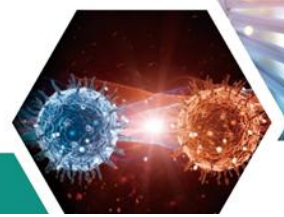




# **2025 IEEE MTT-S International Microwave Biomedical Conference**

# **Program Book**

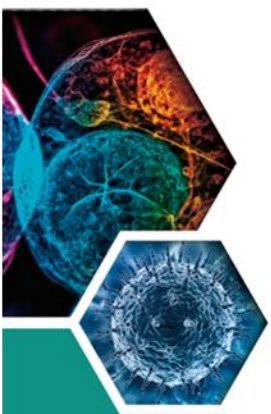
Apr. 15-17, 2025@Kaohsiung, Taiwan



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# WELCOME MESSAGE FROM GENERAL CHAIR

Dear Colleagues, Researchers, and Industry Experts,

On behalf of the organizing committee, it is my great pleasure to welcome you to the 2025 IEEE International Microwave Biomedical Conference (IMBioC 2025), taking place from April 15–17, 2025, at the Kaohsiung Exhibition Center in Taiwan.

IMBioC has long served as a leading platform for advancing RF and microwave technologies, antennas, and electromagnetic theory in biomedical applications. We are thrilled to bring together an international community of researchers, engineers, and industry professionals to share pioneering work, exchange ideas, and spark new collaborations.

Set against the vibrant backdrop of Kaohsiung—a dynamic harbor city known for its innovation, hospitality, and scenic waterfront—this year’s conference promises not only a rich technical program featuring plenary talks and paper presentations, but also opportunities to experience the local culture, explore the city’s attractions, and enjoy its renowned cuisine.

We extend our sincere thanks to all the authors, reviewers, sponsors, and volunteers whose efforts have made IMBioC 2025 possible. Your support is vital to advancing the frontiers of biomedical microwave research.

We look forward to welcoming you to Kaohsiung this April for an inspiring and rewarding conference experience.



Chung-Tse Michael Wu  
Associate Professor, Ph.D.  
Department of Electrical Engineering, National Taiwan University.  
General Chair, IMBioC 2025



# WELCOME MESSAGE FROM GENERAL CO-CHAIR

On behalf of the organizing committee, it is my great honor to welcome you to the 2025 IEEE International Microwave Biomedical Conference (IMBioC 2025), held for the first time in Taiwan.

This year's conference is dedicated to the breakthroughs and emerging applications of microwave technologies in the biomedical field.

As researchers and engineers come together from across the globe, we are excited to provide a platform for sharing cutting-edge advancements, fostering interdisciplinary collaboration, and inspiring innovative solutions to real-world biomedical challenges.

We are especially proud to host IMBioC in Taiwan—a place known for its vibrant culture, breathtaking landscapes, and, of course, its world-renowned cuisine.

During your stay, we hope you take the opportunity to not only engage in stimulating academic exchange but also to enjoy the diverse flavors, local traditions, and warm hospitality that Taiwan has to offer.

We have prepared an array of delicious meals and cultural touches throughout the event to ensure your experience is as enjoyable as it is enriching.

Thank you for being part of this meaningful gathering. We look forward to fruitful discussions, new friendships, and a memorable few days together.



Chia-Chan Chang  
Professor, Ph.D.

Department of Electrical Engineering, National Chung Cheng University.  
General Co-Chair, IMBioC 2025



# CONFERENCE COMMITTEE

## Honorary Chairs

- Ruey-Beei Wu, National Taiwan University, Taiwan
- Tzyy-Sheng Jason Horng, National Sun Yat-sen University, Taiwan
- Sheng-Fuh Chang, National Chung Cheng University, Taiwan

## General Chair

- Chung-Tse Michael Wu, National Taiwan University, Taiwan

## General Co-Chair

- Chia-Chan Chang, National Chung Cheng University, Taiwan

## Technical Program Co-Chairs

- Chao-Hsiung Tseng, National Yang Ming Chiao Tung University, Taiwan
- Fu-Kang Wang, National Sun Yat-sen University, Taiwan
- Pai-Yen Chen, University of Illinois Chicago, USA
- Shiu-hua Wood Chiang, Brigham Young University, USA

## Finance Chair

- Kun-You Lin, National Taiwan University, Taiwan

## Publication Chair

- Chun-Hsing Li, National Taiwan University, Taiwan

# CONFERENCE COMMITTEE

## Local Arrangement Chair

- Kang-Chun Peng, National Kaohsiung University of Science and Technology, Taiwan

## YP and Student Paper Competition Chair

- Yu-Hsiang Cheng, National Taiwan University, Taiwan

## Advisory Committee

- Tzong-Lin Wu, National Taiwan University, Taiwan
- Hsi-Tseng Chou, National Taiwan University, Taiwan
- Tian-Wei Huang, National Taiwan University, Taiwan
- Huei Wang, National Taiwan University, Taiwan

## Executive Committee

- J.-C. Chiao (Chair), Southern Methodist University, USA
- Katia Grenier, LAAS-CNRS, France
- Alessandra Costanzo, University of Bologna, Italy
- Robert Caverly, Villanova University, USA
- Yong Xin Guo, National University of Singapore, Singapore
- Dominique Schreurs, KU Leuven, Belgium
- Milica Popovic, McGill University, Canada
- Roberto Gómez-García, University of Alcalá, Spain
- Jasmin Grosinger, Graz University of Technology, Austria

# GENERAL INFORMATION

## ■ REGISTRATION INFORMATION:

**Location:** Kaohsiung Exhibition Center 3F

### **Registration Hours:**

Tuesday, April 15 2025	07:30AM-05:00PM
Wednesday, April 16 2025	08:00AM-05:00PM
Thursday, April 17 2025	08:00AM-12:00PM

## ■ EXHIBIT HOURS:

The exhibition area will be open during the following times:

Tuesday, April 15 2025	08:00AM-05:30PM
Wednesday, April 16 2025	08:00AM-05:30PM
Thursday, April 17 2025	08:00AM-05:30PM

For the latest information and details on sponsorship and exhibition opportunities, please visit the conference website:

<https://www.imbioc2025.org/site/page.aspx?pid=901&sid=1585&lang=en>

## ■ SOCIAL EVENTS AND NETWORKING :

➤ **Welcome Reception** Tuesday, April 15 2025 06:00PM – 08:30PM  
Location: Kaohsiung Exhibition Center Outdoor Space W1

➤ **Conference Banquet** Wednesday, April 16 2025 06:30PM – 09:30PM  
Location: Light Wedding Kaohsiung 9F

➤ **YP/WIM Event** Thursday, April 17 2025 04:30PM – 06:30PM  
Location: Kaohsiung Cultural Cruise

Note: Space is limited and will be assigned on a first-come, first-served basis.  
The organizer reserves the right to adjust the itinerary if necessary.  
Only participants who have completed conference registration are eligible to join the tour.

➤ **YP/WIM Dinner** Thursday, April 17 2025 06:30PM – 08:30PM  
Location: Zhangmen Craft Brewery

Note: Space is limited and will be assigned on a first-come, first-served basis.  
The organizer reserves the right to adjust the itinerary if necessary.  
Only participants who have completed conference registration are eligible to join the tour.

# GENERAL INFORMATION

## ■ CONFERENCE VENUE:

**Kaohsiung Exhibition Center (KEC), Kaohsiung, Taiwan**

**Address:** No.39, Chenggong 2nd Road, Qianzhen Dist., Kaohsiung, Taiwan

**Website:** <https://www.kecc.com.tw/>

## ■ FLOOR PLAN :

### 3F Floor Plan / Conference Rooms



## ■ Wi-Fi

Network Name: KECC

Free Wi-Fi will be made available for the Conference Participants to use while at the Conference space.



# GENERAL INFORMATION

## PROGRAM AT A GLANCE:

From	To	Tuesday, April 15	Wednesday, April 16	Thursday, April 17
07:30	08:00	Conference Registration		
08:00	08:20	Breakfast/Exhibition		
08:20	09:30	Breakfast/Exhibition	Poster Session (3rd Floor Hallway)	Breakfast/Exhibition
09:30	10:00	Opening Ceremony		Closing Ceremony
10:00	10:30	Plenary Talk: Dr. Chien-Jen Chen Rm.304a	Regular Sessions (Rm.303a,303b,303e)	Plenary Talk: Dr. Dominique Schreurs Rm.304a
10:30	11:00			
11:00	11:30	Plenary Talk: Dr. James C. Lin Rm.304a		Plenary Talk: Dr. Koichi Ito Rm.304a
11:30	12:00			
12:00	13:30	Lunch / Exhibition		
13:30	14:00	Regular Sessions (Rm.303a,303b,303e)	Regular Sessions (Rm.303a,303b,303e)	Regular Sessions (Rm.303a,303b,303e)
14:00	14:30			
14:30	15:10			
15:10	15:50	Coffee Break / Exhibition		
15:50	16:00	Regular Sessions (Rm.303a,303b,303e)	Regular Sessions (Rm.303a,303b,303e)	YP/WIM Event (Kaohsiung Cultural Cruise)
16:00	16:30			
16:30	17:00			
17:00	17:30			
17:30	18:00			
18:00	18:30	Welcome Reception (KEC Outdoor Plaza W1)	Conference Banquet (Light Wedding Kaohsiung 9F)	YP/WIM Dinner (Zhangmen Craft Brewery)
18:30	19:00			
19:00	19:30			
19:30	20:00			
20:00	20:30			
20:30	21:30			

# PLENARY SESSION

## ◆ Opening Remarks

Host by Conference General Chair Chung-Tse Michael Wu (National Taiwan University)  
Location: Kaohsiung Exhibition Center 3F Room 304a

## Greetings by General Chair

- Chung-Tse Michael Wu, National Taiwan University

## Welcome by General Co- Chair

- Chia-Chan Chang, National Chung Cheng University

## Opening Speech

- Dr. Dominique Schreurs, Past President of the IEEE MTT-S
- Dr. Chih-Peng Li, President of National Sun Yat-Sen University
- Chen Chi-Mei, Mayor of Kaohsiung City

# PLENARY SESSION

## Promotion of Precision Health Applying Molecular and Genomic Biomarkers



### *Dr. Chien-Jen Chen*

Distinguished Professor, Genomics Research Center,  
Academia Sinica, Taipei, Taiwan

**10:00a.m-11:00a.m, April 15**  
**Room 304a**

### **Biography**

Dr. **Chien-Jen Chen** earned his Sc.D. in epidemiology and human genetics from Johns Hopkins University (1983). He was a professor at National Taiwan University (1983–2006) and a research fellow at Academia Sinica (1986–2005), later serving as a distinguished research fellow (2006–2015) and vice president (2011–2015). He directed NTU's Graduate Institute of Public Health (1993–1994), founded the Graduate Institute of Epidemiology (1994–1997), and was the dean of the College of Public Health (1999–2002).

In government, he served as Minister of Health (2003–2005), Minister of the National Science Council (2006–2008), Premier (2023–2024), and the 14th Vice President of Taiwan (2016–2020). He is currently an academician and distinguished professor at Genomics Research Center of Academia Sinica.

For over 40 years, Dr. Chen has advanced molecular and genomic epidemiology, particularly in chronic arsenic poisoning and virus-induced cancers. His research on arsenic contamination spurred global mitigation efforts, and his work on hepatitis B shaped the viral load paradigm in clinical management. He has authored over 815 scientific articles and 75+ books/chapters, with 134,000+ citations (H-index: 161 as of March 1, 2025). Ranked Taiwan's top medical scientist in 2022 (Research.com), he is an academician of Academia Sinica (1998) and a member of the World Academy of Sciences (2005), Mongolian Academy of Sciences (2007, honorary), US National Academy of Sciences (2017), and Pontifical Academy of Sciences (2021).

# PLENARY SESSION

## Promotion of Precision Health Applying Molecular and Genomic Biomarkers

### Abstract

Precision health refers to the tailoring of disease prevention, screening, diagnosis, and treatment to the unique characteristics of an individual. It does not literally mean the creation of drugs or medical devices customized to a patient, but rather the ability to classify individuals into subpopulations that differ in their susceptibility to a particular disease, in the biology or prognosis of those diseases they may develop, or in their response to a specific treatment. Preventive or therapeutic interventions can then be concentrated on those who will benefit, sparing expense and side effects for those who will not.

Natural history of disease refers to the progression of a disease process in an individual over time, in the absence of treatment. It includes four stages: susceptibility, subclinical disease, clinical disease, and recovery/disability/death. Disease progression is driven by multiple factors, and end-stage disease is only a tip of iceberg. There exists individual variability in the disease progression with various driving factors at different stages. Prediction of disease progression is essential for precision health, and long-term follow-up studies are required to elucidate risk predictors of disease progression. The prediction of the risk of disease progression and the benefit of healthcare management is essential for the daily practice of healthcare workers.

Predictive medicine entails predicting the probability of disease and instituting preventive measures in order to either prevent the disease or significantly decrease its impact upon the patient by limiting disability or preventing mortality. It is intended for both healthy individuals (disease prediction) and for those with diseases (treatment prediction) with the purpose to predict susceptibility to a particular disease and to predict progression and treatment response for a given disease.

# PLENARY SESSION

## Promotion of Precision Health Applying Molecular and Genomic Biomarkers

The predictors include modifiable and unmodifiable biosignatures. Age, gender, race, and genotypes are unmodifiable predictors; while anthropometric characteristics, dietary intake, lifestyle habits, and infection markers are modifiable predictors. Along with the rapid development in biomedical technology (genomics, transcriptomics, proteomics, glycomics, lipidomics, metabolomics, microbiomics, and medical images), each individual will have a virtual cloud of billions of biosignatures in coming years. Through the analysis of this health data cloud using artificial intelligence, it becomes possible to predict health status and treatment response by monitoring self-parameters.

Risk calculators, are widely used in precision health and predictive medicine. They integrate several predictors into one measure of absolute risk using a regression model, usually in the form of risk score. Uncertainty about clinical interpretation of a single abnormal laboratory parameter can be improved using this method, allowing for appropriate recognition of clinically important risk in persons with several but seemingly marginal risk factors that may otherwise not raise clinical concerns.

Many risk calculators have been developed and validated for the prediction of major cancers and cardiometabolic diseases in Taiwan. In our REVEAL-HBV/HCV Study, we have derived risk calculators for the prediction of cirrhosis and hepatocellular carcinoma in patients affected with chronic hepatitis B or C. These prediction models including age, gender, family history of liver cancer, viral infection biomarkers, liver inflammation index, alcohol consumption. These risk calculators have very good performance assessed through the area under the receiver operating characteristic curve (AUROC), calibration plots, and Brier scores. They are useful for patient-physician communication, clinical decision on follow-up examination and antiviral therapy, and national health resource allocation.

# PLENARY SESSION

## **Promotion of Precision Health Applying Molecular and Genomic Biomarkers**

In the EVB-NPC Study, we have developed the risk calculator for predicting nasopharyngeal carcinoma (NPC), a unique cancer for Chinese populations. The calculator incorporated biosignatures including Epstein-Barr virus (EBV) infection markers, family NPC history and cigarette smoking. New EBV biomarkers have been identified to improve the early diagnosis of NPC.

In the GELAC Study, we have identified 28 variants at 25 independent loci for the prediction of lung adenocarcinoma. A polygenic risk score was derived and had good performance for predicting lung adenocarcinoma in East Asians, especially in never smokers.

# PLENARY SESSION

## Recent Developments in Microwave Ultrasound Tomography (MUT) for Biomedical Imaging Applications



*Dr. James C. Lin*

Professor Emeritus, University of Illinois Chicago, USA

**11:00a.m-12:00p.m, April 15**  
**Room 304a**

### Biography

**James C. Lin** is Professor Emeritus at the University of Illinois Chicago, where he has served as Head of the Bioengineering Department, Director of the Robotics and Automation Laboratory, and Director of Special Projects in Engineering. He held professorships in electrical and computer engineering, bioengineering, physiology and biophysics, and physical and rehabilitation medicine. He received the BS, MS and PhD degrees in electrical engineering from the University of Washington, Seattle.

Professor Lin is a Fellow of AAAS, AIMBE and URSI, and a Life Fellow of IEEE. He is recognized as a ScholarGPS Highly Ranked Scholar-Lifetime and an Elsevier Top Worldwide Scientists in their fields for Career Impact. He held a NSC Research Chair (1993 to 1997) and served for many years as an IEEE-EMBS distinguished lecturer. He is a recipient of the d'Arsonval Medal from the Bioelectromagnetics Society, IEEE EMC Transactions Prize Paper Award, IEEE COMAR Recognition Award, and CAPAMA Outstanding Leadership and Service Awards. He served as a member of U.S. President's Committee for National Medal of Science (1992 and 1993) and as Chairman of Chinese American Academic & Professional Convention (1993).

# PLENARY SESSION

## Recent Developments in Microwave Ultrasound Tomography (MUT) for Biomedical Imaging Applications

Dr. Lin has served in leadership positions of several scientific and professional organizations including President of the Bioelectromagnetics Society, Chairman of the International Scientific Radio Union (URSI) Commission on Electromagnetics in Biology and Medicine, Co-Chair of URSI Inter-Commission Working Group on Solar Power Satellite, Chairman of the IEEE Committee on Man and Radiation, Vice President US National Council on Radiation Protection and Measurements (NCRP), and member of International Commission on Nonionizing Radiation Protection (ICNIRP). He also served on numerous advisory committees and panels for the U.S. Congress, Office of the U.S. President, National Academy of Sciences, National Research Council, National Science Foundation, National Institutes of Health, Marconi Foundation, and the World Health Organization.

Professor Lin has edited 11 and authored 4 books including *Noninvasive Physiological Measurement: Wireless Microwave Sensing* (CRC Press, 2024) and *Auditory Effects of Microwave Radiation* (Springer, 2021), authored 450 journal papers, magazine articles and book chapters, and made over 300 conference presentations. He has made many fundamental scientific contributions to electromagnetics in biology and medicine including microwave auditory effects and microwave thermoacoustic tomography. He has pioneered several medical applications of RF and microwave energies including invention of minimally invasive microwave ablation treatment for cardiac arrhythmia, and noncontact and noninvasive microwave sensing of physiological signatures and vital signs. He has chaired several international conferences including IEEE, BEMS and ICST (founding chairman of Wireless Mobile Communication and Healthcare - MobiHealth Conference). He was Editor-in-Chief of the *Bioelectromagnetics* journal from 2006 to 2022, served as magazine columnist, book series editor, guest editor and member of the editorial boards of several journals.

A member of Sigma Xi, Phi Tau Phi, Tau Beta Pi, and Golden Key honorary societies, and listed in *American Men and Women of Science*, *Who's Who in America*, *Who's Who in Engineering*, *Who's Who in the World*, and *Men of Achievement*, among others.



# PLENARY SESSION

## Recent Developments in Microwave Ultrasound Tomography (MUT) for Biomedical Imaging Applications

### Abstract

Microwave ultrasound tomography (MUT) imaging systems use microwave-pulse-induced acoustic pressure waves to form planar or tomographic images. Since the generation and detection of microwave-pulse-induced acoustic pressure waves depend on dielectric permittivity and acoustic properties of tissue, MUT imaging possesses the characteristic features of a dual-modality imaging system.

The unique attributes of high contrast offered by microwave absorption and fine spatial resolution furnished by ultrasound are being explored to provide a noninvasive and nonionizing imaging modality for classification of biological tissues.

This paper begins with a review of the research being conducted in developing MUT imaging for biomedical applications. It discusses the science of microwave ultrasonic wave generation and propagation in biological tissues, the design of prototype MUT systems, and recent results from phantom models and experimental subjects.

Examples include circular and linear array configurations and application scenarios involving isolated tissues and organs as well as animal models of intraventricular hemorrhages in brain injury.

# PLENARY SESSION

## Challenges in Experiment Design for Microwave Biomedical Applications



***Dr. Dominique Schreurs***

Professor, KU Leuven, Belgium

**10:00a.m-11:00p.m, April 17  
Room 304a**

### Biography

**Dominique Schreurs** (Fellow, IEEE) received the M.Sc. and Ph.D. degrees in electronic engineering from KU Leuven, Leuven, Belgium. As a Postdoctoral Fellow, she was a Visiting Scientist with Agilent Technologies, ETH Zürich, and the National Institute of Standards and Technology. She is currently a Full Professor with KU Leuven. Her research interests include microwave/mmWave metrology, device and circuit modeling, and subsystem design for wireless and biomedical applications. Since 2009, she has been on IEEE MTT-S AdCom in multiple roles. She was a Distinguished Microwave Lecturer (2012-2014) and the Editor-in-Chief of the IEEE Transactions on microwave theory and techniques (2014-2016). From 2018 to 2019, she was the President of the Microwave Theory and Technology Society (MTT-S).

She was also the Co-Chair of the Technical Program Committee (TPC) for the International Microwave Symposium 2023 and the General Chair of IMBioC 2023. She was involved in multiple ARFTG conferences as Conference Chair or TPC Chair. She is also a past President of the ARFTG organization.

# PLENARY SESSION

## Challenges in Experiment Design for Microwave Biomedical Applications

### Abstract

In research, it is a must to validate ideas by realistic proofs-of-concept (PoCs). The difficulty of conceiving experiment design is finding the optimal balance between time efficiency, cost, and effectiveness.

Microwave engineering is characterized by a high dimensionality in experimental degrees of freedom, such as selecting among a wide choice in measurement instrumentation. The level of difficulty increases even more when the subjects are to advance the health of the community at large.

This talk discusses the challenges that microwave engineers face when developing experimental set-ups targeting tests for microwave biomedical applications. The talk covers multiple emerging areas within this domain, ranging from in-vivo dielectric spectroscopy, characterizing liquids in vials, high-precision sensing of small concentrations, to vital sign dynamic sensing and ensuring exposure safety.

# PLENARY SESSION

## RF and Microwave Antenna Technologies for Cancer Treatment



### ***Dr. Koichi Ito***

Professor Emeritus and Visiting Professor, the Center for Frontier Medical Engineering (CFME), Chiba University, Japan

**11:00a.m-12:00p.m, April 17**  
**Room 304a**

### **Biography**

**Koichi Ito** received the Ph.D degree from Tokyo Institute of Technology, Japan. He is currently a Professor Emeritus and Visiting Professor at the Center for Frontier Medical Engineering (CFME), Chiba University, Japan.

He served as Deputy Vice-President for Research and Director of the CFME, Chiba University. His main research interests include antennas for medical applications, small antennas for mobile communications, research on evaluation of the interaction between electromagnetic fields and a human body by use of phantoms, and antenna systems for body-centric wireless communications. Dr. Ito is a Life Fellow of IEEE, a Fellow of URSI, and a Fellow of IEICE, Japan.

He is the recipient of the 2020 Balthasar van der Pol Gold Medal from URSI. He served as an Associate Editor for the *IEEE Transactions on Antennas and Propagation*, an AdCom member for the IEEE AP-S, a Distinguished Lecturer for the IEEE AP-S, a BoD member for the Bioelectromagnetics Society, General Chair of ISAP2012, an elected Delegate to the European Association on Antennas and Propagation, a Vice-President of the Japanese Society for Thermal Medicine, Chair of URSI Commission K, and IEEE AP-S President for 2019. He currently serves as the inaugural Chair of the IEEE AP-S Technical Directions Committee.

# PLENARY SESSION

## RF and Microwave Antenna Technologies for Cancer Treatment

### Abstract

Various therapeutic modalities, such as surgery, radiotherapy, chemotherapy, gene therapy, immunotherapy, electrochemotherapy, hyperthermia and ablation, have been utilized for cancer treatment. RF and microwave antenna technologies have greatly contributed to the advancement of cancer treatment. Hyperthermia and ablation, sometimes referred to as thermal therapies, use the thermal effect of electromagnetic fields generated by heating antennas.

Hyperthermia basically exploits the difference of thermal sensitivity between tumors and normal tissues. The target tumor is usually heated up to the range 42-45 °C resulting in less damage to the surrounding normal tissues. For external heating, sophisticated phased array antennas have been developed and employed.

For internal heating, an array of well-designed thin antennas is directly inserted into the tumor.

RF or microwave ablation has been applied mainly for treatment of small-sized tumors. A thin electrode or an antenna is directly inserted into the tumor to heat well over 60 °C and its treatment time is usually around a few minutes, much shorter than hyperthermia treatment.

Image-guided thermal therapies have recently been developed and employed to further improve QOL (quality of life) of patients and to ease an operation for medical doctors. A magnetic resonance (MR) guided system has been introduced as a promising tool, although the cost is still rather high. A typical example is an MR-guided annular phased array which can produce therapeutic temperatures at any depth in the human body and visualize real-time 3D temperature mapping. It seems impossible to use real human bodies for experimental evaluation of the performances of internal antennas in particular. Instead, computer simulation is usually performed with digital human-body models. However, experiments with physical human-body phantoms are indispensable to validate the results of numerical simulations or to minimize animal experiments.

# PLENARY SESSION

## RF and Microwave Antenna Technologies for Cancer Treatment

A couple of further compelling challenges will be addressed at the end of the presentation including “theranostics” for cancer treatment that means a combination of therapeutics and diagnostics.

# TECHNICAL PROGRAM

Technical Program for Tuesday, April 15 2025

From	To	Room 304a	Room 303a	Room 303b	Room 303e
07:30	08:00	Conference Registration			
08:00	09:30	Breakfast/Exhibition			
09:30	10:00	Opening Ceremony			
10:00	10:30	Plenary Talk: Dr. Chien-Jen Chen			
10:30	11:00				
11:00	11:30	Plenary Talk: Dr. James C. Lin			
11:30	12:00				
12:00	13:30	Lunch / Exhibition			
13:30	14:00		Biomedical radar for macro-motion detection	RF/microwave/T Hz circuits and systems for biomedical applications	Antennas and propagation for biomedical applications
14:00	14:30				
14:30	15:10				
15:10	15:50	Coffee Break / Exhibition			
15:50	16:00		Electromagnetic imaging and magnetic resonance imaging	Panel Discussion: New Wave Biomedical Heterogeneous Integration	Wearable and bio-implantable antennas and wireless devices
16:00	16:30				
16:30	17:00				
17:00	17:30				
17:30	18:00				
18:00	20:30	Welcome Reception (KEC Outdoor Plaza W1)			

# TECHNICAL PROGRAM

**Tuesday, April 15 9:30 - 10:00 Room: 304a**

**Opening Ceremony**

**Tuesday, April 15 10:00 - 11:00 Room: 304a**

**Promotion of Precision Health Applying Molecular and Genomic Biomarkers**

Plenary Talk : Dr. Chien-Jen Chen

**Tuesday, April 15 11:00 - 12:00 Room: 304a**

**Recent Developments in Microwave Ultrasound Tomography (MUT) for Biomedical Imaging Applications**

Plenary Talk : Dr. James C. Lin

**Tuesday, April 15 1:30 - 3:10**

• **Biomedical radar for macro-motion detection**

Room: 303a

Chair: Olga Boric-Lubecke (University of Hawaii at Manoa, USA)

Davi Valerio de Queiroz Rodrigues (University of Texas at El Paso, USA)

***Physiological Radar-Based Sedentary State Classification Using Recurrent Neural Networks***

Mohammad Shadman Ishrak (University of Hawaii at Manoa, USA); Milos Suvakovic (University of California Santa Cruz, USA); Olga Boric-Lubecke and Victor Manuel Lubecke (University of Hawaii at Manoa, USA)

***Gait Parameters to Detect Parkinson's Disease Using a Radar Network: Preliminary Analysis***

Ignacio E. López-Delgado and Jesús Grajal (Universidad Politécnica de Madrid, Spain)

***Fall Detection Doppler Radar System Based on Time and Spatial Division***

Ming-Tsung Wang (National Chung-Cheng University, Taiwan); Jyun-Yan Lai (National Chung Cheng University, Taiwan); Meng-Hsuan Lin and Chia-Chan Chang (National Chung-Cheng University, Taiwan); Shih-Cheng Lin and Sheng-Fuh Chang (National Chung Cheng University, Taiwan)

***Radar2Text: Generation of Linguistic Summary From mmWave Radar Signatures Using Fine-Tuned Multimodal Language Models***

Kevin Ortega Jauregui and Davi Valerio de Queiroz Rodrigues (University of Texas at El Paso, USA)

***Autonomous Integrated Sensing and Processing for BioRadar: Advancing Non-Invasive Biomedical Monitoring and Signal Analysis***

Shafkat Hossain, Omer Kurkutlu and Oluwaseun Adekola (University of Illinois Chicago, USA); Sourav Kumar Pramanik and Shekh Md Mahmudul Islam (University of Dhaka, Bangladesh); Arman Roohi (University of Illinois Chicago, USA); Dieff Vital (The University of Illinois Chicago, USA)



# TECHNICAL PROGRAM

**Tuesday, April 15 1:30 - 3:10**

- **RF/microwave/THz circuits and systems for biomedical applications**

Room: 303b

Chairs: Girdhari Chaudhary (Jeonbuk National University, Korea (South)),  
Sharisse Poff (Brigham Young University, USA)

***A 80 GHz GaN HEMT Amplifier Using Common Gate Topology Loading Open Stub at Gate***  
Shinji Hara, Keiichi Sakuno and Eiji Suematsu (Nagoya University, Japan)

***Design of Quarter-Mode SIW BPF With Ultra-Wide Stopband and Impedance Matching Functionality***

Phanam Pech (Jeonbuk National University, Korea (South) & JIANT-IT Human Resource Development Center, Korea (South)); Palaystint Thorng, Girdhari Chaudhary and Yongchae Jeong (Jeonbuk National University, Korea (South))

***Frequency Tunable Filtering Power Divider With Arbitrary Power Division Ratio and Transmission Zeros***

Girdhari Chaudhary, Suyeon Kim, Palaystint Thorng and Yongchae Jeong (Jeonbuk National University, Korea (South))

***A Three-Channel Reflected SH-SAW Biosensor for Cardiovascular Risk Evaluation***

Chia-Hsuan Cheng (Shizuoka University, Japan); Hsuan-Lun Hung, Hiromi Yatsuda and Szu-Heng Liu (tst Biomedical Electronics Co. Ltd., Taiwan); Jun Kondoh (Shizuoka University, Japan)

***Multirate Filtering for Pulsatile Bioimpedance Signals with MHz Excitation***

Sharisse Poff, Jacob Anderson and Benjamin Boyack (Brigham Young University, USA); David V Anderson (Georgia Institute of Technology, USA); Robert C Davis and Shih-hua Wood Chiang (Brigham Young University, USA)

# TECHNICAL PROGRAM

**Tuesday, April 15 1:30 - 3:10**

- **Antennas and propagation for biomedical applications**

Room: 303e

Chair: Yu-Hsiang Cheng (National Taiwan University, Taiwan)

***Investigation of Breast Tumor Size Effects for Microwave Breast Imaging With Ultra-Wideband Microstrip Antenna***

Huy Bao Bui Minh and Hoang Nhut Huynh (Ho Chi Minh City University of Technology, VNUHCM, Vietnam); Huyen Tran Nguyen Thi (Ho Chi Minh City University of Foreign Languages and Information Technology, Vietnam); Congo Tak Shing Ching (National Chung Hsing University, Taiwan); Trung Nghia Tran (Ho Chi Minh City University of Technology (VNU-HCM), Vietnam)

***290 GHz Bow-Tie Slot Array Antenna for Communication and Imaging Applications***

Sheng-Chun Tsao and Yu-Hsiang Cheng (National Taiwan University, Taiwan)

***High-Gain Slot Array Antenna Integrated on Aluminum Nitride Ceramic Substrate for Sub-Terahertz Applications***

Ming-An Chung, Chia Chun Hsu, Zhi-xuan Zhang, Yi-Ju Yao and Chia-Wei Lin (National Taipei University of Technology, Taiwan)

***A Long Range Small Tag Antenna on Human Healthcare with 3D Printed Artificial Substrate***

Huaming Chen (National Kaohsiung University of Science and Technology, Taiwan); Minh-Tan Nguyen (Dong Nai Technology University, Vietnam); Yi-Fang Lin (National Kaohsiung University of Science and Technology, Taiwan); Chien-Hung Chen (ROC Air Force Academy, Taiwan); Ngoc-Tien Bui and Phu-Tai Do (Dong Nai Technology University, Vietnam)

***Flexible E-Patch Antennas Designed for Breast Cancer Detection***

Jia-Cong Lin and Rashaunda Henderson (University of Texas at Dallas, USA)

# TECHNICAL PROGRAM

**Tuesday, April 15 3:50 - 5:30**

- **Electromagnetic imaging and magnetic resonance imaging**

Room: 303a

Chair: Sung-Nien Hsieh (National Taiwan University of Science and Technology, Taiwan)

***Microwave Tomography Based on Time of Flight of Signals From Scattering***

Cheng-Chung Lin, Ai-Jung Lee and Wei-Chen Chiu (National Chung-Shan Institute of Science and Technology, Taiwan)

***Microwave Tomography Based on Phase Difference From Small-Interval Antenna Slippage***

Cheng-Chung Lin, Chih-Chiang Shen and Wei-Chen Chiu (National Chung-Shan Institute of Science and Technology, Taiwan)

***Microwave Resonant Imaging for Subcutaneous Tissue Detection Using Image Analysis***

Mao-Hsiang Huang (University of California, Irvine, USA); Sen Bing (Southern Methodist University, USA); Mohamed Benomar and Hung Cao (University of California, Irvine, USA); Jung-chih Chiao (Southern Methodist University, USA)

***Clinical Imaging by the Microwave Mammography***

Yoshihiko Kuwahara and Kimihito Fujii (Aichi Medical University, Japan)

***Breast Cancer Screening: Impact of Antenna Array Configurations on Microwave Imaging Quality***

Eleonora Razzicchia and Yunxiao Zhang (McGill University, Canada); Ali Farshkaran and Shwetadwip Chowdhury (University of Texas at Austin, USA); Emily Porter (McGill University, Canada & RI-MUHC, Canada)

# TECHNICAL PROGRAM

**Tuesday, April 15 3:50 - 5:30**

**Panel Discussion: New Wave Biomedical Heterogeneous Integration**

Room: 303b

Chair: CP Hung (ASE, Taiwan)

***Panel Session***

***Prof. T.-S. Jason Horng, National Sun Yat-sen University (NSYSU)***

***Dr. Wayne Lu, Advanced Semiconductor Engineering (ASE)***

***Dr. Shih-An Yu, TeraSilIC CO., LTD.***

***Prof. Hsin Chen, National Tsing Hua University (NTHU)***

**Tuesday, April 15 3:50 - 5:30**

• **Wearable and bio-implantable antennas and wireless devices**

Room: 303e

Chair: Ming-An Chung (National Taipei University of Technology, Taiwan)

Noriharu Suematsu (Tohoku University, Japan)

***Feasibility Study of WSN System for Wireless EEG Using Sub-cm Sized 2-GHz Domino-Resonator***

Fumiaki Wakiya, Tomoyuki Furuichi and Noriharu Suematsu (Tohoku University, Japan)

***Miniaturized Millimeter-Wave Power Divider Circuit for Capsule Applications***

Ming-An Chung, Yi-Ju Yao, Chia Chun Hsu, Zhi-xuan Zhang and Chia-Wei Lin (National Taipei University of Technology, Taiwan)

***Wireless Electromagnetic Tracking System for Wireless Capsule Endoscope***

Xiaoyang Wu (National University of Singapore, Singapore); Yuming Fu (National University of Singapore); Yongxin Guo (City University of Hong Kong, Hong Kong)

***Garment-Integrated Microwave Sensor for Sweat Detection***

Shabbir Chowdhury, Amir Ebrahimi, Kamran Ghorbani and Francisco Tovar-Lopez (RMIT University, Australia)

# TECHNICAL PROGRAM

Technical Program for Wednesday, April 16 2025

From	To	Room 303a	Room 303b	Room 303e
08:00	08:20	Breakfast/Exhibition		
08:20	09:00	Poster Session (3rd Floor Hallway)		
			Invited Talks	DL Talks
09:00	09:30	Demystify IEEE Fellow Nomination		
09:30	10:00			
10:00	10:30	Biomedical radar for macro-motion detection	RF/microwave/THz circuits and systems for biomedical applications	Wireless power transfer and wireless communication technologies for biomedical applications
10:30	11:00			
11:00	11:30			
11:30	12:00			
12:00	13:30	Lunch / Exhibition		
13:30	14:00	Radar and radio sensor applications for biomedical applications	ISTP: Advancing Senior Care Through Interdisciplinary Innovation	RF/microwave/THz circuits and systems for biomedical applications
14:00	14:30			
14:30	15:10			
15:10	15:50	Coffee Break / Exhibition		
15:50	16:00	Radar and radio sensor applications for biomedical applications	Industrial Talks	Radar Signal Processing and Sensor Fusion
16:00	16:30			
16:30	17:00			
17:00	17:30			
17:30	18:00			
18:30	21:00	Conference Banquet (Light Wedding Kaohsiung 9F)		

# TECHNICAL PROGRAM

**Wednesday, April 16 8:20 - 10:00**

- **Poster Session**  
Best Student Paper Finalist

Room: 3rd Floor Hallway

Chair: Yu-Hsiang Cheng (National Taiwan University, Taiwan)

**Wednesday, April 16 8:20 - 9:00**

- **Invited Talks**

Room: 303b

Chair: Chung-Tse Michael Wu (National Taiwan University, Taiwan)

*Radio near-field sensing of internal organs and tissues, Prof. Edwin C. Kan, Cornell/NYCU*

*Label-free Noninvasive Cell Characterization by Broadband Impedance Spectroscopy, Prof. James C. Hwang, Cornell/NYCU*

**Wednesday, April 16 8:20 - 9:00**

- **DL Talks**

Room: 303e

Chair: Somia Sharma (National Taiwan University, Taiwan, India)

*APS DL Talk: Restoration Strategies for the Radiation Pattern of a 5G mmWave 1x4 Antenna Array Integrated into a Smartphone, Prof. Sim Chow-Yen-Desmond*

*EMC DL Talk: Medical Applications of MHz to Sub-THz Waves and EMI/EMC Challenges, Professor Shiban Kishen Koul*

**Wednesday, April 16 9:00 - 10:00**

- **Demystify IEEE Fellow Nomination**

Room: 303a

Chair: Tzyy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan)

*Jenshan Lin, University of Florida*

# TECHNICAL PROGRAM

Wednesday, April 16 10:20 - 12:00

- **Biomedical radar for micro-motion**

Room: 303a

Chair: Ju-Yin Shih (National Sun Yat-sen University, Taiwan)

***Multi-Harmonic Amplitude Analysis of Space-Time-Coding Direct Antenna Modulation for Target Angle Estimation and Vital Sign Detection***

Shuping Li, Minning Zhu, Donglin Gao, Shaghayegh Vosoughitabar and Chung-Tse Michael Wu (Rutgers University, USA)

***Anomaly Detection for Identity Authentication Using 1D-CNN-LSTM Autoencoder and Doppler Radar With Classifiers***

Yu-Hong Wu and Chin-Lung Yang (National Cheng Kung University, Taiwan)

***Respiratory Pattern Variability Assessment Using Doppler Radar***

Jannatun Noor Sameera, Alexander Lee, Victor Manuel Lubecke and Olga Boric-Lubecke (University of Hawaii at Manoa, USA)

***Four-Channel PQSIL Radar for Remote Vital Sign Monitoring With Clutter Effect***

Iou Heng Chen (National Sun Yat-sen University, Taiwan); Ji-Xun Zhong (National Sun Yat-Sen University, Taiwan); Fu-Kang Wang (National Sun Yat-sen University, Taiwan)

***24-GHz Single-Channel Continuous Wave Doppler Radar for Recognizing Diverse Breathing Patterns: a Feasibility Study***

Md Shahriar, Kaisari Ferdous and Sourav Kumar Pramanik (University of Dhaka, Bangladesh); Dieff Vital (The University of Illinois Chicago, USA); Shekh Md Mahmudul Islam (University of Dhaka, Bangladesh)

# TECHNICAL PROGRAM

**Wednesday, April 16 10:20 - 12:00**

- **RF/microwave/THz circuits and systems for biomedical applications**

Room: 303b

Chair: Kun-You Lin (National Taiwan University, Taiwan)

***A K-Band VCO Using a Transformer-Based Resonance Tank for Biomedical Radar Applications***

Hung Liang and Jia-Wei Ye (National Taiwan University, Taiwan); Zi-Hao Fu (National Taiwan University, Taiwan); Kun-You Lin (National Taiwan University, Taiwan)

***Residue Amplifier Gain Error Duplication and Cancellation for Two-Step Pipelined ADCs***

Ziyuan Guo, Sharisse Poff, Jared Marchant and Shih-hua Wood Chiang (Brigham Young University, USA)

***Quasi-Elliptic Tunable Bandpass Filter With Controllable Transmission Zero Locations***

Palaystint Thorng, Girdhari Chaudhary, Suyeon Kim and Yongchae Jeong (Jeonbuk National University, Korea (South))

***A 200-GHz Signal Source in 40-nm CMOS for Sub-THz Biomedical Imaging Applications***

Chien-Ying Tai, Tse-Ying Chen and Chun-Hsing Li (National Taiwan University, Taiwan)

***A Comparison Between WIPD and PCB Flip-Chip Packaging for Broadband MFCW Agile Radar in Vital-Sign Detection Applications***

Tian-Wei Huang, PO-JU Chen, Ti-Yu Chao, Yi-Hsien Lin, Shih-Chun Yeh and Jian-Ming Lin (National Taiwan University, Taiwan)



# TECHNICAL PROGRAM

Wednesday, April 16 10:20 - 12:00

- **Wireless power transfer and wireless communication technologies for biomedical applications**

Room: 303e

Chair: Hong-Yeh Chang (National Central University, Taiwan)

Pai-Yen Chen (University of Illinois at Chicago, USA)

## ***A Wearable Self-Powered Harmonic-Backscattering SWIPT Tag for Avalanche Rescue Operation***

Nga Vu, Trung D Ha, Duc Anh Pham and Pai-Yen Chen (University of Illinois at Chicago, USA)

## ***Advanced Transmitter Coil Optimization Framework for Maximizing Wireless Power Transfer Efficiency in Small Animal Experimental Platforms***

Fan Chen (National University of Singapore, Singapore); Yongxin Guo (City University of Hong Kong, Hong Kong)

## ***Underwater Communication Using Thin Flexible Microdome-Structured PVDF Devices***

Rong Fu (University of Alabama, USA); Xinyu Zhang (University of Alabama & None, USA); Kai Liu (The University of Alabama, USA); Pratiksha Chaudhari, Aijun Song and Mark Cheng (University of Alabama, USA)

## ***Diffusion Model-Based Assisted Attacks on PUF -Secured Telematics and Medical Devices***

Emadeldeen Hamdan and Nanshu Wu (University of Illinois Chicago, USA); Pai-Yen Chen (University of Illinois at Chicago, USA); Ahmet Enis Cetin (University of Illinois Chicago, USA)

## ***Unseen Imprint: Resonating Bio-Art Through RFID***

Chia-Chan Chang (National Chung-Cheng University, Taiwan); Chao-Ming Wang (National Yunlin University of Science and Technology, Taiwan)

# TECHNICAL PROGRAM

**Wednesday, April 16 1:30 - 3:10**

- **Radar and radio sensor applications for biomedical applications**

Room: 303a

Chair: Chin-Lung Yang (National Cheng Kung University, Taiwan)

***Millimeter-Wave Beamforming System Assists in Human Body Moisture Detection***

Ming-An Chung, Jun-Hao Zhang, Ming-Chun Hsieh, Sung-Yun Chai, Kai-Xiang Chen, Shang-Jui Huang, Chia-Wei Lin and Chia Chun Hsu (National Taipei University of Technology, Taiwan)

***Generalized Radar-Based Detection of Respiratory Abnormalities in Indoor Environments***

Pouya Mehrjousesht (Kuleuven, Belgium); Jitse Kennes (KU Leuven, Belgium); Ihsane Gryech (KULEUVEN, Belgium); Dominique Schreurs and Sofie Pollin (KU Leuven, Belgium)

***Heart Rate Detection Based on Modified-RLMD Algorithm in the Presence of Random Body Movement Using FMCW Radars***

Ming-Feng Yang and Chin-Lung Yang (National Cheng Kung University, Taiwan)

***Heartbeat Detection Using Static RIS-Assisted mmWave OFDM System: a Channel State Information Approach with Software-Defined Radios***

Po-Yi Hsieh, You-Cheng Chen, Jyun-Yan Lai and Shih-Cheng Lin (National Chung Cheng University, Taiwan); Chia-Chan Chang (National Chung-Cheng University, Taiwan); Sheng-Fuh Chang (National Chung Cheng University, Taiwan)

***Towards Clinically Accurate Continuous Blood Pressure Smart Watch Biosensor Using Equitable Bioimpedance Modality and AI***

Neelotpala Kumar and Solomon Leo (University of Texas at Austin, USA); Jiahui Zhao (The University of Texas at Austin, USA); Sophie Lalande (University of Colorado, Boulder, USA); Deji Akinwande (University of Texas at Austin, USA)

**Wednesday, April 16 1:30 - 3:10**

- **ISTP: Advancing Senior Care Through Interdisciplinary Innovation**

Room: 303b

Chair: Changzhi Li (Texas Tech University, USA)

***Panel Discussion***

***Prof. Dominique Schreurs (KU Leuven, Belgium)***

***Prof. Changzhi Li (Texas Tech University, USA)***

***Prof. Olga Boric-Lubecke (University of Hawaii, USA)***

***Prof. Victor M. Lubecke (University of Hawaii, USA)***

***Dr. Lida Huang (CytonSys Inc)***

***Dr. Jou-Wei Lin, MD (National Taiwan University Hospital, Taiwan)***

***Prof. Chao-hsiung Tseng (National Yang Ming Chiao Tung University, Taiwan)***

# TECHNICAL PROGRAM

**Wednesday, April 16 1:30 - 3:10**

- **RF/microwave/THz circuits and systems for biomedical applications**

Room: 303e

Chair: Chun-Hsing Li (National Taiwan University, Taiwan)

***Optimized IRS Positioning for Phase-Tuned Wireless Physiological Motion Detection***

Denny V Landika, Mohammad Shadman Ishrak, Haofan Cai and Alvin Yang (University of Hawaii at Manoa, USA); Yao Zheng (University of Hawai'i at Mānoa, USA); Khaldoon Ishmael, Olga Boric-Lubecke and Victor Manuel Lubecke (University of Hawaii at Manoa, USA)

***Spoof Localized Surface Plasmon Polariton for Sensing Applications***

Somia Sharma (IIT Delhi, India); Chun-Hsing Li (National Taiwan University, Taiwan)

***A Switched Fast-Startup AC-Coupled Amplifier for Low-Distortion Detection of Human Vital Signs***

Aaron B Carman, Christopher Williams and Changzhi Li (Texas Tech University, USA)

***Evaluation of Switch Mode Amplifiers for Low-Field MRI***

Maik Ehse (Otto Von Guericke University, Germany); Marcus Prier and Benjamin Mydla (Otto Von Guericke University Magdeburg, Germany); Holger Maune (University of Magdeburg, Germany)

# TECHNICAL PROGRAM

**Wednesday, April 16 3:50 - 5:30**

- **Radar and radio sensor applications for biomedical applications**

Room: 303a

Chair: Akira Nagakubo (Tohoku University, Japan)

Chao-Hsiung Tseng (National Yang Ming Chiao Tung University, Taiwan)

***A New Radio-Frequency Microfluidic Injection-Locked Oscillator Sensor for Loss Tangent Measurement of Liquid Material***

Chien-Heng Chen (National Taiwan University of Science and Technology, Taiwan); Chao-Hsiung Tseng (National Yang Ming Chiao Tung University, Taiwan)

***Liquid Crystal RIS Integrated With SIL Radar for NLOS Vital Sign Monitoring***

Chinmaya Tripathy (National Sun Yat-sen University, Taiwan); Rifa Atul Izza Asyari (University of Southern Denmark, Denmark); Kuan Yuan Lee, Yuh-Chyi Chang and Yi-Chan Hung (National Sun Yat-Sen University, Taiwan); Tien-Lun Ting (National Sun Yat-sen University, Taiwan); Daniel Teichmann (University of Southern Denmark, unknown); Tzyy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan); Tsung-Hsien Lin (National Sun Yat-Sen University, Taiwan)

***Asynchronous Optical Sampling Picosecond Ultrasonics of a GHz Biosensor***

Akira Nagakubo (Tohoku University, Japan); Kohei Sugaya and Hirotsugu Ogi (The University of Osaka, Japan)

***A Study of Continuous Noninvasive RF Hydration Sensing on Human Forearm***

Sen Bing (Southern Methodist University, USA); Mao-Hsiang Huang and Hung Cao (University of California, Irvine, USA); Jung-chih Chiao (Southern Methodist University, USA)

***Experiment Setup Design for in-Vivo Microwave Spectroscopy of Galleria Mellonella Larvae***

Marie Mertens (KU Leuven & Polytechnique Montreal, Belgium); Greetje Vande Velde and Dominique Schreurs (KU Leuven, Belgium)

**Wednesday, April 16 3:50 - 5:30**

- **Industrial Talks**

Room: 303b

Chair: Fu-Kang Wang (National Sun Yat-sen University, Taiwan)

***Compound semi. empower the AI era., Dr. Chuck Huang, WIN Semiconductors Corp.***

***5G/6G Beamforming for mmWave Radar Sensing and Real-Time Vital Sign Monitoring, JackRose Kuo, Solution Architect & Business Development, , TMY Technology, Inc.***

***Cutting-Edge Solutions from Keysight for Biomedical and Imaging Innovations, Say Phommakesone, Keysight Technologies Inc***

***Testbed for the cryogenic microwave measurement in AIST, Dr. Hiroyuki Kayano, AIST***

# TECHNICAL PROGRAM

**Wednesday, April 16 3:50 - 5:30**

- **Radar Signal Processing and Sensor Fusion**

Room: 303e

Chair: Sung-Nien Hsieh (National Taiwan University of Science and Technology, Taiwan)  
Changzhi Li (Texas Tech University, USA)

***Hybrid Signal Processing Framework Based on Second-Order Differentiation and Harmonic Superposition for Non-Contact Heart Rhythm Monitoring***

Syed Doha Uddin, Christopher Williams and Changzhi Li (Texas Tech University, USA)

***Time-Constant Induced Memory Effect for Biomedical Radar Vital Signs Detection***

Syed Doha Uddin, Christopher Williams and Changzhi Li (Texas Tech University, USA)

***Integrated Single-Board 24 GHz FMCW Radar and Infrared Thermal Sensor Fusion for Target Detection***

Hsiu-Che Chang and Chun-Kai Chen (National Taiwan University, Taiwan); Chen-Wei Cho and Shih-An Yu (Terasilic Co. Ltd., Taiwan); Chung-Tse Michael Wu (National Taiwan University, Taiwan)

***Enhancing Muscle Performance and Recovery Assessment with mm-Wave RADAR***

Ramesh Deshpande (Koneru Lakshmaiah Education Foundation & B V Raju Institute of Technology, India); Naresh Kumar B (B V Raju Institute of Technology Narsapur, India); Sanjeev Reddy (BVRIT, India); Jayshree Das (B V Raju Institute of Technology, India); Anirudh Reddy, R (BVRIT, India); Sanjay Dubey (Jawaharlal Nenu Technological University, India)

***Remote Microwave Cardiogram Detection with Interferometric Radar***

Shuqin Dong (City University of Hong Kong, Hong Kong); Changzhan Gu (Shanghai Jiao Tong University, China); Yongxin Guo (City University of Hong Kong, Hong Kong)

# TECHNICAL PROGRAM

Technical Program for Thursday, April 17 2025

From	To	Room 304a	Room 303a	Room 303b	Room 303e
07:30	08:00	Conference Registration			
08:00	09:30	Breakfast/Exhibition			
09:30	10:00	Closing Ceremony			
10:00	10:30	Plenary Talk: Dr. Dominique Schreurs			
10:30	11:00				
11:00	11:30	Plenary Talk: Dr. Koichi Ito			
11:30	12:00				
12:00	13:30	Lunch / Exhibition			
13:30	14:10		Emerging Vital Sign Radar Technology		
14:10	15:10		Journal-Conference Synergy Session		
15:10	15:50	Coffee Break/Exhibition (3rd Floor Hallway)			
16:30	18:30	YP/WIM Event (Kaohsiung Cultural Cruise)			
18:30	20:30	YP/WIM Dinner (Zhangmen Craft Brewery)			

# TECHNICAL PROGRAM

**Tuesday, April 15 9:30 - 10:00 Room: 304a**  
**Closing Ceremony**

**Tuesday, April 15 10:00 - 11:00 Room: 304a**  
**Challenges in Experiment Design for Microwave Biomedical Applications**  
Plenary Talk : Dr. Dominique Schreurs

**Tuesday, April 15 11:00 - 12:00 Room: 304a**  
**RF and Microwave Antenna Technologies for Cancer Treatment**  
Plenary Talk : Dr. Koichi Ito

**Thursday, April 17 1:30 - 2:10**

• **Emerging Vital Sign Radar Technology**

Room: 303a

Chair: Kang-Chun Peng (National Kaohsiung University of Science and Technology, Taiwan)

***Recent Advances in W-Band GaAs MMIC Radar Sensors for High-Precision Vital Sign Monitoring***

Donglin Gao, Shuping Li and Minning Zhu (Rutgers University, USA); Austin Chen (University of California, Santa Cruz, USA); Chung-Tse Michael Wu (National Taiwan University, Taiwan)

***Improving Frequency Sweep Linearity in FMCW Vital Sign Radar Using Frequency Locking***

Kang-Chun Peng (National Kaohsiung University of Science and Technology, Taiwan); Nien-Hsuan Chung and Tzyy-Sheng Jason Horng (National Sun Yat-sen University, Taiwan)

**Thursday, April 17 2:10 - 3:10**

• **Journal-Conference Synergy Session**

Room: 303a

***Safeguarding Humans From Indoor Wireless Powering via Radar Detection, Pouya Mehrjoueresht***

***Gait Symmetry Analysis With FMCW MIMO Radar, Ignacio E. López-Delgado***

***Robust Cardiac Timing Detection Technique With Vectors Analytic Demodulation in Doppler Cardiogram Sensing, Shuqin Dong***

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- mmWave CW Radar Testbed



Read more :  
[Use Case] Non-contact Vital Sign Detection



## mmWave Radar-Driven Child Presence Detection (CPD) Technology

- Radar Architecture: TDM-MIMO FMCW
- Frequency Band: 60 - 64 GHz
- Effective Bandwidth: 4 GHz wideband for high range and velocity resolution
- Antenna Configuration: 3Tx × 4Rx antennas, forming 12 virtual channels



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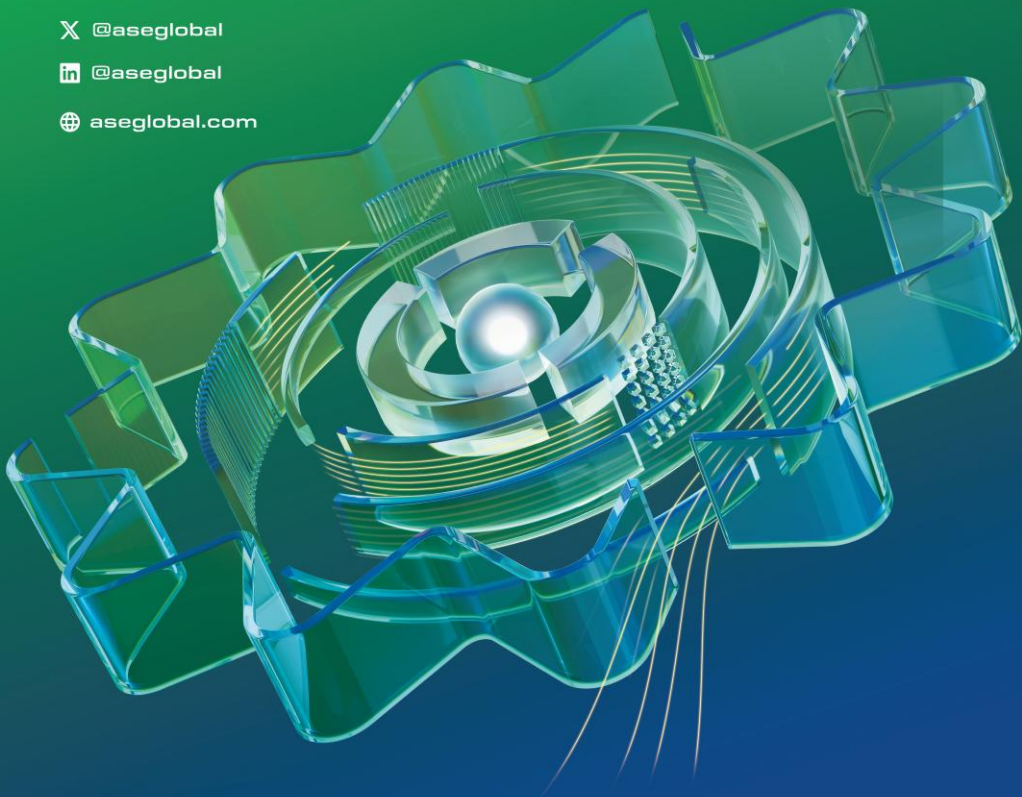
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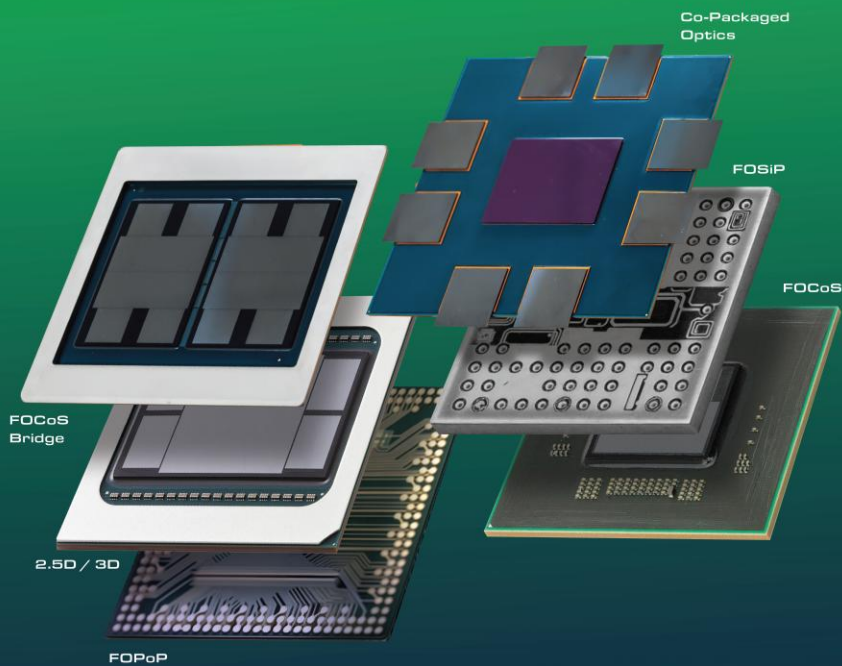
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