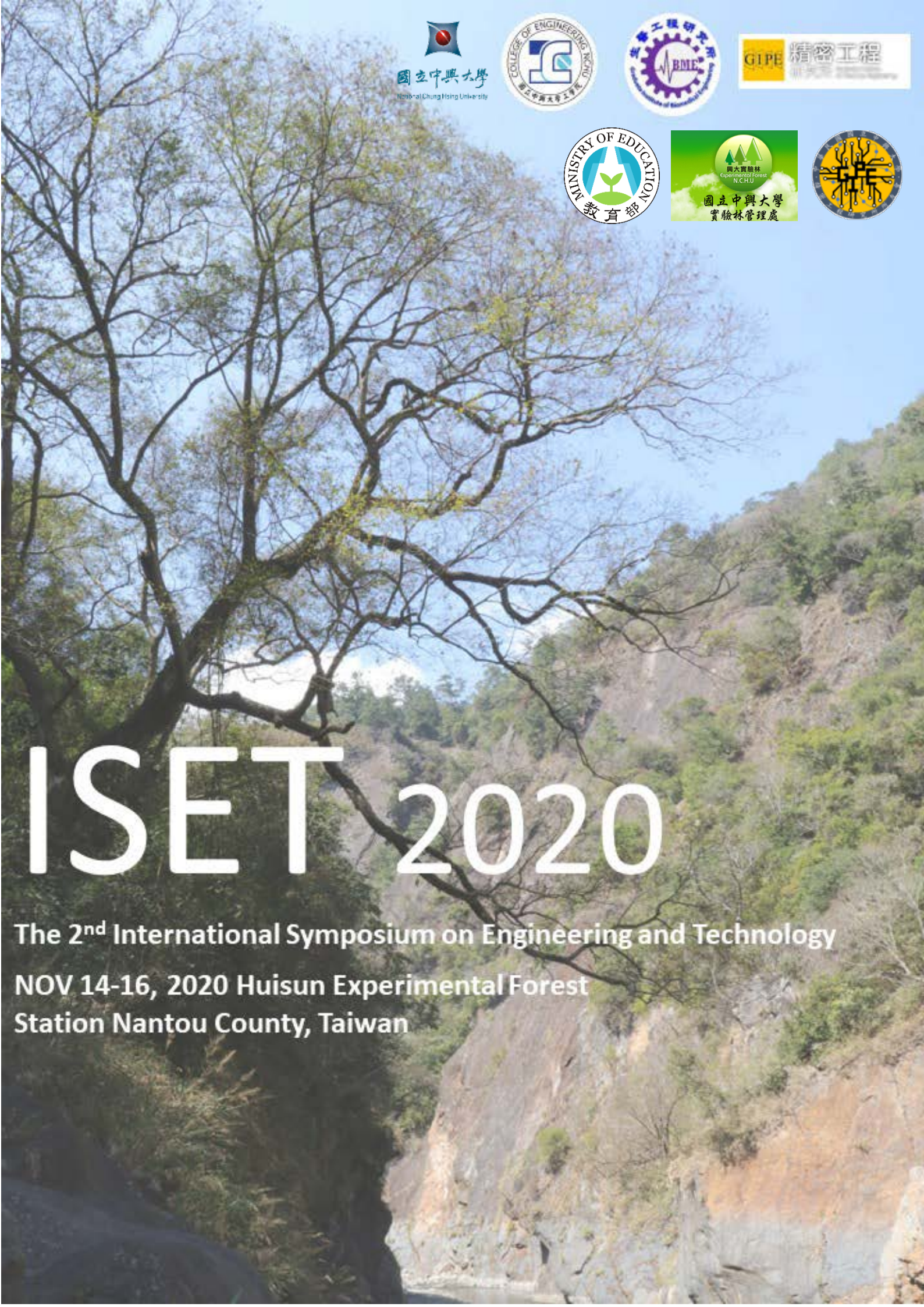

ISET 2020

The 2nd International Symposium on Engineering and Technology

NOV 14-16, 2020 Huisun Experimental Forest Station Nantou County, Taiwan

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Organizers

Organizers:

National Chung Hsing University
http://www.nchu.edu.tw

College of Engineering,
National Chung Hsing University
http://www.engineer.nchu.edu.tw

Graduate Institute of Biomedical Engineering,
National Chung Hsing University
http://www.bme.nchu.edu.tw

Co-organizers:

Graduate Institute of Precision Engineering,
National Chung Hsing University
http://www.ipe.nchu.edu.tw/

NCHUGIPE Alumni Association

Ministry of Education, Taiwan

Experimental Forest Management Office,
National Chung Hsing University

General Information

The 2nd International Symposium on Engineering and Technology (ISET 2020) will be held on 14-16 November 2020 in the Huisun Experimental Forest Station, Nantou County, Taiwan.

The 1st ISET was successfully held in National Chung Hsing University in 2019. Following the same goal of ISET 2019, ISET 2020 will provide a high level forum platform for scholars, industry experts, and researchers from all over the world to share their research achievements, explore the hot issues and exchange the new experiences in the field of engineering and technology.

On behalf of ISET 2020 organizing committee, we sincerely welcome you for participating this symposium to share your experience and research results.

Plenary Speakers

- Prof. Ming-Chang Lin
  Fellow of Academia Sinica, Taiwan
  Robert W. Woodruff Professor Emeritus of Emory University, USA
- Prof. Kahar Bin Osman
  Chair of School of Biomedical Engineering & Health Sciences, Universiti Teknologi Malaysia, Malaysia

Keynote Speakers:

- Prof. Dong-Sing Wuu
  Fellows of SPIE, OSA, IOP
  Professor of Department of Materials Science and Engineering, National Chung Hsing University, Taiwan
- Dr. Srinath Rajagopal
  Principal Research Scientist of National Physical Laboratory, United Kingdom

Invited Speakers:

- Prof. Mamun Bin Ibne Reaz
  Professor of Department of Electrical, Electronic and Systems Engineering, Universiti Kebangsaan Malaysia, Malaysia
- Prof. Nguyen Van Hieu
  Professor of Department of Physics and Electronic Engineering, VNU-Ho Chi Minh University of Science, Vietnam
- Prof. Ngô Thanh Hoàn
  Professor of School of Biomedical Engineering, International University, VNU – HCM City, Vietnam
- Prof. Thanh-Son Dao
  Professor of Faculty of Environment and Natural Resources, Hochiminh City University of Technology, Vietnam

Committee:

Honorary Chairs

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  Dean of College of College of Agriculture and Natural Resources, National Chung Hsing University, Taiwan
- Prof. Shih-Ching Chen
  Deputy Dean of College of Medicine, Taipei Medical University, Taiwan

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- Prof. Congo Tak Shing Ching
  Head of Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan

- Prof. Po-Liang Liu
  Head of Graduate Institute of Precision Engineering, National Chung Hsing University, Taiwan

Organizing Chair

- Prof. Cheng-Chung Chang
  Director of Intelligent Minimally Invasive Center, National Chung Hsing University, Taiwan
  Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan

Program Chair

- Prof. David Hui-Min Wang
  Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan

Organizing Committee

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- Dr. Winson C.C. Lee, University of Wollongong, Australia
- Dr. Yuan Wen Hau, Universiti Teknologi Malaysia, Malaysia
- Prof. Daniel Hung Kay Chow, The Education University of Hong Kong, Hong Kong
- Prof. Dang Van Phuoc, School of Medicine - Vietnam National University Ho Chi Minh City, Vietnam
- Prof. Võ Văn Tới, International University - Vietnam National Universities at Ho Chi Minh City, Vietnam
- Dr. Kuo-Chih Liao, National Chung Hsing University, Taiwan

- Dr. Shu-Ping Lin, National Chung Hsing University, Taiwan

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- Dr. Seongho Kim, Wayne State University, USA
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- Dr. Thanh-Son Dao, Ho Chi Minh City University of Technology (HCMUT), Vietnam National University Ho Chi Minh (VNU-HCM), Vietnam
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- Prof. Chih-Hsiu Cheng, Chang Gung University, Taiwan
- Prof. Vincent K.S. Hsiao, National Chi Nan University, Taiwan
- Prof. Jia-Jung Wang, I-Shou University, Taiwan
- Prof. Kin Fong Lei, Chang Gung University, Taiwan
- Dr. Shih-Hung Lin, National Yunlin University of Science & Technology, Taiwan
- Dr. Shu-Ping Lin, National Chung Hsing University, Taiwan
- Prof. Shih-Chung Chen, Southern Taiwan University of Science and Technology, Taiwan
- Prof. Chin-Sung Hsiao, Asia University, Taiwan
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- Dr. Kang-Ming Chang, Asia University, Taiwan
- Dr. Chian-Hui Lai, National Chung Hsing University, Taiwan
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- Dr. Bill Cheng, National Chung Hsing University, Taiwan
- Prof. Yi-Yo Kuo, Ming Chi University of Technology, Taiwan
- Dr. Wen-Hung Chao, Yuanpei University of Medical Technology, Taiwan

Symposium Secretary:

Prof. Bill Cheng

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Important information for ISET 2020 accepted Papers

Excellent papers selected from ISET 2020 will be recommended to be published on a SCI journal (Applied Sciences; ISSN: 2076-3417; IF: 2.474) after an additional review process and **need extra publication charge**.

Guidelines for Oral Presentations:

Oral presentation must be delivered in **English** only. Contributed oral presentations are 15 minutes long, including 5 minutes for questions and discussion. The paper must be presented by one of the author or co-authors. Oral presentations are to be made either using your laptop or the PC that will be available in the session room (Windows system + Power point). Please come to the session room with your laptop or USB flash drive having your presentation file. There will be a volunteer on hand to assist in starting each presentation.

Guidelines for Poster Presentation:

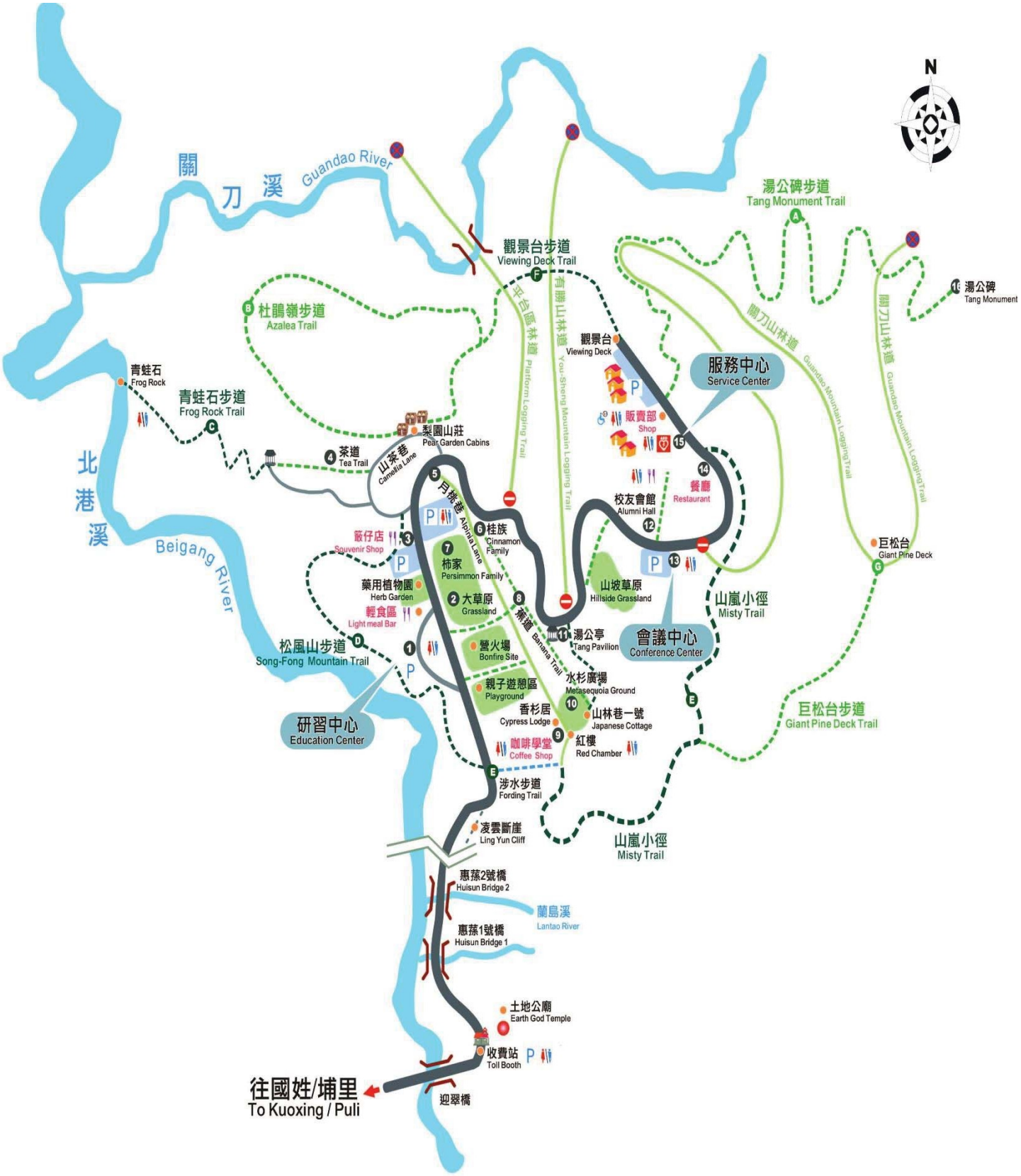
Poster must be prepared in **English** only. Maximum poster size is A0 (84.1 cm in wide x 118.9 cm in height). You must provide your own printout of the poster itself. You are requested to set up your poster in the morning prior to the Opening ceremony and remove it at the end of the session. One of the paper author or co-authors must be present and available for discussion at the specified time of the poster session.

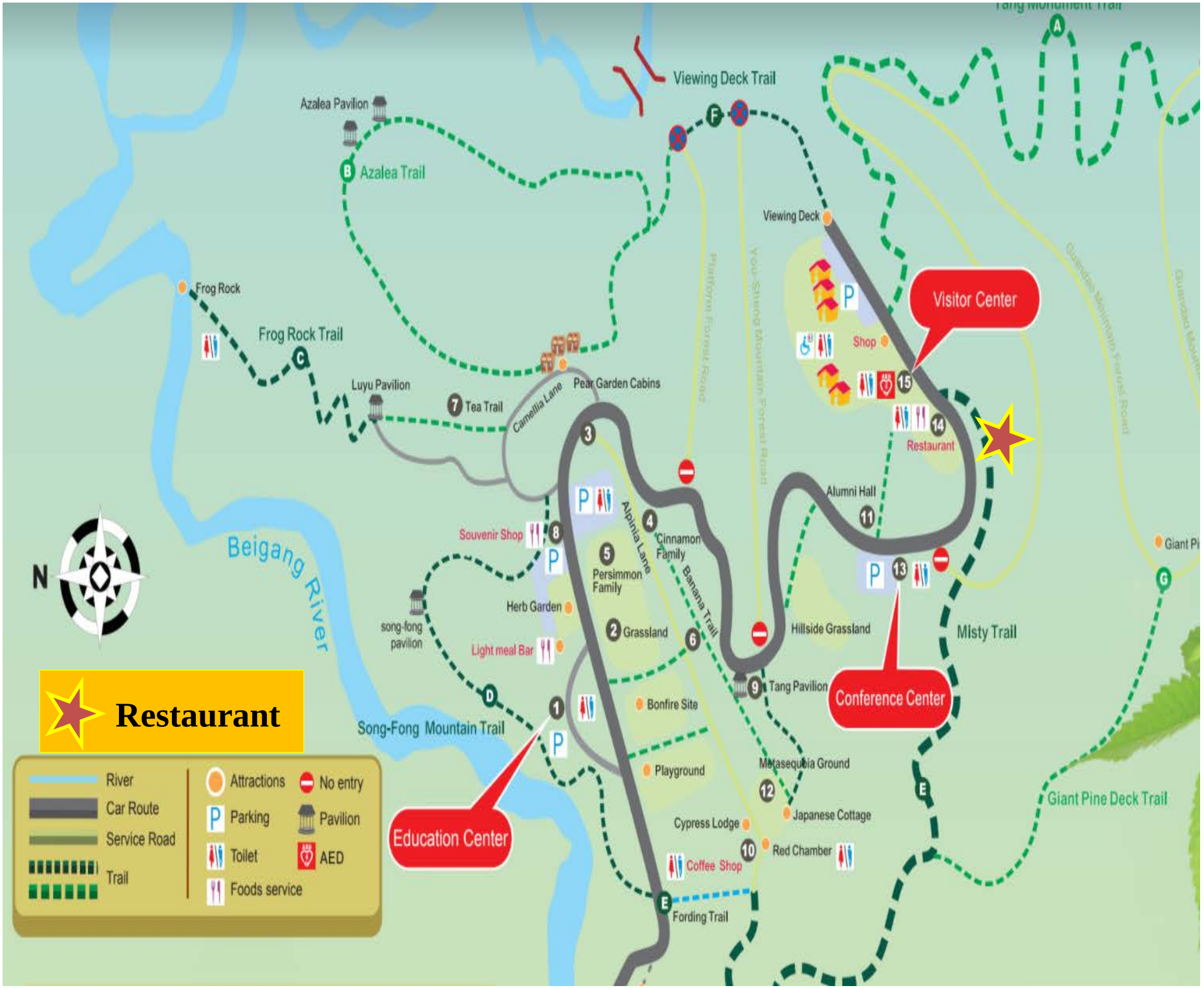
Registration for the Symposium

At least one of the authors listed on the accepted paper must pay the registration. Link for registration is:

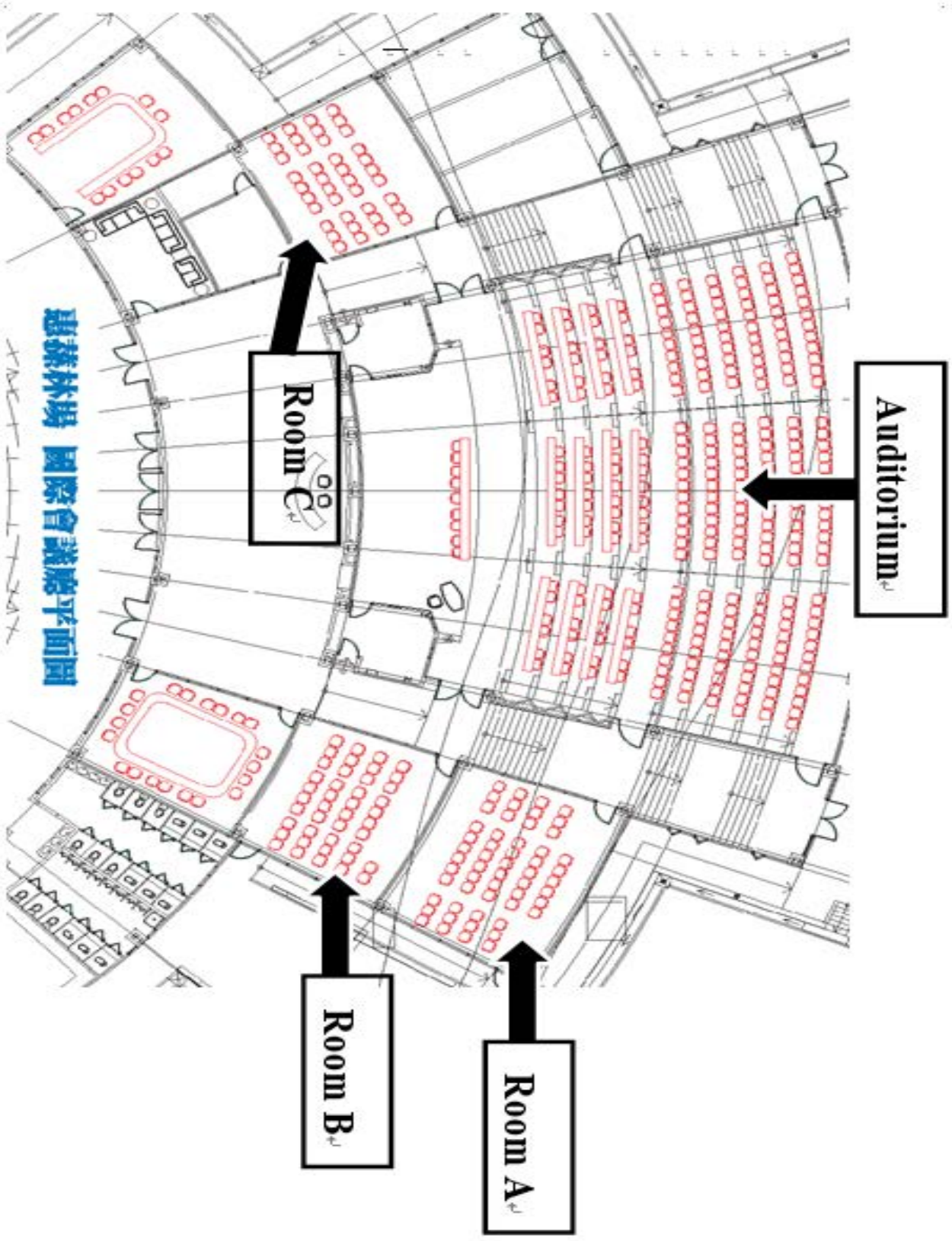
http://www.bme.nchu.edu.tw/iset2020/registration.php

Huisun Experimental Forest Map




Viewing Deck Trail
Azalea Pavilion
Azalea Trail
Viewing Deck
Visitor Center
Frog Rock
Frog Rock Trail
Shop
Luyu Pavilion
Tea Trail
Camellia Lane
Pear Garden Cabins
Restaurant
Alumni Hall
Souvenir Shop
Alpinia Lane
Cinnamon Family
Persimmon Family
Banana Trail
Herb Garden
song-fong pavilion
Grassland
Light meal Bar
Hillside Grassland
Misty Trail
Tang Pavilion
Conference Center
Bonfire Site
Beigang River
Song-Fong Mountain Trail
Playground
Metasequoia Ground
Giant Pine Deck Trail
Japanese Cottage
Cypress Lodge
Red Chamber
Coffee Shop
Fording Trail
Education Center
N
Restaurant
River
Car Route
Service Road
Trail
Attractions
No entry
Parking
Pavilion
Toilet
AED
Foods service

Floor Map of Conference Center



Program Schedule

All academic events will be held at Conference Center of Huisun Experimental Forest Station, Taiwan

TIME	EVENT	PLACE	EVENT (Place)
14 November 2020			
13:00~17:00	**Registration & Welcome Reception**	Lobby	
15 November 2020			
08:00~08:30	**Registration**	Lobby	
08:30~08:45	**Invited Talk (1)** Speaker: Prof. Mamun Bin Ibne Reaz (Universiti Kebangsaan Malaysia, Malaysia) Talk Title: Wireless Capacitive EMG Biomedical Sensor for Extramural Monitoring of Muscle Activity	Room A	**Poster Session (Place: Lobby)**
08:45~09:45	**Oral Session (1)** Session 1A | Session 1B	Room A	
09:45~10:00	**Opening Ceremony**	Auditorium	
10:00~10:15	**Group Photo & Tea Break**	Lobby	
10:15~10:30	**MoU Signing Ceremony**	Auditorium	
10:30~11:15	**Plenary Speech (1)** Speaker: Prof. Ming-Chang Lin (Academia Sinica, Taiwan) Speech Title: Quantum Chemical Simulations of Processes Occurring in Complex Chemical Systems from Combustion to Water Splitting	Auditorium	
11:15~12:00	**Keynote Speech (1)** Speaker: Prof. Dong-Sing Wuu (National Chung Hsing University, Taiwan) Speech Title: Passive-Matrix Micro-LED Displays with Advanced Process Integration	Auditorium	
12:00~13:00	**Lunch**	Restaurant	
13:00~13:45	**Plenary Speech (2)** Speaker: Prof. Kahar Bin Osman (Universiti Teknologi Malaysia, Malaysia) Speech Title: Customised Stent Design	Auditorium	
13:45~14:30	**Keynote Speech (2)** Speaker: Dr. Srinath Rajagopal (National Physical Laboratory, United Kingdom) Speech Title: Metrology in Medical Ultrasound	Auditorium	

14:30~14:45	**Invited Talk (2)** Speaker: Prof. Nguyen Van Hieu (VNU-Ho Chi Minh University of Science, Vietnam) Talk Title: The effect of electrodes pattern on current spreading for the deep-ultraviolet light-emitting diodes (UVLEDs) on MOCVD technology		Room A	
14:45~15:45	**Oral Session (2)**		Room A	
	Session 2A	Session 2B		
15:45~16:00	**Tea Break**		Lobby	
16:00~16:15	**Invited Talk (3)** Speaker: Prof. Ngô Thanh Hoàn (International University, VNU–HCM City, Vietnam) Talk Title: AI for Health Research at the School of Biomedical Engineering, International University, Vietnam National University - Ho Chi Minh City, Vietnam		Room A	**Poster Session (Place: Lobby)**
16:15~17:15	**Oral Session (3)**		Room A	
	Session 3A	Session 3B		
17:15~17:30	**Invited Talk (4)** Speaker: Prof. Thanh-Son Dao (Hochiminh City University of Technology, Vietnam) Talk Title: Single and combined effects of Di-2-ethylhexyl phthalate and Bisphenol A on life traits of the tropical micro-crustacean Ceriodaphnia cornuta		Room A	
17:30~18:30	**Oral Session (4)**		Room A	
	Session 4A	Session 4B		
18:30	**Conference Banquet**		Restaurant	
16 November 2020				
09:00~10:30	**Academic Visit or Huisun Experimental Forest Hiking Tour**			
12:00	**Lunch**		Restaurant	

Plenary Speaker 1

Prof. Ming-Chang Lin

Fellow of Academia Sinica, Taiwan
Robert W. Woodruff Professor Emeritus of Emory University, USA

Title of Plenary Speech

Quantum Chemical Simulations of Processes Occurring in Complex Chemical Systems from Combustion to Water Splitting

Abstract of Plenary Speech

Selected examples on the merit of quantum chemical simulations for elucidation of complex mechanisms involved in combustion, propulsion and solar water splitting systems will be presented. Specifically, the kinetics and mechanisms for nitrogen oxide formation in hydrocarbon combustion, the combustion initiation reactions in N_2O_4-hydrazines and ammonium perchlorate propulsion systems, and the synergistic effects of metal doping in TiO_2 nanoparticles with hydrogenation for water splitting will be discussed, based on the results from state-of-the-art quantum chemical calculations for comparison with available experimental data.

Plenary Speaker 2

Prof. Kahar Bin Osman

Chair of School of Biomedical Engineering & Health Sciences
Universiti Teknologi Malaysia, Malaysia

Title of Plenary Speech
Customised Stent Design

Abstract of Plenary Speech

In some cases, especially in neonates, ductus arteriosus needs to remain patent for multiple medical purposes. In order to achieve this, current practice involves inserting stent in the ductus arteriosus. This condition is called patent ductus arteriosus (PDA). For this process, stents such as coronary stent are commonly used due to unavailability of customized stent for PDA in neonates. The usage of coronary stent however, opens the possibility of acute stent thrombosis and other complications. Therefore, there is a high need of special and customized stents to be used for PDA in neonates. This customized stent has to be able to sustain the hemodynamic effects of the flow inside the PDA. The stent has to be able to support the ductus wall compression and contraction due to arterial compliance. What is more important is that the stent must properly fit into various morphologies of the ductus. In addition, the stent has to be tested for biocompatibility and practicality. Therefore, the customized design of the PDA stents can be derived from the concept of coronary stents and in compliance with all the mentioned characteristics. However, further analysis has to be completed ensure proper compatibility with neonates. In conclusion, the biggest challenge is to customize a stent that fits all the PDA morphologies.

Keynote Speaker 1

Prof. Dong-Sing Wuu

Fellows of SPIE, OSA, IOP
Department of Materials Science and Engineering, National Chung Hsing University, Taichung 40227, Taiwan

Title of Keynote Speech

Passive-Matrix Micro-LED Displays with Advanced Process Integration

Abstract of Keynote Speech

The light-emitting diode (LED) is a self-emissive device with high response time, brightness, and color saturation properties. It possesses the high thermal and humid stability, which is suitable as a next generation displays. However, for achieving the high resolution, the pixel size should be downsized into a few micron scale. In this study, the pixel size of micro-LED was investigated from 100×100 μm^2 to a 10×10 μm^2, where a laser direct writing technique was employed. The direct writing technique does not need the photomask and can improve the exposure accuracy with minimized image distortion. However, for the smaller pixel sizes, the plasma damage from the dry-etched sidewall of pixel became more evident and would degrade the light extraction efficiency. Therefore, the surface passivation processes e.g. spin coating, PECVD, ALD have plays an important role in determining the leakage current levels. As a result, the external quantum efficiency of 10×10 μm^2 pixel size can achieve 18.81% under a current density of 136.8 A/cm^2. The brightness of blue micro-LED display with a pixel size of 20 x 20 μm2 was 516 cd/m^2 at 3 V under the full lighting state. Using the advanced process integration, the performance of the blue, green and red passive-matrix micro-LED displays with 150-250 pixel-per-inch resolution will be described. Future applications of these small-size micro-LED displays will also be discussed.

Keynote Speaker 2

Dr. Srinath Rajagopal

Principal Research Scientist
National Physical Laboratory, United Kingdom

Title of Keynote Speech

Metrology in Medical Ultrasound

Abstract of Keynote Speech

The earliest application of ultrasound in medicine dates back to 1940s when its therapeutic effects were demonstrated by successfully destroying brain tissue in animals. It was nearly after a decade later the first diagnostic capability of ultrasound in the detection of breast carcinoma was reported. The ultrasound-induced damage to tissue in therapy did not go unnoticed as the diagnostic use of ultrasound continued to rise in the 1950s and 1960s especially in monitoring of foetal development. In 1980s US Food and Drug Administration initiated the regulation of diagnostic ultrasound equipment. The regulation placed restriction on the ultrasound exposure level, which has been adopted by the manufacturers globally. The ultrasound exposure levels are quantified by the measurement of the two key quantities, pressure and power. These two quantities represent potential mechanical and thermal damage to tissue under certain excitation conditions. Manufacturers are required to perform measurements under a number of different operational conditions to demonstrate equipment safety. The devices used to make measurements of pressure and power must be traceable to International System of Units (SI) via their calibration at a National Measurement Institute (NMI) for example, National Physical Laboratory, U.K or National Measurement Laboratory, Taiwan. Hydrophones are used to make the measurement of the dynamic pressure of ultrasound and whereas

Radiation Force Balance (RFB) is to measure the ultrasound power. The highest measurement standards applied in the determination of a physical quantity is known as a primary standard. The primary standards for ultrasound pressure and power along with systematic effects, which affect the measurement quality, traceability and dissemination will be described. The emerging technologies in medical ultrasound poses new challenges to measurement and recent efforts to address these challenges will also be covered.

Invited Speaker 1

Prof. Mamun Bin Ibne Reaz

Department of Electrical, Electronic and Systems Engineering
Universiti Kebangsaan Malaysia, Malaysia

Title of Invited Talk:

Wireless Capacitive EMG Biomedical Sensor for Extramural Monitoring of Muscle Activity

Abstract of Invited Talk:

An important biosignal often used in clinical diagnosis, medical treatment, and rehabilitation for patients with musculoskeletal disorders is electromyography (EMG). Conventional EMG measurements are done using contact electrodes such as needle electrode (nEMG) and surface electrode (sEMG) that require the attention of a professional medical officer throughout the tedious skin preparation and complex measurement process, limiting the efficiency of the EMG measurement and portability of the system. Recent technological developments in amplifier electronics allow the use of small capacitive EMG (cEMG) biosensor. These electrodes can measure the EMG signals without galvanic contact with the human body which overcome the limitations of the contact electrode. We are developing a cEMG biosensor that can be applied to an ambulatory monitoring system of muscle activity. The main components of the measurement system are the capacitive electrode, front-end amplifiers, pre-processing filters, a data acquisition unit, and the user interface for data storage, analysis, and monitoring. An electrical model of skin-electrode capacitance was developed and derived to determine the optimum capacitance for a cEMG biosensor. Experimental results showed that the cEMG biosensor was able to measure EMG signal accurately and achieved extremely low noise floor of less than 2 mV. This cEMG biosensor was also able to measure the EMG signal with fabric as an insulator. This cEMG biosensor was able to overcome the limitations of the contact electrodes, yielding a comparable performance to EMG signals measured by conventional wet contact electrodes which makes it ideal for ambulatory applications.

Invited Speaker 2

Prof. Nguyen Van Hieu

Department of Physics and Electronic Engineering
VNU-Ho Chi Minh University of Science, Vietnam

Title of Invited Talk:

The effect of electrodes pattern on current spreading for the deep-ultraviolet light-emitting diodes (UVLEDs) on MOCVD technology

Abstract of Invited Talk:

The UVLEDs are well-known, such as compact circuit, high efficiency, short standby, low heat generation, no mercury used and narrow spectrum. Moreover, the direct band gap of III-nitride materials will be one of the advantage of MO for the wide wavelength range of ultraviolet for UVLEDs with the huge application in life sciences. In this work, the UVLED chips with multi-quantum wells (MQWs) were designed and successfully fabricated by MOCVD technology. The results of PL mapping uvled structure indicated they obtained the uvled in the wavelength from 370 to 387nm of the deep-ultraviolet light-emitting diodes (UVLEDs) with high efficiency. Moreover, the IV measurements of uvled showed that these uvled will be emitted over 2.8VDC and the maximum current of 100mA. Moreover, there are a shift in emitting wavelength peaks around 3,94nm by the PL data. The EL intensity of these uvled chips were obtained from 14687 (uvled4) to 1620000 (a.u) which can be predicted by the disadvantage of MOCVD technology for the thickness of semiconducting layers in the wafers and the effect of electrodes pattern that will be somehow for the fabricating process of uvled.

Invited Speaker 3

Prof. Ngô Thanh Hoàn

School of Biomedical Engineering
International University, VNU – HCM City, Vietnam

Title of Invited Talk:

AI for Health Research at the School of Biomedical Engineering, International University, Vietnam National University - Ho Chi Minh City, Vietnam

Abstract of Invited Talk:

Applications of Artificial Intelligence in Healthcare are exploding, ranging from diagnosis, prognosis… to treatment planning, drug discovery… In this talk, I will give an overview about Artificial Intelligence for Health research that are happening at the School of Biomedical Engineering, International University, Vietnam National University - Ho Chi Minh City, Vietnam. Some of the topics include: (1) AI for skin disease diagnosis using smartphone captured images, (2) AI for eye disease diagnosis using fundus and OCT images, (3) AI for Alzheimer's Disease diagnosis using MRI brain images. Furthermore, I will briefly introduce about other active research topics at my school including: telemedicine, biosensors and lab-on-a-chip, biomaterial, tissue engineering – regenerative medicine, pharmaceutical engineering research…

Invited Speaker 4

Prof. Thanh-Son Dao

Faculty of Environment and Natural Resources
Hochiminh City University of Technology, Vietnam

Title of Invited Talk:

Single and combined effects of Di-2-ethylhexyl phthalate and Bisphenol A on life traits of the tropical micro-crustacean Ceriodaphnia cornuta

Abstract of Invited Talk:

Plastics, plastic additives, and their emission have attracted significant attention and concern both socially and scientifically. Di-2-ethylhexyl phthalate (DEHP) and bisphenol A (BPA) are two of the many plastic additives widely found in aquatic environments, which can have severe impacts on aquatic animals like micro-crustaceans. Therefore, this study assessed the chronic effects of DEHP and BPA, both individually and jointly, at environmental concentrations (e.g. 50 and 500 µg/l) on the survival rate, reproduction, and growth of the tropical micro-crustacean Ceriodaphnia cornuta. We found that each of the two plastic additives, and a mixture of the two, had some influence on the survivorship of C. cornuta. While DEHP marginally enhanced the reproduction of the animals, BPA strongly inhibited it. Additionally, the mixture of DEHP and BPA caused a synergistic effect on reproduction but an antagonistic effect on the growth of C. cornuta. Both DEHP and BPA induced a significantly longer body of C. cornuta when exposed to these plastic additives. Our results showed that the tropical micro-crustacean C. cornuta is more sensitive to DEHP and BPA than the temperate micro-crustacean D. magna in relation to body length development and reproductive characteristics. Our findings enrich the knowledge of DEHP and BPA toxicity to tropical micro-crustaceans. Besides, our results are also of significant value to freshwater monitoring and environmental risk assessments of plastic additives.

Oral Sessions

<table>
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<u>Oral Session 1A</u> (Room A)
Topic: • Electrical and Electronic Engineering
• Information Technology
• Artificial Intelligence
• Computer Vision and Machine Learning
• Mechatronics and Robotics
• Embedded System, Sensors, Actuators</td></tr>
<tr><td colspan="2">Chairs: Prof. Shih-Hung Lin
Co-chairs: Prof. Shu-Ping Lin</td></tr>
<tr><td rowspan="3">08:45~09:45</td><td>A Method to Optimize Food Banks' Food Delivery Schedules: A Preliminary Study
Daisuke Kitakoshi,[2] Tomoshi Iiyama [1] and Masato Suzuki [2]
[1]Department of Computer Science and Engineering,Toyohashi University of Technology, Toyohashi, Japan
[2]Department of Computer Science, National Institute of Technology, Tokyo College, Hachioji, Japan</td></tr>
<tr><td>Intelligent System Platform Design of Hybrid Audio Mixer and Digital Equalizer Based on Speech Recognition
Shin-Chi Lai, Yu-Hsiu Chang, Yong-Jyun Wang, Pei-Wei Yu, Yi-Zhen Chen, Chen-Peng Wang, and Wen-Ho Juang*
Department of Computer Science and Information Engineering, Nanhua University, Taiwan</td></tr>
<tr><td>Creation of ASMR Sounds based on Interactive Differential Evolution
Makoto Fukumoto
Fukuoka Institute of Technology, Japan</td></tr>
</table>

Nov 15, 2020

<u>Oral Session 2A</u> (**Room A**)

Topic: • Chemical and Material Engineering
• Industrial Engineering
• Biotechnology and Nanotechnology

Chairs: Prof. Kuo-Chih Liao

Co-chairs: Prof. Chian-Hui Lai

14:45~15:45	**Parameters Adjustment Optimization for Prepreg of Copper Clad Laminate Based on Virtual Metrology** *Yiyo Kuo [1, *] and Ssu-Han Chen [2]* [1] Department of Industrial Engineering and Management, Ming Chi University of Technology, New Taipei City 24301, Taiwan [2] Department of Industrial Engineering and Management, Ming Chi University of Technology, New Taipei City 24301, Taiwan
	Sb_2O_3 pH-sensing membranes in electrolyte-insulator semiconductor structure with rapid thermal annealing treatment *Chyuan-Haur Kao [1,2,3], Kuan-Lin Chen [1] , Jun-Rong Chen [4] , Shih-Ming Chen [4] , Chih-Chen Kuo [4] , Chang-Hsueh Lee [4] and Hsiang Chen [4*]* [1].Department of Electronics Engineering, Chang Gung University, Tao Yuan 333, Taiwan [2].Kidney Research Center, Department of Nephrology, Chang Gung Memorial Hospital, College of Medicine, Chang Gung University, Taoyuan 333, Taiwan [3].Department of Electronic Engineering, Ming Chi University of Technology, New Taipei City 243, Taiwan [4]. Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Puli 545, Taiwan
	A syringe-array liquid-liquid microextractor for continuous processing *Cheng-Yan Lin , Ya-Yu Chiang ,and Ya-Yu Chiang* Department of Mechanical Engineering/National Chung Hsing University

Nov 15, 2020

Oral Session 3A (**Room A**)

Topic : Biomedical Engineering

Chairs: Prof. Hsiao Chin Sung

Co-hairs: Prof. Bill Cheng

16:15~17:15

EEG signals related to the decision-making of saccadic eye movement in response to visual stimulation

Hiroaki Takeda [1] , Funase Arao [2] , and Ichi Takumi

Nagoya Institute of Technology

Elder fall Prediction by Foot Balance Pressure Signals and Decision Tree Algorithms

*Li-Wei Chou [1,2,3], Yi-Chun Wei [4] and Kang-Ming Chang [4,5] **

[1] Department of Physical Medicine and Rehabilitation, China Medical University Hospital, Taichung, Taiwan
[2] Department of Physical Therapy and Graduate Institute of Rehabilitation Science, China Medical University, Taichung, Taiwan
[3] Department of Rehabilitation, Asia University Hospital, Taichung, Taiwan
[4] Department of Computer Science and Information Engineering, Asia University, 413 Taichung City, Taiwan
[5] Department of Medical Research, China Medical University Hospital, China Medical University, 404 Taichung City, Taiwan

Optimized control for energy saving of industrial air-conditioning systems

Kung-Jeng Wang[1], Teshome Bekele Dagne[2],and Chiuhsiang Joe Li[1]

[1] Department of Industrial Management, National Taiwan University of Science and Technology, Taipei 108, Taiwan; kjwang@mail.ntust.edu.tw
[1] Department of Industrial Management, National Taiwan University of Science and Technology, Taipei 108, Taiwan; cjoelin@mail.ntust.edu.tw.
[2] Department of Industrial Management, National Taiwan University of Science and Technology, Taipei 108, Taiwan; teshome.dagne3@gmail.com.

Development of a low-cost and hand-held precision impedance spectrum device for biomedical applications

Thien Luan Phan[1,2], Nguyen Van Hieu[2], and Congo Tak Shing Ching[1]

[1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung, Taiwan
[2] Department of Physics and Electronic Engineering, University of Science (Vietnam National University of Hochiminh City), Vietnam

Nov 15, 2020

<u>Oral Session 4A</u> (**Room A**)

Topic: • Civil and Environmental Engineering
• Mechanical Engineering
• Any other topic related to Engineering & Technology

Chairs: Prof. Kang Ming Chang

Co-chairs: Prof. Su-Hua Huang

17:30~18:30	**PLANNING THE MAINTENANCE OF GREEN BUILDING MATERIALS FOR SUSTAINABLE DEVELOPMENT: A BUILDING INFORMATION MODELLING APPROACH** *Ismail Z. B. Author* Civil Engineering Division, School of Environmental Engineering, Kompleks Pusat Pengajian Jejawi 3, Universiti Malaysia Perlis, 02600 Arau, Perlis, Malaysia;
	Identification of Transcription Factors, Biological Pathways, and Diseases as Mediated by N6-methyladenosine using Tensor Decomposition-Based Unsupervised Feature Extraction. Y-h. Taguchi [1], S. Akila Parvathy Dharshini [2] and M. Michael Gromiha[3] [1] Department of Physics, Chuo University, Tokyo 112-8551, Japan [2] Department of Biotechnology, Bhupat and Jyoti Mehta School of Biosciences, Indian Institute of Technology Madras, Chennai 600036, Tamilnadu, India [3] Department of Biotechnology, Bhupat and Jyoti Mehta School of Biosciences, Indian Institute of Technology Madras, Chennai 600036, Tamilnadu, India
	Quantitative Ultrasound Texture Analysis to Assess the Spastic Muscles in Stroke Patients *Peng-Ta, Liu [1,2,3] , Ta-Sen Wei [2] , and Congo Tak-Shing Ching [1, *]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan [2] Fall Prevention Center and Department of Physical Medicine & Rehabilitation, Changhua Christian Hospital, Taiwan [3] Department of Biomedical Engineering, Dai-Yeh University, Taiwan

Poster Sessions

Topic： Biomedical Engineering

Submission No.	Poster No.	Paper Title
4	P-01	**Various aspects of Smart Sensors & its AI application towards next-generation technologies** *Akhilesh Kumar Gupta, Shu-Ping Lin* Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung, Taiwan
5	P-02	**PC12 Cells Adhere Poorly to Biodegradable Vertical Silicon Nanowires Fabricated by Metal-Assisted Chemical Etching** *Lester U. Vinzons [1], Shueh-Lian Cheng [2] and Shu-Ping Lin [3,*]* [1]Ph.D. Program in Tissue Engineering and Regenerative Medicine, National Chung Hsing University, Taichung, Taiwan [2]Bachelor Program of Biotechnology, National Chung Hsing University, Taichung, Taiwan [3]Graduate Institute of Biomedical Engineering and Research Center for Sustainable Energy and Nanotechnology, National Chung Hsing University, Taichung, Taiwan
8	P-03	**The characterizations of polyurethane and its biomedical potentials** *Chia-Yun Chang, Yen-Zhong Lu and Shu-Ping Lin* Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 402, Taiwan
16	P-04	**The formulation and characterization of 3D printed grafts as vascular access for potential use in hemodialysis** *Bill Cheng, Yue-Min Xing, Nai-Chia Shih, Jen-Po Weng and Hsin-Chieh Lin* Graduate Institute of Biomedical Engineering/National Chung Hsing University

17	P-05	**Biomimicking Platelet-Monocyte Interactions as a Novel Targeting Strategy for Acute Myocardial Infarction** *Bill Cheng* Graduate Institute of Biomedical Engineering, National Chung-Hsing University, Taiwan
18	P-06	**Development of a Monocyte-Mediated Drug Delivery System** *Shih-Hsun Huang, Hsien-Min Lee, Bill Cheng* Graduate Institute of Biomedical Engineering, National Chung-Hsing University, Taiwan
22	P-07	**Center of Pressure and Decision Tree algorithm to classify young and old subjects.** *Kang-Ming Chang [1,2], Yi-Chun Wei [1], Yu-Ying Chung[1,3] and Jin-Hai Chen [1]* [1] Department of Computer Science and Information Engineering, Asia University, 413 Taichung City, Taiwan [2] Department of Medical Research, China Medical University Hospital, China Medical University, 404 Taichung City, Taiwan [3] Fire Bureau of Taichung City Government, Taiwan
27	P-08	**Development of SERS/PDT-Integrated Microneedle for Monitorable Treatment of Bacterial Skin Infection** Zi-Chun Chia[1], Yi-Lun Chen[2], Chou-Hsun Hsieh[2], Ya-Jyun Chen[1], Mei-Chin Chen[2], Chih-Chia Huang[1] [1] Department of Photonics, National Cheng Kung University, Taiwan. [2] Department of Chemical Engineering, National Cheng Kung University, Taiwan.
34	P-09	**Synthesis of Multi-functional Nano-Vector in Application to Specific Drug Delivery** *Tzu-Chien Wu, Pei-Yuan Lee, Chiao-Ling Lai, Chian-Hui Lai* National Chung Hsing University
35	P-10	**Synthesis Doxorubicin Encapsulated Glyco-Mesoporous Silica Nanoparticle Composite for Cancer Targeting and Drug Delivery System** *Yu-Han Su, Hsing-Yen Li and Chian-Hui Lai* * Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 402, Taiwan

37	P-11	**Quantitative Ultrasound Texture Analysis to Assess the Spastic Muscles in Stroke Patients** *Peng-Ta, Liu [1,2,3], Ta-Sen Wei [2], and Congo Tak-Shing Ching [1]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan; [2] Fall Prevention Center and Department of Physical Medicine & Rehabilitation, Changhua Christian Hospital, Taiwan; [3] Department of Biomedical Engineering, Dai-Yeh University, Taiwan;
58	P-12	**Metabolic engineering probiotic yeast produces 3S, 3′S-astaxanthin And its application in Proliferation, Regeneration and Anti-melanoma** *Chen-Ying Cheng[1], Hsin-Yu Chou[2], Yi-Chen Wang[3], Tzyh-Chyuan Hour[4], Hui-Min Wang[1,2]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University [2] Ph.D. Program in Tissue Engineering and Regenerative Medicine, National Chung Hsing University [3] Division of Cardiology, Department of Internal Medicine, Kaohsiung Armed Forces General Hospital [4] Division of Biochemistry and Molecular Biology, Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University
59	P-13	**Establishment of agent-loaded biomimetic micropillar wound dressing** *Ying-Yi Lin[1], Tien-Hsin Cheng[2], Chung-Yen Chang[2], Shu-Hung Huang[3], Su-Shin Lee[3], Yi-Chia Wu[3], Yu-Shen Cheng[2,*], Hui-Min David Wang[4]* [1] Department of Biomedical Engineering, National Chung Hsing University, Taichung, Taiwan. [2] Department of Chemical and Materials Engineering, National Yunlin University of Science and Technology, Yunlin, Taiwan [3] Division of Plastic Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan [4] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung, Taiwan

60	P-14	**A real-time electronic device for detecting cancer metastasis after treating drugs** *Hsin-Yu Chou [1,2], Hui-Xuan Huang[3], Hui-Min David Wang [2,4,5] and Congo Tak-Shing Ching [2]* [1] Ph.D. Program in Tissue Engineering and Regenerative Medicine, National Chung Hsing University, Taichung 402, Taiwan [2] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung City 402, Taiwan [3] Bachelor Program of Biotechnology, National Chung Hsing University, Taichung 402, Taiwan [4] College of Food and Biological Engineering, Jimei University, Xiamen 361021, PR China [5] Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung City 807, Taiwan
61	P-15	**Liposome delivery of therapeutic substances for Alzheimer's disease therapy** *Wei-Chieh Tseng [1], Hsin-Hua Li [2], Chih-Li Lin [2] and Kuo-Chih Liao [1]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung City, Taiwan 402204, Republic of China. [2] Institute of Medicine, Chung Shan Medical University, Taichung City, Taiwan 402367, Republic of China.
62	P-16	**Size dependence of gold nanoparticle as computed tomography contrast agent for lesion malignancy screening** *Wei-Ting Lin [1], Guo-Sheng Lin [1] , Shan-Ru Ye [1,2], and Kuo-Chih Liao [1]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 402204, Taiwan. [2] Department of Radiology, Taichung Veterans General Hospital, Taichung 407219, Taiwan.
65	P-17	**Lectin-triggered aggregation of glyco-gold nano-probe for detection of H2O2 by nacked eye** *Che-Ming Yeh, Meng-Chun Chen, Chian-Hui Lai* Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 402204, Taiwan.

70	P-18	**The Detection of Dopamine Using Boronic-acid Modified Silicon Nanowires Field-Effect Transistors Integrated with a CMOS Readout IC** *Yun-Lin Lu[1], Wan-Yi Chen[1], Yu-Te Liao[2] and Shu-Ping Lin[1]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 40227, Taiwan [2] Electrical and Computer Engineering, National Chiao Tung University, Hsinchu 30010, Taiwan
71	P-19	**Development of Soft Robotic Gloves with Sense for Hand Rehabilitation** *Zhu-Xuan Xie[1], Pei-Yi Chu[2], Ta-Sen Wei [3], Chien-Hung Lai[4] and Congo Tak Shing Ching[1]* [1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan [2] Show Chwan Memorial Hospital, Taiwan [3] Changhua Christian Hospital, Taiwan [4] Taipei Medical University Hospital, Taiwan
72	P-20	**Development of robotic arm combining nine-axis sensor and voice recognition** *Hong-Qing Chen and Congo Tak Shing Ching* Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan
77	P-21	**Synergistic plasmon-enhanced fluorescence and surface-enhanced Raman scattering detection** *Hao-Jui Tseng,[a] Smruti R. Sahoo,[b] and Cheng-Chung Chang**[a,b] [a] Graduate Institute of Biomedical Engineering, National Chung Hsing University, No.145, Xing Da Road, Taichung 402, Taiwan [b] Intelligent Minimally-Invasive Device Center, National Chung Hsing University, Taichung, Taiwan.
78	P-22	**Fabrication of double emission enhancement fluorescent nanoparticle with combining the PET and AIEE effect** *Chia-Feng Hsieh, Cheng-Chung Chang* Graduate Institute of Biomedical Engineering, National Chung Hsing University, No.145, Xing Da Road, Taichung 402, Taiwan

54	P-23	**Controller Design and Navigation of A Power-Assisted Wheelchair** *Chen Shih-Chung[1], Chen Yeou-Jiunn[2], Wu Chung-Min[3], and Chen Pei-Chung [4,*]* [1]Department of Electrical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan; chung@stust.edu.tw [2]Department of Electrical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan; chenyj@stust.edu.tw [3]Department of Computer and Communication, Kun Shan University, Tainan, Taiwan; cmwu@mail.ksu.edu.tw [4]Department of Mechanical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan
82	P-24	**A Polyamine Labeling Fluorophore to Be a Cancer Cell Marker** *Zi-Lun Lai [1], Yi-Syuan Liou [1] and Cheng-Chung Chang [2]* [1] Graduate Institute of Biomedical Engineering, National Chung-Hsing University, Taichung, Taiwan [2] Intelligent Minimally-Invasive Device Center, National Chung Hsing University, Taichung, Taiwan
83	P-25	**Investigation into how the relative positions of sensing electrodes affect the electrocardiography for developing wearable devices** *Man-Cheng Sun, Kai-Wei Shih, Shu-Ping Lin* Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 402, Taiwan

Topic：
- **Electrical and Electronics Engineering**
- **Information Technology**
- **Artificial Intelligence**
- **Computer Vision and Machine Learning**
- **Mechatronics and Robotics**
- **Embedded System, Sensors, Actuators**

Submission No.	Poster No.	Paper Title
9	P-26	**Accelerating Evolutionary Computing in Parallel: Applied to Non-Intrusive Appliance Load Monitoring for Residential Demand-Side Management in a Smart Grid** *Yu-Chen Hu [1], Chi-Hung Lin [2] and Yu-Hsiu Lin [2]* [1] Department of Computer Science and Information Management, Providence University, Taichung, Taiwan [2] Department of Electrical Engineering, Ming Chi University of Technology, New Taipei City, Taiwan
85	P-27	**Development of a low-cost goniometer for rehabilitation** *Yi-Tai Chen [1], Nguyen Van Hieu [2], Thien Luan Phan [2,3], Tzong Shiun Li [4], Siang-Ru Chen [3], Congo Tak Shing Ching [3]* [1] Department of Electrical Engineering, National Chi Nan University, Taiwan [2] Department of Physics and Electronic Engineering, University of Science (VNU-HCMC), Vietnam [3] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan [4] Department of Plastic Surgery, Show Chwan Memorial Hospital, Taiwan
23	P-30	**Questionnaire-based Elderly Identification System with Artificial Intelligence** *Kang-Ming Chang [1,2], Mei-Kuei Lu * Yi-Chun Wei[1] , and Po-Cheng Chien[1,4]* [1] Department of Computer Science and Information Engineering, Asia University, Taichung, Taiwan [2] Department of Medical Research, China Medical University Hospital, China Medical University, Taichung, Taiwan [3] Department of Early Childhood Education, Asia University, Taichung, Taiwan
25	P-31	**NeuroFuzzy-Wavelet based Control Strategy for SOFC connected to Electric Power Grid** *Syed Wajahat Ali[1], Muhammad Sadiq[2] and Chun-Lien Su[2]* [1] i108188105@nkust.edu.tw
28	P-32	**Investigation of WS2 MOSFET with High-□ HfO2 Gate Oxide and Dual-metal Contact** *Chen-Han Chou [1] and Ming-Huei Huang [2]* [1] Intelligent Semiconductor Nano-system Technology Research Center, National Chiao Tung University, Hsinchu, Taiwan.

		[2] Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan.
38	P-33	**Power system of next-generation ships: A review** *Le Quang Nhat Hoang [1], Ali Zulfiqar [2], Chun-Lien Su [2]* [1] Dept. of Microelectronics Engineering, College of Electrical Engineering and Computer Science, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan; [2] Dept. of Electrical Engineering, College of Electrical Engineering and Computer Science, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan;
40	P-34	**First Demonstration of Plasma-Assisted Roughness Improvement on Oxide Top Surface in InGaAs MOSFET** *P. Huang [1], Q. H. Luc [2] and E. Y. Chang [1,2]* [1] International College of Semiconductor Technology [2] Department of Material Science
43	P-35	**The Study of Magnesium-doping on the Microstructures and Optoelectronic Properties of $ZnCo_2O_4$ Semiconductor Thin Films** *Shen-Yu Chen [1], Yue-Lin Wu [1], Ruei-Sung Yu [2], Chun-Hong Chen[1], and Shih-Hung Lin [3]* [1] Department of Electrical Engineering, Tunghai University; [2] Photonics and Communication Engineering, Asia University; [3] Department of Electronic Engineering, National Yunlin University of Science and Technology
46	P-37	**The study of sintering temperature and duration for influences on physical and microwave dielectric properties in low-loss $Mg_{0.95}Ni_{0.05}TiO_3$** *Chun-Hsu Shen[1], Cheng-Che Ho[1], Zi-Qi Lin[1], Shih-Hung Lin[1*], Chung-Long Pan[2]* [1].Department of Electronic Engineering, National Yunlin University of Science and Technology, 123 University Road, Section 3 ,Douliou ,Yunlin 64002, Taiwan, R.O.C[2] [2].Department of Electrical Engineering, I-Shou University, No.1, Sec. 1, Syuecheng Rd., Dashu District, Kaohsiung City 84001, Taiwan, R.O.C.

49	P-38	**Microstructure, dielectric properties, and applications of low-loss $[(Mg_{0.6}Zn_{0.4})_{0.95}Co_{0.05}]_2(Ti_{1-x}Sn_x)O_4$ ceramics at microwave frequencies** *Chun-Hsu Shen [1], Chung-Long Pan [2], Shih-Hung Lin [1] and Cheng Che Ho [1]* [1] Department of Electronic Engineering, National Yunlin University of Science and Technology, Yunlin 64002, Taiwan [2] Department of Electrical Engineering, I-Shou University, Kaohsiung 84001, Taiwan
51	P-40	Development & performance analysis of an intelligent self-cleaning mechanism for pole-mounted solar PV installation *Zulfiqar Ali [1], Le Quang Nhat Hoang [2], Syed Wajahat Ali [1], Muhammad Sadiq [1] and Chun Lien Su [1]* [1] Dept. of Electrical Engineering, College of Electrical Engineering and Computer Science, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan [2] Dept. of Microelectronics Engineering, College of Electrical Engineering and Computer Science, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan
52	P-41	**A Multi-valued Evaluation for Chatbots in Taiwan Agriculture Services** *Abbott Po Shun Chen, and Chai Wu Liu[1]* Department of Marketing and Logistics Management, Chaoyang University of Technology, Taiwan.
54	P-42	**Controller Design and Navigation of A Power-Assisted Wheelchair** *Chen Shih-Chung [1], Chen Yeou-Jiunn [2] and Wu Chung-Min [3], Chen Pei-Chung [4]* [1] Department of Electrical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan; chung@stust.edu.tw [2] Department of Electrical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan; chenyj@stust.edu.tw

		[3] Department of Computer and Communication, Kun Shan University, Tainan, Taiwan; cmwu@mail.ksu.edu.tw [4] Department of Mechanical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan
55	P-43	**A Method to Optimize Food Banks' Food Delivery Schedules: A Preliminary Study** *Tomoshi Iiyama [1], Daisuke Kitakoshi [2] and Masato Suzuki [2]* [1] Department of Computer Science and Engineering, Toyohashi University of Technology, Toyohashi, Japan [2] Department of Computer Science, National Institute of Technology, Tokyo College, Hachioji, Japan
57	P-44	**Dramatically Performance Improvement of $In_{0.53}Ga_{0.47}As$ Gate-All-Around MOSFETs Using Nitrogen-Passivated** *Hua-Lun Ko[1], Quang Ho Luc[2], Si-Meng Chen[3], Che-Wei Hsu[4], and Edward Yi Chang[*]* [1] Hua-Lun Ko; hua.lun.ke@gmail.com [2] Quang Ho Luc; lucquangho@gmail.com [3] Si-Meng Chen; rsp9250618.mse04@nctu.edu.tw [4] Che-Wei Hsu; tonyvsmike@gmail.com ***** Edward Yi Chang: edc@mail.nctu.edu.tw
81	P-45	**Ultra Low Power Consumption Tunnel Diode based on InAs/GaSb Core-Shell Nanowires** *Che Wei Hsu [1], Quang Ho Luc [2], Hua Lun Ko [3], Ping Huang [4], Jing Yuan Wu [5], Nhan Ai Tran [6],Edward Y. Chang [7],** [1] Che Wei Hsu; tonyvsmike@gmail.com [2] Quang Ho Luc; lucquangho@gmail.com [3] Hua Lun Ko; hua.lun.ke@gmail.com [4] Ping Huang; wx96358@gmail.com [5] Jing Yuan Wu; jingyuan599@gmail.com [6] Nhan Ai Tran; aitran@nctu.edu.tw [7] Edward Y. Chang; edc@mail.nctu.edu.tw * Correspondence: edc@mail.nctu.edu.tw;
12	P-69	**Hand Gesture Detection by Deep Learning** Yu-Ching Chiu, Jhih-Jyun Chen and Jui-Cheng Yen Department of Electronic Engineering, National United University, Miaoli 36063, Taiwan

Topic：
- **Chemical and Material Engineering**
- **Industrial Engineering**
- **Biotechnology and Nanotechnology**

Submission No.	Poster No.	Paper Title
19	P-46	**TO STUDY THE RELATIONSHIP AMONG TOTAL QUALITY MANAGEMENT, SUPPLY CHAIN MANAGEMENT, AND ORGANIZATION SUPPLY PERFORMANCE** *Muhammad Sadiq , Syed Wajahat Ali, Chun Lien Su* Department of Electrical Engineering, College of Electrical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan
30	P-47	**Systematic Investigation of the Impact of Various Quaternary Ammonium Chloride Salts as Additives on the Performance of Inverted Perovskite Solar Cells** *Jr-Wei Jou, Wei-Han Hsiao, Pie-Kai Wang, Chung-Yu Li, Li-Hsin Chan* Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Nantou, Taiwan 54561, ROC.
36	P-48	**Lectin-triggered aggregation of glyco-gold nano-probe for detection of H2O2 by naked eye** *Che-Ming Yeh, Meng-Chun Chen, Chian-Hui Lai* Graduate Institute of Biomedical of Engineering, National Chung Hsing University
41	P-49	**Highly Nb-Doped MoS2 Sensor with Full Range Humidity Sensing** *Kai-Yu Peng [1] , Yu-Hsuan Ho [2] , Jie-Chun Luo [2] , Chen-Han Chou [1] , Chen-Hung Shen [1] , Yen-Teng Ho [1] , Shu-Jui Chang [1]* [1] International College of Semiconductor Technology, National Chiao Tung University, Hsinchu 300, Taiwan. [2] Graduate Institute of Electronics Engineering, National Taiwan University, Taipei 106, Taiwan.
42	P-50	**Chemical Vapor Deposition of WS 2 Thin Film from High Vapor Pressure Precursors on SiN Substrate at Low-temperature** *Cheng-Hung Shen , Kai-Yu Peng, Yu-Che Huang, Yen-Teng Ho, Chen-Han Chou, and Shu-Jui Chang* National Chiao Tung University

45	P-51	**Structural Control Two-dimensional Indium Selenide Epilayers Growth by Molecular Beam Epitaxy** *Yu-Che Huang [2a] , Chia-Hsing Wu [2] , Ssu-Kuan Wu [3] , Yen-Teng Ho [2] , Shu-Jui Chang [2] and Chu-Shou Yang [1]* [1] Department of Electrical Engineering, Tatung University, Taipei 104, Taiwan, ROC [2] International College of Semiconductor Technology, National Chiao Tung University, Hsinchu 300, Taiwan [3] Department of Electrophysics, National Chiao Tung University, Hsinchu 300, Taiwan
68	P-54	**Study of epitaxial α-In 2 Se 3 grown on Sapphire (0001) substrate by molecular beam epitaxy** *Ssu-Kuan Wu , Jui-Sheng Huang, Wu-Ching Chou, Chu-Shou Yang,Yu-Che Huang, Chia-Hsing Wu, Yen-Teng Ho, Shu-Jui Chang*
69	P-55	**Title: The study of optical emission spectrum for WS2 growth on Silicon base substrate by ICPCVD.** *Chia-Hsing Wu , Yu-Che Huang, Cheng-Hung Shen , Kai-Yu Peng , Yen-Teng Ho , Chen-Han Chouand Shu-Jui Chang International College of Semiconductor Technology, National Chiao Tung University, Hsinchu 300, Taiwan.*
74	P-56	**Construction of Photostable Fluorescent Organic Nanoparticles as Biomarkers Base on TICT-AIEgens** *Min-Wei Wu, [a] Hsing-Ju Wu, [b] Cheng-Chung Chang [a, c]* *[a] Graduate Institute of Biomedical Engineering, National Chung Hsing University,No.145, Xing Da Road, Taichung 402, Taiwan* *[b] Research Assistant Center, Show Chwan Memorial Hospital, Changhua 500, Taiwan* *[c] Intelligent Minimally-Invasive Device Center, National Chung Hsing University,No.145, Xing Da Road, Taichung 402, Taiwan*

Topic：
- **Civil and Environmental Engineering**
- **Mechanical Engineering**
- **Any other topic related to Engineering & Technology**

Submission No.	Poster No.	Paper Title
1	P-58	**Relation between Sleep and Quality of Life for College Students in Taiwan by Link Analysis** Yu-Hsuan Chen [1], Shih-Pei Chang [2, 3] , Chen-Shen Chao [4] , Yu-Hong Li [5] , Kang-Ming Chang [6,7] [1] Department of Medical Laboratory Science and Technology, Central Taiwan University of Science andTechnology, 40601, Taichung City, Taiwan [2] Department of Physical Education, Central Taiwan University of Science and Technology, 40601 Taichung City, Taiwan. [3] Department of Education and Human Potentials Development, National Dong Hwa University, 97401 Hualien,Taiwan [4] Office of Physical Education and Sport Affairs, Feng Chia University, 40724 Taichung City, Taiwan [5] Department of Sport and Health Management, Da-Yeh University, 51591 Changhua, Taiwan [6] Department of Computer Science and Information Engineering,, Asia University, Taichung, Taiwan [7] Department of Medical Research, China Medical University Hospital, China Medical University, Taichung,Taiwan
6	P-59	**An Investigation of Field Firefighters onTorrential Rescue Training** *Chih-Hsiung Yang [1] , Ira Puspitasari [2] , Rimuljo Hendradi [2] and Chin-Sung Hsiao [1]* *[1] 500, Lioufeng Rd., Wufeng, Taichung 41354, Taiwan* *[2] Jalan Mulyosari, Surabaya Indonesia, 6011*
7	P-60	**A full exploration of the Willingness on Implementing DA-CPR** *Yu-Ling Peng [1] , Rimuljo Hendradi [2] , Ira Puspitasari [2] and Chin-Sung Hsiao [1]* *[1] 500, Lioufeng Rd., Wufeng, Taichung 41354, Taiwan* *[2] Jalan Mulyosari, Surabaya Indonesia, 6011*

31	P-63	**Numerical study on the performance of flat-sheet membrane dehumidifiers** *Hsuan-Yu Ho [1,2] , Chun-Han Li [1,2] , Wei-Mon Yan [1,2] , Wen-Ken Li [1,2]* [1] Department of Energy and Refrigerating Air-Conditioning Engineering, National Taipei University of Technology, Taipei 10608, Taiwan [2] Research Center of Energy Conservation for New Generation of Residential, Commercial, and Industrial Sectors, National Taipei University of Technology, Taipei 10608, Taiwan
47	P-64	**The effects of time periodic subcooled flow boiling heat transfer of R-134a in annular ducts** *C.A. Chen [1] , T.F. Lin [1] , T.F. Yang [2,3] , W.K. Li [2,3]* and W.M. Yan [2,3]* [1] Department of Mechanical Engineering, National Chiao Tung University, Hsinchu 30010, Taiwan [2] Department of Energy and Refrigerating Air-Conditioning Engineering, National Taipei University of Technology, Taipei 10608, Taiwan [3] Research Center of Energy Conservation for New Generation of Residential, Commercial, and Industrial Sectors, National Taipei University of Technology, Taipei 10608, Taiwan
48	P-65	**Pulse Rate Monitoring System** *Chi-Bo Lin* National Chi Nan University
56	P-67	**An experiment on transport properties of membranes for the planar vacuum-based membrane dehumidifier** *Chun-Han Li [1,2] , Zih-Jyun Lin [1,2] , Pang-Yu Sun [1,2] and Wei-Mon Yan [1,2]** [1] Department of Energy and Refrigerating Air-Conditioning Engineering, National Taipei University of Technology, Taipei 10608, Taiwan [2] Research Center of Energy Conservation for New Generation of Residential, Commercial, and Industrial Sectors, National Taipei University of Technology, Taipei 10608, Taiwan

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