ISEM’13-Sendai, Technical Program

November 3rd, 2013
15:00-17:00  Registration (Exhibition Hall)
17:00-18:30  Reception (Exhibition Hall)

November 4th, 2013
8:30-9:30  Registration
9:30-9:40  Opening Ceremony (Memorial Hall)
Chair: Y. Tanabe (Niigata Univ.)
Makoto SAKAMOTO
(President of the Japanese Society for Experimental Mechanics, Niigata Univ.)
Hiroshi TAKAHASHI
(Chairperson of Organizing Committee of 8th ISEM, Tohoku Univ.)

9:40-10:40  Keynote Lecture 1 (Memorial Hall)
Chair: M. Fujigaki (Wakayama Univ.)
Elastic Wave Propagation in Transversely Impacted Beams
Prof. Dulal GOLDAR (Sharda University, India)

10:40-10:50  ( Break )
10:50-12:05  Fluid Dynamics 1 (Room A)
Chairperson: H. Menji (Univ. of Tsukuba)
1 MEMS Thermal Film Sensors for Flow Research
   J. J. Miao, T. S. Leu, R. M. Yu, J. Y. Dai, J. K. Tu, C. T. Wang, V. Lebiga,
   D. Minnov, A. Pak, V. Zinoviev and K. M. Chung
28 Measurements of Wall Shear Stress Fluctuation with the Micro-Fabricated Hot-Film Sensor
   in a Boundary Layer of Wall Jet
   Takuya SAWADA, Osamu TERASHIMA, Yasuhiko SAKAI, Kouji NAGATA, Mitsuhiro
   SHIKIDA, Hirotaka HIDA and Yasumasa ITO
93 A Study on Removal of Infinitesimal Particles on Wall by High Speed Air Jet
   Sanghyeon SONG, Kazuhiko SOEMOTO, Tatsuro WAKIMOTO and Kenji KATOH
94 Adhesive Force due to a Thin Liquid Film between Two Smooth Surfaces (Wringing
   Mechanism of Gage Blocks)
   Kenji KATOH and Tatsuro WAKIMOTO

40 Study on Separation Characteristics of Fallen Leaves from Water Flow at Intake of Micro
   Hydroelectric Generator
   Hefeng LIANG, MasatoshI YOSHIDA and Kenji AMAGAI

Solid Mechanics 1 (Room B)

Chairperson: K. Nakai (Okayama Univ. of Science)
2 Static Bending Characteristics of Bamboo-Fiber Laminated Plates
Kazufumi UDA
3 Trial Production of Ultra-Lightweight and Small EV: pico-EV using Bamboo-Fiber
   Laminated Plates
   Kazufumi UDA and Yoshishiko TAKAHASHI
83 Mechanical Properties of South America Curaua Fiber at Testing Temperature of up to 473K
   Taichi SAKAMOTO, Akihiro TAKAHASHI and Mayu MIYAGAWA
84 Mechanical Properties and Fracture Behavior of Ramie Fiber at Testing Temperature of up
   to 473K
   Mayu MIYAGAWA, Akihiro TAKAHASHI and Taichi SAKAMOTO
85 Research for Examination on Optimum Shape of Stamping Punch for Metal Sheet
   Hirofumi YOTSUMOTO and Akihiro TAKAHASHI

Bio Engineering 1 (Room C)

Chairperson: E. Yamamoto (Kinki Univ.)
95 Eye-Tracking Analysis of Nurses for Development of Nursing Skills in Patient Care
   Hiromu SASAKI, Ko KAWAI, Yuji TANABE, Makoto SAKAMOTO and Mieko SADAKATA
125 Relationship Electrical Muscle Activity and Muscle Strength of the Biceps Muscle using
   EMG Bluetooth
   H. Ali Jawad Abd
4 Walking Motion Analyses with the Aid of Walker Using Acceleration Sensors
   Satoru OKAMOTO and Hiroshi KUROYABU
19 An Aspect in Free Flight of a Butterfly Colias erate Esper
   Seiichi SUDO and Kohei KITADERA
48 Shrinkage Stress Evaluation of Light-Cured Composite Resin in Cavities
   Kazuo ARAKAWA, Sane-Jae YOON and Mariko NISHIMURA
Civil Engineering 1 (Room D)

Chairperson: Luu Xuan Loc (Ho Chi Minh City Univ. of Technology)
Influence of Silicon Content on Strength of Geopolymer Material with Fly Ash
Duc Hung PHAN, Thanh Tai TRAN, Linh Phuong VO and Anh Tuan LE

The Full Scale Rainfall Experimental Study of Fusion Technology with Monitoring and Reinforcement Method on Slope
Toru DANJO, Kazuari SAKO, Masanitsu FUJIMOTO, Naoto IWASA and Ryoichi FUKAGAWA

A Piezoelectric Film Type Scour Monitoring System for Bridge Pier
Chien-Hsiang WANG, Hao-Lin WANG and Chung-Yue

Study on New Estimation Method of Shear Strength Parameters of Subsurface Layers
Tomoaki SATOMI, Yuki SATO and Hiroshi TAKAHASHI

Analysis on Movement of Wheel-Typed Vehicle with Crawlers in between Front and Rear Wheels on Soft Ground
Ryosuke ETO, Tomoaki SATOMI and Hiroshi TAKAHASHI

Poster Session (Exhibition Hall)
General Presentation
Special Presentation by Students of College of Technology, Awarding Ceremony

Fluid Dynamics 2 (Room A)

Chairpersons: J.J. Miau (National Cheng Kung Univ.), K. Katoh (Osaka City Univ.)
Modeling of Tsunami Waves in an Open Hydrodynamic Channel
Boris BOSHENYATOV and Dmitry LISIN

Small Model Experiment on the Gradient of Pressure Wave by Entering the Tunnel of a Conventional Limited Express
Hirokazu ENDO, Fumiya MEGURO, Masanori OTA and Kazuo MAENO

Distribution Control of Solid Particles-Liquid Two-Phase Flow by Using Swirl Flow at a Manifold
Shohei YOSHIKAWA and Hideaki MONJI

Thermal Fluid Flow Transport Phenomenon over Protrusion Cylinders in Free Stream
Zijie LIN and Shuichi TORII

Drag Force Acting on Each Sphere in a Lattice Arrangement of Sphere
Shuhei ICHIKAWA and Hideaki MONJI

Drag Force Acting on a Sphere behind an Obstacle
Shumpei NOZAKI, Shuhei ICHIKAWA and Hideaki MONJI

Experimental Study of Wake Flow Interaction in Tandem Arrangement at Critical Reynolds Numbers
Hung-Yen, Yi-Chung Liu and Fei-Bin Hsiao

The Hot-Wire Fluctuation Diagram Technique for Separation of Different Modes of Flow Disturbances
V.A. Lebiga, V.N. Zinoviev, A.Yu. Pak

Solid Mechanics 2 (Room B)

Chairpersons: T. Yokoyama (Okayama Univ. of Science), M. Sakamoto (Niigata Univ.)
Investigation of Metal Material Parameters Identification by Dynamic Hysteretic Behavior of the Indentation Tests and FEM Analysis
Junji SAKAMOTO and Masauki NAKAMURA

Prediction Method of Fracture Strain for Non-Standardized Specimen Based on Local Absorbed Strain Energy Distribution
Masato TSUTSUI, Takuto HARA, Tadao FUKUTA, Kiyostar OBUHAI and Koichi OZAKI

Effects of Filled Cell Pattern and Position on Dynamic In-plane Compression Properties of Aluminum Honeycombs
Masahiro NISHIDA, Koji TERANISHI and Shinya OTANI

Relationship between Change of Elastic Modulus Caused by Plastic Deformation and Development of Dislocation
Ryoshei TOMIZAWA, Shuichi ARIKAWA and Satoru YONEYAMA

Cyclic Stress Measurement Using Electrodeposited Copper Foil (Effect of Ambient Temperature on the Grain Growth)
Yuichi ONO, Yasuyuki YAGI and Kouitsu MIYACHIKA

Investigation of Deformation Mechanism under Indentation Testing of Metastable Beta-type Ti-Mo Alloys
Ichiro SHIMIZU, Noriaki KIMURA, Naoya TADA and Yoshito TAKEMOTO

Dynamic Tensile Stress-Strain Behavior of Nuclear-Grade Graphite IG-11
Kenji NAKAI and Takashi YOKOYAMA
November 5th, 2013
10:00-11:00
Keynote Lecture 2 (Memorial Hall)  Chair: H. Takahashi (Tohoku Univ.)
Significance of Experimental Mechanics in the Development of Nanocomposites and Energy Devices
Prof. Toshiyuki HASHIDA (Tohoku University, Japan)

11:00-12:00
Keynote Lecture 3 (Memorial Hall)  Chair: H. Takahashi (Tohoku Univ.)
Experimental Study on Sediment Sorting in Open Channel
Assoc. Prof. Luu Xuan LOC (Ho Chi Minh City University of Technology, Vietnam)

12:00-13:30  -------------------------- ( Lunch )  --------------------------

13:30-21:00
Excursion and Banquet

November 6th, 2013
9:00-10:15
------- Fluid Dynamics (Room A) -------
Chairperson: T. Sawai (Kinki Univ.)

7 Preventing Pipe Blockage Caused by Freezing of Water Flowing Down on Inner Wall of a Vertical Pipe
Yoshimi KOMATSU, Yuki KANEYA, Makoto TAGO and Yoshishiro YOSHIDA

103 3D Laser Interferometric CT Measurement of Unsteady Shock-Vortex Flow Discharged from Three Cylindrical Holes
Yoshishiro MIWA, Tomomi ARATAKI, Tatsumi INAGE, Masanori OTA and Kazuo MAENO

39 Simultaneous Measurement of Liquid Surface and Wave Velocities for Falling Liquid Films
Nurrina ROSLI and Kenji AMAGAI

71 Study on the Concentration Measurement in the Fine Scale Region in a Liquid Jet by the Optical Fiber LIF Method
Toshiki TAKEUCHI, Yasuhiko SAKAI, Osamu TERASHIMA, Kouji NAGATA, Yasumasa ITO and Tomoaki WATANABE

79 Study on Supersonic Nozzle Flow with Micro Bubbles
Kentarou NAKASHIMA and Hideaki MONJI
Solid Mechanics 3 (Room B)

Chairperson: Y. Ono (Tottori Univ.)
60 Application of the Digital Image Correlation Method to Elastic Modulus Measurement of Metal Thin Films
Yuichi ONO and Satoshi SHIRAHAZE
62 Residual Stress Measurement on Laser Shock Peening Superalloy by using FIB Ring-core Milling Method
Ronghua ZHU, Huimin XIE, Zhengxing HU and Jianguo ZHU
107 Development of a Cross-type Grazing SH-wave Sensor for High Precision Stress Measurement of Rolled Steel Plate
Hideshi MIYAZAKI, Yoshitaka HASHIMOTO, Yorinobu MURATA and Motoharu FUJIGAKI
116 An Approach to Wide Range Strain Measurement by Bi-sensitive Speckle Interferometry and Digital Image Correlation
Shuichi ARIKAWA, Yoichi SENSEN and Satoru YONEYAMA
115 J-integral Evaluation for an Interface Crack Using Digital Image Correlation
Hiroto YAMANE, Shuichi ARIKAWA, Satoru YONEYAMA, Yasuaki WATANABE, Tatsuhiko ASAI, Kunio SHIOKA and Mitsuo YAMASHITA

Bio Engineering 2 (Room C)

Chairperson: M. Chiba (Tohoku Univ.)
66 Measurement of Loading Induced Acoustic Emissions at Stem of Miniature Tomato for Estimation of Embolism Risk
Kensuke KAGEYAMA and Kansuke TAJIMA
96 Biomechanical Study on Internal Fixation Devices for Distal Humerus Fracture
Yoji TANABE, Jonas Aditya PRAMUDITA and Takahiro YAMAMOTO
76 Anisotropic Tensile Properties of Porcine Skin in Dorsal and Ventral Regions
Jonas Aditya PRAMUDITA, Yusuke SHIMIZU, Yoji TANABE, Masato ITO and Ryoji WATANABE
122 Alternations in the Structure and Mechanical Properties of Bone Tissues Obtained from Experimental Animal Models of Lifestyle-Related Diseases
Ei YAMAMOTO, Ippei TAKEDA, Yoji MIYAZAKI and Yasuaki HANDA
87 Study on Attitude Stabilization of a Flapping Wing Robot by Dihedral Angle Effect
Hiromu YOSHIDA and Yoshiyuki HIGASHI

Materials Science and Combustion (Room A)

Chairpersons: Y. Nakamura (Hokkaido Univ.), T. Sakai (Tokyo Metropolitan Univ.)
68 Grating Projection Method with Small Pitch Using Linear LED Device
Motoharu FUJIGAKI, Tutomu YOKOYAMA and Yorinobu MURATA
118 Development of Test Methods for Mechanical Property Evaluation of Balloon-Expandable CoCr Alloy Stent
Takuya YOKOO, Ichiro SHIMIZU, Akira WADA, Aya TAKAKI, Shinichi OKADA, Mamoru HATAKEYAMA and Shuzo YAMASHITA
89 The Effect of Sample Aspect Ratio on Limiting Oxygen Index (LOI)
Aki HOSOGAI, Yoji NAKAMURA, Kaoru WAKATSUKI and Yugo KIMOTO
21 Characteristics of Thermo-Fluid phenomena of Torrefied Wood Chips and Optimum Molding Condition of Torrefied Wood-Briquette
Torus SAWAI, Noriyasu HIROKAWA, Takeshi KAJIMOTO and Yoshimitsu ICHINO

Civil Engineering 2 (Room D)

Chairperson: H. Takahashi (Tohoku Univ.)
13 Experimental Consideration on Relationship between Failure Strength Property and Permeability of Fiber-Cement-Stabilized Soil Made of Tsunami Sludge
Tomoaki SATOMI, Hiroki KURIBARA and Hiroshi TAKAHASHI
11 Study on Durability for Drying and Wetting of Cover Soil for Radiation-Contaminated Soil Made of Tsunami Sludge
Hiroshi TAKAHASHI, Hiroki KURIBARA and Tomoaki SATOMI
10 Study on Durability for Erosion of Fiber-Cement-Stabilized Soils Using Tsunami Sludge
Hiroshi TAKAHASHI, Shota KUMAGAI and Tomoaki SATOMI
38 Permeability Test in Single Borehole Using Ultrasonic Wave
Nobutaka HIRAOKA, Takehiro KUROHARA, Shunya NAKANO, Katsuhiko TANAKA, Masamitsu FUJIMOTO, Ryoichi FUKAGAWA and Asako TOGARI
18 Study on Durability for Erosion by Rainfall of Cover Soil for Radiation-Contaminated Soil Made of Tsunami Sludge
Tomoaki SATOMI, Ryoichi YAMAZAKI and Hiroshi TAKAHASHI
10:15-10:30 (Break)

Materials Science and Combustion (Room A)
Solid Mechanics 4 (Room B)

Chairperson: Y. Morita (Nagoya Univ.)

34 Photoelastic Stress Analysis of Fiber/Matrix Interface on Single Fiber Composite
   Takenobu SAKAI, Yasunori IIHARA and Satoru YONEYAMA

81 Two New Methods for 3D Shape Reconstruction in an SEM
   Chuanwei LI, Zhanwei LIU and Huimin XIE

92 Identification of Elasto-plastic Material Properties with Full-field Surface Displacement
   Measurements
   Keita JINNO, Shuichi ARIKAWA, Satoru YONEYAMA, Yasuaki WATANABE, Tatsuhiko
   ASAI, Kunio SHIOKAWA and Mitsuo YAMASHITA

Visual, Sound and Vibration (Room C)

Chairperson: S. Okamoto (Shimane Univ.)

90 Evaluation Method for Sound-absorption Coefficient inside a Tire
   Masaki NAKAMURA, Yohsuke TANAKA and Shigeru MURATA

88 Predictive Maintenance Using Diagnostic System for Work Vessel Equipment
   Taku SAITO, Taichi NAGASAWA, Seiji MATSUDA, Masakazu TOMURA, Katsuki
   SHIBATA and Yoshio TAKEUCHI

127 An Adaptive Active Shape Model for Eye Shape Detection
   Mohammad ALDIBAJA and Sinichi SUZUKI

128 Eye Shape Detection Based on Properties of Eigeneye Image in Log-Polar Domain
   Mohammad ALDIBAJA and Sinichi SUZUKI

Solid and Non-Destructive Testing (Room D)

Chairperson: K. Kageyama (Saitama Univ.)

20 An Attempt of Measurement of Load Acting on Hub-bearing Using Ultrasonic Technique
   Akitoshi TAKEUCHI

29 Micro-hole Inspection System Using Low-frequency Sound
   Yoshinori NAGASU, Kazunori ITOH, Makoto OTANI, Noboru NAKAYAMA and Kakumasa
   EGUCHI

126 Efficient Measurement of Three-Dimensional Displacement Using DIC with LUE Method
   Akira KATO

117 Development of Portable 3-D Shape Measurement Device using Light Source Stepping
   Method
   Toshimasa SAKAGUCHI, Motoharu FUJIGAKI and Yorinobu MURATA

Closing Address (Room C)

Chair: Y. Tanabe (Niigata Univ.)
Poster Session
General Presentation
6 Identification of Damping Ratio in a Single-Degree-of-Freedom Vibration Model
Takashi YOKOYAMA and Yuma KOMATSUBARA
26 Fluid Flow and Heat Transfer of Natural Convection around Heated Horizontal Square Cylinder in Water
Fumiyoshi KIMURA, Masashi KUROTANI and Kenzo KITAMURA
37 Biomechanical Effects of Push Handle Heights on Upper Limbs during Attendant Propelled Wheelchair Slope Transportation
Miyako MIZUTANI, Kensaku KAWAKAMI, Mieko SADAKATA, Koichi KOBAYASHI and Makoto SAKAMOTO
45 Comparison of Gasification Characteristics by Bed Material in a Fluidized Bed Gasifier
Takahiro MURAKAMI, Minoru ASAI and Yoshizo SUZUKI
51 Drop Impact Behavior of Containers for Liquid Food with Recycled Paper Case
Naohiro TSUCHIYA, Eisaku UMEZAKI, Yuma SHINODA and Katsunori FUTASE
52 Accuracy Improvement in Determination of Principal-Stress Direction from Color Photelastic Fringes Obtained with Semicircular Polariscope
Kosuke SAIITO, Wataru MURATA and Eisaku UMEZAKI
53 Digital Image Correlation Analysis of Distal Movement of Mandibular Teeth Using Anchor Screws
Yusuke KANAI, Eisaku UMEZAKI, Sigeyuki MATSUI, Daigo KOMAZAWA and Naoto SUDA
54 System for Simultaneous Measurement of Flow and Stress in UV-Curable Resin during Curing Process
Akira OKANO and Eisaku UMEZAKI
86 New Volcanic Ash Agent for Prevention of Unwanted Spatter Adhesion in Metal Arc Welding Process
Akihiro TAKAHASHI
98 Development and Optimization of a Microbubble Generator with a Hollow Cylindrical Ultrasonic Horn
Tatsuya NUMAKURA and Toshinori MAKUTA
99 Acoustic property and Yield Improvement of Ultrasonically Generated Cyanoacrylate Hollow Microcapsules
Taichi SUTOH, Tadano FUKAMI and Toshinori MAKUTA
105 Real-Time Pseudo-3D Displacement Measurement of Four Points LED Markers with One Camera Image
Yasushi NIITSU, Takashi IIZUKA and Kenji YASUOKA
Toshiro KOBAYASHI, Hatsuki IKDA, Yuichi UTSUMI, Hideyuki KANEMATSU, Tsuyoshi MASUDA and Motomichi YAMAMOTO
111 Proposal of a New Hydroponically Culture System for Root Vegetables
Kiyomi MORI
114 Deflection of Longitudinal Ultrasonic Waves by Stress Gradient
Masahiro SUETSUGU, Noriki INUI and Kouichi SEKINO
120 Quasi-static and Impact Compressive Properties of Foamed Polyethylene Film with Closed Cell
Hiroyuki YAMADA, Kohji TATEYAMA, Ryo OKUI, Nagahisa OGASAWA and Kinya OGAWA

Special Presentation by Students of College of Technology
S01 Development of a rotation inverted pendulum for student experiment
Hiromu UENO and Natsuki TAKAGI
S02 Development of a transport robot using two wheel inverted pendulum
Hideki ASARI, Taichi MAEDA and Natsuki TAKAGI
S03 Mechanical Properties of Natural Jute Fiber at Elevated Temperatures
Kenji BABA, Akihiro TAKAHASHI, Naoyuki YAMAMOTO, Toshinobu TOYOIRO and Hiroyuki SHIRAIWA
S04 Impact Deformation Behavior of Magnesium Alloy at Cryogenic Temperature
Yoshitaka BABA, Akihiro TAKAHASHI, Naoyuki YAMAMOTO, Toshinobu TOYOIRO and Hiroyuki SHIRAIWA
S05 Loading Rate Dependency on Impact Energy Absorption of Lead-Free Solder
Motoki TANAKA, Akihiro TAKAHASHI, Naoyuki YAMAMOTO, Toshinobu TOYOIRO and Hiroyuki SHIRAIWA
S06 Development of New Resistance Welding Process for Metallic Material
Shoyo MAEDA, Hirofumi YOTSUMOTO, Akihiro TAKAHASHI, Naoyuki YAMAMOTO, Toshinobu TOYOIRO and Hiroyuki SHIRAIWA
S07 Study on Heat Transfer Characteristics of Falling Film Type Heat Exchanger (Effect of Tube Flow Condition on Heat Exchanger Performance)
Yutaku KITA and Hiroyuki SHIRAIWA
S08 Cooling System in Data Center to Achieve Low Running Cost
Akinobu OKAMOTO, Keita ARISHIMA and Hiroyuki SHIRAIWA

S09 Microstructure and magnetic properties in aged Mn-Ga-Cu alloys
Masahiro SASAKI, Kazuhiro MINAKUCHI, Ryosuke KAINUMA and Wataru ITO

S10 Develop on Sequential Control Kit for Exchange Students
Toshiaki TAKAYAMA, Youta IISHIBA, Kuniaki YAJIMA and Junichi SUGAYA

S11 Preparation of Vanadium-doped ITO Films by Spray CVD: Effect on the Work Function
and Resistivity by Annealing
Naoki YOSHIDA, Ryouta ONODERA, Shigeyuki SEKI, Keunyoung PAK, Yoshiyuki SEKI,
Takayuki UCHIDA, Yutaka SAWADA, Kunio YUBUTA and Toetsu SHISHIDO

S12 Automatic Impedance Matching Circuit for WPT System
Shinji ABE and Qiao-Wei YUAN

S13 Approach to CAD/CAM in 5-Axis Machine Tools for Purpose of Application to College of
Technology Education
Takazumi ONO, Keisuke ONO, Takeshi MIYAMOTO and Yoshitaka AZUMA

S14 Manufacture of Solar Car and Research into Utilization of Renewable Energy by Hybrid
System
Shota TSUJI, Masayuki WATANABE and Kenya HIROSAWA

S15 Electrostatic Charging Characteristics of Soil and Metal Plate
Kenta YAGI and Tadaomi EGUCHI