi Suzumori (Okayama Univ.)	
2P4-3	Experimental study on piezoelectric plate type power generator for intelligent tire system	267
	Subaru Kudo [†] (Ishinomaki Senshu Univ.)	
2P4-4	Piezoelectric vibration energy harvesters with distinct electrode arrangements	269
	Yung-Yu Chen [†] , Hua-Wen Pan (Tatung Univ.)	
2P4-5	Basic study on ultrasonic metal welding by planar vibration locus	271
	Hikaru Miura [†] , Takuya Asami (Nihon Univ.)	
2P4-6	Hole machining of brittle materials by ultrasonic longitudinal-torsional vibration	273
	Takuya Asami [†] , Hikaru Miura (Nihon Univ.)	
2P4-7*	Exfoliation and guidance of adhered fine particles using high-intensity aerial ultrasonic waves with narrow pipe	275
	Takumi Kobayashi [†] , Ayumu Osumi, Youichi Ito (Nihon Univ.)	
2P4-8	A new technique for forming linearly high-intensity aerial ultrasonic waves	277
	Youichi Ito [†] , Yua Kitamura, Ayumu Osumi (Nihon Univ.)	
2P4-9*	Examination for a high power of aerial ultrasonic sound source using cross type direction changer of longitudinal vibration	279
	Kenji Hosokawa [†] , Ayumu Osumi, Youichi Ito (Nihon Univ.)	
2P4-10*	Two components in sonoluminescence spectra of Na emission	281
	Ryota Nakajima [†] , Pak-kon Choi (Meiji Univ.)	
2P4-11	Sonochemical oxidation of ibuprofen	283
	Binota Thokchom [†] , Jeehyeong Khim (Korea Univ.)	
2P4-12	Decrease in the rate of sonochemical oxidation with introducing CO₂	285
	Hisashi Harada [†] , Yuki Ono, Mayumi Oda (Meisei Univ.)	
2P4-13	Dispersion of TiO₂ nanoparticles by using focused ultrasound	287
	Jungsoon Kim ^{1†} , Moojoon Kim ² , Kanglyeol Ha ² , Seonae Hwangbo ³ , Mincheol Chu ³ (¹ Tongmyong Univ.; ² Pukyong Natl. Univ.; ³ Korea Res. Inst. of standard and Sci.)	
2P4-14*	Geometric effects on sonochemical reactions	289
	Younggyu Son [†] (Kumoh Natl. Inst. of Tech.)	
2P4-15*	Sonochemical treatment of pesticide	291
	Kyungho Kim [†] , Junghyuk Park, Jeehyeong Khim (Korea Univ.)	
2P4-16*	Effect of initial concentration on ultrasonic degradation of methylene blue	293
	Daisuke Kobayashi ^{1†} , Chiemi Honma ¹ , Hideyuki Matsumoto ² , Tomoki Takahashi ¹ , Yuichiro Shimada ¹ , Chiaki Kuroda ² , Katsuto Otake ¹ , Atsushi Shono ¹ (¹ Tokyo Univ. of Sci., ² Tokyo Inst. of Tech.)	
2P4-17*	Preload control of ultrasonic actuator by piezoelectric clutch	295
	Ryota Okeya [†] , Manabu Aoyagi (Muroran Inst. of Tech.)	
2P4-18*	Output estimation and demonstration of cantilever based energy harvesters	297
	Motoaki Hara [†] , Le Van Minh, Hiroyuki Oguchi, Hiroki Kuwano (Tohoku Univ.)	
2P4-19	Concentration of the suspension particles using the ultrasonic standing wave field	299
	Teruyuki Kozuka ^{1†} , Kyuichi Yasui ¹ , Kakumasa Eguchi ² , Shin-ichi Hatanaka ³ (¹ AIST; ² Nagano Pref. General Industrial Tech. Center; ³ Univ. of Electro-Commun.)	

2P5-1*	Phase-contrast imaging of acoustic impedance by ultrasonic interference method for puncture needle-type ultrasonography	301
	Tatsuya Segawa ^{1†} , Yuuki Takano ¹ , Masasumi Yoshizawa ¹ , Norio Tagawa ² , Takasuke Irie ³ , Kouichi Itoh ⁴ , Tadashi Moriya (¹ Tokyo Met. Coll. of Industrial Tech.; ² Tokyo Met. Univ.; ³ Microsonic; ⁴ Hitachi-Omiya Saiseikai Hospital)	
2P5-2*	High frequency ultrasound measurement of micro displacement in human skin induced by arterial pulsation	303
	Ryo Nagaoka ^{1†} , Kazuto Kobayashi ² , Yoshifumi Saito ¹ (¹ Tohoku Univ.; ² Honda Electronics)	
2P5-3	Biomedical applications of photoacoustic imaging with LMS adaptive filter	305
	Tai Chieh Wu [†] , Che Hua Yang (Natl. Taipei Univ. of Tech.)	
2P5-4	Three-dimensional photoacoustic imaging of chicken embryo vasculature	307
	Mika Sato [†] , Rena Yamazaki, Yuji Watanabe, Harukazu Nakamura, Yuji Matsuura, Yoshifumi Saito (Tohoku Univ.)	
2P5-5*	Basic study for tissue characterization of carotid artery plaque using ultrasonic velocity-change imaging II	309
	Ryosuke Kimura [†] , Kazune Mano, Masakimi Sakai, Syouhei Tanigawa, Kenji Wada, Toshiyuki Matsunaka, Hiromichi Horinaka (Univ. of Osaka Pref.)	
2P5-6*	Accuracy enhancement of HIFU beam imaging	311
	Kazuhiro Matsui ^{1†} , Takashi Azuma ¹ , Junchen Wang ¹ , Keisuke Fujiwara ² , Kazunori Itani ² , Satoshi Tamano ² , Hideki Takeuchi ¹ , Shu Takagi ¹ , Akira Sasaki ¹ , Kiyoshi Yoshinaka ³ , Takehiro Ando ¹ , Etsuko Kobayashi ¹ , Ichiro Sakuma ¹ (¹ Univ. of Tokyo; ² Hitachi Aloka Medical; ³ AIST)	
2P5-7*	Quantitative measurement of focused ultrasound pressure field by background-subtracted shadowgraph using holographic diffuser as screen	313
	Ryo Miyasaka [†] , Jun Yasuda, Mohd Syahid, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
2P5-8	Comparison of spatial resolution in parallel beamforming and diffraction tomography	315
	Hideyuki Hasegawa [†] , Hiroshi Kanai (Tohoku Univ.)	
2P5-9*	Effect of glycerol on ultrasonically induced aggregation phenomenon of amyloid β-peptides	317
	Kichitaro Nakajima [†] , Kentaro Noi, Hirotugu Ogi, Hisashi Yagi, Yuji Goto, Masahiko Hirao (Osaka Univ.)	
2P5-10	Blood mimicking fluid using polyethylene glycol aqueous solution and their physical properties	319
	Tomoji Yoshida [†] , Kazuishi Sato, Toshio Kondo (Tokushima Bunri Univ.)	
2P5-11*	Effect of the ultrasonic beam width for quantitative evaluation of liver fibrosis using ultrasonic images	321
	Shohei Mori [†] , Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.)	
2P5-12	Compact module transducer for HIFU therapy	323
	Kiyoshi Yoshinaka ^{1†} , Hideki Takeuchi ² , Takashi Azuma ² , Akira Sasaki ² , Shu Takagi ² , Yoichiro Matsumoto ² (¹ AIST; ² Univ. of Tokyo)	
2P5-13*	A study on the energy concentration in human body using focused ultrasound	325
	Mingyu Cho ^{1†} , Yanghun Lee ¹ , Hi Yuen Song ¹ , Inn-yeal Oh ¹ , Chul Soon Park ¹ , Joontaek Jung ² , Hongsoo Choi (¹ Korea Advanced Inst. of Sci. and Tech.; ² Daegu Gyeongbuk Inst. of Sci. and Tech.)	
2P5-14*	Experimental analysis of temperature elevation in ultrasonic beam from circular piston	327
	Jihee Jung ^{1†} , Moojoon Kim ¹ , Kanglyeol Ha ¹ , Jungsoon Kim ² (¹ Pukyong Natl. Univ.; ² Tongmyong Univ.)	
2P5-15	Visualization of temperature elevation due to focused ultrasound generated by tone bursts wave	329
	Moojoon Kim ^{1†} , Jihee Jung ¹ , Jungsoon Kim ² , Kanglyeol Ha ¹ (¹ Pukyong Natl. Univ.; ² Tongmyong Univ.)	
2P5-16*	Monitoring system for coagulated area using optimal modulation frequency of acoustic radiation force	331
	Ryusuke Sugiyama ^{1†} , Hiroki Shimizu ¹ , Ryosuke Aoyagi ¹ , Hirofumi Nakamura ¹ , Takashi Azuma ¹ , Akira Sasaki ¹ , Hideki Takeuchi ¹ , Keisuke Fujiwara ² , Kazunori Itani ² , Kiyoshi Yoshinaka ³ , Shu Takagi ¹ , Yoichiro Matsumoto ¹ (¹ Univ. of Tokyo; ² Hitachi Aloka Medical; ³ AIST)	

2P5-17* Analysis of pancreatic tissue injury caused by ultrasonically activated devices	333
Bik EeLAU [†] , Tao Gao, Aki Oishi, Tadashi Yamaguchi, Hideki Hayashi (Chiba Univ.)	
2P5-18 Effects of rose bengal on cavitation generation in gel phantom investigated using high-speed camera	335
Jun Yasuda [†] , Takuya Miyashita, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
2P5-19* Highly efficient cavitation-enhanced heating with dual-frequency ultrasound exposure in high-intensity focused ultrasound treatment	337
Hiroshi Sasaki [†] , Jun Yasuda, Ryo Takagi, Takuya Miyashita, Kota Goto, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
2P5-20* Evaluation of bubble cloud cavitation in multi-frequency ultrasonic wave irradiation	339
Naoki Sunaguchi [†] , Jun Yamaguchi, Takuya Kanai, Tomoaki Isono, Yoshiki Yamakoshi (Gunma Univ.)	
2P5-21 Evaluation of path selection ability of microbubbles in a bifurcated flow based on acoustic field design	341
Ren Koda ^{1†} , Jun Koido ¹ , Naoto Hosaka ¹ , Shinya Onogi ¹ , Takashi Mochizuki ¹ , Kohji Masuda ¹ , Ryo Suzuki ² , Kazuo Maruyama ² (¹ Tokyo Univ. of A&T, ² Teikyo Univ.)	
2P5-22* Challenging discussion for effective transfection of plasmid DNA into HeLa cell using laser-induced emergence stress wave	343
Syunsuke Orisaka [†] , Koji Aizawa, Mieko Kogi, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)	
2P5-23 Effect of laser-induced emergent stress wave on cell adhesion	345
Syun Nishimura [†] , Mieko Kogi, Takayasu Yanagisawa, Shunsuke Orisaka, Koji Aizawa, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)	
2P5-24 Development and estimation of brain tumor cells culture flask with acoustic window film for ultrasound exposure	347
Sakino Iwashiro ^{1†} , Akiko Watanabe ¹ , Yoshifumi Onozuka ² , Masatsune Minai ¹ , Hiroyuki Nishimura ¹ , Shinichi Takeuchi ¹ (¹ ToIn Univ. of Yokohama; ² Seidensha Electronics)	
2P5-25 Effect of exposure to standing wave ultrasound field on proliferation of brain tumor cell	349
Akiko Watanabe [†] , Sakino Iwashiro, Masatsune Minai, Hiroyuki Nishimura, Shinichi Takeuchi (ToIn Univ. of Yokohama)	
2P5-26* Antineoplastic effect of MHz ultrasound to leukemia cells	351
Risa Fuji [†] , Wakako Hiraoka (Meiji Univ.)	
2P5-27* Analysis of acoustic characteristics in cartilage and meniscus diseases	353
Takahiro Inagaki [†] , Kenta Inoue, Masahiko Suzuki, Tadashi Yamaguchi (Chiba Univ.)	
2P6-1* Mapping and classification of submerged aquatic vegetation using 3-dimensional side scan sonar	355
Junichiro Osaku ^{1†} , Akira Asada ¹ , Reiko Matsura ² , Yoshinori Matsumoto ³ , Yusuke Sugimoto ³ (¹ Univ. of Tokyo; ² Shizuoka Pref. Government, Fishery Development Division; ³ Windy Network Corp.)	
2P6-2* Detection of ship screw deflection using small element number of hydrophone array	357
Takuji Kawagishi ^{1†} , Keiichi Zempo ¹ , Koichi Mizutani ¹ , Naoto Wakatsuki ¹ , Tadashi Ebihara ¹ , Youhei Kawamura ² (¹ Univ. of Tsukuba; ² Curtin Univ.)	
2P6-3* Super short baseline system using the mirror transponder	359
Toru Kashima [†] , Akira Asada (Univ. of Tokyo)	
2P6-4 A Basic study for target range estimation on the 2010 sea trial of ambient noise imaging with acoustic lens	361
Kazuyoshi Mori ^{1†} , Hanako Ogasawara ¹ , Toshiaki Nakamura ¹ , Takenobu Tsuchiya ² , Nobuyuki Endoh ² (¹ Natl. Defense Academy; ² Kanagawa Univ.)	
2P6-5 Convergence properties of off-axis aplanatic straubel acoustic mirror	363
Yuji Sato ¹ , Hajime Sato ² , Hanako Ogasawara ² , Koichi Mizutani ¹ , Toshiaki Nakamura ^{2†} (¹ Univ. of Tsukuba; ² Natl. Defense Academy)	

11:55-13:10 LUNCH TIME

13:10-14:00 Invited Talk 2 (Cosponsored by IEEE Ultrasonics, Ferroelectrics and Frequency Control Society Japan Chapter)

Chair: Shin-ichiro Umemura (Tohoku Univ.)

- 2I-1 Frequency and field-intensity dependence of dielectric and piezoelectric responses of oxide ferroelectrics: Description of nonlinear response and dissipation effect in piezoelectric fundamental equations** 365

IEEE UFFC-S Distinguished Lecturer, Takaaki Tsurumi[†] (Tokyo Inst. of Tech.)

14:00-14:05 Break

14:05-15:05 Measurement Techniques, Imaging, Nondestructive Evaluation
Chair: Hirotugu Ogi (Osaka Univ.)

- 2E2-1 Improvement of three-dimensional position and velocity measurement using a pair of linear-period-modulated ultrasonic signals** 367

Natee Thong-un[†], Shinnosuke Hirata, Minoru K. Kurosawa (Tokyo Inst. of Tech.)

- 2E2-2* Monitoring of thermal oxidation of thin polymer films by means of acoustic resonant spectroscopy** 369

Yuhei Sakamoto[†], Hironori Tohmyoh (Tohoku Univ.)

- 2E2-3* Quantitative analysis of nonlinear ultrasonic response at closed cracks by the damped double node model** 371

Kentaro Jinno[†], Azusa Sugawara, Koji Takahashi, Yoshikazu Ohara, Kazushi Yamanaka (Tohoku Univ.)

- 2E2-4* Friction torque reduction by ultrasonic vibration and its application to EMS viscometer** 373

Yusuke Matsuura[†], Taichi Hirano, Keiji Sakai (Univ. of Tokyo)

15:05-15:10 Break

15:10-16:10 Physical Acoustics · Acousto-Optics, Piezoelectric Devices
Chair: Oliver B. Wright (Hokkaido Univ.)

- 2E1-1* Acoustic properties of fluorine-doped silica-glass thin films at low temperatures** 375

Akira Nagakubo^{1†}, Shoichi Masuda¹, Satoru Matsuda², Hirotugu Ogi¹, Masahiko Hirao¹
^(1)Osaka Univ.; ²Taiyo Yuden)

- 2E1-2* Ripplon spectroscopic study on liquid surface under temperature gradient** 377

Toshiyuki Koga[†], Keiji Sakai (Univ. of Tokyo)

- 2E3-1* Analysis of passive surface acoustic wave sensors using coupling of modes theory** 379

Takuma Genji[†], Jun Kondoh (Shizuoka Univ.)

- 2E3-2* Highly sensitive trace moisture ball SAW sensor using SiOx film** 381

Satoshi Hagihara^{1†}, Toshihiro Tsuji¹, Toru Oizumi¹, Nobuo Takeda¹, Shingo Akao^{1,2}, Tsuneo Ohgi²,
Kosuke Takayanagi², Takayuki Yanagisawa², Noritaka Nakaso², Yusuke Tsukahara², Kazushi Yamanaka¹
^(1)Tohoku Univ.; ²Toppan Printing)

16:10-16:15 Break

16:15-17:15 High Power Ultrasound, Sonochemistry, Ocean Acoustics
Chairs: Tatsuro Matsuoka (Nagoya Univ.)
Toshiaki Nakamura (Natl. Defense Academy)

- 2E4-1* Ultrasonic aggregation for removal of fine particles from mine drainage treatment process** 383

Yonghyeon Lee[†], Jeonghyuk Park, Mingcan Cui, Jeehyeong Khim (Korea Univ.)

- 2E4-2* Acoustic field and pressure dependences of sonoluminescence** 385

Hyang Bok Lee[†], Pak-Kon Choi (Meiji Univ.)

2E6-1	Passive sonar performance analysis employing the concept ‘robustness of detection’	387
	Young-Nam Na [†] , Changbong Cho, Hyungrok Kim, Jooyoung Hahn (Agency for Defense Dev.)	
2E6-2*	Short range sound propagation characteristics at shallow hashirimizu port	389
	Hanako Ogasawara [†] , Kazuyoshi Mori, Toshiaki Nakamura (Natl. Defense Academy)	

17:15-17:35 Awards Ceremony

17:35-18:00 Break

18:00-20:00 Banquet

Friday, November 22

9:10-10:10 Biomedical Ultrasound 1

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

3J5-1*	Imaging method of tissue characteristics based on multi-Rayleigh model for fibrotic liver	391
	Tatsuya Higuchi ^{1†} , Shinnosuke Hirata ¹ , Tadashi Yamaguchi ² , Hiroyuki Hachiya ¹ (¹ Tokyo Inst. of Tech.; ² Chiba Univ.)	
3J5-2*	Monitoring of high-intensity focused ultrasound lesion formation using decorrelation between high-speed ultrasonic images by parallel beamforming	393
	Shoya Sasaki [†] , Ryo Takagi, Keiko Matsuura, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
3J5-3*	Characterization of single cell properties using high-frequency ultrasound	395
	Koki Yoshida ^{1†} , Rami Abuhabssah ² , Alexander D. Pawlicki ² , Joe Shikama ¹ , Ryo Nagaoka ¹ , Yoshifumi Saijo ¹ , William D. O’Brien, Jr ² (¹ Tohoku Univ., ² Univ. of Illinois)	
3J5-4*	Experimental study on longitudinal wave propagation in human radius model	397
	Fuminori Fujita ^{1†} , Takuma Hachiken ¹ , Yoshiki Nagatani ² , Isao Mano ¹ , Katsunori Mizuno ³ , Mami Matsukawa ¹ (¹ Doshisha Univ., ² Kobe City Coll. Tech.; ³ Univ. of Tokyo)	

10:10-10:15 Break

10:15-11:00 Biomedical Ultrasound 2

Chair: Hideyuki Hasegawa (Tohoku Univ.)

3J5-5	Site-selective ultrasonic tissue-structure destruction for drug delivery control	399
	Ken-ichi Kawabata ^{1†} , Rei Asami ¹ , Reiko Ashida ² (¹ Central Res. Lab. Hitachi; ² Osaka Medical Center for Cancer and Cardiovascular Diseases)	
3J5-6	Study for trapping of microbubbles in flow by forming two focal points with opposite phase	401
	Naoto Hosaka [†] , Shinya Miyazawa, Ren Koda, Takashi Mochizuki, Shinya Onogi, Kohji Masuda (Tokyo Univ. of A&T)	
3J5-7	Primary calibration of hydrophones up to 40 MHz in ultrasonic far-field using optical interferometry	403
	Youichi Matsuda [†] , Masahiro Yoshioka, Takeyoshi Uchida (AIST)	

11:00-11:10 Break

11:10-11:55 Physical Acoustics · Acousto-Optics

Chair: Jun Morimoto (Natl. Defense Academy)

3J1-1	Non-radiative carrier recombination and carrier transport properties in the multiple quantum well solar cell	405
	Taishi Sugimoto ^{1†} , Taketo Aihara ¹ , Hiromasa Fujii ² , Masakazu Sugiyama ² , Yoshiaki Nakano ² , Atsuhiko Fukuyama ¹ , Tetsuo Ikari ¹ (¹ Univ. of Miyazaki; ² Univ. of Tokyo)	

3J1-2	Noise tolerance in acoustooptic switching for high-symbol-rate optical DQPSK pulse train	407
	Nobuo Goto ^{1†} , Yasumitsu Miyazaki ² (¹ Univ. of Tokushima; ² Aichi Univ. of Tech.)	
3J1-3	Development and recent application of non contact air coupled ultrasonic testing with one side access	409
	Masakazu Takahashi ^{1†} , Yukio Ogura ¹ , Hideo Nishino ² , Kazuyuki Nakahata ³ (¹ Japan Probe; ² Univ. of Tokushima; ³ Ehime Univ.)	
11:55-12:45 Invited Talk 3		Chair: Pak-Kon Choi (Meiji Univ.)
3I-1	Ultrasonic transducers for medical volumetric imaging	411
	Yongrae Roh [†] (Kyungpook Natl. Univ.)	
12:45-14:00 LUNCH TIME		
14:00-16:00 Poster Session		Chair: Takenobu Tsuchiya (Kanagawa Univ.)
3P1-1*	Imaging surface acoustic wave propagation in a triangular-lattice phononic crystal	413
	Paul H. Otsuka ^{1†} , Ryota Chinbe ¹ , Motonobu Tomoda ¹ , Osamu Matsuda ¹ , Oliver B. Wright ¹ , Istvan Veres ² , Joo-Hyung Lee ³ , Jun-Bo Yoon ³ (¹ Hokkaido Univ.; ² RECENDT; ³ KAIST)	
3P1-2	Photoacoustic spectroscopy of TiO₂ nanotube electrode adsorbed with CdSe quantum dots	415
	Masaya Akimoto ^{1†} , Qing Shen ^{1,2} , Shuji Hayase ^{2,3} , Taro Toyoda ^{1,2} (¹ Univ. of Electro-Commun.; ² JST CREST; ³ Kyusyu Inst. of Tech.)	
3P1-3	Low viscosity measurement by electro-magnetically revolving method	417
	Maiko Hosoda ^{1†} , Keiji Sakai ² (¹ Tokyo Denki Univ.; ² Univ. of Tokyo)	
3P1-4	Classification of cylindrical shells filled with gas, liquid and solid materials using acoustic resonance spectra	419
	Dong Wan Lee ^{1†} , Byoung-Nam Kim ¹ , Bok Kyoung Choi ¹ , Suk Wang Yoon ² (¹ Korea Inst. of Ocean Sci. and Tech.; ² Sungkyunkwan Univ.)	
3P1-5*	A planar loudspeaker for generating evanescent wave	421
	Ayaka Fujii [†] , Naoto Wakatsuki, Koichi Mizutani (Univ. of Tsukuba)	
3P1-6*	Wave velocity dispersion in GaN single crystal measured by Brillouin scattering method	423
	Hayato Ichihashi ^{1†} , Takahiko Yanagitani ² , Shinji Takayanagi ¹ , Masahiko Kawabe ¹ , Mami Matsukawa ¹ (¹ Doshisha Univ.; ² Nagoya Inst. of Tech.)	
3P1-7*	Elasticity estimation of viscoelastic tube mimicking blood vessels by 1D theoretical model	425
	Shohei Nishi ^{1†} , Mami Matsukawa ¹ , Pierre-Yves Lagree ² (¹ Doshisha Univ.; ² Université Pierre et Marie Curie)	
3P1-8	Mechanical property of ultrasonic bonded FPCB/RPCB joint with self-assembling material	427
	Ji-Na Choi, Young-Chul Lee, Seung-Boo Jung [†] (Sungkyunkwan Univ.)	
3P1-9	The reliability of ultrasonic bonded Cu to Cu electrode with Sn-58Bi solder paste for IC card package	429
	Woo-Ram Myung ^{1†} , Jeonghoon Moon ² , Seung-Boo Jung ¹ (¹ Sungkyunkwan Univ.; ² Suwon Sci. Coll.)	
3P4-1	Study on ultrasonic levitation using conventional sound systems - Application for industrial machines -	431
	Takashi Ando [†] , Mitsutaka Hikita (Kogakuin Univ.)	
3P4-2*	A Rotary motor using giant electrorheological fluid and piezoelectric torsional vibrator	433
	Wei Qiu ^{1†} , Yaying Hong ² , Yosuke Mizuno ¹ , Kentaro Nakamura ¹ , Weijia Wen ² (¹ Tokyo Inst. of Tech.; ² Hong Kong Univ. of Sci. & Tech.)	
3P4-3	Measurement of optical wavefront deformation caused by high-intensity ultrasonic standing wave using phase retrieval	435
	Takanobu Kuroyama ^{1†} , Koichi Mizutani ¹ , Naoto Wakatsuki ¹ , Takeshi Ohbuchi ² (¹ Univ. of Tsukuba; ² Natl. Defense Academy)	
3P4-4	Investigation of SAW motor output power and efficiency	437
	Minoru K. Kurosawa [†] , Koki Sakano (Tokyo Inst. of Tech.)	

3P4-5	The study on the enhanced dewaterability of municipal wastewater sludge and economic assessment by ultrasonic treatment	439
	Seungmin Na ^{1†} , Young Uk Kim ² , Mingcan Cui ³ , Younggu Son ¹ , Jeehyeong Khim ³ (¹ Kumoh Natl. Inst. Tech.; ² Myongji Univ.; ³ Korea Univ.)	
3P4-6	Effect of superposing ultrasonic wave on microwave plasma under water	441
	Tomohiro Takahashi, Noriharu Takada [†] , Hirotaka Toyoda(¹ Nagoya Univ.)	
3P4-7	Effect of ultrasonic physical properties of cement grout	443
	Jong Ho Shin ¹ , Jun Ho Moon ² , Sang Hyun Park ² , Young Uk Kim ^{2†} (¹ Konkuk Univ.; ² Myongji Univ.)	
3P4-8*	Miniaturization of case-type multi-degree-of-freedom ultrasonic motor	445
	Takuo Umezawa [†] , Toshinao Yamashina, Ryouta Oozeki, Yuuki Obara, Kensuke Shimizu, Hiroshige Hanyu, Yoshikazu Koike (Shibaura Inst. of Tech.)	
3P4-9*	Loudspeaker systems for low frequency radiation by piezoelectric ultrasonic actuator	447
	Hiroya Saito ^{1†} , Juro Ohga ^{2,3} , Hirokazu Negishi ³ , Ikuo Oohira ⁴ , Kazuaki Maeda ⁵ , Kunio Oishi ¹ (¹ Tokyo Univ. of Tech.; ² Shibaura Inst. of Tech.; ³ MIX Acous. Lab; ⁴ Self-Employee; ⁵ TOA.)	
3P4-10	Study on two-dimensional ultrasonic motor using vibrations along circumference of arbitrary cross section of sphere	449
	Yusuke Nagira [†] , Mitsutaka Hikita (Kogakuin Univ.)	
3P4-11	Dynamic vibration analysis of ultrasonic power circulation-type quadratic excitation method for coiled stator ultrasonic motor	451
	Masasumi Yoshizawa ^{1†} , Seiya Ishikura ¹ , Norio Tagawa ² , Takasuke Irie ³ , Tadashi Moriya ² (¹ Tokyo Met. Coll. of Industrial Tech.; ² Tokyo Met. Univ.; ³ Microsonic)	
3P4-12*	Experimental study on the Π shaped coiled stator ultrasound motor	453
	Toshinobu Abe ^{1†} , Tadashi Moriya ² , Takasuke Irie ³ , Masakazu Sato ³ , Shinichi Takeuchi ¹ (¹ ToIn Univ. of Yokohama; ² Tokyo Met. Univ.; ³ Microsonic)	
3P4-13*	Analytical study of ultrasonic vibration effect on forced insertion process	455
	Yusuke Watanabe ^{1†} , Manabu Aoyagi ¹ , Hideki Tamura ² , Takehiro Takano ² (¹ Muroran Inst. of Tech.; ² Tohoku Inst. of Tech.)	
3P4-14	Miniatureized structure of ultrasonic motor using a linked twin square plate	457
	Hideki Tamura ¹ , Kouhei Watanebe ^{1†} , Keiji Yokoyama ¹ , Kentaro Masuda ² , Takehiro Takano ¹ (¹ Tohoku Inst. of Tech.; ² Sumida Electric)	
3P4-15	Numerical simulations of a thermoacoustic prime mover at 20 kHz	459
	Kyuichi Yasui [†] , Teruyuki Kozuka, Masaki Yasuoka, Kazumi Kato (AIST)	
3P4-16*	Numerical analysis of the effect of local diameter reduction on the critical temperature of thermoacoustic oscillations in a looped tube	461
	Yuichiro Orino ^{1†} , Shin-ichi Sakamoto ¹ , Yoshitaka Inui ¹ , Takumi Ikenoue ¹ , Yoshiaki Watanabe ² (¹ Univ. of Shiga Pref.; ² Doshisha Univ.)	
3P4-17*	Performance evaluation of parallel thermoacoustic refrigerator	463
	Yosuke Nakano ^{1†} , Shin-ichi Sakamoto ² , Aiko Kido ¹ , Manabu Inoue ¹ , Yoshiaki Watanabe ¹ (¹ Doshisha Univ.; ² Univ. of Shiga Pref.)	
3P4-18*	Factor of resonance mode control on a thermoacoustic system - Determination of acoustics by forced oscillation -	465
	Manabu Inoue ^{1†} , Shin-ichi Sakamoto ² , Yosuke Nakano ¹ , Yoshiaki Watanabe ¹ (¹ Doshisha Univ.; ² Univ. of Shiga Pref.)	
3P4-19*	Size and morphology of scorodite particles synthesized using ultrasound irradiation	467
	Yuya Kitamura [†] , Hirokazu Okawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)	
3P4-20	Development of removal process of burrs and scraps generated by short pulsed laser processing for metallic thin foil by applying ultrasonic cavitation	469
	Masayuki Nakagawa [†] (Industrial Res. Inst. of Niigata Pref.)	
3P4-21	On the intermittent changes in the number of pulsating bubbles under ultrasound	471
	Toru Tuziuti [†] (AIST)	

3P4-22* Application of ultrasound irradiation for absorption and desorption of CO ₂ gas in MEA solvent	473
Kosuke Tanaka [†] , Tatsuo Fujiwara, Hirokazu Okawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)	
3P4-23 Application of ultrasonic atomization for improving dust control in underground mining	475
Hirokazu Okawa ^{††} , Kentaro Nishi ¹ , Youhei Kawamura ² , Takahiro Kato ¹ , Katsuyasu Sugawara ¹ (¹ Akita Univ.; ² Curtin Univ.)	
3P4-24* Effects of pressure, temperature and frequency on the sonochemical reaction in a flow-type reactor	477
Yosuke Noiri ^{††} , Tatsuya Yotsumoto ¹ , Takayuki Maruyama ¹ , Yoshihiro Kojima ¹ , Yoshiyuki Asakura ² (¹ Nagoya Univ.; ² Honda Electronics)	
3P4-25 Generation mechanism of standing acoustic cavitation with the help of a punching metal plate	479
Koichi Sasaki ^{††} , Yushi Iwata ¹ , Shusuke Nishiyama ¹ , Satoshi Tomioka ¹ , Noriharu Takada ² (¹ Hokkaido Univ.; ² Nagoya Univ.)	
3P4-26* Relationship between the frequency characteristics of receiving sensitivity and received waveform of the anti-acoustic cavitation hydrophone	481
Michihisa Shiiba ^{††} , Nagaya Okada ² , Takeyoshi Uchida ³ , Tsuneo Kikuchi ³ , Minoru Kurosawa ⁴ , Shinichi Takeuchi ¹ (¹ Toin Univ. of Yokohama; ² Honda Electronics; ³ AIST; ⁴ Tokyo Inst. of Tech.)	
3P4-27 Effect of ultrasonic irradiation on behavior of silica polymerization in geothermal water	483
Keiji Yasuda ^{††} , Yuta Takahashi ¹ , Yoshiyuki Asakura ² (¹ Nagoya Univ.; ² Honda Electronics)	
3P4-28 Effect of solute dispersion on grain refinement of Al alloys by ultrasound	485
Jeong IL Youn [†] , Young Ki Lee, Kee Joo Jung, Bong Jae Choi, Young Jig Kim (Sungkyunkwan Univ.)	
3P4-29* Grain refinement of AZ31 and AZ91 Mg alloys by nucleation ultrasonic melt treatment	487
Jeong IL Youn [†] , Kee Joo Jung, Young Ki Lee, Bong Jae Choi, Young Jig Kim (Sungkyunkwan Univ.)	
3P4-30* Measurements of sliding friction forces under ultrasonic oscillations: out-of-plane oscillations	489
Youngjae Min [†] , Young H. Kim (Korea Sci. Academy of KAIST)	
3P5-1* Development of algebraic reconstruction technique considering curved ray for ultrasound computed tomography with ring array transducer	491
Hirofumi Nakamura ^{††} , Hiroki Shimizu ¹ , Tetsuya Kanagawa ¹ , Satoshi Tamano ² , Takashi Azuma ¹ , Kiyoshi Yoshinaka ³ , Akira Sasaki ¹ , Shu Takagi ¹ , Yoichiro Matsumoto ¹ (¹ Univ. of Tokyo; ² Hitachi Aloka Medical; ³ AIST)	
3P5-2 A study on the reconstruction precision improvement of tomographic inspection of visceral fat area with abdominal automatic mechanical scanner	493
Hui Li [†] , Daichi Shimizu, Toshihiko Yokoyama, Akira Yamada (Tokyo Univ. of A&T)	
3P5-3* Accurate ultrasound imaging of the embryo surface based on range-point-migration method with synthetic aperture	495
Shinya Tanimura [†] , Hirofumi Taki, Takuya Sakamoto, Toru Sato (Kyoto Univ.)	
3P5-4* Ultrasound speckle reduction by randomly changing bandwidth of transmission	497
Haruka Suzuki [†] , Norio Tagawa, Kan Okubo (Tokyo Met. Univ.)	
3P5-5 High sensitive beamforming for change of tissue scattering property	499
Takashi Azuma [†] (Univ. of Tokyo)	
3P5-6 Statistical analysis of the envelope of three-dimensional high-frequency ultrasonic backscatter from dissected human lymph nodes	501
Thanh M. Bui ^{1,2} , Alain Coron ^{1,2†} , Jonathan Mamou ³ , Emi Saegusa-Beecroft ⁴ , Tadashi Yamaguchi ⁵ , Eugene Yanagihara ⁴ , Junji Machi ⁴ , S. Lori Bridal ^{1,2} , Ernest J. Feleppa ³ (¹ UPMC Univ.; ² CNRS; ³ F. L. Lizzi Center for Biomedical Eng.; ⁴ Univ. of Hawaii and Kuakini Medical Center; ⁵ Chiba Univ.)	
3P5-7 Real-time high-resolution ultrasound imaging method using adaptive beamforming technique applied to swine liver in vitro	503
Hirofumi Taki ^{††} , Takuya Sakamoto ¹ , Kousuke Taki ² , Makoto Yamakawa ¹ , Tsuyoshi Shiina ¹ , Motoi Kudo ² , Toru Sato ¹ (¹ Kyoto Univ.; ² Shiga Univ. Medical Sci.)	

3P5-8*	Characterization of an ultrasonic probe for medical puncturing	505
	Yuusuke Tanaka ^{1†} , Katsumi Ohira ¹ , Yukio Ogura ¹ , Katsuhiro Tanaka ² Hisanori Shiomi ³ , Yoshimasa Kurumi ³ , Tohru Tani ³ (¹ Japan Probe; ² Ritsumeikan Univ.; ³ Shiga Univ. of Medical Sci.)	
3P5-9*	Optimization of feature extraction from ultrasonic RF echoes for identification of heart wall regions	507
	Kohei Nakahara [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	
3P5-10	Improvement of displacement estimation of heart wall by using its deformation in calculation of cross-correlation between ultrasonic RF signals.	509
	Dai Asari [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	
3P5-11*	Visualization of delay distribution of myocardial contraction response by electrical excitation in <i>in vitro</i> experiments	511
	Yuta Fujita [†] , Hideaki Tagashira, Hideyuki Hasegawa, Koji Fukunaga, Hiroshi Kanai (Tohoku Univ.)	
3P5-12*	Vector Projectile Imaging (VPI): A new quantitative framework for high-frame-rate complex flow tracking	513
	Billy Y. S. Yiu [†] , Simon S. M. Lai, Alfred C. H. Yu (Univ. of Hong Kong)	
3P5-13*	Transcranial Doppler ultrasonography using spatial domain interferometry with Capon method: simulation study	515
	Shigeaki Okumura ^{1†} , Aya Kita ² , Hiroyuki Taki ¹ , Toru Sato ¹ (¹ Kyoto Univ.; ² Sakai Rumi Clinic)	
3P5-14	Automatic carotid arterial wall detection using correlation between adjacent receive scan lines	517
	Yukiya Miyachi ^{1,2†} , Hideyuki Hasegawa ² , Hiroshi Kanai ² (¹ FUJIFILM Corp.; ² Tohoku Univ.)	
3P5-15*	Improvement of accuracy in ultrasonic measurement of luminal surface roughness of carotid arterial wall by deconvolution filtering	519
	Yoshifumi Nagai [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	
3P5-16*	Accurate ultrasonic measurement of viscoelasticity of radial arterial wall with correction of change in pulse wave velocity due to FMD reaction	521
	Mitsuki Sato [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	
3P5-17*	A 3D ultrasound image tracking of brachial artery for flow-mediated vasodilation analysis	523
	Kyosuke Motoyama [†] , Tomohiro Ueno, Koichi Ishizuka, Yasutomo Fujii, Tsuyoshi Shiina, Naoto Sugimoto (Kyoto Univ.)	
3P5-18*	Pulse wave measurement by piezoelectric sensor -For the evaluation of the arteriosclerosis-	525
	Yuka Komagata ^{1†} , Masashi Saito ² , Mami Matsukawa ¹ , Takaaki Asada ² , Yoshiaki Watanabe ¹ (¹ Doshisha Univ.; ² Murata Mfg.)	
3P5-19	Two-dimensional blood flow vector obtained by bidirectional Doppler ultrasound with parallel beamforming	527
	Genta Masuno [†] , Ryo Nagaoka, Shoya Sasaki, Shin Yoshizawa, Shin-ichiro Umemura, Yoshifumi Sajio (Tohoku Univ.)	
3P5-20*	Effect of PRF on microcalcification detection in color flow imaging	529
	Masayuki Tanabe ^{1†} , Yu Naito ¹ , Masahiko Ninshimoto ¹ , Lei Liu ² (¹ Kumamoto Univ.; ² GE Healthcare Japan)	
3P5-21	Experimental verification of strain uniformalization by damper layer in static elastography	531
	Yuichi Tashiro [†] , Takayuki Sato, Tomofumi Handa, Yasuaki Watanabe (Tokyo Met. Univ.)	
3P5-22	Effects of ignoring mean normal stress distribution on shear modulus reconstruction	533
	Chikayoshi Sumi [†] (Sophia Univ.)	
3P5-23*	Measurement of shear wave propagation in elasticity phantom considering phase fluctuation of echo signals	535
	Hirofumi Sasaki [†] , Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Inst. of Tech.)	
3P5-24*	Measurement of shear modules by continuous-wave ultrasonic actuation using dual acoustic radiation pressure	537
	Kaori Tachi [†] , Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)	

3P5-25	Directional dependence of shear waves in a 3D blood vessel model	539
	Jun-keun Jang [†] , Kengo Kondo, Makoto Yamakawa, Tsuyoshi Shiina (Kyoto Univ.)	
3P5-26*	Comparison between structure near tissue surface and wave propagation measured through optical methods	541
	Yukako Kato ^{1†} , Yuji Wada ² , Yosuke Mizuno ¹ , Kentaro Nakamura ¹ (¹ Tokyo Inst. of Tech.; ² Seikei Univ.)	
3P5-27	Influence of the circumferential wave on the fast and slow waves	543
	Isao Mano ^{1†} , Kaoru Horii ² , Fuminori Fujita ¹ , Yoshiki Nagatani ³ , Mami Matsukawa ¹ , Takahiko Otani ¹ (¹ Doshisha Univ.; ² OYO Electric; ³ Kobe City Coll. of Tech.)	
3P5-28*	Effect of collagen on wave velocity in bone measured by micro-Brillouin scattering	545
	Ryo Tsubota ^{1†} , Mami Matsukawa ¹ , Mitsuru Saito ² , Keishi Marumo ² (¹ Doshisha Univ; ² Jikei Univ. School of Medicine)	
3P5-29*	Generalized harmonic analysis of ultrasound waves propagating in cancellous bone	547
	Satoshi Maruo [†] , Atsushi Hosokawa (Akashi Natl. Coll. Tech.)	
3P5-30	Numerical investigation of reflection properties of fast and slow longitudinal waves in cancellous bone: Variations with boundary medium	549
	Atsushi Hosokawa [†] (Akashi Natl. Coll. Tech.)	
3P5-31*	Electromagnetic response excited by amplitude-modulated ultrasonic waves in bones	551
	Shun Naito ^{1†} , Natsumi Ohno ¹ , Hisato Yamada ¹ , Kenji Ikushima ¹ , Nobuo Niimi ² (¹ Tokyo Univ. of A&T; ² NIPPON SIGMAX)	
3P5-32	Improvement of in vivo measurement of speed of sound in cartilage	553
	Naotaka Nitta ^{1†} , Koji Hyodo ¹ , Masaki Misawa ¹ , Tomokazu Numano ² , Kazuhiro Homma ¹ (¹ AIST; ² Tokyo Met. Univ.)	
3P5-33	Propagation characteristics of the bone-conducted ultrasound in the living human head: Estimation of the propagation delay by instantaneous frequency analysis	555
	Takuya Hotehama [†] , Seiji Nakagawa (AIST)	
3P5-34	Characterization of human head vibration with bone- conducted ultrasonic stimulation	557
	Kazuhito Ito [†] , Seiji Nakagawa (AIST)	
3P5-35	Instability of bone-conducted ultrasonic perception: Assessments by acoustic field analysis in the inner head and intelligibility test	559
	Seiji Nakagawa [†] , Satoru Kawamura (AIST)	
3P5-36	Measurement and estimation of the wave propagation in human body using multi-sensory system and 3-D simulation	561
	Yoshiki Nagatani ^{1†} , Takashi Saeki ² (¹ Kobe City Coll. of Tech.; ² SDN Corp.)	
3P6-1	Depth dependence of ambient noise at low frequency range in the eastern sea of Korea	563
	Byoung-Nam Kim [†] , Bok Kyung Choi, Bong-Chae Kim, Seom-Kyu Jung, Yong-Kuk Lee (Korea Inst. of Sci. and Tech.)	
3P6-2	Influence of surf noise on oceanic ambient noise in coastal waters with sandy seabed	565
	Bong-Chae Kim [†] , Bok Kyung Choi, Byoung-Nam Kim, Chang-Woong Shin (Korea Inst. of Ocean Sci. & Tech.)	
3P6-3	Effects of sea surface forward scattered signals in radiated noise measurement	567
	Jong Rak Yoon [†] , Kyu-Chil Park, Chulwon Seo (Pukyong Natl. Univ.)	
3P6-4	Archive and excavation of acoustic data and videos on deep seafloor off Hatsushima island in Sagami bay	569
	Ryoichi Iwase [†] (JAMSTEC)	
3P6-5*	Detection of the seasonal variation of the large-scale acoustical environment in the Pacific Ocean by ARGO data	571
	Shinpei Gotoh ^{1,2†} , Toshio Tsuchiya ^{1,2} , Yoshihisa Hiyoshi ¹ (¹ JAMSTEC; ² Tokyo Univ. of Marine Sci. and Tech.)	

3P6-6	Variation on sound propagation caused by topography of seabed in a current rip region	573
	Yoshiaki Tsurugaya ^{1†} , Toshiaki Kikuchi ² , Koichi Mizutani ³ (¹ Sanyo PT; ² Natl. Defense Academy; ³ Univ. of Tsukuba)	
3P6-7	Modification of receiver operating characteristic curve due to internal waves	575
	Jooyoung Hahn [†] , Changbong Cho, Woogeun Cheon, Hyungrok Kim, Jeongssoo Park, Youngnam Na (Agency for Defense Dev.)	
3P6-8	Performance comparison of two real coefficients and a complex linear equalizer in shallow Water Situation	577
	Kyu-Chil Park [†] , Jong Rak Yoon, Jihyun Park, Chulwon Seo, Sanghyun Park (Pukyong Natl. Univ.)	
3P6-9*	Performance of convolution and reed-solomon codes in underwater acoustic fading channel	579
	Chulwon Seo [†] , Jihyun Park, Sanghyun Park, Kyu-Chil Park, Jong Rak Yoon (Pukyong Natl. Univ.)	
3P6-10	Time reversal simulation for underwater acoustic communication	581
	Bok Kyoung Choi ^{1†} , Byoung-Nam Kim ¹ , Bong-Chae Kim ¹ , Jong Wan Kim ² (¹ Korea Inst. of Ocean Sci. and Tech.; ² Ocean Tech.)	

16:00-17:15 High Power Ultrasound, Sonochemistry, Ocean Acoustics
Chair: Kyuichi Yasui (AIST)

3J4-1	Sonoluminescence and bubble dynamics in phosphoric Acid: Comparison with those in sulfuric acid	583
	Shin-ichi Hatanaka [†] (Univ. of Electro-Comm.)	
3J4-2*	Micro energy harvester with (K,Na)NbO₃/Silicon composite cantilevers	585
	Le Van Minh [†] , Motoaki Hara, Hiroki Kuwano (Tohoku Univ.)	
3J4-3*	Three-dimensional non-contact manipulation by opposed ultrasound phased arrays	587
	Takayuki Hoshi ^{1†} , Yoichi Ochiai ² , Jun Rekimoto ^{2,3} (¹ Nagoya Inst. of Tech.; ² Univ. of Tokyo; ³ SONY)	
3J4-4*	Prototype of micro ultrasonic motor using a stator of one cubic millimeter	589
	Tomoaki Mashimo [†] (Toyohashi Univ. of Tech.)	
3J6-1	Development of rhomboidal acoustic lens constructed with phononic crystal	591
	Takenobu Tsuchiya ^{1†} , Tetsuo Anada ¹ , Nobuyuki Endoh ¹ , Sayuri Matsumoto ² , Kazuyoshi Mori ³ (¹ Kanagawa Univ.; ² The Port and Airport Res. Inst.; ³ Natl. Defense Academy)	

17:15- CLOSING