

# The 43rd Symposium on Ultrasonic Electronics (USE 2022) Program

○ Speaker

\* Applying to Young Scientists Award

**Monday, November 7**

**10:00-11:15 Poster session**

**Chair: Masashi Suzuki (Univ. Yamanashi)**

- 1Pa1-1\*** Shear moduli of liquid crystalline polymers and relaxation process in poly methyl methacrylate studied by resonant ultrasound spectroscopy  
○Kazushi Fujita, Akira Nagakubo, Hirotsugu Ogi (Osaka Univ.)
- 1Pa1-2** Study of electronic and thermal properties of  $\text{CH}_3\text{NH}_3\text{PbX}_3$  (X = Br, I) single crystals using photoacoustic methods  
○Dong Liu<sup>1</sup>, Hua Li<sup>1</sup>, Yusheng Li<sup>1</sup>, Chao Ding<sup>1</sup>, Taro Toyoda<sup>1</sup>, Koji Miyazaki<sup>2</sup>, Shuzi Hayase<sup>1</sup>, Qing Shen<sup>1</sup>  
(<sup>1</sup>Univ. Electro-Comm., <sup>2</sup>Kyushu Inst. Tech.)
- 1Pa1-3\*** Reconfigurable Waveguide Design in Valley-Topological Phononic Crystal  
○Md. Shuzon Ali, Motoki Kataoka, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 1Pa1-4\*** Simulation of induced potentials in bone under ultrasound irradiation  
○Hidehisa Suzuyama<sup>1</sup>, Taisei Tsubata<sup>1</sup>, Keigo Maehara<sup>1</sup>, Atsushi Hosokawa<sup>2</sup>, Takao Tsuchiya<sup>1</sup>, Ko Chiba<sup>3</sup>, Mami Matsukawa<sup>1</sup> (<sup>1</sup>Doshisha Univ., <sup>2</sup>Natl. Inst. Tech., Akashi Coll., <sup>3</sup>Nagasaki Univ.)
- 1Pa1-5\*** Image denoising in acoustic field microscopy  
○Shubham Kumar Gupta<sup>1</sup>, Azeem Ahmad<sup>2</sup>, Prakhar Kumar<sup>3</sup>, Frank Melandsø<sup>2</sup>, Anowarul Habib<sup>2</sup>  
(<sup>1</sup>Indian Inst. Tech. Guwahati, <sup>2</sup>UiT Arctic Univ. Norway, <sup>3</sup>Indian Inst. Tech. Dhanbad)
- 1Pa2-1\*** Wireless Sensor for Temperature with Asynchronous-Type Ultrasonic Probe  
○Yuki Fujita, Tadashi Ebihara, Naoto Wakatsuki, Yuka Maeda, Koichi Mizutani (Univ. Tsukuba)
- 1Pa2-2\*** Separation method for multipath response in time-of-flight measurement using Doppler effect  
○Atsushi Tsuchiya, Naoto Wakatsuki, Tadashi Ebihara, Keiichi Zempo, Koichi Mizutani (Univ. Tsukuba)
- 1Pa2-3\*** Measurement of 100-MHz SC-cut crystal resonators in liquid using laser speckle interferometer  
○Kengo Hara, Takashi Kobayashi, Sun Yingbo, Yuta Aoki, Yasuaki Watanabe (Tokyo Met. Univ.)
- 1Pa2-4** Evaluation of frequency divider characteristics using QCM oscillator with IoT  
○Yuta Aoki, Keigo Nishioka, Yingbo Sun, Kengo Hara, Yasuaki Watanabe (Tokyo Met. Univ.)
- 1Pa2-5\*** Competition of Particle Dynamics Accompanying Diffusion and Hydrodynamic Velocity Fluctuations Examined by Dynamic Ultrasound Scattering Method  
○Mayuko Hirano, Kana Kitao, Tomohisa Norisuye (Kyoto Inst. Tech.)
- 1Pa2-6\*** Dynamics of Nanoparticles in Concentrated Suspension Examined by Focused-Beam Dynamic Ultrasound Scattering Method  
○Kana Kitao, Misaki Tani, Tomohisa Norisuye (Kyoto Inst. Tech.)
- 1Pa2-7** Defect detection of shotcrete specimen by noncontact acoustic inspection using spatial spectral entropy  
○Kazuko Sugimoto, Tsuneyoshi Sugimoto (Toin Univ. Yokohama)
- 1Pa2-8\*** Fire Damage Diagnosis of Locally Heated Mortar Using Airborne Ultrasound  
○Tomohide Iketani, Kota Kodama, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1Pa2-9\*** Visualization of Leaky Wave Propagation from Thin Metal Plate with Defects by Nonlinear Airborne Ultrasound Excitation  
○Fumiya Hamada, Kyosuke Shimizu, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1Pa3-1** Wireless QCM Hydrogen Sensor with PDMS-microchannel Fabricated by Nanoimprint Lithography  
○Hiroki Ato<sup>1</sup>, Manabu Suzuki<sup>1</sup>, Noriyasu Masumoto<sup>1</sup>, Fumihito Kato<sup>1</sup>, Hirotsugu Ogi<sup>2</sup>  
(<sup>1</sup>Nippon Inst. of Tech., <sup>2</sup>Osaka Univ.)

- 1Pa3-2 Study on Fabrication Process of 10×10 Array High-Frequency Wireless QCM Chip**  
 ○Junki Shinohara<sup>1</sup>, Manabu Yoshino<sup>1</sup>, Manabu Suzuki<sup>1</sup>, Noriyasu Masumoto<sup>1</sup>, Fumihito Kato<sup>1</sup>, Hirotsugu Ogi<sup>2</sup>  
 (<sup>1</sup>Nippon Inst. of Tech., <sup>2</sup>Osaka Univ.)
- 1Pa3-3\* Effects of Au atoms deposition on Pd film for hydrogen gas sensor using wireless and electrodeless quartz crystal resonator**  
 ○Tokiya Matsukura, Lianjie Zhou, Akira Nagakubo, Hirotsugu Ogi (Osaka Univ.)
- 1Pa3-4 PDMS Microchannel QCM Chip Using Embedded Anodized Aluminum Antennas**  
 ○Tomoya Aoki<sup>1</sup>, Yu Qi<sup>1</sup>, Noriyasu Masumoto<sup>1</sup>, Fumihito Kato<sup>1</sup>, Hirotsugu Ogi<sup>2</sup> (<sup>1</sup>Nippon Inst. of Tech., <sup>2</sup>Osaka Univ.)
- 1Pa3-5\* Development of Battery-Free Long-Range Wireless Hydrogen-Gas Sensor Using High-Frequency QCM Resonator**  
 ○Noritsugu Kanto<sup>1</sup>, Zhou Lianjie<sup>1</sup>, Fumihito Kato<sup>2</sup>, Akira Nagakubo<sup>1</sup>, Hirotsugu Ogi<sup>1</sup>  
 (<sup>1</sup>Osaka Univ., <sup>2</sup>Nippon Inst. of Tech.)
- 1Pa4-1\* Effects of the molecular film on a microbubble collapsed by ultrasound irradiation**  
 ○Reina Kobayashi<sup>1</sup>, Daisuke Koyama<sup>1</sup>, Marie Pierre Krafft<sup>2</sup> (<sup>1</sup>Doshisha Univ., <sup>2</sup>Univ. Strasbourg)
- 1Pa4-2\* Examination of aerosol agglomeration using two small aerial ultrasonic sources**  
 ○Yuki Ono, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 1Pa4-3\* Direct observation of aggregation reaction of  $\alpha$ -synuclein under shear stress using total internal reflection fluorescence microscopy with lithium-niobate resonator**  
 ○Kota Chishiro, Lianjie Zhou, Kichitaro Nakajima, Keiichi Yamaguchi, Kensuke Ikenaka, Hideki Mochiduki, Yuji Goto,  
 Hirotsugu Ogi (Osaka Univ.)
- 1Pa4-4\* Effects of the initial concentration of microorganisms on inactivation by ultrasonic cavitation**  
 ○Kei Nishiguchi, Shun Nagaura, Ken Yamamoto (Kansai Univ.)
- 1Pa4-5 Effect of surfactant on detection sensitivity of amyloid fibril seeds under ultrasonic irradiation**  
 ○Kichitaro Nakajima, Hajime Toda, Keiichi Yamaguchi, Kensuke Ikenaka, Hideki Mochizuki, Yuji Goto, Hirotsugu Ogi  
 (Osaka Univ.)
- 1Pa4-6\* Frequency dependence of seed-dependent amyloid formation of  $\beta_2$ -microglobulin under ultrasonic field**  
 ○Kakeru Hanada, Kichitaro Nakajima, Keiichi Yamaguchi, Kensuke Ikenaka, Hideki Mochizuki, Yuji Goto,  
 Hirotsugu Ogi (Osaka Univ.)
- 1Pa5-1 Determination of the acoustic outputs of an ultrasound probe with an oblique beam-axis according to the new JIS (or IEC Standards)**  
 ○Zuojun Wang<sup>1</sup>, Jun Kubota<sup>1,2</sup>, Norio Nakata<sup>1</sup> (<sup>1</sup>Jikei Univ. Sc. Med., <sup>2</sup>Hashimoto Electronic Industry)
- 1Pa5-2\* Ultrasonic Measurement of Carotid Arterial Wall Thickness Applying Accurate Ultrasonic Measurement Method of Carotid Arterial Surface Roughness**  
 ○Yoshifumi Nagai, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 1Pa5-3\* High precision CT image reconstruction using deep learning based ultrasound propagation time estimates**  
 ○Yuki Mimura, Yushi Hayasaka, Hirotaka Yanagida (Yamagata Univ.)
- 1Pa5-4\* Highly accurate estimation of ultrasonic propagation time using deep learning**  
 ○Yushi Hayasaka, Yuki Mimura, Hirotaka Yanagida (Yamagata Univ.)
- 1Pa5-5 Development of efficient method of generating reactive oxygen species by expanding cavitation region using ultrasound focus scanning**  
 ○Shotaro Miyake<sup>1</sup>, Shin-ichiro Umemura<sup>1,2</sup>, Shin Yoshizawa<sup>1,2</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Sonire Therapeutics)
- 1Pa5-6 Numerical Simulation of Piezoelectric Signals Generated in Cancellous Bone by Ultrasound Irradiation: Effect of Microstructure**  
 ○Atsushi Hosokawa (NIT, Akashi Coll.)
- 1Pa5-7 Motion compensation algorithm for stabilization of temporal variation in envelope statistical analysis**  
 ○Masaaki Omura<sup>1</sup>, Michio Takeuchi<sup>2</sup>, Ryo Nagaoka<sup>1</sup>, Hideyuki Hasegawa<sup>1</sup>  
 (<sup>1</sup>Univ. Toyama, <sup>2</sup>Tateyama Kagaku)
- 1Pa5-8 Nakagami shape parameter 2D image for visualization of internal biological tissue heat denatured by radiofrequency ablation**  
 ○Michio Takeuchi<sup>1</sup>, Toshihiko Sakai<sup>1</sup>, Yusuke Oshima<sup>2</sup>, Yasuhiro Kojima<sup>2</sup>, Kenji Mori<sup>2</sup>, Masaaki Omura<sup>3</sup>, Ryo Nagaoka<sup>3</sup>,  
 Hideyuki Hasegawa<sup>3</sup> (<sup>1</sup>Tateyama Kagaku, <sup>2</sup>Japan Lifeline, <sup>3</sup>Univ. Toyama)

- 1Pa5-9\* Basic Study on Frequency Characteristics in Reflected Ultrasound Signal of Lower Limb Edema Using FDTD Method**  
 ○Taiki Godo, Shin-ichi Sakomoto, Masafumi Koshiyama, Eri Ikuta, Yumiko Watanabe (Univ. Shiga Pref.)
- 1Pa5-10\* Dependence of release of liposome included in giant cluster vesicles on microbubble concentration**  
 ○Kota Seo<sup>1</sup>, Yiting Zhang<sup>2,1</sup>, Taro Toyota<sup>2</sup>, Hideki Hayashi<sup>1</sup>, Shinnosuke Hirata<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup>, Kenji Yoshida<sup>1</sup>  
 (<sup>1</sup>Chiba Univ., <sup>2</sup>Univ. Tokyo)
- 11:15-12:35 LUNCH TIME**
- 12:35-12:45 Opening ceremony**
- 12:45-13:35 Plenary Talk I** **Chair: Jun Kondoh (Shizuoka Univ.)**
- 1PL Metamaterial and Topological Physics Approaches for Designing Efficient Acoustic/Elastic Devices**  
 ○Kenji Tsuruta (Okayama Univ.)
- 13:45-15:00 Poster session** **Chair: Kazuyoshi Mori (National Defense Academy)**
- 1Pb1-1\* Propagation properties of longitudinal wave in defect-free multilayer graphene at low temperatures and high magnetic field**  
 ○Kakeru Tojo<sup>1</sup>, Akira Nagakubo<sup>1</sup>, Masamitsu Tachibana<sup>2</sup>, Kensuke Murashima<sup>2</sup>, Mitsuaki Murakami<sup>2</sup>, Hirotsugu Ogi<sup>1</sup>  
 (<sup>1</sup>Osaka Univ., <sup>2</sup>Kaneka)
- 1Pb1-2\* Dielectric properties of multi-layer graphene on LiNbO<sub>3</sub> crystal**  
 ○Shota Tsuru, Yusuke Yamato, Yosuke Nisimura, Yuki Takemoto, Yong Sun (Kyushu Inst. Tech.)
- 1Pb1-3 Examination of vibration sensor using lead-free piezoelectric ceramics**  
 ○Yutaka Doshida, Shengkai Qin (Ashikaga Univ.)
- 1Pb1-4\* Resonance Scattering Analysis of Viscoelastic Particles in suspension using Ultrasonic Spectroscopy Method**  
 ○Kenichiro Ishimoto, Kazuto Tsuji, Tomohisa Norisuye (Kyoto Inst. Tech.)
- 1Pb1-5\* Resistance Effect of LiNbO<sub>3</sub>-Based Sol-Gel Composites on Poling Temperature**  
 ○Naoki Zaito, Naoki Kambayashi, Makiko Kobayashi (Kumamoto Univ.)
- 1Pb2-1\* Distance and Velocity Measurement of Moving Objects Using Digital Acoustic Communication and Basis Expansion Model**  
 ○Kohei Wada, Tadashi Ebihara, Naoto Wakatsuki, Keiichi Zempo, Koichi Mizutani (Univ. Tsukuba)
- 1Pb2-2\* Analysis of reflected ultrasound from road surface and surrounding obstacles**  
 ○Ayane Tanaka, Hiroyuki Hachiya (Tokyo Tech.)
- 1Pb2-3 Real-time monitoring of viscosity in chemical reaction process by EMS system**  
 ○Maiko Hosoda<sup>1</sup>, Yoshikazu Yamakawa<sup>2</sup>, Keiji Sakai<sup>3</sup> (<sup>1</sup>Tokyo Denki Univ., <sup>2</sup>Triple Eye, <sup>3</sup>Univ. Tokyo)
- 1Pb2-4 Ultrasonic power measurement using radiation force balance method with absorbing target for high ultrasonic power**  
 ○Takeyoshi Uchida (AIST)
- 1Pb2-5 3-D FDTD simulation of moving sound source and receiver with directivity**  
 ○Takao Tsuchiya, Yu Teshima, Shizuko Hiryu (Doshisha Univ.)
- 1Pb2-6 Stable modeling of free boundaries of an anisotropic plate resonator in the finite difference time domain method using staggered grid with collocated grid points of velocities**  
 ○Koji Hasegawa, Ryo Kano (Muroran Inst. Tech.)
- 1Pb2-7 Use of deep learning in leaf natural frequency analysis for plant water stress estimation**  
 ○Motoaki Sano, Yutaka Nakagawa, Takashi Shirakawa, Tsuneyoshi Sugimoto (Toin Univ. Yokohama)
- 1Pb2-8\* Fundamental study on DNA denaturation and amplification by vibration**  
 ○Nao Oyama, Tadzunu Suzuki, Seiji Yoneda, Shigeo Yamaguchi (Kanagawa Univ.)
- 1Pb3-1 High sensitive vector measurement of nonlinear harmonic responses in RF SAW/BAW devices**  
 ○Seiya Himata, Tatsuya Omori (Chiba Univ.)

- 1Pb3-2 Vibration Characteristics of the Complex Bar Resonator with Longitudinal-torsional Vibration Converter**  
○Subaru Kudo (Ishinomaki Senshu Univ.)
- 1Pb3-3 Differential Forms for the Application to Electromechanical Coupling Systems**  
○Michio Ohki (Natl. Defense Academy)
- 1Pb3-4\* Underwater Characteristics of a Lead-free BNBT15-BNM Transducer**  
○Yimeng Wang<sup>1</sup>, Deqing Kong<sup>1</sup>, Yutaka Doshida<sup>2</sup>, Minoru Kuribayashi Kurosawa<sup>3</sup>, Manabu Aoyagi<sup>1</sup>  
(<sup>1</sup>Muroran Inst. Tech., <sup>2</sup>Ashikaga Univ., <sup>3</sup>Tokyo Inst. Tech.)
- 1Pb3-5\* Visualization of ultrasonic waves in piezoelectric materials**  
○Komal Agarwal<sup>1</sup>, Syed Asim Hussain Rizvi<sup>2</sup>, Amit Shelke<sup>3</sup>, Frank Melandsø<sup>1</sup>, Anowarul Habib<sup>1</sup>  
(<sup>1</sup>UiT Arctic Univ. Norway, <sup>2</sup>Birla Inst. Tech. Sci., <sup>3</sup>Indian Inst. Tech. Guwahati)
- 1Pb4-1\* Plasma-confined structure for continuous generation of pulsed laser-induced airborne ultrasound**  
○Kota Miyazaki, Koji Aizawa (Kanazawa Inst. Tech.)
- 1Pb4-2 Effects of trapped particle size on acoustic radiation force in standing wave fields**  
○Teruyuki Kozuka<sup>1</sup>, Taisei Okeda<sup>1</sup>, Kyuichi Yasui<sup>2</sup>, Masahiro Toyoda<sup>3</sup>, Shin-ichi Hatanaka<sup>4</sup>  
(<sup>1</sup>Aichi Inst. Tech., <sup>2</sup>AIST, <sup>3</sup>Honda Electronics, <sup>4</sup>Univ. Electro-Comm.)
- 1Pb4-3 Effect of Insertion of an Absorbing Layer on Parametric Ultrasound**  
○Hideyuki Nomura, Takuma Imaizumi (Univ. Electro-Comm.)
- 1Pb4-4\* Basic Investigation of Sound Field Around Head Under Pulse Ultrasound Irradiation**  
○Yuya Ogawa, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1Pb4-5\* Basic Study of Low-frequency Airborne Ultrasonic Emitter with an Annular Piezoelectric Element**  
○Chiharu Asano, Kyosuke Shimizu, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1Pb4-6\* Pilot study of aerial wireless sound sources using parametric loudspeakers**  
○Yohei Iihoshi, Kan Okubo (Tokyo Met. Univ.)
- 1Pb5-1\* Evaluation of Accuracy of Ultrasonic Measurement of Wall Shear Stress at Stenosis by Computational Fluid Dynamics**  
Michiya Mozumi, Masaaki Omura, Ryo Nagaoka, ○Hideyuki Hasegawa (Univ. Toyama)
- 1Pb5-2\* A Preliminary Study to Extend Nyquist Flow Speed of Echocardiography using a Dual-PRF Dealiasing Method**  
○Yuki Okada, Naoya Kanno, Takuro Ishii, Yoshifumi Saijo (Tohoku Univ.)
- 1Pb5-3\* Examination of temperature dependence in speed of sound evaluation of rat organs**  
○Suguru Seto<sup>1</sup>, Kazuki Tamura<sup>2</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup>  
(<sup>1</sup>Chiba Univ., <sup>2</sup>Hamamatsu Univ. Sc. Med.)
- 1Pb5-4\* Improvement of stability of amplitude envelope statistics and discrimination evaluation of multi-components**  
○Yuki Ujihara<sup>1</sup>, Kazuki Tamura<sup>2</sup>, Shohei Mori<sup>3</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup>  
(<sup>1</sup>Chiba Univ., <sup>2</sup>Hamamatsu Univ. Sc. Med., <sup>3</sup>Tohoku Univ.)
- 1Pb5-5\* Verification of Relationship Between Accuracy of Multi-component Evaluation and Scatterer Structure in Amplitude Envelope Statistics**  
○Tingzhen Zhang, Yuki Ujihara, Shinnosuke Hirata, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 1Pb5-6\* Pseudo-transmission imaging of cultured cells by using focused ultrasound reflectometry**  
○Mai Murakami<sup>1</sup>, Yuki Kawaguchi<sup>2</sup>, Fatini Athirah Mohamad Fadzeli<sup>1</sup>, Yuto Isobe<sup>1</sup>, Tomohiro Kawashima<sup>1</sup>, Yoshinobu Murakami<sup>1</sup>, Kazuto Kobayashi<sup>2</sup>, Sachiko Yoshida<sup>1</sup>, Naohiro Hozumi<sup>1</sup>  
(<sup>1</sup>Toyohashi Univ. Tech., <sup>2</sup>Honda Electronics)
- 1Pb5-7\* Intelligibility of bone-conducted speech detected on the scalp**  
○Satoshi Nanri, Sho Otsuka, Seiji Nakagawa (Chiba Univ.)
- 1Pb5-8\* Comparison of damage in vascular endothelial cells surrounded by microbubbles under ultrasound irradiation according to presence condition of the cells**  
○Yoshiki Ito<sup>1</sup>, Shunya Watanabe<sup>1</sup>, Narumi Ogawa<sup>1</sup>, Ayako Noguchi<sup>1</sup>, Yoshitaka Miyamoto<sup>2</sup>, Daiki Omata<sup>3</sup>, Ryo Suzuki<sup>3</sup>, Kohji Masuda<sup>1</sup> (<sup>1</sup>Tokyo Univ. Agri. Tech., <sup>2</sup>Natl. Cent. Child Health Development, <sup>3</sup>Teikyo Univ.)

- 1Pb6-1\* Examination of amplitude and phase fluctuation of reflected waves from the sea surface by impulse response analysis**  
 ○Ai Murata, Hiroyuki Hachiya (Tokyo Inst. Tech.)
- 1Pb6-2\* Detection of Fish Passing Through Narrow Path Using Ultrasound**  
 ○Ryusuke Miyamoto<sup>1</sup>, Takeru Doi<sup>2</sup>, Koichi Mizutani<sup>2</sup>, Naoto Wakatsuki<sup>2</sup>, Tadashi Ebihara<sup>2</sup>, Seiji Akiyama<sup>1</sup>  
 (<sup>1</sup>Tokyo Univ. Marine Sci. Tech., <sup>2</sup>Univ. Tsukuba)
- 1Pb6-3\* Underwater Acoustic Communication between UUV and USV with Large Relative Velocity**  
 ○Naruhiro Iwama<sup>1</sup>, Takaki Yamada<sup>1</sup>, Yukihiko Kida<sup>2</sup>, Mitsuyasu Deguchi<sup>2</sup>, Takuya Shimura<sup>2</sup> (<sup>1</sup>ATLA, <sup>2</sup>JAMSTEC)
- 1Pb6-4\* Simulation of Underwater Acoustic Communications Under Reflective Environment Using a Parabolic Receiver**  
 ○Ryotaro Chinone, Tadashi Ebihara, Yuji Sato, Naoto Wakatsuki, Yuka Maeda, Koichi Mizutani (Univ. Tsukuba)
- 1Pb6-5 A Study of Vertical Sound Profiler Using Doppler Shift at Flow Field**  
 ○Hanako Ogasawara, Masato Yoshiguchi, Takanobu Kuroyama, Kazuyoshi Mori (Natl. Defense Academy)
- 15:10-15:55 Biomedical ultrasound I Chair: Kohji Masuda (Tokyo Univ. Agri.Tech.)**
- 1J1-1 Evaluation of microbubble translation and destruction by contrast enhanced plane wave ultrasound**  
 ○Kenji Yoshida<sup>1</sup>, Masaaki Omura<sup>2</sup>, Shinnosuke Hirata<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>Univ. Toyama)
- 1J1-2 Development of the nanosecond pulsed photoacoustic wave detection system by using optical interferometry**  
 ○Kazuki Tamura<sup>1</sup>, Ken-ya Hashimoto<sup>2</sup>, Sinpei Okawa<sup>1</sup>  
 (<sup>1</sup>Hamamatsu Univ. Sc. Med., <sup>2</sup>Univ. Elec. Sci. Tech. China)
- 1J1-3\* Relationship between MEMS Mirror Angle and Beam Characteristics in High-Speed Scanning Ultrasound Microscopy**  
 ○Michika Yoshida<sup>1</sup>, Kazuto Kobayashi<sup>2</sup>, Yuki Kawaguchi<sup>2</sup>, Takuro Ishii<sup>1</sup>, Yoichi Haga<sup>1</sup>, Yoshifumi Saijo<sup>1</sup>  
 (<sup>1</sup>Tohoku Univ., <sup>2</sup>Honda Electronics)
- 15:55-16:40 High power ultrasound I Chair: Subaru Kudo (Ishinomaki Senshu Univ.)**
- 1J2-1\* Theoretical elucidation of effect of an anisotropy of shell coating ultrasound-contrast-agent on ultrasound propagation**  
 ○Ryoki Kawahata, Tetsuya Kanagawa (Univ. Tsukuba)
- 1J2-2 Aerial ultrasonic source with integrated horns and vibrating plates**  
 ○Hikaru Miura (Nihon Univ.)
- 1J2-3\* Double-Parabolic-Reflector Ultrasonic Transducer with Fluid Medium (Fluid-type DPLUS)**  
 ○Kyohei Yamada, Weiquan Wang, Kang Chen, Susumu Miyake, Takeshi Morita (Univ. Tokyo)
- 16:40-17:25 Measurement techniques I Chair: Yasuaki Watanabe (Tokyo Met. Univ.)**
- 1J3-1\* Microscopic Vibration Measurement with Thermophone and Phase Tracking Method in Air and its Application for Non-Contact Heartbeat Monitoring**  
 ○Yuma Watabe, Shinichi Sasaki, Takaaki Asada (Murata Manufacturing)
- 1J3-2 Creep-Induced Nonlinear Acoustic Change in Nickel-based superalloy, Inconel 718**  
 ○Toshihiro Ohtani<sup>1</sup>, Yutaka Ishii<sup>1</sup>, Masayuki Kamaya<sup>2</sup>, Takayuki Sakakibara<sup>3</sup>, Yutaro Ohta<sup>4</sup>, Keiji Kubushiro<sup>4</sup>  
 (<sup>1</sup>Shonan Inst. Tech., <sup>2</sup>Inst. Nuclear Safety Sys., <sup>3</sup>Chuo Spring, <sup>4</sup>IHI)
- 1J3-3 A Fluid-solid Coupled FIT Simulation for Photoacoustic Wave Propagation and Its Experimental Validation**  
 ○Kazuyuki Nakahata, Miki Akihiro, Taizo Maruyama (Ehime Univ.)
- 17:35- Steering committee meeting**

## Tuesday, November 8

### 9:00-10:00 Ultrasonic properties I • Measurement techniques II

Chair: Hirotsugu Ogi (Osaka Univ.)

- 2E1-1\* **Numerical Study on High Sensitivity Biosensing Scheme Based on Waveguide Phononic Crystal**  
○Wenlou Yuan, Akira Nagakubo, Hirotsugu Ogi (Osaka Univ.)
- 2E1-2\* **Control of guided wave propagation with layered path in a plate**  
○Mingqian Xia, Takaaki Fukuchi, Takahiro Hayashi, Naoki Mori (Osaka Univ.)
- 2E1-3\* **Acoustic Study of Photoresist Films Applied under Various Conditions**  
○Hyelin Kim, Hironori Tohmyoh (Tohoku Univ.)
- 2E1-4\* **Development of Guided Wave Inspection Technique Using Novel FeCo-based Magnetostrictive Material for CFRP Plates**  
○Temuulen Munkhnyam, Kohei Okada, Ryohei Ohwa, Wenxu Sun, Yoshimi Hatsukade (Kindai Univ.)

### 10:10-11:25 Poster session

Chair: Akira Harata (Kyushu Univ.)

- 2Pa1-1\* **Methodology for measuring two-color two-photon photoacoustic spectra of chemical species in liquid solutions.**  
○Shiori Sakurai, Miki Isoda, Akira Harata (Kyushu Univ.)
- 2Pa1-2\* **Resonance and absorption of ultrasonic waves in asymmetric viscoelastic-elastic laminates**  
○Naoki Mori, Takahiro Hayashi (Osaka Univ.)
- 2Pa1-3\* **Ultrasonic Resonance Scattering Analysis of Colloidal Assemblies in Suspension**  
○Mayu Hiromoto, Kenichiro Ishimoto, Kazuto Tsuji, Tomohisa Norisuye (Kyoto Inst. Tech.)
- 2Pa1-4\* **Fabrication and Electrical Properties of (K, Na)Bi<sub>5</sub>Ti<sub>5</sub>O<sub>18</sub> -based Bismuth Layer-structured Ferroelectric Ceramics**  
○Yuki Ninomiya, Yuka Takagi, Hajime Nagata, Tadashi Takenaka (Tokyo Univ. Sci.)
- 2Pa1-5\* **Study on photoacoustic properties of cortical bone and hydroxyapatite pellet**  
○Taishi Hattori, Yuhi Haneda, Yoshihiko Maekawa, Mami Matsukawa (Doshisha Univ.)
- 2Pa2-1\* **Axial Transmission technique for screening bucked shin in a horse leg.**  
○Taisei Tsubata<sup>1</sup>, Hidehisa Suzuyama<sup>1</sup>, Ko Chiba<sup>2</sup>, Hiroshi Mita<sup>3</sup>, Norihisa Tamura<sup>3</sup>, Mami Matsukawa<sup>1</sup>  
(<sup>1</sup>Doshisha Univ., <sup>2</sup>Nagasaki Univ., <sup>3</sup>JRA Equine Res. Inst.)
- 2Pa2-2 **Detection of interface defects in laser-cladding coatings using laser ultrasonic method**  
○Yang Li<sup>1,2</sup>, Shoujian Hou<sup>1</sup>, Yang Zhou<sup>1</sup>, Yun Zou<sup>1</sup> (<sup>1</sup>Zhengzhou Univ., <sup>2</sup>Osaka Univ.)
- 2Pa2-3\* **Viscoelastic analysis of 100-MHz SC-cut QCM method using drop method**  
○Yingbo. Sun, Yudai Maruyama, Yuta Aoki, Kengo Hara, Yasuaki Watanabe (Tokyo Met. Univ.)
- 2Pa2-4\* **A Narrow Pitch Matrix-Type MEMS Microphone Array for Acoustic Localization in Near-Field**  
○Hirofumi Obo, Tadashi Ebihara, Yuka Maeda, Naoto Wakatsuki, Koichi Mizutani (Univ. Tsukuba)
- 2Pa2-5\* **Deep learning-based digital refocusing in acoustic microscope**  
○Himanshu Singh<sup>1</sup>, Kaushik Shukla<sup>2</sup>, Azeem Ahmad<sup>3</sup>, Prakhar Kumar<sup>2</sup>, Frank Melandsø<sup>3</sup>, Anowarul Habib<sup>3</sup>  
(<sup>1</sup>Indian Inst. Tech. Guwahati, <sup>2</sup>Indian Inst. Tech. Dhanbad, <sup>3</sup>UiT Arctic Univ. Norway)
- 2Pa2-6\* **Fundamental Study on 2D Array Transducer for High-Sensitivity 3D Imaging of Creep Damage**  
○Masateru Endo<sup>1</sup>, Kento Isshikida<sup>1</sup>, Takumi Yamada<sup>1</sup>, Iichiro Aizawa<sup>2</sup>, Toshihiro Tsuji<sup>1</sup>, Yoshikazu Ohara<sup>1</sup>,  
Tsuyoshi Mihara<sup>1</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Tohoku Electric Power Engineering & Construction)
- 2Pa2-7\* **Guided Wave Pulse Compression by Airborne Ultrasound Excitation**  
○Kyosuke Shimizu, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 2Pa2-8\* **Dependence of Vibration Direction of Shear Wave in Ultrasonic Transmission Defect Detection**  
○Takeru Doi<sup>1</sup>, Ryusuke Miyamoto<sup>2</sup>, Naoto Wakatsuki<sup>1</sup>, Tadashi Ebihara<sup>1</sup>, Koichi Mizutani<sup>1</sup>  
(<sup>1</sup>Univ. Tsukuba, <sup>2</sup>Tokyo Univ. Marine Sci. Tech.)

- 2Pa2-9\*** **Nondestructive Inspection Using Transient Vibration Excited by Acoustic Radiation Force**  
○Koko Kitamura, Hideyuki Nomura (Univ. Electro-Comm.)
- 2Pa3-1\*** **Analysis of SAW Resonance Properties on Piezoelectric Substrates with Periodic Voids**  
○Takashi Suzuki, Masashi Suzuki, Shoji Kakio (Univ. Yamanashi)
- 2Pa3-2\*** **Analysis of Longitudinal Leaky Surface Acoustic Waves on Piezoelectric Thin Plates Bonded to Diamond Substrate**  
○Naoto Hara<sup>1</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Yasushi Yamamoto<sup>2</sup> (<sup>1</sup>Univ. Yamanashi, <sup>2</sup>Yamamoto-ADEC LLC)
- 2Pa3-3\*** **Resonance Properties of Leaky SAW Harmonics on LiNbO<sub>3</sub>/Quartz Bonded Structures**  
○Hibiki Morita<sup>1</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Jun Mizuno<sup>2</sup> (<sup>1</sup>Univ. Yamanashi, <sup>2</sup>Waseda Univ.)
- 2Pa3-4\*** **LiNbO<sub>3</sub>/Quartz Hetero Acoustic Layer Surface Acoustic Wave Resonator for Wide Band Filter**  
○Yong Guo, Micho Kadota, Shuji Tanaka (Tohoku Univ.)
- 2Pa3-5** **Characteristic Evaluation of Impedance-Loaded SAW Sensor Using Finite Element Method and High Frequency Circuit Simulator**  
Shinji Baba, ○Jun Kondoh (Shizuoka Univ.)
- 2Pa4-1** **Evaluation of generation amount of superoxide anion radicals generated by ultrasonic cavitation in TiO<sub>2</sub> suspension**  
○Jungsoon Kim<sup>1</sup>, Jihee Jung<sup>2</sup>, Moojoon Kim<sup>3</sup> (<sup>1</sup>Tongmyong Univ., <sup>2</sup>GU, <sup>3</sup>Pukyong Natl. Univ.)
- 2Pa4-2** **Effect of gas saturation and sparging on sonochemical oxidation activity in 300 kHz sonoreactors : A comparison of zero-order and first-order kinetics**  
○Seongeun Lee, Iseul Na, Younggyu Son (Kumoh Natl. Inst. Tech.)
- 2Pa4-3** **Geometric optimization in 20kHz probe sonoreactors for the enhancement of sonochemical oxidation activity**  
○Iseul Na, Seongeun Lee, Younggyu Son (Kumoh Natl. Inst. Tech.)
- 2Pa4-4** **The Effect of High Speed Mixing on Sonochemical Oxidation Reactions in a 28 kHz Sonoreactor**  
○Jumin Kang, Bokyung Jun, Younggyu Son (Kumoh Natl. Inst. Tech.)
- 2Pa4-5** **Effect of Ultrasound on Persulfate Activation for the Removal of BPA in 20 kHz Probe Sonoreactors**  
○Bokyung Jun, Jumin Kang, Younggyu Son (Kumoh Natl. Inst. Tech.)
- 2Pa5-1\*** **Improvement of Precision in Strain Rate Measurement Using Spatial Distribution of Envelope of RF Echoes**  
○Yu Obara<sup>1</sup>, Shohei Mori<sup>1</sup>, Masumi Iwai-Takano<sup>2,1</sup>, Mototaka Arakawa<sup>1</sup>, Hiroshi Kanai<sup>1</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Fukushima Med. Univ.)
- 2Pa5-2\*** **Effect of absorption attenuation on backscattering characteristics analysis of scattering media**  
○Hayato Kutsuzawa<sup>1</sup>, Kazane Yagi<sup>1</sup>, Emilie Franceschini<sup>2</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>Aix-Marseille Univ. / CNRS)
- 2Pa5-3\*** **Propagation characteristics of bone-conducted sounds presented to the facial parts assessed by ear-canal sound pressure and head vibration**  
○Ko Uemura, Sho Otsuka, Seiji Nakagawa (Chiba Univ.)
- 2Pa5-4\*** **Preliminary investigation on deep learning for fast adaptive beamforming**  
○Ryuichi Hiki, Michiya Mozumi, Masaaki Omura, Ryo Nagaoka, Hideyuki Hasegawa (Univ. Toyama)
- 2Pa5-5\*** **Evaluation of piezoelectricity in rat cortical bone**  
○Keigo Maehara, Yuhi Haneda, Hidehisa Suzuyama, Mami Matsukawa (Doshisha Univ.)
- 2Pa5-6\*** **Comparative verification of theory and measurement of backscattering coefficient evaluation in media with multiple scatterers**  
○Kazane Yagi<sup>1</sup>, Hayato Kutsuzawa<sup>1</sup>, Emilie Franceschini<sup>2</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>Aix-Marseille Univ. / CNRS)
- 2Pa5-7\*** **Automatic extraction of blood vessel network using image processing based on Hessian matrix in ultrasonic volume**  
○Daijiro Kasahara<sup>1</sup>, Hiromi Iwazaki<sup>1</sup>, Masaki Takei<sup>1</sup>, Takaaki Sugino<sup>2</sup>, Shinya Onogi<sup>2</sup>, Yoshikazu Nakajima<sup>2</sup>, Kohji Masuda<sup>1</sup> (<sup>1</sup>Tokyo Univ. Agri. Tech., <sup>2</sup>Tokyo Med. Dental. Univ.)

- 2Pa5-8\* Study of culture conditions of vascular endothelial cells retained to vascular wall surface with microbubbles by acoustic radiation force**  
 ○Shunya Watanabe<sup>1</sup>, Kota Konishi<sup>1</sup>, Yoshiki Ito<sup>1</sup>, Yoshitaka Miyamoto<sup>2</sup>, Daiki Omata<sup>3</sup>, Ryo Suzuki<sup>3</sup>, Kohji Masuda<sup>1</sup>  
 (<sup>1</sup>Tokyo Univ. Agri. Tech., <sup>2</sup>Natl. Cent. Child Health Development, <sup>3</sup>Teikyo Univ.)
- 2Pa5-9\* Validation of the accuracy of evaluation of the fat component of the DN Model in a multicomponent medium**  
 ○Taisei Higa, Yuki Ujihara, Shinnosuke Hirata, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 2Pa5-10 Characteristics of speech perception of bone-conducted ultrasound presented to the neck and the trunk**  
 ○Seiji Nakagawa, Koichiro Doi, Sho Otsuka (Chiba Univ.)
- 11:25-12:45 LUNCH TIME**
- 12:45-13:35 Plenary Talk II** **Chair: Shoji Kakio (Univ.Yamanashi)**
- 2PL Advances in Development and Applications of Pb-Free Piezoelectric Materials for Transducer Applications**  
 ○Ahmad Safari (Rutgers Univ.)  
 Distinguished Lecturer, IEEE-UFFC Society
- 13:45-15:00 Poster session** **Chair: Ryo Nagaoka (Univ. Toyama)**
- 2Pb1-1\* Piezoelectric Properties of (Li,Mn)-doped Ba(Zr,Ti)O<sub>3</sub>-(Ba,Ca)TiO<sub>3</sub> Lead-free Piezoelectric Ceramics**  
 ○Jiayi Liu, Yuka Takagi, Hajime Nagata (Tokyo Univ. Sci.)
- 2Pb1-2\* Development of a Photoacoustic Spectrometer for Two-Photon Absorption Using a Femtosecond Laser**  
 ○Kazuki Tomimaru, Miki Isoda, Akira Harata (Kyushu Univ.)
- 2Pb1-3 Resonance profiles and complex Fano parameters in a weakly coupled oscillator system with degenerate eigenfrequencies**  
 ○Seiji Mizuno (Hokkaido Univ.)
- 2Pb1-4\* Effect of Electrical Properties on Poling Temperature of Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub>-based Sol-gel Composite**  
 ○Naoki Kambayashi, Naoki Zaito, Makiko Kobayashi (Kumamoto Univ.)
- 2Pb2-1 Local measurement of ultrasonic pulse wave by SPR type sensors**  
 ○Shuto Nakatsuji, Kota Deza, Hayato Ichihashi, Mami Matsukawa (Doshisha Univ.)
- 2Pb2-2 Analysis of behavior of liquid droplets on vertically oscillating substrates**  
 ○Satoshi Ishida<sup>1</sup>, Shujiro Mitani<sup>2</sup>, Keiji Sakai<sup>2</sup> (<sup>1</sup>Nippon Paint Corporate Solutions, <sup>2</sup>Univ. Tokyo)
- 2Pb2-3\* Electrophoretic Mobility Analysis of Submicron-sized Microparticles in Concentrated Suspension Examined by Electrophoretic Ultrasound Scattering Technique**  
 ○Mao Yamada, Tomohisa Norisuye (Kyoto Inst. Tech.)
- 2Pb2-4 Multi-Mode 3D Ultrasonic Phased Array Imaging Method Using Piezoelectric and Laser Ultrasonic System (PLUS)**  
 ○Yoshikazu Ohara<sup>1</sup>, Timothy J. Ulrich<sup>2</sup>, Marcel C. Remillieux<sup>2</sup>, Kosuke Tsunoda<sup>1</sup>, Takumi Yamada<sup>1</sup>, Toshihiro Tsuji<sup>1</sup>, Tsuyoshi Mihara<sup>1</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Los Alamos Natl. Lab.)
- 2Pb2-5 Applying Frequency Compound to Enhance Image Resolution of Single Integrated Irregular-Lens Oscillator**  
 ○Mohd. Syaryadhi, Norio Tagawa (Tokyo Met. Univ.)
- 2Pb2-6\* Three-dimensional numerical analysis of ultrasonic propagation behavior in a powder layer between metals**  
 ○Daichi Tsunaki, Naoki Mori, Takahiro Hayashi (Osaka Univ.)
- 2Pb2-7 Machine learning prediction of initial values of elastic constants in resonant ultrasound spectroscopy**  
 ○Hiroki Fukuda, Akira Nagakubo, Hirotsugu Ogi (Osaka Univ.)
- 2Pb2-8 Non-Adhesive Dry Couplant for Ultrasonic Testing**  
 ○Akiko Hirao, Noriko Yamamoto, Tomio Ono (Toshiba)



- 2Pb2-9 Simulation of Surface Acoustic Wave in Shallow Layer of Heated Mortar Under Multi-frequency Ultrasound Irradiation**  
○Ayumu Osumi, Tomohide Iketani, Youichi Ito (Nihon Univ.)
- 2Pb3-1\* High  $K^2$  SAW device with ScAlN on Diamond**  
○Kohei Hatashita<sup>1</sup>, Toshiki Tsuchiya<sup>1</sup>, Masaya Okazaki<sup>1</sup>, Marin Nakano<sup>1</sup>, Sri A. Anggraini<sup>2</sup>, Kenji Hirata<sup>2</sup>, Shinya Ohmagari<sup>2</sup>, Masato Uehara<sup>2</sup>, Hiroshi Yamada<sup>2</sup>, Morito Akiyama<sup>2</sup>, Shinichi Shikata<sup>1</sup> (<sup>1</sup>Kwansei Gakuin Univ., <sup>2</sup>AIST)
- 2Pb3-2\* Resonance Properties of Shear-Horizontal Surface Acoustic Wave on  $\text{Ca}_3\text{TaGa}_3\text{Si}_2\text{O}_{14}$  at High Temperature**  
○Ryoto Suzuki<sup>1</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Noritoshi Kimura<sup>2</sup> (<sup>1</sup>Univ. Yamanashi, <sup>2</sup>Piezo Studio)
- 2Pb3-3\* Analysis of Longitudinal Leaky SAWs on Bonded Structures Consisting of Similar and Dissimilar Materials**  
○Yudai Fujii, Masashi Suzuki, Shoji Kakio (Univ. Yamanashi)
- 2Pb4-1\* Topology optimization of large ultrasonic tools for uniform vibration**  
○Yuji Wada, Kentaro Nakamura (Tokyo Inst. Tech.)
- 2Pb4-2 Frequency optimization according to various parameter changes in acoustic metamaterial cavity**  
○Kyu-Chil Park, Hyunsoo Jeong, Jihyun Park (Pukyong Natl. Univ.)
- 2Pb4-3\* Acoustic Underwater Propulsion System via a  $36^\circ$  Y-cut LN Thickness-vibration-mode Transducer**  
○Takumi Hirata<sup>1</sup>, Deqing Kong<sup>1</sup>, Fei Li<sup>2</sup>, Minoru Kurosawa<sup>3</sup>, Manabu Aoyagi<sup>1</sup> (<sup>1</sup>Muroran Inst. Tech., <sup>2</sup>Shenzhen Inst. Adv. Tech., Chinese Academy Sci., <sup>3</sup>Tokyo Inst. Tech.)
- 2Pb4-4\* Sound field between an object and a thin ultrasound touchless sensor using flexural vibration**  
○Natsumi Nakaoka, Eimei Yamamoto, Daisuke Koyama (Doshisha Univ.)
- 2Pb4-5 Optimization of the thin waveguide for double-parabolic-reflectors ultrasonic transducers (DPLUS) for minimally invasive thermal treatments**  
○Kang Chen<sup>1</sup>, Takasuke Irie<sup>2</sup>, Takashi Iijima<sup>3</sup>, Susumu Miyake<sup>1</sup>, Takeshi Morita<sup>1</sup> (<sup>1</sup>Univ. Tokyo, <sup>2</sup>Microsonic, <sup>3</sup>AIST)
- 2Pb4-6\* A multimodal double-parabolic-reflectors transducer for dual-frequency ultrasound**  
○Fangyi Wang, Kyohei Yamada, Susumu Miyake, Takeshi Morita (Univ. Tokyo)
- 2Pb5-1\* Simulation verification of influence of biological tissue structure on shear wave velocity evaluation**  
○Kodai Osato<sup>1</sup>, Takuma Oguri<sup>2</sup>, Naohisa Kamiyama<sup>2</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>GE Healthcare)
- 2Pb5-2 Investigation on effects from sub-aperture overlapping ratio for adaptive beamforming**  
○Ryo Nagaoka, Masaaki Omura, Hideyuki Hasegawa (Univ. Toyama)
- 2Pb5-3\* Effect of amplitude-envelope statistics of ultrasonic image on CNN classification of liver fibrosis stages**  
○Akiho Isshiki<sup>1</sup>, Dar-In Tai<sup>2</sup>, Po-Hsiang Tsui<sup>2</sup>, Kenji Yoshida<sup>1</sup>, Tadashi Yamaguchi<sup>1</sup>, Shinnosuke Hirata<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>Chang Gung Univ.)
- 2Pb5-4\* Compressed Sensing for Faster Optical-resolution Photoacoustic Microscopy: A Simulation Framework**  
○I Gede Eka Sulistyawan, Daisuke Nishimae, Takuro Ishii, Yoshifumi Saijo (Tohoku Univ.)
- 2Pb5-5\* Basic study about detection of vascular channels in contrast-enhanced ultrasound images obtained by two-dimensional array probe**  
○Rentaro Fukuchi, Kenji Yoshida, Tadashi Yamaguchi, Shinnosuke Hirata (Chiba Univ.)
- 2Pb5-6\* Acoustic field simulation for bending thin catheter considering reflection in enclosed space**  
○Yuki Ichikawa, Arata Ogawa, Miyu Ito, Kohji Masuda (Tokyo Univ. Agri. Tech.)
- 2Pb5-7\* Piezoelectric-based compact transducer for low-frequency ultrasound enhanced transdermal drug delivery**  
○Keita Tomioka, Shinya Yamamoto, Naohiro Sugita, Tadahiko Shinshi (Tokyo Inst. Tech.)
- 2Pb5-8\* Three-dimensional evaluation of tissue degeneration derived from muscle diseases using acoustic impedance as an indicator**  
○Akira Hashimoto<sup>1</sup>, Shinnosuke Hirata<sup>1</sup>, Kenji Yoshida<sup>1</sup>, Hitoshi Maruyama<sup>2</sup>, Tadashi Yamaguchi<sup>1</sup> (<sup>1</sup>Chiba Univ., <sup>2</sup>Juntendo Univ.)

- 2Pb6-1\* A Basic Study of Bio-mimic Pulse Train Generation for Underwater Acoustic Localization**  
 ○Eri Sato, Shota Urakawa, Takanobu Kuroyama, Hanako Ogasawara, Kazuyoshi Mori (Natl.Defense Academy)
- 2Pb6-2\* Verified the acoustic characteristics of the audible area of marine mammals based on the ships noise measured by the hydrophone installed in the sea**  
 ○Chika Yamada, Toshio Tsuchiya, Etsuro Shimizu (Tokyo Univ. Marine Sci. Tech.)
- 2Pb6-3 Design and Focusing Characteristic of Wide-angle and Thin Acoustic lens**  
 ○Yuji Sato, Tadashi Ebihara, Shoko Tanabe, Koichi Mizutani, Naoto Wakatsuki (Univ. Tsukuba)
- 2Pb6-4 The performance of channel adaptive full duplex OFDM using PN pilot signal in underwater frequency selective channel**  
 ○Jeongmin Kim, Soyoun Choe, Hyein Cho, Kyu-Chil Park, Jihyun Park (Pukyong Natl. Univ.)
- 2Pb6-5 Acoustic Ranging Using Acoustic Cavitation Noise**  
 ○Takanobu Kuroyama, Hanako Ogasawara, Kazuyoshi Mori (Natl.Defense Academy)

**15:10-16:10 Piezoelectric devices I • High power ultrasound II**

**Chair: Makiko Kobayashi (Kumamoto Univ.)**

- 2E2-1\* High-Frequency SH<sub>1</sub> Mode Plate Wave Resonator on LiTaO<sub>3</sub> Using Aluminum as Backside Electrode**  
 ○Ferriady Setiawan, Michio Kadota, Shuji Tanaka (Tohoku Univ.)
- 2E2-2\*  $k_{\text{eff}}^2$ -E hysteresis curve of ferroelectric ScAlN thin film**  
 ○Naoki Ishii<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4</sup> (<sup>1</sup>Waseda Univ., <sup>2</sup>ZAIKEN, <sup>3</sup>JST-CREST, <sup>4</sup>JST-FOREST)
- 2E2-3 Effect of dynamic behavior of single-bubble on acoustic emission spectra**  
 ○Hyang-Bok Lee<sup>1</sup>, Pak-Kon Choi<sup>2</sup> (<sup>1</sup>Japan Women's Univ., <sup>2</sup>Meiji Univ.)
- 2E2-4\* Board-mounted ultrasonic variable-focus liquid crystal lens**  
 ○Yuma Kuroda<sup>1</sup>, Yuki Harada<sup>1</sup>, Jessica Onaka<sup>1</sup>, Akira Emoto<sup>2</sup>, Mami Matsukawa<sup>1</sup>, Daisuke Koyama<sup>1</sup>  
 (<sup>1</sup>Doshisha Univ., <sup>2</sup>Tokushima Univ.)

**16:10-17:10 Biomedical ultrasound II • Ocean acoustics I**

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

- 2E3-1 First Human Experience with Acoustically Stimulated Electromagnetic (ASEM) Signal Measurement of Bone**  
 ○Kazuyo Ito<sup>1</sup>, Yuki Sakakura<sup>1</sup>, Nobuo Niimi<sup>1</sup>, Masato Mori<sup>2</sup>, Nobuto Kaitoh<sup>1</sup>, Kenji Ikushima<sup>1</sup>  
 (<sup>1</sup>Tokyo Univ. Agri. Tech., <sup>2</sup>Nippon Sigmax)
- 2E3-2 Examination of statistical limitation in statistics evaluation of ultrasound echo envelope amplitudes**  
 ○Shohei Mori<sup>1</sup>, Mototaka Arakawa<sup>1</sup>, Hiroshi Kanai<sup>1</sup>, Hiroyuki Hachiya<sup>2</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Tokyo Inst. Tech.)
- 2E3-3 Underwater acoustic communication performance of space-frequency diversity applying maximum ration combining with maximum likelihood estimation in time varying fading channel by the movement of underwater vehicle**  
 ○Jihyun Park<sup>1</sup>, Chaehui Lee<sup>2</sup> (<sup>1</sup>Pukyong Natl. Univ., <sup>2</sup>Ocenaplan)
- 2E3-4 An experiment of 400 kbps • km class underwater acoustic MIMO communication in shallow sea**  
 ○Yukihiro Kida, Mitsuyasu Deguchi, Takuya Shimura (JAMSTEC)

**17:10-17:35 Award ceremony**

**9:00-10:00 Piezoelectric devices II • Ocean acoustics II**

**Chair: Takahiko Yanagitani (Waseda Univ.)**

- 3J1-1\*** Fabrication and evaluation of high-order mode solid mounted resonators with polarity inverted GeAlN/AlN multilayered films  
○Jun Sekimoto, Masashi Suzuki, Shoji Kakio (Univ. Yamanashi)
- 3J1-2** Fundamental study of nondestructive testing of inner surface of stainless-steel tubings by ball SAW trace moisture sensor  
○Toshihiro Tsuji<sup>1</sup>, Hideyuki Fukushi<sup>2</sup>, Toru Oizumi<sup>2</sup>, Nobuo Takeda<sup>2</sup>, Takamitsu Iwaya<sup>2</sup>, Shingo Akao<sup>2</sup>, Yusuke Tsukahara<sup>2</sup>, Kazushi Yamanaka<sup>2</sup>, Yoshikazu Ohara<sup>1</sup>, Tsuyoshi Mihara<sup>3</sup>  
(<sup>1</sup>Tohoku Univ., <sup>2</sup>Ball Wave, <sup>3</sup>Shimane Univ.)
- 3J1-3** Effectiveness on Perturbation Analysis of 2nd Order Nonlinearity for RF Bulk Acoustic Wave Devices  
○Masanori Ueda<sup>1</sup>, Toshio Nishizawa<sup>1</sup>, Shinji Taniguchi<sup>2</sup>, Ken-ya Hashimoto<sup>3</sup>  
(<sup>1</sup>Taiyo Yuden Mobile Technologies, <sup>2</sup>Taiyo Yuden, <sup>3</sup>Univ. Elec. Sci. Tech. China)
- 3J1-4** Detection of acoustic signals associated with the eruption of a submarine volcano at “Fukutoku-Oka-No-Ba” in the southern Bonin Arc using cabled ocean bottom seismometers along the Japan Trench  
○Ryoichi Iwase (JAMSTEC)

**10:10-11:25 Poster session**

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

- 3Pa1-1** Development of viscosity measurement method in ultra-low shear rate  
○Mika Iga<sup>1</sup>, Satoshi Ishida<sup>1</sup>, Keiji Sakai<sup>2</sup> (<sup>1</sup>Nippon Paint Corporate Solutions, <sup>2</sup>Univ. Tokyo)
- 3Pa1-2** Temporal wave control using a Shive wave machine  
○Motonobu Tomoda, Tetsu Omiya, Hayato Takeda, Osamu Matsuda, Oliver B. Wright (Hokkaido Univ.)
- 3Pa1-3\*** Higher-order Band Control and Topological Elastic Waveguide Design using Resonant-type Phononic Crystals  
○Yuito Ohashi, Motoki Kataoka, Hiroaki Takeshita, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 3Pa1-4\*** Ultrasonic focusing by designing a stacked thin plate region  
○Takaaki Fukuchi, Takahiro Hayashi, Naoki Mori (Osaka Univ.)
- 3Pa1-5\*** Wave propagation in anisotropic crystal using point contact excitation and detection method  
○Varun Bhardwaj<sup>1</sup>, Kaushik Shukla<sup>2</sup>, Frank Melandsø<sup>3</sup>, Anwarul Habib<sup>3</sup>  
(<sup>1</sup>Indian Inst. Tech. Guwahati, <sup>2</sup>Indian Inst. Tech. Dhanbad, <sup>3</sup>UiT Arctic Univ. Norway)
- 3Pa2-1** High Precision Headspace Gas Analysis Using Portable Ball SAW Gas Chromatograph  
○Takamitsu Iwaya<sup>1</sup>, Shingo Akao<sup>1</sup>, Tatsuhiro Okano<sup>1</sup>, Nobuo Takeda<sup>1</sup>, Yusuke Tsukahara<sup>1</sup>, Toru Oizumi<sup>1</sup>, Hideyuki Fukushi<sup>1</sup>, Tomoki Tanaka<sup>1</sup>, Maki Sugawara<sup>1</sup>, Toshihiro Tsuji<sup>2,1</sup>, Akinobu Takeda<sup>1</sup>, Kazushi Yamanaka<sup>1,2</sup>  
(<sup>1</sup>Ball Wave, <sup>2</sup>Tohoku Univ.)
- 3Pa2-2** Quantitative Analysis of Beer Aroma Using Ball SAW Gas Chromatograph  
○Shingo Akao<sup>1</sup>, Takamitsu Iwaya<sup>1</sup>, Tatsuhiro Okano<sup>1</sup>, Nobuo Takeda<sup>1</sup>, Yusuke Tsukahara<sup>1</sup>, Toru Oizumi<sup>1</sup>, Hideyuki Fukushi<sup>1</sup>, Tomoki Tanaka<sup>1</sup>, Maki Sugawara<sup>1</sup>, Toshihiro Tsuji<sup>2,1</sup>, Akinobu Takeda<sup>1</sup>, Kazushi Yamanaka<sup>1,2</sup>  
(<sup>1</sup>Ball Wave, <sup>2</sup>Tohoku Univ.)
- 3Pa2-3\*** Wide-Area Obstacle Position Estimation Using Air-coupled Ultrasonic Sensor Arrays  
○Asuka Tsujii<sup>1,2</sup>, Takashi Kasashima<sup>1</sup>, Yasuyuki Okimura<sup>1</sup>, Hiroyuki Hatano<sup>3</sup>, Takaya Yamazato<sup>2</sup>  
(<sup>1</sup>NGK SPARK PLUG, <sup>2</sup>Nagoya Univ., <sup>3</sup>Mie Univ.)
- 3Pa2-4\*** Measurement of Work Material Edge Position in Press Working Using Surface Waves  
○Wenke Hu, Eikou Nakazawa, Jie Zheng, Norio Tagawa, Ming Yang (Tokyo Met. Univ.)
- 3Pa2-5** Investigation on Shape of Driving Signal to Improve Results of Reflection Point Search using Rectangular Sound Source  
○Hiroyuki Masuyama (NIT, Toba College)

- 3Pa2-6 Vibration Measurement using Digital Image Correlation Method: A Depth Estimation with Linear Regression Models**  
○Dai Chimura (KUMAGAIGUMI)
- 3Pa2-7\* Three-dimensional analysis of reflection characteristics of Lamb waves at an adhesively bonded stiffener in a plate**  
○Junya Toyota, Naoki Mori, Takahiro Hayashi (Osaka Univ.)
- 3Pa2-8\* Energy trapping of in-plane vibration in a hollow cylinder with a circumferential groove on the inner surface**  
○Yuma Iiboshi, Takahiro Hayashi, Naoki Mori (Osaka Univ.)
- 3Pa2-9 Study of classification of guided wave propagating in cylindrical pipe**  
○Harumichi Sato (AIST)
- 3Pa3-1 Piezoelectric characteristics of c-axis oriented GeAlN films and applications to polarity inverted film HBARs**  
○Masashi Suzuki, Jun Sekimoto, Shoji Kakio (Univ. Yamanashi)
- 3Pa3-2 4 GHz Solidly Mounted Thickness Extension Mode Bulk Acoustic Wave Resonator using 36°Y LiNbO<sub>3</sub>**  
○Micho Kadota, Fuyuko Yamashita, Shuji Tanaka (Tohoku Univ.)
- 3Pa3-3\* Evaluation of Ta<sub>2</sub>O<sub>5</sub> Piezoelectric Thin Film Prepared on Pt/Si Substrate at Low Deposition Rate**  
○Keisuke Matsuura<sup>1</sup>, Masashi Suzuki<sup>1</sup>, Shoji Kakio<sup>1</sup>, Masanori Kodera<sup>2</sup>, Hiroshi Funakubo<sup>2</sup>  
(<sup>1</sup>Univ. Yamanashi, <sup>2</sup>Tokyo Inst. Tech.)
- 3Pa3-4\* Thickness shear mode BAW resonator based on epitaxial (10 $\bar{1}$ 2) LiNbO<sub>3</sub> / (11 $\bar{2}$ 0) AZO / (10 $\bar{1}$ 2) Al<sub>2</sub>O<sub>3</sub>**  
○Shinya Kudo<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4</sup> (<sup>1</sup>Waseda Univ., <sup>2</sup>ZAIKEN, <sup>3</sup>JST-CREST, <sup>4</sup>JST-FOREST)
- 3Pa3-5\* Quasi-shear mode excitation of c-axis tilted MgZnO epitaxial thin film**  
○Hiroki Kishi<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4</sup> (<sup>1</sup>Waseda Univ., <sup>2</sup>ZAIKEN, <sup>3</sup>JST-CREST, <sup>4</sup>JST-FOREST)
- 3Pa4-1\* Ultrasound-assisted oxidative desulfurization of bitumen and analysis of sulfur forms in the treated bitumen**  
○Yoshitaka Wakisaka, Hirokazu Okawa, Takahiro Kato (Akita Univ.)
- 3Pa4-2 Bubble cavitation generation near the blood vessel wall by amplitude-modulated wave irradiation**  
○Ren Koda, Taichi Mukai, Yoshiki Yamakoshi (Gunma Univ.)
- 3Pa4-3\* A Physico-mathematical Model for Nonlinear Acoustics of Multiple Ultrasound Contrast Agents with Buckling and Rupture of Membrane**  
○Quoc Nguyen Nam, Tetsuya Kanagawa (Univ. Tsukuba)
- 3Pa4-4\* Effect of medal-shaped PAs on the oscillation conditions of a thermoacoustic prime mover using stability analysis.**  
○Takumi Matsumoto, Shin-ichi Sakamoto (Univ. Shiga Pref.)
- 3Pa4-5\* Effect of stack length variation on heat flow for miniaturization of thermoacoustic system**  
○Satoru Ono, Shin-ichi Sakamoto (Univ. Shiga Pref.)
- 3Pa4-6 Fundamental Study on Stack Characteristics in Standing Wave Sound Field in a Thermoacoustic Heat Pump**  
○Shin-ichi Sakamoto, Toshiki Nakazawa, Teruya Shichiri, Satoru Ono, Tsuyoshi Akiyama (Univ. Shiga Pref.)
- 3Pa5-1\* Synthetic aperture imaging with numerical simulation of propagation delay time of transmitted wave**  
○Kotaro Sugioka, Michiya Mozumi, Masaaki Omura, Ryo Nagaoka, Hideyuki Hasegawa (Univ. Toyama)
- 3Pa5-2\* Occlusion effects by bone-conducted sound to the facial parts assessed by hearing threshold and ear-canal sound pressure measurements**  
○Asuka Miwa, Sho Otsuka, Seiji Nakagawa (Chiba Univ.)
- 3Pa5-3\* Basic study about microbubble localization in contrast-enhanced ultrasound**  
○Yuki Hagihara, Kenji Yoshida, Tadashi Yamaguchi, Shinnosuke Hirata (Chiba Univ.)
- 3Pa5-4\* Basic study on a method for extracting cavitation bubble region in ultrasound imaging by triplet pulse sequence**  
○Shota kuji<sup>1</sup>, Shin-ichiro Umemura<sup>1,2</sup>, Shin Yoshizawa<sup>1,2</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>SONIRE Therapeutics)

- 3Pa5-5\* A Basic Study on Effect of Shielding Objects on Focused Ultrasound Treatment by Acoustic Radiation Force Imaging**  
 ○Erika Numahata<sup>1</sup>, Shin Yoshizawa<sup>1,2</sup>, Shin-ichiro Umemura<sup>1,2</sup>, Takuro Ishii<sup>1</sup>, Yoshifumi Saijo<sup>1</sup>  
 (<sup>1</sup>Tohoku Univ., <sup>2</sup>SONIRE Therapeutics)
- 3Pa5-6 Experimental investigation on effect of focal scanning in ultrasound propagation direction on bubble and coagulation regions in bubble-enhanced ultrasonic heating**  
 ○Sota Kannoto<sup>1</sup>, Shin Yoshizawa<sup>1,2</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>SONIRE Therapeutics)
- 3Pa5-7 3D Modeling of Coronary Lumen Structure by IoU Optimization in Deep Neural Network**  
 ○Takashi Orihara<sup>1</sup>, Naoya Kanno<sup>1</sup>, Hiroyuki Yagami<sup>1</sup>, Koichi Ito<sup>1</sup>, Takuro Ishii<sup>1</sup>, Masanori Kawasaki<sup>2</sup>, Munenori Okubo<sup>2</sup>,  
 Hitoshi Matsuo<sup>2</sup>, Yoshifumi Saijo<sup>1</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>Gifu Heart Center)
- 3Pa5-8 Theoretical verification of ultrasonic peak-frequency shift during red-blood-cell-aggregation-degree measurement**  
 ○Mayu Hatakeyama, Keisuke Nabuchi, Takayuki Sato (Tokyo Met. Univ.)
- 3Pa5-9\* Removal of beam directional displacement caused by blood vessel pulsation for ultrasonic roughness measurement on luminal surface of carotid artery**  
 ○Ryota Yamane<sup>1</sup>, Shohei Mori<sup>1</sup>, Mototaka Arakawa<sup>1</sup>, Jens E. Wilhjelm<sup>2</sup>, Hiroshi Kanai<sup>1</sup>  
 (<sup>1</sup>Tohoku Univ., <sup>2</sup>Kongens Lyngby)
- 3Pa5-10\* Examination of change in arterial wall viscoelasticity by internal pressure in ultrasonic measurement**  
 ○Saki Suzuki<sup>1</sup>, Shohei Mori<sup>1</sup>, Masumi Iwai-Takano<sup>2,1</sup>, Mototaka Arakawa<sup>1</sup>, Hiroshi Kanai<sup>1</sup>  
 (<sup>1</sup>Tohoku Univ., <sup>2</sup>Fukushima Med. Univ.)
- 3Pa5-11\* Two-dimensional displacement estimation using received time distribution of scattered wave on elements in ultrasonic probe**  
 ○Kaisei Hara, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 11:25-12:45 LUNCH TIME**
- 12:45-13:35 Plenary Talk III** **Chair: Hideyuki Hasegawa (Univ. Toyama)**
- 3PL Acoustically induced electric and magnetic polarization and its sensing applications**  
 ○ Kenji Ikushima (Tokyo Univ. Agri.Tech.)
- 13:45-15:00 Poster session** **Chair: Shohei Mori (Tohoku Univ.)**
- 3Pb1-1\* Design of Topological Phononic Structure and Application to Thin Plate Elastic wave**  
 ○Motoki Kataoka, Yuito Ohashi, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 3Pb1-2\* Effect of particle irradiation direction in magnetron sputtering on piezoelectricity of c-axis parallel oriented ZnO films**  
 ○Naoki Tomiyama<sup>1</sup>, Shinji Takayanagi<sup>1</sup>, Takahiko Yanagitan<sup>2</sup> (<sup>1</sup>Doshisha Univ., <sup>2</sup>Waseda Univ.)
- 3Pb1-3 Measurement of Acoustic Properties for Liquid Metal Couplers with Low Melting Point and High Acoustic Impedance**  
 ○Yuji Ohashi<sup>1</sup>, Rikito Murakami<sup>1</sup>, Hiroaki Yamaguchi<sup>2</sup>, Yuui Yokota<sup>1</sup>, Akira Yoshikawa<sup>1,2</sup> (<sup>1</sup>Tohoku Univ., <sup>2</sup>C&A)
- 3Pb1-4 Brillouin Scattering Study of Ferroelectric Instability of Calcium Strontium Barium Niobate Crystals**  
 ○Seiji Kojima<sup>1</sup>, Md Aftabuzzaman<sup>1,2</sup>, Jan Dec<sup>3</sup>, Wolfgang Kleemann<sup>4</sup>  
 (<sup>1</sup>Univ. Tsukuba, <sup>2</sup>Pabna Univ. Sci. Tech., <sup>3</sup>Univ. Silesia, <sup>4</sup>Duisburg-Essen Univ.)
- 3Pb2-1\* Evaluation of velocity anisotropy of cortical bone of hyperglycemic rat using a micro-Brillouin scattering technique**  
 ○Yuhi Haneda, Taishi Hattori, Keigo Maehara, Mami Matsukawa (Doshisha Univ.)
- 3Pb2-2\* 3D Ultrasonic Imaging of Small Defects Using High-Frequency Piezoelectric Transmitter and Ultra-Multiple Laser 2D Scanning**  
 ○Takumi Yamada<sup>1</sup>, Yoshikazu Ohara<sup>1</sup>, Timothy J. Ulrich<sup>2</sup>, Marcel C. Remillieux<sup>2</sup>, Toshihiro Tsuji<sup>1</sup>, Tsuyoshi Mihara<sup>1</sup>  
 (<sup>1</sup>Tohoku Univ., <sup>2</sup>Los Alamos Natl. Lab.)

- 3Pb2-3\* Super-resolution Plane Wave Beamforming Based on Frequency and Angle Compound**  
 ○Jie Zheng<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)
- 3Pb2-4\* Development of a high-frequency focused ultrasound system for applying noninvasively localized mechanical stimulation on cultured cells**  
 ○Natsumi Fujiwara, Takaki Matsumoto, Akira Nagakubo, Masahiro Kino-oka, Hirotsugu Ogi (Osaka Univ.)
- 3Pb2-5\* Study of surface wave propagation analysis of body tissue with cylindrical structure**  
 ○Yunfeng Lu, Marie Tabaru (Tokyo Inst. Tech.)
- 3Pb2-6 Electric field analysis around nano-gap metallic nanoparticles fabricated by ultrasonic resonance method**  
 ○Karin Hattori<sup>1</sup>, Nozomi Watanabe<sup>1</sup>, Keishi Suga<sup>2</sup>, Ryuichi Tarumi<sup>1</sup>, Nobutomo Nakamura<sup>1</sup>  
 (<sup>1</sup>Osaka Univ., <sup>2</sup>Tohoku Univ.)
- 3Pb2-7 Cumulative energy changes of the Kii Peninsula southeast offshore earthquake**  
 ○Toshiaki Kikuchi<sup>1</sup>, Koichi Mizutani<sup>2</sup> (<sup>1</sup>Natl. Defense Academy, <sup>2</sup>Univ. Tsukuba)
- 3Pb2-8 Basic study on intraocular pressure measurement using acoustic radiation pressure III**  
 ○Takaharu Moriya, Shunsuke Watanabe, Motoaki Sano (Toin Univ. Yokohama)
- 3Pb3-1\* Extraction of mechanical reflectance of acoustic Bragg reflector by GHz pulse echo technique**  
 ○Motoshi Suzuki<sup>1,2</sup>, Naoki Ishii<sup>1,2</sup>, Keita Kondo<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4</sup>  
 (<sup>1</sup>Waseda Univ., <sup>2</sup>ZAIKEN, <sup>3</sup>JST-CREST, <sup>4</sup>JST-FOREST)
- 3Pb3-2\* Mechanical Q factor dependence on Zr / Ti ratio of sputter-grown PZT epitaxial thin films**  
 ○Yuki Shimizu<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4</sup>  
 (<sup>1</sup>Waseda Univ., <sup>2</sup>ZAIKEN, <sup>3</sup>JST-CREST, <sup>4</sup>JST-FOREST)
- 3Pb3-3 Development of 3 dimensional shapes piezoelectric films for ultrasonic devices.**  
 ○Mutsuo Ishikawa<sup>1</sup>, Kaoru Yoshida<sup>1</sup>, Yu-to Aikawa<sup>1</sup>, Kengo Kimotsuki<sup>1</sup>, Nao Saito<sup>1</sup>, Marie Tabaru<sup>2</sup>, Kentaro Nakamura<sup>2</sup>,  
 Minoru Kurosawa<sup>2</sup>, Hiroshi Funakubo<sup>2</sup> (<sup>1</sup>Toin Univ. Yokohama, <sup>2</sup>Tokyo Inst. Tech.)
- 3Pb4-1\* Evaluation of the Rotation Speed of a Small Object Levitated by Ultrasound**  
 ○Eimei Yamamoto, Natsumi Nakaoka, Daisuke Koyama (Doshisha Univ.)
- 3Pb4-2\* Temperature during drying of wet cloth using two powerful aerial ultrasonic sources**  
 ○Mio Ito, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 3Pb4-3\* Measurement of elastic waves propagating from processed area during ultrasonic welding**  
 ○Kohei Yabe<sup>1</sup>, Akitoshi Kasai<sup>2</sup>, Masaru Miyata<sup>2</sup>, Taro Kawano<sup>2</sup>, Manabu Aoyagi<sup>1</sup>  
 (<sup>1</sup>Muroran Inst. Tech., <sup>2</sup>Seidensha Electronics)
- 3Pb4-4\* Compact aerial ultrasound source integrating vibration surface with ultra-low loss BLT**  
 ○Ryota Ohfuchi<sup>1</sup>, Takashi Kasashima<sup>2</sup>, Shinsuke Itoh<sup>2</sup>, Takuya Asami<sup>1</sup>, Hikaru Miura<sup>1</sup>  
 (<sup>1</sup>Nihon Univ., <sup>2</sup>NGK SPARK PLUG)
- 3Pb4-5\* Observation of jet emitted from through-hole in cylinder placed near vibrating surface**  
 ○Kohei Aono, Deqing Kong, Hiroki Matsumoto, Manabu Aoyagi (Muroran Inst. Tech.)
- 3Pb4-6\* Characteristics of surface acoustic wave propulsion system at 10 MHz**  
 ○Ryo Tanimura<sup>1</sup>, Deqing Kong<sup>1</sup>, Minoru Kuribayashi Kurosawa<sup>2</sup>, Manabu Aoyagi<sup>1</sup>  
 (<sup>1</sup>Muroran Inst. Tech., <sup>2</sup>Tokyo Inst. Tech.)
- 3Pb4-7\* Structural design for R-SIDM with stacked piezoelectric actuator**  
 ○Daichi Yatagai, Tatsuki Sasamura, Susumu Miyake, Takeshi Morita (Univ. Tokyo)
- 3Pb4-8 Efficient Speed Control of Ultrasonic Motor with Deep Reinforcement Learning Multi-Output Controller**  
 ○Abdullah Mustafa, Tatsuki Sasamura, Takeshi Morita (Univ. Tokyo)
- 3Pb5-1\* Effects of aging on carotid pulse waveforms**  
 ○Kazumasa Matsubara<sup>1</sup>, Mami Matsukawa<sup>1</sup>, Daisuke Koyama<sup>1</sup>, Miho Ohsaki<sup>1</sup>, Kozue Saito<sup>2</sup>, Hiroshi Yamagami<sup>3</sup>  
 (<sup>1</sup>Doshisha Univ., <sup>2</sup>Nara Med. Univ., <sup>3</sup>Osaka Natl. Hosp.)
- 3Pb5-2 Ex vivo evaluation on the accuracy of modified average sound speed estimation**  
 ○Naotaka Nitta, Toshikatsu Washio (AIST)

- 3Pb5-3 Evaluation of Flexible Ultrasonic Array Based on Sol-Gel Composite Spraying Technique**  
 ○Masayuki Tanabe<sup>1</sup>, Kosuke Sato<sup>2</sup>, Toru Uda<sup>2</sup>, Makiko Kobayashi<sup>1</sup> (<sup>1</sup>Kumamoto Univ., <sup>2</sup>NOK)
- 3Pb5-4 Adaptive Compound of Angle and Frequency with Simultaneous Transmission for Multiple Direction using M-sequence**  
 ○Yuta Saito, Norio Tagawa (Tokyo Met. Univ.)
- 3Pb5-5 Comparison of New Decoding Based on Correlation or Convolution between Hadamard- and Golay-Coded Ultrasonic Array Transmissions**  
 ○Chikayoshi Sumi, Bowen Deng (Sophia Univ.)
- 3Pb5-6\* Fundamental Study on Monitoring System of Masseter Muscle Condition Using SWE**  
 ○Tomohisa Funakura<sup>1</sup>, Takuma Hoshino<sup>1</sup>, Masahiro Tsuchiya<sup>2</sup>, Noriaki Shoji<sup>3</sup>, Shinnosuke Hirata<sup>4</sup>, Marie Tabaru<sup>1</sup>  
 (<sup>1</sup>Tokyo Inst. Tech., <sup>2</sup>Tohoku Fukushi Univ., <sup>3</sup>Tohoku Univ., <sup>4</sup>Chiba Univ.)
- 3Pb5-7\* Effect of Imaging Parameters on Classification Accuracy of Large Intestine B-mode Images in Deep Learning**  
 ○Jun Orihara<sup>1</sup>, Masayuki Tanabe<sup>1</sup>, Junko Yotsuya<sup>2</sup> (<sup>1</sup>Kumamoto Univ., <sup>2</sup>Fukui Univ.)
- 3Pb6-1 Simulation of Noise Sound Propagation Radiated from Offshore Wind Power Generation in very-shallow water**  
 ○Takenobu Tsuchiya, Nobuyuki Endoh (Kanagawa Univ.)
- 3Pb6-2\* A characteristic evaluation of signals generated by combining multiple linear chirp signals and M-sequence**  
 ○Shota Urakawa, Eri Sato, Takano Kuroyama, Hanako Ogasawara, Kazuyoshi Mori (Natl.Defense Academy)
- 3Pb6-3\* Improvement of Communication Quality Using Compressed Sensing in MIMO Underwater Acoustic Communication**  
 ○Ryoichi Ishijima, Tadashi Ebihara, Naoto Wakatsuki, Koichi Mizutani (Univ. Tsukuba)
- 3Pb6-4\* Experimental evaluation of non-contact ultrasonic thickness gauging method using compact transducer for underwater steel structure**  
 ○Kazuki Abukawa<sup>1</sup>, Tomoo Satoh<sup>2</sup>, Sayuri Matsumoto<sup>2</sup> (<sup>1</sup>NIT, Kisarazu Coll., <sup>2</sup>PARI)
- 3Pb6-5 Relationship between target position and processing waveform related to ICA (Independent Component Analysis) processing**  
 ○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. Tsukuba)
- 15:10-15:55 Ultrasonic properties II Chair: Mami Matsukawa (Doshisha Univ.)**
- 3J2-1\* Directivity of the Photoacoustic Signal Radiated from a Liquid-Filled Thin Elastic Tube**  
 ○Wang Kun, Yuji Wada, Kentaro Nakamura (Tokyo Inst. Tech.)
- 3J2-2\* Design of Acoustic Meta-surfaces with Both Coincidence Effect Suppression and Sound Absorption Functions**  
 ○Tomoya Ishikawa, Masaaki Misawa, Kenji Tsuruta (Okayama Univ.)
- 3J2-3\* Detection of GHz shear acoustic waves in picosecond laser ultrasonics assisted by two-dimensional metallic diffraction gratings**  
 ○Kouji Momiyama, Motonobu Tomoda, Hayato Takeda, Osamu Matsuda (Hokkaido Univ.)
- 15:55-16:10 Closing ceremony**