

# The 32nd Symposium on Ultrasonic Electronics (USE 2011) Program

† Speaker

\* Applying to Young Scientists Award

## Tuesday, November 8

10:00-	<b>Opening Ceremony</b>		
10:10-11:10	<b>Piezoelectric Devices (Bulk wave devices, Surface wave devices)</b>		
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	Takeru Mutoh <sup>†</sup> , Mitsuaki Koyama <sup>1</sup> , Takao Aizawa <sup>2</sup> , Toshifumi Matsuoka <sup>3</sup> ( <sup>1</sup> Nihon Dempa Kogyo; <sup>2</sup> Suncoh Consultant; <sup>3</sup> Kyoto Univ.)		
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1J3-4	<b>Sensitivity of SAW magnetic sensors composed of various Ni electrode structures</b>		7
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<b>3Pb1-2*</b>	<b>Pressure wave propagation in human arterial model -Comparative study of 1-D numerical simulation and experiment-</b> Masashi Saito <sup>1†</sup> , Yuki Ikenaga <sup>1</sup> , Mami Matsukawa <sup>1</sup> , Yoshiaki Watanabe <sup>1</sup> , Takaaki Asada <sup>1,2</sup> , Pierre-Yves Lagrée <sup>3</sup> ( <sup>1</sup> Doshisha Univ.; <sup>2</sup> Murata Mfg.; <sup>3</sup> UPMC)	<b>455</b>
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<b>3Pb1-4*</b>	<b>Monitoring of sound velocity and attenuation in SrTiO<sub>3</sub> across the phase transition at low temperatures using picosecond ultrasonics</b> Akira Nagakubo <sup>†</sup> , Akihiro Yamamoto, Hirotsugu Ogi, Masahiko Hirao (Osaka Univ.)	<b>459</b>
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<b>3Pb2-4*</b>	<b>Examination of two-dimensional airborne ultrasonic position and velocity real-time measurement using chirp waves</b> Shinya Saito <sup>1†</sup> , Minoru Kurosawa <sup>1</sup> , Yuichiro Orino <sup>1</sup> , Shinnosuke Hirata <sup>2</sup> ( <sup>1</sup> Tokyo Inst. of Tech.; <sup>2</sup> UEC)	<b>473</b>
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<b>3Pb2-11</b>	<b>Fiber-optic vibration sensor based on bending characteristics of long period fiber grating</b> Satoshi Tanaka <sup>†</sup> , Keisuke Ikuma, Atsushi Wada, Nobuaki Takahashi (Natl. Defense Academy)	<b>487</b>
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<b>3Pb3-5</b>	<b>Analysis of characteristics of coupled bending vibrators used as a force sensor</b> Sumio Sugawara <sup>1</sup> , Jiro Terada <sup>2</sup> , Yoshikazu Mito <sup>1</sup> , Yusuke Takahashi <sup>1†</sup> ( <sup>1</sup> Ishinomaki Senshu Univ.; <sup>2</sup> Osaka Inst. of Tech.)	<b>497</b>
<b>3Pb3-6*</b>	<b>Consideration of characteristics of frequency-change-type two-axis acceleration sensor</b> Yu Kajiwara <sup>†</sup> , Sumio Sugawara (Ishinomaki Senshu Univ.)	<b>499</b>
<b>3Pb3-7</b>	<b>Fundamental study on hardness measurement using piezoelectric bimorph resonator</b> Subaru Kudo <sup>†</sup> (Ishinomaki Senshu Univ.)	<b>501</b>
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<b>3Pb3-9</b>	<b>Effect of fabrication parameters on the characteristics of Fresnel lens and piezoelectric transducer</b> Tuan-Anh Bui <sup>†</sup> , Min-Chun Pan <sup>1</sup> , Wen-Ching Shih <sup>2</sup> ( <sup>1</sup> Natl. Central Univ.; <sup>2</sup> Tatung Univ.)	<b>505</b>
<b>3Pb4-1*</b>	<b>A study on reduction of coefficient of friction by using ultrasonic vibration</b> Satoshi Nakamura <sup>†</sup> , Hirofumi Miyamoto, Toshiaki Furusawa (Teikyo Univ.)	<b>507</b>
<b>3Pb4-2*</b>	<b>Removal of liquid in a partially bent pore using high-intensity aerial ultrasonic waves</b> Ayano Sensui <sup>†</sup> , Ryo Kato, Toshiharu Maruyama, Ayumu Osumi, Youichi Ito (Nihon Univ.)	<b>509</b>
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<b>3Pb4-4*</b>	<b>Fundamental study for the solution of thermoacoustic phenomenon using numerical calculation - Relation between the setting position of stack and heat flow -</b> Kentaro Kuroda <sup>†</sup> , Shin-ichi Sakamoto <sup>2</sup> , Kenji Shibata <sup>1</sup> , Takao Tsuchiya <sup>1</sup> , Yoshiaki Watanabe <sup>1</sup> ( <sup>1</sup> Doshisha Univ.; <sup>2</sup> Univ. of Shiga Pref.)	<b>513</b>
<b>3Pb4-5*</b>	<b>Fundamental study on the acoustic impedance relation to sound intensity amplification of a prime mover</b> Kazuki Sahashi <sup>†</sup> , Shin-ichi Sakamoto <sup>2</sup> , Kentaro Kuroda <sup>1</sup> , Yoshiaki Watanabe <sup>1</sup> ( <sup>1</sup> Doshisha Univ.; <sup>2</sup> Univ. of Shiga Pref.)	<b>515</b>
<b>3Pb4-6*</b>	<b>Ultrasonic atomization using a vibrating small gap</b> Ryoichi Isago <sup>†</sup> , Kenta Tokumitsu, Daisuke Koyama, Kentaro Nakamura (Tokyo Inst. of Tech.)	<b>517</b>
<b>3Pb4-7*</b>	<b>High-speed observation of cavitating bubble diameter in surface active SDS solutions</b> Shota Deno <sup>†</sup> , Pak-Kon Choi (Meiji Univ.)	<b>519</b>
<b>3Pb4-8*</b>	<b>Degradation of dioxine by combination of ultrasound and ozone microbubbles</b> Zheng Xu <sup>†</sup> , Kyosuke Mochida, Tetsuya Naito, Keiji Yasuda (Nagoya Univ.)	<b>521</b>
<b>3Pb4-9*</b>	<b>Effluence of internal substances from Pluronic micelle using ultrasound</b> Daisuke Kobayashi <sup>†</sup> , Masahiro Karasawa, Tomoki Takahashi, Katsuto Otake, Atsushi Shono (Tokyo Univ. of Sci.)	<b>523</b>
<b>3Pb4-10*</b>	<b>Degradation of dichloroacetonitrile by sonolytic ozonation</b> Beomguk Park, Donghoon Shin <sup>†</sup> , Eunju Cho, Jeehyeong Khim (Korea Univ.)	<b>525</b>
<b>3Pb4-11</b>	<b>Sonochemical oxidation of cyanide ion using potassium peroxydisulfate as an oxidizing agent</b> Mingcan Cui <sup>†</sup> , Min Jang <sup>2</sup> , Seban Lee <sup>1</sup> , Jeehyeong Khim <sup>1</sup> ( <sup>1</sup> Korea Univ.; <sup>2</sup> Inst. of Mine Reclamation Tech.)	<b>527</b>
<b>3Pb4-12*</b>	<b>Study of degradation of polymer in solution at 20 kHz sonication</b> Khuyen Viet Bao Tran <sup>†</sup> , Yoshiyuki Asakura <sup>2</sup> , Shibobu Koda <sup>1</sup> ( <sup>1</sup> Nagoya Univ.; <sup>2</sup> Honda Electronics)	<b>529</b>

<b>3Pb5-1*</b>	<b>Therapeutic array transducer element using coresonance between hemispherical piezoceramic shell and water sphere</b>	<b>531</b>
	Kenji Otsu <sup>†</sup> , Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-2</b>	<b>Evaluation of ultrasound beam profile of Fresnel zone plate array transducer</b>	<b>533</b>
	Tatsuya Oyama <sup>†</sup> , Yasutaka Tamura, Hirotaka Yanagida, Toshihito Sato (Yamagata Univ.)	
<b>3Pb5-3*</b>	<b>High voltage staircase driver circuit for triggered HIFU treatment</b>	<b>535</b>
	Keisuke Takada <sup>†</sup> , Jumpei Okada, Kotaro Nakamura, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-4*</b>	<b>3D-quantitative optical measurement of asymmetrically focused ultrasound pressure field</b>	<b>537</b>
	Yuta Shimazaki <sup>†</sup> , Soichiro Harigane, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-5</b>	<b>Ultrasonic monitoring of high intensity focused ultrasound lesions using sub-image correlation</b>	<b>539</b>
	Ryo Matsuzawa <sup>†</sup> , Takashi Shishitani, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-6*</b>	<b>Simulated B-mode image from acoustic impedance map of HIFU-exposed specimen</b>	<b>541</b>
	Takashi Shishitani <sup>†</sup> , Ryo Matsuzawa, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-7*</b>	<b>Analysis of temperature increase in excised porcine liver tissue induced by cavitation-enhanced HIFU</b>	<b>543</b>
	Eiko Iwasaki <sup>†</sup> , Ayumu Asai, Tatsuya Moriyama, Takashi Shishitani, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-8*</b>	<b>Efficient generation of cavitation cloud by dual-frequency ultrasound exposure</b>	<b>545</b>
	Jun Yasuda <sup>†</sup> , Ryo Takagi, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3Pb5-9</b>	<b>Optical realtime monitoring of cavitation induction and thermal coagulation with phase change nano droplet in tissues</b>	<b>547</b>
	Ken-ichi Kawabata <sup>†</sup> , Rei Asami <sup>1</sup> , Shinichiro Umemura <sup>2</sup> ( <sup>1</sup> Hitachi; <sup>2</sup> Tohoku Univ.)	
<b>3Pb5-10</b>	<b>Heating location control of gas exchanged microbubble enhanced HIFU</b>	<b>549</b>
	Kiyoshi Yoshinaka <sup>†</sup> , Ken-ichi Kajiyama <sup>2</sup> , Hiroshi Utashiro <sup>2</sup> , Takashi Azuma <sup>2</sup> , Akira Sasaki <sup>2</sup> , Shu Takagi <sup>2</sup> , Yoichiro Matsumoto <sup>2</sup> ( <sup>1</sup> AIST; <sup>2</sup> Univ. of Tokyo)	
<b>3Pb5-11*</b>	<b>Active path selection of microbubbles in an against flow using acoustic radiation force produced by multiple sound sources</b>	<b>551</b>
	Ren Koda <sup>†</sup> , Nobuyuki Watarai <sup>1</sup> , Nobuhiko Shigehara <sup>1</sup> , Takumi Ito <sup>1</sup> , Ayumu Minamide <sup>1</sup> , Kohji Masuda <sup>1</sup> , Yoshitaka Miyamoto <sup>2</sup> , Toshio Chiba <sup>2</sup> ( <sup>1</sup> Tokyo Univ. of A&T; <sup>2</sup> Natl. Center for Child Health and Dev.)	
<b>3Pb5-12*</b>	<b>Observation of continuous variation in size of microbubble aggregations using a broadband sound source</b>	<b>553</b>
	Nobuyuki Watarai <sup>†</sup> , Ren Koda <sup>1</sup> , Nobuhiko Shigehara <sup>1</sup> , Kohji Masuda <sup>1</sup> , Yoshitaka Miyamoto <sup>2</sup> , Toshio Chiba <sup>2</sup> ( <sup>1</sup> Tokyo Univ. of A&T; <sup>2</sup> Natl. Center for Child Health and Dev.)	
<b>3Pb5-13*</b>	<b>Observation of flow variation in capillaries of artificial blood vessel by producing microbubble aggregations</b>	<b>555</b>
	Nobuhiko Shigehara <sup>†</sup> , Nobuyuki Watarai <sup>1</sup> , Ren Koda <sup>1</sup> , Koji Masuda <sup>1</sup> , Yoshitaka Miyamoto <sup>2</sup> , Toshio Chiba <sup>2</sup> ( <sup>1</sup> Tokyo Univ. of A&T; <sup>2</sup> Natl. Center for Child Health and Dev.)	
<b>3Pb5-14*</b>	<b>Effect of acoustic radiation force to microbubbles in flow and its simulation in bifurcation</b>	<b>557</b>
	Ayumu Minamide <sup>†</sup> , Takumi Ito, Nobuyuki Watarai, Ren Koda, Nobuhiko Shigehara, Kohji Masuda (Tokyo Univ. of A&T)	
<b>3Pb5-15*</b>	<b>Simulation of distribution of acoustic radiation force to microbubbles in traveling sound field</b>	<b>559</b>
	Takumi Ito <sup>†</sup> , Ayumu Minamide, Ren Koda, Nobuyuki Watarai, Nobuhiko Shigehara, Kohji Masuda (Tokyo Univ. of A&T)	
<b>3Pb5-16*</b>	<b>Seed-dependent aggregation behavior of amyloidosis peptides studied by wireless quartz crystal microbalance biosensors</b>	<b>561</b>
	Masahiko Fukushima <sup>†</sup> , Taiji Yanagida, Hirotosugu Ogi, Masahiko Hirao, Yuji Shitaka, Hisashi Yagi, Yuji Goto (Osaka Univ.)	
<b>3Pb5-17</b>	<b>Cell death under different acoustic environments of high intensity ultrasound</b>	<b>563</b>
	Soo Yeon Lee <sup>†</sup> , Ji Ye Park, Young H. Kim, Kwang Il Kang (Korea Sci. Academy of KAIST)	
<b>3Pb5-18</b>	<b>Effect of laser induced stress wave on mammalian cells</b>	<b>565</b>
	Mieko Kogi <sup>†</sup> , Motoaki Nishiwaki, Yuji Kitamura, Yuki Makita, Koji Aizawa, Yoshiaki Tokunaga (Kanazawa Inst. of Tech.)	
<b>3Pb6-1*</b>	<b>Tidal effect at small-scale sound propagation experiment</b>	<b>567</b>
	Seiji Kamimura <sup>†</sup> , Hanako Ogasawara, Kazuyoshi Mori, Toshiaki Nakamura (Natl. Defense Academy)	



<b>3Pb6-2*</b>	<b>Experimental study on Doppler shift compensation for underwater acoustic communication using orthogonal signal division multiplexing</b>	<b>569</b>
	Tadashi Ebihara <sup>1†</sup> , Keiichi Mizutani <sup>2</sup> ( <sup>1</sup> Univ. of Tsukuba; <sup>2</sup> Tokyo Inst. of Tech..)	
<b>3Pb6-3</b>	<b>Sound propagation in boundary region between warm core ring and cold water mass of the east sea area off Tsugaru Straits</b>	<b>571</b>
	Yoshiaki Tsurugaya <sup>1†</sup> , Toshiaki Kikuchi <sup>2</sup> , Koichi Mizutani <sup>3</sup> ( <sup>1</sup> Sanyo PT; <sup>2</sup> Natl. Defense Academy; <sup>3</sup> Univ. of Tsukuba)	
<b>3Pb6-4*</b>	<b>Acoustic simulation using wave equation FDTD (WE-FDTD) method with compact FDs</b>	<b>573</b>
	Takeshi Yoda <sup>1†</sup> , Naoki Kawada <sup>1</sup> , Norio Tagawa <sup>1</sup> , Takao Tsuchiya <sup>2</sup> , Kan Okubo <sup>1</sup> ( <sup>1</sup> Tokyo Met. Univ.; <sup>2</sup> Doshisha Univ.)	
<b>3Pb6-5*</b>	<b>Numerical analysis of sound wave propagation in ocean by WE-FDTD method with GPU cluster system</b>	<b>575</b>
	Shigeyoshi Nakai <sup>†</sup> , Takuto Ishii, Takao Tsuchiya (Doshisha Univ.)	
<b>3Pb6-6*</b>	<b>Accuracy evaluation of acoustic analysis using CIP methods with sub-grid technique</b>	<b>577</b>
	Yuta Ara <sup>1†</sup> , Kan Okubo <sup>1</sup> , Norio Tagawa <sup>1</sup> , Takao Tsuchiya <sup>2</sup> ( <sup>1</sup> Tokyo Met. Univ.; <sup>2</sup> Doshisha Univ.)	

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

<b>3J5-1</b>	<b>Observation of micro hollows produced by bubble cloud cavitation</b>	<b>579</b>
	Yoshiki Yamakoshi <sup>†</sup> , Hiromichi Koori, Yoshiyasu Nakano, Jun Yamaguchi, Takashi Miwa (Gunma Univ.)	
<b>3J5-2*</b>	<b>Thermal simulation of cavitation enhanced ultrasonic heating verified with tissue mimicking gel</b>	<b>581</b>
	Tatsuya Moriyama <sup>†</sup> , Ayumu Asai, Shin Yoshizawa, Shin-ichiro Umemura (Tohoku Univ.)	
<b>3J5-3*</b>	<b>Real time HIFU beam imaging</b>	<b>583</b>
	Keisuke Fujiwara <sup>1†</sup> , Hideki Takeuchi <sup>1</sup> , Kazunori Itani <sup>1</sup> , Kiyoshi Yoshinaka <sup>2</sup> , Akira Sasaki <sup>3</sup> , Takashi Azuma <sup>3</sup> , Ichiro Sakuma <sup>3</sup> , Yoichiro Matsumoto <sup>3</sup> ( <sup>1</sup> Hitachi Aloka Medical; <sup>2</sup> AIST; <sup>3</sup> Univ. of Tokyo)	
<b>3J5-4</b>	<b>Measurement uncertainties of thermal and mechanical indices related to medical diagnostic ultrasonic fields</b>	<b>585</b>
	Tsuneo Kikuchi <sup>†</sup> (AIST)	

**17:45- Closing Session**

