

The 39th Symposium on Ultrasonic Electronics (USE 2018) Program

○ Speaker

* Applying to Young Scientists Award

Monday, October 29

9:00-9:15 OPENING

9:15-10:30 Biomedical ultrasound I, High power ultrasound I

Chair: Iwaki Akiyama (Doshisha Univ.)

1J1-1* **Dependence of Width of Diverging, Plane, and Focused Transmitted Waves on Accuracy in Multipoint Simultaneous Ultrasonic Measurements of Cardiac Wall Vibration Waveform**

○Naoya Furusawa, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)

1J1-2* ***In vivo* Estimation of Sound Velocity Distribution for Diagnosis of Chronic Liver Disease and High Resolution Ultrasonic Tomographic Imaging**

○Keiichiro Abe, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)

1J1-3* **Evaluation of properties of shear wave propagation in tissue using viscoelastic phantom**

○Yuichi Toda¹, Masashi Usumura², Shinnosuke Hirata¹, Hiroko Iijima³, Mikio Suga², Hiroyuki Hachiya¹
(¹Tokyo Tech., ²Chiba Univ., ³Hyogo Col. Med.)

1J1-4* **Acoustic picker by hemispherical ultrasonic transducer array and phase control using low-reflection stage**

○Yutaka Yamamoto, Kan Okubo (Tokyo Met. Univ.)

1J1-5* **Trial fabrication of traveling-wave ultrasonic motor with alumina-based ring-shaped vibrator**

○Jiang Wu, Yosuke Mizuno, Kentaro Nakamura (Tokyo Tech.)

10:30-11:45 Physical acoustics I, Measurement techniques I

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

1J2-1* **Mechanism of unusual elasticity in β -Ga₂O₃ studied by ab-initio calculation**

○Kanta Adachi¹, Akira Nagakubo², Hirotsugu Ogi² (¹Iwate Univ., ²Osaka Univ.)

1J2-2* **Observation of Liquid-Liquid Micro Dynamics on Thin Oil Layer**

○Natsuki Yamaoka, Ryohsuke Yokota, Taichi Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)

1J2-3* **Analysis of sound and temperature fields in ultrasonic beam induced resistance change (SOBIRCH) method aiming to failure analysis for semiconductor devices**

○Takuto Matsui¹, Kousuke Tatsumi¹, Tomohiro Kawashima¹, Yoshinobu Murakami¹, Naohiro Hozumi¹, Shigeru Eura², Toru Matsumoto² (¹Toyohashi Univ. of Tech., ²Hamamatsu Photonics K.K.)

1J2-4* **Study on the health monitoring method using frequency shift by AE method**

○Hiraku Kawasaki, Mami Takizawa, Seiichi Omori (IHI Inspection & Instrumentation Co., Ltd)

1J2-5 **Evaluation of a hemispherical-shaped array sensor for photoacoustic tomography**

○Katsumi Ohira¹, Yuusuke Tanaka¹, Mitsuyoshi Yoshida¹, Noriaki Iwata¹, Akira Sakai¹, Daisuke Hirano¹, Yasuhiro Ohashi¹, Naoyuki Murayama², Kenichi Nagae³, Yoshiaki Sudo³
(¹Japan Probe Co., Ltd., ²Hitachi, Ltd., ³Canon Inc.)

11:45-13:00 LUNCH TIME

13:00-13:50 Plenary Talk I

Chair: Hirotsugu Ogi (Osaka Univ.)

1PL **Surface Mechanical Properties of Comet 67P**

○W. Arnold^{1,2}, H.-H. Fischer³, M. Knapmeyer³, H. Krüger⁴
(¹Saarland Univ., ²Georg-August-Universität, ³DLR, ⁴Max Planck Inst. for Solar System Research)

14:00-14:45 Piezoelectric devices I**Chair: Jun Kondoh (Shizuoka Univ.)**

- 1J3-1*** **The modeling of the transverse mode in TC-SAW using SiO₂/LiNbO₃ structure**
 ○Rei Goto^{1,2}, Hiroyuki Nakamura¹, Ken-ya Hashimoto² (¹Skyworks Solutions, Inc., ²Chiba Univ.)
- 1J3-2*** **Longitudinal Leaky SAW with Low Attenuation on LiTaO₃ Thin Plate Bonded to Quartz Substrate**
 ○Junki Hayashi¹, Kosuke Yamaya¹, Shiori Asakawa¹, Masashi Suzuki¹, Shoji Kakio¹, Ami Tezuka², Hiroyuki Kuwae², Toshifumi Yonai³, Kazuhito Kishida³, Jun Mizuno² (¹Univ. of Yamanashi, ²Waseda Univ., ³The Japan Steel Works, Ltd.)
- 1J3-3*** **A new electromechanical coupling coefficient extraction method of as-grown film/wafer structure by using the ratio of overtone mode resonant frequencies**
 ○Makoto Totsuka^{1,2}, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)

14:45-15:30 Physical acoustics, Resonator II**Chair: Kentaro Nakamura (Tokyo Tech.)**

- 1J4-1** **Numerical Nonlinear Formulation of Rott Equations for a Thermoacoustic Engine: Stokes Drift and Phase Change**
 ○Kyuichi Yasui, Noriya Izu (AIST)
- 1J4-2*** **Phononic crystal based on a Shive wave machine**
 ○Masahiro Ino, Motonobu Tomoda, Oliver B. Wright (Hokkaido Univ.)
- 1J4-3*** **Ultrasonic waves transmitted from the probe and phenomena caused by edge waves**
 ○Yuusuke Tanaka, Akira Abe, Yukio Ogura (Japan Probe Co., Ltd.)

15:40-17:40 Poster Session**Chair: Tsuyoshi Mihara (Tohoku Univ.)**

- 1P1-1** **Elastic wave propagation in two-dimensional phononic crystals with periodic arrays of viscoelastic inclusions**
 ○Yukihiro Tanaka, Yukito Shimomura (Hokkaido Univ.)
- 1P1-2*** **Studies on Viscoelasticity of Silicone-Elastomer Microparticles in Suspension Probed by Ultrasound Scattering Techniques**
 ○Kazuto Tsuji, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 1P1-3*** **Analysis of Contribution of Dielectric Change in Optical Orbital Angular Momentum Mode Conversion by Elastic Vortex Wave**
 ○Takuya Shoro, Hiroki Kishikawa, Nobuo Goto (Tokushima Univ.)
- 1P1-4** **Sound velocity mapping in silica glass with picosecond ultrasonics**
 ○Akira Toda¹, Motonobu Tomoda¹, Osamu Matsuda¹, Vitaliy E. Gusev², Oliver B. Wright¹ (¹Hokkaido Univ., ²Le Mans Univ.)
- 1P1-5*** **Propagation properties of surface acoustic wave passing through graphene/LiNbO₃ interface**
 ○Daichi Eto, Syohei Yosimura, Yong Sun (Kyushu Inst. of Tech.)
- 1P1-6** **High-power properties of crystal-oriented (Sr,Ca)₂NaNb₅O₁₅ piezoelectric ceramics and application to ultrasonic motor**
 ○Yutaka Doshida¹, Hideki Tamura², Satoshi Tanaka³ (¹Ashikaga Univ., ²Tohoku Inst. of Tech., ³Nagaoka Univ. of Tech.)
- 1P1-7** **Qualitative analysis of vibrating air columns by 2-dimensional computer simulation for visualization of acoustic waves**
 ○Hisashi Yamawaki¹, Sumiaki Nakano² (¹NIMS, ²Nara Senior High School)
- 1P1-8*** **Discovery of avoided crossing of mechanical resonances during temperature change in piezoelectric materials**
 ○Masaya Nakamura¹, Kanta Adachi², Hirotsugu Ogi¹ (¹Osaka Univ., ²Iwate Univ.)
- 1P1-9*** **Acousto-Optic Modulators Driven by Longitudinal Leaky Surface Acoustic Waves on LiNbO₃ Thin-Plate Bonded Structures**
 ○Kentaro Hakiri, Masashi Suzuki, Shoji Kakio (Univ. of Yamanashi)
- 1P1-10*** **High Temperature properties of CaBi₂Ta₂O₉/Bi₄Ti₃O₁₂**
 ○Tomoya Yamamoto¹, Shohei Nozawa¹, Minoru Furukawa¹, Hajime Nagata², Makiko Kobayashi¹ (¹Kumamoto Univ., ²Tokyo Univ. of Sci.)

- 1P1-11* Bi₄Ti₃O₁₂/Al₂O₃ Sol-Gel Composite Ultrasonic Transducer**
 ○Kazuki Okada, Tomoya Yamamoto, Masaki Yugawa, Minori Furukawa, Makiko Kobayashi (Kumamoto Univ.)
- 1P2-1* Detection of barnacles on a thick steel plate bottom**
 ○Shuhei Fujimoto, Michihiro Kameyama, Tomoyuki Taniguchi, Michio Shimada, Osamu Miyata (Natl. Maritime Res. Inst.)
- 1P2-2* 768kHz / 32bit High-Resolution Acoustic Analysis-Based Method for Determining Empty Alkaline Dry Battery**
 ○Tomoaki Magome, Kan Okubo (Tokyo Met. Univ.)
- 1P2-3* Dynamics of Concentrated Nanoparticle Suspensions Probed by Frequency-Domain Dynamic Ultrasound Scattering Techniques**
 ○Masashi Fujisawa, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 1P2-4* Electrophoretic Mobility of Microparticles in Concentrated Suspensions Probed by Dynamic Ultrasound Scattering Techniques**
 ○Shuzo Kaji, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 1P2-5 Variation in Resonance Characteristics of a Backward-Wave-Type Trapped-Energy Resonator Caused by Dipping in Liquids**
 ○Ken Yamada, Koji Ito (Tohoku Gakuin Univ.)
- 1P2-6* Surface Profile Measurement of Pavement Using Ultrasound**
 ○Matsuyama Kakeru¹, Masayuki Tanabe¹, Hiroshi Okajima¹, Toshitaka Yamakawa¹, Miki Sada¹, Eiichi Funaki² (¹Kumamoto Univ., ²Gement Inc.)
- 1P2-7* Accuracy evaluation of non-contact measurement for breathing and heartbeat using airborne ultrasound**
 ○Taiki Hayashi, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 1P2-8* Estimation of road roughness using amplitude statics of ultrasound reflected from road surface**
 ○Naoki Shinoda, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 1P2-9 Introduction of Irregularly Arranged Array in Reflection Point Search by Rectangular Sound Source**
 ○Hiroyuki Masuyama (NIT, Toba Coll.)
- 1P2-10* Indoor Positioning in Large-scale Area using Multiple Acoustical Transponder Units**
 ○Hirokazu Iwaya, Koichi Mizutani, Tadashi Ebihara, Naoto Wakatsuki (Univ. of Tsukuba)
- 1P2-11* Defect detection inside billet by ultrasonic transmission method using phased array technique**
 ○Ryusuke Miyamoto, Koichi Mizutani, Naoto Wakatsuki, Tadashi Ebihara (Univ. of Tsukuba)
- 1P2-12* A mathematical model of the Lamb wave reflection at a two dimensional rectangular notch**
 ○Junya Ishihara, Masashi Ishikawa, Hideo Nishino (Tokushima Univ.)
- 1P2-13* MIC and GPU-based implementation of sound field simulation using parallelized FDTD methods**
 ○Nastuhiko Araki, Ryo Imai, Yukihisa Suzuki, Kan Okubo (Tokyo Met. Univ.)
- 1P2-14* Incident-Wave-Amplitude Dependence of Closed Crack Imaging by Nonlinear Ultrasonic Phased Array with Fixed-Voltage Amplitude Subtraction**
 ○Hiromichi Nakajima¹, Yoshikazu Ohara¹, Sylvain Haupert², Toshihiro Tsuji¹, Tsuyoshi Mihara¹ (¹Tohoku Univ., ²Sorbonne Univ.)
- 1P2-15* Harmonic Imaging of Defect in Flat Plate Using Guided Wave generated by High-intensity Aerial Ultrasonic Wave**
 ○Ayumu Osumi, Kenta Yamada, Yusuke Asada, Youichi Ito (Nihon Univ.)
- 1P2-16* Non-destructive testing of T-shaped metal object by considering vibration mode**
 ○Hiroki Mine, Jiang Wu, Yosuke Mizuno, Kentaro Nakamura (Tokyo Tech.)
- 1P3-1 Direct Bonding of LiTaO₃/Si at Room Temperature Using Self-sputtered Bonding Method**
 ○Jun Utsumi (Mitsubishi Heavy Industries Machine Tool Co., Ltd.)
- 1P3-2 Modified formula for electromechanical coupling coefficient using resonance--antiresonance measurement with a kind of nonlinear effect**
 ○Michio Ohki (Natl. Defense Academy)

- 1P3-3*** Negative ions generation of the arc-melted and hot press sintered ScAl alloy targets in ScAlN film growth
 ○Yuka Endo^{1,3}, Rei Karasawa^{1,3}, Shinji Takayanagi⁴, Makoto Imakawa⁵, Keisuke Morisaka⁵, Yu Suzuki⁵, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²JST PRESTO, ³ZAIKEN, ⁴Nagoya Inst. Tech., ⁵Furuya Metal Co., Ltd.)
- 1P3-4** Evaluation of Bonded Substrate for SAW Device Using LFB Acoustic Microscopy
 ○Osamu Kawachi¹, Rei Oikawa¹, Yoshiaki Takaoka¹, Jun-ichi Kushibiki² (¹Taiyo Yuden Mobile Technologies, ²Tohoku Univ.)
- 1P3-5*** Large electromechanical coupling ($k_t^2=22\%$) in the ScAlN thin films
 ○Ningrui Bai^{1,2}, Chiaki Masamune^{1,2}, Rei Karasawa^{1,2}, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)
- 1P3-6*** Low Temperature Fabrication of $\text{Bi}_4\text{Ti}_3\text{O}_{12}/\text{TiO}_2$
 ○Shohei Nozawa, Tomoya Yamamoto, Minori Furukawa, Makiko Kobayashi (Kumamoto Univ.)
- 1P3-7** Polarity inverted PZT/PbTiO₃ epitaxial stack resonators for frequency switchable filters
 ○Takahiro Shimidzu^{1,2}, Takeshi Mori¹, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)
- 1P3-8*** ScAlN free-standing piezoelectric plates in the range of 30–40 MHz resonance frequency
 ○Chiaki Masamune^{1,2}, Rei Karasawa^{1,2}, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)
- 1P3-9*** Thick PZT epitaxial film for ultrasonic transducer in the 80 MHz range
 ○Yuka Mazda^{1,2}, Takahiro Shimidzu^{1,2}, Takahiko Yanagitani^{1,2,3} (¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)
- 1P4-1*** A study on fixing method of multiple degrees of freedom ultrasonic motor in the consideration of miniaturization and expandability
 ○Kota Sato, Keita Suzuki, Hiroaki Akizawa, Tatsuya Ookubo, Yoshikazu Koike (Shibaura Inst. of Tech.)
- 1P4-2*** Effect of Preload on Rotary Ultrasonic Motor Driving Characteristics
 ○Abdullah Mustafa, Takeshi Morita (Univ. of Tokyo)
- 1P4-3*** Development of rotary-type noncontact-stepping ultrasonic motor
 ○Taiki Hirano¹, Manabu Aoyagi¹, Hidekazu Kajiwarra¹, Hideki Tamura², Takehiro Takano² (¹Muroran Inst. of Tech., ²Tohoku Inst. of Tech.)
- 1P4-4*** A Novel Approach to Swimmer Actuation via Surface Acoustic Wave
 ○Deqing Kong, Minoru Kuribayashi Kurosawa (Tokyo Tech.)
- 1P4-5*** Examination of near-field acoustic levitation of plate-like object between opposite vibration sources
 ○Kouhei Aono¹, Manabu Aoyagi¹, Hidekazu Kajiwarra¹, Hideki Tamura², Takehiro Takano² (¹Muroran Inst. of Tech., ²Tohoku Inst. of Tech.)
- 1P4-6*** Estimation of Fire Damage Depth of Mortar Using Surface Acoustic Waves Propagation by Non-linear Aerial Ultrasonic Waves
 ○Takuya Saito, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1P4-7*** Non-contact imaging of foreign substance inside soft material using high-intensity aerial ultrasonic waves
 ○Li Jin, Ayumu Osumi, Youichi Ito (Nihon Univ.)
- 1P4-8** A Designing Method of Ringing Suppression for Ultrasonic Sound Source and its Application to Ultrasonic Machining
 ○Sayuri Tarvainen, Guangyuan Wang, Yuji Watanabe (Takushoku Univ.)
- 1P4-9** Optical Interferometric Measurement of Vibration Amplitude in High Power Ultrasonic Tool through Vibration-Synchronized Fringe Counting
 ○Kentaro Nakamura (Tokyo Tech.)
- 1P4-10** Fundamental Research on Acoustic Characteristics of Wet Cotton Fabric by Using Ultrasound of 28 kHz
 ○Takuya Asami, Hikaru Miura (Nihon Univ.)
- 1P4-11*** Radiated sound waves by ultrasonic source with complex type reflective plate attached to circular transverse vibrating plate
 ○Haruki Yoshino, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 1P4-12*** Characteristics of an intense aerial ultrasonic source using a small circular vibrating plate
 ○Naoki Masuda, Takuya Asami, Hikaru Miura (Nihon Univ.)

- 1P4-13*** **Vibrating conditions of welding sample by ultrasonic metal welding**
○Yosuke Tamada, Takuya Asami, Hikaru Miura (Nihon Univ.)
- 1P5-1** **Effect of Pore Fluid on Piezoelectric Signal Generated in Cancellous Bone by Ultrasound Irradiation**
○Atsushi Hosokawa¹, Ikumi Kabeshita² (¹Natl. Inst. Tech., Akashi Coll., ²NAIST)
- 1P5-2** **Low-complexity ultrasonic backscattering measurement in cancellous bone evaluation**
○Qiangqiang Diwu¹, Boyi Li¹, Ying Li¹, Feng Xu¹, Chengcheng Liu², Dean Ta¹ (¹Fudan Univ., ²Tongji Univ.)
- 1P5-3*** **Characterization of Ultrasonic Waves in Cortical Bone using Axial Transmission Technique**
○Leslie Bustamante, Masaya Saeki, Mami Matsukawa (Doshisha Univ.)
- 1P5-4*** **Longitudinal ultrasound radiation from cortical bone**
○Taiki Makino¹, Tsukasa Nakamura¹, Leslie Bustamante¹, Daisuke Koyama¹, Shinji Takayanagi², Mami Matsukawa¹ (¹Doshisha Univ., ²Nagoya Inst. Tech.)
- 1P5-5*** **Measurements of vibration in the external auditory meatus caused by distantly presented bone conducted ultrasound**
○Riki Ogino¹, Sho Otsuka^{1,2}, Seiji Nakagawa^{1,2} (¹Chiba Univ., ²Chiba Univ. Hospital)
- 1P5-6** **Propagation characteristics of amplitude-modulated bone-conducted ultrasounds distantly presented to the neck, trunk and arms**
○Seiji Nakagawa, Koichiro Doi, Riki Ogino, Sho Otsuka (Chiba Univ.)
- 1P5-7*** **Measurement of instantaneous acoustic pressure for diagnostic ultrasound using frequency characteristics of amplitude and phase of hydrophone sensitivity**
○Yusuke Chiba, Masahiro Yoshioka, Ryuzo Horiuchi (AIST)
- 1P5-8** **Evaluation of Reception Characteristics of Diaphragm Type PZT Resonator with Stainless Steel Plate as Vibration Support**
○Masatoshi Suzuki¹, Norio Tagawa¹, Masasumi Yoshizawa², Takasuke Irie³ (¹Tokyo Met. Univ., ²Tokyo Met. Coll. of Industrial Tech., ³Microsonic Co, Ltd.)
- 1P5-9*** **Cross-talk Evaluation of Phased Arrays Using Sol-gel Composites**
○Ryoya Kudo, Shimpei Yamamoto, Miki Sada, Masayuki Tanabe, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 1P5-10*** **Effect of Electrode Size on Sol-gel Composites**
○Shimpei Yamamoto, Masayuki Tanabe, Ryoya Kudo, Miki Sada, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)
- 1P5-11*** **Sonochemical and high-speed photographic investigation on efficiency of reactive oxygen generation by high-intensity focused ultrasound for sonodynamic therapy**
○Daisaku Mashiko, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 1P5-12** **Reduction of cavitation generation region outside focal region of high-intensity focused ultrasound by split-aperture transmission for standing wave suppression**
○Yui Tanaka, Daisaku Mashiko, Shin-ichiro Umemura, Shin Yoshizawa (Tohoku Univ.)
- 1P5-13*** **Study on The Feasibility of Noise Reduction Method in Ultrasound Monitoring of High Intensity Focused Ultrasound Treatment**
○Ryo Takagi (AIST)
- 1P5-14*** **Fluorescent observation of microbubble behavior according to time division emission of multiple focal points considering blood vessel shape**
○Kiyonobu Nozaki¹, Asuka Furutani¹, Kosuke Watanabe¹, Takuya Katai¹, Kohji Masuda¹, Johan Unga², Ryo Suzuki², Kazuo Maruyama² (¹Tokyo Univ. of A&T, ²Teikyo Univ.)
- 1P5-15*** **Three-dimensional detection of tip position of catheter in ultrasound volume through time-series analysis of microbubble dispersion**
○Kosuke Kanda¹, Tatsuya Saito¹, Hidetaka Ushimizu¹, Takuya Katai¹, Shin Enosawa², Kohji Masuda¹ (¹Tokyo Univ. of A&T, ²Natl. Center for Child Health and Dev.)
- 1P5-16** **Characterization of the mechanical impulse produced by a clinical ballistic shock wave therapy device**
○Min Joo Choi, Ohbin Kwon (Jeju Natl. Univ.)

- 1P5-17* Effect of microbubble vibration on HeLa cells under ultrasound irradiation**
 ○Arisa Hirayama¹, Daisuke Koyama¹, Marie Pierre Krafft² (¹Doshisha Univ., ²CNRS)
- 1P5-18* Development and estimation of the adherent cell culture flask with acoustic window film for ultrasound irradiation to glioblastoma cells**
 ○Sakino Iwasiro¹, Naoki Asaoka¹, Yoshifumi Onozuka², Masatsune Minai¹, Hiroyuki Nishimura¹, Shinichi Takeuchi¹ (¹Toin Univ. of Yokohama, ²Seidensha Electronics Co., Ltd.)
- 1P5-19* Viability validation of therapeutic cells according to surrounded amount of microbubbles and ultrasound exposure condition**
 ○Masakazu Seki¹, Takuya Otsuka¹, Riki Oitate¹, Kohji Masuda¹, Johan Unga², Ryo Suzuki², Kazuo Maruyama² (¹Tokyo Univ. of A&T, ²Teikyo Univ.)
- 1P6-1 Influence of Wind- and Ship-generated Sound on Ocean Ambient Noise in Shallow Water**
 ○Jisung Park, Sungho Cho, Donhyug Kang (Korea Inst. of Ocean Sci. and Tech.)
- 1P6-2 Horizontal directionality of ambient noise at the Socheongcho ocean research station**
 ○Min Seop Sim, Bok-Kyoung Choi, Eung Kim, Byoung-Nam Kim (Korea Inst. of Ocean Sci. and Tech.)
- 1P6-3 Influence of gassy sediments on low-frequency acoustic wave propagation in shallow water environments**
 ○Sungho Cho¹, Jisung Park¹, Donhyug Kang¹, Seom-Kyu Jung¹, Lee-Sun Yoo¹, Su-Uk Son² (¹Korea Inst. of Ocean Sci. and Tech., ²Agency for Defense Dev.)
- 1P6-4 Acoustic properties of organic-rich sediment at the seabed surface**
 ○Hanako Ogasawara, Kazuyoshi Mori (Natl. Defense Academy)
- 1P6-5 Influence of source depth and position for upward sound propagation on continental slope**
 ○Yoshiaki Tsurugaya¹, Toshiaki Kikuchi², Koichi Mizutani³ (¹Sanyo PT, ²Natl. Defense Academy, ³Univ. of Tsukuba)
- 17:45-18:30 Organizing Committee Meeting (Oral presentation Hall)**

Tuesday, October 30

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

Chair: Oliver Wright (Hokkaido Univ.)

- 2E1-1 Effect of electric field on uniaxial relaxor ferroelectric $Sr_xBa_{1-x}Nb_2O_6$ with intermediate random fields studied by Brillouin scattering**
 ○Md Aftabuzzaman^{1,2}, Seiji Kojima² (¹Pabna Univ. of Sci. and Tech., ²Univ. of Tsukuba)
- 2E1-2* A Study of interaction SAW with LSPR**
 ○Hironori Sano, Jun Kondoh (Shizuoka Univ.)
- 2E1-3 High speed noncontact acoustic inspection method using sound source mounted type UAV for the outer wall inspection**
 ○Tsuneyoshi Sugimoto¹, Kazuko Sugimoto¹, Itsuki Uechi¹, Noriyuki Utagawa², Chitose Kuroda² (¹Toin Univ. of Yokohama, ²Sato Kogyo Co., Ltd.)
- 2E1-4 Dual point contact imaging of scattered ultrasonic waves in piezoelectric materials**
 ○A. Habib¹, V. Agarwal², B. S. Ahluwalia¹, F. Melandsø¹, A. Shelke² (¹UiT The Arctic Univ. of Norway, ²Indian Inst. of Tech. Guwahati)
- 2E1-5 Ultrasonic Evaluation of Static and Dynamic Properties of Noodle Dough for Industrial Applications**
 ○Anatoliy Strybulevych¹, Reine-Marie Guillermic¹, Sebastien Kerhervé¹, Huiqin Wang¹, Dave W. Hatcher², John H. Page¹, Martin G. Scanlon¹ (¹Univ. of Manitoba, ²Canadian Grain Commission, Canada)

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

Chair: Makiko Kobayashi (Kumamoto Univ.)

- 2E2-1* PZT/PZT Piezoelectric Device for Biological Signal Measurements**
 ○Hiroto Makino, Yuto Kiyota, Kei Nakatsuma, Tomohiko Igasaki, Makiko Kobayashi (Kumamoto Univ.)

- 2E2-2*** **GPGPU Based 3D FEM Simulation of SAW Resonators Using Hierarchical Cascading Technique**
 ○Xinyi Li^{1,2}, Jingfu Bao¹, Luyan Qiu², Naoto Matsuoka^{2,3}, Tatsuya Omori², Ken-ya Hashimoto²
 (¹Univ. of Electronic Sci. and Tech. of China, ²Chiba Univ., ³Nihon Dempa Kogyo)
- 2E2-3*** **Nonlinear modeling of Bolt-clamped Langevin transducer and measurement of nonlinear elastic coefficients**
 ○Naruhiro Iwama, Susumu Miyake, Takeshi Morita (Univ. of Tokyo)
- 2E2-4** **Ultrasonic Complex Vibration Welding Using One Longitudinal Wave-length Mode Diagonal Slit Complex Vibration Converter**
 ○Jiromaru Tsujino^{1,2} (¹Kanagawa Univ., ²LINK-US Co. Ltd)
- 2E2-5** **Demonstration of High Rate MIMO Communication with Adaptive Time Reversal in Tank Experiment**
 ○Takuya Shimura, Yukihiro Kida, Deguchi Mitsuyasu (JAMSTEC)
- 11:30-13:00 LUNCH TIME**
- 13:00-13:50 Plenary Talk II** **Chair: Tsuyoshi Shiina (Kyoto Univ.)**
- 2PL** **Introduction to Piezoelectric Actuators – Professor’s Misconceptions Top 10 –**
 ○Kenji Uchino (The Penn State Univ.)
- 14:00-16:00 Poster Session** **Chair: Tadashi Yamaguchi (Chiba Univ.)**
- 2P1-1** **Elastic Anomaly of Uniaxial Ferroelectric Strontium Barium Niobate with Very Weak Random Fields**
 ○Seiji Kojima¹, Md Aftabuzzaman^{1,2}, Jan Dec³, Wolfgang Kleemann⁴
 (¹Univ. of Tsukuba, ²Pabna Univ. Sci. and Tech., ³Univ. of Silesia, ⁴Duisburg-Essen Univ.)
- 2P1-2** **Phonon Dynamics of Pb(Sc_{1/2}Ta_{1/2})O₃ Ceramics Studied by Brillouin Scattering Spectroscopy**
 ○Taro Aso¹, Yasuhiro Fujii¹, Akitoshi Koreeda¹, Soohan Oh², Jae-Hyeon Ko²,
 Chang-Hyo Hong³, Wook Jo³ (¹Ritsumeikan Univ., ²Hallym Univ., ³UNIST)
- 2P1-3** **Waveform Characteristics of the Shockwaves from the CNT/PDMS Optoacoustic Transducer**
 ○Xiaofeng Fan¹, Kanglyeol Ha¹, Moojoon Kim¹, Dong-Guk Paeng²,
 Junghwan Oh¹ (¹Pukyong Natl. Univ., ²Jeju Natl. Univ.)
- 2P1-4** **Acoustic low-frequency forbidden transmission in solid- fluid superlattices**
 ○Seiji Mizuno (Hokkaido Univ.)
- 2P1-5*** **Evaluation of SiO₂ Thin Film on Piezoelectric Substrate by the Line-Focus-Beam Ultrasonic Material Characterization System**
 ○Ryota Suenaga¹, Masashi Suzuki¹, Shoji Kakio¹, Yuji Ohashi², Mototaka Arakawa²,
 Jun-ichi Kushibiki² (¹Univ. of Yamanashi, ²Tohoku Univ.)
- 2P1-6*** **Polarization Condition Optimization of CaBi₄Ti₄O₁₅/ Pb(Zr,Ti)O₃ Sol-Gel Composite membrane using pulsed power supply**
 ○Minoru Furukawa, Masaki Yugawa, Tomoya Yamamoto, Kazuki Okada, Shohei Nozawa,
 Takao Namihira, Makiko Kobayashi (Kumamoto Univ.)
- 2P1-7** **In-line measurement of visco-elasticity by EMS system**
 ○Maiko Hosoda¹, Taichi Hirano², Yoshikazu Yamakawa³, Keiji Sakai²
 (¹Tokyo Denki Univ., ²Univ. of Tokyo, ³Triple-Eye Co. Ltd.)
- 2P1-8** **Study of Phononic Lens for SAW Devices**
 ○Jia-Hog Sun, Yuan-Hai Yu (Chang Gung Univ.)
- 2P1-9*** **Structures of Silica Particles Localized at the Interface of Liquid Droplet**
 ○Chisato Kanamori, Tomohisa Norisuye, Hideyuki Nakanishi, Qui Tran-Cong-Miyata (Kyoto Inst. of Tech.)
- 2P1-10*** **Poling Optimization of Pb(Zr,Ti)O₃/Al₂O₃ Sol-gel Composite**
 ○Daichi Maeda, Tomoya Yamamoto, Kazuki Okada, Makiko Kobayashi (Kumamoto Univ.)
- 2P1-11*** **Piezoelectric Powder Permittivity Effect of Pb(Zr, Ti)O₃/Pb(Zr, Ti)O₃**
 ○Yuto Kiyota, Hiroto Makino, Kei Nakatsuma, Makiko Kobayashi (Kumamoto Univ.)

- 2P2-1 A 3D Model for the Simulation of Narrowband Lamb Wave Excited by Modulating a Laser Beam with Michelson Interference Technique**
○Tianming Ye, Yanfeng Xu, Wenxiang Hu (Tongji Univ.)
- 2P2-2 Evolutions of nonlinear acoustics induced by plastic strain in an austenitic stainless steel**
○Toshihiro Ohtnai¹, Yutaka Ishii¹, Masayuki Kamaya², Yasuhiro Kamada³
(¹Shonan Inst. of Tech., ²Inst. of Nuclear Safety System, Inc., ³Iwate Univ.)
- 2P2-3* Study about Combination Types of M-sequences in Alternate Transmission of Different Codes for Pulse Compression**
○Khanistha Leetang, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 2P2-4* Modeling of bone-conducted sound transducer on human skin by vibrating system with two degrees of freedom**
○Satoki Ogiso, Koichi Mizutani, Naoto Wakatsuki, Keiichi Zempo, Yuka Maeda (Univ. of Tsukuba)
- 2P2-5* Measurement for Transfer Function of Delay Line Using Acoustical Frequency Comb**
○Kazuma Tajima, Koichi Mizutani, Naoto Wakatsuki, Tadashi Ebihara (Univ. of Tsukuba)
- 2P2-6 Effect of anthocyanin to dissolve A β amyloid fibrils studied by TIRFM-QCM biosensor.**
○Kohei Kamada, Kentaro Noi, Hirotsugu Ogi (Osaka Univ.)
- 2P2-7* High power ultrasonic effect on soil compaction for different static pressure**
○Minseop Sim¹, Moojoon Kim¹, Kanglyeol Ha¹, Jungsoon Kim² (¹Pukyong Natl. Univ., ²Tongmyong Univ.)
- 2P2-8 Multi-Mode Nonlinear Ultrasonic Phased Array for Imaging Closed Cracks**
○Yoshikazu Ohara¹, Jack Potter², Hiromichi Nakajima¹, Toshihiro Tsuji¹,
Tsuyoshi Mihara¹ (¹Tohoku Univ., ²Univ. of Bristol)
- 2P2-9* Enhanced transcranial imaging using longitudinal-shear-longitudinal mode conversion with Barker code excitation**
○Chen Jiang¹, Dan Li¹, Ying Li¹, Feng Xu¹, Chengcheng Liu², Dean Ta¹ (¹Fudan Univ., ²Tongji Univ.)
- 2P2-10 Advanced Non-Destructive Material & Failure Characterization in Microelectronics using Ultrasound**
○Roland Brunner¹, Eva Kozic¹, Rene Hammer¹, Robert Nuster²
(¹Materials Center Leoben Forschung GmbH, ²Karl-Franzens University of Graz)
- 2P2-11* Experiment and Simulation of Polished Surface Reflections using Ultraviolet Laser Diodes for Laser Speckle Interferometers**
○Yunhao Ma, Yasuaki Watanabe, Yufeng Xin, Jing Wang, Takayuki Sato (Tokyo Met. Univ.)
- 2P2-12* Observation of the *Temperature of Intrusion* at Water-Castor Oil Interface**
○Dong-Gyun Han¹, Him-Chan Seo¹, Jee Woong Choi¹, Moonjin Lee², Ho-Jin Hwang²
(¹Hanyang Univ., ²Korea Res. Inst. of Ships and Ocean Eng.)
- 2P2-13* Numerical modelling of dual point contact induced ultrasonic waves in PZT ceramics**
○V. Agarwal¹, A. Habib², B. S. Ahluwalia², F. Melandsø², A. Shelke¹
(¹Indian Inst. of Tech. Guwahati, ²UiT The Arctic Univ. of Norway)
- 2P2-14* Time evolution analysis of Coherent Population Trapping resonance for atomic clock chip**
○Yuichiro Yano, Masatoshi Kajita, Tetsuya Ido, Motoaki Hara (Natl. Inst. of Information and Communications Tech.)
- 2P2-15 Numerical analysis of linear wave propagation in the atmosphere with temperature gradient for Mach cutoff reproduction**
○Takao Tsuchiya^{1,2}, Masashi Kanamori², Takashi Takahashi² (¹Doshisha Univ., ²JAXA)
- 2P2-16 An analysis of natural frequency of leaf by the fluctuation of CCD camera image and the estimation of water stress of plant**
○Motoaki Sano, Chiharu Uchikawa, Yutaka Nakagawa, Takeyuki Ohdaira,
Takashi Shirakawa, Tsuneyoshi Sugimoto (Toin Univ. of Yokohama)
- 2P3-1 Resonance frequencies of AlN and metal freestanding multilayers studied by picosecond ultrasonics**
○Akira Nagakubo¹, Tokihiro Nishihara², Hirotsugu Ogi¹ (¹Osaka Univ., ²Taiyo Yuden Co., Ltd.)
- 2P3-2* Design of a Piezoelectric Multilayered Structure for Ultrasound Sensors using the Equivalent Circuit Method**
○Muhammad Shakeel Afzal, Hayeong Shim, Yongrae Roh (Kyungpook Natl. Univ.)

- 2P3-3 Study on the Construction of Frequency-Change-Type Three-Axis Acceleration Sensor**
○Sumio Sugawara, Yoshifumi Sasaki (Ishinomaki Senshu Univ.)
- 2P3-4 Vibration analysis of tactile sensor using complex resonator with longitudinal-torsional vibration converter**
○Subaru Kudo, Yoshifumi Sasaki, Sumio Sugawara (Ishinomaki Senshu Univ.)
- 2P3-5 Phononic Crystal Disturbed Surface Acoustic Waves for Microparticle Concentration and Separation inside a Sessile Droplet**
○Jin-Chen Hsu, Yu-Ding Lin (Natl. Yunlin Univ.)
- 2P3-6* Three-layer type digital microfluidic system using surface acoustic wave device**
○Yota Terakawa, Jun Kondoh (Shizuoka Univ.)
- 2P3-7* c-Axis tilted ScAlN film shear mode resonators for detection of biomolecular interactions**
○Hana Yazaki^{1,3}, Takumi Soutome^{1,3}, Rei Karasawa^{1,3}, Shinji Takayanagi⁴, Kenji Yoshida⁵, Takahiko Yanagitani^{1,2,3}
(¹Waseda Univ., ²JST PRESTO, ³ZAIKEN, ⁴Nagoya Inst. Tech., ⁵Chiba Univ.)
- 2P3-8* Evaluation of fluid viscosity in the vicinity of 400 MHz using quasi-shear mode c-axis tilted ScAlN thin film resonators**
○Yui Yamakawa^{1,2}, Takumi Soutome^{1,2}, Rei Karasawa^{1,2}, Takahiko Yanagitani^{1,2,3}
(¹Waseda Univ., ²ZAIKEN, ³JST PRESTO)
- 2P3-9 Wireless MEMS Quartz Crystal Microbalance Sensor Chip Fabricated by Wafer-Level Packaging Process**
○Fumihito Kato¹, Fumiya Kawashima¹, Tomoyuki Nonaka², Akimi Uchida², Hirotsugu Ogi³ (¹Nippon Inst. of Tech., ²Samco Inc., ³Osaka Univ.)
- 2P4-1* Modeling of effective energy range with the ultrasonic frequency and the amplitude**
○Young Ki Lee¹, Jeong IL Youn¹, Jae Hyuk Hwang¹, Jung Hwan Kim¹, Tae Yup Lee², Young Jig Kim¹ (¹Sungkyunkwan Univ., ²DR AXION Co., Ltd.)
- 2P4-2* Study on the characteristic parameters of the radially composite cylindrical ultrasonic transducer**
○Jie Xu, Shuyu Lin (Shaanxi Normal Univ.)
- 2P4-3 Modelling of the nonlinear vibration of 33 effect transducer with transfer matrix**
○Susumu Miyake, Takeshi Morita (Univ. of Tokyo)
- 2P4-4* Single underwater spark discharge induced shock wave propagated within the waveguide**
○Takumi Kobayashi, Koji Aizawa (Kanazawa Inst. of Tech.)
- 2P4-5* A Driving Method for Reduction of Ringing Duration of High Power Ultrasonic Pulse Source**
○Guangyuan Wang, Sayuri Tarvainen, Yuji Watanabe (Takushoku Univ.)
- 2P4-6* Effect of Front Plate Structure of Tough Hydrophones on Their Characteristics -Consideration on The Difference Among Three Types of Front Plate Structure-**
○Michihisa Shiiba¹, Choyu Uehara², Fujimaru Kaise³, Takeshi Morishita³, Nagaya Okada⁴, Minoru Kuribayashi Kurosawa⁵, Shinichi Takeuchi³ (¹Nihon Inst. of Med. Sci., ²SOLA Okinawa Med. Col., ³Toin Univ. of Yokohama, ⁴Honda Electronics, ⁵Tokyo Tech.)
- 2P4-7* Discrimination of HeLa Cells Using Ultrasound Vibration**
○Tomohiro Otsuka, Daisuke Koyama, Mami Matsukawa (Doshisha Univ.)
- 2P4-8 Sonolysis of Aqueous Solutions in CO₂-Ar Atmosphere. ESR study of Various in Number of OH Radicals with Concentration of CO₂.**
○Yuki Ono¹, Hisashi Tanaka¹, Kiyooki Shinashi², Kazunori Anzai³, Hisashi Harada¹
(¹Meisei Univ., ²Chuo Gakuin Univ., ³Nihon Pharmaceutical Univ.)
- 2P4-9* Analysis of growth mechanism of Au seed particles synthesized by sonochemical reduction of Au(III) in Ar dissolved aqueous solution**
○Reo Eguchi, Kenji Okitsu (Univ. of Osaka Pref.)
- 2P4-10 Comparison of Sonochemical and Sonophysical Effects in 20 kHz Horn-type Sonoreactors**
○Yunsung No, Jieun Seo, Dukyoung Lee, Hongseok Jin, Younggyu Son (Kumoh Natl. Inst. of Tech.)
- 2P4-11 The Effects of Gas Sparging and Reflector on Sonochemical Oxidation in 300 kHz Sonoreactors**
○Jieun Seo, Yunsung No, Dukyoung Lee, Sangwon Woo, Younggyu Son (Kumoh Natl. Inst. of Tech.)

- 2P4-12*** Optimization of 28 kHz Double-Bath Sonoreactors for the Applications in Heterogeneous System
○Dukyong Lee, Yunsung No, Jieun Seo, Sehyun Kim, Tae-Oh Kim, Younggyu Son (Kumoh Natl. Inst. of Tech.)
- 2P4-13*** A study on an index variation on the end surface of fiber optic probe hydrophone due to cavitation
○Sou Takeuchi, Masatoshi Ichikawa, Nariyuki Sato, Yoshikazu Koike (Shibaura Inst. of Tech.)
- 2P4-14*** Oxidation of arsenite using a combination of sonochemical reaction and electrochemical reaction
○Miyaki Ohta, Hirokazu Okawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 2P5-1** Least-Square Beamformer for Medical Ultrasound Imaging
○Hideyuki Hasegawa, Ryo Nagaoka (Univ. of Toyama)
- 2P5-2** Focusing Efficiency Improvement of Focused Ultrasound by Refraction Compensation
○Jun Yasuda (Hitachi, Ltd.)
- 2P5-3*** Simultaneous Multimodality imaging of MR and ultrasound
○Shimpei Arai, Shoko Kato, Ken Inagaki, Iwaki Akiyama (Doshisha Univ.)
- 2P5-4*** US and MR Multimodality Imaging of The Heart
○Kazumasa Kanai, Mana Masumoto, Iwaki Akiyama (Doshisha Univ.)
- 2P5-5*** A Study on Improvement of Lateral Resolution in Ultrasound Super Resolution Method Based on Phase of Carrier Wave
○Ryouya Kouzai, Jing Zhu, Norio Tagawa (Tokyo Met. Univ.)
- 2P5-6*** Three-dimensional extension of blood vessel network based on extraction of blood vessel shape and the tree-structured analysis in ultrasound volume
○Takuya Katai¹, Ikumu Yasuda¹, Mitsutoshi Kimura¹, Yoshihiro Edamoto², Kohji Masuda¹ (¹Tokyo Univ. of A&T, ²Higashisaitama Natl. Hosp.)
- 2P5-7*** Experimental Study on Reflection and Scattering Characteristics from Bone and Muscle Tissue for Ultrasonic Visualization of Thoracic Surface
○Tomohiro Yokoyama, Shohei Mori, Mototaka Arakawa, Eiko Onishi, Masanori Yamauchi, Hiroshi Kanai (Tohoku Univ.)
- 2P5-8*** L1-norm Measurement of Medical Ultrasound Signal Using Overcomplete Dictionaries
○Miki Sada, Kazuta Kato, Masayuki Tanabe, Masahiko Nishimoto (Kumamoto Univ.)
- 2P5-9*** Study on Weighted Delay Multiply And Sum Beamforming for Medical Ultrasound Imaging
○Hiroaki Mori, Masayuki Tanabe (Kumamoto Univ.)
- 2P5-10*** Super-Resolution Ultrasonic Imaging Based on MUSIC Processing in Both of Transducer Element Domain and Beamforming Domain
○Jing Zhu, Norio Tagawa (Tokyo Met. Univ.)
- 2P5-11*** Study on Effects of Viscosity on Multispectral Phase-contrast Imaging of Acoustic Impedance
○Kohei Shinoda¹, Masasumi Yoshizawa¹, Seiya Ishikura², Norio Tagawa², Takasuke Irie³ (¹Tokyo Met. Coll. of Industrial Tech., ²Tokyo Met. Univ., ³Microsonic)
- 2P5-12*** 2-D Blood Flow Vector Imaging in Common Carotid Artery Based on 2-Step Block Matching Method Using Envelope and RF Signals
○Ryo Nagaoka, Michiya Mozumi, Hideyuki Hasegawa (Univ. of Toyama)
- 2P5-13*** Noninvasive assessment of vascular elastography using 2D phase-sensitive motion estimator
○Akira Miyajo, Ryo Nagaoka, Hideyuki Hasegawa (Univ. of Toyama)
- 2P5-14*** Multi-frequency phase tracking method for estimation of three-dimensional motion velocity
○Soichiro Nunome, Ryo Nagaoka, Hideyuki Hasegawa (Univ. of Toyama)
- 2P5-15*** Blood flow imaging using singular value decomposition filter during high-intensity focused ultrasound exposure
○Hayato Ikeda, Shin Yoshizawa, Moe Maeda, Shin-ichiro Umemura, Yoshifumi Saijo (Tohoku Univ.)
- 2P5-16*** Singular value decomposition of element echo signal received by individual elements for clutter reduction
○Michiya Mozumi, Ryo Nagaoka, Hideyuki Hasegawa (Univ. of Toyama)

- 2P5-17* Effect of True Aneurysm on Pressure Wave in Artificial Arteries**
 ○Fumiaki Iwase¹, Natsuko Itai¹, Hiroto Shimizu¹, Pierre-Yves Lagrée²,
 Mami Matsukawa¹ (¹Doshisha Univ., ²Sorbonne Univ.)
- 2P5-18 Primary experiment for photoacoustic human in vivo tissue strain imaging**
 ○Chikayoshi Sumi¹, Naoto Sato² (¹Sophia Univ., ²CYBERDYNE Inc.)
- 2P5-19* Multidirectional reception of photoacoustic signal for higher resolution imaging**
 ○Kanta Sato¹, Ryo Shintate¹, Mitsuhiro Fujiwara², Yoshifumi Saijo¹ (¹Tohoku Univ., ²Okusonic)
- 2P6-1 A Basic Study of Movie Shooting of Snapping Shrimp Sound Radiation by Schlieren Method**
 ○Kazuyoshi Mori, Hanako Ogasawara (Natl. Defense Academy)
- 2P6-2 The Acoustic Property Measurement of Piston Core Sediment Using PICAM System**
 ○Ho-Youn Ji, Bok-Kyoung Choi, Seong-Hyeon Kim, Byoung-Nam Kim (Korea Inst. of Ocean Sci. and Tech.)
- 2P6-3 Design of an Acoustic Bender Transducer for Low Frequency Active Sonobuoys**
 Hayeong Shim, Seonghun Pyo, ○Yongrae Roh (Kyungpook Natl. Univ.)
- 2P6-4 Analysis of pulses constituting sperm whale vocalizations**
 ○Ryoichi Iwase (JAMSTEC)

16:10-16:55 Biomedical ultrasound II

Chair: Tsuyoshi Shiina (Kyoto Univ.)

- 2E3-1 Development of An Ultrasonic Probe to Measure Both Radial Arterial Pressure and Diameter at Identical Position for Early Diagnosis of Endothelial Function**
 ○Mototaka Arakawa¹, Takumi Saito¹, Shohei Mori¹, Shigeo Ohba¹, Kazuto Kobayashi²,
 Hiroshi Kanai¹ (¹Tohoku Univ., ²Honda Electronics)
- 2E3-2* Evaluation of shear wave dispersion in hepatic viscoelastic models including fibrous structure**
 ○Shiori Fujii, Makoto Yamakawa, Kengo Kondo, Takeshi Namita, Tsuyoshi Shiina (Kyoto Univ.)
- 2E3-3 Trabecular bone characterization using ultrasonic backscatter parametric imaging**
 ○Ying Li¹, Boyi Li¹, Chen Jiang¹, Qiangqiang Diwu¹, Chengcheng Liu², Dean Ta¹ (¹Fudan Univ., ²Tongji Univ.)

17:00-17:20 Awards Ceremony

18:00-20:00 Banquet

Wednesday, October 31

9:30-11:30 Poster Session

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

- 3P1-1* Direct Observation of Microdroplets Penetrating Porous Substrate**
 ○Ryohsuke Yokota, Taichi Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)
- 3P1-2 Time-domain Brillouin scattering in grating structures using two-axis-controlled obliquely-incident probe light**
 ○Kandai Tsutsui¹, Osamu Matsuda¹, Kentaro Fujita¹, Thomas Pezeri², Motonobu Tomoda¹,
 Vitalyi E. Gusev² (¹Hokkaido Univ., ²Le Mans Univ.)
- 3P1-3* Wideband acoustic absorber by multicomponent metasurfaces and its application to energy harvesting**
 ○Mikiya Fujita¹, Kensuke Manabe¹, Kenji Tsuruta¹, Tetsunori Hada², Naoko Yoroza² (¹Okayama Univ., ²Mazda Motor)
- 3P1-4* High Temperature Properties of LiNbO₃/Bi₄Ti₃O₁₂**
 ○Masaki Yugawa, Tomoya Yamamoto, Makiko Kobayashi (Kumamoto Univ.)
- 3P1-5* Development of Pb(Zr,Ti)O₃/TiO₂ Ultrasonic Transducer**
 ○Takumi Hara, Shohei Nozawa, Makiko Kobayashi (Kumamoto Univ.)

- 3P1-6 Accurate measurement of viscosity curve in wide shear rate range for in-vitro evaluation of fluidity of blood using Rheology-Spectrometer**
○Taichi Hirano, Shujiro Mitani, Keiji Sakai (Univ. of Tokyo)
- 3P1-7* Detailed investigations of oscillation and relaxation behaviors in threadlike micelle by means of ultrasonically induced birefringence**
○Yuya Suzuki, Tatsuro Matsuoka (Nagoya Univ.)
- 3P1-8 Elasticity of water melon flesh evaluated by using surface-wave velocity**
○Pak-Kon Choi, Yuu Sugashima, Takashi Ikeda, Ruka Katoh, Miho Konishi (Meiji Univ.)
- 3P1-9* Evaluation of a SPR Sensor by Sub-Nanosecond Pump-Probe Technique**
○Hiromichi Hayashi, Hayato Ichihashi, Shoya Ueno, Mami Matsukawa (Doshisha Univ.)
- 3P1-10* Transmission and focusing of ultrasonic wave in silicone by two-dimensional phononic crystal**
○Midou Hoshika, Kensuke Manabe, Kenji Tsuruta (Okayama Univ.)
- 3P2-1 The study of high efficiency driving of HIFU transducers**
○Hideki Takeuchi¹, Takashi Azuma¹, Kiyoshi Yoshinaka² (¹Univ. of Tokyo, ²AIST)
- 3P2-2* Development of Soft PZT Phased Array Transducer for Large Amplitude Incidence**
○Kosuke Kikuchi, Yoshikazu Ohara, Toshihiro Tsuji, Tsuyoshi Mihara (Tohoku Univ.)
- 3P2-3* Imaging Inspection for Delamination Using Energy Variations of Flexural Vibrations Generated by Laser**
○Shogo Nakao, Takahiro Hayashi (Kyoto Univ.)
- 3P2-4* Mobile Evacuation Guidance System Using Digital Acoustic Communication**
○Shota Endo, Tadashi Ebihara, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)
- 3P2-5* Performance Evaluation of Acoustic Pedestrian-to-vehicle Communication System in Non-line-of-sight Environment**
○Yusuke Umezawa, Tadashi Ebihara, Koichi Mizutani, Naoto Wakatsuki (Univ. of Tsukuba)
- 3P2-6* Air-coupled ultrasonic vertical reflection method using pulse compression and various window functions**
○Kento Suzuki, Masashi Ishikawa, Hideo Nishino (Tokushima Univ.)
- 3P2-7* Ultrasonic Measurements During Solidification of Molten Polyethylene Using Polymer Waveguide Probe**
○Takeyuki Kurauchi, Masanori Abe, Ikuo Ihara (Nagaoka Univ. of Tech.)
- 3P2-8* Measurement accuracy of speed of sound in tissue-mimicking phantom using path-through airborne ultrasound**
○Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 3P2-9* Continuous measurement of particle size using a combination of resonance flexural vibration modes of a circular disc**
○Takuya Kikkawa, Daisuke Koyama, Mami Matsukawa (Doshisha Univ.)
- 3P2-10* Ultrafast Phased Array Imaging with Pump Excitation: an Application to Closed Crack Characterization**
Yoshikazu Ohara¹, Sylvain Haupert², ○Sinan Li³ (¹Tohoku Univ., ²Sorbonne Univ., ³Verasonics Inc.)
- 3P2-11* Ultrasonic observation of intracellular differentiation of HDACi-treated C2C12 cultured cells and evaluation of artificial organs**
○Kazuki Ota¹, Washiya Mamoru¹, Kyoichi Takanashi¹, Kazuto Kobayashi², Naohiro Hozumi¹, Sachiko Yoshida¹ (¹Toyohashi Univ. of Tech., ²Honda Electronics)
- 3P2-12* The evaluation of human skin humidity using ultrasonic observation**
○Marin Higashiyama¹, Atsushi Imori¹, Kazuto Kobayashi², Naohiro Hozumi¹, Sachiko Yoshida¹ (¹Toyohashi Univ. of Tech., ²Honda Electronics)
- 3P2-13* Fast two-dimensional optical full-field imaging of GHz surface acoustic waves**
○Kai Kihara¹, Thomas Pezeril², Motonobu Tomoda¹, Osamu Matsuda¹ (¹Hokkaido Univ., ²Le Mans univ.)
- 3P2-14 Generation and Propagation of Lateral Wave by Sound Source in Underground Duct**
○Toshiaki Kikuchi¹, Koichi Mizutani² (¹Natl. Defense Academy, ²Univ. of Tsukuba)

- 3P3-1 Effect of Base Filters on Phase-Noise Characteristics of Butler Crystal Oscillators**
 ○Yasuaki Watanabe¹, Yufeng Xin¹, Yunhao Ma¹, Jing Wang¹, Katsuaki Sakamoto²
 (¹Tokyo Met. Univ., ²Nihon Dempa Kogyo)
- 3P3-2 Enlarging Bandwidth of Piezoelectric Vibration Energy Harvesters Using Magnetic Coupling**
 ○Yung-Yu Chen, Hung-Yu Lin (Tatung Univ.)
- 3P3-3* Bandwidth control of ultrasonic transducer by shaping piezoelectric ceramic vibrator**
 ○Soohyun Lim¹, Jungsoon Kim², Moojoon Kim¹ (¹Pukyong Natl. Univ., ²Tongmyong Univ.)
- 3P3-4* Effect of Additional Thin Film of Piezoelectric Materials on Frequency Response of Surface Acoustic Devices**
 ○Shinya Rikimaru, Sunao Murakami, Kanato Kitamura, Takahiro Ito (Kyushu Inst. of Tech.)
- 3P3-5 Ultra-wideband T-type Ladder Filters using 0th Shear Horizontal Mode Plate Wave in LiNbO₃ Plate**
 ○Micho Kadota, Yoshimi Yunoki, Shuji Tanaka (Tohoku Univ.)
- 3P3-6 Analysis of Loss in I.H.P. SAW structure**
 ○Yasumasa Taniguchi, Takeshi Nakao, Masayoshi Koshino (Murata Mfg.)
- 3P3-7 Observation of Longitudinal-type SAWs on a Thin LiNbO₃ Plate by Laser Probe System**
 ○Tetsuya Kimura^{1,2}, Haruki Kyoya¹, Hiromu Okunaga¹, Masashi Omura¹, Ken-ya Hashimoto² (¹Murata Mfg., ²Chiba Univ.)
- 3P3-8 Theoretical analysis of longitudinal wave leaky SAW propagation characteristics on ScAlN film/Quartz or Sapphire substrate**
 ○Masashi Suzuki, Naoya Sawada, Shoji Kakio (Univ. of Yamanashi)
- 3P3-9 Impact of Transverse Mode Resonances on Second Harmonic (H2) Generation in RF BAW Structures**
 ○Luyan Qiu¹, Xinyi Li^{2,1}, Tatsuya Omori¹, Ken-ya Hashimoto¹
 (¹Chiba Univ., ²Univ. of Electronic Sci. and Tech. of China)
- 3P3-10* Applicability of Single Precision GPU for Fast 2D FEM Simulation of SAW Devices Using Hierarchical Cascading Technique**
 ○Naoto Matsuoka^{1,2}, Luyan Qiu², Xinyi Li^{3,2}, Tatsuya Omori², Ken-ya Hashimoto²
 (¹Nihon Dempa Kogyo, ²Chiba Univ., ³Univ. of Electronic Sci. and Tech. of China)
- 3P4-1 Effect of Ultrafine Bubbles on Reducer-free Synthesis of Gold Nanoparticles by Ultrasound**
 ○Keiji Yasuda¹, Tomofumi Sato¹, Yoshiyuki Asakura² (¹Nagoya Univ., ²Honda Electronics)
- 3P4-2* Effect of alkyl chain length of added alcohol on sonoluminescence intensity decay**
 ○Kota Shiba¹, Yu Takemura¹, Yoshiteru Mizukoshi², Ken Yamamoto¹ (¹Kansai Univ., ²Tohoku Univ.)
- 3P4-3 Electrification of a bubble under SBSL**
 ○Hyang-Bok Lee, Pak-Kon Choi (Meiji Univ.)
- 3P4-4* Effect of ultrasound irradiation on deposition of Au nanoparticles on carbon coated cathode material**
 ○Yasuyuki Tanaka¹, Hirokazu Okawa¹, Yuki Ono¹, Turtogtokh Enkhtuya², Tsermaa Galya², Takahiro Kato¹, Katsuyasu Sugawara¹ (¹Akita Univ., ²Mongolian Univ. of Sci. and Tech.)
- 3P4-5 Effect of horn and liquid height in ultrasonic atomization**
 ○Teruyuki Kozuka¹, Junsuke Ando¹, Masanori Sato², Kyuichi Yasui³ (¹Aichi Inst. of Tech., ²Honda Electronics, ³AIST)
- 3P4-6 Influence of the Density of Liquid on the Acoustic Streaming for Ultrasonic Melt Treatment**
 ○Jeong Il Youn¹, Young Ki Lee¹, Jong Min Kim¹, Young Jig Kim¹, Ja Wook Koo² (¹Sungkyunkwan Univ., ²DR AXION Co., Ltd.)
- 3P4-7 Synthesis of porous γ -Fe₂O₃ via alkaline treatment of size controlled scorodite particles synthesized using ultrasound irradiation and its evaluation as a cathode for lithium-ion battery**
 ○Yuya Kitamura¹, Hirokazu Okawa¹, Kozo Shinoda², Takahiro Kato¹, Katsuyasu Sugawara¹, Shigeru Suzuki² (¹Akita Univ., ²Tohoku Univ.)
- 3P4-8 Crystal Orientation Analysis of Pure Aluminum Damaged by Cavitation Impact**
 ○Shinobu Sugawara (Natl. Maritime Res. Inst.)
- 3P4-9* Study for low-temperature driving of a loop-tube-type thermoacoustic system-Relation between stack humidification and acoustic streaming -**
 ○Daichi Kuroki¹, Shin-ichi Sakamoto², Yukihiro Takeyama¹, Yoshiaki Watanabe¹ (¹Doshisha Univ., ²Univ. of Shiga Pref.)

- 3P4-10*** Improvement of energy conversion efficiency of thermoacoustic system by heating stack inside
 ○Mana Sugimoto¹, Shin-ichi Sakamoto², Yuya Kurata¹, Yuto Kawashima¹, Yoshiaki Watanabe¹ (¹Doshisha Univ., ²Univ. of Shiga Pref.)
- 3P4-11*** Influence of the acoustic impedance in local high temperature range on thermoacoustic system
 ○Kazuki Shiraki¹, Shin-ichi Sakamoto², Yoshiaki Watanabe¹ (¹Doshisha Univ., ²Univ. of Shiga Pref.)
- 3P4-12*** Fundamental study on enlarge of a loop-tube-type thermoacoustic system
 — Measurement of the onset temperature by experiment —
 ○Kenshiro Inui¹, Shin-ichi Sakamoto¹, Yuichiro Orino², Hidekazu Katsuki¹, Shota Kurihara¹ (¹Univ. of Shiga Pref., ²Tokyo Tech.)
- 3P4-13*** Effect of heat exchanger with parallel plate fins on temperature gradient on straight-tube-type thermoacoustic system
 ○Takeru Kawai, Shin-ichi Sakamoto (Univ. of Shiga Pref.)
- 3P4-14*** Study of heat input in a loop-tube-type thermoacoustic system
 — Fundamental study of the temperature distribution of the thermal buffer tube —
 ○Hidekazu Katsuki, Shin-ichi Sakamoto, Kenshiro Inui, Shota Kurihara (Univ. of Shiga Pref.)
- 3P5-1*** Local Two-Dimensional Distribution of Propagation Velocity of Myocardial Contraction for Ultrasonic Visualization of Propagation Path of Contraction
 ○Akane Hayashi, Shohei Mori, Mototaka Arakawa, Hiroshi Kanai (Tohoku Univ.)
- 3P5-2*** Quantitative evaluation on estimation of shear wave propagation speed using phase of particle velocity
 ○Masato Minagawa¹, Ryo Nagaoka¹, Hideyuki Hasegawa¹, Tadashi Yamaguchi², Shin-ichi Yagi³ (¹Univ. of Toyama, ²Chiba Univ., ³Meisei Univ.)
- 3P5-3*** Shear wave elasticity imaging for tissue engineering: probing superficial regions
 ○Chulhee Yun¹, Heechul Yoon², Stanislav Y Emelianov^{2,3}, Seung Yun Nam¹ (¹Pukyong Natl. Univ., ²Georgia Inst. of Tech., ³Emory Univ.)
- 3P5-4** Measurement of Shear Wave Absorption with Correction of the Diffraction Effect for Viscoelasticity Characterization of Soft Tissues
 Zhen Qu, ○Yuu Ono (Carleton Univ.)
- 3P5-5** Investigation on dependence of initial value of statistical factor in estimation of temperature distribution inside biological tissue
 ○Michio Takeuchi¹, Yuta Matsui¹, Toshihiko Sakai¹, Ryo Nagaoka², Hideyuki Hasegawa² (¹Tateyama Kagaku Industry Co., Ltd., ²Univ. of Toyama)
- 3P5-6*** Backscatter coefficient analysis of fatty liver considering of micro tissue structure
 ○Atsuko Yamada¹, Kazuki Tamura¹, Emilie Franceschini², Kenji Yoshida¹, Tadashi Yamaguchi¹ (¹Chiba Univ., ²Aix-Marseille University / CNRS)
- 3P5-7** Evaluation of liver fibrosis using optimal moments as input parameters based on multi-Rayleigh model
 ○Chuang Zhang, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 3P5-8** Improvement of Estimation Accuracy of Liver Fibrosis Parameters Based on Multi-Rayleigh Model Considering Fluctuation of Statistical Moment of Ultrasound Echo Envelope
 ○Shohei Mori¹, Masaru Yamauchi², Shinnosuke Hirata², Hiroyuki Hachiya² (¹Tohoku Univ., ²Tokyo Tech.)
- 3P5-9*** Comprehensive backscattering characteristics analysis for quantitative ultrasound with annular array
 ○Takeru Mizoguchi¹, Kazuki Tamura¹, Jonathan Mamou², Jeffrey A. Ketterling², Kenji Yoshida¹, Tadashi Yamaguchi¹ (¹Chiba Univ., ²Lizzi Center for Biomedical Eng.)
- 3P5-10** Measurement of Bioacoustic Properties by Ultrasonic Interference Method Using Frequency Sweep
 ○Seiya Ishikura¹, Norio Tagawa¹, Masasumi Yoshizawa², Takasuke Irie^{1,3} (¹Tokyo Met. Univ., ²Tokyo Met. Coll. of Industrial Tech., ³Microsonic Co, Ltd.)
- 3P5-11** Composition and Acoustic Properties in Cartilage Phantom
 ○Naotaka Nitta¹, Masaki Misawa¹, Tomokazu Numano² (¹AIST, ²Tokyo Met. Univ.)
- 3P5-12*** Verification of effects caused by echo separation method in speed of sound analysis at ultra-high frequency
 ○Toshiki Matsuzaki, Atsuko Yamada, Kazuki Tamura, Kazuyo Ito, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)

- 3P5-13*** **Three dimensional acoustic impedance analysis for a cultured cell by 250 MHz ultrasound**
○Tamaki Honda, Kenji Yoshida, Kazuyo Ito, Michiko Sugawara, Tadashi Yamaguchi (Chiba Univ.)
- 3P5-14** **Speed of Sound Analysis from Micro and Macro Size by Multi-Frequency Ultrasound Microscopic Measurement**
○Takuya Ogawa, Kazuyo Ito, Kazuki Tamura, Kenji Yoshida, Tadashi Yamaguchi (Chiba Univ.)
- 3P5-15*** **Evaluation of Longitudinal Wave Velocity in Diabetic Rat Tibia using Micro-Brillouin Scattering Technique**
○Hirokazu Yasui, Takumi Fukunaga, Yuki Kuzuhara, Masaya Ikegawa, Mami Matsukawa (Doshisha Univ.)
- 3P5-16*** **RF Data Recovery using Deep Neural Network in Subjects Including Bone for Ultrasound Computed Tomography**
○Yoshiki Watanabe, Naoki Tomii, Hongxiang Lin, Shu Takagi, Takashi Azuma (Univ. of Tokyo)
- 3P5-17*** **A Novel Approach for Intramuscular Lipid Content Estimation with Portable Ultrasonic Measuring Device**
○Hiroki Takeuchi, Satoki Deguchi, Hongxiang Lin, Naoki Tomii, Takashi Azuma (Univ. of Tokyo)
- 3P5-18*** **Measurement of temperature dependence of sound velocity for biological tissues**
○Yukako Tsujimoto¹, Daiki Matsuda¹, Kiyoyuki Minamiguchi², Toshihiro Tanaka², Toshiko Hirai², Iwaki Akiyama¹ (¹Doshisha Univ., ²Nara Medical Univ.)
- 3P5-19*** **Influence of heartbeat in the detection of unstable plaque using ultrasonic velocity-change method and its removal method**
○Masanobu Kameda¹, Yuya Inuzuka¹, Tetsuya Matsuyama¹, Kenji Wada¹, Koichi Okamoto¹, Toshiyuki Matsunaka², Hiromichi Horinaka¹ (¹Univ. of Osaka Pref., ²TU Research Lab.)
- 3P6-1** **Effect of Acoustic Metamaterials on Frequency Selective and Underwater Communication Performance in Underwater Multipath Channel**
○Jihyun Park, Hyunsoo Jeong, Kyu-Chil Park (Pukyong Natl. Univ.)
- 3P6-2*** **Dependence of Demodulation Performance on Symbol Rate for Underwater Acoustic Communication with Nonuniform Doppler Shift**
○Mitsuyasu Deguchi, Yukihiro Kida, Yoshitaka Watanabe, Takuya Shimura (JAMSTEC)
- 3P6-3** **Adaptive Bidirectional Equalization with Burst Error Detection for Long-Range Underwater Acoustic Communication**
○Hyeonsu Kim¹, Sunhyo Kim¹, Jee Woong Choi¹, Ho Seuk Bae² (¹Hanyang Univ., ²Agency for Defense Dev.)
- 3P6-4** **A Relationship of Time Reversal and Multi-Channel DFE in Underwater Acoustic Communication**
○Yukihiro Kida, Takuya Shimura, Mitsuyasu Deguchi (JAMSTEC)
- 3P6-5*** **Performance of time and space diversity technique in underwater acoustic communication**
○Hyunsoo Jeong, Jihyun Park, Kyu-Chil Park (Pukyong Natl. Univ.)
- 3P6-6** **Biomimetic FSK Underwater Communications using Dolphin Whistle**
○Jongmin Ahn¹, Honjun Lee¹, Yongchul Kim¹, Wanjin Kim², Jeahak Chung¹ (¹Inha Univ., ²ADD)
- 11:30-13:00** **LUNCH TIME**
- 13:00-13:50** **Plenary Talk III** **Chair: Pak-Kon Choi (Meiji Univ.)**
- 3PL** **Bone Ultrasound**
○Mami Matsukawa (Doshisha Univ.)
- 14:00-15:15** **Biomedical ultrasound III, High power ultrasound III**
Chair: Tatsuro Matsuoka (Nagoya Univ.)
- 3J1-1*** **Visualization of wall propagation and water surface reflection effects on ultrasound fields generated inside a small container**
○Takeshi Aikawa, Nobuki Kudo (Hokkaido Univ.)

- 3J1-2* Response Analysis of Brain Nerves System Cultivation Cell by Ultrasound**
 ○Kenya Sasaoka, Tsuyoshi Takashi, Kenta Shinba, Ayumu Ishijima,
 Naoki Tomii, Yasuhiko Jimbo, Takashi Azuma (Univ. of Tokyo)
- 3J1-3* Multi-frequency Tissue Characterization of Skin Tissues for Quantitative Ultrasound Diagnosis of Lymphedema**
 ○Masaaki Omura, Kenji Yoshida, Tamaki Honda, Shinsuke Akita, Ichiro Manabe, Tadashi Yamaguchi (Chiba Univ.)
- 3J1-4 Separation and desulfurization of bitumen from oil sand using oxidation treatment combined with ultrasound**
 ○Hirokazu Okawa, Nobuyuki Akazawa, Takahiro Kato, Katsuyasu Sugawara (Akita Univ.)
- 3J1-5 Sonoluminescence from Alkaline-Earth Metals in Sulfuric Acid**
 ○Shin-ichi Hatanaka¹, Kenneth S. Suslick² (¹Univ. of Electro-Comm., ²Univ. of Illinois)
- 15:15-16:30 Ocean acoustics II, Measurement techniques III**
Chair: Kazuyoshi Mori (Natl. Defense Academy)
- 3J2-1* Quantitative evaluation for fluctuation of sound reflected from sea surface**
 ○Tomoya Tsukui, Shinnosuke Hirata, Hiroyuki Hachiya (Tokyo Tech.)
- 3J2-2 Performance Evaluation of Underwater Acoustic Communication Using Orthogonal Signal Division Multiplexing in Suruga Bay**
 ○Tadashi Ebihara¹, Hanako Ogasawara², Koichi Mizutani¹, Naoto Wakatsuki¹
 (¹Univ. of Tsukuba, ²Natl. Defense Academy)
- 3J2-3 Detection of resonance frequency by spatial spectral entropy for noncontact acoustic inspection method**
 ○Kazuko Sugimoto¹, Tsuneyoshi Sugimoto¹, Noriyuki Utagawa², Chitose Kuroda²
 (¹Toin Univ. of Yokohama, ²Sato Kogyo Co., Ltd.)
- 3J2-4* Time-resolved imaging of GHz surface acoustic waves in phononic crystals at arbitrary frequencies**
 ○Hiroki Muramoto, Hiroaki Koga, Hiroki Nishita, Kentaro Fujita,
 Motonobu Tomoda, Osamu Matsuda (Hokkaido Univ.)
- 3J2-5 Background gas analysis with leaky attenuation in ball surface acoustic wave trace moisture analyzer**
 ○Kazushi Yamanaka^{1,2}, Shingo Akao¹, Nobuo Takeda¹, Toshihiro Tsuji^{2,1}, Toru Oizumi¹,
 Hideyuki Fukushi¹, Tatsuhiro Okano¹, Yusuke Tsukahara¹ (¹Ball Wave, ²Tohoku Univ.)
- 16:30-16:45 CLOSING**