

Sunday, October 1st, 2017

Oral Session A1 📍 **1F RoomA**
09:00-12:00

B. Inventions and innovation in advanced manufacturing

E. Inventions/innovation in smart system

Chairman: Ching-Hung Lee

- National Chung Hsing University

Chairman: Hau-Wei Lee

- National Chung Hsing University

A1-0. 09:00

Invited Speech

Prof. Takayoshi Kobayashi

A1-1. 09:30

012690 Innovative RFID Based Product Portfolio Automatic Management System
Shang-Liang Cheng and Meng-Han Feng

A1-2. 09:45

012747 The Effect of Ball Grooves Configuration on the Dynamic Characteristics of Linear Rolling Guides
Jui-Pin Hung, Made Rama Arya, Yu-Jhang Chen

A1-3. 10:00

012748 Investigation of the Correlation between Cutting Parameters and Surface Roughness
Jui-Pin Hung, Kung-Da Wu, Yung-Chih Lin

A1-4. 10:15

013640 BIM Applied to the Light Gauge Steel Structure Modular Design and Automated manufacturing

Shang Yuan Chen, Tai Liu

A1-6. 10:30

012685 Machine Doctor: A Feed Drive Diagnosis System for CNC Machine Tools
Ching-Hung Lee, Chien-Yu Lin, Yu-Jen Chen

Sunday, October 1st, 2017

Oral Session B1 📍 **1F RoomB**

09:00-12:00

**L. Inventions and Innovation in
Electrical
Engineering/Energy/Communicati
ons**

**X3. Innovation in Smart Sensor
Metrology & Intelligent
Automation System**

Chairman: Chin-Sheng Chen

- National Taipei University of Technology

Chairman: Jui-Hung Liu

*- Southern Taiwan University of Science and
Technology*

Chairman: Chih-Jer Lin

- National Taipei University of Technology

B1-1. 09:00

012808 Combined Adaptive Link-Aware
Clustering Algorithm with Optimal Relays in
Wireless Sensor Networks

*Young-Long Chen, Siao-Jhu Shih, Pin-Lun
Huang*

B1-2. 09:15

013233 Performance Improvement Evaluation
of a Controller Retrofitted Wind Turbine

Jui-Hung Liu, Jien-Chen Chen

B1-3. 09:30

013264 Load Analysis of the Yaw Operation
Strategy to a Wind Turbine System

*Jui-Hung Liu, Jien-Chen Chen, Chih-Hsun
Peng, Chia-Ming Chang*

B1-4. 09:45

013363 Analysis of Flux-Switching Permanent
Magnet Generator for Hydro-power Systems

*Cheng-Tang Pan, Yu-Lung Lin, Shao-Yu Wang,
Chung-Kun Yen, Zong-Hsin Liu*

B1-5. 10:00

012703 Model Reference Adaptive Control and
Fuzzy Neural Network Synchronous Motion
Compensator for Gantry Stage

Chin-Sheng Chen

B1-6. 10:15

012721 A Low Cost of IoT Laser
Interferometer by Using a Raspberry Pi3

*Huay-Chung Liou, Bing-Lin Ho, Jr-Rung Chen,
Hau-Wei Lee, Tsung-Han Hsieh*

B1-7. 10:30

012781 Calibration of a Robot and
Compensation for Stiffness model Using a 3D
Camera

Chih-Jer Lin, Yu-Jung Lin

B1-8. 10:45

012787 Geometric Error Measurement of
Machine Tool Using an Auto-tracking Laser
Interferometer

*Jr-Rung Chen, Bing-Lin Ho, Hau-Wei Lee,
Shan-Peng Pan, Tsung-Han Hsieh*

B1-9. 11:00

013045 Multiple-point Measurement for
Mechanical Strain, Raising Temperature and
Working Frequency of a High Speed Spindle
using One Fiber Bragg Grating Sensor

*Chien-Ching Ma, Ruei-Cing Gong, Ching-Yuan
Chang*

B1-10. 11:15

013330 A self-tuning cross-coupled two degree-of-freedom PID control for positions synchronization of parallel linear motors
Syuan-Yi Chen, Chin-Sheng Chen, Zhen-Wei Yang

B1-11. 11:30

013732 Defect Classification and Evaluation System Based on Deep Learning
Ming Chang, Chia-Sheng Pan, Ruifang Ye

B1-12. 11:45

013797 Displacement measurement simulation of three-axis gantry type structure with auto-tracking ranging principle
Bing-Lin Ho, Hau-Wei Lee, Jr-Rung Chen

Sunday, October 1st, 2017

Poster 1  **1F Recreation Center**
09:00-12:00

B. Inventions and innovation in advanced manufacturing

D. Inventions/innovation in devices sensors and actuators

E. Inventions/innovation in smart system

G. Inventions/innovation in energy and thermal/fluidic science

J. Design/modeling/computing methods

K. Inventions and Innovation in smart design

X2. Invention/innovation in energy saving technology

X4. Nanomaterials for Renewable and Sustainable Energy

Poster 1-1

012624 Sparse Coding for Manufacturing Quality Prediction

Zheng-An Zhu, Hung-An Kao, Cheng-Hui Chen, Yan-Shou Hsieh, Chen-Kuo Chiang

Poster 1-2

012664 A novel technique for reducing thermal errors associated with thermal bending of machine tools

Ming-Tsang Lee, Zhao-Jin Chen, Ming-Chieh Hung, Chia-An Liu, Chieh-Wen Tseng

Poster 1-3

013293 Flexible four-in-one microsensor for PEMFC interior monitoring

Chi-Yuan Lee, Kuan-Lin Yu

Poster 1-4

012696 An investigation of Vibration Assisted Deep groove EDM of Titanium alloy (Ti-6Al-4V)

Chi-Shiang Fang

Poster 1-5

012716 Research on Injection Molding of Bevel Gear

Dyi-Cheng Chen

Poster 1-6

012754 Characteristics of the effect of swirling gas jet assisted electrochemical discharge machining for glass based on machine vision

Chao-Ching Ho

Poster 1-7

011633 Measurement of TCP Errors of the Five-axis Machine Tools by Combining Double Ball-Bar with an Orthogonal Ball Cup Array Plate

Chien-Hung Liu, Hau-Wei Lee, Zhe-Hsin Pong

Poster 1-8

012658 The Invention of Tooling and Manufacturing Process of Curvature Hollow Composite Structure Tube

Kuo-Wei Wu, Chih-Chia Chen, Ming-Jen Ting

Poster 1-9

012739 A novel thermal error control system of machine tool for smart manufacturing

Yu-Chi Liu, Chow-Shih Wang, Yao-Cheng Tsai, Shih-Yu Kao, Hung-Sheng Chiu, Hsiu Fen Lee

Poster 1-10

012961 Prediction of Thermal Displacement of Spindle in Vertical Machining Center by Neural Network

Meng-Ying Lin, Shao-Hsien Chen, Min-Sheng Gao

Poster 1-11

012350 Application of Laplace Adomian Decomposition Method to Nonlinear Fin System Problems

Chin-Chia Liu, Chao-Kuang Chen

Poster 1-12

012424 Flexible three-in-one microsensor embedded in the vanadium redox flow battery stack for in-situ microscopic sensing and diagnosis

Chi-Yuan Lee, Chin-Lung Hsieh, Chia-Hung Chen, Kin-Fu Lin, Chong-An Jiang

Poster 1-13

012425 Study on the internal real-time microscopic diagnosis and aging of proton exchange membrane water electrolyser

Chi-Yuan Lee, Chia-Hung Chen, Shih-Chun Li

Poster 1-14

012823 Simulation analysis of dynamic distribution of the high-temperature furnace with two burner on the furnace temperature

Yen-Liang Yeh, Shao-Wen Tang, Bin-Hao Chen

Poster 1-15

013085 Laser Assisted Material Synthesis and Patterning Technology for Microelectronics Fabrication and Lab-on-a-Chip Applications

Ya-Yu Chiang, Chien-Hung Liu, Seung Hwan Ko Ko, Ming-Tsang Lee

Poster 1-16

012780 Indoor Positioning System Based on BLE Location Fingerprinting

Yu-Chi Pu, Pei-Chiun You

Poster 1-17

012803 Inverse Current Measurement Method for Parameter Estimating of Miniature Loudspeaker

Chih-Wen Chang, Jin-Huang Huang, Chi-Chang Wang

Poster 1-18

013308 Nonlinear Modelling of the Cerebral Blood Flow Responses to Carbon Dioxide for Diabetic Patients and Healthy Subjects

Shyan-Lung Lin, Yu-Kai Hung, Ching-Kun Chen, Shoou-Jeng Yeh

Poster 1-19

012611 Study on the effects of molding parameters on tie bar deformation and part weight

Po-Wei Huang, Hsin-Shu Peng, Cheng-Yue Hung, Kai-Fu Liew, Pei-sheng Pan, Wei-Jie Su

Poster 1-20

013377 An Investigation of Efficiency Improvement and Energy Saving of Waste Heat Source Recovery in the Air Compressor System

Chih-Neng Hsu, Shih-Hui Lu

Poster 1-21

013679 Simulation Study on the Mode of Smart Control on the Comfort of Living Room

Wen-An Wang, Ssu-Wei Tung

Poster 1-22

012736 Internal Resistance of an Anode-Supported Honeycomb Solid Oxide Fuel Cell Depending on the Flow Channel Configurations

Shunzaburo Murakami, Hironori Nakajima, Tatsumi Kitahara

Sunday, October 1st, 2017

Oral & Poster Session C1

♦ 2F Room C

10:30-12:00

**N. Micro & Nanoscale Heat Transfer
& Energy Workshop**

**X4. Nanomaterials for Renewable
and Sustainable Energy**

Chairman: Yu-Bin Chen

- National Tsing Hua University

C1-1. 10:30

012692 Microscale transport phenomena in the novel laser direct metal synthesis and patterning process

*Chung-Hsiang Jiang, Pei-Jun Huang,
Song-Ling Tsai, Chen-Jui Lan, Ming-Tsang
Lee*

C1-2. 10:45

012687 Investigating the heat transfer phenomena of Water-EGS in the reservoir by experiment verification

*Yi-Hong Chen, David Lin, Jui-Ching Hsieh,
Chun-Ping Jen, Yuh-Chung Hu*

C1-3. 11:00

012704 Magnetowetting of Magnetic Nanofluids on AAO Surface

Huei-Chu Weng, Yu-Chin Chien

C1-4. 11:15

012782 Electrochemical Impedance Spectroscopy Study of the Electrode Microstructure of the Lithium-Ion Battery

*Hironori Nakajima, Akiko Inada, Tatsumi
Kitahara*

C1-5. 11:30

013326 Development of Hybrid Model for Electricity Short-Term Load Forecasting in Taiwan Power Company

Kai-Wei Yu

C1-P1.

012649 Highly Stretchable and Transparent Copper Nanowire Heater for Wearable Electronics

*Dongkwan Kim, Habeom Lee, Seung Hwan Ko,
Sukjoon Hong*

C1- P2.

012804 Effect of nanoparticles mean diameter on thermal transition of convective nanofluids flow in a square cavity

Chuan-Chieh Liao

C1-P3.

012843 Enhancing Convective Heat Transfer on the Roughened Surfaces using Mist Flow

*Yao-Hsien Liu, Yi-Hsuan Huang, Szu-Kai Wang,
Kuan-Tzu Huang*

C1-P4.

012852 Enhanced CHF on the ZnO Nanostructured Surfaces

*Ming-Chang Lu, Yu-Chi Chen, Wei-Shen
Chiang, Pu-Wei Wu*

C1-P5.

012809 Enhancement of Photo-thermal Energy Conversion and Utilizations Using Nanomaterials

Ming-Tsang Lee, Hironori Nakajima

C1-P6

012793 Flexible Thermoelectric Power Transmitter

Yuh-Chung Hu

Sunday, October 1st, 2017

Oral Session A2 ♥ **1F RoomA**
13:30-16:30

**J. Design/modeling/computing
methods**

**K. Inventions and Innovation in
smart design**

M. Others related to Inventions

Chairman: Chih-Wen Chang

- National Chung Hsing University

Chairman: Cheng-Chi Wang

*- National Chin-Yi University of Technology,
Taiwan*

A2-5. 14:30

012805 Forming three-dimensional hollow
shapes from two-dimensional elastic ribbons
by controlled buckling

Jia-Yang Juang, Michio Aoki

A2-6. 14:45

012772 Applying Design Thinking Process in
Student Project: A case of EGF Products

Chun-Ming Yang

A2-1. 13:30

012741 Prediction of the Frequency
Response Function of a Milling Tool Based
on Receptance Coupling Method

*Jui-Pin Hung, Jian-Xuan Xiao, Zhe-Hao
Haung*

A2-2. 13:45

012745 Modelling the Contact Behavior of
Linear guide with Different Interferences

Jui-Pin Hung, Wei-Cheng Shi

A2-3. 14:00

012783 Discovering Association Rules Among
Software Libraries

*Wei-Guang Teng, Chen-Ya Chang, Jung-Hua
Chou*

A2-4. 14:15

012784 A Novel Approach to Improve Quality
Control by Comparing the Tagged Sequences
of Product Traceability

Jing-Doo Wang

Sunday, October 1st, 2017

Oral Session B2 ♥ **1F RoomB**
13:30-16:30

**G. Inventions/innovation in energy
and thermal/fluidic science**

**X2. Invention/innovation in energy
saving technology**

Chairman: Win-Jet Luo

- National Chin-Yi University of Technology

Chairman: Ming-Tsang Lee

- National Chung Hsing University

B2-1. 13:30

012707 Development of two - stage spiral
high temperature heat pump system

Win-Jet Luo, Fikri Rahmat Fasya

B2-2. 13:45

012778 Numerical study on thermal
performance of phase change material
(PCM)-based heat sinks with
three-dimensional transient cooling

*Jin Hyun Lee, Sung-Min Kim, Ju-Ho Jeong,
Jung-Youn Song*

B2-3. 14:00

012779 Numerical investigation of thermal
characteristics of spray cooling with minimum
quantity lubrication in milling process

*Sangmok Han, Sung-Min Kim, Seong Hoon
KIM, Sung-Min Kim*

B2-4. 14:15

012861 Development of two - stage screw high
temperature heat pump system

*Fikri Rahmat Fasya, Win Jet Luo, Po-Yuan
Hsieh, Yu-Sheng Cheng*

B2-5. 14:30

012882 Ambient Conditions effect on Hybrid
Solid Desiccant Vapor-Compression
Air-Conditioning System

Dini Faridah, Win Jet Luo

B2-6. 14:45

013304 Economic Analysis of Cooling Water
Tower Applied in Conventional Tire Industry

*Yean-Der Kuan, Win-Jet Luo, Yu-Wei Chiu,
Wei-Ming Chiu*

Sunday, October 1st, 2017

Poster 2 📍 **1F Recreation Center**
13:30-16:30

C. Inventions/innovation in applied optics and lasers

F. Inventions/innovation in Electro/Opto/Mechatronic Systems

H. Invention/innovations in biotechnology/materials

L. Inventions and Innovation in Electrical Engineering/Energy/Communications

M. Others related to Inventions

X1. Advanced Materials and Sensors

X3. Innovation in Smart Sensor Metrology & Intelligent Automation System

Poster 2-1

012666 Development of the on-line measurement system for micro-cutters
Chien-Hung Liu

Poster 2-2

013346 Study and Development of Inspection System for Rice Seeds with Image Processing
Hao-Sheng Lien, Kuo-Yi Huang, Chiao-Yun Hsu, Mao-Chien Chien

Poster 2-3

013347 Study of Rice Seedling Inspection with Machine Vision
An-Qin Xu, Kuo-Yi Huang, Shi-Jie Luo

Poster 2-4

013362 A Novel Auto-sorting Device for the Sorting of Chinese Cabbage Seeds with Machine Vision

Jian-Feng Cheng, Kuan-Chung Huang, Kuo-Yi Huang

Poster 2-5

013336 Vibration Measurement and Suppression for Laser Galvanometers Using a MEMS-based Accelerometer

Yu-Liang Hsu, Shih-Chin Yang, Po-Huan Chou, Hsing-Cheng Chang, Yu-Chen Kuo, Li-Feng Chiu

Poster 2-6

011681 Design the imaging system on video laryngoscope with 7mm blade for neonatal patient

Han-Chao Chang, Ming-Ying Hsu, Feng-Yi Hsu

Poster 2-7

012842 An Integrated LED Driver with Unity Power Factor and Zero-Voltage Switching
Hung-Liang Cheng, Chien-Hsuan Chang, Yong-Nong Chang, Hau-Chen Yen, Rong-Zong Lin

Poster 2-8

013279 Wide-Area Synchrophasor-Based Voltage Security Assessment Considering Generator Equivalent Circuit Model
Heng-Yi Su, Tzu-Yi Liu

Poster 2-9

012712 Bifurcation Analysis and Control for High Speed Gas Bearing Systems with Variation of Bearing Number
Cheng-Chi Wang, Tsui-Er Lee

Poster 2-10

012387 Effects of Atmospheric Plasma Surface Modification on the Tribological Behavior of Artificial Total Knee Joints

Shih-Chen Shi, Ting-Wei Chang

Poster 2-11

012731 Mechanical properties and fracture behavior of Cu based bulk metallic glasses

Tao-Hsing Chen, Yi-Chun Lin, Te-Hua Fang

Poster 2-12

012742 Temperature sensor using tilted fiber Bragg grating with PDMS

Chia-Chin Chiang

Poster 2-13

012743 Glucose sensor using U-shape optical fiber probe with gold nanoparticles

Chia-Chin Chiang

Poster 2-14

012790 Improved Field Emission Properties of Open-ended MWCNTs on Flexible Carbon Cloth Substrate

Tsung-Chieh Cheng, Wen Shih Lin

Poster 2-15

012799 The Analysis of Engine Performance and Exhaust Emissions by Using By-Pass Cooling Air Compressor Device in the Internal Combustion Engine

Ming-Hsien Hsueh

Poster 2-16

013196 A vision-based system for automated extension measurement

Terry Chen, Yi-Ru Liu

Poster 2-17

012698 Real-Time Intelligent Diagnosis of Islanding in a Solar Power Grid System based on Fractional Order Lorenz Chaos Synchronization

Her-Terng Yau

Poster 2-18

013881 The kinetics of chromogenic reaction during the cultivation of Escherichia coli

Ching-Hsun Chen, Guan-Liang Chen, Si-Yu Li

Poster 2-19

012808 Combined Adaptive Link-Aware Clustering Algorithm with Optimal Relays in Wireless Sensor Networks

Young-Long Chen, Siao-Jhu Shih, Pin-Lun Huang

Poster 2-20

012885 A Study on the Design Stability Evaluation of Telescopic Type Boom Crane for ROV LARS (Launch and Recovery System)

Namsub Woo, Hyunji Kim, Sangmok Han, Sunchul Huh

Poster 2-21

012883 A Study on the Numerical Analysis of In-line type Subsea Separator for Multiphase Flow from Oil-Well

Youngju Kim, Hyunji Kim, Sangmok Han, Namsub Woo

Saturday, September 30th, 2017

SPINTECH Session

📍 1F Room A 📍 1F Room B

📍 2F Room C

📍 1F Recreation Center

10:40-12:10 / 13:30-15:45

16:00-17:00

A. SPINTECH Technology Thesis Awards Section

Chairman: Chien-Hung Liu

National Chung Hsing University

012149 The bonding strength of simultaneous laser drilling and bonding

Hirofumi Hidai, Shun Sato

012506 Dynamic observation of glass fiber generation with continuous laser illumination by high-speed imaging

Hirofumi Hidai, Nobuyasu Nishioka, Souta Matsusaka, Akira Chiba, Noboru Morita

012614 Silver Nanowire Based Stretchable and Transparent Heater

Seung Hwan Ko, Dongkwan Kim, Habeom Lee, Sukjoon Hong

012650 Processing of diamond by laser-induced graphitization and selective chemical etching

Hirofumi Hidai, Haruna Hirai, Noboru Morita, Souta Matsusaka, Akira Chiba

012693 A Segmentation Based Cubic-Spline Path Generation Strategy For Laser Machining
Chao-Chung Peng, Shi-Xian Su, Li-Hsin Chen

012695 Formation of multi layer structure in borosilicate glass by electric field-assisted solid-state ion exchange

Souta Matsusaka, Ryuta Suzuki, Hirofumi Hidai, Akira Chiba, Noboru Morita

012819 A Predictive Model for Identifying Bearing Faults of a Machine Tool Spindle

Jhy-Cherng Tsai, Zhi-Chi Chen, Oliver Tsai

013173 Electrochemical Deep Drilling by Using Epoxy-Insulated Tube Electrode

Jung-Chou Hung, Ling-Zhou Lin, Zhi-Wen Fan, Chia-Wei Cheng

013226 Implementation of the Cyber-Physical System for a Computer Numerical Control Hobbing Machine

Ying-Chih Lai, Jui-Hung Hsu, Po-Yuan Yu, Yu-Lin Xie

013269 New Volumetric Heat Source for 3D Selective Laser Melting System-Simulation and Experiment

Yu-Lung Lo, Hong-Chuong Tran

013370 Development of a 5-DOF
Nanopositioning Stage with Error
Compensation System

*Chih-Liang Chu, Hung-Chi Chen, Ming-Han
Sie*

013372 Feasibility Study on Application of
Bismuth-coated Platinum Electrodes in
Microbial Fuel cells

Yi-Ta Wang, Yi-Chi Hsieh, Yue-Sheng Lin

013373 Numerical Analysis of CNC Milling
Chatter Using Embedded Miniature MEMS
Microphone Array System

Y. T. Tsai, P. L. Wang

013718 Analysis and Prediction for Surface
Roughness of Milling Using Vibration Signal
and Artificial Neural Network

*Tian-Yau Wu, Kai-Wei Lei, Shi-Yo Hsieh,
Chi-Hsuan Lu*

013309 Development of the Flow Channel
Structure of an Anode-Supported Honeycomb
Solid Oxide Fuel Cell for High Power Density

*Shunzaburo Murakami, Hironori Nakajima,
Tatsumi Kitahara*

012699 Ball Bearing Fault Diagnosis by using
Fractional Lorenz Chaos Extenics Detection
Method

Her-Terng Yau

012933 Control and analysis of various loads
for the rod-less pneumatic servo system

Hao-Ting Lin

012753 Parameters Evaluations of the Thermal
Network Model of a Machine Tool Spindle by
Self-made Bluetooth Temperature Sensor
Modulus

Yuh-Chung Hu, Yuan-Chieh Lo, Pei-Zen Chang

013364 Hand-Held Device for Assessing
Dental Implant Osseointegration Stability
through Vibro-Acoustic Technique

*Min-Chun Pan, Shih-Yao Wang, Chin-Sung
Chen*

013300 Development of 2-DOF energy
converter for self-power monitoring buoys

Yu-Jen Wang, Chih-Kuang Lee, Shao-Fu Sun