

The 41th Symposium on Ultrasonic Electronics (USE 2020) Program

○ Speaker

* Applying to Young Scientists Award

Wednesday, November 25

8:45-9:00 **OPENING**

9:00-9:45 **Nonlinear acoustics, high power ultrasound, sonochemistry I**
Chair: Hirokazu Okawa (Akita Univ.)

1J1-1 **Stroboscopic Imaging to Determine Number Density of Acoustic Cavitation Bubbles**
○Takano Kuroyama (NIT, Gifu College)

1J1-2 **Crystal Orientation Analysis of Pure Tin Damaged by Cavitation Impact**
○Shinobu Sugawara (Natl. Maritime Res. Inst.)

1J1-3* **Three Cases of Nonlinear Evolution Theory of Ultrasound Propagation in Liquids Containing Many Microbubbles with a Polydispersity of Bubble Size**
○Takuma Kawame, Tetsuya Kanagawa, Reona Ishitsuka (Univ. of Tsukuba)

10:00-11:00 **Ultrasonic properties of materials, phonon physics, acousto-optics I**
Chair: Mami Matsukawa (Doshisha Univ.)

1J2-1 **Perfect-bandgap acoustic metamaterial rod based on a single material**
○Motonobu Tomoda, Akira Ogasawara, Kentaro Fujita, Osamu Matsuda, Oliver B. Wright (Hokkaido Univ.)

1J2-2* **Development of a wave machine to model phononic band gaps**
○Tetsu Omiya, Motonobu Tomoda, Masahiro Ino, Kentaro Fujita, Osamu Matsuda, Oliver B. Wright (Hokkaido Univ.)

1J2-3* **Effect of negative ion bombardment increased in low-pressure sputtering deposition on piezoelectric properties of ScAlN thin films**
○Takumi Tominaga¹, Shinji Takayanagi¹, Takahiko Yanagitani² (¹Doshisha Univ., ²Waseda Univ.)

1J2-4 **Volume fraction dependence of viscosity curves for dilute and dense suspensions of gel-like microbeads fabricated in aerial process**
○Taichi Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)

11:15-12:15 **Poster Session** **Chair: Akira Harata (Kyusyu Univ.)**

1Pa1-1 **Optimal Condition for Inkjet Fabrication of Soft-micro Gel Beads**
○Shujiro Mitani, Taichi Hirano, Keiji Sakai (Univ. of Tokyo)

1Pa1-2* **Withdraw**

1Pa1-3* **Polarization and High Temperature Characteristics of Bi₄Ti₃O₁₂/Al₂O₃ Sol-Gel Composite Ultrasonic Transducer**
○Hiroaki Akatsuka, Kei Nakatsuma, Makiko Kobayashi, Daichi Maeda, Takumi Hara (Kumamoto Univ.)

1Pa1-4* **Film growth of ZnO with suppressing ion bombardment to substrate during sputtering deposition and effect of piezoelectric property**
○Kohei Tominaga¹, Shinji Takayanagi¹, Takahiko Yanagitani² (¹Doshisha Univ., ²Waseda Univ.)

1Pa2-1 **Moving sound source with arbitrary trajectory in two-dimensional finite difference-time domain method**
○Takao Tsuchiya^{1,2}, Masashi Kanamori² (¹Doshisha Univ., ²JAXA)

1Pa2-2* **Simulation of shear wave propagation near heterogeneous tissue surface by using velocity-stress FDTD method**
○Shoka Iwai, Marie Tabaru (Tokyo Tech.)

- 1Pa2-3*** Efficiency Improvement of Signal Coding Method for Acoustic Sensing in Occlusion Area Using Super-Directional Sound Sources
○Seiji Koyama, Kan Okubo, Norio Tagawa (Tokyo Met Univ.)
- 1Pa2-4*** Focusing Properties of Airborne Ultrasound Phased Array Using Time Reversal Method
○Kyosuke Shimizu, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1Pa2-5*** Ultrasonic Self-Bending Beam by Phase-coded Modulation in Air
○Nagisa Yamamoto, Hideyuki Nomura (Univ. of Electro-Comm.)
- 1Pa3-1** Broadband Piston Mode Applied in A_1 Lamb Mode Solidly Mounted Resonator
○Zhaohui Wu¹, Yu-Po Wong², Ting Wu¹, Jingfu Bao¹, Ken-ya Hashimoto^{1,2}
(¹Univ. of Electronic Sci. and Tech. of China, ²Chiba Univ.)
- 1Pa3-2*** Analysis of Leaky Surface Acoustic Waves on Quartz Thin Plates Bonded to Similar-Material Substrate
○Takumi Fujimaki, Masashi Suzuki, Shoji Kakio (Univ. of Yamanashi)
- 1Pa4-1*** Theoretical Study on Nonlinear and Thermal Effects of High-Speed Pressure Waves in Bubbly Liquids
○Tetsuya Kanagawa, Takafumi Kamei, Takahiro Ayukai, Aya Fujimoto (Univ. of Tsukuba)
- 1Pa4-2*** Study of ultrasonic pitting mechanism on starch particle
○Fumiya Sugino, Ken Yamamoto (Kansai Univ.)
- 1Pa4-3** Study on relationship between ultrasonic cleaning and acoustic cavitation signal
○Takeyoshi Uchida (AIST)
- 1Pa4-4*** Surface deformation of a tissue phantom using an airborne concave ultrasound transducer
○Yuga Beppu, Hiroyuki Komatsu, Daisuke Koyama, Mami Matsukawa (Doshisha Univ.)
- 1Pa4-5** Numerical simulation of temperature rise distribution on material surface under high-intensity aerial ultrasonic irradiation
○Ayumu Osumi, Masashi Hishinuma, Youichi Ito (Nihon Univ.)
- 1Pa4-6*** Resonance control by locally contraction of outer tube in a coaxial thermoacoustic system
○Riku Onishi¹, Shin-ichi Sakamoto², Yuto Kawashima¹, Koto Hiramatsu¹, Asuka Hirata¹, Yoshiaki Watanabe¹
(¹Doshisha Univ., ²Univ. of Shiga Pref.)
- 1Pa5-1** Evaluation of Risk on the Excessive Temperature Rise at Acoustic Radiation Surface of Ultrasound Transducers
○Satoshi Yamazaki, Masao Takimoto, Muneki Kataguchi (Canon Medical Systems Corp.)
- 1Pa5-2*** Phantom experiments on separation of reflection and scattering components using ultrasonic synthetic aperture imaging
○Kazunori Nagata¹, Ryo Nagaoka¹, Jens E. Wilhjelm², Hideyuki Hasegawa¹ (¹Univ. of Toyama, ²Tech. Univ. of Denmark)
- 1Pa5-3*** Investigation of Relationship between Accuracy of 2D Velocity Estimation and Scan Pitch of Ultrasound Image
○Michiya Mozumi¹, Masaaki Omura¹, Ryo Nagaoka¹, Magnus Cinthio², Hideyuki Hasegawa¹
(¹Univ. of Toyama, ²Lund Univ.)
- 1Pa5-4*** Accurate measurement of blood pressure by pulse transit time method for estimating of viscoelastic properties of radial artery with a single ultrasound probe
○Yuto Shoji¹, Shohei Mori¹, Mototaka Arakawa¹, Shigeo Ohba¹, Kazuto Kobayashi², Hiroshi Kanai¹
(¹Tohoku Univ., ²Honda Electronics)
- 1Pa5-5*** Effect of Spot Scanning Method of Ultrasonic Focus on Heating Efficiency in Cavitation-enhanced Ultrasonic Heating
○Kohei Ueda¹, Sayaka Ito¹, Shin-ichiro Umemura¹, Shin Yoshizawa^{1,2} (¹Tohoku Univ., ²SONIRE Therapeutics)
- 1Pa5-6*** Ultrasound Imaging of Cavitation Bubbles by Triplet Pulse Sequence with Reduction of Therapeutic Ultrasound Noise
○Ikumi Shiozaki, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 1Pa5-7*** Strategic Lateral Undersampling with Weighted Filtered Delay Multiply And Sum Beamforming
○Shun Fukushima, Masayuki Tanabe (Kumamoto Univ.)

- 1Pa5-8*** **Effect of duty cycle of ultrasonic exposure sequence on efficiency of sonodynamic treatment method**
○Kenki Tsukahara, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 1Pa6-1*** **Measurement of sound velocity using Doppler shift in water tank with temperature gradient**
○Masato Yoshiguchi, Hanako Ogasawara, Kazuyoshi Mori (Natl. Defense Academy)
- 1Pa6-2*** **Development of mussel-distribution estimation using high-resolution sonar image**
○Zhao Fan¹, Katsunori Mizuno¹, Shigeru Tabeta¹, Takato Asayama², Hiroki Hayami², Yasufumi Fujimoto², Tetsuo Shimada² (¹Univ. of Tokyo, ²The Miyagi Prefectural Izunuma-Uchinuma Environmental Foundation)
- 1Pa6-3** **Recovery and analysis of long-term observation data of acoustic Doppler current profiler**
○Ryoichi Iwase, Shun Nomura (JAMSTEC)
- 12:15-13:00** **LUNCH TIME**
- 13:00-13:50** **Plenary Talk I** **Chair: Ken-ya Hashimoto (Chiba Univ.)**
- 1PL** **High-performance SAW Devices Using Composite Substrate Structures**
○Shoji Kakio (Univ. of Yamanashi)
- 14:00-15:00** **Poster Session** **Chair: Koichi Mizutani (Univ. of Tsukuba)**
- 1Pb1-1** **Experimental verification of line tension by shape observation of micro-droplets on liquid substrate**
○Ryohsuke Yokota, Taichi Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)
- 1Pb1-2*** **Accuracy verification in ultrasonic measurement method of arterial wall elasticity using phantom experimental system**
○Seira Akiyama, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 1Pb1-3** **Enhancement of Ultrasound Transmission Efficiency using a Liquid Matching Layer**
Jungsoon Kim¹, Haeun Kim², ○Moojoon Kim² (¹Tongmyong Univ., ²Pukyong Nat'l Univ.)
- 1Pb1-4*** **Ultrasonic Characteristics of PbTiO₃/Pb(Zr,Ti)O₃ at High Temperature**
○Kohei Hirakawa, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 1Pb1-5*** **Deposition of c-axis parallel oriented ZnO film on rotated silica glass pipe for SH-SAW pipe sensor**
○Takuya Wakabayashi¹, Shinji Takayanagi¹, Takahiko Yanagitani² (¹Doshisha Univ., ²Waseda Univ.)
- 1Pb2-1** **Nondestructive inspection based on laser ultrasonics for the cracks inside the WC-based hard alloy formed by additive manufacturing (AM)**
○Harumichi Sato¹, Hisato Ogiso¹, Yorihiro Yamashita², Yoshinori Funada² (¹AIST, ²IRII)
- 1Pb2-2*** **Nonlinear ultrasonic induced by fatigue damage in a low carbon steel**
○Masaki Kaneko, Yutaka Ishii, Toshihiro Ohtani (Shonan Inst. of Tech.)
- 1Pb2-3** **Time-reversal Analysis of Ultrasonic Waves for Defect Imaging in Anisotropic Materials**
○Hirohisa Mizota^{1,2}, Yuui Amano², Kazuyuki Nakahata² (¹Hitachi, Ltd., ²Ehime Univ.)
- 1Pb2-4*** **Study on the characteristics of aluminum-alloy fatigue cracks and the behavior of subharmonic generation**
○Taisei Umezaki, Marina Ishibashi, Toshihiro Tsuji, Yoshikazu Ohara, Tsuyoshi Mihara (Tohoku Univ.)
- 1Pb2-5*** **Development of large-displacement laminated transducer and its application to SPACE**
○Marina Ishibashi, Taisei Umezaki, Toshihiro Tsuji, Yoshikazu Ohara, Tsuyoshi Mihara (Tohoku Univ.)
- 1Pb2-6*** **Interfacial Evaluation of Adhesively Bonded CFRP Joints Based on Ultrasonic Reflection Spectrum - Stiffness Estimation of Two Interfaces -**
○Shohei Ito¹, Naoki Mori², Naoki Matsuda³, Yasuaki Furuta³, Takayuki Kusaka¹, Masaki Hojo³ (¹Ritsumeikan Univ., ²Osaka Univ., ³Kyoto Univ.)
- 1Pb3-1*** **A Detection Electronics Enabling Ultimate Suppression of Leakage Signals for RF SAW/BAW Laser Probes**
○Toru Yaginuma, Tatsuya Omori, Ken-ya Hashimoto (Chiba Univ.)

- 1Pb3-2* Increase of electromechanical coupling coefficient in c-axis oriented AlN films by chromium doping at low concentrations**
○Yusei Takano, Masashi Suzuki, Shoji Kakio (Univ. of Yamanashi)
- 1Pb3-3 Shear-horizontal Surface Acoustic Wave on New Langasite-type Piezoelectric Single Crystal**
○Shoji Kakio¹, Yusuke Takiguchi¹, Takuto Nakayama¹, Masashi Suzuki¹, Noritoshi Kimura²
(¹Univ. of Yamanashi, ²Piezo Studio Inc.)
- 1Pb4-1 On the influence of bulk nanobubble concentration on the intensity of sonoluminescence**
○Toru Tuziuti, Kyuichi Yasui, Wataru Kanematsu (AIST)
- 1Pb4-2* Sonoluminescence in the initial bubble growth process**
○Ayaka Inui, Kota Shiba, Ken Yamamoto (Kansai Univ.)
- 1Pb4-3 Relation between thresholds of free-radical generation and atomization under ultrasound exposure**
○Takeshi Aikawa, Nobuki Kudo (Hokkaido Univ.)
- 1Pb4-4* Design and Development of Omnidirectional Sound Source Using Facing Ultrasonic Transducer Arrays**
○Kyoka Okamoto, Kan Okubo (Tokyo Met. Univ.)
- 1Pb4-5* Improvement of Mid-air Acoustic Tweezers for Non-contact Pick Up Based on Multi-channel Control**
○Shota Kondo, Kan Okubo (Tokyo Met Univ.)
- 1Pb4-6* Mechanism of the heat exchange promotion by superimposing the external sound wave in standing-wave thermoacoustic system**
○Koto Hiramatsu¹, Shin-ichi Sakamoto², Yuto Kawashima¹, Riku Onishi¹, Yoshiaki Watanabe¹
(¹Doshisha Univ., ²Univ. of Shiga Pref.)
- 1Pb5-1* Preliminary investigation on clutter filtering based on deep learning**
○Hongpeng Wang, Shange Gao, Michiya Mozumi, Masaaki Omura, Ryo Nagaoka, Hideyuki Hasegawa
(Univ. of Toyama)
- 1Pb5-2 Comparisons about Stabilization Methods for Increasing Ultrasonic Vectorial Doppler Measurement Accuracy**
○Chikayoshi Sumi (Sophia Univ.)
- 1Pb5-3 Maximum likelihood estimation of scattering strength applied to beamformed ultrasonic signals**
○Hideyuki Hasegawa, Ryo Nagaoka, Masaaki Omura, Michiya Mozumi (Univ. of Toyama)
- 1Pb5-4* Basic study on correction of speed of sound in forming of non-cylindrical focus beam**
○Ryo Nagaoka¹, Shin Yoshizawa², Shin-ichiro Umemura², Hideyuki Hasegawa¹ (¹Univ. of Toyama, ²Tohoku Univ.)
- 1Pb5-5* Basic Study on Image Degradation by Lateral Spatial Undersampling and Its Compensation**
○Shota Yoshisue, Masaki Tanabe (Kumamoto Univ.)
- 1Pb5-6 Relation between statistical properties of sound speed distribution and average sound speed estimation**
○Naotaka Nitta, Toshikatsu Washio (AIST)
- 1Pb5-7* Examination of Stability of Backscattering Coefficient Evaluation Under Clinically Applied Transmission/Reception Conditions**
○Takuma Oguri^{1,2}, Masaaki Omura^{1,3}, Wakana Saito¹, Kenji Yoshida¹, Tadashi Yamaguchi¹
(¹Chiba Univ., ²GE Healthcare, ³Univ. of Toyama)
- 1Pb5-8* Acoustic impedance evaluation of myoblasts for quantitative diagnosis of sarcopenia**
○Ryoya Hashimoto¹, Hitoshi Maruyama², Tadashi Yamaguchi¹ (¹Chiba Univ., ²Juntendo Univ.)

15:15-16:15 Piezoelectric devices (bulk wave devices, surface wave devices) I, Ocean acoustics I

Chair: Kazuyoshi Mori (Natl. Defense Academy)

- 1J3-1 Solidly-Mounted High Frequency Thickness Shear Mode Bulk Acoustic Wave Resonator Using X-LiTaO₃ Thin Plate and SiO₂/Ta Multilayer Acoustic Films**
○Micho Kadota, Yoshimi Ishii, Shuji Tanaka (Tohoku Univ.)

1J3-2* **Implementation of Absolute Amplitude Measurement Function to High-Speed and Phase-Sensitive Laser Probe for RF SAW/BAW Devices**
○Hikaru Takahashi, Tatsuya Omori, Ken-ya Hashimoto (Chiba Univ.)

1J3-3 **Influence on sound propagation in basin by the relation between change depth of continental slope and depth of sound channel axis**
○Yoshiaki Tsurugaya¹, Toshiaki Kikuchi², Koichi Mizutani³ (¹Sanyo PT, ²Natl. Defense Academy, ³Univ. of Tsukuba)

1J3-4* **Basic study on sonar system development for exploring infaunal bivalves**
○Katsuma Okubo, Katsunori Mizuno, Shigeru Tabeta (Univ. of Tokyo)

16:30-17:30 **Measurement techniques, imaging, nondestructive evaluation I**
Chair: Hideyuki Nomura (Univ. of Electro-Comm.)

1J4-1* **Time resolved acoustic wave imaging in a one-dimensional phononic crystal with an arbitrary frequency technique**
○Shinya Aihara, Kentaro Fujita, Shohei Ueno, Motonobu Tomoda, Oliver B. Wright, Osamu Matsuda (Hokkaido Univ.)

1J4-2* **Plane Wave Beamforming Using Each Frequency with Adaptive Weight**
○Jie Zheng¹, Shirui Liu¹, Norio Tagawa¹, Masasumi Yoshizawa², Takasuke Irie^{1,3}
(¹Tokyo Met Univ., ²Tokyo Met. Coll. of Industrial Tech., ³Microsonic Co, Ltd.)

1J4-3* **Numerical Simulation of Lamb Wave Propagation in Flat Plate by Scanning Aerial Ultrasonic Source Technique**
○Kenta Yamada, Ayumu Osumi, Youichi Ito (Nihon Univ.)

1J4-4* **Non-contact measurement of axial force in a bolt by remotely exciting a piezoelectric element bonded to a bolt**
○Kazuhiko Hasebe, Kentaro Nakamura (Tokyo Tech.)

17:45-19:00 **Organizing Committee Meeting**

Thursday, November 26

9:00-9:45 **Measurement techniques, imaging, nondestructive evaluation II**
Chair: Tsuyoshi Mihara (Tohoku Univ.)

2E1-1 **Fundamental study for long-distance noncontact shallow underground exploration technology by acoustic irradiation induced vibration**
○Tsuneyoshi Sugimoto¹, Kazuko Sugimoto¹, Noriyuki Utagawa², Chitose Kuroda²
(¹Toin Univ. of Yokohama, ²Sato Kogyo Co., Ltd.)

2E1-2* **Sensitive label-free IgG detection using MEMS QCM biosensor with 125-MHz wireless quartz resonator**
○Lianjie Zhou¹, Fumihito Kato², Hirotsugu Ogi¹ (¹Osaka Univ., ²Nippon Inst. of Tech.)

2E1-3* **Influence of TiO₂ precursor variation in GO/TiO₂ composite for gas sensing applications using quartz crystal microbalance**
○Savidya Jayawardena, Atsushi Kubono, Masaru Shimomura (Shizuoka Univ.)

10:00-11:00 **Biomedical ultrasound I** **Chair: Naotaka Nitta (AIST)**

2E2-1 **Numerical Study of Beam-Steering Ultrasonic Guided Waves in a Bone-Mimicking Plate**
○Hoai Thi Lam Nguyen¹, Vu-Hieu Nguyen², Quyen T. -L. Bui^{3,4}, Kim-Cuong T. Nguyen⁵, Haidang Phan⁶, Lawrence H. Le⁵ (¹Institute of Physics, VAST, ²Univ. Paris-Est, ³Graduate Univ. of Science and Technology, VAST, ⁴Thai Binh Univ., ⁵Univ. of Alberta, ⁶Duy Tan Univ.)

2E2-2 **Optical/Photoacoustic Hybrid Microscopy with Deconvolution Processing for Visualizing Morphology and Composition of Cells**
○Ryo Shintate¹, Ryo Nagaoka², Takuro Ishii¹, Yoshifumi Saijo¹ (¹Tohoku Univ., ²Univ. of Toyama)

2E2-3 Non-invasive measurement of temperature elevation inside tumor tissue during oncological hyperthermia treatment by statistical analysis of ultrasonic scattered echoes
○Michio Takeuchi^{1,2}, Toshihiko Sakai¹, Gabor Andocs^{2,3}, Tsuyoshi Takanaka⁴, Masashi Taka⁴, Kuniko Yamashita⁴, Masahiro Kawahara⁴, Tomoko Nojiri⁴, Asaka Tanaka⁴, Azusa Norishima⁴, Yoshitaka Omoto², Masaaki Omura², Ryo Nagaoka², Keizo Takao², Hideyuki Hasegawa² (¹Tateyama Kagaku Industry Co., Ltd., ²Univ. of Toyama, ³Tateyama Machine Co., Ltd., ⁴Kouseiren Takaoka Hosp.)

2E2-4* Application of Axial Transmission technique to shear wave evaluation in bone with periostitis.
○Kazuki Miyashita¹, Mineaki Takata¹, Takashi Misaki¹, Ko Chiba², Hiroshi Mita³, Norihisa Tamura³, Mami Matsukawa¹ (¹Doshisha Univ., ²Nagasaki Univ., ³JRA Equine Research Institute)

11:15-12:15 Poster Session

Chair: Shoji Kakio (Univ. of Yamanashi)

2Pa1-1* Characteristics of Wave Propagation on Honeycomb Sandwich Panel in Audible Frequency Range
○Shotaro Daito, Naoto Wakatsuki, Koichi Mizutani, Tadashi Ebihara (Univ. of Tsukuba)

2Pa1-2* Stable modeling of free boundaries in the finite-difference time-domain method using staggered grids with collocated grid points of velocities
○Akino Koda, Koji Hasegawa (Muroran Inst. of Tech.)

2Pa1-3* Visualization of Acoustic Wave Phenomena by Numerical Simulation for Educational Purpose
○Yu-Po Wong¹, Naoto Matsuoka^{2,1}, Luyan Qiu¹, Ken-ya Hashimoto¹ (¹Chiba Univ., ²Nihon Dempa Kogyo)

2Pa1-4* Study of High Temperature Ultrasonic Transducer in LiNbO₃ Based Sol-gel Composite
○Daichi Maeda, Makie Hidaka, Kohei Hirakawa, Takumi Hara, Hiroaki Akatsuka, Makiko Kobayashi (Kumamoto Univ.)

2Pa1-5* Effects of coating layer on the resonance curve of SPR sensor
○Shoya Ueno, Hayato Ichihashi, Shuhei Nishikawa, Shuto Nakatsuji, Mami Matsukawa (Doshisha Univ.)

2Pa2-1* Simulation of electrothermal-based ultrasonic testing for CFRP defects
○Fengxiu Wang, Cizhu Luo, Lanjiang Song, Xinhua Guo (Wuhan Univ.)

2Pa2-2 Experimental Analysis of Linear and Nonlinear Ultrasonic Responses at Fatigue Cracks Using Fundamental Wave Amplitude Difference
○Yoshikazu Ohara¹, Taisei Umezaki¹, Ewen Carcreff², Sylvain Hauptert³, Toshihiro Tsuji¹, Tsuyoshi Mihara¹ (¹Tohoku Univ., ²The Phased Array Company, ³Sorbonne Univ.)

2Pa2-3 Theoretical consideration of V(x) measurement method using the line-focus-beam ultrasonic-material-characterization system
○Yuji Ohashi, Yuui Yokota, Akihiro Yamaji, Masao Yoshino, Shunsuke Kurosawa, Kei Kamada, Hiroki Sato, Satoshi Toyoda, Takashi Hanada, Akira Yoshikawa (Tohoku Univ.)

2Pa2-4 Measurement of polished surface vibration displacement of piezoelectric resonators in laser speckle interferometers
○Jing Wang, Yuxuan Zhong, Yasuaki Watanabe, Takayuki Sato (Tokyo Met Univ.)

2Pa2-5 Extension of remote distance of Electro-Magnetically Spinning viscometer
○Maiko Hosoda¹, Yoshikazu Yamakawa², Keiji Sakai³ (¹Tokyo Denki Univ., ²Triple-Eye Co. Ltd., ³Univ. of Tokyo)

2Pa3-1* Identification method of wireless SAW sensor based on mass loading effect
○Naoki Horikawa, Jun Kondoh (Shizuoka Univ.)

2Pa3-2* Cantilever damage evaluation using impedance-loaded SAW sensor with CWT and machine learning
○Sena Suzuki, Jun Kondoh (Shizuoka Univ.)

2Pa3-3 Evaluation of Electromechanical Coupling Coefficients of Hydrothermally Synthesized (K,Na)NbO₃ Films
○Kazuma Yoshizawa¹, Masashi Suzuki¹, Shoji Kakio¹, Yoshiharu Ito², Akinori Tateyama², Hiroshi Funakubo², Tsuyoshi Wakabayashi³ (¹Univ. of Yamanashi, ²Tokyo Tech., ³Koike Co., Ltd.)

2Pa4-1* Highly sensitive detection of β 2-microglobulin seeds by ultrasonic irradiation
○Ryota Matsuda, Yasushi Oshikane, Kentaro Noi, Masatomo So, Kichitaro Nakajima, Keiichi Yamaguchi, Yuji Goto, Hirotsugu Ogi (Osaka Univ.)

2Pa4-2* Basic Physico-Mathematical Model toward an Application of Microbubble-Enhanced HIFU Treatment: An Effect of Thermophysical Property on Nonlinearity of Ultrasound
○Shunsuke Kagami, Tetsuya Kanagawa (Univ. of Tsukuba)

- 2Pa4-3* Multi degree-of-freedom noncontact transportation using near-field acoustic levitation**
○Kouhei Kikuchi, Deqing Kong, Hidekazu Kajiwara, Manabu Aoyagi (Muroran Inst. of Tech.)
- 2Pa4-4* Drying of wet cloth by aerial intense ultrasound field formed by stripe-mode transverse vibrating plate**
○Tomoya Nakamura, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 2Pa4-5 Study of ultrasonic longitudinal and flexural vibration source using a slit**
○Takuya Asami, Hikaru Miura (Nihon Univ.)
- 2Pa5-1* Evaluation of accuracy in ultrasonic measurement of motion velocity with simulation of blood vessel deformation**
○Kazuma Ishikawa, Michiya Mozumi, Masaaki Omura, Ryo Nagaoka, Hideyuki Hasegawa (Univ. of Toyama)
- 2Pa5-2 Numerical Simulation of Piezoelectric Signal Generated in Cancellous Bone by Ultrasound Irradiation: Effect of Pore Fluid**
○Atsushi Hosokawa (Natl. Inst. Tech., Akashi Coll.)
- 2Pa5-3* High-Sensitivity Detection of Latex Agglutination by Ultrasound Scattering Techniques**
○Kana Kitao, Hideyuki Nakanishi, Tomohisa Norisuye (Kyoto Inst. of Tech.)
- 2Pa5-4* 3D Vector Flow Imaging using a 2D Matrix Array Transducer by Synthesizing and Rotating Sub-apertures**
○Naoya Kanno, Kaito Anzai, Hayato Ikeda, Takuro Ishii, Yoshifumi Saijo (Tohoku Univ.)
- 2Pa5-5* Comparison between Thermal Strain and Acoustic Radiation Force Imaging Methods for Estimation of Heat Source Distribution of High-Intensity Focused Ultrasound**
○Nozomi Obara, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 2Pa5-6* Effect of attenuation correction on backscattering coefficient evaluation of lymphedema**
○Wakana Saito¹, Masaaki Omura^{1,2}, Shinsuke Akita¹, Kenji Yoshida¹, Tadashi Yamaguchi¹
(¹Chiba Univ., ²Univ. of Toyama)
- 2Pa5-7* Evaluation of frequency dependence of speed of sound of liver in clinical to microscopic frequency band**
○Mai Ino, Kazuma Noguchi, Wakana Saito, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 2Pa6-1 Preliminary Analysis Results of Sound Field Converged by a Convex Acoustic Lens Applying to Ambient Noise Imaging**
○Kazuyoshi Mori, Hanako Ogasawara (Natl. Defense Academy)
- 2Pa6-2* Performance of Underwater Multi-Channel Communication Method Applying Frequency Diversity Technique in Underwater Fading Channel**
○Chaehui Lee, Hyunsoo Jeong, Kyu-Chil Park, Jihyun Park (Pukyong Natl. Univ.)
- 2Pa6-3 Evaluation of Spatial Diversity Technique from Experimental Results using Multiple Array Sensors in Underwater Acoustic Communication**
○Kyu-Chil Park, Hyunsoo Jeong, Chaehui Lee, Jihyun Park (Pukyong Natl. Univ.)
- 2Pa6-4 Machine Learning based Underwater SSP Estimation for Fault Sensors**
○Yongcheol Kim, Hojun Lee, Seunghwan Seol, Jaehak Chung (Inha Univ.)

12:15-13:00 LUNCH TIME

13:00-13:50 Plenary Talk II

Chair: Kyuichi Yasui (AIST)

- 2PL ScAlN, ZnO, and PbTiO₃ polarization inverted thin multilayers for BAW and SAW applications**
○Takahiko Yanagitani (Waseda Univ., ZAIKEN, JST CREST)

14:00-14:30 Awards Ceremony

14:30-15:30 Poster Session

Chair: Daisuke Koyama (Doshisha Univ.)

- 2Pb1-1 Preliminary measurement of high-power properties for crystal-oriented (Sr,Ca)₂NaNb₅O₁₅ piezoelectric ceramics in a longitudinal mode**
 ○Yutaka Doshida¹, Hideki Tamura², Satoshi Tanaka³, Tomohiro Harada⁴, Hiroyuki Shimizu⁴
 (¹Ashikaga Univ., ²Tohoku Inst. of Tech., ³Nagaoka Univ. of Tech., ⁴Taiyo Yuden Co., Ltd.)
- 2Pb1-2* Corona discharge polarity influence on Pb(Zr,Ti)O₃/TiO₂**
 ○Takumi Hara, Makie Hidaka, Hiroaki Akatsuka, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 2Pb1-3 Effects of CuO-doping and Quenching on Electrical Properties of (Bi_{1/2}Na_{1/2})TiO₃-based Solid Solution Ceramics**
 ○Seiji Harada, Yuka Takagi, Hajime Nagata, Tadashi Takenaka (Tokyo Univ. of Sci.)
- 2Pb1-4* Acoustic waves propagating through a solid-fluid superlattice by resonance with Lamb wave modes**
 ○Yohei Takahashi, Seiji Mizuno (Hokkaido Univ.)
- 2Pb1-5* Decrease of longitudinal wave velocity in glycated collagen**
 ○Keita Yano, Itsuki Michimoto, Yoshihiko Maekawa, Mami Matsukawa (Doshisha Univ.)
- 2Pb2-1 Design and Implementation of High-order FDTD Method for Room Acoustics**
 ○Tan Yiyu, Toshiyuki Imamura, Masaaki Kondo (R-CCS)
- 2Pb2-2* Photoacoustic Performance and Resonance Characteristics of the Liquid-Filled Thin Glass Capillary Embedded in a Soft Material**
 ○Shili Qu, Kentaro Nakamura (Tokyo Tech.)
- 2Pb2-3 Evaluation of non-contact measurement for acoustic properties in tissue-mimicking phantoms with inclined sides**
 ○Shinnosuke Hirata¹, Hiroyuki Hachiya² (¹Chiba Univ., ²Tokyo Tech.)
- 2Pb2-4 Defect detection of noncontact acoustic inspection using spectral entropy and spatial spectral entropy**
 ○Kazuko Sugimoto, Tsuneyoshi Sugimoto (Toin Univ. of Yokohama)
- 2Pb2-5 Odorant analysis of sake by using ball SAW gas chromatograph**
 ○Shingo Akao¹, Takamitsu Iwaya¹, Tatsuhiro Okano¹, Nobuo Takeda¹, Yusuke Tsukahara¹, Toru Oizumi¹, Hideyuki Fukushi¹, Tomoki Tanaka¹, Maki Sugawara¹, Toshihiro Tsuji^{2,1}, Ryoko Hiraoka¹, Akinobu Takeda¹, Kazushi Yamanaka^{1,2} (¹Ball Wave Inc., ²Tohoku Univ.)
- 2Pb2-6 Ripeness evaluation of melon by using surface acoustic wave**
 ○Pak-Kon Choi, Takashi Ikeda, Yui Nakajima, Seina Sawayama, Rentaro Minabe, Masaaki Shimizu (Meiji Univ.)
- 2Pb3-1 Characteristic Analysis of Frequency-Change-Type Two-Axis Acceleration Sensor Using Multiple Transverse Vibrators**
 ○Sumio Sugawara (Ishinomaki Senshu Univ.)
- 2Pb3-2* Development of measurement system using on-line software for shear horizontal surface acoustic wave sensor**
 ○Naoki Maekawa, Jun Kondoh (Shizuoka Univ.)
- 2Pb3-3* Measurements of liquid sound velocity with droplet manipulation using surface acoustic wave**
 ○Ryota Mitsuyoshi, Jun Kondoh (Shizuoka Univ.)
- 2Pb4-1* Bioactive Compounds Extraction from Natural Fruit by Ultrasonic Irradiation**
 ○Hiroki Sakai, Tanjina Sharmin, Taku M. Aida, Miyuki Nakamura, Kenji Mishima (Fukuoka Univ.)
- 2Pb4-2 ATP-dependent amyloid fibrillization of α -synuclein under the ultrasonic irradiation**
 ○Keiichi Yamaguchi, Maya Sawada, Kichitaro Nakajima, Masatomo So, Hirotsugu Ogi, Yuji Goto (Osaka Univ.)
- 2Pb4-3* Control of Responsiveness of Temperature-responsive Copolymer Using Ultrasonic Irradiation**
 ○Seunghwan Lee, Masato Higuchi, Masaki Kubo, Takao Tsukada (Tohoku Univ.)
- 2Pb4-4 Evaluation of ultrasonic spray coating using high intensity and high frequency ultrasonic transducer with hydrothermal piezoelectric films**
 ○Mutsuo Ishikawa¹, Ayaho Tsukamoto¹, Nao Saito¹, Shintaro Yasui², Marie Tabaru², Hiroshi Funakubo², Minoru Kurosawa² (¹Toin Univ. of Yokohama, ²Tokyo Tech.)
- 2Pb4-5 Nonlinear acoustics induced by plastic strain in stress concentration area**
 ○Toshihiro Ohtani, Shunsuke Nagasawa, Yutaka Ishii (Shonan Inst. of Tech.)

- 2Pb4-6* Inhomogeneous acoustofluidics: how does medium inhomogeneity impact acoustic streaming in microscale?**
 ○Wei Qiu¹, Henrik Bruus², Per Augustsson¹ (¹Lund Univ., ²Tech. Univ. of Denmark)
- 2Pb5-1* Automatic Detection of Large Intestine Site Using Machine Learning in Abdominal Ultrasonography**
 ○Ryota Kabata¹, Toya Sugino¹, Jun Orihara¹, Masayuki Tanabe¹, Junko Yotsuya² (¹Kumamoto Univ., ²Fukui Univ.)
- 2Pb5-2* Singular Value Decomposition of Ultrasound Signals for Tissue Boundary Detection in M-mode**
 ○Andy Huang, Sreeraman Rajan, Yuu Ono (Carleton Univ.)
- 2Pb5-3* A Study on Estimation of Reflector Angle to Assist Epidural Anesthesia by Ultrasound**
 ○Takumi Hashimoto¹, Shohei Mori¹, Mototaka Arakawa¹, Eiko Onishi², Masanori Yamauchi², Hiroshi Kanai¹
 (¹Tohoku Univ., ²Tohoku Univ. Hosp.)
- 2Pb5-4* Case Study on Phase Difference Color Contrast Imaging of Acoustic Impedance by Interference Method**
 ○Daigo Watanabe¹, Masasumi Yoshizawa¹, Norio Tagawa², Takasuke Irie³ (¹Tokyo Met. Coll. of Industrial Tech., ²Tokyo Met Univ., ³Microsonic)
- 2Pb5-5* Time-Frequency Domain Signal Processing for 3D Acoustic Impedance Microscopy and Its Application to Human Skin Observation**
 ○Edo Bagus Prastika¹, Atsushi Imori¹, Tomohiro Kawashima¹, Yoshinobu Murakami¹, Sachiko Yoshida¹, Naohiro Hozumi¹, Ryo Nagaoka², Kazuto Kobayashi³ (¹Toyohashi Univ. of Tech., ²Univ. of Toyama, ³R & D Division, Honda Electronics Co., Ltd)
- 2Pb5-6* Verification of the influence of microstructure in the liver on the evaluation of shear wave velocity**
 ○Daiki Ito¹, Takuma Oguri^{1,2}, Mikio Suga¹, Tadashi Yamaguchi¹ (¹Chiba Univ., ²GE Healthcare)
- 2Pb5-7 Relationship between ultrasonic transmitted beamwidth and accuracy for measurement of myocardial minute velocity**
 ○Kana Sugahara, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 2Pb5-8* Preliminary Study of Skin Microvasculature Visualization by High Frequency Ultrasound Plane Wave Imaging**
 ○Anam Bhatti, Takuro Ishii, Yoshifumi Saijo (Tohoku Univ.)

15:45-16:45 Piezoelectric devices (bulk wave devices, surface wave devices) II, Ocean acoustics II

Chair: Jun Kondoh (Shizuoka Univ.)

- 2E3-1* Enhancement of Leaky SAW Harmonics Excitation Using Bonded Dissimilar Material Structures**
 ○Shiori Asakawa¹, Masashi Suzuki¹, Shoji Kakio¹, Ami Tezuka², Jun Mizuno² (¹Univ. of Yamanashi, ²Waseda Univ.)
- 2E3-2 Broadband Piston Mode Operation Of Thickness Shear Bulk Acoustic Resonator On Lithium Niobate**
 ○Ting Wu¹, Yu-Po Wong², Zhao-hui Wu¹, Jing-fu Bao¹, Ken-ya Hashimoto^{1,2}
 (¹Univ. of Electronic Sci. and Tech. of China, ²Chiba Univ.)
- 2E3-3 Performance Improvement of Compound Eye Underwater Acoustic Lens Using Partition**
 ○Yuji Sato, Tadashi Ebihara, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)
- 2E3-4 Analysis of Doppler shift and phase error according to the movement of underwater vehicles in the underwater phase modulation method**
 ○Jihyun Park¹, Chaehui Lee², Yoseop Hwang³ (¹Oceanplan Co., ²Pukyong Natl. Univ., ³CILAB Co.)

17:00-18:00 Nonlinear acoustics, high power ultrasound, sonochemistry II

Chair: Makiko Kobayashi (Kumamoto Univ.)

- 2E4-1* Preparation of medical nanomaterials by ultrasonic irradiation**
 ○Shinichi Tokunaga, Miyuki Nakamura, Tanjina Sharmin, Taku M. Aida, Kenji Mishima (Fukuoka Univ.)
- 2E4-2* High-throughput sonochemical reactor for accelerative amplification of ultratrace amyloid-fibril seeds**
 ○Kichitaro Nakajima, Hajime Toda, Keiichi Yamaguchi, Masatomo So, Hirotsugu Ogi, Yuji Goto (Osaka Univ.)

- 2E4-3* Double-parabolic-reflectors ultrasonic transducer with long and flexible waveguide for therapeutic ultrasound**
 ○Kang Chen¹, Takasuke Irie², Takashi Iijima³, Takeshi Morita³
 (¹Univ. of Tokyo, ²Microsonic Co., Ltd., ³Tokyo Univ. of Sci.)
- 2E4-4* Clarification of relationship between temperature distribution in the stack and energy conversion in a two-phase fluid thermoacoustic engine**
 ○Yuto Kawashima¹, Shin-ichi Sakamoto², Riku Onishi¹, Koto Hiramatsu¹, Yoshiaki Watanabe¹
 (¹Doshisha Univ., ²Univ. of Shiga Pref.)
- 18:15-19:00 Ultrasonic properties of materials, phonon physics, acousto-optics II**
Chair: Oliver B. Wright (Hokkaido Univ.)
- 2E5-1* Transient ink nucleation: the proof is in the pudding**
 ○Craig S. Carlson¹, Ryunosuke Matsumoto², Koji Fushino², Miryu Shinzato², Nobuki Kudo², Michiel Postema^{1,3}
 (¹Univ. of Witwatersrand, ²Hokkaido Univ., ³Tampere Univ.)
- 2E5-2 Q-factor enhancement of MEMS Resonators with Ditetragonal Prism shaped Phononic Crystal (DTP-PnC)**
 ○Temesgen Bailie Workie¹, Ting Wu¹, Jing-Fu Bao¹, Ken-ya Hashimoto^{1,2}
 (¹Univ. of Electronic Sci. and Tech. of China, ²Chiba Univ.)
- 2E5-3* Electrically tunable of LSPR using shear horizontal surface acoustic wave device**
 ○Teguh Firmansyah^{1,2}, Gunawan Wibisono², Eko Tjipto Rahardjo², Jun Kondoh¹ (¹Shizuoka Univ., ²Univ. of Indonesia)

Friday, November 27

- 9:00-9:45 Biomedical ultrasound II** **Chair: Mototaka Arakawa (Tohoku Univ.)**
- 3J1-1* Photoacoustic Beacon Positioning with Kalman Filter**
 ○Hirozumi Takeshima, Tomohiko Tanaka (Hitachi, Ltd.)
- 3J1-2 Velocity profile of flow in artificial blood vessel model with stenosis**
 ○Hiroto Shimizu¹, Toshikazu Miyawaki¹, Eriko Yamaguchi², Kozue Saito³, Mami Matsukawa¹
 (¹Doshisha Univ., ²Natl. Cerebral and Cardiovascular Center, ³Nara Medical Univ.)
- 3J1-3* Effect of Difference in Shear Modulus of Biological Tissue on Heat Source Distribution of High-intensity Focused Ultrasound Estimated by Acoustic Radiation Force Imaging**
 ○Hiroki Yabata, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 10:00-11:00 Nonlinear acoustics, high power ultrasound, sonochemistry III**
Chair: Subaru Kudo (Ishinomaki Senshu Univ.)
- 3J2-1 Non-contact manipulation of particles using ultrasonic speakers**
 ○Teruyuki Kozuka¹, Satoshi Tani¹, Shin-ichi Hatanaka², Masanori Sato³, Kyuichi Yasui⁴
 (¹Aichi Inst. of Tech., ²Univ. of Electro-Comm., ³Honda Electronics, ⁴AIST)
- 3J2-2* A high-power ultrasonic motor utilizing torsional/flexural vibrations**
 ○Jiang Wu¹, Yosuke Mizuno², Kentaro Nakamura³ (¹Shandong Univ., ²Yokohama National Univ., ³Tokyo Tech.)
- 3J2-3* Observation of acoustic streaming ejected from a small hole in a disk levitated by near-field acoustic levitation**
 ○Kohei Aono, Manabu Aoyagi (Muroran Inst. of Tech.)
- 3J2-4* Dissimilar metals welding using longitudinal-torsional complex vibration source -Welding strength characteristics due to different weld time-**
 ○Haruki Sakuma, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 11:15-12:15 Poster Session** **Chair: Tadashi Yamaguchi (Chiba Univ.)**

- 3Pa1-1* Piezoelectric Characteristic Sustaining Temperature of Pb(Zr,Ti)O₃/Pb(Zr,Ti)O₃**
○Makie Hidaka, Takumi Hara, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 3Pa1-2 Reconfigurable Valley Topological Phononic Waveguide with Local C_{3v} Symmetry**
○Kenshi Okuno, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 3Pa1-3* Acoustic properties of metal/antiferromagnet epitaxial multilayers**
○Hiroki Fukuda, Akira Nagakubo, Hirotsugu Ogi (Osaka Univ.)
- 3Pa1-4* Ultrasonic longitudinal wave velocity in equine cortical bone with periosteum inflammation**
○Mineaki Takata¹, Norihisa Tamura², Hiroshi Mita², Tsukasa Nakamura¹, Kazuki Miyashita¹, Mami Matsukawa¹
(¹Doshisha Univ., ²JRA Equine Research Institute)
- 3Pa2-1* Study on dynamic characteristics of acceleration effect of Amyloid β peptide aggregation by shear stress field**
○Yasutake Fukuda, Kentaro Noi, Masatomo So, Kichitaro Nakajima, Keiichi Yamaguchi, Yuji Goto, Hirotsugu Ogi (Osaka Univ.)
- 3Pa2-2* Monitoring of viscoelasticity and structural change during aggregation reactions of β-2 microglobulin with wireless quartz-crystal-microbalance biosensor**
○Touko Hajiri, Lianjie Zhou, Kichitaro Nakajima, Masatomo So, Keiichi Yamaguchi, Yuji Goto, Hirotsugu Ogi (Osaka Univ.)
- 3Pa2-3* Energy Trapping of Circumferential SH Wave at a Groove in a Pipe**
○Akito Iwata, Takahiro Hayashi, Naoki Mori (Osaka Univ.)
- 3Pa2-4* Nondestructive fault localization of multilayered semiconductor devices with frequency dependent ultrasound heating**
○Takuto Matsui¹, Shunya Hayashi¹, Tomohiro Kawashima¹, Yoshinobu Murakami¹, Naohiro Hozumi¹, Toru Matsumoto²
(¹Toyohashi Univ. of Tech., ²Hamamatsu Photonics K.K.)
- 3Pa2-5* Improvement of Isolation in Rotary Transformers for the Ultrasonic Testing System**
○Takuma Nishimura¹, Hidenori Yukawa¹, Hidenori Ishibashi¹, Tomonori Kimura¹, Toru Takahashi¹, Toshiaki Kamoi², Tomohide Nishikawa² (¹Mitsubishi Electric Corporation, ²Ryoden Shonan Electronics Corporation)
- 3Pa3-1 Frequency Response Characteristics of Piezoelectric Complex Bar Resonator using Longitudinal-torsional Vibration Converter**
○Subaru Kudo (Ishinomaki Senshu Univ.)
- 3Pa3-2 Incorporation tests of micromachined gas cell using new solid Rb source into atomic clock system**
○Motoaki Hara¹, Yuichiro Yano¹, Masaya Toda², Takahito Ono², Tetsuya Ido¹
(¹Natl. Inst. of Information and Communications Tech., ²Tohoku Univ.)
- 3Pa4-1 Enhancement of Sono-oxidation Rate in the Presence of NaHCO₃**
○Hisashi Harada¹, Kiyooki Shinashi², Miho Murada¹, Yuki Ono¹, Hisashi Tanaka¹ (¹Meisei Univ., ²Chuo Gakuin Univ.)
- 3Pa4-2* Sonochemical synthesis of Au/Pd nanoparticles on the surface of LiFePO₄/C cathode material for lithium-ion batteries**
○Kotaro Yoshida, Hirokazu Okawa, Yuki Ono, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 3Pa4-3 Desorption of carbon dioxide from monoethanolamine solution by the addition of calcium chloride under ultrasound irradiation and characteristic evaluation of generated calcium carbonate**
○Yuya Kitamura, Hirokazu Okawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 3Pa4-4 Continuous generation of intense aerial ultrasound induced by pulsed laser**
○Koji Aizawa (Kanazawa Inst. of Tech.)
- 3Pa4-5* Aerial ultrasonic source with sharp directivity containing a filleted compact circular transverse vibrating plate**
○Hiroki Monzen, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 3Pa4-6* Development of complex vibration source using longitudinal vibration transducers and diagonal slits –Case of considering vibration of flange–**
○Naoki Saegusa, Takuya Asami, Hikaru Miura (Nihon Univ.)

- 3Pa5-1* Reduction of influence on interference among scatterers in evaluation of red blood cell aggregation by analyzing ultrasonic backscattering characteristics**
 ○Kyohei Higashiyama¹, Akiyo Fukase¹, Shohei Mori¹, Mototaka Arakawa¹, Satoshi Yashiro², Yasushi Ishigaki², Hiroshi Kanai¹ (¹Tohoku Univ., ²Iwate Medical Univ.)
- 3Pa5-2* Effect of skull bone shape on Transcranial Doppler measurements**
 ○Itsuki Michimoto¹, Keita Yano¹, Yasuyo Kobayashi², Kozue Saito², Mami Matsukawa¹ (¹Doshisha Univ., ²Nara Medical Univ.)
- 3Pa5-3 Relationship between stability and viscoelastic property of fluorescence microbubbles**
 ○Kenji Yoshida¹, Chiaki Kaneko¹, Yiting Zhang¹, Taro Toyota², Hideki Hayashi¹, Tadashi Yamaguchi¹ (¹Chiba Univ., ²Univ. of Tokyo)
- 3Pa5-4* Stability verification of backscattering coefficient evaluation in medium composed of scatterers of multiple sizes**
 ○Kazuya Ito¹, Masaaki Omura^{2,1}, Emilie Franceschini³, Tadashi Yamaguchi¹ (¹Chiba Univ., ²Univ. of Toyama, ³Aix-Marseille Univ.)
- 3Pa5-5* Effects of target scatterer size on ultrasonic sound velocity estimation based on delay time distribution**
 ○Aoi Nakayama, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 3Pa5-6* Simulation study of ultrasonic focusing for the hip joint using 3D X-ray CT data**
 ○Takashi Misaki¹, Kazuki Miyashita¹, Nobuo Niimi², Ko Chiba³, Mami Matsukawa¹ (¹Doshisha Univ., ²Nippon Sigmax, ³Nagasaki Univ.)
- 3Pa5-7* Ultrasound-Modulated Optical Tomography Using Optical Axis Scanning and Pulse-Delay Scanning**
 ○Atsushi Tsuchiya¹, Takano Kuroyama², Naoto Wakatsuki¹, Tadashi Ebihara¹, Koichi Mizutani¹ (¹Univ. of Tsukuba, ²NIT, Gifu College)
- 3Pa5-8 Improvement of Spatial Resolution by Two Directional Scanning for Ultrasound 3D Reconstructions**
 ○Keisuke Yamakawa, Hirozumi Takeshima, Tomohiko Tanaka (Hitachi, Ltd.)
- 3Pa6-1* Underwater Acoustic Communication over Highly Doppler Spread Environment Exceeding Guard Band**
 ○Yushi Tabata¹, Tadashi Ebihara¹, Hanako Ogasawara², Koichi Mizutani¹, Naoto Wakatsuki¹ (¹Univ. of Tsukuba, ²Natl. Defense Academy)
- 3Pa6-2* Performance of Stacked Denoising Autoencoder Technique for Enhancing Image in Underwater Acoustic Communication Channel**
 ○Hyunsoo Jeong, Chaehui Lee, Jihyun Park, Kyu-Chil Park (Pukyong Natl. Univ.)
- 3Pa6-3* Transmission Characteristics of Wedge-shaped Medium with Evanescent Field**
 ○Shoko Tanabe, Yuji Sato, Tadashi Ebihara, Naoto Wakatsuki, Koichi Mizutani (Univ. of Tsukuba)
- 12:15-13:00 LUNCH TIME**
- 13:00-13:50 Plenary Talk III** **Chair: Pak-Kon Choi (Meiji Univ.)**
- 3PL Introduction to Rheometry**
 ○Keiji Sakai (Univ. of Tokyo)
- 14:00-15:00 Poster Session** **Chair: Takenobu Tsuchiya (Kanagawa Univ.)**
- 3Pb1-1* Low-frequency sound absorbing metasurface using multiple split resonators**
 ○Shota Takasugi, Keita Watanabe, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 3Pb1-2 Pressure Dependence of Poisson's Ratio of Glassy Baltic Amber Studied by Brillouin Scattering Spectroscopy**
 Sergey N. Tkachev¹, Muhtar Ahart², Vladimir N. Novikov³, ○Seiji Kojima⁴ (¹Univ. of Chicago, ²Univ. of Illinois, ³IA & E, ⁴Univ. of Tsukuba)
- 3Pb1-3 Acoustic properties of metal close to the melting point measured by laser ultrasonics**
 ○Hisato Ogiso, Harumichi Sato, Hirotomo Itagaki (AIST)

- 3Pb1-4*** **Detection of IgG by ultrasonic attenuation of free standing ^{12}C diamond thin film studied by picosecond ultrasonics**
 ○Hsu Kai Weng¹, Lianjie Zhou¹, Akira Nagakubo¹, Hideyuki Watanabe², Hirotsugu Ogi¹ (¹Osaka Univ., ²AIST)
- 3Pb1-5** **Growth of spherical lithium tetraborate crystal using lotus effect**
 ○Ryuichi Komatsu, Akira Nadatomo, Kohei Ikemura, Hideyuki Okamura, Harutoshi Asakawa (Yamaguchi Univ.)
- 3Pb2-1** **Frequency and azimuth characteristics of active fault vibration by singular value decomposition method**
 ○Toshiaki Kikuchi¹, Koichi Mizutani² (¹Natl. Defense Academy, ²Univ. of Tsukuba)
- 3Pb2-2** **Basic study on intraocular pressure measurement using acoustic radiation pressure II**
 ○Margarette Kozuka, Motoaki Sano (Toin Univ. of Yokohama)
- 3Pb2-3*** **Designing Tapered Buffer Rod with Small End for Ultrasonic Pulse Echo Measurements**
 ○Yuya Ogawa, Ikuo Ihara (Nagaoka Univ. of Tech.)
- 3Pb2-4** **Investigation on Improving Search Results in Reflection Point Search Using Rectangular Sound Source**
 ○Hiroyuki Masuyama (NIT, Toba Coll.)
- 3Pb2-5*** **OFDM Communication Method for a Parametric Loudspeaker**
 ○Kazuma Tajima, Naoto Wakatsuki, Tadashi Ebihara, Koichi Mizutani (Univ. of Tsukuba)
- 3Pb3-1*** **Research on acoustic energy harvesting method based on coupled Helmholtz resonators**
 ○Lin Sun, Jie Gao, Xiaofeng Zhang (Shaanxi Normal Univ.)
- 3Pb3-2** **Effects of Corrector Filter on Phase Noise Characteristics of Butler Crystal Oscillators**
 Yuxuan Zhong¹, Jing Wang¹, ○Yasuaki Watanabe¹, Katsuaki Sakamoto²
 (¹Tokyo Met Univ., ²Former Nihon Dempa Kogyo)
- 3Pb3-3** **Investigations on simultaneous detection of CPT resonances by two-phase detection**
 ○Yuichiro Yano, Masatoshi Kajita, Tetsuya Ido, Motoaki Hara (Natl. Inst. of Information and Communications Tech.)
- 3Pb4-1*** **Basic Theory on Ultrasound Propagation in a Liquid Containing Encapsulated Bubbles toward Medical Application**
 ○Yusei Kikuchi, Tetsuya Kanagawa (Univ. of Tsukuba)
- 3Pb4-2** **Utilization of tertiary amine solutions and ultrasound irradiation for CO₂ desorption at low temperature in a process of CCS**
 ○Hirokazu Okawa, Hiroyasu Ito, Tatsuo Fujiwara, Yuya Kitamura, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 3Pb4-3*** **A Underwater Propulsion System with (Bi,Na,Ba)TiO₃ Piezoelectric Ceramics**
 ○Yuan Qian¹, Deqing Kong², Yutaka Doshida³, Manabu Aoyagi², Minoru Kuribayashi Kurosawa¹
 (¹Tokyo Tech., ²Muroran Inst. of Tech., ³Ashikaga Univ.)
- 3Pb4-4*** **Torque control of ultrasonic motor using holding torque reduction by standing wave excitation**
 ○Tatsuki Sasamura, Abdullah Mustafa, Takamitsu Kaneko, Takeshi Morita (Univ. of Tokyo)
- 3Pb4-5*** **Noncontact-stepping ultrasonic motor using radial array of rectangular vibrators**
 ○Naoyuki Inoue, Deqing Kong, Hidekazu Kajiwara, Manabu Aoyagi (Muroran Inst. of Tech.)
- 3Pb5-1** **Effect of extrapolation of frequency-dependent hydro-phone sensitivity on instantaneous acoustic pressure of diagnostic ultrasound**
 ○Yusuke Chiba, Masahiro Yoshioka (AIST)
- 3Pb5-2** **Ultrasound Imaging by Replacing Conventional Ultrasound Jelly with Double-Network Gel for High Image Quality and Low Operator Dependency**
 ○Ken-ichi Kawabata, Hirozumi Takeshima, Hideki Yoshikawa (Hitachi, Ltd.)
- 3Pb5-3*** **Simulation study to evaluate variable factors of Nakagami parameter due to temperature change**
 ○Masaaki Omura¹, Yoshitaka Omoto¹, Michio Takeuchi², Ryo Nagaoka¹, Hideyuki Hasegawa¹
 (¹Univ. of Toyama, ²Tateyama Kagaku Industry Co., Ltd.)
- 3Pb5-4*** **A Study on Transmission Method for Shape Estimation of Ultrasonic Flexible Probe**
 ○Kakeru Matsuyama, Masayuki Tanabe (Kumamoto Univ.)

3Pb5-5* Accuracy Verification of Amplitude Envelope Analysis Models for Fatty Liver Assessment
○Yusuke Sato¹, Kazuki Tamura², Shohei Mori³, Po-Hsiang Tsui⁴, Tadashi Yamaguchi¹
(¹Chiba Univ., ²Hamamatsu Univ. School of Med., ³Tohoku Univ., ⁴Chang Gung Univ.)

3Pb5-6* Three-dimensional evaluation of speed of sound of lymph nodes in tumor bearing mice
○Kazuma Noguchi¹, Masaaki Omura^{1,2}, Takashi Ohnishi¹, Daiki Matsumoto¹, Tetsuya Kodama³, Tadashi Yamaguchi¹
(¹Chiba Univ., ²Univ. of Toyama, ³Tohoku Univ.)

3Pb5-7* Significance of phase of transfer function in filter designed for high-resolution observation of muscle fiber
○Kenta Kawamata, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)

3Pb5-8* Ultrasonically induced electrical potentials in swine skull
○Tsukasa Nakamura, Mineaki Takata, Itsuki Michimoto, Tomoya Oda, Mami Matsukawa (Doshisha Univ.)

3Pb5-9 Examination of stable evaluation method of the degree of red blood cell aggregation by measuring short axis view of vein using ultrasound
○Akiyo Fukase¹, Kyohei Higashiyama¹, Shohei Mori¹, Mototaka Arakawa¹, Satoshi Yashiro², Yasushi Ishigaki², Hiroshi Kanai¹ (¹Tohoku Univ., ²Iwate Medical Univ.)

15:15-16:15 Measurement techniques, imaging, nondestructive evaluation III
Chair: Yasuaki Watanabe (Tokyo Met Univ.)

3J3-1* Development of Ball SAW Gas Chromatograph with Preconcentrator for Analysis of Multiple Hazardous Gases
○Takamitsu Iwaya¹, Shingo Akao¹, Kazushi Yamanaka¹, Tatsuhiro Okano¹, Nobuo Takeda¹, Yusuke Tsukahara¹, Toru Oizumi¹, Hideyuki Fukushi¹, Maki Sugawara¹, Toshihiro Tsuji¹, Tomoki Tanaka¹, Ryoko Hiraoka¹, Akinobu Takeda¹, Asuka Shima², Satoshi Matsumoto², Haruna Sugahara², Takeshi Hoshino², Tetsuya Sakashita² (¹Ball Wave Inc., ²JAXA)

3J3-2* Development of 1-3 ceramic-air composite transducers for air-coupled ultrasonic measurement
○Hiroki Ohshida, Hitoshi Kumagai, Toshihiro Tsuji, Yoshikazu Ohara, Tsuyoshi Mihara (Tohoku Univ.)

3J3-3* Creep Damage Evaluation of a Nickel-based Superalloy Using Nonlinear Ultrasound
○Yutaka Ishii¹, Masati Kaneko¹, Toshihiro Ohtani¹, Takayuki Sakakibara², Yutaro Ohta³, Keiji Kubushiro³
(¹Shonan Inst. of Tech., ²Chuo Spring Co., LTD, ³IHI Corporation)

3J3-4* Extraction of k_{12} of film/wafer structure by conversion loss methods without acoustic losses in the substrate
○Ryota Tatsumi^{1,2}, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)

16:30-17:30 Biomedical ultrasound III
Chair: Shinnosuke Hirata (Chiba Univ.)

3J4-1* Application of Super-resolution Technique to Spatiotemporal Observation of Bubble Cavitation
○Yusuke Sakamura, Ren Koda (Gunma Univ.)

3J4-2* Differences in acoustical property between normal and tumor cells in a rat brain tumor based on cell nuclei density
○Kazuki Tamura¹, Kazuyo Ito², Katsutoshi Miura¹, Seiji Yamamoto¹
(¹Hamamatsu Univ. School of Med., ²Singapore Eye Research Institute)

3J4-3* Measurement of local change in myocardial thickness caused by electrical excitation in heart wall
○Yu Obara, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)

3J4-4* Effect of split-aperture transmission methods on behavior of cavitation bubbles and temperature rise in bubble-enhanced ultrasonic heating
○Sayaka Ito, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)

17:45-18:45 Ultrasonic properties of materials, phonon physics, acousto-optics III, Piezoelectric devices (bulk wave devices, surface wave devices) III
Chair: Kentaro Nakamura (Tokyo Tech.)

3J5-1 Trial of nondestructive inspection of concrete specimens by photothermal radiometry with a line heat source
○Tsutomu Hoshimiya, Haruo Endoh (Tohoku Gakuin Univ.)

- 3J5-2*** **Theoretical study on the photothermal signal of the multilayer structure and application to the Si-nanopillar/SiGe composite films**
○Yuki Arata¹, Tomoki Harada¹, Daisuke Ohori², Seiji Samukawa², Tetsuo Ikari¹, Atsuhiko Fukuyama¹
(¹Univ. of Miyazaki, ²Tohoku Univ.)
- 3J5-3** **Study on PDMS Microchannel Structure of Wireless-Electrodeless QCM Sensor and Application to Gas Sensor**
○Fumihito Kato¹, Yu Sato¹, Hiroki Ato¹, Haruki Kuwabara¹, Yuto Kobayashi¹, Kensuke Nakamura¹, Noriyasu Masumoto¹,
Hiroyuki Noguchi¹, Hirotsugu Ogi² (¹Nippon Inst. of Tech., ²Osaka Univ.)
- 3J5-4** **Optical characteristics of a variable-focus lens using ultrasound and a thixotropic gel**
○Daiko Sakata, Takahiro Iwase, Daisuke Koyama, Mami Matsukawa (Doshisha Univ.)

18:45-19:00 CLOSING