Tuesday, November 8

10:00- Opening Ceremony

10:10-11:10 Piezoelectric Devices (Bulk wave devices, Surface wave devices)
Chair: Jun Kondoh (Shizuoka Univ.)

1J3-1 Experimental results of gravity sensor using AT-cut quartz crystal MEMS resonator
Takeru Mutoh†, Mitsuaki Koyama†, Takao Aizawa†, Toshifumi Matsuoka†
(‘Nihon Dempa Kogyo; ‘Suncoh Consultant; ‘Kyoto Univ.)

1J3-2* Experimental study of highly sensitive strain sensor using a surface acoustic wave resonator for wireless monitoring system
Zhongqing Bao†, Motoaki Hara, Misato Mitsui, Riyo Konno, Koji Sano
Sumito Nagasawa, Hiromu Kuwano (Tohoku Univ.)

1J3-3* Electromechanical coupling coefficient of SH-SAW in c-axis parallel oriented ZnO film/amorphous substrate structure
Yuta Nakahigashi†, Takahiko Yanagitani†, Mami Matsukawa†, Yoshiaki Watanabe†
(Doshisha Univ.; Nagoya Inst. Tech.)

1J3-4 Sensitivity of SAW magnetic sensors composed of various Ni electrode structures
Michio Kadota†, Shigeo Ito (Murata Mfg.)

11:15-12:15 Ultrasonic Properties of Materials, Phonon Physics, Acousto-optics
Chair: Akira Harata (Kyushu Univ.)

1J1-1* Extraordinary optical transmission modulated by the vibrational modes of a periodic structure of square holes
Hirotaka Sakuma†, Motonobu Tomoda, Osamu Matsuda, Paul H. Otsuka, Oliver B. Wright (Hokkaido Univ.)

1J1-2* Characteristics analysis of Fabry-Perot interferometer using chirped FBGs: Application to vibration measurement
Keisuke Ikuma†, Atsushi Wada†, Satoshi Tanaka†, Koji Omichi†, Nobuaki Takahashi†
(Natl. Defense Academy; Fujikura)

1J1-3* Preisach modeling of the electric-field-induced strain of ferroelectric material
Yoichi Kadota†, Takeshi Morita (Univ. of Tokyo)

1J1-4 Evaluation of acoustic properties of amorphous Ta₂O₅ thin film prepared by RF sputtering
Shoji Kakio†, Keiko Hosaka†, Mototaka Arakawa†, Yuji Ohashi†, Jun-ichi Kushibiki†
(Univ. of Yamanashi; Tohoku Univ.)

12:15-13:15 Lunch Time

13:15-14:05 Invited Talk 1
Chair: Minoru Kurosawa (Tokyo Inst. of Tech.)

1I-1 Raman spectroscopy evaluation of piezoelectric materials
Giuseppe Pezzotti (Kyoto Inst. Tech.)

14:10-14:55 Nonlinear Acoustics, High Power Ultrasound, Sonochemistry
Chair: Subaru Kudo (Ishinomaki Senshu Univ.)

1J4-1* High temperature tolerant transducer for ultrasonic assisted hydrothermal method
Gaku Isobe†, Peter Bormann†, Tobias Hemsel†, Takeshi Morita†
(Univ. of Tokyo; Univ. of Paderborn)
1J4-2  Sheet-like ultrasonic transducer and its application for tactile display  [S1386]
Masaya Takasaki†, Michihiko Suzuki, Hiroki Takada, Takeshi Mizuno (Saitama Univ.)

1J4-3*  Development of compact piezoelectric stirrer using a bending vibration mode  [S0723]
Tomoaki Mashimo† (Toyoohashi Univ. of Tech.)

15:00-16:15  Measurement Techniques, Imaging, Nondestructive Evaluation
Chair: Mitsudaka Hikita (Kogakuin Univ.)

1J2-1  Dynamic ultrasound scattering studies on the velocity fluctuations of settling microspheres under spatial confinement  [S0923]
Yohsuke Maeyama, Mariko Kohyama†, Tomohisa Norisuye, Qui Tran-Cong-Miyata (Kyoto Inst. Tech.)

1J2-2*  Ultrasonic hydrogen sensor: Effects of the environmental changes  [S2899]
Hiroaki Fukuoka†, Jinhyuck Jung†, Masahiro Inoue†, Yoshimine Kato†, Hideaki Fujita†
(Kyusyu Univ.; Oriimec)

1J2-3*  High-accuracy analytical method for NDE simulation of FEM  [S0308]
Miki Nagano†, Yoshiyasu Hirose, Yasushi Ikegami (ITOCHU Techno-Solutions)

1J2-4  Analyses on nonlinear ultrasonic imaging of closed cracks by damped double node model  [S2722]
Yoshikazu Ohara†, Yohei Shintaku, Satoshi Horinouchi, Masako Ikeuchi, Kazushi Yamanaka
(Tohoku Univ.)

1J2-5*  Non-destructive inspection of steel billet using phase-modulated and multiplexed Gold sequences  [S2290]
Yoko Norose†, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

16:20-16:50  Underwater Sound  Chair: Takenobu Tsuchiya (Kanagawa Univ.)

1J6-1  Time reversal and azimuth of seismic waves in Suruga bay  [S1255]
Toshiaki Kikuchi†, Koichi Mizutani† (Natl. Defense Academy; Univ. of Tsukuba)

1J6-2  Off-axis aplanatic Straubel mirror for wide field of view  [S1249]
Yuji Sato†, Koichi Mizutani†, Naoto Wakatsuki†, Toshiaki Nakamura†
(Univ. of Tsukuba; Natl. Defense Academy)

16:55-17:40  Nonlinear Acoustics, High Power Ultrasound, Sonochemistry  Chair: Pak-Kon Choi (Meiji Univ.)

1J4-4*  Sonication-time dependence of sonoluminescence spectrum from Na atom in surfactant solutions  [S3488]
Yuichi Hayashi†, Pak-Kon Choi (Meiji Univ.)

1J4-5  Relationship between sonoluminescence, radical production and bubble dynamics during single-bubble cavitation  [S3285]
Shin-ichi Hatanaka† (Univ. of Electro-Comm.)

1J4-6  Effect of the honeycomb ceramics in the thermoacoustic system  [S1313]
Teruyuki Kozuka†, Kyuichi Yasui†, Shinichi Sakamoto† (AIST; Univ. of Shiga Pref.)

17:45-18:30  Medical Ultrasound  Chair: Mami Matsukawa (Doshisha Univ.)

1J5-1  High frame rate measurement of two-dimensional heart wall motion for assessment of regional myocardial contraction and relaxation  [S3873]
Yasunori Honjo†, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

1J5-2*  Basic study of medical ultrasound blood velocity estimation using correlation considering random changing distribution of red blood cells  [S2313]
Junichi Morimoto†, Hirofumi Taki, Takuya Sakamoto, Toru Sato (Kyoto Univ.)
1J5-3 Tissue elasticity imaging based on wave number vector analysis for continuous vibration wave excitation

Takashi Miwa, Yuki Yoshihara, Kouki Kanzawa, Raj Kumar Parajuli, Daisuke Nakai, Yoshiki Yamakoshi

(Gunma Univ.)

Wednesday, November 9

9:25-10:10 Ultrasonic Properties of Materials, Phonon Physics, Acousto-optics

Chair: Oliver B. Wright (Hokkaido Univ.)

2E1-1 Characterization of acoustical properties for gan single crystal by the ultrasonic microspectroscopy technology

Yuji Ohashi, Jun-ichi Kushibiki (Tohoku Univ.)

2E1-2* Ripplon spectroscopic study of surface viscoelasticity of water with piston oil

Toshiyuki Koga, Syujiro Mitani, Keiji Sakai (Univ. of Tokyo)

2E1-3 Mode conversion of phonons and resonance gap in solid-liquid superlattices

Seiji Mizuno (Hokkaido Univ.)
2Pa2-5 Observation of single yeast cells with advanced photothermal lens microscopes [S1175]  
Noriyuki Fujii†, Akira Harata (Kyushu Univ.)

2Pa2-6 Estimation of spatial averaging in near field measurement using a hydrophone for deriving mechanical index [S1184]  
Masahiro Yoshioka†, Tsuneo Kikuchi (AIST)

2Pa2-7* On the perfectly matched layer for the WE-FDTD method [S1132]  
Yutaka Miyazaki†, Takao Tsuchiya (Doshisha Univ.)

2Pa2-8 Non contact acoustic contour imaging method using phase difference in extremely shallow underground [S1180]  
Tsuneo Sugimoto†, Ryo Akamatsu1, Touma Abe2 (1Toin Univ. of Yokohama; 2IHI Inspection & Instr.)

2Pa2-9 Basic study of distance measurement and movement detection in sensor network using ultrasonic technique [S1145]  
Natsuki Tobita†, Mitsutaka Hikita (Kogakuin Univ.)

2Pa2-10 Tomographic measurement of the vortex wind field based on the transmission and reception of the coded acoustic wave signals between parallel array elements [S1277]  
Haiyue Li†, Takuya Hirawawa, Junich Tabeta, Akira Yamada (Tokyo Univ. of A&T)

2Pa3-1 Precision test fixture for measuring equivalent circuit parameters of GHZ surface-mounted quarts crystal unit [S1145]  
Yasuaki Watanabe†, Manabu Wada†, Yukinori Sakuta†, Masashi Hattori†, Osamu Takahashi†  
(Tokyo Met. Univ.; 1Nihon Dempa Kogyo; 2Nihon Univ.; 3Epson; 4Showa Shinku)

2Pa3-2* Effects of Mn additive on the dielectric and piezoelectric properties of 0.92(Na0.5K0.5)NbO3-xBaZrO3-(0.08-x)(Bi0.5Li0.5)TiO3 ceramics [S1201]  
Takuma Ariizumi† (Tsukuba Univ.)

2Pa3-3 Contour-mode AlN resonator with high Q factor [S1050]  
Kengo Asai†, Atsushi Isobe (Hitachi)

2Pa3-4* Wideband ZnO multimode transducer consisting of c-axis normal and tilted orientation layers [S1278]  
Shinji Takayanagi†, Takahiko Yanagitani†, Mami Matsukawa†, Yoshiaki Watanabe†  
(Doshisha Univ.; Nagoya Inst. Tech.)

2Pa3-5* A new technique for suppression of spurious responses in an aluminum nitride based thin film bulk acoustic resonator [S1183]  
Motoaki Hara†, Hiroki Kuwano (Tohoku Univ.)

2Pa3-6 Preparation of piezoelectric films by high-temperature spinner [S1216]  
Seiji Mutoh†, Takehiko Uno (Kanagawa Inst. of Tech.)

2Pa3-7* Polarization-inverted multilayer shear mode resonator with c-axis parallel AlN films fabricated by IBAD [S1300]  
Masashi Suzuki†, Nobuhiro Suganuma, Takahiko Yanagitani (Nagoya Inst. of Tech.)

2Pa3-8* Electromechanical coupling in ScAlN films fabricated by sputtering of Sc grain ingot [S1302]  
Nobuhiro Suganuma†, Masashi Suzuki, Takahiko Yanagitani (Nagoya Inst. of Tech.)

2Pa4-1* Motion control of an object in near-field acoustic levitation [S1240]  
Akira Oka†, Manabu Aoyagi†, Hideki Tamura†, Takehiro Takano†  
(Muroran Inst. of Tech.; 2Tohoku Univ. Inst. of Tech.)

2Pa4-2 A new point-convergence type aerial ultrasonic source with a stripe-mode vibrating plate [S1240]  
Youichi Ito†, Tomoyuki Kuriyama, Ayumu Osumi (Nihon Univ.)

2Pa4-3* Removal promotion of low hydrophilic gas by aerial ultrasonic waves adding two different particles of spraying water. [S1136]  
Keisuke Matsumoto†, Hikaru Miura (Nihon Univ.)

2Pa4-4* Investigation on the structure of a high-power piezoelectric transformer [S1282]  
Takuma Konno†, Kazunari Adachi (Yamagata Univ.)

2Pa4-5 Fundamental study of hole machining by ultrasonic complex vibration [S1240]  
Takuya Asami†, Hikaru Miura (Nihon Univ.)

2Pa4-6* Stress analysis of contact surface in ultrasonically forced insertion process [S1285]  
Satoshi Ono†, Manabu Aoyagi†, Hideki Tamura†, Takehiro Takano†  
(Muroran Inst. of Tech.; 2Tohoku Univ. Inst. of Tech.)
Estimation of gas void fraction in gas-bubble-contained sand with difference frequency acoustic wave
Byoung-Nam Kim⁴, Suk Wang Yoon⁵, Bok Kyung Choi⁴, Bong-Chae Kim⁵, Yosup Park⁴, Seom-Kyu Jung⁴, Yong-Kuk Lee⁴ (Korea Ocean Res. and Dev. Inst.; ⁵Sungkyunkwan Univ.)

Microstructure refinement of Al alloy by ultrasonic vibration
Hyun Rok Cha⁶, Jae Il Cho (Korea Inst. Indust. Tech.)

Dependence of cavitation bubbles formation on pulsed-wave conditions at 1 MHz
Kazunari Suzuki¹, Makoto Takata, Yasuhiro Imazeki, Ki Han, Tetsuya Shimura, Junichiro Soejima (Kaijo Corp.)

Basic research on development of cells for measurement of sonochemical reaction in focused ultrasound field
Akkio Watanabe², Takurou N. Murakami², Norimichi Kawashima², Takeyoshi Uchida², Masahiro Yoshioka², Tsuneo Kikuchi², Shinichi Takeuchi² (Toin Univ. of Yokohama; ²AIST)

Experimental investigation of acoustically enhanced dewaterability of unconsolidated soils
Young-Uk Kim¹, Tien Trung Hoang, Young Woo Chun, Zhang Guang Minh (Myongji Univ.)

Influence of changing frequency of superposed ultrasonic wave on reaction fields induced by laser ablation in water
Noriharu Takada¹, Koichi Sasaki¹ (Nagoya Univ.; ¹Hokkaido Univ.)

Influence of air humidity on dust control using ultrasonic atomization
Hirokazu Okawa¹, Kentaro Nishi¹, Dai Shindo¹, Youhei Kawamura¹ (Akita Univ.; ¹Univ. of Tsukuba)

Verification of ultrasonic image fusion technique for laparoscopic surgery
Satoki Zenbutsu¹, Tadashi Yamaguchi (Chiba Univ.)

Noise reduction of tissue harmonic signals using fundamental echo and intensity characteristics with propagon distance
Takuya Yamamura¹, Masayuki Tanabe¹, Kan Okubo¹, Norio Tagawa¹ (Tokyo Met. Univ.; ¹Kumamoto Univ.)

Proper bandwidth for frequency averaging in medical ultrasound imaging using frequency domain interferometry
Hirofumi Taki¹, Takuya Sakamoto, Makoto Yamakawa, Tsuyoshi Shiina, Toru Satō (Kyoto Univ.)

Analysis of elasticity image of chronic hepatitis based on dynamic model of fibrous progression
Tomonori Maki¹, Tsuyoshi Shiina¹, Makoto Yamakawa¹, Tsuyoshi Mitake¹, Masatoshi Kudo¹, Kenji Fujimoto¹ (Kyoto Univ.; ¹Hitachi Aloka Medical; ¹Kinki Univ.; ¹Natl. Hosp. Organ. Minami-wakayama Medical Center)

Optimal parameter of damper layer for static elastography
Takayuki Sato¹, Yasuki Watanabe (Tokyo Met. Univ.)

Amplitude modulation with temporal control of number of driving elements for tissue harmonic imaging
Chizue Ishihara¹, Hiroki Tanaka, Kunion Hashiba (Hitachi)

Two-dimensional vibration scanning method for puncture needle-type ultrasonography
Masasumi Yoshizawa¹, Koutaichi Karasaki¹, Mao Kurohane¹, Takasuke Irie¹, Kouichi Ito¹, Tadashi Moriya¹ (Tokyo Met. Coll. of Indust. Tech.; ¹Microsonic; ¹Hitachi-Omiya Saiseikai Hospital; ¹Tokyo Met. Univ.)

Ultrasound velocity-change images of fatty liver in living rabbit by ultrasound warming
Hiromichi Horinaka¹, Yuya Ohara, Yoshinori Maeda, You Iizuka, Kazune Mano, Kenji Wada, Toshiyuki Matunaka (Osaka Pref. Univ.)

Closely-contact body surface scanning mechanism for the acoustic tomographic measurement of the visceral fat area
Tsuyoshi Shimabukuro¹, Kunsuke Sasaki¹, Toshihiko Yokoyama¹, Akira Yamada¹ (Tokyo Univ. of A&T; ¹Seiko Epson)

Evaluation of fatty liver based on frequency characteristic of echo attenuation
Xiangxin Meng¹, Naohisa Kamiyama¹, Tadashi Yamaguchi¹ (Chiba Univ.; ¹Toshiba Medical Systems)

Experimental evaluation of quantitative technique for hepatic fibrosis using ultrasonic phantom
Atsushi Koriyama¹, Wataru Yasuhara, Hiroyuki Hachiya (Tokyo Inst. of Tech.)

Measurement of tissue physical properties of rat liver using multi-modality measurement system
Ryo Narisawa¹, Yoichiro Takeuchi, Tadashi Yamaguchi (Chiba Univ.)
2Pa5-13* Acoustic characteristics measurement of rat liver by multi-frequency ultrasound
Yoichiro Takeuchi¹,², Ryo Narisawa¹, Hirohiko Hachiya¹, Yoshifumi Saijo¹, Kazuto Kobayashi², Tadashi Yamaguchi¹ (¹Chiba Univ.; ²Tokyo Inst. of Tech.; ³Tohoku Univ.; ⁴Honda Electronics)

2Pa5-14* Visualization of forward and reflected components in minute vibration velocity waveform of human arterial wall
Kazue Hongo¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2Pa5-15* Ultrasound image interpretation for fibrotic liver based on simulation model of tissue structure change
Yasuhiro Watarari¹, Tadashi Yamaguchi², Hiroyuki Hachiya¹ (¹Tokyo Inst. of Tech.; ²Chiba Univ.)

2Pa6-1 The multipath effect on target location estimation
Jooyoung Hahn¹, Joong-Soo Park, Young-Nam Na (Agency for Defense Dev.)

2Pa6-2 Performance test of direct sequence spread-spectrum signal for range estimation in deep sea
Kyu-Chil Park¹, Hyo Jin Park¹, Seon Hak Kang¹, Phil-Ho Lee¹, Jong Rak Yoon¹ (¹Pukyong Natl. Univ.; ²Agency for Defense Dev.)

2Pa6-3 Grazing-angle dependent boundary reflection effects on underwater acoustic communication
Jongwook Kim¹, Kyu-Chil Park¹, Phil-Ho Lee¹, Chundan Lin¹, Jong Rak Yoon¹ (¹Pukyong Natl. Univ.; ²Agency for Defense Dev.; ³China Univ. of Petroleum)

2Pa6-4 Underwater image transmission performance in very shallow littoral ocean
Jong Rak Yoon¹, Jongwook Kim¹, Jihyun Park¹, Kyu-Chil Park¹, Jungchae Shin¹, Seung-Wook Lee¹ (¹Pukyong Natl. Univ.; ²Hanwha Corp.)

2Pa6-5 Underwater acoustic channel estimation for OFDM system
Chundan Lin¹, Wansong Zhang¹, Jong Rak Yoon¹, Zhenqing Yang¹, Kyu-Chil Park² (¹China Univ. of Petroleum; ²Pukyong Natl. Univ.)

12:15-13:15 Lunch Time

13:15-14:05 Invited Talk 2 (Cosponsored by IEEE Ultrasonics, Ferroelectrics and Frequency Control Society Japan Chapter) Chair: Tsuyoshi Shiina (Kyoto Univ.)

14:10-16:10 Poster Session Chair: Hideyuki Hasegawa (Tohoku Univ.)

2Pb1-1* Study of the generation and detection of GHz acoustic waves in a SiO₂ film on a GaAs (411) substrate using picosecond laser acoustics
Masahiro Tonomura¹, Osamu Matsuda, Motonobu Tomoda, Oliver B. Wright (Hokkaido Univ.)

2Pb1-2* Development of a picosecond-ultrasound system with a stable femtosecond-pulse fiber laser
Yohei Nakamichi¹, Tetsuya Kawamoto, Hirotsugu Ogi, Masahiko Hirao (Osaka Univ.)

2Pb1-3* Acoustic properties PIN-PMN-PT relaxor ferroelectric single crystal studied by micro-Brillouin spectroscopy
Tae Hyun Kim¹,², Jae-Hyun Ko², Seiji Kojima¹ (¹Univ. of Tsukuba; ²Hallym Univ.)

2Pb1-4 Accurate viscosity evaluation of various liquids by EMS system
Maiko Hosoda¹, Taichi Hirano, Keiji Sakai¹ (¹Tokyo Denki Univ.; ²Univ. of Tokyo)

2Pb1-5 Dynamic behavior of nanosecond Nd:YAG laser induced impulse acoustic wave
Koji Aizawa¹, Tomoya Makino, Shoichi Yoshida, Motoaki Nishiwaki, Mieko Kogi, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)

2Pb1-6* Acoustic study of glass transition of ionic liquids for application to cryoprotective agents
Takahiro Ishii¹, Takuto Kurokawa, Miwa Nakano, Harutaka Takayama, Seiji Kojima (Univ. of Tsukuba)

2Pb1-7* High temperature elastic properties of lithium and caesium borate glasses, crystal and melts.
Shunsuke Aramomi¹, Masao Kodama, Seiji Kojima (Univ. of Tsukuba)

2Pb2-1 Investigation of ultrasonic spatial temperature measuring device with concise structure
Hiroyuki Masuyama¹, Ryoma Umetani (Toba Natl. Coll. Mar. Tech.)
2Pb2-2* Ultrasonic behavior of rocket fuel model using multi-channel pulser and laminated transducer
Takumi Hamajima¹, Tsuyoshi Mihara¹, Akira Sato¹, Hatsuzu Tashiro¹ (Univ. of Toyama; ¹HI Aero Space)

2Pb2-3* Second harmonic components detection of Lamb waves from fatigued metal plates
Makoto Fukuda², Kazuhiko Imano¹, Hideki Yamagushi², Katsuhiro Sasaki²
(¹Akita Univ.; ²Toyama Ind. Tech. Center)

2Pb2-4* Measurement of liquid viscosity and density using single piezoelectric sensor with two vibration modes
Jun Takarada¹, Naoto Wakatsuki¹, Koichi Mizutani¹, Ken Yamamoto² (Univ. of Tsukuba; ²Kansai Univ.)

2Pb2-5* Measurement of humidity based on sound attenuation
Takahiro Motegi¹, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

2Pb2-6 2D or 3D visualizations of vibrations measured with optical fiber sensors
Jun Hasegawa (Takushoku Univ.)

2Pb2-7* Observation of Lamb wave in metal plate having a notch type defect
Tomoya Endo¹, Kazuhiko Imano (Akita Univ.)

2Pb2-8 Grids in the finite difference time domain method for elastic waves in solids
Koji Hasegawa, Takao Shimada, Hongmei Liu (Muroan Inst. of Tech.)

2Pb2-9* Improvement of the communication accuracy on hybrid communication system using ultrasonic waves and electric field
Shin-nosuke Suzuki¹, Manabu Ishihara¹, Yukio Kobayashi¹, Nagaya Okada¹, Kazuto Kobayashi²
(¹Oyama Natl. Coll. of Tech.; ²Honda Electronics)

2Pb2-10 Applying nonlinear resonant ultrasound spectroscopy (NRUS) to evaluating fatigue damage in a pure copper
Yutaka Ishii¹, Toshihiro Ohtani (Shonan Inst. of Tech.)

2Pb2-11* Measurements of acoustically stimulated electromagnetic response from piezoelectric materials
Natsumi Ohno¹, Yuko Kiyama, Hisato Yamada, Kazuya Takashima, Kenji Ikushima (Tokyo Univ. of A&T)

2Pb3-1 Improvement in temperature characteristics of boundary acoustic wave resonators using multi-layered electrodes
Masakazu Mimura¹, Daisuke Tamazaki, Takashi Yamane, Hajime Kando (Murata Mfg.)

2Pb3-2 Band pass type tunable filters using SAW resonators and various capacitors
Michio Kadota, Yasuyuki Ida¹, Tetsuya Kimura (Murata Mfg.)

2Pb3-3 Effect of alumina film on surface acoustic wave properties of ZnO thin film surface acoustic wave devices on glass substrate
Wen-Ching Shih, Tzyy-Long Wang¹, Chia-Chi Chang, Mu-Shiang Wu (Tatung Univ.)

2Pb3-4 Study of relationship between cut angle of substrate and characteristics of SAW resonators with shape-controlled SiO₂
Ryoichi Takayama¹,², Hidekazu Nakanishi¹, Rei Goto¹, Takahiro Sato¹, Ken-ya Hashimoto²
(¹Panasonic Electronic Devices; ²Chiba Univ.)

2Pb3-5* Optimization of SiO₂ films and application of fluorine doped SiO₂ films for temperature compensated surface acoustic wave devices
Satoru Matsuda¹,², Motoaki Hara¹,³, Michio Miura¹, Takashi Matsuda¹, Masanori Ueda¹, Yoshio Sato¹, Ken-ya Hashimoto²
(¹Taiyo Yuden; ²Chiba Univ.; ³Tohoku Univ.)

2Pb3-6 Development of transverse-mode spurious suppression technique for SAW resonator with zero temperature coefficient of frequency on a SiO₂/Al/LiNbO₃ structure
Hidekazu Nakanishi²,³, Hiroyuki Nakamura¹, Tetsuya Tsurunari¹, Joji Fujiiwara¹, Yosuke Hamaoka¹, Ken-ya Hashimoto²
(¹Panasonic Electronic Devices; ²Chiba Univ.)

2Pb3-7* Acoustooptic Bragg diffraction in Ti-diffused rotated Y-Cut LiNbO₃ optical waveguide
Yuji Kobayashi¹, Shoji Kakio (Univ. of Yamanashi)

2Pb3-8* Loss reduction of longitudinal-type leaky SAW by reverse proton exchange
Masaya Abe¹, Shoji Kakio (Univ. of Yamanashi)

2Pb3-9 Low loss wide band microwave filters using SAW devices combined with microstrip lines
Takaoki Taniguchi¹, Yuzou Kawabata¹, Hiroyuki Odagawa¹, Yoshifumi Shimoshio¹, Yoshitada Iyama¹, Ichiro Oota¹, Kazuhiko Yamashita²
(¹Kumamoto Natl. Coll. of Tech.; ²Tohoku Univ.)
2Pb3-10* Polarization control by leaky SAW in reverse-proton-exchanged LiNbO₃ optical waveguide
Sho Sato¹, Shoji Kakio (Univ. of Yamanashi)

2Pb4-1 Reliability of Cu-Cu direct interconnections using ultrasonic bonding process between RPCB
and FF CB
Jong-Bum Lee¹, Woo-Ram Myung, Seung-Boo Jung (Sungkyunkwan Univ.)

2Pb4-2 A study on power accumulator of surface acoustic wave and its application to plastics welding
Kengo Naruse¹, Yuji Watanabe* (‘Seidensha Electronics; ‘Takushoku Univ.)

2Pb4-3* A design and evaluation of ultrasonic motor using PMN-PT single crystal for ultralow temperature
Daisuke Yamaguchi¹, Takefumi Kanda, Koichi Suzumori, Masataka Kuroda, Dai Takeda (Okayama Univ.)

2Pb4-4 Second harmonic component in focused gaussian beam propagating through a nonuniform sound-speed layer
Shigemi Saito* (Tokai Univ.)

2Pb4-5 Properties of miniature ultrasonic motor using (Sr,Ca)₂NaNb₅O₁₄ piezoelectric ceramics
under high-input power
Yutaka Doshida¹, Hiroyuki Shimizu¹, Youichi Mizuno¹, Hideki Tamura² ('Taiyo Yuden; 'Tohoku Inst. of Tech.)

2Pb4-6 Generation of rotary motion by circular / elliptic drive synthesized with straight-move ultrasonic motors
Hiroki Arimura¹, Mitsutaka Hikita (Kogakuin Univ.)

2Pb4-7* Sonophotolytic degradation of estriol at various UV wavelengths in aqueous solution
Seungmin Na¹, Jinhua Cai, Beomguk Park, Jeeyoeng Khim (Korea Univ.)

2Pb4-8* The removal of arsenic from acidic solution using jarosite and sonication
Yota Hosokawa¹, Hirokazu Okawa (Akita Univ.)

2Pb4-9* Sonophotolytic and sonophocatalytic degradation of THMs mixture in aqueous phase
Beomguk Park, Jongbok Choi¹, Seungmin Na, Jeeyoeng Khim (Korea Univ.)

2Pb4-10 Effect of frequency on sonolysis using several kinds of reactors
Kiyoaki Shinashi¹, Tomofumi Tsuji¹, Hisashi Harada¹ ('Chuogakuan Univ.; 'Meisei Univ.)

2Pb4-11* Arsenite oxidation by ultrasound combined with UV-C in aqueous solution
Seban Lee¹, Mingcan Cui¹, Seungmin Na¹, Min Jang², Jeeyoeng Khim¹ ('Korea Univ.; 'Korea Mine Reclamation Corporation)

2Pb4-12 Ultrasound irradiation induced Ag NP/MWCNT composites preparation
Nobuaki Tanaka¹, Hiromasa Nishikiori, Lusiana Amelisa, Tsuneo Fujii, Morinobu Endo
(Shinshu Univ.)

2Pb4-13* Acoustic-pressure dependence of ultrasonically-induced aggregation behavior
of amyloid β peptides
Kentaro Uesugi¹, Hirotosugu Ogi, Hisashi Yagi, Masatomo So, Yuji Goto, Masahiko Hiroa (Osaka Univ.)

2Pb5-1 Blood-mimicking fluid for a flow Doppler test object
Kouhei Tanaka¹, Tomoji Yoshida¹, Kazuishi Sato¹, Toshio Kondo¹, Kazuhiro Yasukawa²,
Nobuaki Miyamoto², Masahiko Taniguchi² ('Tokushima Bunri Univ.; 'Takiron)

2Pb5-2* Estimating accuracy of synchronization by electrocardiogram for reconstruction
of 3D ultrasonic data
Hirofumi Watanabe¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2Pb5-3* Estimation of rate of change in thickness of myocardium
by measuring time variation of ultrasonic integrated backscatter during a cardiac cycle
Hiro Shida¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2Pb5-4* Detection of boundaries of carotid arterial wall by analyzing ultrasonic RF signals
Nabilah Ibrahim¹, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2Pb5-5 Impulse stress wave emerged by pulsed laser and target impulse coupling
Yoshiaki Tokunaga, Motoaki Nishiwaki¹, Mieko Kogi, Koji Aizawa (Kanazawa Inst. of Tech.)

2Pb5-6* Simultaneous multispectral coded excitation using Gold codes for photoacoustic imaging
Haichong Zhang¹, Kengo Kondo, Makoto Yamakawa, Tsuyoshi Shiina (Kyoto Univ.)

2Pb5-7* Evaluation of arterial stiffness by pulse wave analysis
Yuka Shibayama¹, Yuki Ikenaga¹, Masashi Saito¹, Mami Matsukawa¹, Yoshiaki Watanabe¹, Takaike Asada¹,²
(‘Doshisha Univ.; ‘Murata Mfg.)
2Pb5-8* Expansion of region of accurate estimation of surface roughness for application to carotid luminal surface
Kosuke Kitamura†, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

2Pb5-9 Effect of burst length and amplitude of push pulse on imaging area in ultrasonic shear wave imaging
Hideki Yoshikawa†, Marie Tabaru, Rei Asami, Kunio Hashiba (Hitachi)

2Pb5-10 Quantitative analysis of soft-tissue displacement generated by acoustic radiation force
Marie Tabaru†, Hideki Yoshikawa, Rei Asami, Takashi Azuma, Kunio Hashiba (Hitachi)

2Pb5-11 Tissue viscoelasticity imaging using ultrasound coupler gel
Makoto Yamakawa†, Tsuyoshi Shiina (Kyoto Univ.)

2Pb5-12* Experimental validation of displacement vector measurement based on 2D modulation method with virtual hyperbolic scanning
Kengo Kondo†, Makoto Yamakawa, Tsuyoshi Shiina (Kyoto Univ.)

2Pb5-13 Mobility imaging based on normed space
Masui Hironari†, Azuma Takashi† (Hitachi; ‡Univ. of Tokyo)

2Pb5-14 Overdetermined system for displacement measurement using plural beamforming and spectra division
Chikayoshi Sumi†, Yuuki Takanashi, Yousuke Ishii (Sophia Univ.)

2Pb6-1 Diurnal and seasonal variations of ambient noise due to the snapping shrimp sound in the coast of southern sea of Korea
Seom-Kyu Jung†, Bok Kyung Choi, Bong-Chae Kim, Byoung-Nam Kim, Yousup Park, Yong-Kuk Lee (Korea Ocean Res. and Dev. Inst.)

2Pb6-2 Characterization of backscattering signal of 300 kHz multibeam echo sounder
Yousup Park†, Sinje Lee, Seom Kyu Jung (Korea Ocean Res. and Dev. Inst.)

2Pb6-3 Acoustic properties of red tide causing microalgae Chattonella sp.: Density and sound speed contrasts and backscattering strengths
Junghun Kim†, Jee Woong Choi†, Donhyug Kang† (‡Hanyang Univ.; ³Korea Ocean Res. and Dev. Inst.)

2Pb6-4 Geoaoustic inversion using mid-frequency bottom loss data in shallow water off the east coast of Korea
Changil Lee†, Sungho Cho†, Jee Woong Choi† (³Korea Ocean Res. and Dev. Inst.)

2Pb6-5 Analysis of low-frequency ambient noise measured in shallow sea with tidal flow
Seongwook Lee†, Yong-Kuk Lee, Dong-Hyeok Shin, Bong-Chae Kim (Korea Ocean Res. and Dev. Inst.)

16:15-17:00 Nonlinear Acoustics, High Power Ultrasound, Sonochemistry
Chair: Tatsuro Matsuoka (Nagoya Univ.)

2E4-1 Numerical simulations of sonochemical production and aggregation of BaTiO₃ nanocrystals
Kyuichi Yasui†, Kazumi Kato (AIST)

2E4-2* Sonocatalytic determination of acoustic power for degradation of diethyl pthalate
Eunju Cho†, Hepsiba Yenubari, Beomguk Park, Joehyeong Khim (Korea Univ.)

2E4-3* Analysis of lubricating effect of hybrid transducer-type ultrasonic motor
Wei Qiu†, Yosuke Mizuno, Daisuke Koyama, Kentaro Nakamura (Tokyo Inst. of Tech.)

17:05-17:50 Piezoelectric Devices(Bulk Wave Devices, Surface Wave Devices) & Underwater Sound
Chair: Ken-ya Hashimoto (Chiba Univ.)

2E3-1 Effects of electrodes on frequency -Temperature characteristics of AT-cut quartz crystal unit
Morio Onoe†, Hiroyuki Yamashita†, Heiji Takado† (Univ. of Tokyo; ‡Nihon Dempa Kogyo)

2E3-2* Development of a long-focal-range annular array ultrasonic transducer
Yusuke Korai†, Atushi Baba (Hitachi)

2E6-1 Target echo signal separation from underwater active sonar data using ICA
Kweon Son†, Yonggon Lee†, Minho Lee‡, Jinho Cho‡ (Agency for Defense Dev.; ³Kyungpook Natl. Univ.)
17:50-18:20  Awards Ceremony
18:30-20:30  Banquet

Thursday, November 10

            Chair: Hirotugu Ogi (Osaka Univ.)

3E2-1*  Evaluation of synthetic transmit aperture 3D acoustic imaging using 2D transmitter array
        [S1258]
        Natsuda Laokulrat1, Yasushige Maeda2, Masanori Sugimoto1, Hiromichi Hashizume1
        (*Univ. of Tokyo; †Grad. Univ. for Advanced Studies; ‡NII)

3E2-2*  Holographic imaging of acoustic waves in piezoelectric ceramics by local electric field probes
        [S1315]
        Anowarul Habib1, Amit Shelke2, Mieczyslaw Pluta1, Tribikram Kundu2, Ullrich Pietsch3, Wolfgang Grill3
        (*Univ. of Siegen; †Univ. of Arizona; ‡Univ. of Leipzig)

3E2-3  Transmission and focusing of ultrasound in a solid two-dimensional phononic crystal made
       from steel rods in PDMS
       [S1381]
       Anatoliy Strybulevych1, John H. Page2, Yukihiro Tanaka3
       (1Univ. of Manitoba; 2Univ. of Arizona)

3E2-4  Tissue mimicking phantom for visualization thermal distribution caused by ultrasound
       [S1308]
       Jungsoon Kim1, Moojoon Kim2†, Kanglyeol Ha1 (1Tongmyong Univ.; 2Pukyong Natl. Univ.)

10:30-12:30  Poster Session  Chair: Makoto Yamakawa (Kyoto Univ.)

3Pa1-1  Change of ultrasonic wave properties during soil freezing
        [S1082]
        Jung-Hee Park1, Seung-Seo Hong2, Young-Seok Kim2, Jong-Sub Lee2
        (1Korea Univ.; 2Korea Inst. of Construction Tech.)

3Pa1-2  Tunable frequency gaps in piezoelectric phononic crystal slabs
        [S1049]
        Jin-Chen Hsu† (Natl. Yunlin Univ. of Sci. and Tech.)

3Pa1-3  A piezoelectric vibration energy harvester for tire pressure monitoring systems
        [S1078]
        Yung-Yu Chen1, Hua-Wen Pan (Tatung Univ.)

3Pa1-4  Propagation of surface acoustic waves in a two-dimensional phononic-crystal layer
        [S1067]
        Yukihiro Tanaka1†, Hiroshi Iida (Hokkaido Univ.)

3Pa1-5  Imaging Lamb waves in a phononic crystal waveguide
        [S1077]
        Ryota Chinbe1, Sihan H. Kim2, Paul H. Otsuka1, Motonobu Tomoda1, Osamu Matsuda1,3
        Istvan A. Veres1, Yukihiro Tanaka1, Heonsu S. Jeon1,4, Oliver B. Wright1
        (1Hokkaido Univ.; 2Seoul Natl. Univ.; 3Austria Res. Center for Non Destructive Testing)

3Pa1-6  Low temperature elastic constants and piezoelectric coefficients of LiNbO3 and LiTaO3
        [S1037]
        Ryuichi Tarumi1, Tomohiro Matsuhisa, Yoji Shibutani (Osaka Univ.)

3Pa2-1  Evaluating the homogeneity of a synthetic silica glass ingot using ultrasonic
        microspectroscopy technology
        [S1217]
        Jun-Ichi Kushibiki1, Mototaka Arakawa1, Yuji Ohashi1, Yuko Maruyama1, Hideharu Horikoshi2, Kenji Mori4ma1
        (1Tohoku Univ.; 2Tosoh SGM)

3Pa2-2* Reflection and transmission behavior of ultrasonic wave at micro gap using Newton's ring
        [S1273]
        Masaki Inoue1, Tsuyoshi Mihara3, Tatsuya Tashiro2, Takashi Furukawa2
        (1Univ. of Toyama; 2Japan Power Eng. and Inspection)

3Pa2-3*  Accuracy evaluation of laser ultrasonic methods for measuring surface temperature distribution
        [S1249]
        Akira Kosugi1, Ikuo Ibara (Nagaoka Univ. of Tech.)

3Pa2-4*  Evaluation of viscoelasticity of polymer blend thin films in high-temperature region by a QCM-D method
        [S1225]
        Naoki Taguchi1, Masahiro Maebayashi2, Shinobu Koda1 (1Nagoya Univ.; 2Meijo Univ.)
3Pa2-5* Horn loudspeaker with whole circumference aperture for horizontal omnidirectional characteristics

Akihiro Itagaki¹, Naoto Wakatsuki, Koichi Mizutani (Univ. of Tsukuba)

3Pa2-6 A study for generating elastic shear waves having high directivity based on FEM simulations

Tomohiko Omura¹, Ryo Tanaka¹, Kan Okubo¹, Norio Tazawa¹, Shin-ichi Yagi²
(Tokyo Met. Univ.; *Meisei Univ.)

3Pa2-7* Development of thin-film biosensors using picosecond ultrasound spectroscopy

Tetsuya Kawamoto¹, Yohei Nakamichi, Hirotsugu Ogi, Nobutomo Nakamura, Masahiko Hiroa, Masayoshi Nishiyama (Osaka Univ.)

3Pa2-8* Non-contact acoustic imaging method using SLDV and LRAD -Basic study on the non-destructive inspection for concrete-

Ryo Akamatsu¹, Tsuneyoshi Sugimoto¹, Hikaru Kawasaki², Noriyuki Utagawa², Shuhei Tsuji²
(Toin Univ. of Yokohama; *IHI Inspection & Instr.; *Sato Kogyo)

3Pa2-9* Acoustic measurement of small movement on objects behind cloths

Kotaro Hoshiba¹, Jun-ya Takayama, Hiroyuki Hachiya (Tokyo Inst. of Tech.)

3Pa2-10 Resonant phenomena of circumferential Lamb waves generated by eight transducer-elements located evenly on the circumference and wall thickness measurements

Hideo Nishino¹, Tomoya Kataoka, Keiichi Morita, Kenichi Yoshiida (Univ. of Tokushima)

3Pa2-11 Nondestructive inspection of austenitic stainless steels by detection of acoustically stimulated electromagnetic response

Kazuya Takashima¹, Hisato Yamada¹, Kenji Ikushima¹, Michitaka Sato¹, Yoshiichi Ishizawa²
(Tokyo Univ. of A&T; *JFE Techno-Research)

3Pa3-1 Flow connecting type SH-SAW methanol concentration sensor for direct methanol fuel cells

Koji Kano¹, Takashi Kogai¹, Naoyuki Yoshimura¹, Hiromi Yatsuda¹, Jun Kondo¹, Showko Shikowawa¹
(Japan Radio; *Shizuoka Univ.; *SAW & SPR-Tech.)

3Pa3-2* Methanol sensor using shear horizontal surface acoustic wave sensing system

Saburo Endo¹, Jun Kondo¹, Katsuhiko Satoh², Naomi Sawada² (Shizuoka Univ.; *Suzuki)

3Pa3-3 Comparison of SH-SAW sensor sensitivity based on gold nanoparticle deposition

Junya Nakashima¹, Jun Kondo (Shizuoka Univ.)

3Pa3-4 Eludiation of change in motional capacitance of quartz-crystal tuning-fork tactile sensor induced by viscoelastic materials in contact with its base

Hideaki Itoh, Naoki Hatakeyama, Susumu Itoh¹ (Shinshu Univ.)

3Pa3-5* Development of MEMS quartz crystal microbalance biosensor with an electrodeless embedded quartz resonator

Shintaro Nishikawa¹, Fumihito Kato, Taiji Yanagida, Hirotsugu Ogi, Masahiko Hiroa (Osaka Univ.)

3Pa3-6* Molecular-mass analysis of proteins in liquids using a high frequency wireless-electrodeless quartz crystal microbalance sensor

Taiji Yanagida¹, Hirotsugu Ogi, Masayoshi Nishiyama, Masahiko Hiroa (Osaka Univ.)

3Pa3-7* Resonance properties of surface acoustic wave resonators in supercritical CO₂

Katsuhiko Hayashi¹, Shoji Kakio, Eiichi Kondo (Univ. of Yamanashi)

3Pa3-8* Automatic measurements of ten kinds of ultrasonic heads of bulk SAW gas chromatograms

Toshiohito Sakamoto¹, Shingo Akaö¹, Takamitsu Iwaya¹, Toshihiro Tsuji¹, Noritaka Nakaso¹, Kazushi Yamanaka¹ (Tohoku Univ.; *Tohoku University; *JST,CREST)

3Pa3-9* Development of high precision metal MEMS column for portable SAW gas chromatograph

Takamitsu Iwaya¹, Shingo Akaö¹, Toshihiro Sakamoto¹, Toshihiro Tsuji¹, Noritaka Nakaso¹, Kazushi Yamanaka¹ (Tohoku Univ.; *JST,CREST; *Tohoku University)

3Pa3-10 Equivalent network representation of a liquid-level sensor operating in trapped-energy-mode thickness vibration

Ken Yamada¹, Tatsuya Koyama, Shuichi Seto (Tohoku Gakuin Univ.)

3Pa4-1 A fundamental study of applying ultrasonic waves in 20 kHz band frequency to the method of preheating the oil sand

Shingo Kamagata¹, Youhei Kawamura¹, Hirokazu Okawa¹, Kouichi Mizutani¹ (Univ. of Tsukuba; *Akita Univ.)

3Pa4-2* A study on micro droplet generation by using ultrasonic torsional transducer

Yusuke Kiyama¹, Yoshiyuki Tominaga, Takefumi Kanda, Koichi Suzumori, Norihisa Seno (Okayama Univ.)

3Pa4-3 Study of energy harvesting using two-dimensional small vibrations

Takeshi Shimizu¹, Mitsutaka Hikita (Kogakuin Univ.)
3Pa4-4  Fundamental study of a loop-tube-type thermoacoustic heater  
Shin-ichi Sakamotoi, Yoshiaki Watanabe1 (Uiniv. of Shiga Prefecture; 2Doshisha Univ.)

3Pa4-5* A study on half-ring-shaped ultrasonic motor for simple mounting  
Kensuke Shimizu1, Hiroshige Hanyu, Toshinao Yamashina, Takuo Umezawa, Yoshikazu Koike (Shibaura Inst. of Tech.)

3Pa4-6 A study on single-phase drive USM using linked square plates  
Hideki Tamura1, Kentaro Masuda1, Takehiro Takeno1 (Tohoku Inst. of Tech.; 2Sumida Electric)

3Pa4-7 On the influence of degree of gas saturation on multibubble sonoluminescence intensity  
Toru Tuziuti, Kyuichi Yasui, Kazumi Kato (AIST)

3Pa4-8 Sonoluminescence from viscous liquids using horn-type transducer  
Takaaki Yamada1, Pa-Kon Choi (Meiji Univ)

3Pa4-9* Performance comparison of optical spectrometry and stroboscopic imaging for measurement of acoustic cavitation  
Takanobu Kuroyama1, Tadashi Ebihara, Koichi Mizutani1, Takeshi Ohbuchi2 (Univ. of Tsukuba; 2Natl. Defense Academy)

3Pa4-10 A study on spatial distribution of cavitation generation by using cavitation sensor  
Takeyoshi Uchida1, Shinichi Takeuchi1, Tsuneo Kikuchi1 (AIST; 2Toin Univ. of Yokohama)

3Pa4-11* High-speed observation of acoustic bubbles in highly-viscous liquids  
Yuta Takeuchi1, Pak-Kon Choi (Meiji Univ.)

3Pa4-12 Microstructure evolution of A390 Al alloy by high power ultrasound injection into melts  
Jeong IL Youn1, Young Ki Lee, Tae Sung Choi, Bong Jae Choi, Young Jig Kim (Sungkyunkwan Univ.)

3Pa4-13 Cavitation erosion mechanism of electroless Nickel plating  
Shinobu Sugasawai, Shigeru Akiyama1, Susumu Uematsu1, Toshiaki Shibata1, Toshiaki Iwata1, Naoki Miyauchi1, Fumihiro Fujita1 (Natl. Maritime Res. Inst.; 2Meltex)

3Pa5-1 Behaviour of ultrasonic wave propagation in human body - Investigation of experimental and simulated data using 3-D elastic human model  
Yoshiki Nagatanai, Masashi Saito1 (Kobe City Coll. Tech.; 2Doshisha Univ.)

3Pa5-2 Direct measurement of Bekki-Nozaki amplitude holes in nonlinear waves on cardiac interventricular septum wall  
Yoshifumi Harada1, Noriaki Inoue1, Takashi Okada1, Akimitzu Harada1, Yoshihiro Yoshikawa2, Naoaki Bekki1, Hiroshi Kana1 (Fukui Univ.; 2Hitachi Aloka Medical; 3Nihon Univ.; 4Tohoku Univ.)

3Pa5-3* A study of noninvasive observation of blood viscosity based on ultrasonic echo correlation method  
Toru Takahashi1, Takayuki Sato, Yusaku Watanabe (Tokyo Met. Univ.)

3Pa5-4* Accurate measurement of transient change in viscoelasticity of radial arterial wall for evaluation of endothelial function  
Kazuki Ikeshita1, Hideyuki Hasegawa, Hiroshi Kanai (Tohoku Univ.)

3Pa5-5 Development of tissue-mimicking materials using segmented polyurethane gel and their acoustic properties  
Tomoji Yoshida1, Kouhei Tanaka1, Toshio Kondo1, Kazuhiro Yasukawa1, Nobuaki Miyamoto2, Masahiko Taniguchi2, Yasuo Shikinami2 (Tokushima Bunri Univ.; 2Toin Univ.)

3Pa5-6* Measurement of temperature rise in phantom using infrared imaging by varying pulse repetition frequency  
Ryuta Nikikawa1, Suguru Sakuma, Shin Tanaka, Takenobu Tsuchiya, Nobuyuki Endoh (Kanagawa Univ.)

3Pa5-7 Elasticity evaluation of regenerating cartilage sample based on laser Doppler measurement of ultrasonic particle velocity  
Naotaka Nitta1, Masaki Misawa1, Kazuhiro Homma1, Tsuyoshi Shiina2 (AIST; 2Kyoto Univ.)

3Pa5-8* Measurement of wave velocity in cortical bone by micro-Brillouin scattering technique -Effect of bone tissue properties-  
Kenji Fukui1, Shinji Takayanagi, Daisuke Suga, Mami Matsukawa (Doshisha Univ.)

3Pa5-9* Dependence of ultrasonic wave velocity on the HAp crystallites orientation and bone mineral density  
Suga Daisuke1, Ikeda Kazuma1, Takayanagi Shinji1, Matsukawa Mami1, Otani Takahiko1, Yamamoto Kazufumi1, Yangitani Takahiko1 (Doshisha Univ.; 2JA Shizuoka Kohseiren Enshu Hospital; 3Nagoya Inst. of Tech.)
3Pa5-10* Time-frequency representation of ultrasonic wave transmitted through cancellous bone:
Analysis method based on instantaneous frequency

Ryosuke O. Tachibana\(^1\)\(^2\), Yoshiki Nagatani\(^2\)\(^3\)\(^6\)
\(^{1}\)Doshisha Univ.; \(^{2}\)Kobe City Coll. Tech.)

3Pa5-11* Experimental study on instantaneous frequency analysis of ultrasonic wave propagated in cancellous bone

Mana Hayashi\(^3\), Ryosuke O. Tachibana\(^2\), Atsushi Hosokawa\(^1\), Yoshiki Nagatani\(^2\)
\(^{1}\)Kobe City Coll. Tech.; \(^{2}\)Doshisha Univ.; \(^{3}\)Akashi Nat. Coll. Tech.)

3Pa5-12 Effect of cortical bone layer on fast and slow wave propagations in cancellous bone:
Investigation using stratified models

Atsushi Hosokawa\(^3\), Yoshiki Nagatani\(^2\)
\(^{1}\)Akashi Nat. Coll. Tech.; \(^{2}\)Kobe City Coll. Tech.)

3Pa5-13* Frequency dispersion of fast and slow wave velocities in cancellous bone

Katsunori Mizuno\(^1\), Keisuke Yamashita\(^1\), Mami Matsukawa\(^1\), Takahiko Otani\(^2\), Hirokazu Tsubone\(^3\)
\(^{1}\)Doshisha Univ.; \(^{2}\)Equine Reserch Inst. Japan Racing Association; \(^{3}\)Univ. of Tokyo)

3Pa5-14* Time-amplitude mapping of ultrasonic wave propagating in the cancellous bone
-Evaluation of anisotropic structure-

Keisuke Yamashita\(^1\), Katsunori Mizuno, Mami Matsukawa (Doshisha Univ.)

3Pa5-15 Frequency characteristics of the living human head vibration under bone-conducted ultrasonic stimulation

Kazuhiro Ito\(^1\), Seiji Nakagawa (AIST)

3Pa5-16* Propagation velocity of bone-conducted ultrasound in the human head

Takuya Hotehama\(^2\), Seiji Nakagawa (AIST)

3Pa5-17 Bone-conducted ultrasonic hearing-aid for the profoundly deaf:
Development of a downsized digital prototype

Seiji Nakagawa (AIST)

3Pa6-1* Convergence property of Straubel acoustic mirror made of acrylic resin

Shohei Nishimoto\(^1\), Yuji Sato\(^2\), Koichi Mizutani\(^3\), Naoto Wakatsuki\(^1\), Toshiaki Nakamura\(^1\)
\(^{1}\)Natl. Defense Academy; \(^{2}\)Univ. of Tsukuba

3Pa6-2 Study on underwater multiple acoustic lens performance evaluation by integral projection

Sayuri Matsumoto\(^1\), Kageyoshi Kakahara\(^2\), Takenobu Tsuchiya\(^1\), Nobuyuki Endoh\(^2\)
\(^{1}\)Port and Airport Res. Inst.; \(^{2}\)Kanagawa Univ.)

3Pa6-3 Preliminary analysis for transient event of target scattering on ambient noise imaging with acoustic lens

Kazuyoshi Mori\(^1\), Hanako Ogasawara\(^1\), Toshiaki Nakamura\(^1\), Takenobu Tsuchiya\(^2\), Nobuyuki Endoh\(^2\)
\(^{1}\)Natl. Defense Academy; \(^{2}\)Kanagawa Univ.)

3Pa6-4 Developments of a new discrimination method between Japanese Jack Mackerel and Chub Mackerel by using the relation between incident angle and reflect ratio

Yong Wang\(^1\), Shinji Ogawa\(^1\), Yasushi Nishimori\(^1\), Masahiko Furusawa\(^1\), Masanori Ito\(^1\), Ikuo Matsuo\(^2\), Tomohito Imaizumi\(^3\), Tomonari Akamatsu\(^3\)
\(^{1}\)Furuno Electric; \(^{2}\)Tokyo Univ. of Mar. Sci. and Tech.; \(^{3}\)Tohoku Gakuin Univ.; \(^{4}\)Natl. Res. Inst. of Fisheries Eng.)

3Pa6-5 A study of planate acoustic lens constructed with phononic crystal structures

Takenobu Tsuchiya\(^1\), Tetsuo Anada\(^1\), Nobuyuki Endoh\(^2\), Sayuri Matsumoto\(^1\), Kazuyoshi Mori\(^2\)
\(^{1}\)Kanagawa Univ.; \(^{2}\)Port and Airport Res. Inst.; \(^{3}\)Natl. Defense Academy)

3Pa6-6 Echoes of clicks and creaks of sperm whales observed on deep seafloor in Sagami Bay

Ryoichi Iwase\(^1\) (JAMSTEC)

12:30-13:20 Lunch Time

13:20-14:35 Medical Ultrasound
Chair: Nobuki Kudo (Hokkaido Univ.)

3E5-1 Development of multiple frequency ultrasonic imaging system by using multi-resonance piezoelectric transducer

Iwaki Akiyama\(^1\), Natsuki Yoshizumi\(^1\), Shigemi Saito\(^2\), Yuji Wada\(^1\), Daisuke Koyama\(^1\), Kentaro Nakamura\(^1\)
\(^{1}\)Shonan Inst. of Tech.; \(^{2}\)Tokai Univ.; \(^{3}\)Tokyo Inst. of Tech.)
3E5-2* Detection and localization of small metastatic foci in human lymph nodes using three-dimensional high-frequency quantitative ultrasound methods
Jonathan Mamou1, Emi Saegusa-Beercroft2, Alain Coron3, Michael L. Oelze4, Masaki Hata5, Junji Machi6, Eugene Yanagihara2, Pacal Laugier4, Tadashi Yamaguchi8, Ernest J. Feleppa
(F. L. Lizzi Center for Biomedical Eng., 3Univ. of Hawai and Kuakini Medical Center, 4UPMC Univ. Paris 6; 5CNRS; 6Univ. of Illinois; 8Chiba Univ.)

3E5-3* Elastic characterization of human jaw bone using scanning acoustic microscopy
Amit Shelke, Sharham Ghanaiati, Oksana Petruchin, Ralph Pflanzer, Juergen Bereiter-Hahn, Robert Sader
( Goethe Univ.)

3E5-4 Urodynamics measurement by airborne ultrasound doppler system
Seiji Matsumoto, Yasuhiro Takeuchi5, Hidehiro Kakizaki6 (Asahikawa Medical Univ.; Non-Affiliated)

3E5-5* Complex micelles applied ultrasound-mediated gene transfection
Yiwei Zhang1*, Takashi Azuma, Akira Sasaki, Shu Takagi, Yoichiro Matsumoto (Univ. of Tokyo)

14:40-16:40  Poster Session  Chair: Shinichi Takeuchi (Toin Univ. of Yokohama)

3Pb1-1 High frequency rheo-optical spectroscopy by means of ultrasonically induced light diffraction
Sho Miyake1, Tatsuro Matsuoka (Nagoya Univ.)

3Pb1-2* Pressure wave propagation in human arterial model -Comparative study of 1-D numerical simulation and experiment-
Masashi Saito1, Yuki Ikenaga1, Mami Matsukawa1, Yoshiaki Watanabe1, Takaaki Asada1, Pierre-Yves Lage1 (Doshisha Univ.; Murata Mfg.; UPMC)

3Pb1-3* Analysis of ultrasonic velocity and attenuation in particle-dispersed viscoelastic composites for acoustic materials design
Hideyasu Iwasaki2, Shiro Biwa (Kyoto Univ.)

3Pb1-4* Monitoring of sound velocity and attenuation in SrTiO3 across the phase transition at low temperatures using picosecond ultrasonics
Akira Nagakubo, Akihiro Yamamoto, Hirotsubu Ogi, Masahiko Hirao (Osaka Univ.)

3Pb1-5 Ultrasonic waves for unsaturated soil characterization
Se-Hyun Cho, Hyung-Koo Yoon, JuHan Kim, JongSub Lee1 (Korea Univ.)

3Pb1-6 Characterization of shear zone using ultrasonic waves
YongHo Kim1*, Yong-Hoon Byun1, Myung-Jun Song2, Jong-Sub Lee2 (Korea Univ.; Hyundai Eng. & Construction)

3Pb1-7* Acoustic resonance of two-dimensional elastic sheet studied by Airy stress function
Shinpei Yamada1, Ryuichi Tarumi, Yoji Shibutani (Osaka Univ.)

3Pb2-1 Some issues for precise lumped-parameter estimation in electromechanical coupling systems
Michio Ohki1 (Natl. Def. Acad.)

3Pb2-2 Focused ultrasound effect on nano particle size distribution in water
Jungsoon Kim1, Moujoon Kim2, Misun Jo2, Minechul Chung2 (Tongmyong Univ.; Pukyong Natl. Univ.; Korea Res. Inst. of Standard and Sci.)

3Pb2-3* Nondestructive evaluation of plane crack tip using laser induced pulse wave and vibration
Ryosuke Nakase1, Mami Matsukawa (Doschisha Univ.)

3Pb2-4* Examination of two-dimensional airborne ultrasonic position and velocity real-time measurement using chirp waves
Shinya Saito1, Minoru Kuribayashi Kurosawa1, Yuichiro Orino1, Shinnosuke Hirata2 (Tokyo Inst. of Tech.; UEC)

3Pb2-5* Sound propagation on circular concave surface depending on radius of boundary
Yuya Saito1, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)

3Pb2-6 Basic study on location estimation of drill-bit using giant-magnetostrictive vibrator on simulated ground
Junpei Tamura1, Youhei Kawamura1, Hidemi Mochiji2, Naoto Sasaki2, Hirokazu Okawa1, Koichi Mizutani2 (Univ. of Tsukuba; Tada Construction; Akita Univ.)

3Pb2-7* Study on directionality control by M-sequence encoding ultrasonic transducer
Hiroshi Yonenaka1, Yorinobu Murata (Wakayama Univ.)
3Pb2-8* A finite-difference time-domain technique for nonlinear elastic media and its application to nonlinear Lamb wave propagation [S1133]

Naoki Matsuda¹, Shiro Biwa (Kyoto Univ.)

3Pb2-9* Basic study on acoustic imaging of water distribution in the soil using propagation velocity of sound [S1148]

Yutaka Nakagawa¹, Tsuneyoshi Sugimoto¹, Takashi Shirakawa¹, Motoaki Sano¹, Sakae Shibusawa², Motoyoshi Ohaba¹ (Toin Univ. of Yokohama; °Tokyo Univ. of A&T)

3Pb2-10* Ultrasonic sensing using the split-and-merge up-and-down chirp signal [S1151]

Katsuhiko Sakata¹, Kan Okubo¹, Satoshi Akamine¹, Norio Tagawa¹, Masayuki Tanabe¹ (Tokyo Met. Univ.; °Kumamoto Univ.)

3Pb2-11 Fiber-optic vibration sensor based on bending characteristics of long period fiber grating [S1211]

Satoshi Tanaka¹, Keisuke Ikuma, Atsushi Wada, Nobuaki Takahashi (Natl. Defense Academy)

3Pb3-1 Construction of two-axis acceleration sensor using a cross coupled vibrator [S1226]

Jiro Terada¹¹, Yasutomo Uetsuji¹, Sumio Sugawara¹ (Osaka Inst. of Tech.; °Ishinomaki Senshu Univ.)

3Pb3-2 Ultrasonic variable-focus optical lens using viscoelastic material [S1303]

Daisuke Koyama¹, Ryoichi Isago, Kentaro Nakamura (Tokyo Inst. of Tech.)

3Pb3-3 Fundamental study on odor generator based on SAW streaming [S1322]

Atsushi Saitoh¹ (Shibaura Inst. of Tech.)

3Pb3-4* Vibratory gyroscope using coaxial resonator [S1230]

Mami Nakanishi¹, Naoto Wakatsuki, Koichi Mizutani (Univ. of Tsukuba)

3Pb3-5 Analysis of characteristics of coupled bending vibrators used as a force sensor [S1249]

Sumio Sugawara¹, Jiro Terada¹, Yoshikazu Mito¹, Yusuke Takahashi¹ (Ishinomaki Senshu Univ.; °Tokyo Univ. of A&T)

3Pb3-6* Consideration of characteristics of frequency-change-type two-axis acceleration sensor [S1258]

Yu Kajiwara¹, Sumio Sugawara (Ishinomaki Senshu Univ.)

3Pb3-7 Fundamental study on hardness measurement using piezoelectric bimorph resonator [S1263]

Subaru Kudo¹ (Ishinomaki Senshu Univ.)

3Pb3-8 Focal point controllable ultrasonic array transducer with adjustable curvature [S1287]

Jungsoon Kim¹, Moojoon Kim¹, Kanglyeol Ha¹ (Pukyong Natl. Univ.)

3Pb3-9 Effect of fabrication parameters on the characteristics of fresnel lens and piezoelectric transducer [S1300]

Tuan-Anh Bui¹¹, Min-Chun Pan¹, Wen-Ching Shih¹ (Natl. Central Univ.; °Tatung Univ.)

3Pb4-1* A study on reduction of coefficient of friction by using ultrasonic vibration [S1313]

Satoshi Nakamura¹, Hirofumi Miyamoto, Toshiaki Furusawa (Teikyo Univ.)

3Pb4-2* Removal of liquid in a partially bent pore using high-intensity aerial ultrasonic waves [S1348]

Ayano Sensui¹, Ryo Kato, Toshiharu Maruyama, Ayumu Osumi, Youichi Ito (Nihon Univ.)

3Pb4-3* A study of detecting internal defect in solid material using nonlinear aerial convergence ultrasonic waves [S1272]

Ayumu Osumi¹, Hiromasa Kobayashi, Youichi Ito (Nihon Univ.)

3Pb4-4* Fundamental study for the solution of thermoacoustic phenomenon using numerical calculation - Relation between the setting position of stack and heat flow - [S1348]

Kentaro Kuroda¹¹, Shin-ichi Sakamoto², Kenji Shibata¹, Takao Tsuchiya¹, Yoshiaki Watanabe¹ (Doshisha Univ.; °Univ. of Shiga Pref.)

3Pb4-5* Fundamental study on the acoustic impedance relation to sound intensity amplification of a prime mover [S1358]

Kazuki Sahashi¹¹, Shin-ichi Sakamoto², Kentaro Kuroda¹, Yoshiaki Watanabe¹ (Doshisha Univ.; °Univ. of Shiga Pref.)

3Pb4-6* Ultrasonic atomization using a vibrating small gap [S1383]

Ryoichi Isago¹, Kenta Tokumitsu, Daisuke Koyama, Kentaro Nakamura (Tokyo Inst. of Tech.)

3Pb4-7* High-speed observation of cavitating bubble diameters in surface active SDS solutions [S1395]

Shota Deno¹, Pak-Kon Choi (Meiji Univ.)

3Pb4-8* Degradation of dioxine by combination of ultrasound and ozone microbubbles [S1426]

Zheng Xu¹, Kyosuke Mochida, Tetsuya Naito, Keiji Yasuda (Nagoya Univ.)
3Pb4-9*  Effluence of internal substances from Pluronic micelle using ultrasound
Daisuke Kobayashi†, Masahiro Karasawa, Tomoki Takahashi, Katsuto Otake, Atsushi Shono
(Tokyo Univ. of Sci.)

3Pb4-10*  Degradation of dichloroacetonitrile by sonolytic ozonation
Beomguk Park, Donghoon Shin†, Eunju Cho, Jeehyeong Khim (Korea Univ.)

3Pb4-11  Sonochemical oxidation of cyanide ion using potassium peroxysulfitate as an oxidizing agent
Cui Mingcan†, Jang Min†, Lee Seban†, Khim Jeehyeong† (Korea Univ.; Inst. of Mine Reclamation Tech.)

3Pb4-12*  Study of degradation of polymer in solution at 20 kHz sonication
Khuyen Viet Bao Tran†, Yoshiyuki Asakura, Shibobu Koda† (Nagoya Univ.; Honda Electronics)

3Pb5-1*  Therapeutic array transducer element using coresonance between hemispherical piezoceramic shell and water sphere
Kenji Otsu†, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-2  Evaluation of ultrasound beam profile of Fresnel zone plate array transducer
Tatsuya Oyama†, Yasutaka Tamura, Hirotaka Yanagida, Toshihito Sato (Yamagata Univ.)

3Pb5-3*  High voltage staircase driver circuit for triggered HIFU treatment
Keisuke Takada†, Kotaro Nakamura, Jumpei Okada, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-4*  3D-quantitative optical measurement of asymmetrically focused ultrasound pressure field
Yuta Shimazaki, Soichiro Harigane, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-5  Ultrasonic monitoring of high intensity focused ultrasound lesions using sub-image correlation
Ryo Matsuzawa†, Takashi Shishihiti, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-6*  Simulated B-mode image from acoustic impedance map of HIFU-exposed specimen
Takashi Shishihiti†, Ryo Matsuzawa, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-7*  Analysis of temperature increase in excised porcine liver tissue induced by cavititation-enhanced HIFU
Eiko Iwasaki†, Tatsuya Moriyama, Ayumu Asai, Takashi Shishihiti, Shin Yoshizawa, Shin-ichiro Umemura
(Tohoku Univ.)

3Pb5-8*  Efficient generation of cavitation cloud by dual-frequency ultrasound exposure
Jun Yasuda†, Ryo Takagi, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3Pb5-9  Optical realtime monitoring of ultrasonic cavitation induction and thermal coagulation with phase change nano droplet in tissues
Ken-ichi Kawabata†, Rei Asami†, Shinichiro Umemura† (Hitachi; Tohoku Univ.)

3Pb5-10  Heating location control of gas exchanged microbubble enhanced HIFU
Kiyoshi Yoshinaka†, Ken-ichi Kajiyama†, Hiroshi Utashiro†, Talashi Azuma†, Akira Sasaki†, Shu Takagi†, Yoichiro Matsumoto† (AIST; Univ. of Tokyo)

3Pb5-11*  Active path selection of microbubbles in an against flow using acoustic radiation force produced by multiple sound sources
Ren Koda†, Nobuyuki Watarai†, Nobuhiko Shigehara†, Takumi Ito, Ayumu Minamide†, Kohji Masuda†, Yoshitaka Miyamoto†, Toshio Chiba† (Tokyo Univ. of A&T; Natl. Center for Child Health and Dev.)

3Pb5-12*  Observation of continuous variation in size of microbubble aggregations using a broadband sound source
Nobuyuki Watarai†, Ren Koda†, Nobuhiko Shigehara†, Kohji Masuda†, Yoshitaka Miyamoto†, Toshio Chiba† (Tokyo Univ. of A&T; Natl. Center for Child Health and Dev.)

3Pb5-13*  Observation of flow variation in capillaries of artificial blood vessel by producing microbubble aggregations
Nobuhiko Shigehara†, Ren Koda†, Nobuyuki Watarai†, Koji Masuda†, Yoshitaka Miyamoto†, Toshio Chiba† (Tokyo Univ. of A&T; Natl. Center for Child Health and Dev.)

3Pb5-14*  Effect of acoustic radiation force to microbubbles in flow and its simulation in bifurcation
Ayumu Minamide†, Takumi Ito, Ren Koda, Nobuyuki Watarai, Nobuhiko Shigehara, Kohji Masuda (Tokyo Univ. of A&T)

3Pb5-15*  Simulation of distribution of acoustic radiation force to microbubbles in traveling sound field
Takumi Ito†, Ayumu Minamide, Ren Koda, Nobuyuki Watarai, Nobuhiko Shigehara, Kohji Masuda (Tokyo Univ. of A&T)

3Pb5-16*  Seed-dependent aggregation behavior of amyloidosis peptides studied by wireless quartz crystal microbalance biosensors
Masahiko Fukushima†, Taiji Yanagida, Hirotsgu Ogi, Masahiko Hirao, Yuji Shitaka, Hisashi Yagi, Yuji Goto (Osaka Univ.)
3Pb5-17 Cell death under different acoustic environments of high intensity ultrasound
Soo Yeon Lee†, Ji Ye Park, Young H. Kim, Kwang Il Kang (Korea Sci. Academy of KAIST)

3Pb5-18 Effect of laser induced stress wave on mammalian cells
Mieko Kogi†, Motoaki Nishiwaki, Yugi Kitamura, Yuki Makita, Koji Aizawa, Yoshiaki Tokunaga
(Kanazawa Inst. of Tech.)

3Pb6-1* Tidal effect at small-scale sound propagation experiment
Seiji Kamimura†, Hanako Ogasawara, Kazuyoshi Mori, Toshiaki Nakamura (Natl. Defense Academy)

3Pb6-2* Experimental study on Doppler shift compensation for underwater acoustic communication using orthogonal signal division multiplexing
Tadashi Ebihara†, Keiechi Mizutani‡ (Univ. of Tsukuba; ‡Tokyo Inst. of Tech.)

3Pb6-3 Sound propagation in boundary region between warm core ring and cold water mass of the east sea area off Tsugaru Straits
Yoshiaki Tsurugaya†, Toshiaki Kikuchi‡, Koichi Mizutani‡ (Sanyo PT; ‡Natl. Defense Academy; ‡Univ. of Tsukuba)

3Pb6-4* Acoustic simulation using wave equation FDTD (WE-FDTD) method with compact FDs
Takeshi Yoda†, Naoki Kawada‡, Norio Tagawa‡, Takao Tsuchiya‡, Kan Okubo‡ (Tokyo Met. Univ.; ‡Doshisha Univ.)

3Pb6-5* Numerical analysis of sound wave propagation in ocean by WE-FDTD method with GPU cluster system
Shigeyoshi Nakai†, Takuto Ishii, Takao Tsuchiya (Doshisha Univ.)

3Pb6-6* Accuracy evaluation of acoustic analysis using CIP methods with sub-grid technique
Yuta Ara†, Kan Okubo†, Norio Tagawa†, Takao Tsuchiya† (Tokyo Met. Univ.; ‡Doshisha Univ.)

16:45-17:45 Medical Ultrasound
Chair: Iwaki Akiyama (Shonan Inst. Tech.)

3J5-1 Observation of micro hollows produced by bubble cloud cavitation
Yoshiki Yamakoshi†, Hiromichi Koori, Yoshiyasu Nakano, Jun Yamaguchi, Takashi Miwa (Gunma Univ.)

3J5-2* Thermal simulation of cavitation enhanced ultrasonic heating verified with tissue mimicking gel
Tatsuya Moriyama†, Ayumu Asai, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

3J5-3* Real time HIFU beam imaging
Keisuke Fujiwara†, Hideki Takeuchi†, Kazunori Itani†, Kiyoshi Yoshinaka‡, Akira Sasaki‡, Takashi Azuma‡,
Ichiro Sakuma‡, Yoichiro Matsumoto‡ (Hitachi Aloka Medical; ‡AIST; ‡Univ. of Tokyo)

3J5-4 Measurement uncertainties of thermal and mechanical indices related to medical diagnostic ultrasonic fields
Tsuneo Kikuchi† (AIST)

17:45- Closing Session