

# The 38th Symposium on Ultrasonic Electronics (USE 2017) Program

† Speaker

\* Applying to Young Scientists Award

Wednesday, October 25

9:15-9:30      **OPENING**

9:30-10:45      **Biomedical ultrasound I, High power ultrasound I**

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

- 1J1-1\*      **Effect of various focusing schemes of ultrasound on stone erosion rate using cavitation bubbles**  
Toshiya Yura<sup>†</sup>, Maxime Lafond, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)
- 1J1-2\*      **A Preliminary Study of Portal Veins' 3D Respiratory Motion Analysis with 3D Ultrasound**  
Iori Terada<sup>†</sup>, Tomohiro Ueno, Koichi Ishizu, Yasutomo Fujii, Tsuyoshi Shiina, Naozo Sugimoto (Kyoto Univ.)
- 1J1-3      **A Robust Method for Analyzing Acoustic Properties of Biological Specimens by Acoustic Microscopy**  
Mototaka Arakawa<sup>1†</sup>, Ryo Nagaoka<sup>1</sup>, Miki Horie<sup>1</sup>, Kazuto Kobayashi<sup>2</sup>, Hiroshi Kanai<sup>1</sup>, Yoshifumi Saijo<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Honda Electronics.)
- 1J1-4      **Growth suppression effect of high-frequency ultrasound on microcystis aeruginosa**  
Katsunori Mizuno<sup>1†</sup>, Kenji Yoshida<sup>2</sup>, Bong-seok Jeon<sup>3</sup>, Jisun Han<sup>3</sup>, Ho-Dong Park<sup>3</sup> (<sup>1</sup>Univ. of Tokyo; <sup>2</sup>Chiba Univ.; <sup>3</sup>Shinshu Univ.)
- 1J1-5\*      **Finite element analysis of acoustic streaming in a Kundt tube with bended wall**  
Yuji Wada<sup>†</sup>, Kohei Yuge (Seikei Univ.)

10:45-11:45      **Physical acoustics I, Measurement techniques I**

**Chair: Hideyuki Nomura (Univ. of Electro-Comm.)**

- 1J2-1\*      **Local probing of magnetic hysteresis properties through acoustically stimulated electromagnetic response**  
Yuhei Suzuki<sup>1,2†</sup>, Hisato Yamada<sup>1</sup>, Tomohiro Ozaki<sup>3</sup>, Kazuhiko Noguchi<sup>3</sup>, Masahiro Iwata<sup>3</sup>, Kenji Ikushima<sup>1</sup>  
(<sup>1</sup>Tokyo Univ. of A&T; <sup>2</sup>IHI Inspection & Instrumentation Co., Ltd.; <sup>3</sup>Denshijiki Industry)
- 1J2-2      **Optical detection of picosecond acoustic waves generated in grating structures**  
Osamu Matsuda<sup>1†</sup>, Thomas Pezeril<sup>2</sup>, Chaban Ievgeniia<sup>2</sup>, Vitaliy Gusev<sup>2</sup> (<sup>1</sup>Hokkaido Univ.; <sup>2</sup>Université du Maine)
- 1J2-3      **Defect imaging of a thin plate using evanescent modes of guided waves**  
Takahiro Hayashi<sup>†</sup>, Misaki Fukuyama (Kyoto Univ.)
- 1J2-4\*      **High efficiency ScAlN thick film hydrophone operating in the ranges of 40-80 MHz**  
Ko-hei Sano<sup>1†</sup>, Rei Karasawa<sup>1</sup>, Takahiko Yanagitani<sup>1,2,3</sup> (<sup>1</sup>Waseda Univ.; <sup>2</sup>JST PRESTO; <sup>3</sup>ZAIKEN)

11:45-13:00      **LUNCH TIME**

13:00-13:50      **Plenary Talk I**

**Chair: Takeshi Morita (Univ. of Tokyo)**

- 1PL      **Development of a novel coating process, devices, and their technology transfer with the discovery of Room Temperature Impact Consolidation phenomenon**  
Jun Akedo<sup>†</sup> (AIST)

14:00-14:45      **Piezoelectric devices I**

**Chair: Shoji Kakio (Univ. of Yamanashi)**

- 1J3-1      **Study for Frequency Response of SAW Devices with SiO<sub>x</sub>N<sub>y</sub> Film Using LiTaO<sub>3</sub> Substrate**  
Atsushi Nishimura<sup>†</sup>, Satoru Matsuda, Yoshiro Kabe, Hiroyuki Nakamura (Skyworks Solutions, Inc.)
- 1J3-2      **3.5GHz LLSAW resonators on a composite substrate comprises a thin LiNbO<sub>3</sub> plate and multilayers**  
Tetsuya Kimura<sup>1,2†</sup>, Yutaka Kishimoto<sup>1</sup>, Masashi Omura<sup>1</sup>, Ken-ya Hashimoto<sup>2</sup>  
(<sup>1</sup>Murata Manufacturing Co., Ltd.; <sup>2</sup>Chiba Univ.)

- 1J3-3 Integrated VCOs employing FBARs for direct oscillation of Rb clock frequency**  
Motoaki Hara<sup>†</sup>, Yuichiro Yano<sup>1</sup>, Masatoshi Kajita<sup>1</sup>, Shinsuke Hara<sup>1</sup>, Akifumi Kasamatsu<sup>1</sup>, Hiroyuki Ito<sup>2</sup>, Tetsuya Ido<sup>1</sup>  
(<sup>1</sup>Natl. Inst. of Information and Communications Tech.; <sup>2</sup>Tokyo Tech.)
- 14:45-15:30 Resonator, Physical acoustics II Chair: Mami Matsukawa (Doshisha Univ.)**
- 1J4-1 The resonant frequency control of the ultrasonic transducers by connecting electric elements**  
Hiroki Yokozawa<sup>†</sup>, Jens Twiefel<sup>2</sup>, Michael Weinstein<sup>2</sup>, Takeshi Morita<sup>1</sup> (<sup>1</sup>Univ. of Tokyo; <sup>2</sup>Leibniz Univ. Hannover)
- 1J4-2\* Effects of highly energetic negative ions generated from Sc grains during sputtering deposition on electromechanical properties of ScAlN film**  
Shinji Takayanagi<sup>†</sup>, Takahiko Yanagitani<sup>2</sup> (<sup>1</sup>Nagoya Inst. of Tech.; <sup>2</sup>Waseda Univ.)
- 1J4-3 Influence of Sc substitution on acoustic properties of Ca<sub>3</sub>Ta(Ga<sub>0.9</sub>Sc<sub>0.1</sub>)<sub>3</sub>Si<sub>2</sub>O<sub>14</sub> single crystal**  
Yu Igarashi<sup>†</sup>, Yuji Ohashi<sup>1,2</sup>, Yuui Yokota<sup>1</sup>, Kenji Inoue<sup>2</sup>, Akihiro Yamaji<sup>1</sup>, Yasuhiro Shoji<sup>1,3</sup>, Kei Kamada<sup>1,2,3</sup>, Shunsuke Kurosawa<sup>1,4</sup>, Akira Yoshikawa<sup>1,2,3</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Piezo Studio; <sup>3</sup>C&A; <sup>4</sup>Yamagata Univ.)
- 15:40-17:40 Poster Session Chair: Tsuyoshi Mihara (Tohoku Univ.)**
- 1P1-1\* High Temperature Properties of CaBi<sub>4</sub>Ti<sub>4</sub>O<sub>15</sub>/Ba<sub>0.7</sub>Sr<sub>0.3</sub>TiO<sub>3</sub>**  
Tomoya Yamamoto<sup>†</sup>, Kazuho Kiyofuji, Masaki Yugawa, Makiko Kobayashi (Kumamoto Univ.)
- 1P1-2\* High Temperature Properties of CaBi<sub>4</sub>Ti<sub>4</sub>O<sub>15</sub>/Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub>**  
Kazuki Okada<sup>†</sup>, Tomoya Yamamoto, Masaki Yugawa, Makiko Kobayashi (Kumamoto Univ.)
- 1P1-3 Measurement of Locally Resonant Band Gaps in a Surface Phononic Crystal with Inverted Conical Pillars**  
Jin-Chen Hsu<sup>†</sup>, Fan-Shun Lin (Natl. Yunlin Univ.)
- 1P1-4\* Analysis of Elastic Vortex Waves in Optical Fiber for Optical Vortex Mode Conversion**  
Takuya Shoro<sup>†</sup>, Hiroki Kishikawa<sup>1</sup>, Nobuo Goto<sup>1</sup>, Yasumitsu Miyazaki<sup>2</sup> (<sup>1</sup>Tokushima Univ.; <sup>2</sup>Aichi Math. Tech. Lab.)
- 1P1-5\* Application of resonant ultrasound spectroscopy to β-Ga<sub>2</sub>O<sub>3</sub>**  
Kanta Adachi<sup>†</sup>, Hirotsugu Ogi<sup>1</sup>, Nobutomo Nakamura<sup>1</sup>, Hideyuki Watanabe<sup>2</sup>, Toshimitsu Ito<sup>2</sup>, Yasuko Ozaki<sup>2</sup> (<sup>1</sup>Osaka Univ.; <sup>2</sup>AIST)
- 1P1-6 Theoretical study on elastic properties of Si<sub>2</sub>N<sub>2</sub>O by ab-initio calculation**  
Seiya Tsuboi<sup>†</sup>, Kanta Adachi<sup>1</sup>, Akira Nagakubo<sup>2</sup>, Hirotsugu Ogi<sup>1</sup> (<sup>1</sup>Osaka Univ.; <sup>2</sup>Kyoto Univ.)
- 1P1-7 Relaxation behavior of blood viscosity assessed by RheoSpec viscometer**  
Taichi Hirano<sup>†</sup>, Miki Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)
- 1P1-8\* Increase in Q factor of Poly Phenylene Sulfide at high-amplitude ultrasonic vibration by thermal annealing**  
Jiang Wu<sup>†</sup>, Yosuke Mizuno, Kentaro Nakamura (Tokyo Tech.)
- 1P1-9 Elastic constant of alpha and beta tungsten films studied by picosecond ultrasonics**  
Akira Nagakubo<sup>†</sup>, Lee Henu Tae<sup>2</sup>, Yoshio Ueda<sup>2</sup>, Hirotsugu Ogi<sup>2</sup>, Takahiro Moriyama<sup>1</sup>, Teruo Ono<sup>1</sup>  
(<sup>1</sup>Kyoto Univ.; <sup>2</sup>Osaka Univ.)
- 1P2-1 Viscous-characteristics of glycerin water solutions with Q-factors of SC-cut QCM**  
Shin-ya Watanabe<sup>†</sup>, Yasuaki Watanabe, Yunhao Ma, Takayuki Sato  
(Tokyo Metro. Univ.)
- 1P2-2\* Polished Surface Measurements at Ultraviolet Wavelengths for Laser-speckle Methods**  
Yunhao Ma<sup>†</sup>, Yasuaki Watanabe, Takayuki Sato (Tokyo Metro. Univ.)
- 1P2-3\* Separation performance of longitudinal and shear waves using piezoelectric probe with two degree-of-freedom**  
Masafumi Aoyanagi<sup>†</sup>, Naoto Wakatsuki, Koichi Mizutani, Tadashi Ebihara (Univ. of Tsukuba)
- 1P2-4\* A Flexible Ultrasonic Probe for Measuring from Curved Surface**  
Yuusuke Tanaka<sup>†</sup>, Mitsuyoshi Yoshida, Hidekazu Hoshino, Ryu Izumi, Yukio Ogura (Japan Probe Co., Ltd.)

- 1P2-5 Investigation on Application of Rectangular-Annular Element in Reflection Point Search by Single Sound Source**  
Hiroyuki Masuyama<sup>†</sup> (NIT, Toba Coll.)
- 1P2-6 Evaluation of Design Parameters of Pipe Systems for Highly Pure Gases by Ball Surface Acoustic Wave Trace Moisture Analyzer**  
Toshihiro Tsuji<sup>1†</sup>, Shingo Akao<sup>2</sup>, Toru Oizumi<sup>2</sup>, Hideyuki Fukushi<sup>2</sup>, Tatsuhiko Okano<sup>2</sup>, Nagisa Satoh<sup>2</sup>, Nobuo Takeda<sup>2</sup>, Yusuke Tsukahara<sup>2</sup>, Kazushi Yamanaka<sup>1,2</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Ball Wave Inc.)
- 1P2-7<sup>\*</sup> Propagation Properties of Leaky Surface Acoustic Wave on Water-loaded Piezoelectric Substrate**  
Ryota Suenaga<sup>1†</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Yuji Ohashi<sup>2</sup>, Mototaka Arakawa<sup>2</sup>, Jun-ichi Kushibiki<sup>2</sup> (<sup>1</sup>Univ. of Yamanashi; <sup>2</sup>Tohoku Univ.)
- 1P2-8 Development of portable Ball SAW Moisture Analyzer by using USB Pulsar**  
Shingo Akao<sup>1†</sup>, Tatsuhiko Okano<sup>1</sup>, Toru Oizumi<sup>1</sup>, Hideyuki Fukushi<sup>1</sup>, Nagisa Sato<sup>1</sup>, Nobuo Takeda<sup>1</sup>, Yusuke Tsukahara<sup>1</sup>, Toshihiro Tsuji<sup>2</sup>, Kazushi Yamanaka<sup>1,2</sup> (<sup>1</sup>Ball Wave Inc.; <sup>2</sup>Tohoku Univ.)
- 1P2-9 Attenuation characteristics of the leaky T(0,1) mode guided wave propagating in piping coated with anticorrosion grease**  
Hideo Nishino<sup>1†</sup>, Kohei Tateishi<sup>1</sup>, Masashi Ishikawa<sup>1</sup>, Takashi Furukawa<sup>2</sup>, Motoki Goka<sup>3</sup> (<sup>1</sup>Tokushima Univ.; <sup>2</sup>JAPEIC; <sup>3</sup>Mitsubishi Chemical)
- 1P2-10 Development of a defect imaging method using ultrasonic time reversal analysis for heterogeneous anisotropic materials**  
Hirohisa Mizota<sup>1,2†</sup>, Yoshiaki Nagashima<sup>1</sup>, Kazuyuki Nakahata<sup>2</sup> (<sup>1</sup>Hitachi, Ltd.; <sup>2</sup>Ehime Univ.)
- 1P2-11<sup>\*</sup> Proposal of low-frequency phased array for highly attenuative materials and its fundamental study for large amplitude incidence**  
Kosuke Kikuchi<sup>†</sup>, Yoshikazu Ohara, Toshihiro Tsuji, Tsuyoshi Mihara (Tohoku Univ.)
- 1P2-12 Imaging of Branched Stress Corrosion Cracks by Subharmonic Phased Array for Crack Evaluation (SPACE)**  
Yoshikazu Ohara<sup>1†</sup>, Kazushi Yamanaka<sup>2</sup>, Sinan Li<sup>3</sup>, Toshihiro Tsuji<sup>1</sup>, Tsuyoshi Mihara<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Ball Wave Inc.; <sup>3</sup>Verasonics Inc.)
- 1P2-13<sup>\*</sup> Theoretical Analysis and Experimental Monitoring of Morphology Change of Thin Film during Deposition**  
Tomoya Ueno<sup>†</sup>, Nobutomo Nakamura, Hirotosugu Ogi (Osaka Univ.)
- 1P2-14<sup>\*</sup> Size Estimation of Multiple Defects in Billet from Time-of-flight Profile by Transmission Method**  
Ryusuke Miyamoto<sup>†</sup>, Koichi Mizutani, Naoto Wakatsuki, Tadashi Ebihara (Univ. of Tsukuba)
- 1P2-15 Mechanical properties of lithium-ion battery electrode**  
Ryo Inagaki<sup>1†</sup>, Tsuyoshi Noge<sup>1</sup>, Keita Sonoda<sup>1</sup>, Kenta Kirimoto<sup>2</sup>, Yong Sun<sup>1</sup> (<sup>1</sup>Kyushu Inst. of Tech.; <sup>2</sup>Ariake Natl. Coll. of Tech.)
- 1P3-1<sup>\*</sup> High Coupling and Highly Stable Leaky SAWs on LiTaO<sub>3</sub> Thin Plate Bonded to Quartz Substrate**  
Junki Hayashi<sup>1†</sup>, Kosuke Yamaya<sup>1</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Haruka Suzaki<sup>2</sup>, Toshifumi Yonai<sup>3</sup>, Kazuhito Kishida<sup>3</sup>, Jun Mizuno<sup>2</sup> (<sup>1</sup>Univ. of Yamanashi; <sup>2</sup>Waseda Univ.; <sup>3</sup>The Japan Steel Works, Ltd.)
- 1P3-2 Theoretical Analysis of Longitudinal-type Leaky Surface Acoustic Wave on LiNbO<sub>3</sub> with Oriented ScAlN Film**  
Masashi Suzuki<sup>†</sup>, Masashi Gomi, Shoji Kakio (Univ. of Yamanashi)
- 1P3-3<sup>\*</sup> Model Parameter Extraction of Lateral Propagating SAWs with Mode Coupling on TC-SAW Resonators**  
Benfeng Zhang<sup>1,2†</sup>, Tao Han<sup>1</sup>, Xinyi Li<sup>2,3</sup>, Yulin Huang<sup>2,3</sup>, Tatsuya Omori<sup>2</sup>, Ken-ya Hashimoto<sup>1,2,3</sup> (<sup>1</sup>Shanghai Jiao Tong Univ.; <sup>2</sup>Chiba Univ.; <sup>3</sup>Univ. of Electronic Sci. and Tech. of China)
- 1P3-4<sup>\*</sup> Parameter Extraction of COM Equations Including Two SAW Coupling for TC-SAW Structures**  
Yulin Huang<sup>1,2†</sup>, Jingfu Bao<sup>1</sup>, Xinyi Li<sup>1,2</sup>, Benfeng Zhang<sup>2,3</sup>, Tatsuya Omori<sup>2</sup>, Ken-ya Hashimoto<sup>2,3</sup> (<sup>1</sup>Univ. of Electronic Sci. and Tech. of China; <sup>2</sup>Chiba Univ.; <sup>3</sup>Shanghai Jiao Tong Univ.)
- 1P3-5 Wideband Acoustic Wave Resonators Composed of Hetero Acoustic Layer Structure**  
Michio Kadota<sup>†</sup>, Shuji Tanaka (Tohoku Univ.)

- 1P3-6\* Spurious Responses Modeling with Multi-mode COM Model on SiO<sub>2</sub>/LiNbO<sub>3</sub> Substrate**  
Rei Goto<sup>†</sup>, Joji Fujiwara, Hiroyuki Nakamura (Skyworks Solutions, Inc.)
- 1P3-7 Study on Influence of Electrode Width of Interdigital Transducer on Third-order Nonlinear Signals of SAW Devices**  
Ryo Nakagawa<sup>1†</sup>, Ken-ya Hashimoto<sup>2</sup> (<sup>1</sup>Murata Manufacturing Co., Ltd.; <sup>2</sup>Chiba Univ.)
- 1P3-8 Power Durability Measurement of RF SAW/BAW Devices Considering Their TCF**  
Luyan Qiu<sup>†</sup>, Tatsuya Omori, Ken-ya Hashimoto (Chiba Univ.)
- 1P3-9 A Study on High-Isolation SAW Duplexer with On-Chip Compensation Circuit**  
Masafumi Iwaki<sup>1†</sup>, Masanori Ueda<sup>1</sup>, Yoshio Satoh<sup>2</sup> (<sup>1</sup>Taiyo Yuden Co.,Ltd.; <sup>2</sup>Taiyo Yuden Mobile Technologies)
- 1P3-10\* Acousto-optic and Electro-optic Modulators for Photonic Aharonov–Bohm Effect**  
Yuya Hiramatsu<sup>†</sup>, Masashi Suzuki, Shoji Kakio (Univ. of Yamanashi)
- 1P3-11\* Acousto-optic Bragg Diffraction Using Longitudinal-type Leaky SAW**  
Kentaro Hakiri<sup>†</sup>, Masashi Suzuki, Shoji Kakio (Univ. of Yamanashi)
- 1P4-1\* Excitation of Rayleigh Wave with Sapphire-LiNbO<sub>3</sub> Mechanical Integration for Surface Acoustic Wave Motor**  
Deqing Kong<sup>†</sup>, Minoru Kuribayashi Kurosawa (Tokyo Tech.)
- 1P4-2\* A Study on Element Characteristics Compensation of Parametric Loudspeaker**  
Shota Kinjo<sup>†</sup>, Yoshifumi Nagata, Toyota Fujioka, Masato Abe (Iwate Univ.)
- 1P4-3\* Ultrasonic metal welding by complex vibration source using planar vibration locus**  
Yosuke Tamada<sup>†</sup>, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 1P4-4 Change of physical properties of conductive paste by applying ultrasonic vibration.**  
Eiji Sato<sup>†</sup>, Masahiko Jin (Nippon Inst. of Tech.)
- 1P4-5\* Analysis of acoustic fountain generated by ultrasonic plane wave for different water depth**  
Soohyun Lim<sup>1†</sup>, Jungsoon Kim<sup>2</sup>, Kanglyeol Ha<sup>1</sup>, Moojoon Kim<sup>1</sup> (<sup>1</sup>Pukyong Natl. Univ.; <sup>2</sup>Tongmyong Univ.)
- 1P4-6 Nano particle Dispersionizer by using Ultrasonic Cavitation and Streaming**  
Moojoon Kim<sup>1†</sup>, Jungsoon Kim<sup>2</sup> (<sup>1</sup>Pukyong Natl. Univ.; <sup>2</sup>Tongmyong Univ.)
- 1P4-7 Generation and Reduction of Ultrafine Bubble by Ultrasonic Irradiation**  
Yoshiyuki Asakura<sup>1†</sup>, Hodaka Matsushima<sup>2</sup>, Keiji Yasuda<sup>2</sup> (<sup>1</sup>Honda Electronics.; <sup>2</sup>Nagoya Univ.)
- 1P4-8\* Influence of ultrasonic duty cycle on ultrasonically induced aggregation reaction of amyloid-β protein**  
Daisuke Nishioka<sup>†</sup>, Kentarou Noi, Hirotsugu Ogi (Osaka Univ.)
- 1P4-9\* Viscosity Dependence of Acoustic Emission Spectra from Single Bubble Oscillation**  
Yuto Hatanaka<sup>†</sup>, Takanobu Kuroyama (NIT, Gifu Coll.)
- 1P4-10 High power ultrasonic effect on compaction and analysis of radioactive sample for γ-ray spectroscopy**  
Jungsoon Kim<sup>1†</sup>, Minseop Sim<sup>2</sup>, Jihyang Kim<sup>2</sup>, Moojoon Kim<sup>2</sup> (<sup>1</sup>Tongmyong Univ.; <sup>2</sup>Pukyong Natl. Univ.)
- 1P4-11 Study of electric power generation by a thermoacoustic engine**  
Teruyuki Kozuka<sup>1†</sup>, Arata Oshima<sup>1</sup>, Kyuichi Yasui<sup>2</sup> (<sup>1</sup>Aichi Inst. of Tech.; <sup>2</sup>AIST)
- 1P4-12\* Loop-tube-type thermoacoustic system saturated with water vapor -Observation of stability of low-temperature driving-**  
Sho Kawaminami<sup>1†</sup>, Shin-ichi Sakamoto<sup>2</sup>, Daichi Kuroki<sup>1</sup>, Yoshiaki Watanabe<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Univ. of Shiga Pref.)
- 1P5-1 Transmission of shock waves by a focused carbon nano tube coated transducer through human skull cadaver**  
Minho Lee<sup>1</sup>, Dong-Guk Paeng<sup>1†</sup>, Kanglyeol Ha<sup>2</sup>, Min Joo Choi<sup>1</sup> (<sup>1</sup>Jeju Natl. Univ.; <sup>2</sup>Pukyong Univ.)
- 1P5-2\* Single underwater spark discharge-induced shock wave used for physical gene transfer method**  
Takumi Kobayashi<sup>†</sup>, Takaaki Hasebe, Naoki Osawa, Miekko Kogi, Koji Aizawa (Kanazawa Inst. of Tech.)

- 1P5-3\*** **Development of focus controlling method with tFUS aided by numerical simulation for non-invasive brain therapy**  
Yohei Kobayashi<sup>1†</sup>, Takashi Azuma<sup>1</sup>, Kazuya Shimizu<sup>1</sup>, Masashi Koizumi<sup>2</sup>, Tomomichi Oya<sup>2</sup>, Ryo Suzuki<sup>3</sup>, Kazuo Maruyama<sup>3</sup>, Kazuhiko Seki<sup>2</sup>, Shu Takagi<sup>1</sup> (<sup>1</sup>Univ. of Tokyo; <sup>2</sup>NCNP; <sup>3</sup>Teikyo Univ.)
- 1P5-4\*** **Reduction of Potential Side Effects Outside Focal Region by Suppressing Standing Waves in Cavitation Enhanced High-Intensity Focused Ultrasound Treatment**  
Kazuhiro Sakamoto<sup>1†</sup>, Daisaku Mashiko<sup>1</sup>, Ryo Takagi<sup>2</sup>, Shin Yoshizawa<sup>1</sup>, Shin-ichiro Umemura<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>AIST)
- 1P5-5\*** **Enhancement of Efficiency in Ultrasonic Generation of Reactive Oxygen Species by Scanning Focus**  
Shinya Nishitaka<sup>†</sup>, Daisaku Mashiko, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)
- 1P5-6\*** **Study of acoustic field sweeping for active induction of bubble-surrounded T-cells**  
Riki Oitate<sup>1†</sup>, Takuya Otsuka<sup>1</sup>, Masakazu Seki<sup>1</sup>, Asuka Furutani<sup>1</sup>, Takashi Mochizuki<sup>1</sup>, Kohji Masuda<sup>1</sup>, Ryo Suzuki<sup>2</sup>, Kazuo Maruyama<sup>2</sup> (<sup>1</sup>Tokyo Univ. of A&T; <sup>2</sup>Teikyo Univ.)
- 1P5-7\*** **Study of bending thin catheter by tempo-spatial division emission and effect of viscosity**  
Hidetaka Ushimizu<sup>†</sup>, Toshiya Suzuki, Takashi Mochizuki, Kohji Masuda (Tokyo Univ. of A&T)
- 1P5-8\*** **A Simple Technique for Evaluation of a High-intensity Focused Ultrasound Field Using Focused Shadowgraphy**  
Tsubasa Sakaki<sup>†</sup>, Nobuki Kudo (Hokkaido Univ.)
- 1P5-9\*** **Estimation of sonodynamic treatment region with chemosonoluminescence in gel phantom**  
Daisaku Mashiko<sup>†</sup>, Shin-ya Nishitaka, Ryosuke Iwasaki, Maxime Lafond, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)
- 1P5-10\*** **Selective detection of cavitation bubbles by triplet pulse sequence in high-intensity focused ultrasound treatment**  
Ryosuke Iwasaki<sup>†</sup>, Ryo Nagaoka, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)
- 1P5-11** **Observation of spatial-temporal dynamics of bubble cavitation during high-intensity ultrasound exposure**  
Ren Koda<sup>†</sup>, Takumu Origasa, Toshitaka Nakajima, Yoshiki Yamakoshi (Gunma Univ.)
- 1P5-12** **Microbubble characterization based on analysis of echo signal obtained by pulse inversion method**  
Kenji Yoshida<sup>†</sup>, Kazuki Tamura, Masaaki Omura, Tadashi Yamaguchi (Chiba Univ.)
- 1P5-13** **Fast Decomposition Method Based on Adaptive Beamforming Technique with a Phase Rotation Parameter for the Analysis of Two Wave Phenomenon in Cancellous Bone**  
Hirofumi Taki<sup>1†</sup>, Yoshiki Nagatani<sup>2</sup>, Mami Matsukawa<sup>3</sup>, Shin-Ichi Izumi<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Kobe City Coll. Tech.; <sup>3</sup>Doshisha Univ.)
- 1P5-14\*** **Fabrication of bone phantoms with numerically designed cancellous bone patterns**  
Shohei Nakata<sup>†</sup>, Satoshi Suzuki, Toshihiro Teraoka, Ryosuke Fukai, Masahiro Ohno (Chiba Inst. of Tech.)
- 1P5-15\*** **Simulation study on the control of ultrasound propagation in cortical bone**  
Koki Takano<sup>1†</sup>, Masaya Saeki<sup>1</sup>, Yoshiki Nagatani<sup>2</sup>, Mami Matsukawa<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Kobe City Coll. Tech.)
- 1P5-16\*** **Induced electrical potentials in cortical bone under shear ultrasound exposure**  
Taiki Makino<sup>1†</sup>, Koki Takano<sup>1</sup>, Shoko Nakanishi<sup>1</sup>, Daisuke Koyama<sup>1</sup>, Shinji Takayanagi<sup>2</sup>, Takahiko Yanagitani<sup>3</sup>, Mami Matsukawa<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Nagoya Inst. of Tech.; <sup>3</sup>Waseda Univ.)
- 1P5-17\*** **Wavenumber Estimation of an Ultrasonic Guided Wave Propagating in Cortical Bone Using an Adaptive Signal Processing Technique with Information Theoretic Criteria**  
Shigeaki Okumura<sup>1†</sup>, Vu-Hieu Nguyen<sup>2</sup>, Hirofumi Taki<sup>3</sup>, Toru Sato<sup>1</sup> (<sup>1</sup>Kyoto Univ.; <sup>2</sup>Université Paris-Est; <sup>3</sup>Tohoku Univ.)
- 1P5-18** **Improvement of High Frequency Ultrasound Images by Correcting the Point Spread Function in a Coaxial Measurement with Optical Coherence Tomography**  
Naoshi Kashiwagura<sup>1†</sup>, Ryo Nagaoka<sup>1</sup>, Kazuto Kobayashi<sup>2</sup>, Yoshifumi Saijo<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Honda Electronics.)
- 1P5-19** **Experimental and Numerical Observations of Piezoelectric Signal Generated in Cancellous Bone by an Ultrasound Wave**  
Atsushi Hosokawa<sup>†</sup> (Nat. Inst. Tech., Akashi Coll.)
- 1P6-1** **Simulation of propagation of ship propeller cavitation pulse in shallow water area**  
Toshio Tsuchiya<sup>†</sup>, Yukino Hirai, Etsuro Shimizu (Tokyo Univ. of Marine Sci. and Tech.)

- 1P6-2 Influence of frequency on sound propagation by sound source passing over self-break**  
Yoshiaki Tsurugaya<sup>1†</sup>, Toshiaki Kikuchi<sup>2</sup>, Koichi Mizutani<sup>3</sup> (<sup>1</sup>Sanyo PT; <sup>2</sup>Natl. Defense Academy; <sup>3</sup>Univ. of Tsukuba)
- 1P6-3\* Measurement and Modelling of Ship Noise in Shallow Water**  
Yukino Hirai<sup>†</sup>, Toshio Tsuchiya, Etsuro Shimizu (Tokyo Univ. of Marine Sci. and Tech.)
- 1P6-4 Study on depth and range estimation of sound source in deep water with a bottom mounted single hydrophone off Hatsushima Island in Sagami Bay**  
Ryoichi Iwase<sup>†</sup> (JAMSTEC)
- 1P6-5\* Basic Study on High Frequency Ultrasound Imaging of Shellfish in Sediment**  
Hiroki Suganuma<sup>†</sup>, Katsunori Mizuno, Akira Asada (Univ. of Tokyo)
- 1P6-6\* Variation of back scattering directivity of fish body including bone by difference of source frequency**  
Shunichi Fujii<sup>†</sup>, Takenobu Tsuchiya, Nobuyuki Endoh (Kanagawa Univ.)
- 17:45-18:30 Organizing Committee Meeting (Oral presentation Hall)**

## Thursday, October 26

### 9:00-10:15 Physical acoustics III, Measurement techniques II

Chair: Oliver Wright (Hokkaido Univ.)

- 2E1-1 Measurement of Elastic Stiffness of Fe, Cr and Fe/Cr-Multilayer Films by Picosecond Ultrasound**  
Nobutomo Nakamura<sup>†</sup>, Nobutaka Takeuchi, Hirotsugu Ogi (Osaka Univ.)
- 2E1-2\* Investigation of the electro-induced 2D domain structures in LiTaO<sub>3</sub> crystal**  
Siarhei Barsukou<sup>1,2†</sup>, Jun Kondoh<sup>1</sup>, Sergei Khakhomov<sup>2</sup> (<sup>1</sup>Shizuoka Univ.; <sup>2</sup>Gomel State Univ.)
- 2E1-3 Non Local Means Denoising in Photoacoustic Imaging**  
Syahril Siregar<sup>†</sup>, Israr Ul Haq, Ryo Nagaoka, Yoshifumi Saijo (Tohoku Univ.)
- 2E1-4\* Perfect recovery USCT method for estimation of scatter distribution**  
Tianhan Tang<sup>†</sup>, Takashi Azuma, Naoki Tomii, Hirofumi Nakamura, Ichiro Sakuma (Univ. of Tokyo)
- 2E1-5\* Nonlinear Surface-Acoustic-Wave Phased Array with Fixed-Voltage Amplitude Subtraction Method**  
Hiromichi Nakajima<sup>†</sup>, Yoshikazu Ohara, Toshihiro Tsuji, Tsuyoshi Mihara (Tohoku Univ.)

### 10:15-11:30 Piezoelectric devices II, High power ultrasound II, Ocean acoustics I

Chair: Tatsuro Matsuoka (Nagoya Univ.)

- 2E2-1\* Polarity inverted ScAlN films for application to transformer in rectenna**  
Rei Karasawa<sup>1†</sup>, Takahiko Yanagitani<sup>1,2,3</sup> (<sup>1</sup>Waseda Univ.; <sup>2</sup>JST PRESTO; <sup>3</sup>ZAIKEN)
- 2E2-2\* Application of Hierarchical Cascading Technique to FEM Simulation in BAW Devices**  
Xinyi Li<sup>1,2†</sup>, Jingfu Bao<sup>1</sup>, Yulin Huang<sup>1,2</sup>, Benfeng Zhang<sup>3,2</sup>, Tatsuya Omori<sup>2</sup>, Ken-ya Hashimoto<sup>2,3</sup>  
(<sup>1</sup>Univ. of Electronic Sci. and Tech. of China; <sup>2</sup>Chiba Univ.; <sup>3</sup>Shanghai Jiao Tong Univ.)
- 2E2-3 Numerical Simulations of Evaporation and Condensation of Water in a Thermoacoustic Engine**  
Kyuichi Yasui<sup>†</sup>, Noriya Izu (AIST)
- 2E2-4 Vibration Characteristics of LiNbO<sub>3</sub> Single Crystal Ultrasonic Transducer Driven by High Voltage Burst Wave**  
Yusuke Korai<sup>†</sup>, Hiroyuki Nakano (Hitachi)
- 2E2-5 Signal feature extraction and detection for snapping shrimp noise**  
Jongmin Ahn<sup>†</sup>, Hyeonsu Kim, Jeahak Chung (Inha Univ.)

### 11:30-13:00 LUNCH TIME

**13:00-13:50 Plenary Talk II**

**Chair: Pak-Kon Choi (Meiji Univ.)**

**2PL Digital microfluidic system using SAW devices**  
Jun Kondoh<sup>†</sup> (Shizuoka Univ.)

**14:00-16:00 Poster Session**

**Chair: Kazuyoshi Mori (Natl. Defense Academy)**

**2P1-1\* Re-investigation of translational-orientational coupling behavior of nematogen in isotropic phase with non-nematogenic additives**  
Wataru Hanai<sup>†</sup>, Tsuyoshi Yamaguchi, Tatsuro Matsuoka (Nagoya Univ.)

**2P1-2 Variational method with Legendre-basis-functions: calculation of acoustic phonon modes in nanowires**  
Seiji Mizuno<sup>†</sup> (Hokkaido Univ.)

**2P1-3\* FDTD Simulation of shear wave propagation in subcutaneous region**  
Hayato Koyama<sup>†</sup>, Marie Tabaru (Tokyo Tech.)

**2P1-4\* Phase sensitive detection of acoustically stimulated electromagnetic response in steel**  
Hisato Yamada<sup>1†</sup>, Junichi Yotsuji<sup>2</sup>, Kenji Ikushima<sup>1</sup> (<sup>1</sup>Tokyo Univ. of A&T; <sup>2</sup>JFE Steel Corp.)

**2P1-5 Fabrication and Application of a CNT/PDMS Coated Optoacoustic Film Transducer**  
Xiaofeng Fan<sup>1</sup>, Kanglyeol Ha<sup>1†</sup>, Moojoon Kim<sup>1</sup>, Gwansuk Kang<sup>2</sup>, Min Joo Choi<sup>2</sup>,  
Junghwan Oh<sup>1</sup> (<sup>1</sup>Pukyong Natl. Univ.; <sup>2</sup>Jeju Natl. Univ.)

**2P1-6 Investigation on Lamb Wave Propagation in Anisotropic Plate using Large Aperture Line Focused (PVDF) Transducer**  
Seung soo Yang, Min jae Yu, Yun jae Chung, Young H. Kim<sup>†</sup> (Korea Sci. Academy of KAIST)

**2P1-7 Fundamental Consideration on Numerical Analysis of the Vibrating Propagation on the Acoustic Waveguide for Coiled Stator Ultrasound Motor**  
Seiya Ozeki<sup>1,2†</sup>, Keisuke Kurita<sup>1</sup>, Noriaki Nakane<sup>1</sup>, Toshio Sato<sup>1</sup>, Shinichi Takeuchi<sup>1</sup>  
(<sup>1</sup>Toin Univ. of Yokohama; <sup>2</sup>Tsukuba International Univ.)

**2P1-8\* Induced phonons by laser pulses for Brillouin scattering measurement**  
Alessandro Perino<sup>†</sup>, Yoshiaki Shibagaki, Yutaka Hayashi, Mami Matsukawa (Doshisha Univ.)

**2P1-9\* c-Axis tilted ScAlN film on sapphire substrate for SAW devices with high electromechanical coupling**  
Shohei Tokuda<sup>1†</sup>, Shinji Takayanagi<sup>2</sup>, Mami Matsukawa<sup>1</sup>, Takahiko Yanagitani<sup>3</sup>  
(<sup>1</sup>Doshisha Univ.; <sup>2</sup>Nagoya Inst. of Tech.; <sup>3</sup>Waseda Univ.)

**2P1-10 Coherent Guided Acoustic Phonons in GaN/AlN Nanowire Superlattices.**  
Yuki Iwai<sup>†</sup>, Seiji Mizuno (Hokkaido Univ.)

**2P2-1\* Non-contact Imaging Defect in Flat Plate Using Surface Wave Generated by Focus Aerial Ultrasonic Wave**  
Ayumu Osumi<sup>†</sup>, Youichi Ito (Nihon Univ.)

**2P2-2\* Sound Speed Estimation for Underground Acoustical Imaging -A Study on Array Arrangement-**  
Dai Chimura<sup>†</sup>, Kengo Izumida, Ryo Toh, Seiichi Motooka (Chiba Inst. of Tech.)

**2P2-3 3D imaging of buried microstructures in a slab using picosecond acoustics**  
Paul H. Otsuka<sup>†</sup>, Kohei Miyoshi, Sylvain Mezil, Motonobu Tomoda, Osamu Matsuda, Oliver B. Wright (Hokkaido Univ.)

**2P2-4\* Non-contact Diagnosis of Fire Damage of Mortar using Surface Acoustic Waves**  
Takuya Saito<sup>†</sup>, Ayumu Osumi, Youichi Ito (Nihon Univ.)

**2P2-5\* Indoor Experiment of Acoustical Positioning Method Using Transponders**  
Hirokazu Iwaya<sup>†</sup>, Koichi Mizutani, Tadashi Ebihara, Naoto Wakatsuki (Univ. of Tsukuba)

**2P2-6 Development and evaluation of automated abdominal sound speed tomographic imaging system**  
Akira Yamada<sup>†</sup>, Kensuke Kawai, Tomohiro Kurokawa (Tokyo Univ. of A&T)

**2P2-7 Pulse compression of parametric ultrasound with M-sequential coded excitation**  
Hideyuki Nomura<sup>†</sup>, Riku Nishioka (Univ. of Electro-Comm.)

- 2P2-8\* **Study about extension of measurable depth in M-sequence pulse compression by alternate transmission of different codes**  
Shinnosuke Hirata<sup>†</sup>, Hiroyuki Hachiya (Tokyo Tech.)
- 2P2-9\* **Three-dimensional Numerical Acoustic Simulation with Background Flow Using Method of Characteristics**  
Akihiro Fukuda<sup>1†</sup>, Kan Okubo<sup>1</sup>, Takuya Oshima<sup>2</sup>, Takao Tsuchiya<sup>3</sup>, Masashi Kanamori<sup>4</sup>  
(<sup>1</sup>Tokyo Met. Univ.; <sup>2</sup>Niigata Univ.; <sup>3</sup>Doshisha Univ.; <sup>4</sup>JAXA.)
- 2P2-10 **3-D compact explicit-finite difference time domain scheme for density variation**  
Takao Tsuchiya<sup>†</sup>, Naoki Maruta (Doshisha Univ.)
- 2P2-11\* **Numerical Simulation Study on Wedge Elastic Waves Propagating along Sharp Edge**  
Masayuki Mori<sup>†</sup>, Ikuo Ihara, Iwao Matsuya, Masanori Abe (Nagaoka Univ. of Tech.)
- 2P2-12\* **Studies on Nanoparticle Suspensions Probed by Frequency-Domain Dynamic Ultrasound Scattering Techniques**  
Masashi Fujisawa<sup>†</sup>, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 2P2-13\* **Studies on the Sedimentation Dynamics of Silica Particles by Dynamic Ultrasound Scattering Techniques**  
Takahiro Tsuji<sup>†</sup>, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 2P2-14 **Characteristics of the cavitation bubble cloud visualized under micro pulsed light with various exposure time**  
Gwansuk Kang<sup>†</sup>, Jung Sik Huh, Min Joo Choi (Jeju Natl. Univ.)
- 2P3-1 **Reduction of the Coupling Vibration Between the Bending Vibrators of the Frequency-Change-Type Two-Axis Acceleration Sensor**  
Sumio Sugawara<sup>†</sup> (Ishinomaki Senshu Univ.)
- 2P3-2 **Equivalent Circuit Consideration of Frequency-Shift-Type Acceleration Sensor**  
Yoshifumi Sasaki<sup>†</sup>, Sumio Sugawara, Subaru Kudo (Ishinomaki Senshu Univ.)
- 2P3-3 **On the use of Cylindrical Trapped-Energy Resonator for Liquid-Level Sensing**  
Ken Yamada<sup>†</sup>, Koki Watanabe (Tohoku Gakuin Univ.)
- 2P3-4\* **Improvement of estimation method for physical properties of liquid using shear horizontal surface acoustic wave sensor response**  
Kazuya Takayanagi<sup>†</sup>, Jun Kondoh (Shizuoka Univ.)
- 2P3-5 **Engine oil measurement using a surface acoustic wave sensor**  
Saya Kobayashi<sup>†</sup>, Jun Kondoh (Shizuoka Univ.)
- 2P3-6\* **Simultaneous viscosity evaluation in the MHz to GHz range with low TCF resonators consisting of shear mode piezoelectric thin films on AT-cut quartz crystal**  
Yui Yamakawa<sup>1†</sup>, Rei Karasawa<sup>1</sup>, Takahiro Shimidzu<sup>1</sup>, Takahiko Yanagitani<sup>1,2,3</sup>  
(<sup>1</sup>Waseda Univ.; <sup>2</sup>JST PRESTO; <sup>3</sup>ZAIKEN)
- 2P3-7\* **Liquid loading characteristics of thickness-shear mode resonator consisting of c-axis parallel oriented ZnO film**  
Rikuya Iwanaga<sup>1†</sup>, Shinji Takayanagi<sup>2</sup>, Mami Matsukawa<sup>1</sup>, Takahiko Yanagitani<sup>3</sup>  
(<sup>1</sup>Doshisha Univ.; <sup>2</sup>Nagoya Inst. of Tech.; <sup>3</sup>Waseda Univ.)
- 2P3-8 **Characterization of LFE Acoustic Wave Liquid Sensors with Finite Element Method**  
Yung-Yu Chen<sup>†</sup>, Chung-Min Chi (Tatung Univ.)
- 2P3-9 **Sequential Detection of Immunoglobulin G via Nonspecific Adsorbed Staphylococcal Protein A Using PDMS Quartz Crystal Microbalance Sensor**  
Fumihito Kato<sup>1†</sup>, Hiroyuki Noguchi<sup>1</sup>, Jun Kishinami<sup>1</sup>, Chihaya Kimura<sup>1</sup>, Taichi Kobayashi<sup>1</sup>, Takumi Kobayashi<sup>1</sup>, Keita Komori<sup>1</sup>, Hirotsugu Ogi<sup>2</sup> (<sup>1</sup>Nippon Inst. of Tech.; <sup>2</sup>Osaka Univ.)
- 2P3-10\* **Fundamental Study of Magnetic Drive Micropump for Integration of Quartz Crystal Microbalance Sensor**  
Naoya Oshida<sup>1†</sup>, Noriyasu Masumoto<sup>1</sup>, Fumihito Kato<sup>1</sup>, Zhang Xiaoyou<sup>1</sup>, Hirotsugu Ogi<sup>2</sup> (<sup>1</sup>Nippon Inst. of Tech.; <sup>2</sup>Osaka Univ.)



- 2P3-11\* **Analysis of reaction rate in chemical reaction between biotinylated bubbles and streptavidin**  
Yuta Otsuki<sup>1†</sup>, Kenji Yoshida<sup>2</sup>, Yasuhiro Yokoi<sup>1</sup>, Yoshiaki Watanabe<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Chiba Univ.)
- 2P4-1 **Basic Study of Aerial Ultrasonic Source Using Cylinder Typed Vibrating Plate with Axial Nodal Mode**  
Takuya Asami<sup>†</sup>, Hikaru Miura (Nihon Univ.)
- 2P4-2\* **Impregnation of mesh with liquid droplet containing abrasive grains by sound waves from a sound source with a circular transverse vibrating plate**  
Ren Nakayama<sup>†</sup>, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 2P4-3\* **Study of circular vibrating plate size of ultrasonic source with rigid wall**  
Ryo Kuratomi<sup>†</sup>, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 2P4-4 **Tensile-Strain-induced Nonlinear Ultrasonic Changes in a Low Carbon steel**  
Toshihiro Ohtani<sup>1†</sup>, Yutaka Ishii<sup>1</sup>, Masayuki Kamaya<sup>2</sup>, Takayuki Sakakibara<sup>3</sup>  
(<sup>1</sup>Shonan Inst. of Tech.; <sup>2</sup>Inst. of Nuclear Safety System, Inc.; <sup>3</sup>Chuo Spring Co.)
- 2P4-5 **Orange luminescence from acoustic bubbles affected by electric fields**  
Hayng-Bok Lee<sup>†</sup>, Pak-Kon Choi (Meiji Univ.)
- 2P4-6 **Effect of ultrasound on the extraction of saccharides from roselle seeds**  
Anh Bang Le<sup>†</sup>, Aoi Yagura, Kenji Okitsu, Kiyoshi Imamura, Norimichi Takenaka, Yasuaki Maeda (Univ. of Osaka Pref.)
- 2P4-7\* **Catalytic Effect on Ultrasonic Decomposition of Cellulose**  
Shinfuku Nomura, Kosuke Wakida<sup>†</sup>, Shinobu Mukasa, Hiromichi Toyota (Ehime Univ.)
- 2P4-8 **Acoustical and optical measurement for monitoring the cavitation related activities in a cylindrically focused acoustic field**  
Ohbin Kwon<sup>1†</sup>, Gwansuk Kang<sup>1</sup>, Kanglyeol Ha<sup>2</sup>, Min Joo Choi<sup>1</sup> (<sup>1</sup>Jeju Natl. Univ.; <sup>2</sup>Pukyong Natl. Univ.)
- 2P4-9\* **Relationship between a prime mover positioning and a thickness of viscous boundary layer in narrow channel -Study of a coaxial thermoacoustic system-**  
Yukihiro Takeyama<sup>1†</sup>, Shin-ichi Sakamoto<sup>2</sup>, Yoshiaki Watanabe<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Univ. of Shiga Pref.)
- 2P4-10\* **Influence of external heat input by parallel plate fin heat exchanger on sound field of thermoacoustic system**  
Takeru Kawai<sup>†</sup>, Shin-ichi Sakamoto, Yuichiro Orino, Hidekazu Katsuki, Takahiro Wada (Univ. of Shiga Pref.)
- 2P4-11\* **Effect of forced temperature change at thermal buffer tube on sound field in a straight-tube-type thermoacoustic prime mover**  
Takahiro Wada<sup>†</sup>, Shin-ichi Sakamoto, Yuichiro Orino, Toshiya Saito (Univ. of Shiga Pref.)
- 2P5-1\* **Estimation of transmit-receive response of ultrasound system for high range resolution imaging**  
Michiya Mozumi<sup>†</sup>, Hideyuki Hasegawa (Univ. of Toyama)
- 2P5-2\* **Estimation of Pulsation Component to Improve Accuracy in Ultrasonic Measurement of Luminal Surface Roughness of Carotid Artery**  
Akiyoshi Fujiwara<sup>†</sup>, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 2P5-3\* **Fundamental Study on Application of Ultrasonic Computed Tomography in Bone Existing Region**  
Yoshiki Watanabe<sup>†</sup>, Daisuke Kondo, Hirofumi Nakamura, Takashi Azuma (Univ. of Tokyo)
- 2P5-4\* **Quantitative assessment of fat content by ultrasonic velocity change method using a combined ultrasonic probe**  
Yuhei Aotani<sup>1†</sup>, Yuta Kumagai<sup>1</sup>, Masanobu Kameda<sup>1</sup>, Kenji Wada<sup>1</sup>, Toshiyuki Matsunaka<sup>2</sup>, Hiroyasu Morikawa<sup>†</sup>, Hiromichi Horinaka<sup>1</sup> (<sup>1</sup>Univ. of Osaka Pref.; <sup>2</sup>TU Inst. Tech.)
- 2P5-5\* **Detection of unstable vessel plaques using ultrasonic velocity-change imaging under cold exposure**  
Yuta Kumagai<sup>1†</sup>, Yuhei Aotani<sup>1</sup>, Masanobu Kameda<sup>1</sup>, Kenji Wada<sup>1</sup>, Toshiyuki Matsunaka<sup>2</sup>, Hiromichi Horinaka<sup>1</sup> (<sup>1</sup>Univ. of Osaka Pref.; <sup>2</sup>TU Research Lab)
- 2P5-6\* **Experimental Study of Ultrasound Imaging Employing Compressive Sensing**  
Miki Sada<sup>†</sup>, Masayuki Tanabe, Masahiko Nishimoto (Kumamoto Univ.)
- 2P5-7\* **Tissue Characterization of Stools and Gas Using Abdominal Ultrasonography**  
Kanako Tomihara<sup>1†</sup>, Masayuki Tanabe<sup>1</sup>, Junko Yotsuya<sup>2</sup>, Michiaki Takii<sup>3</sup>, Masahiko Nishimoto<sup>1</sup>  
(<sup>1</sup>Kumamoto Univ.; <sup>2</sup>Fukui Univ.; <sup>3</sup>Mishima-Minami Hosp.)

- 2P5-8\*** Visualization of Frequency Dependent Attenuation of Tissue by Phase-Contrast Imaging Based on Ultrasonic Interference Method  
Seiya Ishikura<sup>1†</sup>, Norio Tagawa<sup>1</sup>, Masasumi Yoshizawa<sup>2</sup>, Takasuke Irie<sup>1,3</sup>  
(<sup>1</sup>Tokyo Met. Univ.; <sup>2</sup>Tokyo Met. Coll. Industrial Tech.; <sup>3</sup>Microsonic Co, Ltd.)
- 2P5-9** Super-Resolution Ultrasound Imaging Based on Change of Carrier Frequency and Synthetic Aperture System  
Norio Tagawa<sup>†</sup>, Jing Zhu, Nguyen Chi Hai, Yihsin Ho, Kan Okubo (Tokyo Met. Univ.)
- 2P5-10\*** Reconstruction of Tissue Scatterer Distribution from Ultrasound Echo Bayesian Inference  
Jing Zhu<sup>†</sup>, Atsumi Ubukata, Yihsin Ho, Norio Tagawa (Tokyo Met. Univ.)
- 2P5-11\*** Development of Transducer for Photoacoustic Imaging Employing Sol-Gel Composite Spraying Technique  
Masayuki Tanabe<sup>1†</sup>, Tai-Chien Wu<sup>2</sup>, Makiko Kobayashi<sup>1</sup>, Masahiko Nishimoto<sup>1</sup>, Che-Hua Yang<sup>2</sup>  
(<sup>1</sup>Kumamoto Univ.; <sup>2</sup>Natl. Taipei Univ. of Tech.)
- 2P5-12\*** Quantitative evaluation method of liver fibrosis based on multi-Rayleigh model with number estimation of tissue components in ultrasound B-mode image  
Shohei Mori<sup>1†</sup>, Shinnosuke Hirata<sup>1</sup>, Tadashi Yamaguchi<sup>2</sup>, Hiroyuki Hachiya<sup>1</sup> (<sup>1</sup>Tokyo Tech.; <sup>2</sup>Chiba Univ.)
- 2P5-13\*** Influence on Amplitude Envelope Analysis due to Mixture of Scatterers with Different Acoustic Characteristics  
Masato Sendo<sup>†</sup>, Masaaki Omura, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 2P5-14\*** Assessment of Red Blood Cell Aggregation of Diabetics by Analyzing Ultrasonic Scattering Property  
Hiroki Sakaki<sup>1†</sup>, Mototaka Arakawa<sup>1</sup>, Satoshi Yashiro<sup>2</sup>, Yasushi Ishigaki<sup>2</sup>, Hiroshi Kanai<sup>1</sup>  
(<sup>1</sup>Tohoku Univ.; <sup>2</sup>Iwate Med. Univ.)
- 2P5-15** Theoretical Study on Relationship between Particle Diameter and Peak Frequency in Blood-Mimicking Suspension  
Takayuki Sato<sup>†</sup>, Ken Ikeda (Tokyo Met. Univ.)
- 2P5-16\*** Effect of various parameters on ultrasonic estimation of red blood cell aggregation degree  
Yosuke Hanada<sup>†</sup>, Show Watanabe, Takayuki Sato (Tokyo Met. Univ.)
- 2P5-17\*** Application of annular array in biostructure evaluation by amplitude envelope analysis  
Takeru Mizoguchi<sup>1†</sup>, Kazuki Tamura<sup>1</sup>, Jonathan Mamou<sup>2</sup>, Masaaki Omura<sup>1</sup>, Kazuyo Ito<sup>1</sup>, Kenji Yoshida<sup>1</sup>,  
Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ.; <sup>2</sup>Lizzi Center for Biomedical Eng.)
- 2P5-18\*** Examination of optimal input parameters for evaluation of liver fibrosis based on multi-Rayleigh model  
Chuang Zhang<sup>†</sup>, Shohei Mori, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 2P6-1** A Study in Acoustic Monitoring of Small Change at Sea Bottom  
Hanako Ogasawara<sup>†</sup>, Kazuyosi Mori (Natl. Defense Academy)
- 2P6-2** Band Reject Filter Characteristics of Acoustic Metamaterial in Underwater Multipath Channels  
Jihyun Park<sup>†</sup>, Kyu-Chil Park (Pukyong Natl. Univ.)
- 2P6-3** Noise Directionality Estimated by Using the Ship Track Data in the Southern Sea of Korea  
Ji Sung Park<sup>†</sup>, Donhyug Kang, Sungho Cho, Mira Kim (Korea Inst. of Ocean Sci. and Tech)
- 2P6-4** Spatial Mapping of Underwater Radiated Noise from Passing Vessels Using Automatic Identification System (AIS) data  
Sungho Cho<sup>1†</sup>, Donhyug Kang<sup>1</sup>, Ji Sung Park<sup>1</sup>, Jooyoung Hahn<sup>2</sup>  
(<sup>1</sup>Korea Inst. of Ocean Sci. and Tech; <sup>2</sup>Agency for Defense Dev.)
- 2P6-5** Performance Evaluation of the Rake Receiver in the Underwater Acoustic Communication System  
Kyu-Chil Park<sup>†</sup>, JiHyun Park, Eun Young Lee (Pukyong Natl. Univ.)
- 2P6-6\*** Analysis of effects of multipath signal with nonuniform Doppler shift on vertical underwater acoustic communication  
Mitsuyasu Deguchi<sup>†</sup>, Yukihiro Kida, Yoshitaka Watanabe, Takuya Shimura (JAMSTEC)
- 2P6-7\*** Evaluation of effects of multipath and co-channel interference on time reversal MIMO in underwater acoustic channel  
Yukihiro Kida<sup>†</sup>, Mitsuyasu Deguchi, Takuya Shimura (JAMSTEC)

**16:10-16:55 Biomedical ultrasound II**

**Chair: Tadashi Yamaguchi (Chiba Univ.)**

- 2E3-1\*** **A proposal of compound amplitude envelope statistical analysis model considering low scatterer concentration**  
Kazuki Tamura<sup>1†</sup>, Kenji Yoshida<sup>1</sup>, Hiroyuki Hachiya<sup>2</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ.; <sup>2</sup>Tokyo Tech.)
- 2E3-2\*** **Basic study on improvement of an axial resolution by correcting initial phases of photoacoustic waves in photoacoustic tomography**  
Ryo Nagaoka<sup>†</sup>, Shin Yoshizawa, Shin-ichiro Umemura, Yoshifumi Saijo (Tohoku Univ.)
- 2E3-3** **Basic properties of distal-presented bone-conducted ultrasonic hearing**  
Seiji Nakagawa<sup>†</sup>, Riki Ogino, Gaik Sean Yap, Sho Otsuka (Chiba Univ.)
- 17:00-17:20 Awards Ceremony**
- 18:00-20:00 Banquet**

**Friday, October 27**

**9:30-11:30 Poster Session**

**Chair: Hideyuki Hasegawa (Univ. of Toyama)**

- 3P1-1\*** **Simple and rapid measurement of hypersonic wave velocity by Brillouin scattering method**  
Yoshiaki Shibagaki<sup>1†</sup>, Masahiko Kawabe<sup>1</sup>, Shinji Takayanagi<sup>2</sup>, Takahiko Yanagitani<sup>3</sup>, Masashi Suzuki<sup>3</sup>, Shohei Tokuda<sup>1</sup>, Mami Matsukawa<sup>1</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Nagoya Inst. of Tech.; <sup>3</sup>Waseda Univ.)
- 3P1-2\*** **Film growth of c-axis parallel oriented ZnO films by RF magnetron sputtering for improvement of electromechanical properties**  
Kazuma Mori<sup>1†</sup>, Shinji Takayanagi<sup>2</sup>, Mami Matsukawa<sup>1</sup>, Takahiko Yanagitani<sup>3</sup> (<sup>1</sup>Doshisha Univ.; <sup>2</sup>Nagoya Inst. of Tech.; <sup>3</sup>Waseda Univ.)
- 3P1-3\*** **Control and Optical Visualization of Ultrasonic Propagation in Phononic Crystal**  
Kensuke Manabe<sup>†</sup>, Atsushi Ishikawa, Takefumi Kanda, Kenji Tsuruta (Okayama Univ.)
- 3P1-4\*** **Theoretical modeling and experimental measurement for bandgap control of phononic crystals**  
Takahiro Nishino<sup>†</sup>, Atsushi Ishikawa, Kazuhiro Fujimori, Kenji Tsuruta (Okayama Univ.)
- 3P1-5\*** **Electric field effect on polar nanoregions of uniaxial ferroelectric Sr<sub>x</sub>Ba<sub>1-x</sub>Nb<sub>2</sub>O<sub>6</sub> with weak random fields studied by Brillouin scattering**  
Md Aftabuzzaman<sup>1,2†</sup>, Jan Dec<sup>3</sup>, Wolfgang Kleemann<sup>4</sup>, Seiji Kojima<sup>1</sup> (<sup>1</sup>Univ. of Tsukuba; <sup>2</sup>Pabna Univ. of Sci. and Tech.; <sup>3</sup>Univ. of Silesia; <sup>4</sup>Duisburg-Essen Univ.)
- 3P1-6\*** **Effect of Piezoelectric Powder Phase Permittivity on Pb(Zr, Ti)O<sub>3</sub>/Pb(Zr, Ti)O<sub>3</sub> Thin Films**  
Yuto Kiyota<sup>†</sup>, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 3P1-7\*** **Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub> Based Lead-Free Sol-Gel Composite Ultrasonic Transducers**  
Masaki Yugawa<sup>†</sup>, Tomoya Yamamoto, Makiko Kobayashi (Kumamoto Univ.)
- 3P1-8** **Effect of Na impurity on the elastic constants of Al-5%Mg alloy**  
Kenichi Tanigaki<sup>†</sup>, Keitaro Horikawa, Hidetoshi Kobayashi, Kanta Adachi, Nobutomo Nakamura, Hirotsugu Ogi (Osaka Univ.)
- 3P1-9\*** **Design of phononic metamaterials for the control of gigahertz plate acoustic waves**  
Kentaro Fujita<sup>†</sup>, Motonobu Tomoda, Keisuke Inagaki, Oliver B. Wright, Osamu Matsuda (Hokkaido Univ.)
- 3P1-10** **Liquid, glass and crystalline indomethacin studied by Brillouin scattering**  
Tomohiko Shibata, Seiji Kojima<sup>†</sup> (Univ. of Tsukuba)
- 3P2-1** **Measurement on Ultrasonic Power by Calorimetric Method -Comparison between Saturated and Degassed Water-**  
Takeyoshi Uchida<sup>†</sup>, Masahiro Yoshioka, Youichi Matsuda, Ryuzo Horiuchi (AIST)

- 3P2-2 Estimation of water stress of plants by measurement of diurnal variation of natural frequency of leaves using ordinary CCD camera**  
Motoaki Sano<sup>†</sup>, Chiharu Uchikawa, Yutaka Nakagawa, Takeyuki Ohdaira, Takashi Shirakawa, Tsuneyoshi Sugimoto (Toin Univ. of Yokohama)
- 3P2-3\* Experimental study on the pressure wave propagation in the artificial arterial tree in brain**  
Shinya Shimada<sup>1†</sup>, Fumiaki Iwase<sup>1</sup>, Mami Matsukawa<sup>1</sup>, Pierre-Yves Lagree<sup>2</sup>  
(<sup>1</sup>Doshisha Univ.; <sup>2</sup>Université Pierre et Marie Curie)
- 3P2-4\* Measurement of carotid artery pulse wave by piezoelectric sensor ~ Examination of left / right difference ~**  
Ryo Tsurusaki<sup>1†</sup>, Shinya Shimada<sup>1</sup>, Mami Matsukawa<sup>1</sup>, Yoshinori Okuno<sup>2</sup>, Kozue Saito<sup>2</sup>, Kazuyuki Nagatsuka<sup>2</sup>  
(<sup>1</sup>Doshisha Univ.; <sup>2</sup>Natl. Cerebral and Cardiovascular Center Hosp.)
- 3P2-5\* Non-contact measurement of displacement vector on chest surface by breathing and heartbeat using airborne acoustic image**  
Taiki Hayashi<sup>†</sup>, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 3P2-6\* Study of non-contact measurement of sound speed in incline-sided phantom using pass-through airborne ultrasound**  
Daisuke Hanawa<sup>†</sup>, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 3P2-7\* Relationship between contact force and electrical impedance of bone-conducted sound transducer on human head**  
Satoki Ogiso<sup>†</sup>, Koichi Mizutani, Naoto Wakatsuki, Keiichi Zempo, Yuka Maeda (Univ. of Tsukuba)
- 3P2-8\* Dynamic characterization of amyloid-fibril formation of Amyloid  $\beta$  peptide using total-internal-reflection fluorescence microscopy coupled with quartz-crystal microbalance biosensor**  
Kentaro Noi<sup>†</sup>, Hirotsugu Ogi (Osaka Univ.)
- 3P2-9\* 3D acoustic impedance mapping of cultured biological cells**  
Nur Dalila Binti Jalaluddin<sup>1†</sup>, Rahma Hutami Rahayu<sup>1</sup>, Kyoichi Takanashi<sup>1</sup>, Tomohiro Kawashima<sup>1</sup>, Sachiko Yoshida<sup>1</sup>, Yoshinobu Murakami<sup>1</sup>, Naohiro Hozumi<sup>1</sup>, Kazuto Kobayashi<sup>2</sup>  
(<sup>1</sup>Toyohashi Univ. of Tech.; <sup>2</sup>Honda Electronics.)
- 3P2-10 Harmonic Imaging and Thickness Measurement of Thermal Spray Coating by Immersion Local Resonance**  
Koichiro Kawashima<sup>1†</sup>, Kazunori Sakata<sup>2</sup>, Katsuhiko Hosokawa<sup>2</sup>, Koji Tagomori<sup>2</sup>, Tomoyuki Ishihara<sup>2</sup>  
(<sup>1</sup>Ultrasonic Mat. Diag. Lab.; <sup>2</sup>Fujiki Kosan Co.)
- 3P2-11\* Development of an analytical method of nitropolycyclic aromatic hydrocarbons using ultraviolet-excitation micro-photothermal heterodyne-interferometer**  
Toshihiko Abe<sup>†</sup>, Miki Isoda, Akira Harata (Kyushu Univ.)
- 3P2-12\* Self-shape estimation algorithm for a flexible ultrasonic transducer array probe**  
Yoshiaki Nakajima<sup>†</sup>, Naoki Tomii, Takashi Azuma, Ichiro Sakuma (Univ. of Tokyo)
- 3P2-13 Studies on Stability of Carbon Black Suspensions Probed by Dynamic Ultrasound Scattering Techniques**  
Motoki Ozaki<sup>†</sup>, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 3P2-14 Evaluation of Disturbance by Light Scattering Particles on Sound Field Measurement Based on Laser Deflection**  
Takanobu Kuroyama<sup>1†</sup>, Koichi Mizutani<sup>2</sup> (<sup>1</sup>NIT, Gifu Coll.; <sup>2</sup>Univ. of Tsukuba)
- 3P2-15 Detection of internal defects of concrete by non-contact acoustic inspection method -Evaluation of healthy part of concrete-**  
Kazuko Sugimoto<sup>1†</sup>, Tsuneyoshi Sugimoto<sup>1</sup>, Noriyuki Utagawa<sup>2</sup>, Chitose Kuroda<sup>2</sup>  
(<sup>1</sup>Toin Univ. of Yokohama; <sup>2</sup>Sato Kogyo Co., Ltd.)
- 3P3-1\* PMN paraelectric phase epitaxial film for DC field-induced frequency switchable filter**  
Takahiro Shimidzu<sup>1†</sup>, Kiyotaka Wasa<sup>2</sup>, Takahiko Yanagitani<sup>1,3,4</sup>  
(<sup>1</sup>Waseda Univ.; <sup>2</sup>Yokohama City Univ.; <sup>3</sup>JST PRESTO; <sup>4</sup>ZAIKEN)

- 3P3-2\* **Poling Condition Optimization for  $\text{CaBi}_4\text{Ti}_4\text{O}_{15}$  / $\text{Pb}(\text{Zr,Ti})\text{O}_3$  Sol-Gel Composite**  
 Minori Hুরুkawa<sup>†</sup>, Masaki Yugawa, Tomoya Yamamoto, Hikaru Kouyama,  
 Takao Namihira, Makiko Kobayashi (Kumamoto Univ.)
- 3P3-3\* **Wide-Band and High-Sensitive Ultrasound Transducer Composed of Very Thick PZT Diaphragm**  
 Yuya Ishiguro<sup>†</sup>, Norio Tagawa, Tsuyoshi Okubo (Tokyo Met. Univ.)
- 3P3-4\* **Analysis of the electromechanical characteristics of a piezoelectric multilayered structure for in-air ultrasound radiation**  
 Hayeong Shim<sup>†</sup>, Yongrae Roh (Kyungpook Natl. Univ.)
- 3P3-5\* **Minimization of thickness of ultrasonic transducer by using piezoelectric backing layer**  
 Jiyoung Yeom<sup>1†</sup>, Jungsoon Kim<sup>2</sup>, Kanglyeol Ha<sup>1</sup>, Moojoon Kim<sup>1</sup> (<sup>1</sup>Pukyong Natl. Univ.; <sup>2</sup>Tongmyong Univ.)
- 3P3-6 **Issue in adoption of lumped-parameter circuit for electromechanical coupling phenomenon and its improvement --- Modifying circuit structure**  
 Michio Ohki<sup>†</sup> (Natl. Defense Academy)
- 3P3-7\* **Damage detection of damaged beam using impedance load SAW sensor**  
 Kosuke Nagai<sup>†</sup>, Jun Kondoh (Shizuoka Univ.)
- 3P3-8\* **Fundamental study on self-sensing of piezoelectric manipulator**  
 Kenta Suzuki<sup>1†</sup>, Sze Keat Chee<sup>2</sup>, Takeshi Morita<sup>1</sup> (<sup>1</sup>Univ. of Tokyo; <sup>2</sup>Mechano Transformer Corp.)
- 3P3-9\* **Observation of reflected and transmitted waves caused by acoustic streaming in droplet on SAW devices**  
 Sota Tsunogaya<sup>†</sup>, Jun Kondoh (Shizuoka Univ.)
- 3P3-10 **Numerical Study of Microparticle Separation in a Microfluidic Channel Driven by Surface Acoustic Waves**  
 Yu-Chun Chen<sup>†</sup>, Jin-Chen Hsu (Natl. Yunlin Univ. of Sci. and Tech.)
- 3P4-1\* **Stress dependence of the ultrasonic wave propagation characteristics in silicone rubber subjected to repeated tensile loading**  
 Kenta Imamura<sup>†</sup>, Shiro Biwa (Kyoto Univ.)
- 3P4-2\* **Experiment Evaluation of Velocity Control in Linear Ultrasonic Motor Using a Link Twin Square Plate Vibrator**  
 Takahiro Takaya<sup>†</sup>, Hideki Tamura, Takehiro Takano (Tohoku Inst. of Tech.)
- 3P4-3\* **Influence of Electrode Arrangement in Surface Acoustic Wave Device for UltraSonic Welding by using PZT substrate**  
 Hiroki Nakamura<sup>1†</sup>, Kengo Naruse<sup>2</sup>, Yuji Watanabe<sup>1</sup> (<sup>1</sup>Takushoku Univ.; <sup>2</sup>Seidensha Electronics Co., Ltd.)
- 3P4-4 **Generation of High-Power Ultrasonic Monopole Pulse for Application of Ultrasonic Machining**  
 Sayuri Tarvainen<sup>†</sup>, Guangyuan Wang, Yuji Watanabe (Takushoku Univ.)
- 3P4-5\* **Study on Residual Vibration Control of High Amplitude Ultrasonic Transducer**  
 Guangyuan Wang<sup>†</sup>, Sayuri Tarvainen, Yuji Watanabe (Takushoku Univ.)
- 3P4-6 **Study on Relationship between Acoustic Cavitation Bubbles Behavior and Output Signal from Tough Hydrophone Using High-speed Camera**  
 Nagaya Okada<sup>1†</sup>, Michihisa Shiiba<sup>2</sup>, Shinobu Yamauchi<sup>3</sup>, Toshio Sato<sup>3</sup>, Shinichi Takeuchi<sup>3</sup>  
 (<sup>1</sup>Honda Electronics.; <sup>2</sup>Nihon Inst. of Med. Sci.; <sup>3</sup>Toin Univ. of Yokohama)
- 3P4-7 **Simultaneous recovery and desulfurization of bitumen from oil sand using ultrasound irradiation**  
 Hirokazu Okawa<sup>†</sup>, Wan Mohamad Ikhwan bin Wan Kamal, Nobuyuki Akazawa,  
 Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 3P4-8 **Characterization of an Acoustic Field in Ultrasonic Cleaning Bath**  
 Kazunari Suzuki<sup>†</sup>, Hiroshi Hasegawa (Kaijo Corp.)
- 3P4-9\* **Utilization of Layered Double Hydroxide to Remove Arsenic and Suppress pH Decrement During Ultrasound Oxidation of Arsenious Acid**  
 Yasuyuki Tanaka<sup>†</sup>, Hirokazu Okawa, Yuya Takahashi, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)

- 3P4-10\*** **Comparison of Oxidation Efficiency between Disposal of 2-Deoxyribose Using Ultrasound and Existing Method of Disposing Waste Water**  
Seoyeong Yang<sup>†</sup>, Yunji Lee, Jungha Shim, Young H. Kim (Korea Sci. Academy of KAIST)
- 3P4-11\*** **The Onset Temperature Measurement of the Straight-Tube-Type Thermoacoustic System with Diameter-Expanded Prime Mover: Influence of the Expanded Part Length**  
Kohei Egawa<sup>†</sup>, Shin-ichi Sakamoto, Yuichiro Orino, Yuya Yamaga (Univ. of Shiga Pref.)
- 3P4-12\*** **Comparison of onset temperature by stability analysis and experiment in changing inner diameter expansion position of loop tube type thermoacoustic system**  
Kenshiro Inui<sup>†</sup>, Shin-ichi Sakamoto, Yuichiro Orino, Kohei Egawa, Takahiro Wada, Shintaro Kataoka (Univ. of Shiga Pref.)
- 3P5-1\*** **Echo Simulation Method reflecting the Tissue Structure and Acoustic Characteristics of Skin**  
Masaaki Omura<sup>†</sup>, Masato Sendo, Kenji Yoshida, Shinsuke Akita, Tadashi Yamaguchi (Chiba Univ.)
- 3P5-2\*** **Basic Study on Speed of Sound Analysis in Multi-scale using Hundreds MHz Band Ultrasound**  
Takuya Ogawa<sup>†</sup>, Masaaki Omura, Kazuyo Ito, Kazuki Tamura, Toshiki Matsuzaki, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 3P5-3\*** **Quantitative Monitoring for Cerebellar Abnormal Development of Acoustic Model Animals using Acoustic Impedance Pattern**  
Saki Iwamoto<sup>1†</sup>, Kyoichi Takanashi<sup>1</sup>, Inna Seviaryna<sup>2</sup>, Roman Maev<sup>2</sup>, Kazuto Kobayashi<sup>3</sup>, Naohiro Hozumi<sup>1</sup>, Sachiko Yoshida<sup>1</sup> (<sup>1</sup>Toyohashi Univ. of Tech.; <sup>2</sup>Univ. of Windsor; <sup>3</sup>Honda Electronics.)
- 3P5-4\*** **Quantitative Research of the Effects of Anticancer Drugs on Cultured Breast Cancer Cells Using Ultrasonic Microscope**  
Rahma Hutami Rahayu<sup>1†</sup>, Kyoichi Takanashi<sup>1</sup>, Thomas Tiong Kwong Soon<sup>1</sup>, Inna Seviaryna<sup>2</sup>, Roman Maev<sup>2</sup>, Kazuto Kobayashi<sup>3</sup>, Naohiro Hozumi<sup>1</sup>, Sachiko Yoshida<sup>1</sup> (<sup>1</sup>Toyohashi Univ. of Tech.; <sup>2</sup>Univ. of Windsor; <sup>3</sup>Honda Electronics.)
- 3P5-5\*** **Frequency Characteristics of Vibration Generated by Dual Acoustic Radiation Force for Estimating Viscoelastic Properties of Biological Tissues**  
Ryoichi Watanabe<sup>†</sup>, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 3P5-6\*** **Analysis of 2D motion velocity of common carotid arterial wall by estimation of phase shift and frequency of received ultrasonic echo**  
Akira Miyajo<sup>†</sup>, Hideyuki Hasegawa (Univ. of Toyama)
- 3P5-7\*** **2D motion velocity estimation using beamformed ultrasonic signal in Cartesian coordinate for measurement of cardiac dynamics**  
Kaori Kaburaki<sup>†</sup>, Michiya Mozumi, Hideyuki Hasegawa (Univ. of Toyama)
- 3P5-8** **Novel Estimation Method of Shear Wave Displacement Amplitude excited by Vibrator**  
Yoshiki Yamakoshi<sup>†</sup>, Mayuko Yamazaki, Yoshino Ishimori, Kana Taniuchi (Gunma Univ.)
- 3P5-9\*** **Basic study on estimation of two dimensional wavenumbers using phase of particle velocity**  
Masato Minagawa<sup>1†</sup>, Hideyuki Hasegawa<sup>1</sup>, Tadashi Yamaguchi<sup>2</sup>, Shin-ichi Yagi<sup>3</sup> (<sup>1</sup>Univ. of Toyama; <sup>2</sup>Chiba Univ.; <sup>3</sup>Meisei Univ.)
- 3P5-10** **Investigation on maximum likelihood method for measurement of regional pulse wave velocity**  
Hideyuki Hasegawa<sup>†</sup> (Univ. of Toyama)
- 3P5-11\*** **Ultrasonic Measurement and Analysis of Propagation of Myocardial Contraction Response in Heart Wall**  
Itsuki Kobayashi<sup>†</sup>, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 3P5-12\*** **Analysis of Local Pulse Wave Velocity by Ultrasonic Measurement of Vibrations at Multiple Points on Arterial Wall**  
Mika Ito<sup>†</sup>, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 3P5-13** **Accuracy Improvement in Measurement of Arterial Wall Elasticity by Applying Pulse Inversion to Phased Tracking Method**  
Yukiya Miyachi<sup>1,2†</sup>, Mototaka Arakawa<sup>2</sup>, Hiroshi Kanai<sup>2</sup> (<sup>1</sup>FUJIFILM Corp.; <sup>2</sup>Tohoku Univ.)

- 3P5-14 New Phase Matching Method for Ultrasonic Tissue Displacement Measurement**  
Chikayoshi Sumi<sup>†</sup> (Sophia Univ.)
- 3P5-15\* Analysis Left Ventricle Blood Flow Patterns in Normal Subject by Echodynamography**  
Sri Oktamuliani<sup>†</sup>, Kaoru Hasegawa<sup>2</sup>, Yoshifumi Saijo<sup>1</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Tohoku Pharm. Univ. Hosp.)
- 3P5-16\* Singular value decomposition of received ultrasound signal for separation of blood flow and cavitation**  
Hayato Ikeda<sup>†</sup>, Ryo Nagaoka, Maxime Lafond, Shin Yoshizawa, Ryosuke Iwasaki,  
Moe Maeda, Shin-ichiro Umemura, Yoshihumi Saijo (Tohoku Univ.)
- 3P5-17 3D Blood Flow Vectors Obtained with Multi-Slice Flow Velocity Mapping**  
So Yaegashi<sup>†</sup>, Ryo Nagaoka, Moe Maeda, Sri Oktamuliani, Yoshifumi Saijo (Tohoku Univ.)
- 3P5-18\* Deduction of two-dimensional blood flow vector by dual angle diverging waves from a cardiac sector probe**  
Moe Maeda<sup>†</sup>, Ryo Nagaoka, Hayato Ikeda, So Yaegashi, Yoshifumi Saijo (Tohoku Univ.)
- 3P5-19\* Study on Ultrasonic Measurement of Radial Arterial Pressure and Diameter at the Same Position**  
Kota Kudo<sup>†</sup>, Mototaka Arakawa<sup>1</sup>, Hiroshi Kanai<sup>1</sup>, Kazuto Kobayashi<sup>2</sup> (<sup>1</sup>Tohoku Univ.; <sup>2</sup>Honda Electronics.)
- 3P6-1 The 3rd Sea Trial for Ambient Noise Imaging with Acoustic Lens**  
Kazuyoshi Mori<sup>1</sup>, Hiroyuki Kawahara<sup>1</sup>, Hanako Ogasawara<sup>1</sup>, Takenobu Tsuchiya<sup>2</sup>  
(<sup>1</sup>Natl. Defense Academy; <sup>2</sup>Kanagawa Univ.)
- 3P6-2\* Fundamental Study on Effect of Acoustic Matching Layer on Convex Aspherical Acoustic Lens for Installation in Bow of Small AUV**  
Hiroyuki Kawahara<sup>†</sup>, Hanako Ogasawara, Kazuyoshi Mori (Natl. Defense Academy)
- 3P6-3 Optimal Design of a Sparse Planar Array Transducer for Underwater Vehicles by Inclusion of Crosstalk Effect**  
Yongrae Roh<sup>†</sup>, Muhammad Shakeel Afzal (Kyungpook Natl. Univ.)
- 3P6-4\* Optimal Design of the Structure of an Accelerometer to Maximize the Performance of Underwater Vector Hydrophones**  
Seonghun Pyo<sup>†</sup>, Seongmin Lee, Yongrae Roh (Kyungpook Natl. Univ.)
- 3P6-5\* Advanced study on Self-focusing effect of polarization inverted transmitter with up-chirp signal driving for sub aperture array**  
Kazuki Abukawa<sup>†</sup>, Tomoo Sato<sup>1</sup>, Takenobu Tsuchiya<sup>2</sup>, Nobuyuki Endoh<sup>2</sup>, Sayuri Matsumoto<sup>1</sup>,  
Kageyoshi Katakura<sup>1</sup> (<sup>1</sup>The Port and Airport Res. Inst.; <sup>2</sup>Kanagawa Univ.)
- 3P6-6\* Withdraw**
- 11:30-13:00 LUNCH TIME**
- 13:00-13:50 Plenary Talk III** **Chair: Tsuyoshi Shiina (Kyoto Univ.)**
- 3PL Ultrasonic Tissue Characterization and quantitative diagnosis**  
Hiroyuki Hachiya<sup>†</sup> (Tokyo Tech.)
- 14:00-15:15 Biomedical ultrasound III, High power ultrasound III**  
**Chair: Subaru Kudo (Ishinomaki Senshu Univ.)**
- 3J1-1\* Quantitative elasticity imaging by shear wave speed evaluation using inverse filtering**  
Yasunari Takayama<sup>†</sup>, Kengo Kondo, Takeshi Namita, Makoto Yamakawa, Tsuyoshi Shiina (Kyoto Univ.)
- 3J1-2 Measurement of Internal Temperature in Biological Tissue by Statistical Analysis of Ultrasonic Scattered Echoes**  
Michio Takeuchi<sup>†</sup>, Yuta Matsui<sup>1</sup>, Tatsuro Doi<sup>1</sup>, Yoshiyuki Takano<sup>1</sup>, Hideyuki Hasegawa<sup>2</sup>  
(<sup>1</sup>Tateyama Kagaku Device Tech. Co., Ltd.; <sup>2</sup>Univ. of Toyama)
- 3J1-3\* Quantitative Measurement of Ultrasonic Pressure Field using combination of Optical Method and Nonlinear Acoustic Holography**  
Takuya Nakamura<sup>†</sup>, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)

**3J1-4\*** **The relationship between piezoelectric high power property and linear property**  
Susumu Miyake<sup>1†</sup>, Takashi Kasashima<sup>2</sup>, Masato Yamazaki<sup>2</sup>, Yasuyuki Okimura<sup>2</sup>, Hajime Nagata<sup>3</sup>, Takeshi Morita<sup>1</sup>  
(<sup>1</sup>Univ. of Tokyo; <sup>2</sup>NGK SPARK PLUG Co., Ltd.; <sup>3</sup>Tokyo Univ. of Sci.)

**3J1-5** **Utilization of Carbon Dioxide to Synthesize Large Scorodite Particles under Ultrasound Irradiation**  
Yuya Kitamura<sup>†</sup>, Hirokazu Okawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)

**15:15-16:30** **Ocean acoustics II, Measurement techniques III**

**Chair: Hiroyuki Hachiya (Tokyo Tech.)**

**3J2-1** **Basic Study on Self-focusing Effect of Polarization Inverted Transmitter with Up-chirp Signal Driving for Sub-aperture Array**  
Sayuri Matsumoto<sup>1†</sup>, Kageyoshi Katakura<sup>1</sup>, Takenobu Tsuchiya<sup>2</sup>, Nobuyuki Endoh<sup>2</sup>  
(<sup>1</sup>The Port and Airport Res. Inst.; <sup>2</sup>Kanagawa Univ.)

**3J2-2** **Multiuser communication with moving targets using adaptive time reversal**  
Takuya Shimura<sup>†</sup>, Yukihiro Kida, Mitsuyasu Deguchi, Yoshitaka Watanabe (JAMSTEC)

**3J2-3\*** **Ultrasonic imaging of molten pool configuration using sound velocity compensation**  
Azusa Sugawara<sup>1†</sup>, Takeshi Hoshi<sup>1</sup>, Setsu Yamamoto<sup>1</sup>, Jun Semboshi<sup>1</sup>, Makoto Ochiai<sup>1</sup>,  
Kazufumi Nomura<sup>2</sup>, Satoru Asai<sup>2</sup> (<sup>1</sup>Toshiba; <sup>2</sup>Osaka Univ.)

**3J2-4\*** **Differentiation of C2C12 myoblast cells quantitatively assessed by change in acoustic properties using ultrasound microscopy**  
Kyoichi Takanashi<sup>1†</sup>, Mamoru Washiya<sup>1</sup>, Kazuki Ota<sup>1</sup>, Sachiko Yoshida<sup>1</sup>, Tomohiro Kawashima<sup>1</sup>, Yoshinobu Murakami<sup>1</sup>,  
Naohiro Hozumi<sup>1</sup>, Kazuto Kobayashi<sup>2</sup> (<sup>1</sup>Toyohashi Univ. of Tech.; <sup>2</sup>Honda Electronics.)

**3J2-5\*** **An experimental study on acoustic sensing for occlusion area combining super-directional sound source and super-resolution signal processing**  
Yuya Asakura<sup>†</sup>, Kan Okubo, Norio Tagawa (Tokyo Met. Univ.)

**16:30-16:45** **CLOSING**