

**Small Auditorium: Plenary Lecture 1**

Time: 9:30-10:30

Chair: *Prof. Masumi Saka (Tohoku University, Japan)***PL-1 Current status and future strategy of national energy R&D program and overview of related NDE research in Korea***Dr. Joon-Hyun Lee (Korea Institute of Energy Technology Evaluation and Planning, Korea)***Room 411&412: Ultrasonic Testing 1**

Time: 11:00-11:50

Chair: *Yoshio Arai (Saitama University, Japan)**Matthew T. Khoo (Defense Science and Technology Organization, Australia)***UT1-1 Applications of laser ultrasound NDT methods in aircraft industry (11:00-11:25)***Michael Kalms, Ralf B. Bergmann (Bremen Institute of Applied Beam Technology, Germany)***UT1-2 3D weld visualization using manual phased array (11:25-11:50)***Michael Berke, Peter Renzel (GE Sensing & Inspection Technologies GmbH, Germany), S. Nakagawa (GE Inspection Technologies Japan Co., Ltd, Japan)***Room 413: Ultrasonic Testing 2**

Time: 11:00-11:50

Chair: *Shohei Numata (Hitachi, Ltd., Japan)**Yingying Cui (Leepipe Inspection Technologies Ltd., China)***UT2-1 Ultrasonic imaging for crack identification (11:00-11:25)***Toshihiko Sasahara (Central Research Institute of Electric Power Industry, Japan), Hirotsugu Inoue (Tokyo Institute of Technology, Japan)***UT2-2 A multi-channel ultrasonic system for structural health monitoring of nuclear power plants (11:25-11:50)***Heung-Seop Eom, Jin-Ho Park (Korea Atomic Energy Research Institute, Korea), Hak-joon Kim, To Gang, Sung-Jin Song (Sungkyunkwan University, Korea)***Room 414&415: Eddy Current Testing 1**

Time: 11:00-11:50

Chair: *Hironori Tohmyoh (Tohoku University, Japan)**Martin Lugg (TSC Inspection Systems, United Kingdom)***ET1-1 Delamination detection in CFRP laminate using eddy current technique (11:00-11:25)***Masahito Ueda (Nihon University, Japan), Takahiro Yasuoka, Akira Todoroki, Ryosuke Matsuzaki, Yoshihiro Mizutani (Tokyo Institute of Technology, Japan)***ET1-2 Development of a magnetic leakage testing system using magnetic sensor for detection of defect in back side of the iron plate (11:25-11:50)***Yoshihiko Kawasaki, Mitsuteru Yoshioka, Takayuki Hayashi, Hironobu Yamada, Toshihiko Kiwa, Kenji Tsukada (Okayama University, Japan)***Room 416&417: Magnetic Testing 1**

Time: 11:00-11:50

Chair: *Tatsuya Taguchi (Hamamatsu Photonics K.K., Japan)**Oliver Brunke (GE Sensing & Inspection Technologies GmbH, Germany)***MT1-1 The magnetic leakage field yielded by a subsurface artificial hole in the tool steel ring specimen over its surface (11:00-11:25)***Wei-Chang Zhong (Nanjing Gas Turbine Research Institute, China)***MT1-2 Research on the effect of stress on the magnetic domain in magnetic memory testing of ferromagnetic components (11:25-11:50)***Jilin Ren, Sheng Yang, Qianghua Pan, Chen Chen, Jihong Tang, Xi Chen (Nanchang Hangkong University, China)***Room 418: General Session 1**

Time: 11:00-11:50

Chair: *Shigenori Yuyama (Nippon Physical Acoustics Ltd., Japan)**Akio Yonezu (Osaka University, Japan)*

**Monday, November 9**

**9:30-11:50**

**GS1-1 Safety and reliability through NDT (11:00-11:25)**

*Md. Sana Ullah (Bangladesh Society for NDT, Bangladesh)*

**GS1-2 Study of the ferromagnetic-anti ferromagnetic transition of a nano scale samples using non destructive methods based on the PTD and the PDS technique (11:25-11:50)**

*Imen Gaied, Taher Ghrib, Mohamed Salah Ben Kraiem, Nouredine Yacoubi (Institut Preparatoire aux Etudes d'Ingenieurs de Nabeul, Tunisia)*

**Room 411&412: Ultrasonic Testing 3**

Time: 13:30-15:10

Chair: *Hiroaki Hatanaka (IHI Inspection & Instrumentation Co., Ltd., Japan)*  
*Chin-Chi Cheng (Hsiuping Institute of Technology, Chinese Taiwan)***UT3-1 Dependence of ultrasonic back reflections on in-plane orientation of incident wave in fatigued austenitic stainless steel (13:30-13:55)***Islam Md. Nurul, Yoshio Arai, Wakako Araki (Saitama University, Japan)***UT3-2 A modified synthetic aperture focusing technique (SAFT) by the Hilbert-Huang transform (HHT) to scan the defects inside concrete structure (13:55-14:20)***Chin-Lung Chiu, Chung-Yue Wang (National Central University, Chinese Taiwan), Jian-Hua Tong (HungKung University, Chinese Taiwan)***UT3-3 Effects of crack closure and influence of fatigue loading spectra on the detectability of fatigue cracks at fastener holes (14:20-14:45)***Matthew T. Khoo, Cayt A. Harding (Defense Science and Technology Organization, Australia)***UT3-4 Development of multichannel wireless-electrodeless quartz crystal microbalance biosensors (14:45-15:10)***Hironano Nagai, Yuji Hukunishi, Hirotsugu Ogi, Masahiko Hirao, Masayoshi Nishiyama (Osaka University, Japan)***Room 413: Ultrasonic Testing 4**

Time: 13:30-15:10

Chair: *Kazunari Makino (Railway Technical Research Institute, Japan)*  
*M.A. Salam Akanda (Tohoku University, Japan)***UT4-1 Phased array ultrasonic inspection technique for fatigue cracks in fillet welds using three dimensional ray tracing method (13:30-13:55)***Shohei Numata, Masahiro Miki (Hitachi, Ltd., Japan), Junichiro Naganuma, Mitsuru Odakura (Hitachi-GE Nuclear Energy, Ltd., Japan)***UT4-2 Ultrasound phased array technology for the process piping girth weld inspection (13:55-14:20)***Boajia Ma (China Offshore Oil), Yingying Cui (Leepipe Inspection Technologies Ltd., China)***UT4-3 Evaluation of header to stub-tube weld using an automated ultrasonic system (14:20-14:45)***Seong-Jin Lim, Kwang-Kwon Lee, In-Gon Jung (Korea Inspection & Engineering Co. Ltd., Korea), Jong-Seok Ahn (Korea East-West Power Co. Ltd., Korea)***UT4-4 Guard-time inserted phase modulation method for ultrasonic digital testing and its evaluation (14:45-15:10)***Tadashi Ebihara, Hideto Mitsui, Takeshi Ohbuchi, Naoto Wakatsuki, Koichi Mizutani (University of Tsukuba, Japan)***Room 414&415: Eddy Current Testing 2**

Time: 13:30-15:10

Chair: *Tomio Nakajima (IHI Inspection & Instrumentation Co.,Ltd, Japan)*  
*Ki-Weon Kang (Kunsan National University, Korea)***ET2-1 Application of the frequency sweep eddy current method to nondestructive evaluation of the depth of near-surface residual stress field in the steels shot-peened by fine particles (13:30-13:55)***Takashi Kojima, Kiyoshi Hoshikawa, Akihiko Sano (Kanagawa Industrial Technology Center, Japan), Shouzou Ishibashi (Fuji Manufacturing Co.Ltd., Japan)***ET2-2 Method to remove the lift-off effect in pulsed eddy current signal processing for ferromagnetic plate testing (13:55-14:20)***Chen Huang, Xinjun Wu, Zhiyuan Xu, Yihua Kang (Huazhong University of Science & Technology, China)***ET2-3 Application of the ACFM technique for inspecting through metallic coatings (14:20-14:45)***Martin Lugg (TSC Inspection Systems, United Kingdom)***ET2-4 Excitation of local eddy current in small-scaled objects (14:45-15:10)***Hironori Tohmyoh, Shoho Ishikawa (Tohoku University, Japan), Mikio Muraoka (Akita University, Japan), Masumi Saka (Tohoku University, Japan)*

**Monday, November 9**

**13:30-15:10**

**Room 416&417: Radiographic Testing 1**

Time: 13:30-14:45

Chair: *Wei-Chang Zhong (Nanjing Gas Turbine Research Institute, China)*  
*Md. Sana Ullah (Bangladesh Society for NDT, Bangladesh)*

- RT1-1 Microfocus X-ray source (MFX) for mechanical parts inspection (13:30-13:55)**  
*Tatsuya Taguchi, Takuya Homme, Motofumi Tanaka, Kazutaka Suzuki (Hamamatsu Photonics K.K., Japan)*
- RT1-2 Comparison between X-Ray tube based and synchrotron radiation based  $\mu$ CT (13:55-14:20)**  
*Oliver Brunke (GE Sensing & Inspection Technologies GmbH, Germany), Takahisa Yamane, (GE Inspection Technologies Japan Co., Ltd, Japan)*
- RT1-3 Mathematical modeling the electron leaving the objects being under radiation in radiography (14:20-14:45)**  
*Mikhail Zhukovskiy (Keldysh Institute for Applied Mathematics, Russian Academy of Sciences, Russia)*

**Room 418: Acoustic Emission Testing 1**

Time: 13:30-15:10

Chair: *Hideo Cho (Aoyama Gakuin University, Japan)*  
*Rongsheng Geng (Beijing Aeronautical Technology Research Centre, China)*

- AT1-1 Acoustic emission evaluation of corrosion damages in pipes (13:30-13:55)**  
*Shigenori Yuyama, Zhengwang Li (Nippon Physical Acoustics Ltd., Japan), Minoru Yamada (National Research Institute of Fire and Disaster, Japan), Takahiro Hayashi (Nagoya Institute of Technology, Japan), Takahide Sakagami (Kobe University, Japan)*
- AT1-2 Characterization of AE event with time-frequency analysis on the loading of concrete specimen (13:55-14:20)**  
*Wen Chung Ko, C.W. Yu (Sinotech Engineering Consultants, Inc, Chinese Taiwan)*
- AT1-3 Application of acoustic emission technique to hydrogen induced cracking monitor during hydrogen permeation test of low-carbon steel (14:20-14:45)**  
*Li-fei Li, Wan-ling Zhang, Zhi-qiang Chen, Li-juan Wen, Fang Wang (Hebei University, China), Gong-tian Shen (China Special Equipment Inspection Institute, China)*
- AT1-4 Acoustic emission from hydrogen embrittlement cracking in maraging steel subjected to contact loading (14:45-15:10)**  
*Akio Yonezu, Masanori Arino, Toshiyuki Kondo, Hiroyuki Hirakata, Kohji Minoshima (Osaka University, Japan)*

**Room 411&412: Ultrasonic Testing 5**

Time: 15:40-17:20

Chair: *Michael Kalms (Bremen Institute of Applied Beam Technology, Germany)*  
*Hirotsugu Ogi (Osaka University, Japan)***UT5-1 Correcting the effects of refraction in an immersion test by a wavefront stacking image technique (15:40-16:05)***Chih-Hsiung Chang (National Chiayi University, Chinese Taiwan), Young-Fo Chang, Po-Yen Tseng, Yi-Jiun Tang (National Chung Cheng University, Chinese Taiwan)***UT5-2 The development of the 2D-matrix array probe to inspect seamless pipes and tubes (16:05-16:30)***Masaki Yamano, Yoshiyuki Nakao (Sumitomo Metal Industries, Ltd., Japan)***UT5-3 Torque value evaluated by ultrasonic technique during polymer melting process (16:30-16:55)***Chin-Chi Cheng (Hsiuping Institute of Technology, Chinese Taiwan)***UT5-4 Application of real-time signal processing to ultrasonic testing (16:55-17:20)***Hiroaki Hatanaka, Tomio Nakajima, Takahiro Arakawa (IHI Inspection & Instrumentation Co., Ltd., Japan), Yu Kurokawa, Yoshihiro Mizutani (Tokyo Institute of Technology, Japan)***Room 413: Ultrasonic Testing 6**

Time: 15:40-16:55

Chair: *Toshihiko Sasahara (Central Research Institute of Electric Power Industry, Japan)*  
*Heung-Seop Eom (Korea Atomic Energy Research Institute, Korea)***UT6-1 Ultrasonic angle-beam inspection of micrometer cracks (15:40-16:05)***M.A. Salam Akanda, Hironori Tohmyoh, Masumi Saka (Tohoku University, Japan)***UT6-2 Enhancement of UT test reliability in the nuclear power plant (16:05-16:30)***Jae-Seong Kim, Woong-ki Hwang, Jong-hyun Kim, Seok-pil Jang, Bo-Young Lee (Korea Aerospace University, Korea)***UT6-3 Evaluation of fatigue cracks at the wheel seat of a miniature wheelset test piece (16:30-16:55)***Kazunari Makino, Hiroshi Sakamoto, Jiro Yohso (Railway Technical Research Institute, Japan)***Room 414&415: Strain Testing 1**

Time: 15:40-16:55

Chair: *Masahito Ueda (Nihon University, Japan)**Chen Huang (Huazhong University of Science & Technology, China)***ST1-1 Application of FBG sensor to measurement fast strain for health monitoring (15:40-16:05)***Tomio Nakajima, Takahiro Arakawa (IHI Inspection & Instrumentation Co., Ltd., Japan)***ST1-2 Clarification on mechanical characteristic in state of stress of artificial hip joint using stress freezing method (16:05-16:30)***Nobutaka Maezaki, Tsutomu Ezumi (Shibaura Institute of Technology, Japan), Masashi Hachiya (Yokohama Minami Kyouzai Hospital, Japan)***ST1-3 Simple approach for statistical distribution of residual strength in composite structure subjected to low velocity impact (16:30-16:55)***Jong-Ik Jeon, Myong-Jin Shin (Hanyang University, Korea), Ki-Weon Kang (Kunsan National University), Jung-Kyu Kim (Hanyang University, Korea)***Room 418: Acoustic Emission Testing 2**

Time: 15:40-17:20

Chair: *Wen Chung Ko (Sinotech Engineering Consultants, Inc., Chinese Taiwan)**Takashi Kojima (Kanagawa Industrial Technology Center, Japan)***AT2-1 Development of a pipeline leakage location instrument based on acoustic waves (15:40-16:05)***Gongtian Shen (China Special Equipment Inspection Institute, China), Shifeng Liu (Soundwel Corporation, China)*

**Monday, November 9**

**15:40-17:20**

- AT2-2**     **Development of AE monitoring system with noise reduction function by spectral subtraction** (16:05-16:30)  
*Takuma Matsuo, Hideo Cho (Aoyama Gakuin University, Japan)*
- AT2-3**     **Integrated NDT and its significant role in full scale aircraft fatigue test** (16:30-16:55)  
*Rongsheng Geng (Beijing Aeronautical Technology Research Centre, China)*
- AT2-4**     **Low speed shaft fault detection using acoustic emission** (16:55-17:20)  
*Dong Sik Gu, Byeong Su Kim, Jae Gu Kim, Byeong Keun Choi (Gyeongsang National University, Korea)*

**Room 411&412: Plenary Lecture 2**

Time: 9:00-10:00

Chair: *Dr. Baldev Raj (Indira Gandhi Centre for Atomic Research, India)***PL-2 Harmonization of NDT practice: Experience of the third world country***Dr. Abdul Nassir Ibrahim (Malaysian Nuclear Agency, Malaysia)***Room 413: Poster Session 1**

Time: 10:30-12:00

Chair: *To be Announced***PS1-1 An attempt to evaluate insufficient supply of oil in ball bearing with ultrasonic technique***Akitoshi Takeuchi (Kochi University of Technology, Japan)***PS1-2 Temperature distribution estimated with optimization from sound fields reconstructed using near-field acoustical holography***Takeshi Ohbuchi, Kojiro Nishimiya, Koichi Mizutani, Naoto Wakatsuki (University of Tsukuba, Japan), Hiroyuki Masuyama (Toba National College of Maritime Technology, Japan)***PS1-3 Investigation of the effect of the roughness induced crack closure on the fatigue crack propagation behavior of hot-rolled steels under mixed-mode loading conditions***Ki-Jeong Seo, Jeong-Moo Lee (LG Chemical Company, Korea), Byoung-Ho Choi (Korea University, Korea)***PS1-4 Beam edge waves by pitch and catch transducer mounted on the same surface***Osami Kobori (Osaka Sangyo University, Japan), Yoshio Udagawa (Imaging Supersonic Laboratories Co., Ltd., Japan), Akio Nomura (Osaka Sangyo University, Japan)***PS1-5 High accurate FEM analysis for ultrasonic propagation in concrete structure***Yuki Nagai, Tsuyoshi Mihara, Hatsuzo Tashiro (University of Toyama, Japan)***PS1-6 Acoustic nonlinearity of surface wave in a fatigued aluminum alloy specimen***Kyung-Young Jhang, Jaeik Lee, Taehun Lee (Hanyang University, Korea)***PS1-7 The study of ultrasonic nonlinearity in heat treatment material***Weibin Li, Jaesun Lee, Bin Yang, Younho Cho (Pusan National University, Korea)***Room 414&415: Poster Session 2**

Time: 10:30-12:00

Chair: *To be Announced***PS2-1 A study of dynamic focusing technique of phased array for ultrasonic nondestructive testing***Po-Yen Tseng, Cheng-Lun Chen, Wei-Jen Nien, Chien-Kuo Huang, Yi-Jiun Tang, Young-Fo Chang (National Chung Cheng University, Chinese Taiwan)***PS2-2 A simple ultrasonic array system via total focusing method***Chien-Kuo Huang, Po-Yen Tseng, Cheng-Lun Chen, Wei-Jen Nien, Yi-Jiun Tang, Young-Fo Chang (National Chung Cheng University, Chinese Taiwan)***PS2-3 Investigation of the sound field of phased array using the photoelastic visualization technique and the accurate FEM***Sho Washimori, Tsuyoshi Mihara, Hatsuzo Tashiro (University of Toyama, Japan)***PS2-4 Fundamental study on spatial resolution enhancement of phased array image***Masayuki Imaizumi, Yu Kurokawa, Hirotsugu Inoue (Tokyo Institute of Technology, Japan)***PS2-5 Ultrasonic imaging of concrete by SAFT based on Hilbert-Huang transform of time domain data***Oscar Victor Manaloto Antonio, Jr., Sohichi Hirose (Tokyo Institute of Technology, Japan)***Room 416&417: Poster Session 3**

Time: 10:30-12:00

Chair: *To be Announced***PS3-1 Examination of electromagnetic inspection of nickel-layer on steel using 3-D nonlinear FEM***Aya Matsuoka, Yuji Gotoh (Oita University, Japan), Norio Takahashi (Okayama University, Japan)*

**Tuesday, November 10**

**9:00-12:00**

- PS3-2 Non-destructive electromagnetic inspection of surface hardened depth in surface spheroidal graphite cast iron**  
*Mitsuru Miyamoto, Kazuki Yamada, Yuji Gotoh (Oita University, Japan), Tatsuo Hiroshima (Theta Technology, Japan), Nobuya Sasaguri (Kurume National College of Technology, Japan), Norio Takahashi (Okayama University, Japan)*
- PS3-3 3-D analysis for the inspection method of outer side defect on steel tube with support plate using applied alternating magnetic flux leakage testing**  
*Atsushi Kiya, Yuji Gotoh (Oita University, Japan), Norio Takahashi (Okayama University, Japan)*
- PS3-4 Carbon fiber reinforced plastic composite materials characterization by acoustic emission**  
*Kyungwon Lee, Jonghyun Kim, Yeong K. Kim, Boyoung Lee (Korea Aerospace University, Korea)*
- PS3-5 The study on the acoustic emission signal characteristic of thermal fatigue crack generation in the nuclear structure**  
*Jonghyun Kim, Kyungwon Lee, Jaeseong Kim, Jooho Choi, Boyoung Lee (Korea Aerospace University, Korea)*
- PS3-6 Material differentiation by differential computed tomography**  
*Josef Prokop, Libor Sveda, Alexandr Jancarek, Ladislav Pina (Czech Technical University in Prague, Czech)*
- PS3-7 Use of mathematical modeling for the reconstruction of response functions and radiation spectra in NDT**  
*Sergei Victorovich Podolyako (Keldysh Institute for Applied Mathematics, Russian Academy of Sciences, Russia)*
- PS3-8 Internal survey of radiographic irradiators using borescope**  
*Sang-Min Lee, Ho-Sub Shim, Sae-Yul Lee, Youn-Hwan Park, Kyu-Seok Seo, Woon-Kap Cho (Korea Institute of Nuclear Safety, Korea)*

**Room 411&412: Ultrasonic Testing 7**

Time: 13:30-14:45

Chair: *Makoto Ochiai (Toshiba Corporation, Japan)*  
*Zhenggan Zhou (Beihang University, China)***UT7-1 Research on the excitation of ultrasonic transducer with pulse compression method (13:30-13:55)***Zhenggan Zhou, Hongyu Zhang, Dong Wei (Beihang University, China)***UT7-2 Behaviors of laser-induced surface acoustic waves through surface-breaking tight crack (13:55-14:20)***Makoto Ochiai (Toshiba Corporation, Japan), Kazushi Yamanaka (Tohoku University, Japan)***UT7-3 Development of constant incident angle focusing method for pipes by non contact air coupled ultrasonic testing (14:20-14:45)***Masakazu Takahashi, Hidekazu Hoshino, Yukio Ogura (Japan Probe Co. Ltd, Japan), Hideaki Kitagawa, Junichi Kusumoto, Akihiro Kanaya (Kyushu Electric Power Co., Inc., Japan)***Room 413: Ultrasonic Testing 8**

Time: 13:30-14:45

Chair: *Nobutomo Nakamura (Osaka University, Japan)*  
*Helsin Wang (National Taiwan University of Science and Technology, Chinese Taiwan)***UT8-1 Study of ultrasonic technique on the inspection for reinforcing rod corrosion of concrete structures (13:30-13:55)***Shinya Sasazawa, Hiroshi Irie, Yasukatsu Yoshida, Akira Watakori (Nippon Telegraph and Telephone Corporation, Japan), Yuji Nagashima (Airec Engineering Corporation, Japan), Takanori Kinoshita (High and Broad Technology System Corporation, Japan)***UT8-2 An ultrasonic waveform observation on viscous-elastic cementitious materials (13:55-14:20)***Helsin Wang, Chia-Wei Kan, Bo-Tsun Chen, Ta-Peng Chang (National Taiwan University of Science and Technology, Chinese Taiwan)***UT8-3 Mode conversion of SH guided waves for pipe inspection (14:20-14:45)***Silvina Aminta Uribe, Nobutomo Nakamura, Hirotsugu Ogi, Masahiko Hirao (Osaka University, Japan)***Room 414&415: Ultrasonic Testing 9**

Time: 13:30-15:10

Chair: *Tomohiro Yamasaki (Osaka City University, Japan)*  
*Michal Kubinyi (Czech Technical University, Czech)***UT9-1 Application of ultrasonic inverse method to internal temperature monitoring of metal casting process (13:30-13:55)***Manabu Takahashi, Ikuo Ihara (Nagaoka University of Technology, Japan)***UT9-2 Non-contact NDE for thin aerospace structures (13:55-14:20)***Michal Kubinyi, Adam Döcekál (Czech Technical University, Czech), Helena Geirinhas Ramos, Artur Lopes Ribeiro (Instituto de Telecomunicacoes, Portugal)***UT9-3 Studies of ultrasonic testing methods for reliability improvement of expecting crack length and shape (14:20-14:45)***W.K. Hwang (Korea Aerospace University, Korea)***UT9-4 Detection of resin flow front in RTM process by electromagnetic acoustic transducers (14:45-15:10)***Tomohiro Yamasaki (Osaka City University, Japan), Hiromitsu Nishino (Sekisui Chemical Co. Ltd., Japan)***Room 416&417: Radiographic Testing 2**

Time: 13:30-15:10

Chair: *Xue-hai Yang (Institute of Chemical Materials, CAEP, China)*  
*Shinichi Higuchi (The Japan Welding Engineering Society, Japan)*

**Tuesday, November 10**

**13:30-15:10**

- RT2-1 Compact and high-quality gamma-ray source for high-resolution and non-destructive inspection (13:30-13:55)**  
*Ahmed Ben-Ismaïl, Olle Lundh, Clément Rechatin, Jérôme Faure, Victor Malka (Ecole Polytechnique, France)*
- RT2-2 Computed vs. conventional radiography for detecting cracks in silicone rubber housing of in-service aged composite insulators (13:55-14:20)**  
*Armando Hideki Shinohara, Pietro P.J.C. Silva (Federal University of Pernambuco, Brazil), Zurdival Pino Castro Jr., Jose Felipe A.G. Wavrik, M.L. Porto (Companhia Hidro Elétrica do São Francisco, Brazil), N.V. Lacerda (Compoende Aeronáutica Ltda, Brazil)*
- RT2-3 Application of the “GUCHI” technique used for flaw sizing on pipes by radiographic testing (14:20-14:45)**  
*Toshibumi Kashiwa (Hitachi-GE Nuclear Energy, Ltd., Japan), Shinichi Higuchi, Norikazu Ooka (The Japan Welding Engineering Society, Japan)*
- RT2-4 Research on PBX volume density by X-ray cone beam computed tomography (14:45-15:10)**  
*Xue-hai Yang, Wei-bin Zhang, Bin Dai (Institute of Chemical Materials, CAEP, China)*

### **Room 418: Acoustic Emission Testing 3**

Time: 13:30-15:10

Chair: *Jae-Gu Kim (Gyeongsang National University, Korea)*  
*Jiunnren Lai (Chaoyang University of Technology, Chinese Taiwan)*

- AT3-1 Waveform evaluation of AE signal caused by crack growth for the condition monitoring of rotating machine (13:30-13:55)**  
*Jae-Gu Kim, Dong-Sik Gu, Seong-Soo Kim, Byeong-Keun Choi (Gyeongsang National University, Korea)*
- AT3-2 Evaluating the height of earth retaining structures by sonic echo method (13:55-14:20)**  
*Jiunnren Lai, Sung-Chi Hsu, Shengmin Wu (Chaoyang University of Technology, Chinese Taiwan)*
- AT3-3 Study on acoustic emission characteristics of aging explosive PBX-003 under uniaxial compressive stress (14:20-14:45)**  
*Zhangfeng Yang, Xing Tang, Yu Du, Weibin Zhang (Institute of Chemical Materials, CAEP, China)*
- AT3-4 Acoustic emission behavior during static/dynamic test of wind turbine blade (14:45-15:10)**  
*Dong-Jin Yoon, Byeong-Hee Han, Jeong-Hee Kim, Yong-Hak Hur (Korea Research Institute of Standards and Science, Korea)*

**Room 413: Poster Session 4**

Time: 15:40-17:10

Chair: *To be Announced***PS4-1 Imaging of nonlinear acoustic characteristics by electronic scanning of linear array***Kyung-Young Jhang, Goodo Kwon, Taehun Lee (Hanyang University, Korea)***PS4-2 Nondestructive evaluation for bottom edges of a rail using guided waves***Junjie Chang, Katsumi Ohira (Japan Probe Co., Ltd., Japan), Keita Kataoka (East Japan Railway Co., Ltd., Japan), Takahiro Hayashi, Morimasa Murase (Nagoya Institute of Technology, Japan)***PS4-3 Defect detections in welded elbow pipes using guided waves and their propagation phenomena***Shuichi Masuda, Toshiro Tanaka, Kenichi Yoshida, Hideo Nishino (The University of Tokushima, Japan)***PS4-4 Advanced and efficient defect detection using multireflecting guided wave energy trapping (MGET) method***Keiji Ogura, Saori Katashima, Kenich Yoshida, Hideo Nishino (The University of Tokushima, Japan)***PS4-5 Non-contact guided wave tomographic imaging of plate-like structures using a probabilistic algorithm***Farabirazy Albiruni, Yunri Piao, Younho Cho (Pusan National University, Korea), Bongyoung Ahn, Lianji Jin (Korea Research Institute of Standards and Science, Korea)***Room 414&415: Poster Session 5**

Time: 15:40-17:10

Chair: *To be Announced***PS5-1 The study on the fracture characteristic for the nuclear structural metallic material using acoustic emission***Jonghyun Kim, Kyungwon Lee, Jaesung Kim, Boyoung Lee (Korea Aerospace University, Korea)***PS5-2 Acoustic emission and X-ray computed tomography testing for damage evaluation in freeze-thawed concrete***Tetsuya Suzuki (Nihon University, Japan), Hidehiko Ogata (Tottori University, Japan), Ryuichi Takada (Matsue College of Technology, Japan), Masao Aoki (Nihon University, Japan), Masayasu Ohtsu (Kumamoto University, Japan)***PS5-3 Application of modal based acoustic emission method for source location detection at the multilayered structure***Younghoon Kim, Bongjae Sheen, Farabirazy Albiruni, Joonhyun Lee, Younho Cho (Pusan National University, Korea)***PS5-4 Development of phase and polarization compensated optical fiber acoustic emission monitoring system and its application***Yudai Takayama, Takahiro Sasaki, Tubasa Kanamura, Takuma Matsuo, Hideo Cho (Aoyama Gakuin University, Japan)***PS5-5 Electromagnetic inspection method of retained austenite in high chromium cast iron***Akira Nishishita, Yuji Gotoh (Oita University, Japan), Nobuya Sasaguri (Kurume National College of Technology, Japan), Norio Takahashi (Okayama University, Japan)***PS5-6 Evaluation of 3D nonlinear FEM for magnetic flux leakage testing using a magnetizing current wire***Yuki Nakagawa, Yuji Gotoh (Oita University), Mituaki Katoh (Kyushu Institute of Technology, Japan)***PS5-7 Detection of the wheel-rail lateral displacement based on the image processing method***Min-Soo Kim, Hyun-Moo Hur (Korea Railroad Research Institute, Korea)***Room 416&417: Poster Session 6**

Time: 15:40-17:10

Chair: *To be Announced*

**Tuesday, November 10**

**15:40-17:10**

- PS6-1 Research about magnetic pulse detection method of annulus multi-string damagement**  
*Rui Deng, Fan-shun Meng (Ocean University of China, China), Jing-yan Zhang (Xianhe Oil Production Plant, China), Xiang-yang Li (Yangtze University, China), Hai-jun Liu (CNPC Chuanqing Drilling Engineering Company Ltd., China)*
- PS6-2 Basic study on strain measurement of steel for general structure using tandem coil**  
*Yoshikazu Tanaka, Tatsuya Hara, Yukio Fujimoto (Hiroshima University, Japan)*
- PS6-3 Development of a magnetic inspection probe using a magnetic sensor array for detection of internal defect of the welding part**  
*Yasuhiro Manji, , Hironobu Yamada, Toshihiko Kiwa, Keiji Tsukada (Okayama University, Japan), Katsumi Inoue, Akihiro Sakuramoto (Mes Testing & Research Center Co. Ltd., Japan)*
- PS6-4 Electromagnetic properties varied with applied equibiaxial stress measured by an eddy current method**  
*Yuichi Sekine, Hitoshi Soyama (Tohoku University, Japan)*
- PS6-5 Using nondestructive eddy current technique as a tool for quality control of carburized steels**  
*Meisam Sheikh Amiri, Mehrdad Kashefi (Ferdowsi University of Mashhad, Iran)*
- PS6-6 Evaluation of ferromagnetic metals by the integrated eddy current and magnetic memory method**  
*Junmin Lin, Fabing Lin (Eddysun (Xiamen) Electronic Co., Ltd., China), Changzhi Zhou (Beihang University, China)*

**Room 411&412: Plenary Lecture 3**

Time: 9:00-10:00

Chair: *Dr. Yoshikazu Yokono (Pony Industry Co., Ltd, Japan)***PL-3 Research and development in NDE and component health monitoring***Dr. Glenn M. Light (Southwest Research Institute, USA)***Room 413: Poster Session 7**

Time: 10:30-12:00

Chair: *To be Announced***PS7-1 Rapid measurement of water cement ratio for fresh concrete using an ultrasonic method***Hamza Haffies Ismail, Yorinobu Murata (Wakayama University, Japan)***PS7-2 Nondestructive elastic-wave tests of foundation slab in office building***Krzysztof Schabowicz, Jerzy Hola (Wroclaw University of Technology, Poland)***PS7-3 Detection of second harmonic ultrasonic components generated from fastened bolts***Makoto Fukuda, Kazuhiro Yoshida, Kazuhiko Imano (Akita University, Japan)***PS7-4 Ultrasonic creeping wave for surface fatigue crack detection of rotary shaft***Changzhi Zhou (Beihang University, China), Junmin Lin (Eddysun (Xiamen) Electronic Co., Ltd., China), Jianzhong Shen (Institute of Acoustics, CAS, China)***PS7-5 Ultrasonic nondestructive testing of honeycomb sandwich panel using multiple reflection echoes***Tomonori Kimura, Koji Ibata, Toshiaki Kunugi (Mitsubishi Electric Corporation, Japan), Minoru Okamoto, Shusou Wadaka (Ryoden Shonan Electronics Corporation, Japan)***PS7-6 Effect of microstructural changes of sigma-phase on creep behavior of aged AISI 316L stainless steel***Bumjoon Kim, Moon K Kim, Jonghoon Lee, Dong-yeol Kim, Hak-joon Kim, Sung-jin Song, Byeongsoo Lim (Sungkyunkwan University, Korea)***Room 414&415: Poster Session 8**

Time: 10:30-12:00

Chair: *To be Announced***PS8-1 Investigation of the impedance in transducer and pulser for nonlinear ultrasound measurement***Yoshinori Kamiyama, Tsuyoshi Mihara, Hatsuzou Tashiro (University of Toyama, Japan)***PS8-2 Surface flaw detection of rotating bodies using laser ultrasound***Tetsuo Fukuchi, Takashi Ogata (Central Research Institute of Electric Power Industry, Japan)***PS8-3 Fast remaining thickness measurement using a laser source scanning technique***Muhammad Nor Salim, Takahiro Hayashi, Morimasa Murase, Toshihiro Ito, Shoji Kamiya (Nagoya Institute of Technology, Japan)***PS8-4 Evaluation of composite laminates for aircraft primary-structure applications using ultrasonic guided wave technique***DoYoun Kim, Jaesun Lee, Joonhyun Lee, Younho Cho (Pusan National University, Korea)***PS8-5 Nonlinear acoustic evaluation during creep progress in Cr-Mo-V steel with EMAR***Tomonori Ogawa, Toshihiro Ohtani (Shonan Institute of Technology, Japan)***PS8-6 The integrated NDT technique for industrial application***Junmin Lin, Fabing Lin, Chunjing Lin Hanlin Li, Xingzeng Yu (Eddysun (Xiamen) Electronic Co., Ltd., China)***Room 416&417: Poster Session 9**

Time: 10:30-12:00

Chair: *To be Announced***PS9-1 Study on crystallization characteristic of casting TNT based on real-time observation with CT***Weibin Zhang, Yong Tian, Bin Dai, Hehou Zong, Guan Luo (Institute of Chemical Materials, China Academy of Engineering Physics, China)*

**Wednesday, November 11**

**9:00-12:00**

- PS9-2** Four-needle probe of electromagnetic potential difference method for the evaluation of surface flaw depth  
*Hiroshi Hoshikawa, Kiyoshi Koyama (Nihon University, Japan)*
- PS9-3** Effect of reactive gas on mechanical behavior of plasma treated polyethylene-metal joints  
*Ji Hoon Lee, Kyong Yop Rhee (Kyung Hee University, Korea)*
- PS9-4** Study on an oxygen plasma treatment of a basalt fiber and its effect on the interlaminar fracture property of basalt/epoxy woven composites  
*Min Ho Kim, Kyong Yop Rhee (Kyung Hee University, Korea)*
- PS9-5** Effect of Zn concentration on thermo-optical properties of Zn-doped CuInS<sub>2</sub> thin films using the PTD and the PDS technique  
*Imen Gaied (Photothermal Laboratory, IPEIN, Tunisia), Mohamed Ben Rabeh, Mounir Kanzari (Laboratoire de Photovoltaïque et Matériaux Semi-conducteurs, ENIT, Tunisia), Noureddine Yacoubi (Photothermal Laboratory, IPEIN, Tunisia)*
- PS9-6** Comparison of round-robin NDE results on impact test pieces of model specimens simulating irradiation embrittlement  
*Yasuhiro Kamada, Hiroaki Kikuchi (Iwate University, Japan), Katsuo Joubouji (Institute of Nuclear Safety System, Japan), Kiminori Sato (Tokyo Gakugei University, Japan), Toshihiro Ohtani (Shonan Institute of Technology, Japan), Satoru Kobayashi (Iwate University, Japan), Ken Kurosaki, Shinsuke Yamanaka (Osaka University, Japan)*

**Room 411&412: Ultrasonic Testing 10**

Time: 13:30-15:35

Chair: *P.J. Mudge (TWI Ltd, United Kingdom)*  
*Zenghua Liu (Beijing University of Technology, China)*

- UT10-1 Development of square burst and chirp waves equipments and application in NDT (13:30-13:55)**  
*Masakazu Takahashi, Yukio Ogura, Hiroshi Baba (Japan Probe Co. Ltd, Japan), Koichiro Kawashima (Ultrasonic Material Diagnosis Lab, Japan), Hideo Nishino (The University of Tokushima, Japan), Yasuhiro Kamada (Iwate University, Japan)*
- UT10-2 Developments in long range ultrasonic testing for pipes using guided waves for enhanced detection and evaluation of corrosion and other defects (13:55-14:20)**  
*P.J. Mudge, P. Catton, R.M. Sanderson (TWI Ltd, United Kingdom), A.G. Haig, Y. Gharaibeh (Brunel University, United Kingdom)*
- UT10-3 Long range seven-wire steel strands inspection by using high frequency ultrasonic longitudinal guided waves (14:20-14:45)**  
*Zenghua Liu, Jichen Zhao, Cunfu He, Bin Wu (Beijing University of Technology, China)*
- UT10-4 An ultrasonic guided wave tomographic imaging technique for pipeline health monitoring (14:45-15:10)**  
*Joseph L. Rose (The Pennsylvania State University, USA), Jason K. Van Velsor, Roger L. Royer (FBS, Inc., USA), Ik-Keun Park (Seoul National University of Technology, Korea)*
- UT10-5 Guided wave inspection of coated and buried pipe (15:10-15:35)**  
*Joseph L. Rose (Pennsylvania State University, USA), Jing Mu, Roger Royer (FBS, Inc., USA), Jia Hua (Pennsylvania State University, USA), Ik-Keun Park (Seoul National University of Technology, Korea)*

**Room 413: Ultrasonic Testing 11**

Time: 13:30-15:10

Chair: *Takahiro Ebuchi (Non-Destructive Inspection Co., Ltd., Japan)*  
*Young-Fo Chang (National Chung Cheng University, Chinese Taiwan)*

- UT11-1 Real-time monitoring of aggregation of amyloid  $\beta$  peptides using multichannel wireless-electrodeless quartz crystal microbalance (13:30-13:55)**  
*Yuji Fukunishi, Hironao Nagai, Hirotsugu Ogi, Masahiko Hirao, Masayoshi Nishiyama (Osaka University, Japan)*
- UT11-2 Simulation of ultrasonic propagation based on FDTD (13:55-14:20)**  
*Zhengan Zhou, Dong Wei (Beihang University, China)*
- UT11-3 Imaging for ultrasonic focused transducer B-scan + depth-scan (14:20-14:45)**  
*Young-Fo Chang, Kuo-Yu Wu (National Chung Cheng University, Chinese Taiwan)*
- UT11-4 Non-destructive evaluation of weld structure using ultrasonic imaging technique (14:45-15:10)**  
*Takahiro Ebuchi, Junichi Kitasaka, Tatsuyuki Nagai (Non-Destructive Inspection Co., Ltd., Japan)*

**Room 414&415: Ultrasonic Testing 12**

Time: 13:30-14:45

Chair: *Yutaka Matsui (JFE Steel Corporation, Japan)*  
*Guangping Guo (Beijing Institute of Aeronautical Materials, China)*

- UT12-1 Ultrasonic testing of thick steel products using a synthetic aperture focusing technique with a line-focused probe (13:30-13:55)**  
*Yutaka Matsui, Yukinori Iizuka (JFE Steel Corporation, Japan)*
- UT12-2 Wall thickness measurement of single crystal turbine blade by ultrasonic method (13:55-14:20)**  
*Guangping Guo, Bo Han, Qin Yang (Beijing Institute of Aeronautical Materials, China)*
- UT12-3 Synchronized surface acoustic wave measurement of fretting fatigue crack appearing at bolt joints of aluminum alloy plates (14:20-14:45)**  
*Sanat Wagle, Hiroshi Kato (Saitama University, Japan)*

**Room 416&417: Radiographic Testing 3**

Time: 13:30-15:20

**Wednesday, November 11****13:30-15:35**Chair: *Cun-feng Yang (Institute of Chemical Materials, CAEP, China)**Silvio Fazolli (Institute of Aeronautics and Space, Brazil)***RT3-1** **KEYNOTE** **Mobile computed tomography for inspection of large stationary components in aerospace and nuclear industries** (13:30-14:05)*Uwe Ewert, Bernhard Redmer, Christoph Rädcl (BAM, Germany), Ulf Schnars, Rudolf Henrich (Airbus AG, Germany), Klaus Bavendiek, Mirco Jahn (YXLON International GmbH, Germany)***RT3-2** **Application of 9MeV line-array industrial computed tomography in testing ammunition** (14:05-14:30)*Cun-feng Yang, Wei-bin Zhang, Yong Fu, Yong Tian (Institute of Chemical Materials, CAEP, China)***RT3-3** **Means to verify the uncertainty measurement on radiographic inspection** (14:30-14:55)*Silvio Fazolli, Paulo Roberto Sakai (Institute of Aeronautics and Space, Brazil)***RT3-4** **In-service aged composite insulators at transmission line investigated by the micro-computerized tomography**(14:55-15:20)*Pietro P.J. Silva (Federal University of Pernambuco, Brazil), Zurdival P. Castro Filho (Companhia Hidro Elétrica do São Francisco, Brazil), Admilson P. Pacheco, Armando H. Shinohara (Federal University of Pernambuco, Brazil)***Room 418: Infrared Thermographic Testing 1**

Time: 13:30-15:35

Chair: *B. Venkatraman (Indira Gandhi Centre for Atomic Research, India)**Jeongguk Kim (Korea Railroad Research Institute, Korea)***TT1-1** **Thermographic damage detection during tensile testing in railway steels** (13:30-13:55)*Jeongguk Kim, Sung-Tae Kwon (Korea Railroad Research Institute, Korea)***TT1-2** **A standardized hotspot extraction and representation technique using central moments for weld thermographs depicting lack of penetration for online weld monitoring in GTAW** (13:55-14:20)*N.M. Nandhitha, N. Manoharan, B. Sheela Rani (Sathyabama University, India), B. Venkatraman, M. Vasudevan, P. Kalyana Sundaram, Baldev Raj (Indira Gandhi Centre for Atomic Research, India)***TT1-3** **Modeling of circular layer in oil conduits** (14:20-14:45)*N. Laaidi, S. Belattar, A. Elballouti (Chouaib Doukkali University, Morocco)***TT1-4** **The effect of shape and depth of defect on the quantitative estimation in austenitic steel using lock-in thermography** (14:45-15:10)*B. Venkatraman, M. Menaka, Baldev Raj (Indira Gandhi Centre for Atomic Research, India)***TT1-5** **Thermographic monitoring of braking in railway brake disc** (15:10-15:35)*Jeongguk Kim, Sung-Tae Kwon, Sung-Cheol Yoon, Byeong-Choon Goo (Korea Railroad Research Institute, Korea)*

**Room 413: Poster Session 10**

Time: 15:40-17:10

Chair: *To be Announced*

- PS10-1 Non-contact measurement of temperature and humidity using ultrasonic delay line**  
*Akihiko Kon (University of Tsukuba / Yamatake Corporation, Japan), Koichi Mizutani, Naoto Wakatsuki (University of Tsukuba, Japan)*
- PS10-2 Visualization of wave propagation in elastic plates with cracks using pulse light source**  
*Kojiro Nishimiya, Takeshi Ohbuchi, Koichi Mizutani, Naoto Wakatsuki (University of Tsukuba, Japan), Ken Yamamoto (Kansai University, Japan)*
- PS10-3 Effect of wood properties on within-tree variation of ultrasonic wave velocity in softwood**  
*Masumi Hasegawa, Masato Takata, Junji Matsumura, Kazuyuki Oda (Kyushu University, Japan)*
- PS10-4 Numerical study on the ultrasonic transmission of concrete with various void ratios**  
*Bo-Tsun Chen, Zong-Ruey Yang, Helsin Wang, Qian-Ling Liao, Ta-Peng Chang (National Taiwan University of Science and Technology, Chinese Taiwan)*
- PS10-5 Development of a new ultrasonic analysis method for evaluation of thermally aged stainless steel**  
*Dong-Yeol Kim, Hak-Joon Kim, Sung-Jin Song, Bumjoon Kim, Byeongsoo Lim (Sungkyunkwan University, Korea)*
- PS10-6 Influence of directional coarsening of gamma prime precipitates on the acoustic harmonic generation in gas turbine blade material**  
*Ik-Keun Park, Chungseok Kim, (Seoul National University of Technology, Korea)*
- PS10-7 Electret condenser sensors with layered micro-gaps for ultrasonic measurement of rubbers**  
*Kensuke Kageyama, Yusuke Shibata, Hiroshi Kato (Saitama University, Japan)*

**Room 414&415: Poster Session 11**

Time: 15:40-17:10

Chair: *To be Announced*

- PS11-1 Bridge deflection measurement using digital image correlation with camera movement correction**  
*Satoru Yoneyama, Hiroki Ueda (Aoyama Gakuin University, Japan)*
- PS11-2 Full-field unwrapping of isochromatic fringe orders from photoelastic fringes obtained using semicircular polariscope**  
*Wataru Murata (Nippon Institute of Technology, Japan), Yudai Nomura (Sanden Co, Japan), Eisaku Umezaki (Nippon Institute of Technology, Japan)*
- PS11-3 Variation in pressure in liquid-filled plastic film bags subjected to drop impact**  
*Kenta Watanabe, Eisaku Umezaki (Nippon Institute of Technology, Japan), Katsunori Futase (Yushin Co. Ltd.)*
- PS11-4 Numerical simulation on fatigue limit evaluation using thermography**  
*Hung Anh Ly, Hirotsugu Inoue (Tokyo Institute of Technology, Japan)*
- PS11-5 Geometrical correction of thermal images for inspection of highway pavement**  
*Chih-Hung Chiang, Yi-Yin Chang, Tao-Ming Cheng (Chaoyang University of Technology, Chinese Taiwan), Ming-Der Yang, Tung-Ching Su (National Chung Hsing University, Chinese Taiwan)*
- PS11-6 Characteristics of thermal dissipations for fatigue crack in ultrasound excited infrared thermography**  
*Manyong Choi (Korea Research Institute of Standards and Science, Korea), Kisoo Kang (Hyundai Steel Co., Korea), Junghak Park (Korea Research Institute of Standards and Science, Korea), Dongpyo Hong (Chonbuk National University, Korea), Wontae Kim (Kongju National University, Korea),*
- PS11-7 Infrared thermographic diagnostics of ageing disconnecter joints and fuses in power installations**  
*Wontae Kim (Kongju National University, Korea), Manyong Choi, Junghak Park (Korea Research Institute of Standards and Science, Korea), Kisoo Kang (Hyundai Steel Co., Korea), Vladimir P Vavilov (Institute of Introscopy, Russia)*

- PS11-8** **Inspection of composite insulators of transmission lines by the thermography and the computed radiography**  
*Armando Hideki Shinohara, L.H.N. Rodrigues, F.S. Magnani, A.P. Pachêco (Federal University of Pernambuco, Brazil), Z.P. Castro Jr, S.P.L. Monteiro (Hydroelectric Company of San Francisco, Brazil)*

**Room 416&417: Poster Session 12**

Time: 15:40-17:10

Chair: *To be Announced*

- PS12-1** **Quick evaluation of the degree of deterioration of fire damaged concrete plate using stress wave method**  
*Chia-Chi Cheng (Chaoyang University of Technology, Chinese Taiwan), Yiching Lin (National Chunghsin University, Chinese Taiwan)*
- PS12-2** **Characterization of a humid concrete by study of thermal impedance**  
*Jibao Shen (Shaoxing University, China), Didier Defer, Emmanuel Antczak, Bruno Duthoit (Université d'Artois, France)*
- PS12-3** **Effect of oxidized test surface on the measurement of potential drops by DC four-point-probe method**  
*Md. Rostom Ali, Hironori Tohmyoh, Masumi Saka (Tohoku University, Japan)*
- PS12-4** **Prediction on the delamination life of thermal barrier coating (TBC) applied gas turbine blade in cyclic oxidation**  
*In-Hwan Shin, Dae-Jin Kim, Jae-Mean Koo, Chang-Sung Seok (SungKyunKwan University, Korea), Tack-Woon Lee (KPS Gas Turbine Technology Service Center, Korea)*
- PS12-5** **New technique for residual stress measurement NDT**  
*Ennio Curto (Research and Developed Vicenza, Italy)*
- PS12-6** **Measurement technique of distribution of power generation current using static magnetic field around polymer electrolyte fuel cell by 3D inverse problem FEM**  
*Tomoaki Katou, Yuji Gotoh (Oita University, Japan), Norio Takahashi (Okayama University, Japan), Masaki Izumi (The University of Kitakyushu, Japan)*
- PS12-7** **Static and dynamic magnetic hysteresis properties of thermally aged Fe-Cu model alloys**  
*Yasuhiro Kamada, Yusuke Tozawa, Hiroaki Kikuchi, Satoru Kobayashi, Katsuyuki Ara, Jun-ichi Echigoya (Iwate University, Japan)*

**Room 411&412: Ultrasonic Testing 13**

Time: 9:00-10:40

Chair: *Oliver Focke (Bremen Institute of Applied Beam Technology, Germany)*  
*Yukihisa Imagawa (Shin Nippon Nondestructive Inspection Co., Ltd., Japan)***UT13-1 Design of ultrasonic phased array testing procedure for angled T-weld structure** (9:00-9:25)*Guoxuan Lian, You Li, Haijing Cao (China Classification Society, China)***UT13-2 3D boundary element analysis of guided waves in a pipe** (9:25-9:50)*Haidang Phan, Jaesun Lee, Weiwei Liu, Younho Cho (Pusan National University, Korea)***UT13-3 Guided wave UT: a reliable NDT method for the screening and monitoring of structures** (9:50-10:15)*Alessandro Demma (Guided Ultrasonics Ltd., United Kingdom)***UT13-4 Signal processing for the guided wave testing based on the empirical mode decomposition** (10:15-10:40)*Xinjun Wu, Hongfen Xiong, Jiang Xu (Huazhong University of Science and Technology, China)***Room 413: Ultrasonic Testing 14**

Time: 9:00-10:15

Chair: *Tatsuyuki Nagai (Non-Destructive Inspection Co., Ltd., Japan)*  
*Seong-Jin Lim (Korea Inspection & Engineering Co. Ltd., Korea)***UT14-1 Ultrahigh frequency characterization of oxide thin films using Brillouin oscillations excited by picosecond ultrasound** (9:00-9:25)*Kei Morita, Hirotosugu Ogi, Nobutomo Nakamura, Masahiko Hirao (Osaka University, Japan)***UT14-2 Development of crack measuring technology to be applied to pipe weld for boiler facility** (9:25-9:50)*Akihiro Kanaya, Junichi Kusumoto, Hideaki Kitagawa (Kyushu Electric Power Co., Inc., Japan), Toshikazu Yokooji, Kihachi Hashiguchi (Toa Nondestructive Inspection Co., Ltd., Japan)***UT14-3 Application of ultrasonic nondestructive characterization on materials quality evaluation** (9:50-10:15)*Tie Gang, Xuemei Zhao, Xuesong Liu, Shuqi Li (Harbin Institute of Technology, China)***Room 414&415: General Session 2**

Time: 9:00-10:15

Chair: *Yasutomo Sakai (Tohoku University, Japan)*  
*Yang Ju (Nagoya University, Japan)***GS2-1 Delamination detection in CFRP plates using statistical analysis of temperature characteristic of resistance** (9:00-9:25)*Yoshiro Suzuki, Akira Todoroki (Tokyo Institute of Technology, Japan), Kosuke Takahashi (University of California, Los Angeles, USA), Yoshihiro Mizutani, Ryosuke Matsuzaki (Tokyo Institute of Technology, Japan)***GS2-2 Structural health monitoring with fibre optic sensors—a studying case—** (9:25-9:50)*Francesco Morrone (NewTech s.r.l., Italy), Giacinto Porco (University of Calabria, Italy), Dolores Romano, (Sismlab s.r.l., Italy)***GS2-3 Damage evaluation in composite structures using TLC thermography and comparison of the results with PCS and MIA test methods** (9:50-10:15)*Hadi Rezaghi Maleki, Vahid Marefat, Tohid Alizadeh (University of Bonab, Iran)***Room 416&417: General Session 3**

Time: 9:00-10:15

Chair: *Motoki Sakaguchi (Nagaoka University of Technology, Japan)*  
*Armando Hideki Shinohara (Federal University of Pernambuco, Brazil)***GS3-1 Tomography of concrete structures based on impact echo depth spectra** (9:00-9:25)*Pei-Ling Liu, Po-Liang Yeh, Chi-Yuan Yu (National Taiwan University, Chinese Taiwan)*

**Thursday, November 12**

**9:00-10:40**

- GS3-2** Study on the micron defect characterization and aging treat of explosive crystal (9:25-9:50)  
*Hehou Zong, Bin Dai, Weibin Zhang, Bin Kang (Institute of Chemical Materials, CAEP, China)*
- GS3-3** Numerical study on the mechanical behavior of aluminum foam material using CT images (9:50-10:15)  
*Sang Hoon Kim, Kyong Yop Rhee (KyungHee University, Korea)*

**Room 418: Infrared Thermographic Testing 2**

Time: 9:00-10:25

Chair: *Takahide Sakagami (Kobe University, Japan)*  
*Hirotsugu Inoue (Tokyo Institute of Technology, Japan)*

- TT2-1** **KEYNOTE** Nondestructive assessment of glass fibre composites by near and mid-wave infrared vision (9:00-9:35)  
*Clemente Ibarra-Castanedo, Abdelhakim Bendada, Xavier P.V. Maldague (Université Laval, Canada), Nicolas Avdelidis (National Technical University of Athens, Greece)*
- TT2-2** Development of a remote nondestructive evaluation technique for fatigue cracks in steel bridges by infrared thermography (9:35-10:00)  
*Takahide Sakagami (Kobe University, Japan), Yui Izumi, Shiro Kubo (Osaka University, Japan)*
- TT2-3** Quantitative determination of delamination depth in concrete by passive lock-In infrared thermography (10:00-10:25)  
*Tzu Yang Cheng (Osaka University, Japan), Takahide Sakagami (Kobe University, Japan), Shiro Kubo (Osaka University, Japan)*

**Room 411&412: Ultrasonic Testing 15**

Time: 11:00-11:50

Chair: Guoxuan Lian (*China Classification Society, China*)  
Alessandro Demma (*Guided Ultrasonics Ltd., United Kingdom*)

- UT15-1 Ultrasonic guided wave testing system for piping** (11:00-11:25)  
*Yukihisa Imagawa, Hideki Wada, Yasuhiko Wakibe (Shin Nippon Nondestructive Inspection Co., Ltd., Japan), Hideaki Kitagawa, Junichi Kusumoto, Akihiro Kanaya (Kyushu Electric Power Co., Inc., Japan)*
- UT15-2 Inspection of delaminated carbon fiber reinforced plastics with laser generated Lamb waves and shearographic interferometry** (11:25-11:50)  
*Oliver Focke, Christoph von Kopylow (Bremen Institute of Applied Beam Technology, Germany)*

**Room 413: Ultrasonic Testing 16**

Time: 11:00-12:15

Chair: Tie Gang (*Harbin Institute of Technology, China*)  
Akihiro Kanaya (*Kyushu Electric Power Co., Inc., Japan*)

- UT16-1 Acoustical detection of internal crack scanning from uneven surface of billet** (11:00-11:25)  
*Hideto Mitsui, Tadashi Ebihara, Koichi Mizutani, Naoto Wakatsuki (University of Tsukuba, Japan)*
- UT16-2 Application of storage tank weld using phased array technique** (11:25-11:50)  
*Seong-Jin Lim, Soon-Cheol Kim, Duck-Hee Kim, Jin-Hyuk Lee (Korea Inspection & Engineering Co. Ltd., Korea)*
- UT16-3 Implementation of guided wave inspection method in Japan: current status and future directions** (11:50-12:15)  
*Tatsuyuki Nagai, Yoshiyuki Imai (Non-Destructive Inspection Co., Ltd., Japan), Alessandro Demma (Guided Ultrasonics Ltd., United Kingdom)*

**Room 414&415: General Session 4**

Time: 11:00-11:50

Chair: Francesco Morrone (*NewTech s.r.l., Italy*)  
Akira Todoroki (*Tokyo Institute of Technology, Japan*)

- GS4-1 Numerical analysis of microwave NDT applied to piping inspection** (11:00-11:25)  
*Yasutomo Sakai, Noritaka Yusa, Satoshi Ito, Hidekazu Hashizume (Tohoku University, Japan)*
- GS4-2 An equivalent method to evaluate wall-thinning degrees of metal pipes using microwaves** (11:25-11:50)  
*Linsheng Liu, Yang Ju (Nagoya University, Japan)*

**Room 416&417: General Session 5**

Time: 11:00-12:15

Chair: Po-Liang Yeh (*National Taiwan University, Chinese Taiwan*)  
Hehou Zong (*Institute of Chemical Materials, CAEP, China*)

- GS5-1 In-situ estimation of high temperature stress fields based on microstructural analysis of single crystal Ni base superalloys** (11:00-11:25)  
*Motoki Sakaguchi, Masakazu Okazaki, Momoko Ike (Nagaoka University of Technology, Japan)*
- GS5-2 Change in the elastic constants of crept boiler piping ferritic steel** (11:25-11:50)  
*Armando Hideki Shinohara, A.B. Carvalho (Federal University of Pernambuco, Brazil), Sergio D. Soares (Petróleo Brasileiro S/A, Brazil), Hirotsugu Ogi (Osaka University, Japan), Kazumasa Sugiyama (Tohoku University, Japan)*
- GS5-3 Assessment of flexural stiffness of slender concrete members with impulse response rata** (11:50-12:15)  
*Chih-Peng Yu, Jiunnren Lai, Chia-Chi Cheng, Chi-Hung Chiang (Chaoyang University of Technology, Chinese Taiwan)*

**Room 418: General Session 6**

**Thursday, November 12**

**11:00-12:15**

Time: 11:00-12:15

Chair: *Yoshiro Suzuki (Tokyo Institute of Technology, Japan)*  
*Hadi Rezaghi Maleki (University of Bonab, Iran)*

**GS6-1 Effect of surface modification of Fe<sub>3</sub>O<sub>4</sub> on wear behavior of Fe<sub>3</sub>O<sub>4</sub>/epoxy nanocomposites (11:00-11:25)**

*Jeung Ook Park, Kyong Yop Rhee (Kyung Hee University, Korea)*

**GS6-2 Development of magnetic measurement system for moisture content of mortar (11:25-11:50)**

*Yasutaka Masuda, Nobuo Kataoka, Hironobu Yamada, Toshihiko Kiwa, Keiji Tsukada (Okayama University, Japan)*

**GS6-3 Study on metal magnetic memory signals of surface damage (11:50-12:15)**

*Bin Hu (Tsinghua University, China), Gang Chen, Gongtian Shen, Shangzhi Zuo (China Special Equipment Inspection & Research Institute, China)*

**Room 411&412: Ultrasonic Testing 17**

Time: 9:00-10:50

Chair: *Kyung-Young Jhang (Hanyang University, Korea)**Jiang Xu (Huazhong University of Science and Technology, China)***UT17-1** **KEYNOTE** **Evaluation of fatigue crack using nonlinear acoustic effect with the focused beam (9:00-9:35)***Kyung-Young Jhang, Taehun Lee (Hanyang University, Korea)***UT17-2** **Elastic constant of FePt thin films studied by picosecond ultrasound (9:35-10:00)***Mamoru Wakita, Atsuyoshi Uranishi, Nobutomo Nakamura, Hirotsugu Ogi, Masahiko Hirao, Masayoshi Nishiyama (Osaka University, Japan)***UT17-3** **Nondestructive diagnosis of micro-cracks using nonlinear resonant ultrasound spectroscopy (NRUS) (10:00-10:25)***Yong-Moo Cheong, M. Khurshed Alam (Korea Atomic Energy Research Institute, Korea), CheolGi Kim (Chungnam National University, Korea)***UT17-4** **Defect detection on the arc transition zone of the sucker rod with guided waves (10:25-10:50)***Jiang Xu, Xinjun Wu, Liangyun Wang, Yihua Kang (Huazhong University of Science and Technology, China)***Room 413: Ultrasonic Testing 18**

Time: 9:00-10:40

Chair: *Yu Kurokawa (Tokyo Institute of Technology, Japan)**Bo Song (China Classification Society, China)***UT18-1** **Propagation path model for ultrasonic TOFD testing (9:00-9:25)***Tie Gang, Zhao-yang Sheng (Harbin Institute of Technology, China)***UT18-2** **Application of stainless-steel-wedge line-focus probe to TOFD method (9:25-9:50)***Yu Kurokawa, Hirotsugu Inoue, Yuta Moriya (Tokyo Institute of Technology, Japan)***UT18-3** **The research of TOFD technology testing the butt weld in the ship building industry (9:50-10:15)***Bo Song, You Li (China Classification Society, China), Zhenshun Zheng (Leepipe Inspection Technologies Ltd., China)***UT18-4** **Ultrahigh-frequency evaluation of bulk microdefects in Si wafers using Brillouin oscillations (10:15-10:40)***Kenichi Tanigaki, Hirotsugu Ogi, Nobutomo Nakamura, Masahiko Hirao (Osaka University, Japan), Kazuhito Matsukawa (Renesas Technology Corporation, Japan), Hirofumi Harada (Siltronic Japan Corporation, Japan)***Room 414&415: General Session 7**

Time: 9:00-10:15

Chair: *Jae Seok Lee (Kyung Hee University, Korea)**Makoto Uchida (Okayama University, Japan)***GS7-1** **Compressive fracture monitoring of CFRP structure by electrical resistance change method (9:00-9:25)***Kensuke Suzuki, Akira Todoroki, Yoshihiro Mizutani, Ryosuke Matsuzaki (Tokyo Institute of Technology, Japan)***GS7-2** **Plasma modification of woven carbon fibers and its effect on the wear behavior of woven carbon/epoxy composites (9:25-9:50)***Jae Seok Lee, Kyong Yop Rhee (Kyung Hee University, Korea)***GS7-3** **Evaluation of geometry of semi-elliptical crack by direct current potential difference method based on potential difference distribution in two orthogonal directions (9:50-10:15)***Makoto Uchida (Okayama University, Japan), Hiroki Ishikawa (Mitsubishi Heavy Industries, Ltd., Japan), Naoya Tada (Okayama University, Japan)***Room 416&417: General Session 8**

Time: 9:00-10:40

Chair: *Kimmo Karhunen (University of Kuopio, Finland)**Chia-Chi Cheng (Chaoyang University of Technology, Chinese Taiwan)*

**Friday, November 13****9:00-12:00**

- GS8-1** **A modified elastic-wave-based imaging method by using velocity responses** (9:00-9:25)  
*Jian-Hua Tong (Hungkuang University, Chinese Taiwan), Shu-Tao Liao (Chung Hua University, Chinese Taiwan)*
- GS8-2** **Electrical resistance tomography for concrete crack detection** (9:25-9:50)  
*Kimmo Karhunen, Aku Seppänen, Anssi Lehtikoinen (University of Kuopio, Finland), Paulo J.M. Monteiro (University of California, Berkeley, USA), Jari P. Kaipio (University of Kuopio, Finland)*
- GS8-3** **Development of SINO-NDT-IE tester and its engineering application** (9:50-10:15)  
*W.C. Ko, Yiching Lin, D.K. Wu, C.W. Yu, K.J. Lee (Sinotech Engineering Consultants, Inc., Chinese Taiwan)*
- GS8-4** **A preliminary study on using Lamb waves to evaluate the interfacial debonding for steel plate strengthened concrete** (10:15-10:40)  
*Chia-Chi Cheng, Keng-Tsang Hsu, Chih-Peng Yu (Chaoyang University of Technology, Chinese Taiwan)*

**Room 418: General Session 9**

Time: 9:00-10:40

Chair: *Shien Ri (Tohoku University, Japan)**Ching-Chung Yin (National Chiao Tung University, Chinese Taiwan)*

- GS9-1** **Basic study of control of a crack in laminated materials** (9:00-9:25)

*Yuya Miyazaki, Tsutomu Ezumi (Shibaura Institute of Technology, Japan)*

- GS9-2** **Noncontact deflection measurement for large-scale structure by advanced image processing techniques** (9:25-9:50)

*Shien Ri, Tatsuro Numayama, Masumi Saka (Tohoku University, Japan), Koichi Nanbara, Daisuke Kobayashi (Chubu Electric Power Co., Inc., Japan)*

- GS9-3** **Application of ESPI to defect detection in solar cell substrates** (9:50-10:15)

*Ching-Chung Yin, Tzu-Kuei Wen (National Chiao Tung University, Chinese Taiwan)*

- GS9-4** **State of stress by inside and outside diameter of different aspect axis that has interface** (10:15-10:40)

*Keiichi Hagiwara, Tsutomu Ezumi (Sibaura Institute of Technology, Japan)***Small Auditorium: Plenary Lecture 4**

Time: 11:00-12:00

Chair: *Dr. Norikazu Ooka (The Japan Welding Engineering Society, Japan)*

- PL-4** **Safety assessment of nuclear power plant in the case of earthquake**

*Dr. Shunichi Suzuki (Tokyo Electric Power Company, Japan)*