



Dear Esteemed Colleagues and Participants,

On behalf of the organizing committee, it is my distinct honor and immense pleasure to extend the warmest of welcomes to all of you to the **2025 Taiwan THz Summer Workshop**. We are delighted to host you here at the vibrant campus of National Yang Ming Chiao Tung University in Hsinchu, Taiwan, from June 26th to 28th, 2025.

This workshop continues a proud tradition that began in 2023 at National Tsing Hua University. The fact that this marks our fifth gathering is a powerful testament to the rapidly growing interest and dynamism within the terahertz community in Taiwan. Our core mission for this event is to create a fertile ground for profound discussion and to spark collaboration. We firmly believe that by bringing together brilliant minds from across the nation and around the globe, we can foster the national and international partnerships essential for pushing the frontiers of terahertz science and technology.

Over the next three days, we will delve into the latest developments and chart future directions in our field. The program is rich with cutting-edge research, encompassing both experimental and theoretical approaches related to terahertz devices, spectroscopy, imaging, ultrafast phenomena, and communications. Reflecting the truly interdisciplinary nature of our work, the workshop will also explore pivotal applications that span biology, chemistry, physics, material science, and electrical engineering. This workshop thrives on your participation. I wholeheartedly encourage each of you—whether you are a academic researcher, an industry expert, or a promising student—to actively engage. Please ask challenging questions, share your unique perspectives, and seek out new collaborations that could ignite the next great idea.

An event of this scale would not be possible without the generous support of our sponsors. We extend our deepest gratitude to the university groups, national labs, and industry partners who have invested in the success of our community. Their commitment is instrumental in making this workshop a reality.

We are delighted to host you in Hsinchu, a city renowned for its spirit of innovation. It is our sincere hope that the connections you make and the ideas you explore here will inspire you long after our time together concludes. Thank you for your valuable contribution to this event. We look forward to a stimulating and memorable workshop.

Warmly,

Shang-Hua Yang, Conference Chair



Organizing Committee

Title	Name	Affiliation
Conference Chair	Shang-Hua Yang	NTHU, Taiwan
Conference Co-Chair	Chih-Wei Luo	NYCU, Taiwan
	Chien-Nan Kuo	NYCU, Taiwan
	Chun-Hsing Li	NTU, Taiwan
Organizing Committee Member	Chien-Ming Tu	NYCU, Taiwan
	Hsin-Yu Yao	CCU, Taiwan
	Rayko Ivanov Stantchev	NSYSU, Taiwan

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Conference Program – June 26–27, 2025

Thursday, June 26th 2025

Time	Session/ Speaker
0800–0820	Arrival & Registration
0820–0830	Opening Remarks
THz photonics I	
Chair: Shang-Hua Yang	
0830–0915	Th1-1 (Plenary) Willie Padilla / Duke University
0915–1000	Th1-2 (Plenary) Joo-Hiuk Son / University of Seoul
1000–1020	Coffee Break
THz photonics II	
Chair: Rayko Ivanov Stantchev	
1020–1050	Th2-1 Shang-Hua Yang / National Tsing Hua University
1050–1120	Th2-2 Bumki Min / Korea Advanced Institute of Science & Technology
1120–1150	Th2-3 Chia-Yi Huang / Tunghai University
1150–1220	Th2-4 Kosuke Murate / Nagoya University
1220–1330	Lunch
1330–1400	Poster Session (Hallway)
Vacuum Electronics	
Chair: Chih-Wei Luo	
1430–1500	Th3-1 Tsun-Hsu Chang / National Tsing Hua University
1500–1530	Th3-2 Ming-Chang Chou / National Synchrotron Radiation Research Center
1530–1600	Th3-3 Yu-Hsiang Cheng/ National Taiwan University
1600–1620	Coffee Break
Phenomena	
Chair: Yu-Hsiang Cheng	
1620–1650	Th4-1 Chih-Wei Luo / National Yang Ming Chiao Tung University
1650–1720	Th4-2 Hironori Ito / University of Yamanashi
1720–1750	Th4-3 Chien-Ming Tu / National Yang Ming Chiao Tung University
1750–1820	Th4-4 Sheng-Kwang Hwang/ National Cheng Kung University
1820–2030	Conference Banquet



Conference Program – June 26–27, 2025

Friday, June 27th 2025

Time	Session/ Speaker
0800–0820	Arrival & Registration
0820–0830	Opening Remarks
THz Electronics & Communications I	
Chair: Chia-Yi Yeh	
0830–0915	Fr1-1 (Plenary) Jong-Shinn Wu / Taiwan Space Agency
0915–1000	Fr1-2 (Plenary) Minoru Fujishima / Hiroshima University
1000–1020	Coffee Break
THz Electronics & Communications II	
Chair: Hsin-Yu Yao	
1020–1105	Fr2-1 (Plenary) Tzyy-sheng Horng/ National Sun Yat-sen University
1105–1135	Fr2-2 Chun-Hsing Li/ National Taiwan University
1135–1205	Fr2-3 Zuo-Min Tsai/ National Yang Ming Chiao Tung University
1205–1330	Lunch
THz Sensing, Imaging & Communications	
Chair: Rayko Ivanov Stantchev	
1330–1400	Fr3-1 Chia-Yi Yeh/ National Taiwan University
1400–1430	Fr3-2 Hsin-Yu Yao / National Chung Cheng University
1430–1500	Fr3-3 Rayko Ivanov Stantchev/ National Sun Yat-sen University
1500–1510	Closing Remarks
1510–2030	Conference Excursion



Conference Program

Day 1(Thu / June 26, 2025)

Time	Session
08:30-09:15	THz photonics I
09:15-10:00	
10:00-10:20	Coffee Break
10:20-10:50	
10:50-11:20	THz photonics II
11:20-11:50	
11:50-12:20	
12:20-13:30	Lunch
13:30-14:30	Poster Session
14:30-15:00	
15:00-15:30	Vacuum Electronics
15:30-16:00	
16:00-16:20	Coffee Break
16:20-16:50	
16:50-17:20	Phenomena
17:20-17:50	
17:50-18:20	
18:20-20:30	Conference Banquet

Day 2 (Fri / June 27, 2025)

Time	Session
08:30-09:15	THz Electronics & Communications I
09:15-10:00	
10:00-10:20	Coffee Break
10:20-11:05	
11:05-11:35	THz Electronics & Communications II
11:35-12:05	
12:05-13:30	Lunch
13:30-14:00	
14:00-14:30	THz Sensing, Imaging & Communications
14:30-15:00	
15:00-15:10	Closing Remarks
15:10-20:30	Conference Excursion



Presentation Guidelines

Oral Presentation

Please arrive at the session meeting rooms 15 minutes earlier and reconfirm your presentation slides with workshop staffs. Workshop staffs will stay in session meeting rooms to provide relevant assistance accordingly. **All presentations must be presented in English.**

1. In every presentation, we will hold up a sign remind you that you have one more minute to enter the Q&A session. Once the Q&A session ends (5 mins later), we will remind you that time is up.
2. The presenter must load the presentation file onto the session room computer before the beginning of the session. In general, it is NOT suggested to connect your own computer to the projector in the session room.

Poster Presentation

Presenters should arrive **15 minutes** earlier to set up their posters. The poster size is **A0 format (Width 84.1cm x Height 118.9cm)**.

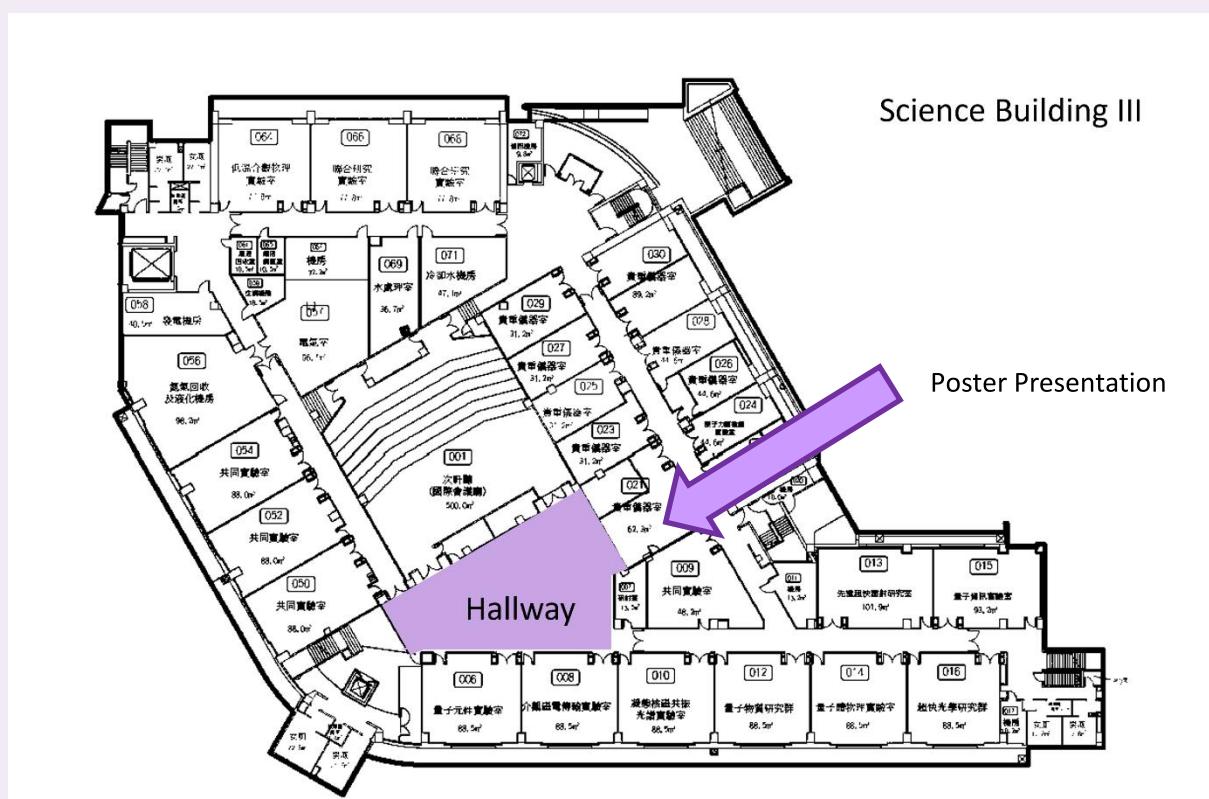
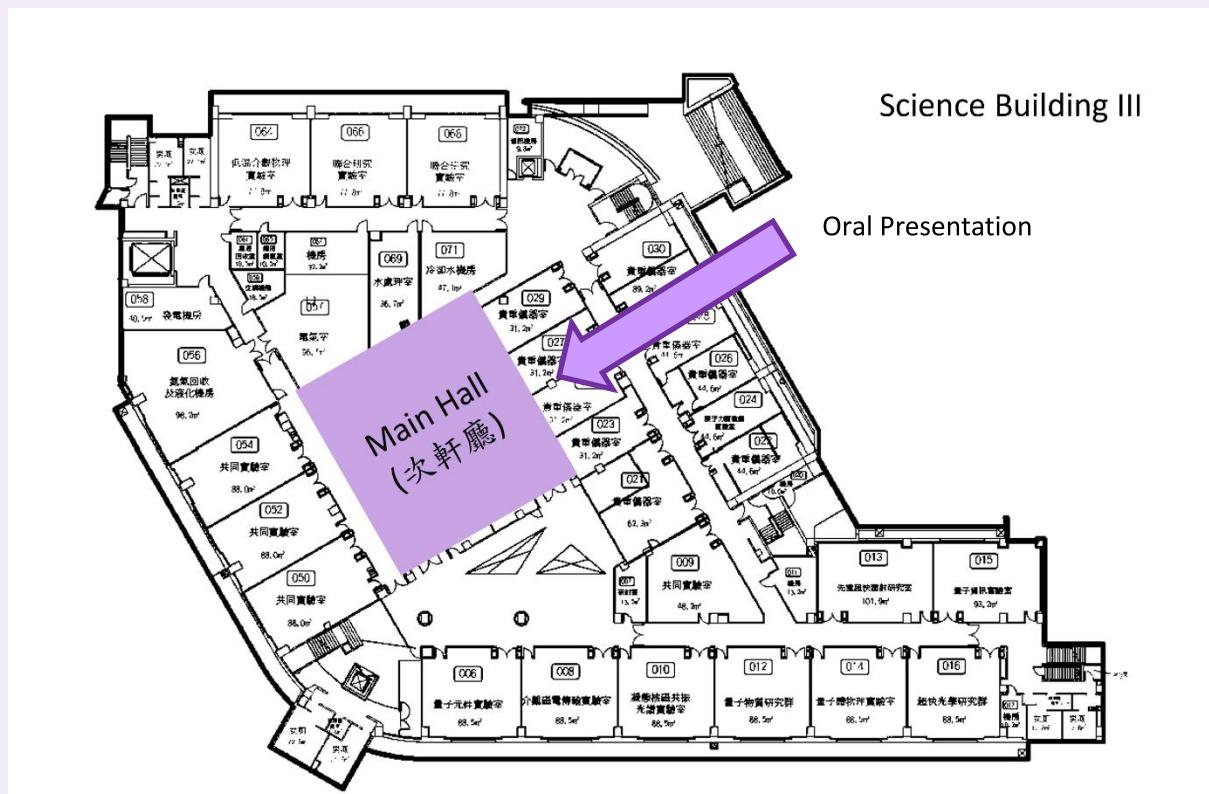
Presenters must be around their bulletin boards to make their presentations and answer questions during the poster sessions. Presenters who wish to keep their posters should remove them after the presentation. Any remaining posters will be removed by workshop staffs when the session ends.



Workshop Venue

The Taiwan THz Summer Workshop 2025 will be held at National Yang Ming Chiao Tung University, with the main venue being Main Hall (次軒廳). You can enter from the main gate of National Yang Ming Chiao Tung University (Guangfu Campus) and walk straight along the main road for about 3 to 5 minutes. After passing the central lawn area, you will see the Science Building III (Basic Science Teaching and Research Building) on your right. Enter the building and go down to the first basement level (B1) to reach the Main Hall (次軒廳).







Social Program

Excursion

This two-day journey begins at the Shihmen Reservoir in Taoyuan, where we'll enjoy a delicious multi-course feast featuring fresh fish by the water's edge. As night falls, the colorful lights reflecting on the reservoir create a stunning evening view. Later in the evening, we'll head up into the mountains to spend the night at a cozy farmhouse guesthouse nestled in the serene landscape of Lala mountain. The next morning, we'll take a peaceful stroll along the forest trails of Lalashan Giant Trees park, soaking in the morning light, the lush greenery, and the refreshing phytoncides of the forest air. In the afternoon, we'll visit Balung and Jiaobanshan Residence to admire the dramatic cliffside views of the Northern Cross-Island Highway and enjoy breathtaking panoramas of the reservoir from above. On our way back, we'll stop by Cihu Mausoleum—a site rich in history—to reflect on a century of war, political shifts, and historical change. We'll wrap up our journey at Daxi Old Street, where beautifully preserved buildings from the Japanese colonial period line the streets. Here, we'll also indulge in local Taiwanese delicacies such as sticky rice sausage, savory rice pudding, tofu pudding, and marinated dried tofu—a perfect ending to a memorable trip.





THz photonics I
(08:30-10:00)

Chair: Shang-Hua Yang

**08:30 Th1-1
(Plenary)**

An Agentic Approach to Metasurface Inverse Design

Willie J. Padilla,^{1*} Dary Lu,¹ Jordan M. Malof²

¹Department of Electrical and Computer Engineering, Duke University, USA;

²Department of Electrical Engineering and Computer Science, University of Missouri, USA

**09:15 Th1-2
(Plenary)**

Terahertz Radiation for Cancer Therapy

Joo-Hiuk Son^{1,2}

¹Department of Physics, University of Seoul, Seoul 02504, Republic of Korea;

²iNexus, Inc., Gyeonggi-do 13486, Republic of Korea

THz photonics II
(10:20-12:20)

Chair: Rayko Ivanov Stantchev

10:20 Th2-1

Terahertz Hybrid Neural Network Imaging

Shang-Hua Yang^{1,2}

¹Department of Electrical Engineering, National Tsing Hua University

Hsinchu, Taiwan ²Terahertz Optics and Photonics Center, National Tsing Hua University Hsinchu, Taiwan

10:50 Th2-2

From Momentum-Gap Emission Control to Irreversible Rabi Dynamics: New Frontiers in Photonic Temporal Crystals

Bumki Min^{1*}

¹Department of Physics, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

11:20 Th2-3

Transmissive Terahertz Metamaterials with High-Aspect-Ratio Nano-Profiles for Sensitive Aqueous Detection

Chia-Yi Huang^{1*} and Harry Miyosi Silalahi¹

¹Department of Applied Physics, Tunghai University, Taichung 407, Taiwan, ROC

11:50 Th2-4

Progress and Applications in Terahertz Parametric Detection

K. Murata,¹ S. Mine,^{1,2} F. Blanchard,³ K. Kawase¹

¹Department of Electronics, Nagoya University, Furocho, Chikusa, Nagoya, 464-8603, Japan

²RIKEN, 519-1399 Aramakiaoba, Aoba, Sendai, 980-0845, Japan

³École de technologie supérieure (ÉTS), Montréal, QC, H3C 1K3 Canada

Vacuum Electronics
(14:30-16:00)

Chair: Chih-Wei Luo

14:30 Th3-1

Tunable Complex Permittivity and Permeability of Silver/Epoxy Nanocomposites from Microwave to Terahertz Frequencies

Tsun-Hsu Chang, Bo-Wei Tseng,¹ and Hua-Yan Chen

Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

15:00 Th3-2

Development of Superradiant THz Free Electron Lasers at NSRRC

M.C. Chou[#], A.P. Lee, W.Y. Chiang, H.P. Hsueh, Y.C. Chang and W.K. Lau

National Synchrotron Radiation Research Center, Hsinchu, Taiwan

15:30 Th3-3

300 GHz Antenna Designs and Measurements

Yu-Hsiang Cheng

Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan



Phenomena
(16:20-18:20)

Chair: Yu-Hsiang Cheng

16:20 Th4-1	Three-dimensional THz phonon and collective mode dynamics in CDW materials Chih-Wei Luo, ^{1,2,3*} Nguyen Nhat Quyen, ¹ China-Nung Kuo, ⁴ Chin Shan Lue ⁴ ¹ Department of Electrophysics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; ² Institute of Physics and Center for Emergent Functional Matter Science, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; ³ National Synchrotron Radiation Research Center, Hsinchu, Taiwan; ⁴ Department of Physics, National Cheng Kung University, Tainan 70101, Taiwan
16:50 Th4-2	Modulation of carrier-envelope phase of terahertz pulses and real-time monitoring without electro-optic sampling Hironori Ito ¹ , Hao-Keng Wei ² , Chih-Wei Luo ² , Satoshi Honma ¹ ¹ Integrated Graduate School of Medicine, Engineering, and Agricultural Sciences, University of Yamanashi, Japan ² Department of Electrophysics, Institute of Physics and Center for Emergent Functional Matter Science, National Yang Ming Chiao Tung University, Taiwan
17:20 Th4-3	Photon-drag-induced terahertz emission from EuCd₂Sb₂ single crystals Xin-Yun Chang ¹ , Sheng-Kai Huang ¹ , Yi-Cheng Cheng ¹ , Jiun-Haw Chu ² , Cheng-Chien Chen ³ , Jiunn-Yuan Lin ⁴ , Chih-Wei Luo ¹ , and Chien-Ming Tu ^{1,5,6*} ¹ Department of Electrophysics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; ² Department of Physics, University of Washington, Seattle, Washington, USA; ³ Department of Physics, University of Alabama at Birmingham, Birmingham, Alabama, USA; ⁴ Institute of Physics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; ⁵ Undergraduate Degree Program of Systems Engineering and Technology, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; ⁶ Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan
17:50 Th4-4	All-Optical, 100-Hz-Linewidth, Broadband-Tunable Terahertz-Wave Generation Using Two Mutually Injected Semiconductor Lasers Chin-Hao Tseng ¹ , Yung-Jr Hung ² , and Sheng-Kwang Hwang ^{1,3} ¹ Department of Photonics, National Cheng Kung University, Tainan, Taiwan ² Department of Photonics, National Sun Yat-Sen University, Kaohsiung, Taiwan ³ Meta-nanoPhotonics Center, National Cheng Kung University, Tainan, Taiwan

**THz Electronics & Communications I**

(08:30-10:00)

Chair: Chia-Yi Yeh

08:30 Fr1-1**(Plenary)****Overview of Space Development at Taiwan Space Agency**Jong-Shinn Wu¹¹Taiwan Space Agency, Hsinchu, Taiwan**09:15 Fr1-2****(Plenary)****CMOS Transceivers and Scalable Phased Arrays for 300-GHz Wireless****Communications**

Minoru Fujishima

Graduate School of Advanced Science and Engineering, Hiroshima University,
Hiroshima, Japan**THz Electronics & Communications II**

(10:20-12:05)

Chair: Hsin-Yu Yao

10:20 Fr2-1**(Plenary)****Sub-THz Hartley Receiver IRR Characterization via Doppler Radar**

Tzyy-Sheng Horng

Department of Electrical Engineering, National Sun Yat-sen University,
Taiwan**11:05 Fr2-2****THz Electronics for Sensing and Communication Applications**Chun-Hsing Li,¹ Yi-Fan Tseng¹¹Department of Electrical Engineering, National Taiwan University, Taipei,
Taiwan**11:35 Fr2-3****100 GHz 8T 8R 4D MIMO Radar with Heterogeneous Integration
Technique**Zuo-Min Tsai¹, T.S. Horng², Shuo-Hung Hsu³, Da-Chiang Chang⁴,Ta-Yeh Lin⁴, Yin-Cheng Chang⁴, Chaoping Hsieh⁴¹Institute of Communications Engineering, National Yang Ming Chiao Tung
University, Taiwan²Department of Electrical Engineering, National Sun Yat-sen University,
Taiwan³Department of Electrical Engineering, National Tsing Hua University, Taiwan⁴Taiwan Semiconductor Research Institute, Taiwan

**THz Sensing, Imaging & Communications**

(13:30-15:00)

Chair: Rayko Ivanov Stantchev

13:30 Fr3-1**Absolute Security with Multiple-Slit Diffraction in Terahertz Links**

Chia-Yi Yeh^{1,2,3}, Yaseman Shiri¹, Zhaoji Fang¹, Hichem Guerboukha^{1,4}, Rabi Shrestha¹, Muriel M' edard², John Malowicki⁵, David Overrocker⁶, Paul Fanelli⁶, Ngwe Thawdar⁵, Daniel M. Mittleman¹

¹School of Engineering, Brown University, Providence, RI, 02912 USA

²Repartement of Electrical Engineering and Computer Scienc, MIT, Cambridge, MA, 02139 USA

³Graduate Institute of Communication Engineering, National Taiwan University, Taipei, 106032, Taiwan

⁴Department of Electrical and Computer Engineering, University of Missouri-Kansas City, Kansas City, 64110, MO, USA

⁵U.S Air Force Research Laboratory, Rome, 13441, NY, USA

⁶PAR Government Systems, Rome, 13441, NY, USA

14:00 Fr3-2**Ultra-sensitive refractive index sensor based on ultrathin grating metasurfaces**

Hsin-Yu Yao^{1*} and Ya-Ting Kang¹

¹Department of Physics, National Chung Cheng University, Chiayi 621301, Taiwan

14:30 Fr3-3**Terahertz imaging with compressed sensing: methods, past research and future outlook**

Rayko Ivanov Stantchev^{1,2}

¹Department of Physics, National Sun Yat-sen University, Kaohisung, Taiwan

²Department of Physics, University of Warwick, Coventry, United Kingdom

**Poster**

- P-01 **Enhanced Terahertz Biosensing via Multilayer Dielectric-Metal Metamaterials**
 Harry Miyosi Silalahi¹ and Chia-Yi Huang^{1*}
¹Department of Applied Physics, Tunghai University, Taichung 407, Taiwan, ROC
- P-02 **Calibration and De-embedding Method for Millimeter Wave Free Space Measurement**
 Che Min Wu,¹ Chia-Chin Cheng, Shao-Hsuan Wu², Shang-Hua Yang²
¹Institute of Electronics Engineering National Tsing Hua University, Hsinchu, Taiwan;
²Department of Electrical Engineering National Tsing Hua University, Hsinchu, Taiwan
- P-03 **Nano-composite 3D printing materials for terahertz beam steering**
 Seyed Mostafa Latifi^{1,2}, Po-Jen Yu¹, Shang-Hua Yang^{1,3}
¹Institute of Electronics Engineering National Tsing Hua University, Hsinchu, 30013, Taiwan
²School of Engineering University of Liverpool, Liverpool L69 3BX, United Kingdom
³Department of Electrical Engineering National Tsing Hua University, Hsinchu, 30013, Taiwan
- P-04 **Molecular absorption fingerprint characterization using an ultrathin all-dielectric high-contrast grating metasurface**
 Ya-Ting Kang,¹ and Hsin-Yu Yao^{1*}
¹Department of Physics, National Chung Cheng University, Chiayi 621301, Taiwan
- P-05 **Terahertz Time Domain Hyperspectral Imaging for Rapid and Non-destructive Classification among Ginseng Species**
 Chia-Ming Mai¹, Chih-Ling Kuo², Shao-Hsuan Wu¹, Wen-Tai Li³ and Shang-Hua Yang^{1,2,4*}
¹Institute of Electronic Engineering, National Tsing Hua University, Hsinchu City, Taiwan
²Department of Electrical Engineering, National Tsing Hua University, Hsinchu City, Taiwan
³National Research Institute of Chinese Medicine, Ministry of Health and Welfare, Taipei City, Taiwan
⁴Terahertz Optics and Photonics Center, National Tsing Hua University, Hsinchu City, Taiwan
- P-06 **A Compact D-Band 360° Common-Gate Phase Shifter (CGPS) in 40nm CMOS**
 Zhen Yan^{1**}, Satoshi Tanaka^{1†}, Takeshi Yoshida^{1#}, Minoru Fujishima^{1†}
¹Graduate School of Advanced Science and Engineering, Hiroshima University, Japan
- P-07 **Simultaneous THz and OCT Imaging for Non-Invasive Skin Diagnostics**
 Anam Ishaq¹, Rayko I. Stantchev^{1,2}
¹Department of Physics, National Sun Yat-sen University, Taiwan;
²Department of Physics, University of Warwick, United Kingdom
- P-08 **Thin-Line Shielded Crossover Design for High Isolation and Low Loss**
 Leshan Xu, Satoshi Tanaka, Takeshi Yoshida, Minoru Fujishima
 Graduate School of Advanced Science and Engineering, Hiroshima University, Japan

**Poster**

- P-09 **Discussion on Range of Validity on Applying Tinkham Equation for Conductivity Analysis with Terahertz Spectroscopy**
 Tzu-Chuan Chao¹, Chia-Ming Mai², and Shang-Hua Yang^{1,2,3,*}
¹Department of Electrical Engineering, National Tsing Hua University, Hsinchu City, Taiwan
²Institute of Electronic Engineering, National Tsing Hua University, Hsinchu City, Taiwan
³Terahertz Optics and Photonics Center, National Tsing Hua University, Hsinchu City, Taiwan
- P-10 **Demonstration of a Highspeed Terahertz Single-Pixel Compressed Sensing Imaging System**
 Zhi-Hwa Huang¹, Chia-Ming Mai², Yuan-Hao Huang^{3,4} and Shang-Hua Yang^{2,3,5*}
¹Department of Physics, National Tsing Hua University, Hsinchu City, Taiwan
²Institute of Electronic Engineering, National Tsing Hua University, Hsinchu City, Taiwan
³Department of Electrical Engineering, National Tsing Hua University, Hsinchu City, Taiwan
⁴Institute of Communication Engineering, National Tsing Hua University, Hsinchu City, Taiwan
⁵Terahertz Optics and Photonics Center, National Tsing Hua University, Hsinchu City, Taiwan
- P-11 **Decoupling Power Layout Technology Achieving Compact Size and Wideband Characteristics**
 Yudai Miyoshi[†], Satoshi Tanaka[†], Takeshi Yoshida[‡], Minoru Fujishima[†]
 Graduate School of Advanced Science and Engineering, Hiroshima University, Japan
- P-12 **A 340-GHz THz Amplifier-Frequency-Multiplier Chain With 360° Phase-Shifting Range and Its Phase Characterization**
 Chun Wang¹, Yi-Fan Tseng², Chun-Hsing Li²
¹Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
²Graduate Institute of Electronics Engineering, National Taiwan University, Taipei, Taiwan
- P-13 **Direct generation of THz optical vortex beams with visible light spatial modulation techniques**
 Satyam Priyanshu¹, Rayko Ivanov Stantchev^{1,2}
¹Department of Physics, National Sun Yat-sen University, Kaohsiung 80424, Taiwan
²Department of Physics, University of Warwick, Coventry, United Kingdom
- P-14 **Analytical expression for enhanced focusing of short focal-length spherical lenses**
 Tasaur Hussain¹, Seyed M. Latifi^{2,3}, Shang-Hua Yang^{2,4}, Rayko I. Stantchev^{1,5}
¹Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan
²Institute of Electronic Engineering, National Tsing Hua University, Hsinchu, Taiwan
³School of Engineering, University of Liverpool, Liverpool, United Kingdom
⁴Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan
⁵Department of Physics, University of Warwick, United Kingdom

**Poster**

- P-15 **Ion-Implanted GeSn Plasmonic Terahertz Photoconductive Antenna Detector**

Zi-Xiang Liao¹, Pin-Han Lee¹, Shang-Hua Yang¹

¹Institute of Electronic Engineering, National Tsing Hua University, Hsinchu, Taiwan

- P-16 **Percolative Behaviour in Complex Permittivity and Permeability of Silver/Epoxy Nanocomposite at Terahertz by Time-domain Spectroscopy**

Hua-Yan Chen¹, Bo-Wei Tseng¹, Po-Hsiang Chuang², Chan-Shan Yang², Tsun-Hsu Chang¹

¹Department of Physics, National Tsing Hua University, 30013, Hsinchu, Taiwan

²Institute and Undergraduate Program of Electro-Optical Engineering, National Taiwan Normal University, 11677, Taipei, Taiwan

- P-17 **Dual-Resonance Metasurface Sticker for Broadband Terahertz Fruit Ripeness Sensing**

Yu-Jen Lyu¹, Chia-Yi Yeh¹

¹Graduate Institute of Communication Engineering, National Taiwan University, Taipei, 106319 Taiwan

- P-18 **Real-time Deep THz Imaging**

Shao-Hsuan Wu,^{1,†} Han-Yu Liang,^{2,†}, Seyed Mostafa Latifi^{1,3} and Shang-Hua Yang^{1,4,5,*}

¹Institute of Electronics Engineering, National Tsing Hua University, Hsinchu, 30013, Taiwan

²College of Semiconductor Research, National Tsing Hua University, Hsinchu, 30013, Taiwan

³School of Engineering, University of Liverpool, Liverpool, L69 7ZL, UK

⁴Department of Electrical Engineering, National Tsing Hua University, Hsinchu, 30013, Taiwan

⁵Terahertz Optics and Photonics Center, National Tsing Hua University, Hsinchu, 30013, Taiwan

- P-19 **Single-input Single-output Terahertz Communication System with Multi-channel Access**

Xuan-Wei Miao¹, Shang-Hua Yang^{1,2}

¹Institute of Electronic Engineering, National Tsing Hua University, Hsinchu, Taiwan

²Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan

- P-20 **Design of a hole-Array Al₂O₃ metasurface applicator for 24 GHz microwave annealing**

Wen-Yang, Hsu* and Hsin-Yu, Yao

Department of Physics, National Chung Cheng University, Chiayi 621301, Taiwan

- P-21 **Design of a few-layers reflective-type optical limiter based on Si-SiO₂ grating mirror and resonance quenching in Si3N4 nanofilm**

Cheng-En, Hsiao^{1*} and Hsin-Yu Yao

¹National Chung Chang University, Taiwan

**Poster**

- P-22 **Effects of Acid Treatment and External Doping on the Optoelectronic Properties of PEDOT:PSS Analyzed by Terahertz Time-Domain Spectroscopy**
 Sin Le Chang¹, Wei Tsung Chuang², and Yu Chueh Hung^{1*}
¹Institute of Photonics Technologies, National Tsing Hua University, Hsinchu 30013, Taiwan;
²National Synchrotron Radiation Research Center (NSRRC), Hsinchu 30076, Taiwan
- P-23 **Plasmonic Terahertz Extremly Large Area Emitter for Intense Terahertz Broadband Generation**
 Yi-Jie Wang¹, Pouya Torkaman¹, Cheng-Siang Le¹and Shang-Hua Yang^{1*}
¹Institute of Electronic Engineering, National Tsing Hua University, 300 Hsinchu, Taiwan
- P-24 **Thin-Film Dielectric Characterization Using Fano Resonance in High Contrast Grating**
 Yi-Wen Lin¹, Hsin-Yu Yao², and Tsun-Hsu Chang¹
¹Department of Physics, National Tsing Hua University, Hsinchu 30010, Taiwan
²Department of Physics, National Chung Cheng University, Chiayi 621301, Taiwan
- P-25 **Comparative study on asymmetric behavior of start-oscillation current in gyrotron with structural nonuniformity**
 Zih-Cian Liou¹, Tien-Fu Yang¹, Chia-Chuan Chang¹, Hsin-Yu Yao², Tsun-Hsu Chang¹
¹Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan
²Department of Electrical Engineering, National Chung Cheng University, Chiayi, Taiwan
- P-26 **Study of Terahertz Emission from EuCd₂Sb₂ Single Crystals**
 Xin Yun Chang^{1*}, Sheng Kai Huang¹, Yi-Cheng Cheng¹, Jiun-Haw Chu², Cheng-Chien Chen³, Jiunn-Yuan Lin⁴, Chih-Wei Luo^{1,5}, Chien-Ming Tu^{1,6,7}
¹Department of Electrophysics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan;
²Department of Physics, University of Washington, Seattle, Washington, USA;
³Department of Physics, University of Alabama at Birmingham, Birmingham, Alabama, USA;
⁴Institute of Physics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan;
⁵National Synchrotron Radiation Research Center, Hsinchu, Taiwan;
⁶Undergraduate Degree Program of Systems Engineering and Technology, National Yang Ming Chiao Tung University, Hsinchu, Taiwan;
⁷Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan



Poster

P-27

An Economic Fresnel Zone Plate for Fast-Prototyping in Millimetre Wave and Terahertz Frequencies

Jo-Yu Huang¹, Chia-Ming Mai², Seyed Mustafa Lafiti^{2,3}, Shang-Hua Yang^{2,4,5}

¹International Bilingual School at Hsinchu-Science-Park, Hsinchu, Taiwan

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