

**The 6th International Conference on
Engineering, Physics, MEMS-
Biosensors and Applications
(ICEBA 2025)**



ICEBA 2025
NCU, TAIWAN

November 6-8, 2025
Dept. Optics & Photonics
National Central University
Taoyuan, TAIWAN

<https://iceba2025.org.tw/>

ICEBA 2025-CNU

Co-Chair of ICEBA



HCMUS
Viet Nam National University
Ho Chi Minh City

VNUHCM- University of Science
Ho Chi Minh city, Vietnam



TOHOKU
UNIVERSITY

Tohoku University
Sendai, Japan

Conference host ICEBA 2025



National Central University, Taoyuan, Taiwan



Conference co-host ICEBA 2025



Graduate Institute of Biomedical Engineering

&

Smart Sustainable New Agriculture Research Center
National Chung Hsing University, Taichung, Taiwan



Technical Support ICEBA 2025



TAIWAN

Chinese Journal of
Physics



Institute of Electrical Engineers of Japan



HSIA

Hochiminh Semiconductor Industrial
Association, Vietnam

Sponsored by:



Welcome Remark
from General Co-Chair of 6th ICEBA2025-NCU

Dear all professors, colleagues and students,

I am very pleased to attend the 6th International Conference on Engineering Physics, MEMS-Biosensors, and Applications (ICEBA2025), which host by Department of Optics and Photonics, National Central University and Co-host by Graduate Institute of Biomedical Engineering, Smart Sustainable New Agriculture Research Center, National Chung Hsing University, Taichung, Taiwan.

I am deeply honored to be part of this event, which brings together some of the most brilliant minds and innovative leaders in our fields. My sincere gratitude to Prof. Kun-Yu Lai, Program Chair of ICEBA2025 to invite me and other professors to have their plenary invited talks or invited talks of ICEBA2025.

ICEBA2025 is a platform for fostering global collaboration and knowledge exchange, encompassing disciplines such as Engineering Physics, Semiconductor, MEMS-Sensor, Optics & Photonics, Computing Science, Embedded Systems, Nanotechnology, IoT & AI,... The conference's objectives align closely with our collective vision of leveraging advanced technologies, from semiconductors and IC chips to biosensors, to drive progress in industries including electronics, automotive, and manufacturing.

In Tohoku University, Prof. Takahito Ono and his colleagues are the strong research group in micro/nano fabrication and nanomaterial technologies gives us a strong foundation in MEMS/NEMS, making this conference an exciting convergence of our shared expertise. Through this event, we aim to strengthen partnerships with the University of Science, supporting doctoral training and pioneering research in MEMS, sensors, and biosensors.

VNU-HCM-University of Science are well-recognized for their work in Physic Engineering, Applied Physics, MEMS-devices, IoT-AI, embedded systems, computer science,... which offers significant opportunities for research collaboration-from manufacturing innovations in MEMS and sensor technology to applications in biomedical, environmental, and precision agriculture sectors. We also look forward to facilitating exchange programs that will promote co-publications and enrich the learning and research experiences of faculty members, researchers, and students.

I would like to thank Prof. Ku-Yu Lai and others for preparing and coordinating with professors from Tohoku University and VNUHCM-University of Science to successfully organize ICEBA2025-NCU.

We also thank and welcome all professors, researchers, and students from Taiwan, Vietnam, Japan, Malaysia, Singapore, USA and others to join ICEBA2025-CNU to share, discuss about their research works and enhance our future international cooperation.

Wishing you all health, success, and a memorable experience at this year's ICEBA2025.

Nguyen Van HIEU

Vietnam National University- Ho Chi Minh city and HSIA Vietnam

Welcome Remark
from Vice President of National Central University

It is my great pleasure to welcome all of you, our distinguished guests, speakers, and participants, to ICEBA2025 at National Central University (NCU). We are delighted to host such a vibrant gathering of international scholars, researchers, and professionals from Asian countries.

This conference offers a unique opportunity to exchange ideas, spark new collaborations, and explore the latest developments in the fields of biomedical engineering and semiconductors. Beyond the sessions and presentations, I hope you take the time to connect with colleagues, share experiences, and enjoy the rich culture and hospitality that NCU.

NCU has a longstanding tradition of excellence in research and education. We are proud to provide a platform where pioneering ideas can be discussed, partnerships can be formed, and new avenues of inquiry can emerge. I hope that your time here will be both intellectually stimulating and personally rewarding.

Thank you for joining us at this remarkable event. I wish you a productive conference and an enjoyable stay at NCU.



Prof. Chung-Pai CHANG
Vice President for International Affairs
National Central University, Taiwan

Welcome Message
from Program Chair of ICEBA2025

I am delighted to extend a personal invitation to you on behalf of the Organizing Committee and Program Committee of the 6th International Conference on Engineering, Physics, MEMS-Biosensors and Applications (ICEBA 2025). We would like to thank the General co-chair of ICEBA (VNUHCM-University of Science-Vietnam and Tohoku University- Japan) to entrust DOP-NCU as host of ICEBA2025-CNU in Taiwan.

It is with great pleasure that you can join us for this event in the Department of Optics and Photonics at National Central University, Taoyuan, Taiwan, R.O.C.

The purpose of ICEBA2025 is to link the researchers and scientists from the world, especially Asian countries, in the fields of biomedical engineering, health sciences, optics, and hi-tech sensors. We aim to promote international cooperation by joining research projects and international co-publications for the participants. We would like to express heartfelt gratitude to the speakers, sponsors, and all those who have contributed to the planning and organization of the conference. Your dedication and support have been invaluable in making this event a reality. We look forward to meeting all of you and witnessing the enlightening discussions and remarkable discoveries that will unfold during our time together.

Thank you, and I wish you a rewarding and memorable experience.



Kun-Yu Lai,
Chair, Organizing Committee ICEBA2025

General Co-Chairs

Takahito Ono (Tohoku University, Japan)

Nguyen Van Hieu (Vietnam National University-HCM and HSIA, Vietnam)

Huynh Van Tuan (VNUHCM-University of Science, Vietnam)

Organizing committee

Chair

Kun-Yu Lai (National Central University, Taiwan)

Co-chairs

Chien-Cheng Kuo (National Central University, Taiwan)

Fan-Ching Chien (National Central University, Taiwan)

Ching Tak Shing Congo (National Chung Hsing University-Taiwan)

Nguyen Van Toan (Tohoku University, Japan)

Ko-Ting Cheng (National Central University-Taiwan)

Tsung-Hsun Yang (National Central University-Taiwan)

Nguyen Chi Nhan (VNUHCM-University of Science, Vietnam)

Members

Le Vu Tuan Hung (VNUHCM-University of Science, Vietnam)

Nguyen Quang Khoi (VNUHCM-University of Science, Vietnam)

Huynh Chan Khon (VNUHCM-International University, Vietnam)

Nguyen Huu Truong (HSIA, Vietnam)

Publication Committee

Nguyen Van Hieu (Vietnam National University-HCM, Vietnam)

Takahito Ono (Tohoku University, Japan)

Kun-Yu Lai (National Central University, Taiwan)

Fan-Ching Chien (National Central University, Taiwan)

Ching Tak Shing Congo (National Chung Hsing University, Taiwan)

International Advisory Committee

Takahito Ono (Tohoku University, Japan)

Nguyen Van Hieu (Vietnam National University-HCM and HSIA, Vietnam)

Huynh Van Tuan (VNUHCM-University of Science, Vietnam)

Jen-Inn Chyi (National Central University, Taiwan)

Chung-Pai Chang (National Central University, Taiwan)

Chau Van Tao (VNUHCM-University of Science, Vietnam)

Dzung Dao (Griffith University, Australia)

Tran Tri Nang (Minnesota University, USA)

Kun-Yu Lai (National Central University, Taiwan)

Nguyen Van Toan (Tohoku University, Japan)

Ching Tak Shing Congo (National Chung Hsing University, Taiwan)

Kyeong-Sik Min (Kookmin University& IKEEE, Korea)

Le Vu Tuan Hung (VNUHCM-University of Science, Vietnam)

Pham Thanh Trung (Namur University, Belgium)

Nguyen Hoang Nam (VNU Ha Noi-University of Science, Vietnam)

Ho Manh Dung (Ho Chi Minh City Physics Association: HPA, Vietnam)

Duong Minh Tam (Ho Chi Minh City Semiconductor Industry Association: HSIA, Vietnam)

Trinh Xuan Thang (R&d Center, Saigon Hi-Tech Park and HSIA, Vietnam)

Truong Cong Duan (FPT University, Vietnam)

Plenary Invited Speaker (PL.01):



Prof. Tran Tri Nang

College of Science and Technology, University of Minnesota, USA

Diamond-Like Carbon Film for Multi-Terabyte Sputtered Tape Applications

Diamond-like carbon (DLC) layers are used for the terabyte sputtered magnetic recording tape having an areal density of 15 Gb/inc². The multi-layered sputtered thin metal film recording medium includes a flexible substrate, a texture promotion layer, a tungsten seed layer deposited on the texture promotion layer, an intermediate layer of a chromium-titanium-tungsten alloy deposited on the seed layer and a magnetic recording layer including a cobalt alloy deposited on the intermediate layer. DLC layer is applied over the magnetic layer to provide either a wear and corrosion resistance or lubrication of the magnetic recording medium for interacting with drive components and environment protection. The DLC layer can also be as a lubricant or a back –side coating applied to the opposing side of the nonmagnetic substrate in order to improve the durability, electrical conductivity, and tracking characteristics of the magnetic recording medium. Different doping agents are also added to DLC layer depending on their functions. The DLC layer is coated using an on-line ion-source plasma-enhanced chemical vapor deposition PECVD where different ion sources and gases are utilized.

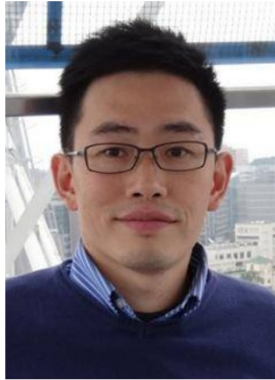
Short Bio:

A McKnight distinguished visiting professor and a teaching professor at University of Minnesota, Dr. Nang Tran received his PhD in solid state materials and device physics from Osaka Prefecture University-Japan in 1979 and did his postdoctoral research at Harvard University and University of California, Irvine. His two significant technical achievements are : (i) co-inventor of a direct x-ray digital radiography detector, a major medical breakthrough for digital mammography (1990).

Products based on this invention are currently available in many hospitals worldwide for early detection of breast cancer ; (ii) co-inventor of transparent conducting ZnO film doped with group III elements (1983). At present, most of the commercial thin film photovoltaic solar modules have at least one layer of this oxide in the device configuration.

During his tenure with the industry, Dr. Tran was instrumental in winning the funding for several multi-million- dollar research projects and had brought in millions of dollars in royalties from his inventions. He has received more than 62 patents. Products based on his invention have received many awards including the prestigious R&D 100, and Photonic Circle of Excellence. He has participated in the technical communities as an invited speaker, a lecturer at seminars and workshops, a committee member of international conferences, and currently an editorial board member of Vietnam Journal of Science, Technology and Engineering. He is a life senior member of the Institute of Electrical and Electronic Engineers and a recipient of Albert Nelson Marquis Lifetime Achievement Award..Prof. Tran was also the co-founder of Ecosolar International, a consulting company on solar energy, thin films and water filtration.

Plenary Invited Speaker (PL.02):



Dr. Wei-Yen Woon

Pathfinding, R&D

Taiwan Semiconductor Manufacturing Company, Taiwan

Thermal-Management Materials for 3D-stacked Integrated Circuits

As transistor scaling approaches fundamental physical and design limitations, three-dimensional (3D) stacking has become a critical enabler for sustaining advances in semiconductor performance, especially in high-performance computing and artificial intelligence (AI) applications. However, 3D integration introduces significant thermal management challenges due to increased power density and constrained heat dissipation pathways, particularly through low thermal conductivity interlayer dielectrics and complex interfaces. In this talk, we survey state-of-the-art thermal management materials, categorizing them by electronic properties and functional roles. We explore their process compatibility and integration challenges, with a focus on interfacial thermal boundary resistance, which is increasingly becoming a performance bottleneck. Additionally, we discuss advanced metrologies—both electrical and optical—used to characterize thermal conductivity and thermal boundary resistance across relevant length scales. Finally, we discuss critical integration challenges and propose future directions to enable efficient thermal dissipation in the AI era.

Short Bio:

Dr. Wei-Yen Woon is senior manager in pathfinding, R&D, Taiwan Semiconductor Manufacturing Company (TSMC), leading a exploratory materials research group, since 2020. Prior to joining TSMC, he was professor in the Department of Physics at National Central University from 2008-2023. His current research focuses are growth and characterization of thermal management materials, and 2D materials.

Plenary Invited Speaker (PL.03):



Prof. Takahito Ono

Department of Mechanical Systems Engineering
Tohoku University, Japan

Fusion of Microsystem and Nanomaterials for Advanced Bio- and Environmental Sensors

The convergence of microsystems with advanced nanomaterials has opened up new pathways for multifunctional sensor technologies that address challenges in biomedical, environmental, and industrial fields. Conventional sensors, while effective, often rely on non-renewable resources and energy-intensive fabrication, motivating the development of sustainable and high-performance alternatives.

We present recent advances that illustrate this fusion. Cellulose nanofibers (CNFs), derived from renewable resources, provide a biodegradable and biocompatible platform for biosensors (1). A CNF–enzyme composite enables a resistive glucose sensor suitable for disposable point-of-care testing, while CNF-based field-effect transistors demonstrate semiconducting behavior with high on/off ratios, marking a pioneering step toward biodegradable electronics (2). Complementary nanoparticle-assisted biosensors expand diagnostic capabilities: a gold nanoparticle–antibody composite achieves highly sensitive detection of GDF-15, a biomarker of mitochondrial health, and a platinum nanoparticle–enzyme cascade sensor enables rapid creatinine monitoring.

For environmental monitoring, nanomechanical polymer sensor arrays fabricated on silicon microelectromechanical structures detect vapors through polymer swelling, enabling statistical discrimination of gas species and successful monitoring of food freshness (3). In parallel, micro resonators utilizing biodegradable poly(L-lactic acid) (PLLA) illustrate how eco-friendly materials can serve as functional mechanical devices (4). Moreover, microfabricated soft-magnet resonators

with active Q-factor control demonstrate high-resolution magnetic sensing (5), while the spin-current volume effect (SVE) enables a novel actuation principle for microstructures (6).

Together, these examples establish a framework where microfabrication technology and nanomaterials are synergistically integrated to produce sustainable, multifunctional sensors and actuators. Such approaches bridge biomedical and environmental domains, advancing the vision of eco-friendly and high-performance sensor platforms for future society.

Reference

- (1) R. Takahashi, et al., Proc. 41st Symp. on Sensors, Micromachines and Applied Systems Symposium (IEEJ), Sendai, Japan, Nov. 25, 2024.
- (2) M. Fukuhara, et al., AIP Adv., vol. 15, no. 7, 075047, 2025.
- (3) M. A. Momin, et al., Microsyst. Nanoeng., vol. 11, article 91, 2025.
- (4) N. H. Quan, et al., Proceeding of Transducers 2025, Orlando, FL, June 29–July 3, 1113-1116, 2025.
- (5) Z. Zhao et al., IEEE Sens. J., vol. 24, no. 23, pp. 38861–3886, 2024.
- (6) Y.-T. Huang et al., Commun. Eng., vol. 3, article 72, 2024.

Short Bio:

Prof. Takahito Ono received his PhD in precision engineering from Tohoku University in Japan in 1996. He is currently the director of Micro System Integration Center (uSiC) at Tohoku University. Prof. Ono received Tokin Research Award from Tokin Science Foundation for the development of nanomechanical machines in 2005, also received MNC 2012 Paper Award, 15th International Microprocess and Nanotechnology Conference, IEEJ paper award 2019, Microsystem & Nanoengineering Award 2020, and IEEJ award 2022. He has authored more than 100 SCI papers in the field of MEMS biosensors and presented invited lectures over 60 at international conferences.

Plenary Invited Speaker (PL.04):



Prof. Xing Yi Ling

Department of Chemistry
Nanyang Technological University, Singapore

Machine Learning + Surface-enhanced Raman Scattering (SERS): Towards Predictive Sensing Applications

Nanomaterial-based sensors (“nanosensors”) are attractive detection tool to detect multiple disease biomarkers swiftly and at point-of-care. These nanosensors make use nanometer-sized particles with unique physical, optical, and electrical properties to induce enhanced output signals in response to the detection and/or changes in concentrations of analytes. In this talk, I will discuss my group’s effort in using one of the nanosensors, surface-enhanced Raman scattering (SERS) nanosensors for various biomedical applications. SERS utilizes metallic nanoparticles such as Ag and Au to harness incoming light excitation, concentrate surface plasmon resonances, and boost the Raman vibrational signatures of biomarkers for ultrasensitive detection. Firstly, I will discuss various SERS platform fabrication strategies to bestow desirable chemoselectivity and increase target analyte/biomarker affinity to achieve higher detection sensitivity and selectivity. I will also highlight various emerging research strategies which utilize machine learning algorithms for rapid on-site prediction of disease infection. Specifically, how chemometrics and machine learning algorithms can transform the assimilation and interpretation of complex spectral data in biological samples by discerning more patterns hidden within the data, to achieve high throughput data analysis, sensitivity, and disease prediction. I hope these insights can stimulate the development of innovative and hybrid detection methods across the entire analytical discipline to resolve longstanding challenges in biomarker and analyte sensing and detection.

Short Bio:

Xing Yi Ling is a Professor in Chemistry from Nanyang Technological University, Singapore. She received her Ph.D. degree in Chemistry from University of Twente, the Netherlands, and her postdoctoral research at the University of California, Berkeley. She is the Fellow of The Royal Society of Chemistry, and received Singapore National Research Foundation Investigatorship, Nanyang Award for Innovation & Entrepreneurship, L'ORÉAL Singapore for Women in Science National Fellowship, Singapore National Research Foundation Fellowship, IUPAC Prize for Young Chemists, and etc. In January 2024, Xing Yi assume the Editor-in-Chief position of the ACS Applied Materials & Interfaces and Applied Materials portfolio, a family of eight journals focused on materials, interfacial processes, and their applications. She is in the editorial boards of *Angewandte Chemie*, *Chemistry of Materials*, *Nanoscale Horizons*, *Cell Reports Physical Science*, *ChemPlusChem*. Her research focuses in using nanotechnology for fundamental studies and applications in environmental, healthcare, and catalysis fields. In particular, she is interested in self-assembling shape-controlled noble metal nanoparticles into superlattices to impart new structure-to-function properties and applications in surface-enhanced Raman scattering (SERS).

Plenary Invited Speaker (PL.05):



Prof. Keisuke Goda

Department of Chemistry
University of Tokyo, Japan

Data is Everything: How High-Quality Data Drives Biomedical Breakthroughs

In recent years, the application of artificial intelligence (AI) in the medical field has advanced rapidly, demonstrating its usefulness across a wide range of areas, including medical imaging, drug discovery, patient monitoring, and personalized medicine. However, it is ultimately training data that underpins the performance and reliability of AI. No matter how sophisticated the AI algorithms may be, without training data of sufficient quality and quantity, practical implementation in clinical settings is not possible. In this talk, I will introduce innovative optical imaging technologies designed to acquire high-quality, high-volume data: (1) intelligent image-activated cell sorting [1,2,3], (2) intelligent platelet morphometry [4,5,6], (3) whole-slide edge tomography [7], and (4) flow zoometry [8]. Through these efforts, I will explore the significance and potential of data-driven approaches for the practical realization of AI in healthcare.

Reference

- (1) N. Nitta, T. Sugimura, ..., and K. Goda, "Intelligent image-activated cell sorting," *Cell* (2018)
- (2) T. Ding, K. Lee, ..., and K. Goda, "Image-activated cell sorting," *Nature Reviews Bioengineering* (2025)
- (3) A. Isozaki, H. Mikami, ..., and K. Goda, "A practical guide to intelligent image-activated cell sorting," *Nature Protocols* (2019)
- (4) M. Nishikawa, H. Kanno, ..., and K. Goda, "Massive image-based single-cell profiling reveals high levels of circulating platelet aggregates in patients with COVID-19," *Nature Communications* (2021)
- (5) Y. Zhou, A. Nakagawa, ..., K. Goda, "Emergent photonics for cardiovascular health," *Nature Photonics* (2025)
- (6) K. Hirose, S. Kodera, and K. Goda, "Direct evaluation of antiplatelet therapy in coronary artery disease by comprehensive image-based profiling of circulating platelets," *Nature Communications* (2025)

- (7) N. Nitta, ..., K. Goda, and T. Chiba, "Clinical-grade autonomous cytopathology via whole-slide edge tomography," medRxiv (2025)
- (8) W. Peterson, J. Arenson, ..., and K. Goda, "Flow zoometry of Drosophila," bioRxiv (2025)

Short Bio:

Keisuke Goda is currently a professor in the Department of Chemistry at the University of Tokyo, as well as an adjunct professor in the Department of Bioengineering at UCLA and the Institute of Technological Sciences at Wuhan University. He earned a B.A. degree summa cum laude in Physics from UC Berkeley in 2001 and a Ph.D. in Physics from MIT in 2007. While at MIT, he contributed to the development of quantum-enhancement techniques in the LIGO group, which received the 2017 Nobel Prize in physics for the detection of gravitational waves. In 2007, he joined the Department of Electrical Engineering at UCLA as a postdoctoral researcher and program manager, where he focused on laser-based ultrafast optical imaging and spectroscopy, as well as microfluidic biotechnology. In 2012, Goda joined the Department of Chemistry at the University of Tokyo as a professor. His research group is currently dedicated to developing "serendipity-enabling technologies" through extreme engineering. He has authored nearly 300 journal papers, filed over 30 patents, and launched four startups: CYBO, Cupido, LucasLand, and FlyWorks. Goda has received more than 30 awards and honors, including the Japan Academy Medal, JSPS Prize, SPIE Biophotonics Technology Innovator Award, and Philipp Franz von Siebold Award.

Invited Speakers:

Nam Hoang Nguyen (VNU-University of Science, Vietnam)

Advanced Microfabricated Electrochemical Sensors with Carbon Nanotube Modification for Selective Heavy Metal Ion Detection

Hung Vu Tuan Le (VNUHCM-University of Science, Vietnam)

The High Performance SERS Substrate Based on Semiconductor Heterostructure and Metal Nanoparticles for Detecting Chemical Trace in Food, Drug, and Cosmetic

Vo Luong Hong Phuoc (VNUHCM-University of Science, Vietnam)

Distribution and Composition of Microplastics in Coastal Mangrove Cangio (Ho Chi Minh City)

Ko-Ting Cheng (National Central University, Taiwan)

Liquid Crystal Smart Windows with Scattering, Absorption, and Lighting Modes

Truong Cong Duan (FPT University, Vietnam)

Optical and Magnetic Properties of Nano-size Rb Clusters Incorporated into Zeolite

Jun Hieng Kiat (Universiti Tunku Abdul Rahman, Malaysia)

Some Insights on PEMA-based Solid Polymer Electrolytes for EDLC Application

Yao-Chuan Tsai (National Chung Hsing University, Taiwan)

Research and Development of Miniaturized Pneumatic Finger

Nguyen Van Toan (Tohoku University, Japan)

Metal-Assisted Chemical Etching Subjected to Micro/Nano Devices

Nguyen Quang Khoi (VNUHCM-University of Science, Vietnam)

Study of Some Solutions for Increasing the Output White Light Quality of Laser Based Solid-State Lighting

Quoc-Hung Phan (National United University, Taiwan)

Surface Plasmon Resonance Prism Coupler Sensor for miRNA Detection

Jui-Fen Chang (National Central University, Taiwan)

Investigation of Optical Properties and Amplified Spontaneous Emission in Symmetric BTAQ-Based Organic Thin Films

Chia-Yuan Chang (National Cheng Kung University, Taiwan)
Advanced Multiphoton Microscopy with Higher Contrast for Bioimaging Application

Shih-Hsuan Chia (National Yang-Ming Chiao Tung University, Taiwan)
Next-Gen IR Femtosecond Sources for Deep-Tissue Microscopy Imaging

Yun-Chorng Chang (Academia Sinica, Taiwan)
Detecting Plasmonic Generation of Hot Carriers Using a AlGaN/GaN High Electron Mobility Transistor

Henry J. H. Chen (National Chi Nan University, Taiwan)
Enhancement of Biomedical Ion-Sensitive FET Sensors via Nanoimprint Technology

Bill Cheng (National Chung Hsing University, Taiwan)
Cell-Mediated Drug Delivery Systems for Tissue Regeneration and Cancer Therapy

Chi-Wen Lung (Asia University, Taiwan)
Innovations and Implementation of Artificial Intelligence for Soft Tissue Injury Prevention

Muhammad Hanif Ramlee (Universiti Teknologi Malaysia, Malaysia)
Revolutionizing Prosthetics and Orthotics through Digital Manufacturing

Time Table

Plenary Speech
 Invited Speech
 Contributed Speech

Start	End	Nov. 6 (Thr.)	Nov. 7 (Fri.)						Nov. 8 (Sat.)		
08:20	08:35		Opening Remarks						City Tour		
08:35	09:05		Tran Tri Nang Diamond-Like Carbon Film for Multi-Terabyte Sputtered Tape Applications								
09:05	09:35		Wei-Yen Woon Thermal Management Materials for Stacked Integrated Circuits								
09:35	10:05		Takahito Ono Fusion of Microsystem and Nanomaterials for Advanced Bio- and Environmental Sensors								
10:05	10:25		Coffee Break								
10:25	10:55		Xing Yi Ling Machine Learning + Surface-enhanced Raman Scattering (SERS): Towards Predictive Sensing Applications								
10:55	11:25		Keisuke Goda Data is Everything: How High-Quality Data Drives Biomedical Breakthroughs								
11:25	13:30		Lunch								
				Session 1A (Room104)	Session 1B (Room427)	Session 1C (Room526)	Session 2 (Room111)	Session 3 (Room203)		Session 4 (Room116)	Session 5A (Room112)
13:30	13:35		Nam Hoang Nguyen	Vo Luong Hong Phuoc	Truong Cong Duan	Jun Hieng Kiat	Nguyen Quang Khoi	Chia-Yuan Chang	Henry J. H. Chen	Chi-Wen Lung	
13:35	13:40		Hung Vu Tuan Le	Ko-Ting Cheng	#1102	Yao-Chuan Tsai	Quoc-Hung Phan	Shih-Hsuan Chia	Bill Cheng	Muhammad Hanif Ramlee	
13:40	13:45	#1084			#1049	#1028	#1002	#1012	#1063	#1095	#1117
13:45	13:50	#1015			#1050	#1082	#1009	#1016	#1004	#1105	#1085
13:50	13:55					#1104	#1027	#1025	#1007	#1080	#1054
13:55	14:00					#1029	#1006	#1101	#1066		
14:00	14:05										
14:05	14:10										
14:10	14:15										
14:15	14:20										
14:20	14:25										
14:25	14:30										
14:30	14:35										
14:35	14:40										
14:40	14:45										
14:45	14:50										
14:50	14:55										
14:55	15:00										
15:00	15:05										
15:05	15:10										
15:10	15:30		Coffee Break								
15:30	15:35		#1065	#1062	#1059	Nguyen Van Toan	#1088	Yun-Chorng Chang	#1003	#1044	
15:35	15:40					#1034	#1047	#1033	#1026	#1089	
15:40	15:45		#1014	#1051	#1083	#1093	#1037	#1039	#1032	#1096	
15:45	15:50					#1106	#1097	#1011	#1043	#1091	
15:50	15:55							#1019	#1061	#1081	
15:55	16:00							#1069	#1061	#1081	
16:00	16:05								#1053	#1121	
16:05	16:10								#1031	#1123	
16:10	16:15										
16:15	16:20										
16:20	16:25										
16:25	16:30										
16:30	16:35										
16:35	16:40										
16:40	16:45										
16:45	16:50										
16:50	16:55										
16:55	17:00										
17:00	17:05										
17:05	17:10										
17:10	17:15										
17:15	17:20										
17:20	17:25										
17:25	17:30										
17:30	18:30		Moving to Banquet								
18:30	21:00	Welcome Reception (Invited Only)	Banquet								

Session I · A: Room 104 · B: Room 427 · C: Room 526

Thursday-Saturday 6-8 November 2025 · ICEBA 2025

Applied Physics, Engineering Physics, Electronic Engineering, and Earth Sciences

Friday 7 November

Oral Session I-A

Session Chairs: **Le Vu Tuan Hung**, VNUHCM-University of Science (Vietnam); **Nguyen Hoang Nam** VNUHCM-University of Science (Vietnam)

Room 104.....Fri 1:30 pm to 3:10 pm

1:30 pm [ID# 1112] (Invited Paper)
Advanced Microfabricated Electrochemical Sensors with Carbon Nanotube Modification for Selective Heavy Metal Ion Detection, Hieu Minh Nguyen, Huong Thi Phi, Lam Son Dao, Tuan Quoc Vu, Nam Hoang Nguyen, VNU University of Science (Vietnam)

1:50 pm [ID# 1078] (Invited Paper)
The high performance SERS substrate based on The High Performance SERS Substrate Based on Semiconductor Heterostructure and Metal Nanoparticles for Detecting Chemical Trace in Food, Drug, and Cosmetic, Hung Vu Tuan Le, Vietnam University of HoChi Minh City (Vietnam)

2:10 pm [ID# 1084]
Enhancing SERS Performance via Tunable Al Doping in ZnO Thin Films: Toward the Detection of Antibiotics in Seafood, Huyen Thi Minh Le, Hung Vu Tuan Le, Vietnam University of HoChi Minh City (Vietnam)

2:25 pm [ID# 1015]
Cancer classification using Nitride Surface-Enhanced Raman Spectroscopy and machine learning algorithms, Nhat Huy Kim, Thuy Doan Khanh Huynh, Kun-Yu Lai, Fan-Ching Chien, National Central University (Taiwan)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session I-A

Room 104.....Fri 3:30 pm to 4:45 pm

3:30 pm [ID# 1065]
Bridging Nonlinear Laser Physics in Complex Systems: A Unified Model of Synergetics and Catastrophe Theory, Shang Ping Yeh, Chi Kuo Mao, National Yang Ming Chiao Tung University (Taiwan)

3:45 pm [ID# 1014]
All-Dielectric Planar Chiral Meta-GMR Structure Exhibiting Strong Circular Dichroism in the Visible Range, Yung-Chih Liu, Tzu-Yao Chao, Qiu-Chun Zeng, Chih-Ming Wang, National Central University (Taiwan)

4:00 pm [ID# 1060]

Centrifuge Test of Sandy Soil Slope Stability Reinforced by Different Root Types, Weny Irma Wardani, Ida Agustin Nomleni, Wen-Yi Hung, National Central University (Taiwan)

4:15 pm [ID# 1100]

Dynamic Modeling of a Hybrid Drone with Aerial and Tracked Ground Mobility, Hien Xuan Pham, Quan Tuong Vo, Anh Pham Huy Ho, University of Technology, Vietnam National University, HCM City (Vietnam)

Friday 7 November

Oral Session I-B

Session Chairs: **Ko-Ting Cheng**, National Central University (Taiwan); **Vo Luong Hong Phuoc**, VNUHCM-University of Science (Vietnam)

Room 427.....Fri 1:30 pm to 3:10 pm

1:30 pm [ID# 1109] (Invited Paper)
Distribution and Composition of Microplastics in Coastal Mangrove Cangio (Ho Chi Minh city), Hong-Phuoc Vo-Luong, Hoa Tien Le Nguyen, Xuan Dung Tran, Sohiko Kameyama, Hao Van Lam, University of Science, Vietnam National University, Ho Chi Minh City (Vietnam)

1:50 pm (Invited Paper)
Liquid Crystal Smart Windows with Scattering, Absorption, and Lighting Modes, Ko-Ting Cheng, National Central University (Taiwan)

2:10 pm [ID# 1049]
Influence of Tunnel - Pile Distance on Load Transfer Mechanisms in Saturated Sand, Canh Minh Tran, Wen-Yi Hung, National Center for Earthquake Engineering (Taiwan)

2:25 pm [ID# 1050]
Experimental and Numerical Study on the Rubber-Sand Mixture as a Geotechnical Seismic Isolator Using Centrifuge Modeling and OpenSees, Tu Tran Thanh Nguyen, Anh Tuan Le, Wen-Yi Hung, National Central University (Taiwan)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session I-B

Room 427.....Fri 3:30 pm to 4:45 pm

3:30 pm [ID# 1062]
Behavior of Liquefaction-Induced Lateral Spreading on Submerged Slopes by Centrifuge Tests, Thawatchai Chalermponchai, Wen-Yi Hung, National Central University (Taiwan)

3:45 pm [ID# 1051]

The Effect of Testing Conditions on Automatic Compaction Results, Hoang Huy Nguyen, Wen-Yi Hung, National Central University (Taiwan)

4:00 pm [ID# 1052]

Centrifuge Modeling Piled Raft Foundation with Vertical and Batter Pile under Shaking Events, Quang Tran Ha, Wen-Yi Hung, National Central University (Taiwan)

4:15 pm [ID# 1056]

Evaluation of tunnel-soil interaction induced by shear wave velocity and acceleration response in the lateritic gravelly soil, Tuyet Thi Bach Le, Wen Wei Pao, Wen-Yi Hung, National Central University (Taiwan)

4:30 pm [ID# 1126]

Comparison of Alpha Decay Half Lives Using the WKB and Two Potential Approaches, Nga Huyen Nguyen, Chien Hoang Le, Phuc Tri Nguyen, Tao Van Chau, Thai Quoc Le, University of Science, VNU-HCM (Vietnam)

Friday 7 November

Oral Session I-C

Session Chairs: **Yeh-Wei Yu**, National Central University (Taiwan); **Anjali Chandel**, National Central University (Taiwan)

Room 526.....Fri 1:30 pm to 3:10 pm

1:30 pm [ID# 1128] (Invited Paper)

Optical and magnetic properties of nano-size Rb clusters incorporated into zeolite A, Truong Cong Duan, Takehito Nakano, FPT University, Hoa Lac Hi-tech Park, Hanoi (Vietnam)

1:50 pm [ID# 1102]

Comparative study of gold nanospheres, nanorods, and nanourchins: Shape-directed LSPR tuning for enhanced SERS detection of Auramine O, Khanh Duy Nguyen, Thi Hanh Thu Vu, Ngoc Van Le, Hung Vu Tuan Le, University of Science, VNU-HCM (Vietnam)

2:05 pm [ID# 1028]

Study of Thermoelectric Properties of penta-materials by Quantum Calculation and Machine Learning, Tien Thanh NGUYEN, Thanh Tuan Huynh, Khuong Dien Vo, Can Tho University (Vietnam)

2:20 pm [ID# 1082]

Robust Intelligent Control of Heart Rate Regulation Using Bio-Inspired Algorithms, Thanh Phong Tran, Van Huynh Tuan, Trung Hoai Dang, Nhan Chi Nguyen, VNUHCM-University of Science (Vietnam)

2:35 pm [ID# 1104]

Radiant Flux Estimation of a UVC LED with the aid of a Fluorescent Film, Thi-Thu-Ngoc Le, Vietnam National University Ho Chi Minh City - University of Science (Vietnam)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session I-C

Room 526.....Fri 3:30 pm to 4:45 pm

3:30 pm [ID# 1059]

Three-dimensional numerical analysis of a road embankment on soft soil with SCPs improvement in Can Tho City, Vietnam, Thoi Hung Do, Hoang Le, Hong Thi Anh Le, Lam Gia Le, Lap Tien Pham, Nong Le, Cu Van Pham, Can Tho University of Technology (Vietnam)

3:45 pm [ID# 1083]

Simulating Hydrodynamics around Geotube Breakwaters: A Case Study at Thanh Phong, Vinh Long (Mekong Delta), Thao Kim Thi Nguyen, Tuan Van Le, Hong-Phuoc Vo-Luong, University of Science, Vietnam National University, Ho Chi Minh City (Vietnam)

4:00 pm [ID# 1110]

Modeling the Distribution of Microplastics under Hydrodynamic Impacts at the Cu Lao Dung Estuary (Soc Trang Province), Xuan Dung Tran, Thanh Minh Nguyen, Chung Thi Tran, Phong Hoang Nguyen, Hong-Phuoc Vo-Luong, University of Science, Vietnam National University, Ho Chi Minh City (Vietnam)

4:15 pm [ID# 1073]

Study of accuracy method for spectrum modeling of ultraviolet light-emitting diodes using a combination of Gaussian and Lorentz functions, Quang-Khoi Nguyen, Vo-Diem-My Pham, Minh-Triet Nguyen, Van Huynh Tuan, Thuan Nguyet Phan, Huynh-Tuan-Anh Nguyen, VNUHCM-University of Science (Vietnam)

Poster Session - Friday

Location: B1.....Fri 4:45 pm to 5:30 pm

[ID# 1017] **Charge Transport in Modified Cellulose Nanofibers**, Rahul Kumar, Tohoku University (Japan)

[ID# 1042] **Study on Improving the Directionality of Liquid Crystal Display with Edge-Lit Backlight Panels**, Yuk-Nga Chan, Pin-Chien Chien, Chi-Shou Wu, Ching-Cherng Sun, Tsungshun Yang, Yeh-Wei Yu, National Central University (Taiwan)

[ID# 1055] **Effect of Arias Intensity on Uplift Displacement of a Rectangular Tunnel in Liquefiable soil: A Centrifuge Study**, Tam Chi Do, Wen-Yi Hung, National Central University (Taiwan)

[ID# 1057] **Comparative Study of Precast and Injection Methods in Low-Cement Fly Ash Pile Reinforcement of Slopes**, M Afzalurrahman, Wen-Yi Hung, National Central University (Taiwan)

[ID# 1058] **Numerical investigation for a road embankment on soft soil with Prefabricated Vertical Drain improvement in Can Tho City, Mekong Delta region, Vietnam**, Thoi Hung Do, Hoang Le, Hong Thi Anh Le, Lam Gia Le, Lap Tien Pham, Nong Le, Cu Van Pham, Can Tho University of Technology (Vietnam)

[ID# 1067] **Polarization Rotators with Periodically Arranged Air Holes**, Che-Hao Kuo, Chii-Chang Chen, National Central University (Taiwan)

[ID# 1068] **Extending the shelf life of mangoes using UVC LED irradiation**, Thi-Thu-Ngoc Le, Chung-Ta Liao, Chi-Shou Wu, Yeh-Wei Yu, Tsung-Hsun Yang, Ching-Cherng Sun, Vietnam National University Ho Chi Minh City - University of Science (Vietnam)

[ID# 1070] **Non-Hermitian Third-Order Topological Electric Circuit System**, SiouChen Lee, Wu JhungWei, Pi-Gang Luan, National Central University (Taiwan)

[ID# 1087] **Simulation Study of Hybrid Inorganic/Organic Vertical Light-Emitting Transistors**, Jui-Fen Chang, National Central University (Taiwan)

[ID# 1098] **MODELING UNDERGROUND TARGETS IN URBAN AREA IN GPR IMAGES BY FINITE DIFFERENCE TIME-DOMAIN**, Trung Hoai Dang, Tam Huu Nguyen, Truong Ngoc Nguyen Le, Sinh Nhat Nguyen, University of Science, VNU – HCM (Vietnam)

[ID# 1099] **Revolutionizing Pain Detection: Leveraging Heart Rate Data Correlations, Artificial Intelligence Models, and Heart Rate Variability**, Chao-Quan Liu, Zhi-Ren Tsai, Chih-Lung Lin, Yun-Cong Zheng, Ching Tak-Shing, Kuo Chun-Hsien, Mein-Woei Suen, Asia University (Taiwan)

[ID# 1113] **Canal plastic pollution: Community behavior in Can Tho city, Vietnam**, Truong Thanh Nguyen, Lavane Kim, Toan Van Pham, Ngan Nguyen Vo Chau, Can Tho University (Vietnam)

[ID# 1114] **Saltwater intrusion in the Mekong Delta area**, Phong Hoang Nguyen, University of Science, Ho Chi Minh City (Vietnam)

[ID# 1071] **Topological Polarization and Higher-Order Topological States in Two-Dimensional Photonics Crystal Structures**, Kuan Yu Lai, Pi-Gang Luan, Chien Ho Wang, National Central University (Taiwan)

Session II · Room 111

Thursday-Saturday 6-8 November 2025 · ICEBA 2025

Semiconductors, MEM-Biosensors and Applications

Session Chairs: **Nguyen Van Hieu**, VNUHCM-IPTC (Vietnam); **Nguyen Van Toan**, Tohoku University (Japan)

Friday 7 November

Oral Session II

Room 111.....Fri 1:30 pm to 3:10 pm

1:30 pm [ID# 1129] (Invited Paper)

Some Insights on PEMA-based Solid Polymer Electrolytes for EDLC Application, Jun Hieng Kiat, Universiti Tunku Abdul Rahman (Malaysia)

1:50 pm [ID# 1130] (Invited Paper)

Research and Development of Miniaturized Pneumatic Finger, Yao-Chuan Tsai, National Chung Hsing University (Taiwan)

2:10 pm [ID# 1002]

Graphene Biosensing with Integrated Chip-Level System for Point-of-Care Testing, Ching-Yuan Su, National Central University (Taiwan)

2:25 pm [ID# 1009]

Multiple cancers diagnosis by Nitride Surface-Enhanced Raman Spectroscopy, Thuy Doan Khanh Huynh, Nhat Huy Kim, Kun-Yu Lai, Fan-Ching Chien, National Central University (Taiwan)

2:40 pm [ID#1027]

Design and Fabrication of a Serpentine Microdevice for Methane Production via CO₂ Electroreduction, Zheng-Yan Lei, Tohoku University (Japan)

Coffee Break.....Fri 3:30 pm to 3:45 pm

Oral Session II

Room 111.....Fri 3:30 pm to 4:45 pm

3:30 pm [ID# 1131] (Invited Paper)

Metal-Assisted Chemical Etching Subjected to Micro/Nano Devices, Nguyen Van Toan, Tohoku University (Japan)

3:50 pm [ID# 1034]

Measurement of heat generation of magnetic nanoparticles dispersed on a micro-resonator, Taika Yamanami, Takahito Ono, Masaya Toda, Tohoku University (Japan)

4:05 pm [ID# 1093]

The study of interdigitated electrodes on biosensors with resonance frequencies for the detection of bacteria in foods, Nguyen Van Hieu, Nguyen Ngoc Thao Nhi, Do Thi Thao Vien, Nguyen Hoang Phuc, Nhan Chi Nguyen, Tak Shing Congo Ching, Vietnam National University Ho Chi Minh City (Vietnam)

4:20 pm [ID# 1106]

Phase-Sensitive SPR Sensing Using a Pixelated Polarization Camera, Kai-Ren Chen, Meng-Chi Li, Li-Chen Su, Chien-Cheng Kuo, Xin-Hui Wang, National Central University (Taiwan)

Poster Session - Friday

Location: B1.....Fri 4:45 pm to 5:30 pm

[ID# 1008] **Comparison of different Bioprobes Surface Modification and Multiplexed Detection of Cardiac Troponins on Silicon Nanowire Field-Effect Transistors**, Yung Hsuan Chang, Wen-Yi Chen, National Central University (Taiwan)

[ID# 1035] **Development of Amine-Oxide Zwitterionic Materials For Biomedical Applications**, Zihan Su, Chun-Jen Huang, National Central University (Taiwan)

[ID# 1038] **Influence of Heat on Spin-Driven Volume Change in Pt/TbFeCo Thin-Film Actuators**, Hiroki Kato, Noriyuki Tamazawa, Takahito Ono, Tohoku University (Japan)

[ID# 1094] **The optimal design of heat sink for the high efficiency ThermoElectric Gen-erator (TEG) for the PMIC circuits**, Mai Thanh Tan Cuong, Truong Ngo Anh Phuong, Nguyen Hoang Phuc, Dao Hong Nam, Nhan Chi Nguyen, Nguyen Toan, Nguyen Van Hieu, Vietnam National University Ho Chi Minh City (Vietnam)

[ID# 1118] **Printed Resistance-Type Glucose Sensor with Cellulose Nanofiber-Enzyme Composite**, Reo Takahashi, Nguyen Toan, Mikio Fukuhara, Toshiyuki Hashida, Keita Sakakibara, Shinpei Kawaguchi, Takahito Ono, Tohoku University (Japan)

Session III · Room 203

Thursday-Saturday 6-8 November 2025 · ICEBA 2025

Thin Film Optics, Optical Engineering, and Vacuum Technologies

Session Chairs: **Chien-Cheng Kuo**, National Central University (Taiwan); **Nguyen Quang Khoi**, VNUHCM-University of Science (Vietnam)

Friday 7 November

Oral Session III

Room 203.....Fri 1:30 pm to 3:10 pm

1:30 pm [ID# 1132] (Invited Paper)

Study of Some Solutions for Increasing the Output White Light Quality of Laser Based Solid-State Lighting, Quang-Khoi Nguyen, Faculty of Physics and Engineering Physics, VNUHCM-University of Science, Hochiminh City (Vietnam)

1:50 pm (Invited Paper)

Surface Plasmon Resonance Prism Coupler Sensor for miRNA Detection, Quoc-Hung Phan, Department of Mechanical Engineering, National United University (Taiwan)

2:10 pm [ID# 1012]

Ultra-stable Carboxyl Silatrane for Controlled Silanization and Biomolecular Conjugation, Van-Truc Vu, Chun-Jen Huang, National Central University (Taiwan)

2:25 pm [ID# 1016]

Deployment of specified optical stack to diffractive lens testing in wafer level, Le Duong Anh Duy, Optica company (Vietnam)

2:40 pm [ID# 1025]

Characterization on Focal Length of Small Module Lens with Digital Holography, Shao-Hua Jiang, Tsunghsun Yang, Yeh-Wei Yu, Ching-Cherng Sun, National Central University (Taiwan)

2:55 pm [ID# 1029]

Longitudinal Spherical Aberration Measurement in Small Singlet Lenses, Laura Alejandra Vasquez Troncoso, Tsunghsun Yang, Yeh-Wei Yu, Ching-Cherng Sun, National Central University (Taiwan)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session III

Room 203.....Fri 3:30 pm to 4:45 pm

3:30 pm [ID# 1088]

Investigation of Optical Properties and Amplified Spontaneous Emission in Symmetric BTAQ-Based Organic Thin Films, Jui-Fen Chang, National Central University (Taiwan)

3:45 pm [ID# 1047]

Refractive Index Distribution Measurement of Volume Holographic Optical Elements, Jun-Sheng Xiao, National Central University (Taiwan)

4:00 pm [ID# 1037]

Optical Design of a Compact LED Projector with Ultra-High Contrast Ratio, Kai-Chun Huang, National Central University

(Taiwan)

4:15 pm [ID# 1097]

High-Efficiency Monolithic Y₂O₃ Guided-Mode Resonators for Trichromatic Augmented Reality Displays, Hoang Thu Ha, DUY THANH CU, Chien-Cheng Kuo, National Central University (Taiwan)

Poster Session - Friday

Location: B1.....Fri 4:45 pm to 5:30 pm

[ID# 1019] **Efficiency Enhancement of Exit Pupil Expansion Light Guide with Volume Holographic Optical Element**, Guan Ying Su, National Central University (Taiwan)

[ID# 1020] **Light Field Near Eye Display Base On View-Angle Extraction**, Yu Hua Chou, National Central University (Taiwan)

[ID# 1021] **Harnessing sunlight for energy-efficient thermal-responsive smart windows with enhanced optical control**, You-Chieh Kuo, Chih-Cheng Lai, Pravinraj Selvaraj, Ko-Ting Cheng, National Central University (Taiwan)

[ID# 1030] **Continuously Variable Time Series Signal in Holographic Data Storage System**, Tzu Chieh Huang, National Central University (Taiwan)

[ID# 1046] **Field-of-view Extension Array of Near Eye Display**, Chun Yu Hsieh, National Central University (Taiwan)

[ID# 1072] **Analysis of Coupling Effects of Fano Resonances in Nanophotonic Waveguides**, Cheng-Chih Hsieh, Yu-En Hsiao, Pi-Gang Luan, National Central University (Taiwan)

[ID# 1090] **Gallium Oxide Photodetectors for Deep Ultraviolet Sensing**, Yi-Nung Chao, Sheng-Hui Chen, National Central University (Taiwan)

[ID# 1108] **Advanced Goos-Hänchen Displacement Detection System Based on Heterodyne Interferometry and Surface Plasmon Resonance**, Li-Chen Su, Ming Chi University of Technology (Taiwan)

Session IV · Room 116

Thursday-Saturday 6-8 November 2025 · ICEBA 2025

Bioimaging, Spectroscopy, and Materials

Session Chairs: **Fan-Ching Chien**, National Central University (Taiwan); **Po-Sheng (Hans) Hu**, National Yang Ming Chiao Tung University (Taiwan)

Friday 7 November

Oral Session IV

Room 116.....Fri 1:30 pm to 3:10 pm

1:30 pm (Invited Paper)

Advanced Multiphoton Microscopy with Higher Contrast for Bioimaging Application, Chia-Yuan Chang, National Cheng Kung University (Taiwan)

1:50 pm (Invited Paper)

Next-Gen IR Femtosecond Sources for Deep-Tissue Microscopy Imaging, Shih-Hsuan Chia, National Yang-Ming Chiao Tung University (Taiwan)

2:10 pm [ID# 1063]

Photostability and Power-Dependent Photoluminescence Bleaching Dynamics in Monolayer WS₂ under Ultrafast Excitation, Tang Chun Liu, Chung-Kai Tseng, Chao-Yi Tai, National Central University (Taiwan)

2:25 pm [ID# 1004]

Raman-barcoded Nanoaggregate Embedded Beads as Nanobiosensors for Multiplexed Detection, Lai-Kwan Chau, National Chung Cheng University (Taiwan)

2:40 pm [ID# 1007]

Single-Molecule Localization Imaging by Using the Multi-Quantum Well-Enhanced Plasmonic Substrates, Shang En Hsieh, Jian Zong Lai, Kun-Yu Lai, Fan-Ching Chien, National Central University (Taiwan)

2:55 pm [ID# 1006]

Enhancing neuron differentiation through the delivery of multiple plasmid DNA using fluorescent carriers, Chung Wei, Yung Chin Huang, Chih-Hsin Chen, Fan-Ching Chien, National Central University (Taiwan)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session IV

Room 116.....Fri 3:30 pm to 4:45 pm

3:30 pm (Invited Paper)

Detecting Plasmonic Generation of Hot Carriers Using a AlGa_N/Ga_N High Electron Mobility Transistor, Yun-Chorng Chang, Academia Sinica (Taiwan)

3:50 pm [ID# 1033]

Developing a ternary composite of Ni-MOF integrated with GO and AgNPs for electrochemical detection of chloramphenicol, Nandhini Chinnathambi, Chi-Hsien Huang, Ming Chi University of Technology (Taiwan)

4:05 pm [ID# 1039]

Laboratory Measurement Platform for Evaluating LWIR Meta-optics, Shang Ping Yeh, Pin-Duo Chen, Chih-Ming Wang, National Central University (Taiwan)

4:20 pm [ID# 1011]

Synthesis of Biotinylated Silatrane via Huisgen Cycloaddition for Bioconjugation Properties in Biosensors, NiNi Thi Phan, Chun-Jen Huang, National Central University (Taiwan)

4:35 pm [ID# 1069]

Non-invasive Water pH Monitoring using Near-Infrared (NIR) Spectroscopy and Machine Learning, Duy-Khanh Nguyen, Quoc-Hung Pham, Thanh-Nhan Nguyen, Nhut-Thanh Tran, University of Information Technology (Vietnam)

Poster Session - Friday

Location: B1.....Fri 4:45 pm to 5:30 pm

[ID# 1041] **Imaging Luminance Meter**, Chen-Ting Liao, National Central University (Taiwan)

[ID# 1075] **Comparative Study of Single Photon Emission Microscope with Different Pinhole Numbers under Double-Helix Reconstruction**, Chi-Kai Feng, Chao-Han Hsueh, Yi-Chun Chen, National Central University (Taiwan)

[ID# 1115] **Plasma Engineering of Plasmonic Semiconductor and Metal Nanostructures**, Wei-Hung Chiang, National Taiwan University of Science and Technology (Taiwan)

[ID# 1124] **Experimental study to determine the correlation between the falling head and the constant head permeability tests of sustainable Pervious Concretes**, Wen-Yi Hung, Tran Duc Trung, National Central University (Taiwan)

Conference V · A: Room 112 · B: Room 113

Thursday-Saturday 6-8 November 2025 · ICEBA 2025

Biomedical Engineering, Bio-devices, and Healthcare Technologies

Friday 7 November

Oral Session V-A

Session Chairs: **Huynh Chan Khon**, VNUHCM-IT (Vietnam); **Nguyen Chi Nhan**, VNUHCM-University of Science (Vietnam)

Room 113.....Fri 1:30 pm to 3:10 pm

1:30 pm (Invited Paper)

Enhancement of Biomedical Ion-Sensitive FET Sensors via Nanoinprint Technology, Henry J. H. Chen, National Chi Nan University (Taiwan)

1:50 pm (Invited Paper)

Cell-Mediated Drug Delivery Systems for Tissue Regeneration and Cancer Therapy, Bill Cheng, National Chung Hsing University (Taiwan)

2:10 pm [ID# 1095]

Systemic Effects of Low Level Laser Therapy on Skin Microcirculation during Wound Healing, Bayu - Widiatoro, Gilang Titah Ramadhan, Ardha Ardhea Prisilia, Hsu-Tang Cheng, Yih-Kuen Jan, Ben-Yi Liau, Chi-Wen Lung, Asia University (Taiwan)

2:25 pm [ID# 1105]

Surface-Enhanced Raman Scattering Detection of Pesticides Using a Silver Nanostructured PDMS Well (SNPW) Platform, Chia-Feng Hsieh, Hao-Jiu Tseng, Cheng-Chung Chang, National Chung Hsing University (Taiwan)

2:40 pm [ID# 1080]

Evaluating the Detection Potential of Impedance Analysis in Sarcopenia Disorder Using a Self-Developed Impedance Analyzer, Hai Dang Nguyen Tran, Ngoc Luan Tran, Ha Anh Nguyen Thi, Quoc Tuan Nguyen Diep, Duc Huy Nguyen, Ngoc Quan Ha Phan, Minh Khue Ha, Hung-Ting Kuo, Thien-Luan Phan, Ching Tak-Shing, National Chung Hsing University (Taiwan)

2:55 pm [ID# 1101]

Non-Contact Vital Sign Monitoring System Using Radar Sensor and Machine Learning on Edge Devices, Nhan Chi Nguyen, Phuc Thien Van, Anh Thuy Van Nguyen, Minh Khue Ha, Nguyen Van Hieu, VNUHCM-University of Science (Vietnam)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session V-A

Room 113.....Fri 3:30 pm to 5:15 pm

3:30 pm [ID# 1003]

Deep Learning-Based Tuberculosis Detection with an Image Fusion Strategy, Tzu-Chin Yang, Chun-Cheng Lee, Jen-I Hwang, Yu-Kang Chang, Pei-Jou Chen, Shih-Huan Lin, Yen-Wei Chu, National Chung Hsing University (Taiwan)

3:45 pm [ID# 1026]

Impedance-Based Biosensing of GDF-15 Using Gold Nanoparticle-Antibody Composites, Yi-Hsiu Kao, Tohoku University (Japan)

4:00 pm [ID# 1032]

Classification of Basic Human Taste Sensations Using Electroencephalogram Signals and the TasteNet-SVM Model, Hoang-Thuy-Tien Vo, Thi-Nhu-Quynh Nguyen, Van Huynh Tuan, University of Science, Vietnam National University (Vietnam)

4:15 pm [ID# 1043]

Muscle Activations During Backward Treadmill Walking in Young and Older Adults, Long-Huei Lin, Chih-Hsiu Cheng, Chang Gung University (Taiwan)

4:30 pm [ID# 1061]

Plasma-Treated V_2O_5 Membranes for Biosensing Applications, Hsiang Chen, Yang Yuhong, National Chi Nan University (Taiwan)

4:45 pm [ID# 1053]

Surface EMG Feature Dataset for Hand Movement Classification, Thuan Nguyet Phan, Van Huynh Tuan, Nguyen Thi Thuy Le, University of Science (Vietnam)

5:00 pm [ID# 1031]

Decoding Imagined Vowels from Portable EEG via Discrete Wavelet Transform and Machine Learning, Thi-Nhu-Quynh Nguyen, Hoang-Thuy-Tien Vo, Van Huynh Tuan, University of Science, Vietnam National University (Vietnam)

Friday 7 November

Oral Session V-B

Session Chairs: **Ching Tak Shing Congo**, National Chung Hsing University (Taiwan); **Nguyen Thi Hiep**, VNUHCM-IU (Vietnam)

Room 112.....Fri 1:30 pm to 3:10 pm

1:30 pm (Invited Paper)

Innovations and Implementation of Artificial Intelligence for Soft Tissue Injury Prevention, Chi-Wen LUNG, Asia University (Taiwan)

1:50 pm (Invited Paper)

Revolutionizing Prosthetics and Orthotics through Digital Manufacturing, Muhammad Hanif Ramlee, Universiti Teknologi Malaysia (Malaysia)

2:10 pm [ID# 1117]

Application of Machine Learning in Early Identification of Pre-frail Older People with Chronic Kidney Disease, Huang Ting-Chun, Shih-fen Hsiao, Kang-Ming Chang, National Kaohsiung University of Science and Technology (Taiwan)

2:25 pm [ID# 1085]

Developing Individual Artificial Intelligence Detector of

Patient's Painful Status by Wearable Smart Device, Yun-Cong Zheng, Tsai Zhi-Ren, Kuo Chun-Hsien, Mein-Woei Suen, Lin Chih-Lung, Asia University Hospital (Taiwan)

2:40 pm [ID# 1054]
Synthesis of Non-Enzymatic Sensor Via Electropolymerization of O-Phenylenediamine For Sweat Lactate Determination, MUHAMMAD FAIZ MD SHAKHIH, Faizuan Abdullah, Asnida Abd Wahab, Amirah Farhan Kamaruddin, UNIVERSITI TEKNOLOGI MALAYSIA (Malaysia)

2:55 pm [ID# 1066]
Monocyte-mediated drug carriers targeting cancer spheroids in a 3D microfluidic cell culture that reconstitute tumour microenvironment, Bill Cheng, National Chung-Hsing University (Taiwan)

Coffee Break.....Fri 3:10 pm to 3:30 pm

Oral Session V-B

Room 112.....Fri 3:30 pm to 5:15 pm

3:30 pm [ID# 1044]
Wearable Piezoelectric Sensor Design based on Lead Free Perovskites, Ying Chin Chao, Yang Po-Kang, National Central University (Taiwan)

3:45 pm [ID# 1089]
Study on the Correlation between Physiological Parameters and Traditional Chinese Medicine Theory under Stress, Teng-Hua Huang, Cheng-Chan Yang, Chang-Wei Hsieh, National Dong Hwa University (Taiwan)

4:00 pm [ID# 1096]
Polarized Spectrometry for Enzyme Inhibition in H2O2 Sensors, Cheng-Chih Hsu, National United University (Taiwan)

4:15 pm [ID# 1091]
Toward Smart and Accessible Backpack Evaluation: A Systematic Review of Biomechanical Indicators and Assessment Methods, Manlu Zhou, Keyi Zhang, Wing Shan Chan, Zhuohong Zhuang, Wu Jin, Daniel Hung Kay Chow, The Education University of Hong Kong (China)

4:30 pm [ID# 1081]
U-shaped Fiber-optic Biosensor with Gold Nanoparticle-assisted Signal Amplification for Allergy-related Biomarker Detection, YING-FENG CHANG, Che-Hao Tseng, Lin-Chia Chen, Li-Chen Su, Ja-an Annie Ho, Chang Gung University (Taiwan)

4:45 pm [ID# 1121]
EEG-TAGAN data augmentation model for schizophrenia patient signals, Viet Quoc Huynh, Van Huynh Tuan, University of Science, Vietnam National University (Vietnam)

5:00 pm [ID# 1123]
EEG-Based Emotion Recognition Using Optimized Logit Boost And Relief Feature Selection, Huy Tran Do, Viet Quoc Huynh, Thinh Xuan Huynh, Van Huynh Tuan, University of Science, Vietnam National University (Vietnam)

Poster Session - Friday

Location: B1.....Fri 4:45 pm to 5:30 pm

[ID# 1005] **Nonlinear Analysis of Eye Movements for Visual Fatigue Classification**, CHIN-CHENG CHU, Zhi-lin Chen, Kang-Ming Chang, National Kaohsiung University of Science and Technology (Taiwan)

[ID# 1018] **Micro-Structural and Mechanical Properties of Mg-Zn/CNF coated with ZnO for Orthopaedics Implant Application**, Muhammad Hanif Ramlee, Nurdayana Saffiyah Mohd Nazri, Siti Adawiyah Zulkefli, Nurin Tihani Nazemi, Zatul Faqihah Mohd Salaha, Radiyati Umi Partan, Universiti Teknologi Malaysia (Malaysia)

[ID# 1022] **Student Attention Monitoring through Facial Features and Phone Usage Behavior with the Aid of Machine Learning**, Shin-Hua Li, Huang Ting-Chun, Kang-Ming Chang, National Kaohsiung University of Science and Technology (Taiwan)

[ID# 1023] **Metal Injection Molded Mg-Zn/CNF Screws: Development and Pull-Out Performance Analysis**, Muhammad Hanif Ramlee, Siti Adawiyah Zulkefli, Nurin Tihani Nazemi, Zatul Faqihah Mohd Salaha, Radiyati Umi Partan, Mohammed Rafiq Abdul Kadir, Universiti Teknologi Malaysia (Malaysia)

[ID# 1040] **An Eco-Friendly Piezoelectric Nanogenerator Design based on Metal-Free Hybrid Perovskites**, Kuan Chih Kao, Yang Po-Kang, National Central University (Taiwan)

[ID# 1045] **A Flexible Triboelectric Patch for Self-Powered Interactive Sensing Application**, Kang Yu Luo, Yang Po-Kang, National Central University (Taiwan)

[ID# 1048] **Electrochemical microfluidic chip fabrication using a bondless and solventless method**, SUNG LIN TSAI, National Formosa University (Taiwan)

[ID# 1064] **Integrating Biosensor-Based Physiological Data and Machine Learning in Medical Statistics Education to Enhance Clinical Decision-Making**, Nam Hong Dao, University of Medicine and Pharmacy at Ho Chi Minh City (Vietnam)

[ID# 1074] **Transfemoral Prosthetic Socket: Finite Element Analysis of Different Designs and Evaluation of Different Infill Densities of 3D Printed**, Muhammad Hanif Ramlee, Muhammad Hanif Baharuddin, Faiha Nur Qaisara Azman, Nor Liyana Safura Hashim, Asnida Abd Wahab, MUHAMMAD FAIZ MD SHAKHIH, Hong Seng Gan, Siti Nur Syakirah Abdullah, Mohamad Ikhwan Kori, Mohammed Rafiq Abdul Kadir, Universiti Teknologi Malaysia (Malaysia)

[ID# 1076] **Exploring the Effect of Different Background Sounds on Concentration Using EEG Features and Machine Learning**, Hong-Min Zhang, Jia-Hong Lin, Yi-Chun Chen, National Central University (Taiwan)

[ID# 1079] **Development of a Titanium Dioxide Nanotube-Based Immunosensor for Early Detection of Liver Cancer Biomarker DCP**, Hai Dang Nguyen Tran, Thien-Luan Phan, Ching Tak-Shing, Ngoc Luan Tran, Ha Anh Nguyen Thi, Quoc Tuan Nguyen Diep, Duc Huy Nguyen, Hsing-Ju Wu, Pei-Yi Chu, Chan KHon Huynh, National Chung Hsing University (Taiwan)

[ID# 1086] **Developing Individual Artificial Intelligence Detector of Patient's Painful Status by Wearable Smart Devices**, Yun-Cong Zheng, Tsai Zhi-Ren, Kuo Chun-Hsien, Suen Mein-Woei, Lin Chih-Lung, Asia University (Taiwan)

[ID# 1103] **High-Sensitivity and Rapid Bacterial Sensing with SERS Nanostructures**, Ryan Joshua Liou, Ting Jhen Huang, Cheng-Chung Chang, National Chung Hsing University (Taiwan)

[ID# 1107] **Application of Surface-Enhanced Raman Spectroscopy for Rapid On-Site Detection of Pesticide Residues**, Xuan Yu Chen, Ryan Joshua Liou, Cheng-Chung Chang, National Chung Hsing University (Taiwan)

[ID# 1119] **AI-Guided In-silico Screening to Minimize Non-specific Hybridization in Catalytic Hairpin Assembly**, Pei-Ying Lin, Yun-Ting Tseng, Ying-Feng Chang, Ja-an Annie Ho, National Taiwan University (Taiwan)

[ID# 1120] **Fabrication and Characterization of a Screen-Printed Admittance-Based Creatinine Biosensor Array**, Ha Anh Nguyen Thi, Hai Dang Nguyen Tran, Tak Shing Congo Ching, Thien-Luan Phan, University of Science, VNU-HCM (Vietnam)

[ID# 1122] **Eeg-Based Emotion Recognition With Optimized Bagged Trees: A Feature Importance And Selection Approach**, Thinh Xuan Huynh, Van Huynh Tuan, Huy Tran Do, University of Science, Viet Nam National University Ho Chi Minh City (Vietnam)