NCKU

ISGN-8
November 9-12, 2025
Tainan, Taiwan

8th International Symposium on Growth of III-Nitrides

November 9-12, 2025 | NCKU, Tainan, Taiwan

Handbook

國立成功大學
National Cheng Kung University
1931

NSTC 國家科學及技術委員會
National Science and Technology Council

NCKU DPS Department of Photonics

國立陽明交通大學電子研究所
Institute of Electronics, National Yang Ming Chiao Tung University

國立臺灣大學光電工程學研究所
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IEEE Photonics Society

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ISGN-8

November 9-12, 2025
NCKU, Taiwan

8th International Symposium on Growth of III-Nitrides (ISGN-8)

The 8th International Symposium on Growth of III-Nitrides (ISGN-8) is a biennial conference rotating among host countries, focusing on advances in the growth of III-nitride bulk crystals, thin films, and nanostructures. Since its inception in 2006 in Sweden, ISGN has been held across Europe, Asia, and the US. ISGN-8, originally planned for 2020 in San Diego, was canceled due to COVID-19. The symposium resumes in 2025 and takes place from **November 9 to November 12, 2025**, at National Cheng Kung University (NCKU) in Tainan, Taiwan.

This year, ISGN-8 comprises 10 parallel sessions and 1 special session:

S1. III-N Bulk Crystal Growth
S2. III-N Epitaxial Growth Techniques
S3. III-N Ternary and Quaternary Alloys
S4. III-N Nanostructures and 2D Materials
S5. III-N Heterostructure Characterization
S6. III-N Defect Control and Surface Effects
S7. III-N Optical and Electrical Properties
S8. III-N Device Modeling and Simulation
S9. III-N Spin-related Phenomena
S10. III-N Devices—FETs, LEDs, and Lasers
Special Session. Ultrawide-bandgap materials and devices

For more information about ISGN-8, please visit:

ISGN-8

Agenda

Day 0 - November 9 (Sunday)

Time/Room	多功能廳 Multifunction Room
18:00-20:30	Networking Meeting (Reception) **(Invitation Only)**

Day 1 – November 10 (Monday)

08:30-17:00	Registration	
Time/Room	**第一演講室** **1st Lecture Room**	
09:00-09:20	ISGN-8 Opening Ceremony	
09:20-10:10	Plenary Session 1: Prof. Zetian Mi Presider: Prof. Ray-Hua Horng 洪瑞華	
10:10-10:20	Coffee Break	
10:20-11:10	Plenary Session 2: Prof. Kei May Lau 劉紀美 Presider: Prof. Ray-Hua Horng 洪瑞華	
11:10-12:00	Plenary Session 3: Prof. Elison Matioli Presider: Prof. Ray-Hua Horng 洪瑞華	
12:00-13:00	**多功能廳 Multifunction Room**	
	Lunch	
	Exhibitor Seminar - Orbray Co., Ltd. The Cutting Edge and Future of Lab-Grown Diamonds	
Time/Room	**第二演講室** **2nd Lecture Room**	**第三演講室** **3rd Lecture Room**
Session	S1. III-N Bulk Crystal Growth S5. III-N Heterostructure Characterization	S4. III-N Nanostructures and 2D Materials S9. III-N Spin-related Phenomena
Presider	Prof. Ming-Chi Mitch Chou 周明奇 Dr. Michał Boćkowski	Prof. Yu-Hsun Chou 周昱薰 Prof. Jesús Zúñiga Pérez
13:00-13:30	Invited Talk- Dr. Michał Boćkowski	Invited Talk- Prof. Jesús Zúñiga Pérez
13:30-13:45	Oral Presentation (0107)	Invited Talk- Dr. Bernard Gil
13:45-14:00	Oral Presentation (0064)	
14:00-14:15	Oral Presentation (0065)	Oral Presentation (0041)
14:15-14:30	Oral Presentation (0087)	Oral Presentation (0028)
14:30-14:45	Oral Presentation (0096)	Oral Presentation (0118)
14:45-15:00	Coffee Break	
Time/Room	**第二演講室** **2nd Lecture Room**	**第三演講室** **3rd Lecture Room**
Session	S1. III-N Bulk Crystal Growth S5. III-N Heterostructure Characterization	S6. III-N Defect Control and Surface Effects
Presider	Prof. Ming-Chi Mitch Chou 周明奇 Dr. Michał Boćkowski	Prof. Hsiang-Chen Wang 王祥辰 Prof. Che-Hao Liao 廖哲浩
15:00-15:15	Oral Presentation (0081)	Invited Talk- Prof. Chris G. Van de Walle
15:15-15:30	Oral Presentation (0018)	
15:30-15:45	Invited Talk- Prof. Frank Bertram	Oral Presentation (0007)
15:45-16:00		Oral Presentation (0029)
16:00-16:15	Oral Presentation (0062)	Oral Presentation (0046)
16:15-16:30	Oral Presentation (0003)	Oral Presentation (0112)
16:30-16:45	Oral Presentation (0048)	Oral Presentation (0085)
16:45-17:00	Oral Presentation (0104)	Oral Presentation (0024)
18:00-20:30	IAC Meeting (Invitation Only)	

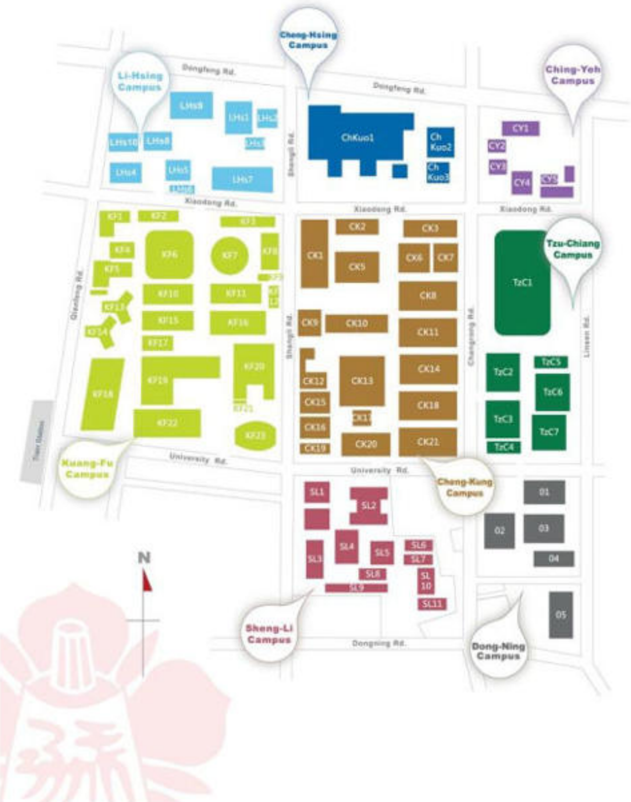
Day 2 – November 11 (Tuesday)

08:00-17:00	Registration		
Time/Room	第一演講室 1st Lecture Room		
08:30-09:20	Plenary Session 4: Prof. Jen-Inn Chyi 綦振瀛 Presider: Prof. Yuh-Renn Wu 吳育任		
09:20-10:10	Plenary Session 5: Dr. Hideki Hirayama 平山 秀樹 Presider: Prof. Yuh-Renn Wu 吳育任		
10:10-10:20	Coffee Break		
10:20-11:10	Plenary Session 6: Prof. James S. Speck Presider: Prof. Yuh-Renn Wu 吳育任		
11:10-12:00	Plenary Session 7: Prof. Debdeep Jena Presider: Prof. Yuh-Renn Wu 吳育任		
12:00-13:00	Lunch @ Multifunction Room 多功能廳		
Time/Room	第二演講室 2nd Lecture Room	第三演講室 3rd Lecture Room	多功能廳 Multifunction Room
Session	S3. III-N Ternary and Quaternary Alloys	S8. III-N Device Modeling and Simulation	
Presider	Prof. Chia-Yen Huang 黃嘉彥 Prof. Mitsuru Funato 船戶 充	Prof. Ya-Ju Lee 李亞儒 Prof. Yoshihiro Kangawa 寒川 義裕	
13:00-13:30	Invited Talk- Prof. Mitsuru Funato	Invited Talk- Prof. Yoshihiro Kangawa	
13:30-13:45	Oral Presentation (0098)	Invited Talk- Dr. Muhammad Ajmal Khan	
13:45-14:00	Oral Presentation (0026)		
14:00-14:15	Oral Presentation (0068)	Oral Presentation (0042)	Posters can be posted
14:15-14:30	Oral Presentation (0092)	Oral Presentation (0110)	
14:30-14:45	Oral Presentation (0109)	Oral Presentation (0119)	
14:45-15:00	Coffee Break		
Time/Room	第二演講室 2nd Lecture Room	第三演講室 3rd Lecture Room	多功能廳 Multifunction Room
Session	S2. III-N Epitaxial Growth Techniques	S7. III-N Optical and Electrical Properties	Refreshments will be served
Presider	Prof. Chun-Kai Wang 王俊凱 Prof. Hideto Miyake 三宅 秀人	Prof. Hsin-Chieh Yu 尤信介 Prof. Chan-Shan Yang 楊承山	
15:00-15:30	Invited Talk- Prof. Hideto Miyake	Invited Talk- Prof. Yong-Hoon Cho	Poster Session
15:30-15:45	Oral Presentation (0108)	Invited Talk- Dr. Sai Charan Vanjari	
15:45-16:00	Oral Presentation (0073)		
16:00-16:15	Oral Presentation (0027)	Oral Presentation (0040)	
16:15-16:30	Oral Presentation (0074)	Oral Presentation (0012)	
16:30-16:45	Oral Presentation (0025)	Oral Presentation (0106)	
16:45-17:00	Oral Presentation (0030)	Oral Presentation (0066)	
17:00-17:15	Oral Presentation (0138)	Oral Presentation (0139)	
18:00-20:30	Banquet @ Far Eastern Grand Ballroom, Shangri-La Far Eastern, Tainan 台南遠東香格里拉 遠東宴會廳		

Day 3 – November 12 (Wednesday)		
08:00-09:15	Registration	
Time/Room	**第一演講室** **1st Lecture Room**	
08:25-09:15	**Plenary Session 8: Prof. Xiuling Li** Presider: Prof. Wei-Chih Lai 賴韋志	
Time/Room	**第二演講室** **2nd Lecture Room**	**第三演講室** **3rd Lecture Room**
09:15-11:00	Refreshments will be arranged in parallel	
Session	Special Session. Ultrawide-bandgap materials and devices	S10. III-N Devices—FETs, LEDs, and Lasers
Presider	Prof. Hsin-Ying Lee 李欣縈 Prof. Sheng-Po Chang 張勝博	Prof. Zhi-Ting Ye 葉志庭 Prof. Tetsuya Takeuchi 竹內 哲也
09:15-09:45	**Invited Talk- Prof. Masataka Higashiwaki**	**Invited Talk- Prof. Tetsuya Takeuchi**
09:45-10:00	**Invited Talk-** **Prof. Okhyun Nam**	Oral Presentation (0088)
10:00-10:15		Oral Presentation (0020)
10:15-10:30	Oral Presentation (0032)	Oral Presentation (0089)
10:30-10:45	Oral Presentation (0063)	Oral Presentation (0061)
10:45-11:00	Oral Presentation (0072)	Oral Presentation (0117)
11:00-11:15	Oral Presentation (0039)	Oral Presentation (0079)
11:15-11:30	Oral Presentation (0058)	Oral Presentation (0137)
Time/Room	**第一演講室** **1st Lecture Room**	
11:35-12:00	ISGN-8 Closing and Iwińska Award Ceremony	
12:00	Lunch	
12:30-17:10	Free Tainan City Tour Limited to 35 participants (pre-registered online participants only).	

ISGN-8 Map

國立成功大學
National Cheng Kung University

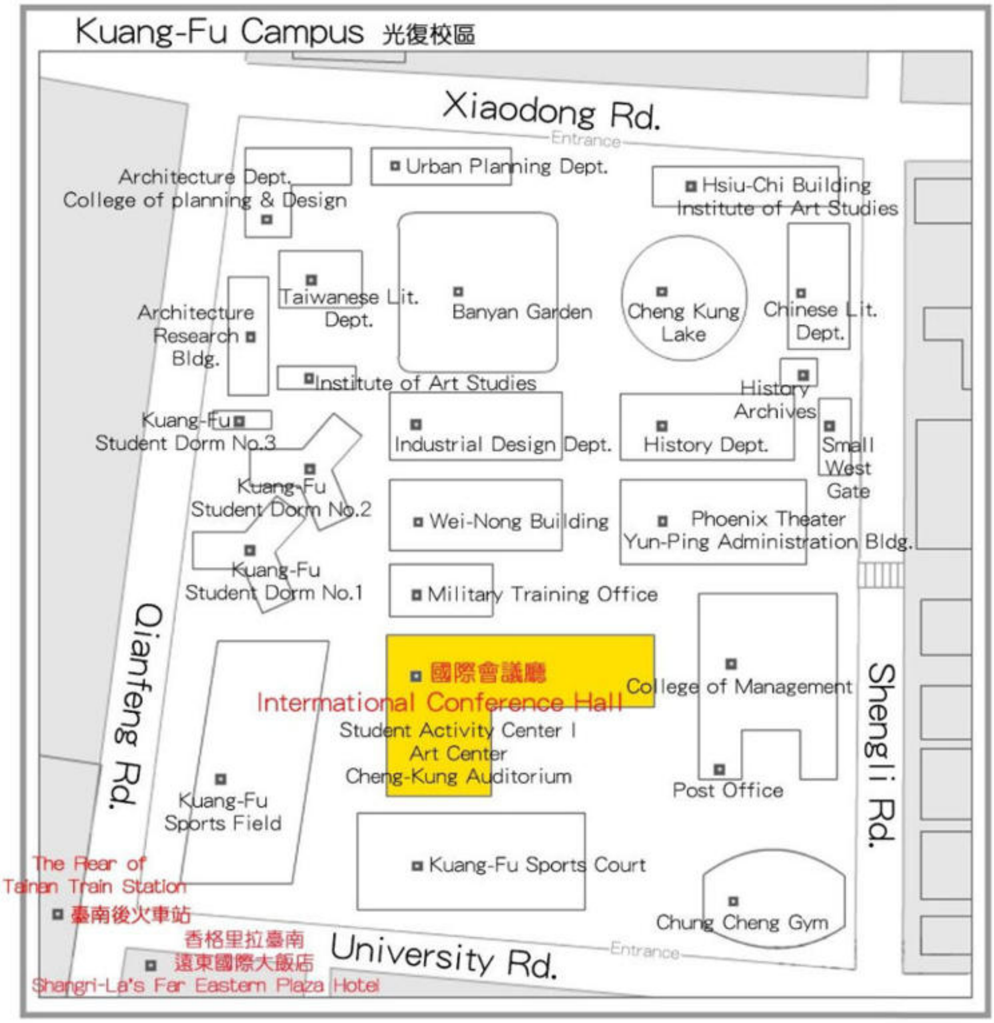


National Cheng Kung University Campus Map

01	Aeronautical & Astronautical Eng. Dept.
SL1	Alumni Association Center
KF1	Architecture Dept.
02	Center for Micro/Nano Science & Technology
CK14	Chemistry Dept.
TzC2	Chemical Eng. Dept.
KF7	Chinese Lit. Dept.
CK8	Civil Eng. Dept.
ChKuo2	College of Bioscience & Biotech.
TzC7	College of Eng.
TzC3	College of Eng. & Computer Science
KF20	College of Management
ChKuo1	College of Medicine
KF1	College of Planning & Design
CK12	College of Sciences
LHs5	College of Social Sciences
KF3	College of Liberal Arts
CK18	Computer Science & Info. Eng. Dept.
CK15	Earth Sciences Dept.
TzC3	Electrical Eng. Dept.
CK21	Eng. Science Dept.
CK6	Environmental Eng. Dept.
CK17	Ge-Chi Hall
CK11	Geomatics Dept.
KF11	History Dept.
CK3	Hydraulics & Ocean Eng. Dept.
KF10	Industrial Design Dept.
KF5	Institute of Art Studies
CK2	
CK11	Materials Science & Eng. Dept.
CK10	Mathematics Dept.
TzC6	Mechanical Eng. Dept.
LHs1	Medicine & Nursing Dept.
LHs3	Mental Health Center
CK1	
ChKuo1	Nursing Dept.
ChKuo3	Occupational Therapy Dept.
ChKuo3	Physical Therapy Dept.
CK16	Physics Bldg. No.2
CK13	Physics Dept.
LHs4	R&D Foundation
CK14	Resources Eng. Dept.
TzC7	Systems & Naval Mechatronic Eng. Dept.
KF4	
ChKuo2	University Center for Bioscience & Biotech.
KF2	Urban Planning Dept.
KF5	Architecture Research Bldg.
TzC4	Chi Mei Building
CK7	Geotechnical Eng. Bldg.
KF3	Hsiu-Chi Building
CK12	Info. Tech. Bldg.
TzC5	Instrumentation Equipments Bldg.
CK5	Main Library
ChKuo2	Medical Lab. Science & Biotech. Bldg.
CK19	Multi-Purpose Bldg.
CK12	Physics & Chemistry Bldg.
LHs4	Public Health Bldg.
02	Science & Tech. Bldg.
SL2	Students' Reading Hall
LHs2	The Uni President Health Research Building
KF15	Wei-Nong Building
LHs10	Institute of Archaeology
ChKuo1	NCKU Hospital
LHs7	NCKU Hospital Bldg. No.2
KF17	Military Training Office
KF16	Yun-Ping Administration Bldg.
KF19	Art Center
ChKuo1	Cheng-Hsing Auditorium
KF19	Cheng-Kung Auditorium
CK13	Ge-Chi Auditorium
KF9	History Archives
KF19	International Conference Hall
LHs6	Magic School of Green Technology
KF19	Student Activity Center I
SL8	Student Activity Center II
LHs8	Taiwanese Lit. Dept.
LHs9	Life Sciences Dept.
KF6	Banyan Garden
KF8	Cheng Kung Lake
CK20	NCKU Museum
KF16	Phoenix Theater
KF12	Small West Gate
SL1	Zenda Suites
KF23	Chung Cheng Gym
KF22	Kuang-Fu Sports Court
KF18	Kuang-Fu Sports Field
SL3	Swimming Pool
TzC1	Tzu-Chiang Sports Field
03	Aeronautical & Astronautical Eng. Dormitory
CY4	Ching-Yeh Student Dorm No.1
CY3	Ching-Yeh Student Dorm No.2
CY2	Ching-Yeh Student Dorm No.3
KF14	Kuang-Fu Student Dorm No.1
KF13	Kuang-Fu Student Dorm No.2
CY5	Medical Doctor Dormitory
05	Scholar Dormitory
SL9	Sheng-Li Student Dorm No.1
SL7	Sheng-Li Student Dorm No.2
SL6	Sheng-Li Student Dorm No.3
SL5	Sheng-Li Student Dorm No.5
SL4	Sheng-Li Student Dorm No.6
SL10	Sheng-Li Student Dorm No.8
SL11	Sheng-Li Student Dorm No.9
04	Single Faculty Housing
CY1	Single Faculty Housing
CK9	Hsin Yuan
CK20	Mail Room
KF21	Post Office

- ■ Centers & Dept.
- ■ Buildings
- ■ Hospital
- ■ Administrations
- ■ Auditorium
- ■ Scenic Spots
- ■ Sports
- ■ Dorms & Lodgings
- ■ Others

ISGN-8 Map


Kuang-Fu Campus 光復校區
Xiaodong Rd.
Entrance
Urban Planning Dept.
Hsiu-Chi Building
Institute of Art Studies
Architecture Dept.
College of planning & Design
Taiwanese Lit. Dept.
Banyan Garden
Cheng Kung Lake
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Kuang-Fu Student Dorm No.2
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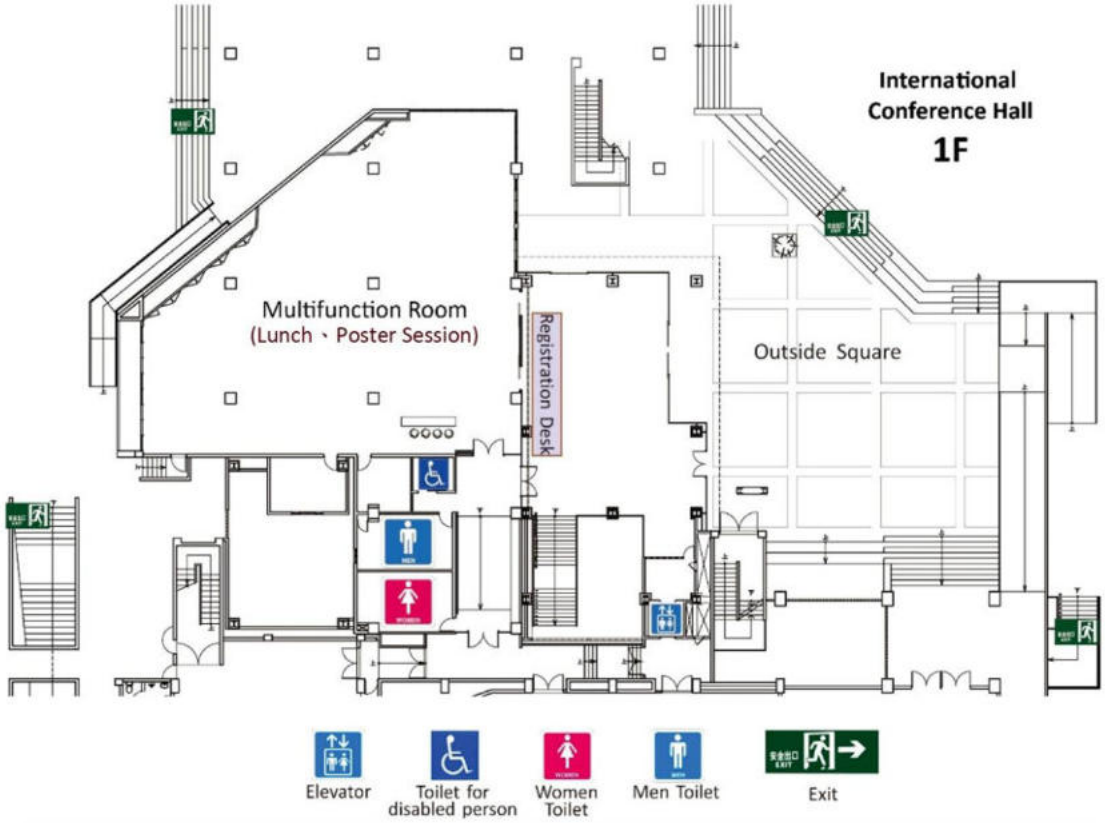
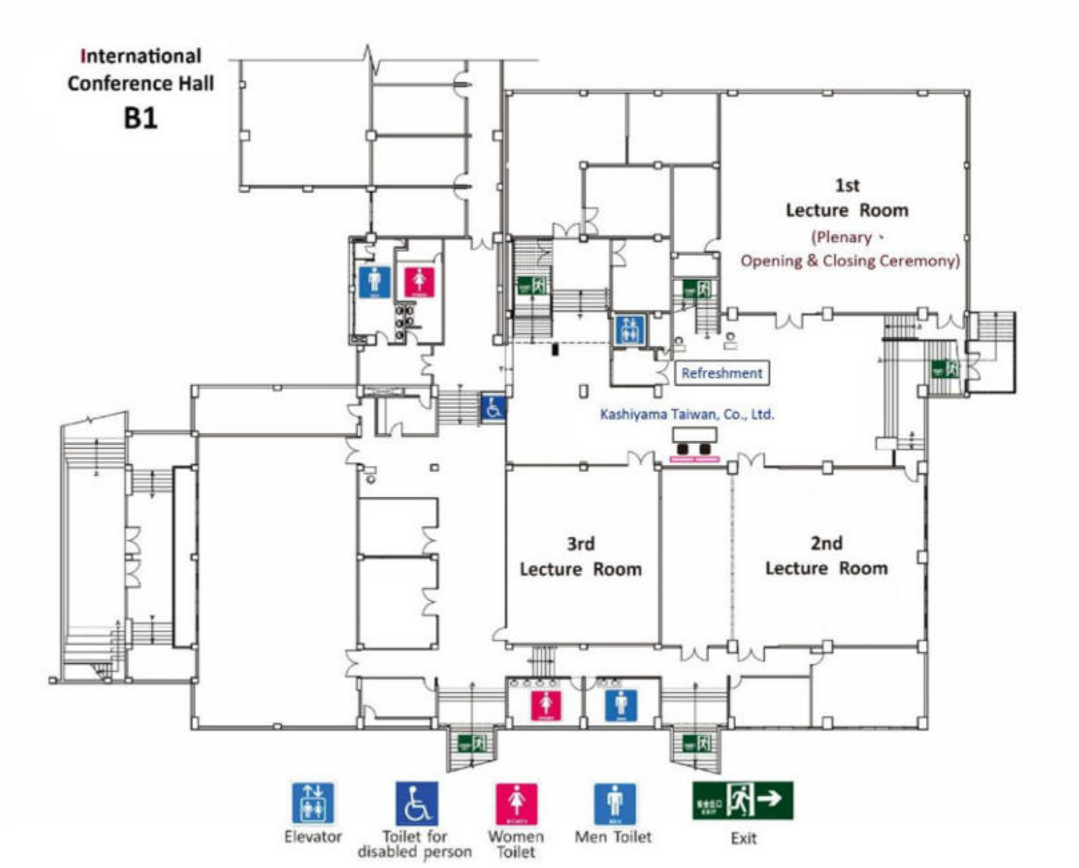
Kuang-Fu Student Dorm No.1
Military Training Office
Qianfeng Rd.
國際會議廳
International Conference Hall
College of Management
Student Activity Center I
Art Center
Cheng-Kung Auditorium
Post Office
Shengli Rd.
Kuang-Fu Sports Field
Kuang-Fu Sports Court
The Rear of Tainan Train Station
臺南後火車站
Chung Cheng Gym
香格里拉臺南
遠東國際大飯店
Shangri-La's Far Eastern Plaza Hotel
University Rd.
Entrance


國際會議廳
International Conference Hall

ISGN-8 Map

International Conference Hall Floor Maps





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Welcome

It is my great honor to welcome all distinguished participants and colleagues from around the world to the **8th International Symposium on Growth of III-Nitrides (ISGN-8)**, hosted at National Cheng Kung University in Tainan, Taiwan. As the Honorary Chair, I wish to express my sincere gratitude for your participation and support of this important event.

III-nitrides have become a cornerstone of modern science and technology. Their remarkable properties have enabled revolutionary advances in optoelectronics, high-power electronics, and emerging quantum devices. From high-efficiency LEDs to next-generation transistors, the impact of III-nitrides continues to transform industries and improve daily life worldwide.

The ISGN series has long provided a unique platform for sharing knowledge, fostering collaboration, and advancing this field. Each edition has showcased significant progress while strengthening ties among researchers and industry leaders. ISGN-8 proudly continues this mission, featuring a broad range of topics—from fundamental crystal growth to novel applications—reflecting the diversity and dynamism of III-nitride research.

As we gather in Tainan, a city known for its cultural heritage and academic vitality, I encourage participants to engage in open exchange, build collaborations, and inspire new ideas. The challenges ahead, such as developing more sustainable growth methods and exploring new device functionalities, require our collective creativity and commitment.

I would like to thank the organizing committee and all contributors for their tireless efforts in making this symposium possible. Their dedication ensures a meaningful and productive experience for all.

With great anticipation, I look forward to the stimulating discussions and achievements that will arise from ISGN-8. May this symposium inspire innovation, strengthen our global community, and create lasting collaborations and friendships.

Prof. Yan-Kuin Su
Honorary Chair, ISGN-8
Academy of Innovative Semiconductor and Sustainable Manufacturing (AISSM)
National Cheng Kung University, Taiwan
November 10, 2025

Welcome

On behalf of the Organizing Committee, it is my great honor and privilege to welcome you all to the 8th International Symposium on Growth of III-Nitrides (ISGN-8). After an unexpected hiatus caused by the global COVID-19 pandemic, it is truly heartening to see our community reunited again in 2025 to continue the proud tradition of this symposium.

Since its inception in 2006 in Linköping, Sweden, ISGN has served as a unique platform for scientists, engineers, and technologists from around the world to exchange the latest insights into the growth of III-nitride crystals, thin films, and nanostructures. Over the years, the symposium has traveled across Europe, Asia, and North America, reflecting the truly international spirit of our field.

This year's ISGN-8 provides an opportunity not only to showcase advances in bulk and epitaxial growth, characterization techniques, and nanostructure fabrication, but also to highlight the increasing importance of III-nitrides in next-generation high-power electronics and optoelectronic devices. By bringing together experts in crystal growth, materials science, and device applications, we aim to foster a deeper understanding of the fundamental science while paving the way for innovative technologies that can transform society.

I am confident that the discussions, presentations, and collaborations initiated here will enrich our collective knowledge and inspire new research directions. Equally important, ISGN-8 will provide a welcoming environment for young researchers and students, who represent the future of our field, to learn, interact, and build lasting professional connections.

I would like to take this opportunity to express my sincere gratitude to the International Advisory Committee (IAC), the Program Committee, our sponsors, and all the contributors who have made this symposium possible. Most importantly, I thank each of you for your participation and for bringing your expertise and enthusiasm to this meeting.

I warmly welcome you to ISGN-8 in Tainan, the ancient capital of Taiwan, and I look forward not only to stimulating scientific exchanges and fruitful collaborations, but also to the opportunity for you to experience the charm of this historic city. May this symposium be both intellectually rewarding and personally memorable for all of us.

With my very best wishes,

Ray-Hua Horng

Prof. Ray-Hua Horng
Conference Chair, ISGN-8
Institute of Electronics (IEE)
National Yang Ming Chiao Tung University, Taiwan
November 10, 2025

Committee

Honorary Chair

Prof. Yan-Kuin Su	Chair Professor Emeritus, AISSM, National Cheng Kung University, Taiwan
國立成功大學 蘇炎坤 名譽講座教授	

Conference Chair

Prof. Ray-Hua Horng	Chair Professor, IEE, National Yang Ming Chiao Tung University, Taiwan
國立陽明交通大學 洪瑞華 講座教授	

General Program Chair

Prof. Wei-Chih Lai	Professor, DPs, National Cheng Kung University, Taiwan
國立成功大學 賴韋志 教授	

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Prof. Cheng-Huang Kuo 郭政煌	National Yang Ming Chiao Tung University, Taiwan
Prof. Chia-Yen Huang 黃嘉彥	National Yang Ming Chiao Tung University, Taiwan
Dr. Chih-Wei Chu 朱治偉	Research Center for Applied Sciences, Academia Sinica, Taiwan
Prof. Chun-Kai Wang 王俊凱	National Kaohsiung University of Science and Technology, Taiwan
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Prof. Hsin-Chieh Yu 尤信介	National Yang Ming Chiao Tung University, Taiwan
Prof. Hsin-Ying Lee 李欣縈	National Cheng Kung University, Taiwan
Prof. Kung-Yen Lee 李坤彥	National Taiwan University, Taiwan
Prof. Ming-Chi Mitch Chou 周明奇	National Cheng Kung University, Taiwan
Prof. Sheng-Po Chang 張勝博	National Kaohsiung University of Science and Technology, Taiwan
Prof. Wu-Ching Chou 周武清	National Yang Ming Chiao Tung University, Taiwan
Prof. Ya-Ju Lee 李亞儒	National Cheng Kung University, Taiwan
Prof. Yu-Hsun Chou 周昱薰	National Cheng Kung University, Taiwan
Prof. Zhi-Ting Ye 葉志庭	National Chung Cheng University, Taiwan
**The above committee member list is sorted in alphabetical order by name.*	

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國立中央大學 綦振瀛 教授	

International Advisory Committee Members

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Prof. Bo Shen 沈波	Peking University, China
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Dr. Sergey Ivanov	Ioffe Institute, Russia
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Prof. Yoichi Kawakami 川上 養一	Kyoto University, Japan
Prof. Zetian Mi	University of Michigan, USA
Prof. Zlatko Sitar	North Carolina State University, USA
**The above committee member list is sorted in alphabetical order by name.*	

Program Committee Chairs

Prof. Jinn-Kong Sheu	Distinguished Professor, DPs, National Cheng Kung University, Taiwan
國立成功大學 許進恭 特聘教授	
Prof. Yuh-Renn Wu	Professor, GIPO, National Taiwan University, Taiwan
國立臺灣大學 吳育任 教授	

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Prof. Zetian Mi	University of Michigan, USA
Prof. Zhi-Ting Ye 葉志庭	National Chung Cheng University, Taiwan
Dr. Zi-Hao Wang 王子豪	National Cheng Kung University, Taiwan
The above committee member list is sorted in alphabetical order by name.	

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S1. III-N Bulk Crystal Growth

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Co-Chair	Dr. James R. Grandusky	Crystal IS, Inc., USA

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Chair	Prof. Cheng-Huang Kuo 郭政煌	National Yang Ming Chiao Tung University, Taiwan
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S4. III-N Nanostructures and 2D Materials

Chair	Prof. Yu-Hsun Chou 周昱薰	National Cheng Kung University, Taiwan
Co-Chair	Prof. Zetian Mi	University of Michigan, USA

S5. III-N Heterostructure Characterization

Chair	Prof. Chan-Shan Yang 楊承山	National Taiwan Normal University, Taiwan
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S6. III-N Defect Control and Surface Effects

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S8. III-N Device Modeling and Simulation

Chair	Prof. Ya-Ju Lee 李亞儒	National Cheng Kung University, Taiwan
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S9. III-N Spin-related Phenomena

Chair	Dr. Yun-Chorng Chang 張允崇	Research Center for Applied Sciences, Academia Sinica, Taiwan
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S10. III-N Devices—FETs, LEDs, and Lasers

Chair	Prof. Zhi-Ting Ye 葉志庭	National Chung Cheng University, Taiwan
Co-Chair	Prof. Maki Kushimoto 久志本 真希	Nagoya University, Japan

Special Session. Ultrawide-bandgap materials and devices

Chair	Prof. Hsin-Ying Lee 李欣縈	National Cheng Kung University, Taiwan
Co-Chair	Dr. Ekaterine Chikoidze	Université Paris-Saclay, France

General Information

About ISGN-8

The 8th International Symposium on Growth of III-Nitrides (ISGN-8) is hosted by:

- National Cheng Kung University, Taiwan
- Department of Photonics, National Cheng Kung University, Taiwan
- Institute of Electronics, National Yang Ming Chiao Tung University, Taiwan
- Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan
- National Science and Technology Council, Taiwan

and technically co-sponsored by:

- Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University, Taiwan
- Taiwan Vacuum Society, Taiwan
- Ministry of Education, Taiwan
- Center of Crystal Research, Taiwan
- IEEE Photonics Society, Taiwan

Venue

International Conference Hall, Kuang-Fu Campus
National Cheng Kung University (NCKU), Tainan, Taiwan
國立成功大學 光復校區 國際會議廳
No.1, University Road, Tainan City 701, Taiwan

Official Language

The official language of ISGN-8 is English.

Registration

The ISGN-8 registration counter is located in the 1F, International Conference Hall.

Registration hours	
November 10, 2025 (Monday)	08:30 to 17:00
November 11, 2025 (Tuesday)	08:00 to 17:00
November 12, 2025 (Wednesday)	08:00 to 09:15

ISGN-8 registration includes admission to all ISGN-8 sessions, plenaries, panels, poster sessions, exhibitions, coffee breaks, lunches, and the banquet. Upon registration, you will receive your ISGN-8 materials, including an ISGN-8 bag, an identification badge, and an advanced program. The identification badge must be worn at all ISGN-8 activities.

Lunch Break

During the ISGN-8 (Nov. 10 - Nov. 12), we will provide lunch for the participants. Please remember to bring your identification badge when picking up your lunch. After collecting your meal, you can enjoy it in the following conference rooms and dining areas:

November 10, 2025 (Monday)	Multifunction Room(1F), International Conference Hall
November 11, 2025 (Tuesday)	
November 12, 2025 (Wednesday)	Bread box (takeaway available)

ISGN-8 Banquet

Date: November 11, 2025 (Tuesday)
Time: 18:00-20:30
Venue: B2F, Far Eastern Grand Ballroom, Shangri-La's Far Eastern, Tainan
台南遠東香格里拉 B2F 遠東宴會廳
No. 89, Section West, University Rd., East Dist., Tainan City 701, Taiwan

Coffee Break

The coffee breaks will be held in the Venue of ISGN-8 (International Conference Hall):

November 10, 2025 (Monday)	10:10 to 10:20
	14:45 to 15:00
November 11, 2025 (Tuesday)	10:10 to 10:20
	14:45 to 15:00
November 12, 2025 (Wednesday)	09:15 to 11:00

Exhibitions

The exhibition will be held on the B1F of the International Conference Hall. The Exhibition will offer the opportunity to search for the latest products, technology, and services. Attendees are encouraged to visit the displays during the ISGN-8.

Access to the Internet

Free internet access is provided in the Venue of ISGN-8 for the convenience of the participants.
Wi-Fi SSID: 2025ISGN8
Password: wifi1112

ISGN-8 Secretariat (NCKU)

Mr. H. W. Chen
Department of Photonics, National Cheng Kung University (NCKU)
No.1, University Road, Tainan City 701, Taiwan
E-mail: isgn8@ncku.edu.tw

Presentation Information

Presentation timeslot

Session type	Plenary	Invited	Oral
Total length	50 mins (including 5 mins Q&A)	30 mins (including 3 mins Q&A)	15 mins (including 3 mins Q&A)

Before the presentation

- Please arrive at the session meeting rooms 15 minutes earlier and reconfirm your presentation slides with conference staff.
- Conference staff will stay in the meeting rooms to provide relevant assistance accordingly.
- All presentations should be presented in English.
- For an oral presenter, we will allocate 12 minutes for the lecture plus 3 minutes for discussion. In every lecture, we will hold up a sign at the 11th minute to remind you that you have one more minute to enter the Q&A session. At the 12th minute, we will remind you to start the Q&A, at the 15th minute, we will remind you that time is up.

Facilities in the session rooms

- In each session room, there will be a computer and a projector. The projectors in all the classrooms are 4:3. The operating system of the computer is Microsoft Windows 11.
- In each session, the computer will be equipped with USB ports to read a USB flash drive. 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.

Instructions for Poster Presentation

- Poster presentations will be held in the Multifunction Room (1F).
- Presenters should arrive 15 minutes earlier to set up their posters.
- The poster size is 90 cm (W) x120 cm (H).
- Presenters are not required to upload their posters in advance. Kindly bring your poster with you and display it on-site on the day of your scheduled presentation.
- 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 conference staff when the session ends.

Session	Time	Set Up
Poster Session	15:00-17:00, Tuesday, November 11, 2025	15 mins earlier

Iwińska Award

Iwińska Award – In Memory of Dr. Małgorzata Iwińska (1985–2024)

The ISGN-8 proudly introduces the Iwińska Award, established to honor the memory and legacy of Dr. Małgorzata Iwińska, a brilliant researcher, inspiring mentor, and valued member of the nitride semiconductor community.
Dr. Iwińska passed away in 2024, leaving behind a legacy of outstanding scientific contributions in the field of gallium nitride (GaN) crystal growth. In recognition of her impact, the Iwińska Award will be presented for the Best Student Presentations at ISGN-8.

About Dr. Małgorzata Iwińska – Scientific Biography

- Graduate of the Physics Departments of Warsaw University and Warsaw University of Technology
- Since 2014, researcher at the Crystal Growth Laboratory, Institute of High Pressure Physics (Unipress), Polish Academy of Sciences
- 2015: Winner of the Yamaguchi Masahito Award at LEDIA 2015 for *"HVPE-GaN Growth on GaN-based Advanced Substrate by Smart Cut™"*
- 2019: PhD with distinction – *"HVPE as a Method for Crystallizing GaN with Low Background Impurity Concentration with Controllable Doping – Highly Conductive n-type and Semi-insulating Material"*
- Visiting Associate Professor at the New Industry Creation Hatchery Center, Tohoku University, Japan
- Coordinator and scientific lead at Unipress for multiple international projects, including *"GaN for Advanced Power Applications"* under the 2020 ECSEL IA Call
- Author of 52 scientific publications, cited nearly 1,000 times

Beyond her scientific excellence, Dr. Iwińska was admired for her collegial spirit, kindness, and support for young researchers around the world.

About the Award

- Name: Iwińska Award – Best Student Presentation
- Eligibility: Only **student** presenters (oral) in ***S1. III-N Bulk Crystal Growth*** and ***S5. III-N Heterostructure Characterization*** are eligible for the award
- Form of Award: Certificate and prize
- Number of Recipients: One
- Sponsor: Institute of High Pressure Physics (Unipress), Polish Academy of Sciences

To be eligible for the awards, you must meet the following criteria:

1. **The student has to register to attend the conference in person.**
2. **The student should be the presenter of the paper and present it in English.**
3. **All awardees must present a valid identification document (ID card, Passport, or ARC) and an official proof of student status (e.g., Student ID card) for identity verification and award collection.**

This award serves not only to commemorate Dr. Iwińska's achievements but also to support and inspire emerging talents in the field of III-nitrides.

List of Candidates for the Iwińska Award

Day 1-11/10 (Monday) @ 2nd Lecture Room			
Manuscript ID	Time	Presenter	Title
0107	13:30-13:45	Krzysztof Gołyga	Novel GaN Seed Architecture for Bulk Crystal Growth Processes Based on Surface Bonding
0064	13:45-14:00	Naoki Fujimoto	Correlation between reactor polycrystal amount and large pit formation in GaN growth by oxide vapor phase epitaxy
0065	14:00-14:15	Kosei Asao	Dependence of thermal conductivity on oxygen concentration in GaN grown by OVPE method
0081	15:00-15:15	Shogo Washida	*Surface Planarization and Reduction of Threading Dislocation Density of GaN Crystals after Facet Growth in the Na-flux Method*
0048	16:30-16:45	Jeong Kyun OH	*Enhanced Green Hydrogen Generation Using GO-GaN Photoanodes in Direct Seawater Splitting*
0104	16:45-17:00	Pham Tu Huynh	*Defects Visualization in GaN-based HEMTs with SiNx nano-mask by Cathodoluminescence Spectroscopy*
Reviewers			
Prof. Filip Tuomisto (University of Helsinki, Finland) Dr. Michał Boćkowski (Institute of High-Pressure Physics, Polish Academy of Sciences, Poland) Prof. Ray-Hua Horng (National Yang Ming Chiao Tung University, Taiwan) Prof. Takashi Matsuoka (Tohoku University, Japan) Prof. Wei-Chih Lai (National Cheng Kung University, Taiwan) Prof. Yuh-Renn Wu (National Taiwan University, Taiwan)			

ISGN-8 Speakers

Plenary Speakers

Day 1-November 10 (Monday)

Time	Room	Speaker	Title
09:20-10:10	1st Lecture Room, B1F	**Prof. Zetian Mi** University of Michigan, USA	*Ferroelectric Nitride Semiconductors: Epitaxy, Properties, and Emerging Device Applications*
10:20-11:10		**Prof. Kei May Lau 劉紀美** The Hong Kong University of Science and Technology, Hong Kong	*Growth of Vertical GaN Power Devices on Foreign and Native Substrates*
11:10-12:00		**Prof. Elison Matioli** Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland	*Emerging technologies for high-performance GaN power devices*

Day 2-November 11 (Tuesday)

Time	Room	Speaker	Title
08:30-09:20	1st Lecture Room, B1F	**Prof. Jen-Inn Chyi 綦振瀛** National Central University, Taiwan	*Growth of h-BN and Its Mediated Growth of III-Nitrides on Foreign Substrates by van der Waals Epitaxy*
09:20-10:10		**Dr. Hideki Hirayama 平山 秀樹** RIKEN, Japan	*Recent progress of Far-UVC LEDs fabricated on C-sapphire and their applications*
10:20-11:10		**Prof. James S. Speck** University of California, Santa Barbara, USA	*V-defect Science and Engineering for High Efficiency LEDs*
11:10-12:00		**Prof. Debdeep Jena** Cornell University, USA	*Homoepitaxial growth on bulk AlN for ultrawide bandgap electronics and photonics*

Day 3-November 12 (Wednesday)

Time	Room	Speaker	Title
08:25-09:15	1st Lecture Room, B1F	**Prof. Xiuling Li** University of Texas, USA	*Ferroelectric Nitrides by MOCVD: Challenges and Opportunities*

ISGN-8 Plenary Session

Plenary Session 1

Prof. Zetian Mi

Professor, University of Michigan, USA

AM 09:20-10:10, November 10, 2025

1st Lecture Room

Presider: Prof. Ray-Hua Horng

Title
Ferroelectric Nitride Semiconductors: Epitaxy, Properties, and Emerging Device Applications
Abstract
The incorporation of group IIIB elements, e.g., Sc and Y, can transform conventional III-nitride semiconductors to be ferroelectric, with significantly enhanced piezoelectric, dielectric, and linear and nonlinear optical properties. In this talk, I will discuss the underlying physics and mechanisms of significantly enhanced piezoelectric response, ferroelectric switching, domain wall kinetics, and polarization dynamics. I will then present the recent advances of molecular beam epitaxy and characterization of ferroelectric nitride heterostructures and nanostructures. Their emerging applications in high electron mobility transistors, memory and acoustic devices, as well as integrated photonics, together with the obstacles faced by nitride ferroelectrics will be presented.

Plenary Session 2

Prof. Kei May Lau
劉紀美

Professor Emeritus, The Hong Kong University of Science and Technology, Hong Kong

AM 10:20-11:10, November 10, 2025

1st Lecture Room

Presider: Prof. Ray-Hua Horng

Title
Growth of Vertical GaN Power Devices on Foreign and Native Substrates
Abstract
Vertical GaN-based power devices have tremendous potential in achieving high power handling capabilities and power delivery density compared with lateral GaN HEMTs [1]. Two terminal PIN diodes and trench MOSFETs stand out as simple choices that can offer switching and intrinsic normally-off operation with a p-GaN inversion channel, providing a high positive threshold voltage to prevent false turn-on. The p-n junction for OFF-state blocking can provide avalanche capability, which is vital for high power applications. Furthermore, a relatively simple fabrication process requiring no regrowth has been demonstrated. Quasi-vertical GaN trench MOSFETs can be grown on cost-effective foreign substrates, such as sapphire and silicon[2]. For fully-vertical devices with drain contact at the substrate backside, GaN-on-silicon trench MOSFETs have been materialized using a complicated substrate removal process. Alternatively, trench MOSFETs on a conductive buffer grown on doped substrates would greatly simplify the fabrication process. SiC has been shown to be the most sensible choice to realize high-performance fully-vertical GaN-on-SiC diodes with a conductive AlGaN buffer. In addition

to the advantage of smaller mismatch between GaN and SiC, the high thermal conductivity of SiC substrates is highly desirable for power applications. It's also possible to integrate GaN and SiC devices to combine their advantages if a GaN-on-SiC platform is used [3]. Recently, quasi-vertical GaN-on-SiC FinFETs are demonstrated. The challenge of growing trench VMOS on SiC is optimization of the conductive buffer to grow a thick drift layer. The other option is using highly doped native GaN substrates.

We will discuss the growth of GaN-based diodes and trench MOS on all the different substrates to balance all the trade-offs of the on- and off-state characteristics of the devices. For the OFF-state, electric field crowding at trench corners can lead to premature breakdown. We also developed a trench etching process and application of a thick bottom dielectric (TBD) in fully-vertical GaN-on-GaN trench MOSFETs, which mitigates this electric field crowding and successfully increases the breakdown voltage (VBR)T.

REFERENCES:
[1] Andrew T. Binder et al., Appl. Phys. Express, 17, 101003, 2024.
[2] R. Zhu et al., IEEE Electron Device Lett., 43, 346-349, 2022.
[3] J. Li et al., IEEE Electron Device Lett., 46, 282-285, 2025.

Plenary Session 3

Prof. Elison Matioli

Professor, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

AM 11:10-12:00, November 10, 2025

1st Lecture Room

Presider: Prof. Ray-Hua Horng

Title
Emerging technologies for high-performance GaN power devices
Abstract
This presentation will discuss recent advancements and emerging technologies based on III-Nitride semiconductors that aim to address some of the main challenges in power electronics. We will highlight the significant improvements in device performance achieved through the use of multi-channel structures, resulting in figures of merit that far exceed current state of the art. To address the challenge of managing high heat fluxes in compact devices, we will explore recent advancements in the thermal management of GaN devices. This includes the co-design of microfluidics and electronics within the same semiconductor substrate, a technology that offers significantly greater cooling capabilities than currently available and enables denser integration of GaN devices on a single chip. These emerging technologies present exciting opportunities for the future development of III-nitride electronic devices.

Plenary Session 4

Prof. Jen-Inn Chyi
綦振瀛

Vice President & Professor, National Central University, Taiwan

AM 08:30-09:20, November 11, 2025

1st Lecture Room

Presider: Prof. Yuh-Renn Wu

Title
Growth of h-BN and Its Mediated Growth of III-Nitrides on Foreign Substrates by van der Waals Epitaxy
Abstract
Hexagonal boron nitride (h-BN) is a wide-bandgap III-V two-dimensional semiconductor known for its exceptional thermal conductivity, high-temperature stability, and strong chemical inertness. These unique properties have sparked growing interest in its use across a range of emerging applications, including active layers for UV optoelectronics, insulators for 2D electronics, single-photon emitters for quantum computing, tunneling spin valves for spintronics, and ferroelectric transistors for next-generation memory devices. However, the commercialization of h-BN-based technologies has been hindered by challenges in synthesizing large, single-crystalline bulk crystals or producing uniform thin films over large areas in an affordable way. Although material growth techniques for h-BN continue to advance, new challenges and opportunities are arising in parallel. To date, various substrates have been employed for h-BN film growth, such as sapphire, nickel, copper, platinum, silicon, and diamond. Each substrate presents its own advantages and drawbacks in terms of film quality and cost-effectiveness for commercial-scale production.

III-nitride semiconductor epilayers are typically grown on single-crystalline foreign substrates, which often compromise material quality due to lattice mismatch, incompatible crystal symmetry, and limited thermal stability. These issues significantly constrain the development of application-specific epitaxial structures. Recent research has demonstrated that using h-BN as an intermediate layer enables van der Waals epitaxy of III-nitrides on polycrystalline AlN substrates, (100) silicon, and amorphous SiO_2. As a proof of concept, a multiple-quantum-well (MQW) heterostructure was successfully fabricated on an h-BN-coated poly-AlN substrate, emitting light at a wavelength of 423 nm. This achievement highlights the potential of h-BN for flexible GaN-based light-emitting diodes and opens new avenues for III-nitride device integration on thermally robust substrates, while mitigating crystallographic constraints.

Plenary Session 5

Dr. Hideki Hirayama
平山 秀樹

Chief Scientist, RIKEN, Japan

AM 09:20-10:10, November 11, 2025

1st Lecture Room

Presider: Prof. Yuh-Renn Wu

Title

Recent progress of Far-UVC LEDs fabricated on C-sapphire and their applications

Abstract

Human harmless short wavelength 230 nm AlGaN far-UVC LED fabricated on sapphire substrate is promising for potential applications of any kind of virus inactivation used in the spaces where people are present. Up to now, the light power of the 230 nm far-UVC LED is lower than those of 265-280 nm LEDs. We demonstrated efficiency increase in 220-230 nm far-UVC LEDs fabricating on AlN/c-sapphire by improving internal quantum efficiency (IQE), injection efficiency (IE), and light-extraction efficiency (LEE).

We have demonstrated 0.8-1.5% EQE for 232-236 nm LEDs by introducing polarization doping (PD) layer for transparent p-contact layer. We also challenged short wavelength 219-222 nm LEDs by introducing PD hole injection layer. We also demonstrated efficiency increase by about 4 times in 232 nm LED by introducing photonic crystal (PhC) reflector on p-AlGaN/p-GaN contact layer and obtain single more than 10 mW light power. 80 chips of 230 nm LED with 2.7 mW pulse operation power were integrated to cupper heat sink and we demonstrated 220 mW power far-UVC light module. The 230 nm far-UVC power LED module fabricated on sapphire can be provided in low cost and would be available for virus inactivation applications in human-working space.

Plenary Session 6

Prof. James S. Speck

Seoul Viosys Distinguished Professor, University of California, Santa Barbara, USA

AM 10:20-11:10, November 11, 2025

1st Lecture Room

Presider: Prof. Yuh-Renn Wu

Title
V-defect Science and Engineering for High Efficiency LEDs
Abstract
In this presentation we provide an overview of the early history of V-defects in visible LEDs. We then consider vertical transport in long wavelength LEDs without V-defects and the significant polarization and bandoff barrier at high indium content InGaN QWs. Then we show key work on the benefits of V-defects for low voltage operation via lateral injection through V-defect sidewalls. We show the latest understanding of the structure of V-defects including the observation of the threading dislocation on the V-defect sidewalls. We demonstrate a new method for generating new threading dislocations with controlled density that are subsequently used to control V-defect density. We presentation experimental evidence for lateral injection via: direct electron emission microscopy experiments; scanning near field optical microscopy studies; and scanning tunneling lumincescence studies. We demonstrate atomic layer etching of p-GaN to faithfully reveal buried V-defects. We present recent results in 2D and 3D simulations of lateral electron and hole injection through the V-defect sidewalls to the planar emitting QWs.

Plenary Session 7

Prof. Debdeep Jena

David E. Burr Professor of Engineering, Cornell University, USA

AM 11:10-12:00, November 11, 2025

1st Lecture Room

Presider: Prof. Yuh-Renn Wu

Title
Homoepitaxial growth on bulk AlN for ultrawide bandgap electronics and photonics
Abstract
The availability of bulk AlN substrates has rejuvenated our field on nitride semiconductors. In this presentation, I will cover recent results on epitaxial growth on bulk AlN substrates, the challenges encountered, and new findings in growth and subsequent epitaxial layers. I will cover the growth of sharp and graded heterostructures, and their structural, electronic, and optical properties and uses in electronic and photonic devices.

Plenary Session 8

Prof. Xiuling Li

Temple Foundation Endowed Professorship No. 3 Professor, University of Texas, USA

AM 08:25-09:15, November 12, 2025

1st Lecture Room

Presider: Prof. Wei-Chih Lai

Title
Ferroelectric Nitrides by MOCVD: Challenges and Opportunities
Abstract
Ferro-nitrides such as AlScN and AlBN are promising for non-volatile memory and RF devices, including applications in extreme environments. Scaling these materials by MOCVD is attractive but challenging, as Sc and B precursors exhibit extremely low vapor pressures, limiting delivery and incorporation. Using a close-coupled showerhead reactor, we investigate the growth of AlScN and AlBN, examining how growth temperature, pressure, rate, template morphology, and crystallinity influence Sc incorporation and ferroelectric behavior. Ferroelectric switching, temperature dependence, and endurance are presented, highlighting both the opportunities and remaining challenges for MOCVD of ferro-nitrides.

ISGN-8 Speakers

Invited Speakers

Day 1-November 10 (Monday)

S1. III-N Bulk Crystal Growth		
@2nd Lecture Room, B1F		
Time	Speaker	Title
13:00~13:30	**Dr. Michał Boćkowski** Institute of High-Pressure Physics, Polish Academy of Sciences, Poland	*The Science and Art of GaN Crystal Growth*
Abstract	Gallium nitride (GaN) is central to modern optoelectronics and high-power electronics, but further progress depends on advances in crystal growth. This lecture reviews recent developments in bulk GaN crystallization, with emphasis on the basic ammonothermal method and its integration with halide vapor phase epitaxy (HVPE). Key challenges—including scalability, reactor design, and seed preparation—will be examined alongside issues in wafer processing and surface treatment. Particular focus will be given to hybrid growth strategies that combine the strengths of different techniques. Finally, future milestones toward large-diameter GaN substrates will be outlined, enabling next-generation lasers, transistors, and high-performance power devices.	
S4. III-N Nanostructures and 2D Materials		
@3rd Lecture Room, B1F		
Time	Speaker	Title
13:30-14:00	**Dr. Bernard Gil** CNRS, University of Montpellier, France	*The Optical Properties of Various Polytypes of sp2-bonded Boron Nitride.*
Abstract	Hexagonal boron nitride (h-BN), an insulating two-dimensional layered material, has attracted great attention due to its fascinating properties and promising applications across the fields of photonics, quantum optics, and electronics. Given the layered structure of h-BN, various polytypes exist with high-symmetry stacking sequences where successive layers are rotated or translated, leading to a variety of physical properties. Similarly to silicon carbide, polytypism in sp2-bonded boron nitride is to lead to a wealth of variations in the opto-electronic properties. I will report on the optical properties of a variety BN polytypes including bulk crystals grown by precipitation out of molten metallic solutions and epilayers by	

produced by metal-organic chemical vapor deposition on sapphire substrates [1,2]. The sp2-bonded layered compound BN exists in more than a handful of different polytypes (i.e. different layer stacking sequences) with similar formation energies, which makes obtaining a pure monotype single crystals extremely tricky. Co-existence of polytypes in a similar crystal leads to formation of many interfaces and structural defects having deleterious influence on the internal quantum efficiency of the light- emission and on the mobility of carriers. Light emission, when recorded in standard experimental illumination conditions, is in general inhomogeneous and its yield is dominated to radiative recombination to localized stacking faults [3], even for crystals with state-of-the- art, high structural quality [4]. However, despite of this, lasing operation was reported at 215 nm [5], which has shifted the interest of sp2-bonded BN from the laboratories of basic sciences to the fields of optoelectronic and electrical device applications. Here I present X-ray diffraction, electron microscopy and Raman light scattering experiments that were performed on a large variety of samples grown using the complementary techniques alluded to above and that we interpret with the help of group theory arguments and calculations of the phonon dispersion relations (in the context of quantum espresso). They revealed the three coherently ordered AA' (normal), AB (Bernal), and ABC or rBN (Rhombohedral) and AA stackings, and the disordered turbostratic (tBN) one. Characterization of the different structural polytypes are completed by micro-photoluminescence experiment measurements that furnish a one-by-one, unambiguous relationship between the sp2-stacking and its photoluminescence spectrum [6,7,8,9]. These, together with reflectance experiment disentangle the nature of the light-matter interaction processes in sp2-bonded BN. All polytypes studied here display an indirect configuration of their fundamental bandgap, some of them (the AA and AB two-layer stackings and the rBN three-layer one) offer efficient Second Harmonic Generation of light performances.

References:

[1] Jiahan Li et al. ACS Nano 15, 7032 (2021).
[2] M. Chubarov et al., Crystal Growth Design 12, 3215 (2012)
[3] R. Bourrellier et al. ACS Photonics 1, 857 (2014).
[4] G. Cassabois et al. Nature Photonics 10, 262, (2016).
[5] K. Watanabe et al. Nature Materials 3, 404 (2004).
[6] M. Rousseau et al. Physical Review Materials 5, 064602 (2021).
[7] M. Moret et al. Applied Physics Letters 119, 262102 (2021).
[8] S.Moon et al. Nature Materials (2025) DOI10.1038/s41563-025-02173-2
[9] W.Desrat et al submitted to Physical Review Materials (under review)

<table>
<tr><th colspan="3">S5. III-N Heterostructure Characterization</th></tr>
<tr><th colspan="3">@2nd Lecture Room, B1F</th></tr>
<tr><th>Time</th><th>Speaker</th><th>Title</th></tr>
<tr><td>15:30-16:00</td><td>Prof. Frank Bertram
Otto-von-Guericke-University
Magdeburg, Germany</td><td><i>Advanced Nanoscale Characterization of Nitride-Based Heterostructures</i></td></tr>
<tr><td>Abstract</td><td colspan="2">We will present nano-scale correlation of structural, electronic and optical properties of nitride-based heterostructures using cathodoluminescence and electron-beam induced current directly performed in a scanning transmission electron microscope. Typical results exhibiting the complex nano-transport of excess carriers, in particular charge carriers and/or excitons, due to a specific heterostructure design of a device will be presented.</td></tr>
<tr><th colspan="3">S6. III-N Defect Control and Surface Effects</th></tr>
<tr><th colspan="3">@3rd Lecture Room, B1F</th></tr>
<tr><th>Time</th><th>Speaker</th><th>Title</th></tr>
<tr><td>15:00-15:30</td><td>Prof. Chris G. Van de Walle
University of California, Santa Barbara, USA</td><td><i>Impact of polarization fields on surface reconstructions</i></td></tr>
<tr><td>Abstract</td><td colspan="2">Polarization fields due to spontaneous and piezoelectric polarization are a distinguishing feature of nitride semiconductors. They are exploited in transistors to create high-density carrier gases, while in light emitters they need to be controlled to avoid efficiency loss. The impact of polarization on growth of nitrides has received less attention, however. We have recently developed a first-principles methodology that enables us to rigorously address polarization fields in surface calculations. The results show that spontaneous polarization affects the stability and nature of surface reconstructions. Compensation of the polarization fields requires the presence of significant amounts of charge, which manifests in the form of fixed charge associated with surface reconstructions or the presence of heterovalent impurities. Consequences for defect incorporation will be discussed.

Work performed in collaboration with C. E. Dreyer, J. Neugebauer, M. Todorova, S. H. Yoo, and D. Vanderbilt.

[1] S. H. Yoo, M. Todorova, J. Neugebauer, and C. G. Van de Walle, Phys. Rev. Appl. 19, 064037 (2023).</td></tr>
</table>

S9. III-N Spin-related Phenomena

@3rd Lecture Room, B1F

Time	Speaker	Title
13:00-13:30	**Prof. Jesús Zúñiga Pérez** Nanyang Technological University, Singapore (PAP, SPMS)	*Quantum sensing with hexagonal BN*

Abstract

Point defects in crystalline materials can behave as artificial atoms, with optical and spin properties that enable their exploitation in quantum sensing. Compared to bulk materials, where point defects are generally located far from the surface (which improves their stability and minimizes surface-induced charge and spin noises), in 2D materials point defects lie necessarily close to the surface. This allows to place the sensing probes as close as possible to the test object, without necessarily degrading neither their stability nor their sensing performance. Among the plethora of 2D materials, hBN occupies an outstanding place, given its ubiquitous presence in almost every 2D-based device and heterostructure. Interestingly, hBN hosts several types of spin-defects; among them, the negatively-charged boron vacancy (VB-) is the most studied one because, even though it shows a relatively poor luminescence intensity, it works at 300K and its spin can be initialized and read-out. In this work we will introduce the use of VB- in hBN for quantum strain sensing [1]. The measurement of optically-detected magnetic resonance (ODMR) on VB- ensembles enables to achieve sub-micrometre spatial resolution that, combined with micro-Raman spectroscopy, can provide a spatially-resolved map of in-plane and out-of-plane strain distribution [1]. Subsequently, we will address the important issue of enhancing photon emission from VB- defects. To achieve such an enhancement, we will implement metallic (gold-based) nanotrenches in which the coupled effect of gap-plasmons and enhanced extraction efficiency results in a ~ 40-times emission enhancement with respect to a bare gold surface, while being compatible with ODMR measurements [2]. Finally, we will discuss the possibility of substituting the conventional optical detection by an electrical one, promoting thereby hBN as a practical real-field quantum sensor [3].

[1] X. Lyu et al., Nano Lett. 22 (2022) 6553

[2] H. Cai et al., Nano Lett. 23 (2023) 4991

[3] S. Ru et al., to be published

Day 2-November 11 (Tuesday)

<table>
<tr><th colspan="3">S2. III-N Epitaxial Growth Techniques</th></tr>
<tr><th colspan="3">@2nd Lecture Room, B1F</th></tr>
<tr><th>Time</th><th>Speaker</th><th>Title</th></tr>
<tr><td>15:00~15:30</td><td>Prof. Hideto Miyake 三宅 秀人
Mie University, Japan</td><td><i>Polarity control of AlN via a combination of sputtering deposition and face-to-face annealing</i></td></tr>
<tr><td>Abstract</td><td colspan="2">We have successfully fabricated high-quality AlN templates by combining sputtering deposition of AlN (Sp-AlN) with high-temperature face-to-face annealing (FFA). These templates are hereafter referred to as FFA Sp-AlN. Additionally, we achieved Al-polar and N-polar FFA Sp-AlN by annealing Sp-AlN films sputtered using a sintered AlN target and an Al metal target, respectively. By controlling the polarity, we fabricated a bilayer polarity-inverted AlN structure, where the Al-polar FFA Sp-AlN serves as the lower layer and the N-polar FFA Sp-AlN as the upper layer. In this bilayer polarity-inverted FFA Sp-AlN, an inversion domain boundary (IDB) with an abrupt interface, consisting of several monolayers (ML), and an atomically smooth surface were observed. Various devices have been proposed using polarity inversion structures, such as second harmonic generation (SHG) devices based on quasi-phase matching, which exploits the nonlinear optical properties of nitride semiconductors. Leveraging the structural characteristics of the bilayer polarity-inverted FFA Sp-AlN, an SHG device with a transverse quasi-phase matched waveguide was fabricated. This device achieves a high nonlinear coupling coefficient by placing IDBs at the nodes of the second harmonic (SH) wave electric field distribution. The fabrication of a multi-layer polarity-inverted AlN structure with more than two layers is highly desirable. In this study, we demonstrate the fabrication of a four-layer polarity-inverted AlN structure using multiple sputtering of AlN and FFA with the polarity control method of FFA Sp-AlN. It was found that the IDB structures vary depending on the sequence of polarity inversion.</td></tr>
<tr><th colspan="3">S3. III-N Ternary and Quaternary Alloys</th></tr>
<tr><th colspan="3">@2nd Lecture Room, B1F</th></tr>
<tr><th>Time</th><th>Speaker</th><th>Title</th></tr>
<tr><td>13:00~13:30</td><td>Prof. Mitsuru Funato 船戸 充
Kyoto University, Japan</td><td><i>InGaN MOVPE on arbitrary 3D GaN templates for polychromatic emission</i></td></tr>
<tr><td>Abstract</td><td colspan="2">InGaN grown on (0001) vicinal surface shows In-content variations depending on the inclination angle. This property leads to polychromatic emission from InGaN quantum well emitters grown on 3D GaN templates. Controlling the 3D shape enables us to tune the</td></tr>
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<tr><td></td><td colspan="2">emission spectra, which is beneficial for the fabrication of polychromatic, full color light emitters via single-step crystal growth.</td></tr>
<tr><td colspan="3">S7. III-N Optical and Electrical Properties</td></tr>
<tr><td colspan="3">@3rd Lecture Room, B1F</td></tr>
<tr><td>Time</td><td>Speaker</td><td>Title</td></tr>
<tr><td>15:00~15:30</td><td>Prof. Yong-Hoon Cho
Korea Advanced Institute of Science and Technology (KAIST), South Korea</td><td><i>Growth Control and Optical Characteristics of 6-fold and 3-fold Symmetric GaN Pyramid and Pillar Structures for Quantum Photonic Device Applications</i></td></tr>
<tr><td>Abstract</td><td colspan="2">We developed III-nitride quantum dot (QD) uniform arrays using MOCVD, forming single InGaN QDs at the apex of six-fold and three-fold symmetric GaN pyramids via a selflimited growth mechanism. This method enables precise control of QD position, size, and symmetry, crucial for high-purity single-photon and polarization-entangled photon generation.
We also fabricated GaN hexagonal microrods and triangular prisms supporting whispering gallery and superscar modes, respectively, achieving room-temperature exciton-polariton condensation. These advances in QD symmetry control and microcavity engineering pave the way for integrated quantum photonic and polaritonic devices.</td></tr>
<tr><td>15:30~16:00</td><td>Dr. Sai Charan Vanjari
University of Bristol, UK</td><td><i>The power race: GaN, SiC, or Ga2O3?</i></td></tr>
<tr><td>Abstract</td><td colspan="2">Gallium nitride (GaN) has become central to wide band gap power electronics, with decades of progress driving its adoption in sub-1kV applications and establishing it as a preferred choice for low-voltage systems. Silicon carbide (SiC) currently dominates the 1-3kV range, while gallium oxide (Ga2O3), with its ultra-wide band gap and higher breakdown strength, promises operation beyond both GaN and SiC. This raises a key question: which material will shape the future of high-voltage power electronics?
This talk will compare GaN, SiC and Ga2O3 across different voltage regimes, highlighting their performance advantages as well as key challenges in reliability, scalability and thermal management. Emphasis will be placed on high-voltage device architectures, defect-driven degradation, and emerging strategies such as heterogeneous integration, providing insights into pathways for next-generation, energy-efficient power conversion systems.</td></tr>
</table>

S8. III-N Device Modeling and Simulation

@3rd Lecture Room, B1F

Time	Speaker	Title
13:00~13:30	**Prof. Yoshihiro Kangawa 寒川 義裕** Kyushu University, Japan	*Optimal Design of Fabrication Process for Deep Ultraviolet Laser Diodes: Computational Approach*
Abstract	Deep ultraviolet LDs and LEDs around 260 nm, which are absorbed by the RNA and DNA of viruses and bacteria, are expected to be useful. To enhance the emission efficiency of these optical devices, controlling the flatness of the heterointerface at the atomic level is essential. In this study, we investigated the relationship between the device fabrication process, specifically the growth temperature of thin films, and the flatness of the heterointerface using a computational approach.	
13:30~14:00	**Dr. Muhammad Ajmal Khan** RIKEN, Japan	*Light Extraction Enhancement in 230 nm far-UVC LEDs Using nanoPSS and Photonic Crystals: Updates on Virus Inactivation*
Abstract	Far-ultraviolet C (Far-UVC) light-emitting diodes (LEDs) operating near 230 nm are emerging as promising sources for safe and effective disinfection, including inactivation of airborne pathogens and viruses. However, their external quantum efficiency (EQE) remains below 1% @ 230nm emission wavelength, primarily due to poor light extraction efficiency (LEE) and point defects. In this talk, we present recent theoretical and experimental progress at RIKEN in collaboration with National Yang Ming Chiao Tung University (Taiwan) toward overcoming this limitation through nano-patterned sapphire substrates (nanoPSS) and photonic crystal (PhC) structures. Finite-difference time-domain (FDTD) simulations reveal that optimized nanoPSS and reflective PhCs can synergistically enhance LEE by up to 6.7× compared to flat substrates. Experimentally, nanoPSS-based devices demonstrated a two-fold increase in EQE—from 0.15% to 0.32%—and doubled emission power. The experimental results of both the nanoPSS and PhC based LED will be revealed later. Furthermore, our 230 nm far-UVC LED modules successfully inactivated Dengue Virus (DENV), HIV-1, Influenza-A Virus (IAV), and SarsCoV-2 confirming their potential for real-world sterilization applications. Ongoing work aims to integrate optimized PhC designs with nanoPSS to achieve EQE >2% @ 230nm emission wavelength, paving the way for high-performance far-UVC LEDs for healthcare and environmental safety.	

Day 3-November 12 (Wednesday)

S10. III-N Devices—FETs, LEDs, and Lasers

@3rd Lecture Room, B1F

Time	Speaker	Title
09:15~09:45	**Prof. Tetsuya Takeuchi 竹內 哲也** Meijo University, Japan	*Highly efficient GaN-based vertical-cavity surface-emitting lasers*
Abstract	The developments towards higher wall-plug efficiency GaN-based VCSELs at Meijo University are described. By using high-quality AlInN/GaN DBR, lateral optical/current confinement, and in situ cavity length control, our GaN-based VCSELs show a WPE of 27% at 413 nm under RT CW operation.	

Special Session. Ultrawide-bandgap materials and devices

@2nd Lecture Room, B1F

Time	Speaker	Title
09:15~09:45	**Prof. Masataka Higashiwaki 東脇 正高** Osaka Metropolitan University, Japan	*Nitrogen doping technology for Ga2O3 devices*
Abstract	Nitrogen (N) atoms doped in gallium oxide (Ga2O3) act as deep acceptors, and an energy barrier of about 3 eV can be formed at the N-doped p-Ga2O3/n-Ga2O3 junction. In this talk, we will present the effect of N radical irradiation on electrical properties of Ga2O3 Schottky barrier diodes and electrical properties of N-doped Ga2O3 thin films grown by molecular beam epitaxy.	
09:45~10:15	**Prof. Okhyun Nam** Tech University of Korea, South Korea	*Recent Advances in Heteroepitaxial Diamond: From Single Crystal Substrate to Devices*
Abstract	In our study, the activities for the growth of large size single crystal diamond substrate have been conducting using the heteroepitaxy on the foreign substrate. In case of (100) plane, we achieved the heteroepitaxy of free-standing single crystal diamond wafer (size: 20x20 mm2) on the A-plane sapphire substrate in the last year [1-2], and are working on the heteroepitaxy of larger-size diamond wafer (>1inch).[3] Especially, the twin-free (111) single crystal diamond heteroepitaxy has been successfully demonstrated on the r-plane sapphire substrate, for the first time.[3] In addition, the heteroepitaxial single crystal diamond-based device study has been successfully conducted in the area of doping and devices of p-SBDs and p-MESFETs [4-5].	

	Recently, the H-terminated diamond E-/D-mode MOSFETs have been simultaneously fabricated on the same heteroepitaxial diamond substrate [6]. The detailed advancements in the heteroepitaxial diamond wafer and power devices will be discussed in the conference.

ISGN-8

November 9-12, 2025

NCKU, Taiwan

Technical Program

S1. III-N Bulk Crystal Growth

Oral Session: 2nd Lecture Room 第二演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session I: 13:00-14:45, Monday, November 10, 2025

Presider:

Prof. Ming-Chi Mitch Chou (National Cheng Kung University, Taiwan)

Dr. Michał Boćkowski (Institute of High-Pressure Physics, Polish Academy of Sciences, Poland)

- 13:00 2025-Mon-S0101-I001

Invited Talk

The Science and Art of GaN Crystal Growth

Dr. Michal Bockowski, Institute of High-Pressure Physics, Polish Academy of Sciences, Poland

- 13:30 2025-Mon-S0101-O001

Manuscript ID: 0107

Iwińska Award Candidate (Paper Competition)

Novel GaN Seed Architecture for Bulk Crystal Growth Processes Based on Surface Bonding

Krzysztof Gołyga, Jan Mizeracki, Magdalena A. Zając, Michał Fijałkowski, Robert Kucharski, Tomasz Sochacki, Michał Boćkowski, Institute of High Pressure Physics, Polish Academy of Sciences; Kacper Sierakowski, Department of Material Science and Engineering, North Carolina State University

- 13:45 2025-Mon-S0101-O002

Manuscript ID: 0064

Iwińska Award Candidate (Paper Competition)

Correlation between reactor polycrystal amount and large pit formation in GaN growth by oxide vapor phase epitaxy

Naoki Fujimoto, Shigeyoshi Usami, Masayuki Imanishi, Mihoko Maruyama, Yusuke Mori, Graduate School of Eng, The University of Osaka; Masashi Yoshimura, Institute of Laser Engineering, The University of Osaka; Tomoaki Sumi, Junichi Takino, Yoshio Okayama, Panasonic Holdings; Masahiko Hata, Itochu Plastics Incorporated; Masashi Isemura, Sosho-Oshin Incorporated

- 14:00 2025-Mon-S0101-O003

Manuscript ID: 0065

Iwińska Award Candidate (Paper Competition)

Dependence of thermal conductivity on oxygen concentration in GaN grown by OVPE method

Kosei Asao, Shigeyoshi Usami, Masayuki Imanishi, Mihoko Maruyama, Yusuke Mori, Graduate School of Eng, The University of Osaka; Junichi Takino, Tomoaki Sumi, Yoshio Okayama, Panasonic Holdings; Masashi Yoshimura, Institute of Laser Engineering, The University of Osaka,; Masahiko Hata, Itochu Plastics Incorporated; Masashi Isemura, Sosho-Oshin Incorporated

- 14:15 2025-Mon-S0101-O004

Manuscript ID: 0087

Stability and Crystallization of hBN from 10 at.% B-Ni Solutions under Controlled N2 Pressure

Petro Sadovyi, Bohdan Sadovyi, Stanislaw Krukowski, Sylwester Porowski, Izabella Grzegory, Institute of High Pressure Physics Polish Academy of Sciences, 29/37, Sokolowska street, 01-142 Warsaw, Poland; Andrii Nikolenko, Viktor Strelchuk, V. Lashkaryov Institute of Semiconductor Physics of National Academy of Sciences of Ukraine, 41 pr. Nauky, 03028, Kyiv, Ukraine; Borys Turko, Ivan Franko National University of Lviv, Faculty of Physics, 50, Drahomanovastreet, Lviv, 79005, Ukraine

- 14:30 2025-Mon-S0101-O005

Manuscript ID: 0096

N-polar epitaxial lateral overgrowth of GaN via high temperature Cl2-based halide vapor phase epitaxy

Hisashi Murakami, Qiu Ping, Keito Shiroma, Haruto Ishida, Tokyo University of Agriculture and Technology; Aina Hiyama Zazuli, Narihito Okada, Yamaguchi University

Oral Session II: 15:00-15:30, Monday, November 10, 2025

Presider:

Prof. Ming-Chi Mitch Chou (National Cheng Kung University, Taiwan)

Dr. Michał Boćkowski (Institute of High-Pressure Physics, Polish Academy of Sciences, Poland)

- 15:00 2025-Mon-S0108-O001

Manuscript ID: 0081

Iwińska Award Candidate (Paper Competition)

Surface Planarization and Reduction of Threading Dislocation Density of GaN Crystals after Facet Growth in the Na-flux Method

Shogo Washida, Masayuki Imanishi, Ryotaro Sasaki, Kosuke Murakami, Shigeyoshi Usami, Mihoko Maruyama, Yusuke Mori, Graduate. School of Engineering., the University of Osaka; Masashi Yoshimura, Graduate. School of Engineering., the University of Osaka, Institute of Laser Engineering, the University of Osaka

- 15:15 2025-Mon-S0108-O002

Manuscript ID: 0018

Fabrication of Needle-like AlN Seed Crystals and Epitaxial Growth using Fe-based Fluxes

Sen Li, Chiaki Amei, Masayoshi Adachi, Makoto Ohtsuka, Hiroyuki Fukuyama, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0101-P001

Manuscript ID: 0071

3D CFD Study of Internal Installation Geometry Effects on Convective Transport and GaN Crystal Growth in the Ammonothermal Process

Marek Zak, Pawel Kempisty, Boleslaw Lucznik, Robert Kucharski, Michal Bockowski, Institute of High Pressure Physics Polish Academy of Sciences, Poland

2025-Tue-P0101-P002

Manuscript ID: 0093

From Crystal to Wafer: Advanced Mechanical Processing of Ammonothermal GaN

Tomasz Sochacki, Robert Kucharski, Karolina Grabianska, Aneta Sidor-Zak, Jaroslaw Skladanowski, Grzegorz Kamler, Michal Bockowski, Institute of High Pressure Physics Polish Academy of Sciences

2025-Tue-P0101-P003

Manuscript ID: 0102

Properties of defects formed as a result of hillock coalescence in Am- and HVPE-grown GaN crystals.

Zajac A. Magdalena, Sochacki Tomasz, Kucharski Robert, Grabianska Karolina, Konczewicz Leszek, Zajac Marcin, Weyher L. Jan, Bockowski Michal, Institute of High Pressure Physics Polish Academy of Sciences, Warsaw, Poland; Paillet Matthieu, Juillaguet Sandrine, Contreras Sylvie, Laboratoire Charles Coulomb (L2C), University of Montpellier, CNRS, Montpellier, France; Stranak Patrik, Kirste Lutz, Fraunhofer Institute for Applied Solid State Physics (IAF), Freiburg, Germany.

2025-Tue-P0101-P004

Manuscript ID: 0105

Thermodynamic Analysis of GaN Solubility in Supercritical Ammonia: Influence of Mineralizer Concentration and Pressure

Pawel Kempisty, Karolina Grabianska, Robert Kucharski, Mikolaj Amilusik, Tomasz Sochacki, Michal Bockowski, Institute of High Pressure Physics Polish Academy of Sciences, Warsaw, Poland

2025-Tue-P0101-P005

Manuscript ID: 0011

Bragg Diffraction Imaging Analysis of Crystal Defects in AlN Substrates

L. Kirste, Fraunhofer Institute for Applied Solid State Physics (IAF), Freiburg, Germany; T.N. Tran-Caliste, J. Baruchel, European Synchrotron Radiation Facility (ESRF), Grenoble, France; C. Richter, T. Straubinger, C. Hartmann, Leibniz-Institut für Kristallzüchtung (IKZ), Berlin, Germany; M. Kabukcuoglu, Institute for Photon Science and Synchrotron Radiation (IPS), KIT, Karlsruhe, Germany

2025-Tue-P0101-P006

Manuscript ID: 0057

Analysis of Growth Discontinuities in Ammonothermal GaN Crystals Using Bragg Diffraction Imaging

L. Kirste, P. Straňák, Fraunhofer Institute for Applied Solid State Physics (IAF), Freiburg, Germany; T. Sochacki, R. Kucharski, K. Grabianska, J.L. Weyher, M. Bockowski, Institute of High Pressure Physics (UNIPRESS), Polish Academy of Sciences, Warsaw, Poland; T.N. Tran-Caliste, J. Baruchel, European Synchrotron Radiation Facility (ESRF), Grenoble, France

S2. III-N Epitaxial Growth Techniques

Oral Session: 2nd Lecture Room 第二演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 15:00-17:15, Tuesday, November 11, 2025

Presider:

Prof. Chun-Kai Wang (National Kaohsiung University of Science and Technology, Taiwan)

Prof. Hideto Miyake (Mie University, Japan)

- 15:00 2025-Tue-S0204-I001

Invited Talk

Polarity control of AlN via a combination of sputtering deposition and face-to-face annealing

Prof. Hideto Miyake, Professor, Mie University, Japan

- 15:30 2025-Tue-S0204-O001

Manuscript ID: 0108

Structural Evaluation of AlGaN MQWs on Face-to-Face Annealed (11-22) AlN Templates

Hiroki Yasunaga, Kensei Oya, Ryota Akaike, Yongzhao Yao, Hideto Miyake, Mie University

- 15:45 2025-Tue-S0204-O002

Manuscript ID: 0073

Crystallographic Orientation Control of Nonpolar AlN via Thermal Treatment of r-Plane Sapphire Substrates

Shinnosuke Mori, Ryota Akaike, Hiroki Yasunaga, Takao Nakamura, Hideto Miyake, Mie University

- 16:00 2025-Tue-S0204-O003

Manuscript ID: 0027

Calibration of Surface Temperature of Metallic Substrates in MBE – Unveiling the Impact of Thickness Dependent Emissivity of Thin Buffer Layers

Z.R. Zytkiewicz, K. Olszewski, A. Wierzbicka, M. Sobanska, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; M. Guziewicz, Łukasiewicz Research Network - Institute for Microelectronics and Photonics, Warsaw, Poland

- 16:15 2025-Tue-S0204-O004

Manuscript ID: 0074

Estimation of Screw Dislocation Density in High-crystallinity AlN by X-ray Rocking Curves

Rennosuke Hara, Ryota Akaike, Hiroki Yasunaga, Takao Nakamura, Hideto Miyake, Mie University

- 16:30 2025-Tue-S0204-O005

Manuscript ID: 0025

Growth Behavior of AlN Crystals Using Type 304L Stainless Steel Flux

Makoto OHTSUKA, Masayoshi ADACHI, Hiroyuki FUKUYAMA, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

- 16:45 2025-Tue-S0204-O006

Manuscript ID: 0030

Effect of Nb Addition to Molten Fe on Solution Growth of AlN Crystals

Shunya Nanri, Makoto Ohtsuka, Masayoshi Adachi, Hiroyuki Fukuyama, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

- 17:00 2025-Tue-S0204-O007

Manuscript ID: 0138

Evaluation of Polarity-inverted AlN interface using oxidation processes

Tomohiro Tamano, Ryota Akaike, Hiroki Yasunaga, Hideto Miyake, Mie University; Zentaro Akase, Shigetaka Tomiya, Nara Institute of Science and Technology

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0201-P001

Manuscript ID: 0033

Effect of Flux Composition on Growth Behavior of AlN Crystals Using Fe-Cr-Ni Fluxes

Go Shinnoda, Masayoshi Adachi, Makoto Ohtsuka, Hiroyuki Fukuyama, IMRAM, Tohoku Univ.

2025-Tue-P0201-P002

Manuscript ID: 0067

Buffer Layer Design toward 1600 V GaN HEMTs on 150 mm Si Substrates

Shao-Hsiang Hsu, Si-Hong Chen, Chieh-Hsiang Kuo, Jun-Zhe Wang, Hung-Yang Lin, Sheng-Kai Chen, Jen-Inn Chyi, National Central University, Taoyuan, Taiwan; Yong-Xiang Zhuang, Hsien-Chin Chiu, Chang Gung University, Taoyuan, Taiwan

2025-Tue-P0201-P003

Manuscript ID: 0080

Performance Enhancement of AlGaN/GaN HEMTs on 150 mm Si Substrates by BGaN Buffer Layers

Hung-Yang Lin, Jun-Zhe Wang, Shao-Hsiang Hsu, Chao-Yuan Chang, Sheng-Kai Chen, Jen-Inn Chyi, National Central University, Taoyuan, Taiwan; Wei-Jen Hsueh, WAFER WORKS, Taoyuan, Taiwan

2025-Tue-P0201-P004

Manuscript ID: 0113

Direct growth of Bulk InGaN nanocolumns on nanotemplates prepared using Ni nanodot mask

Satoshi Ishikawa, Rie Togashi, Katsumi Kishino, Sophia University

2025-Tue-P0201-P005

Manuscript ID: 0114

Influence of Underlying GaN Nanocolumns on the Selective Area Growth of GaInN

Takuto Katogi, Ryuta Shindo, Takumi Umemoto, Tomohiro Yamaguchi, Tohru Honda, Takeyoshi Onuma, Kogakuin university; Rie Togashi, Katsumi Kishino, Sophia university

2025-Tue-P0201-P006

Manuscript ID: 0115

Surface Stoichiometry Control in GaN Pulsed Sputtering Epitaxy Using Sintered Target

Kohei Nomura, Masahiro Uemukai, Tomoyuki Tanikawa, Ryuji Katayama, The University of Osaka; Koo Bando, Yoshihiro Ueoka, Yoshiro Kususe, Masami Mesuda, Tosoh Corporation

2025-Tue-P0201-P007

Manuscript ID: 0124

USPD-Fabricated Li-Doped p-NiO$_x$ Gates for High-Performance Normally-Off InAlGaN/GaN HEMTs

Yu-Hsuan Chen, Yan-Kuei Wu, Wei-Chou Hsu, National Cheng Kung University

2025-Tue-P0201-P008

Manuscript ID: 0134

Growth and characterization of N-polar AlN and strained GaN heterostructures by MOVPE

Yoann ROBIN, Itsuki Furuhashi, Xu Yang, Markus Pristovsek, Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, Japan

S3. III-N Ternary and Quaternary Alloys

Oral Session: 2nd Lecture Room 第二演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 13:00-14:45, Tuesday, November 11, 2025

Presider:

Prof. Chia-Yen Huang (National Yang Ming Chiao Tung University, Taiwan)

Prof. Mitsuru Funato (Kyoto University, Japan)

- 13:00 2025-Tue-S0303-I001

Invited Talk

InGaN MOVPE on arbitrary 3D GaN templates for polychromatic emission

Prof. Mitsuru Funato, Professor, Kyoto University, Japan

- 13:30 2025-Tue-S0303-O001

Manuscript ID: 0098

Challenges and Solutions in the Epitaxy of Al-rich AlGaN HEMT for Extreme Environmental Electronics

Okhyun Nam, Jooyong Park, S. Mohan, J. Jeong, Tech University of Korea

- 13:45 2025-Tue-S0303-O002

Manuscript ID: 0026

Attractive Ferroelectric Properties of Monocrystalline Sc-Rich Nitride Solid Solutions Grown by MBE

Samuel Yang, Shubham Mondal, Jae Hun Kim, Zetian Mi, University of Michigan

- 14:00 2025-Tue-S0303-O003

Manuscript ID: 0068

MOVPE of AlNP/GaN HFET layer structures using PH3

Eberhard Richter, Frank Brunner, Sanowar Alam Gazi, Sylvia Hagedorn, Oliver Hilt, Carsten Netzel, Kornelius Tetzner, Markus Weyers, Ferdinand-Braun-Institut (FBH), 12489 Berlin, Gustav-Kirchhoff-Str. 4, Germany

- 14:15 2025-Tue-S0303-O004

Manuscript ID: 0092

Ammonothermal Growth of Bulk $Al_xGa_{1-x}N$: Current Achievements and Perspectives for Crystal Development

Kucharski Robert, Sochacki Tomasz, Grabianska Karolina, Zajac A. Magdalena, Jaroszynska Arianna, Weyher L. Jan, Institute of High Pressure Physics Polish Academy of Sciences; Stranak Patrik, Kirste Lutz, Fraunhofer Institute for Applied Solid State Physics (IAF); Bockowski Michal, Institute of HighPressure Physics Polish Academy of Sciences

- 14:30 2025-Tue-S0303-O005

Manuscript ID: 0109

Influence of Strain on Hole Transport and TM-TE Emission in AlGaN UVC LEDs with Direct Localization Landscape Model Calculation

Yu-Ming Chang, Ping-Jie Zhuang, Yuh-Renn Wu, GIPO, National Taiwan University

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0301-P001

Manuscript ID: 0091

AlxGa1-xN growth by Halide Vapor Phase Epitaxy

Arianna Jaroszynska, Karol Pozyczka, Petro Sadovyi, Robert Kucharski, Pawel Kempisty, Michal Bockowski, Tomasz Sochacki, Institute of High Pressure Physics, Polish Academy of Sciences; Lutz Kirste, Fraunhofer Institute for Applied Solid State Physics (IAF)

S4. III-N Nanostructures and 2D Materials

Oral Session: 3rd Lecture Room 第三演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session I: 13:30-14:45, Monday, November 10, 2025

Presider:

Prof. Yu-Hsun Chou (National Cheng Kung University, Taiwan)

Prof. Jesús Zúñiga Pérez (Nanyang Technological University, Singapore)

- 13:30 2025-Tue-S0303-I001

Invited Talk

The Optical Properties of Various Polytypes of sp2-bonded Boron Nitride.

Dr. Bernard Gil, Director of Research, CNRS, University of Montpellier, France

- 14:00 2025-Tue-S0303-O001

Manuscript ID: 0041

(Al,Ga)N heterostructures grown on AlN on Graphene: towards van der Waals epitaxy of UV LED structures

Julien Brault, Sunanda Mitra, Sébastien Chenot, Mohamed Al Khalfioui, Université Côte d'Azur, CNRS, CRHEA, Valbonne, 06560, France; Yuma Doko, Graduate School of Engineering, University of Fukui, Bunkyo, Fukui, Japan; Hideaki Kitahara, Masahiko Tani, Akihiro Hashimoto, Research Center for Development of Far Infrared Region, University of Fukui, 3-9-1 Bunkyo Fukui, 910-8507, Japan

- 14:15 2025-Tue-S0303-O002

Manuscript ID: 0028

Peculiarities of MBE Growth and Properties of GaN Nanowires on Metallic ZrN Buffer Layers

Marta Sobanska, Zbigniew R. Zytkiewicz, Karol Olszewski, Aleksandra Wierzbicka, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; Marek Guziewicz, Łukasiewicz Research Network - Institute for Microelectronics and Photonics, Warsaw, Poland

- 14:30 2025-Tue-S0303-O003

Manuscript ID: 0118

Contactless Electreflectance Studies of Fermi Level Position at MXene/(Al)GaN Interface – Engineering of Electric Contacts to (Al)GaN

Robert Kudrawiec, Wroclaw University of Science and Technology

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0401-P001

Manuscript ID: 0005

The Blood Test for Lung Cancer by InGaN Quantum Wells

Kun-Yu Lai, Thuy Doan Khanh Huynh, Huy Kim Nhat, Fan-Ching Chien, National Central University; Yu-Chi Chiu, Taoyuan General Hospital; Yu-Chi Chiu, Yuanpei University of Medical Technology; Pin-Kuei Fu, Taichung Veterans General Hospital; Pin-Kuei Fu, National Chung Hsing University

2025-Tue-P0401-P002

Manuscript ID: 0097

Growth of Boron Nitride on (100) Silicon Substrates

Chen-Da Du, Kun-Yu Lai, National Central University

2025-Tue-P0401-P003

Manuscript ID: 0054

Coupling between WSe2 and Plasmonic Structure

Chiao-Chih Lin, Program on Key Material, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University, Tainan, Taiwan; Zhe-Wei Hsu, Yu-Hsun Chou, Department of Photonics, National Cheng Kung University, Tainan, Taiwan

2025-Tue-P0401-P004

Manuscript ID: 0052

Formation of non-polar and semi-polar AlN planes via microwave annealing of AlN on AAO templates

Chien-Sheng Huang, Basheer Baba, Yi-Tang Lin, He-Han Wu, Che-Hao Liao, Department of Electronic Engineering, National Yunlin University of Science and Technology; Xiao Tang, School of Electrical, Electronic and Mechanical Engineering, University of Bristol

2025-Tue-P0401-P005

Manuscript ID: 0076

Sensitivity Enhancement of Aluminum Nitride Surface Acoustic Wave Humidity Sensors Using Silica Nanospheres

Che-Hao Liao, Lu-Xiang Wang, I-Ten Chen, Shih-Hung Lin, Chien-Sheng Huang, Department of Electronic Engineering, National Yunlin University of Science and Technology

S5. III-N Heterostructure Characterization

Oral Session: 2nd Lecture Room 第二演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 15:30-17:00, Monday, November 10, 2025

Presider:

Prof. Ming-Chi Mitch Chou (National Cheng Kung University, Taiwan)

Dr. Michał Boćkowski (Institute of High-Pressure Physics, Polish Academy of Sciences, Poland)

- 15:30 2025-Mon-S0509-I001

Invited Talk

Advanced Nanoscale Characterization of Nitride-Based Heterostructures

Prof. Frank Bertram, Gordon Schmidt, Juergen, University of Magdeburg

- 16:00 2025-Mon-S0509-O001

Manuscript ID: 0062

Influence of 2D carrier localization on light emission in (Al,Ga)N alloys emitting in the Deep UV range.

Alexandra Ibanez, Bernard Gil, Guillaume Cassabois, Pierre Valvin, Wilfried Desrat, UMR 5221, Laboratoire Charles Coulomb and Université Montpellier 2, Montpellier, 34095,France; Nikita Nikitskiy, Julien Brault, Mathieu Leroux, Antoine Barbier, Fabrice Semond, CNRS-CRHEA, Université Côte d'Azur, Valbonne, 06560, France; Muhammad Khan, Hideki Hirayama, Fumiya Chugenji, Taiga Kirihara, RIKEN Cluster for Pioneering Research (CPR), 2-1 Hirosawa, Wako, Saitama 351-0198, Japan

- 16:15 2025-Mon-S0509-O002

Manuscript ID: 0003

Direct observation of nanoscopic lattice distortion and composition inhomogeneity in AlGaN multiple-quantum wells

Chia-Yen Huang, National Yang Ming Chiao Tung University; Ying-Chun Chao, Hung-Wei Yen, National Taiwan University

- 16:30 2025-Mon-S0509-O003

Manuscript ID: 0048

Iwińska Award Candidate (Paper Competition)

Enhanced Green Hydrogen Generation Using GO-GaN Photoanodes in Direct Seawater Splitting

Jeong-Kyun OH, Sung-Un Kim, Dae-Young Um, Min-Seok Lee, Cheul-Ro Lee, Yong-Ho Ra, . Division of Advanced Materials Engineering, College of Engineering, Jeonbuk National University (JBNU), Jeonju, Republic of Korea

- 16:45 2025-Mon-S0509-O004

Manuscript ID: 0104

Iwińska Award Candidate (Paper Competition)

Defects Visualization in GaN-based HEMTs with SiNx nano-mask by Cathodoluminescence Spectroscopy

Tu Huynh Pham, Nhu Quynh Diep, Jinji Dai, Quynh Trang Tran, Thi Bich Tuyen Huynh, Wu Ching Chou, Department of Electrophysics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; Thi Thu Mai, Department of Advanced Materials Science and Nanotechnology, University of Science and Technology of Hanoi, Vietnam

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0501-P001

Manuscript ID: 0035

Comparison of n-Ga_2O_3/p-GaN PN Heterojunction Diode Grown by TMGa and TEGa

Ho, Ai, Chun-Kai Huang, Institute of Pioneer Semiconductor Innovation, National Yang Ming Chiao Tung University, Hsinchu 300, Taiwan; Sheng-Ti Chung, Ray-Hua Horng, Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu 300, Taiwan

2025-Tue-P0501-P002

Manuscript ID: 0036

Effect of Post-Deposition Annealing on Room-Temperature Sputtered NiO Gate Dielectric for AlGaN/GaN HEMTs

Hao-Wei Chang, 0965003491; Po-Chuan Liao, qwert61004.ee12@nycu.edu.tw; Ray-Hua Horng, rayhua@nycu.edu.tw

S6. III-N Defect Control and Surface Effects

Oral Session: 3rd Lecture Room 第三演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 15:00-17:00, Monday, November 10, 2025

Presider:

Prof. Hsiang-Chen Wang (National Chung Cheng University, Taiwan)

Prof. Che-Hao Liao (National Yunlin University of Science and Technology, Taiwan)

- 15:00 2025-Mon-S0602-I001

Invited Talk

Impact of polarization fields on surface reconstructions

Prof. Chris G. Van de Walle, Herbert Kroemer Distinguished Professor, Materials, University of California, Santa Barbara, USA

- 15:30 2025-Mon-S0602-O001

Manuscript ID: 0007

Vacancy-type defects in low-dose Si-implanted GaN probed by positron annihilation

H.Iguchi, Toyota Central R&D Labs; M. Horita, J. Suda, Nagoya University; K. Shima, S. F. Chichibu, Tohoku University; S. Ishibashi, University of Tsukuba

- 15:45 2025-Mon-S0602-O002

Manuscript ID: 0029

Investigating GaN-Based Avalanche Photodiode Performance with Different GaN Substrates and p-Layer Doping Profiles

Alexandra V. Dolgashev, Davide Balzerani, Zhiyu Xu, Theeradetch Detchprohm, Russell D. Dupuis, School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332-0250, USA; Subhra Chowdhury, Dhrubes Biswas, Magnolia Optical Technologies, Woburn, Massachusetts 01801 USA; Nepomuk Otte, School of Physics, Georgia Institute of Technology, Atlanta, Georgia 30332-0250, USA

- 16:00 2025-Mon-S0602-O003

Manuscript ID: 0046

High-quality MBE-grown AlN thin film layers on Sapphire substrates by high-temperature annealing

SUNANDA MITRA, MAUD NEMOZ, AIMERIC COURVILLE, Pierre-Marie Coulon, Jean-Yves Duboz, JULIEN BRAULT, Université Côte d'Azur, CNRS, CRHEA, 06560 Valbonne, France

- 16:15 2025-Mon-S0602-O004

Manuscript ID: 0112

Theoretical Study of AlGaN(0001) Surfaces under MOVPE Growth Conditions: Surface Reconstructions, Potential Energy Maps, and Diffusion

Karol Kawka, Pawel Strak, Pawel Kempisty, Institute of High Pressure Physics of the Polish Academy of Sciences, Warsaw, Poland

- 16:30 2025-Mon-S0602-O005

Manuscript ID: 0085

Electrical compensation and acceptor-type carrier traps in nitride semiconductors

Igor Prozheev, Ilja Makkonen, Filip Tuomisto, Department of Physics and Helsinki Institute of Physics, University of Helsinki, P.O. Box 43, FI-00014 HELSINKI, FINLAND

- 16:45 2025-Mon-S0602-O006

Manuscript ID: 0024

The Role of Native Oxide on p-type N-polar GaN Ohmic Contacts

Chao-I (Benny) Liu, Masahiro Kamiyama, Cristyan Quiñones García, Shashwat Rathkanthiwar, Ronny Kirste, Ram ón Collazo, Zlatko Sitar, Department of Materials Science and Engineering, North Carolina State University, Raleigh, North Carolina, USA; Matthew Alessi, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, North Carolina, USA; Pramod Reddy, Adroit Materials, Cary, North Carolina, USA

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0601-P001

Manuscript ID: 0021

The performance comparison of GaN vertical transistors with sidewalls treated using TMAH and H3PO4 solutions

Ting-Ci Li, Yu-Chuan Chu, Zhi-Xiang Zhang, Chih-Kang Chang, Jian-Jang Huang, Graduate Institute of Photonics and Optoelectronics, National Taiwan University

2025-Tue-P0601-P002

Manuscript ID: 0044

Study on the Growth Mechanism of Periodic Structure MoS2

Chin-Jen Huang, paullovealice@gmail.com; Kai-Hsiang Ke, dannykewade51@gmail.com; Ming-Chen Li, yoyo410508@gmail.com; Kuang-Yu Kung, kuangyu365@gmail.com; Chih-Hsin Tseng, chihhsin0322@gmail.com; Hsiang-Chen Wang, hcwang@ccu.edu.tw

2025-Tue-P0601-P003

Manuscript ID: 0045

Fabrication of Cu2O Biosensor for Photoelectrochemical and Impedance Detection of Lung Cancer Cell

Kuang-Yu Kung, kuangyu365@gmail.com; Quan-Han Gong, zxc60153.54345@gmail.com; Ming-Zhen Li, yoyo410508@gmail.com; Chin-Jen Huang, paullovealice@gmail.com; Chih-Hsin Tseng, chihhsin0322@gmail.com; Hsiang-Chen Wang, hcwang@ccu.edu.tw

2025-Tue-P0601-P004

Manuscript ID: 0055

Fermi Level Pinning behaviour of semi-polar (10-11) n-GaN surface before and after passivation

Jun-Young Kwon, Tae-Yeon Seong, Korea University; Hiroshi Amano, Nagoya University

2025-Tue-P0601-P005

Manuscript ID: 0082

Vacancy defects in III-nitride alloys

Filip Tuomisto, University of Helsinki

S7. III-N Optical and Electrical Properties

Oral Session: 3rd Lecture Room 第三演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 15:00-17:15, Tuesday, November 11, 2025

Presider:

Prof. Chan-Shan Yang (National Taiwan Normal University, Taiwan)

Prof. Hsin-Chieh Yu (National Yang Ming Chiao Tung University, Taiwan)

- 15:00 2025-Tue-S0704-I001

Invited Talk

Growth Control and Optical Characteristics of 6-fold and 3-fold Symmetric GaN Pyramid and Pillar Structures for Quantum Photonic Device Applications

Prof. Yong-Hoon Cho, Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

- 15:30 2025-Tue-S0704-I002

Invited Talk

The power race: GaN, SiC, or Ga2O3?

Dr. Sai Charan Vanjari, Prof. Martin Kuball, University of Bristol, UK

- 16:00 2025-Tue-S0704-O001

Manuscript ID: 0040

Performance Enhancement of AlGaN/GaN HEMTs by Ar+ Ion Implantation with Pre-Annealing Process and CF4 Surface Treatment

Min-Chun,Chung, Kun-Yang Jhang, Ren-Hong Zhang, Graduate Institute of Photonics and Optoelectronics, National Taiwan University; Yi-Lun Huang, Graduate School of Advanced Technology, National Taiwan University

- 16:15 2025-Tue-S0704-O002

Manuscript ID: 0012

Monolithic GaN meta-collimator on the backside of microlight emitting diodes

Yu-Chi Lee, Vtin66067632v@gmail.com; Li-Sheng Hu, andyhu891209@gmail.com; Po-Yang Chang, jerome0425@gmail.com; Yu-Min Chang, chang.ym.ee11@nycu.edu.tw; Yao-Wei Huang, ywh@nycu.edu.tw; Chia-Yen Huang, cyhuang06@nycu.edu.tw

- 16:30 2025-Tue-S0704-O003

Manuscript ID: 0106

Deep Magnesium Diffusion in Conductive Ammonothermal GaN for Thick Semi-Insulating Layer Fabrication

Krzysztof Gołyga, Tomasz Sochacki, Arianna Jaroszyńska, Michał Fijałkowski, Karolina Grabiańska, Marcin Zając, Julita Smalc-Koziorowska, Artur Lachowski, Michał Boćkowski, Institute of High Pressure Physics, Polish Academy of Sciences; Lutz Kirste, Patrik Stranak, Fraunhofer Institute for Applied Solid State Physics IAF; Kacper Sierakowski, Department of Material Science and Engineering, North Carolina State University; Rafał Jakieła, Institute of Physics, Polish Academy of Sciences; Marcin Turek, Institute of Physics, Maria Curie-Sklodowska University in Lublin; Kensuke Sumida, Graduate School of Engineering, Nagoya University

- 16:45 2025-Tue-S0704-O004

Manuscript ID: 0066

Ultra-High Brightness Blue Quantum Dot Light-Emitting Diodes with Charge Control Layer

You-Huei Jhang, Min-Han Lu, Institute of Photonic System, College of Photonics, National Yang Ming Chiao Tung University, Tainan 711, Taiwan; Zheng-Wei Lu, Shoou-Jinn Chang, Program on Semiconductor Manufacturing Technology, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University, University Road, Tainan City 701, Taiwan; Yu-Heng Hong, Hao-Chung Kuo, Hon Hai Research Institute, New Taipei City 236, Taiwan; Hsin-Chieh Yu, Program on Semiconductor Manufacturing Technology, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University, University Road, Tainan City 701, Taiwan, Institute of Lighting and Energy Photonics, College of Photonics, National Yang Ming Chiao Tung University, Tainan 711, Taiwan

- 17:00 2025-Tue-S0704-O005

Manuscript ID: 0139

Distinctness of Spontaneous Emission and Optical Gain in Wide InGaN Quantum Wells

Greg Muziol, Mateusz Hajdel, Marcin Siekacz, Pawel Wolny, Czeslaw Skierbiszewski, Institute of High Pressure Physics PAS; Ulrich Theodor Schwarz, Chemnitz University of Technology

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0701-P001

Manuscript ID: 0034

Investigation of (Al,Ga)N:Mg p-type doping using UV light excitation during molecular beam epitaxy growth

Julien Brault, Sankesh Shetty, Satish Gupta, Sunanda Mitra, Sébastien Chenot, Mathieu Leroux, Mohamed Al Khalfioui, Université Côte d’Azur, CNRS, CRHEA, Valbonne, 06560, France; Samuel Matta, RIBER SA, 31 rue Casimir Perier, 95873 Bezons, France; Alexandra Ibanez, Leszek Konczewicz, Pierre Valvin, Guillaume Cassabois, Sylvie Contreras, Bernard Gil, UMR 5221, L2C and Université Montpellier 2, Montpellier, 34095, France; Takeshi Moriyasu, Hideaki Kitahara, Research Center for Development of Far Infrared Region, University of Fukui, 3-9-1 Bunkyo Fukui, 910-8507, Japan; Muhammad Ajmal Khan, Hideki Hirayama, Masahiko Tani, RIKEN Cluster for Pioneering Research (CPR), 2-1 Hirosawa, Wako, Saitama 351-0198, Japan

2025-Tue-P0701-P002

Manuscript ID: 0050

Photon Recycling-Driven Vertical Light Extraction in InGaN Nanorods for Advanced Micro-LED Efficiency

Min-Seok Lee, Sung-Un Kim, Dae-Young Um, Jeong-Kyun Oh, Cheul-Ro Lee, Yong-Ho Ra, Division of Advanced Materials Engineering, College of Engineering, Jeonbuk National University (JBNU), Jeonju, Republic of Korea

2025-Tue-P0701-P003

Manuscript ID: 0069

Open-Circuit Voltage Methods to Detect Micro-LED Characteristics

Fu-An Tu, mannydu.ee11@nycu.edu.tw; Ming-Hsien Wu, ITRI_MHWu@itri.org.tw; Yen-Hsiang Fang, YHFang@itri.org.tw; Hao-Chung Kuo, hckuo0206@nycu.edu.tw; Chien-Chung Lin, chienchunglin@ntu.edu.tw

2025-Tue-P0701-P004

Manuscript ID: 0121

Thickness-Dependent strain relaxation in Semipolar (11-22) AlN on m-Sapphire

Bei Ma, Yoshihiro Ishitani, Chiba University; Kensei Oya, Ryota Akaike, Hideto Miyake, Mie University

S8. III-N Device Modeling and Simulation

Oral Session: 3rd Lecture Room 第三演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 13:00-14:45, Tuesday, November 11, 2025

Presider:

Prof. Ya-Ju Lee (National Cheng Kung University, Taiwan)

Prof. Yoshihiro Kangawa (Kyushu University, Japan)

- 13:00 2025-Tue-S0803-I001

Invited Talk

Optimal Design of Fabrication Process for Deep Ultraviolet Laser Diodes: Computational Approach

Prof. Yoshihiro Kangawa, Research Institute for Applied Mechanics, Kyushu University, Japan

- 13:30 2025-Tue-S0803-I002

Invited Talk

Light Extraction Enhancement in 230 nm far-UVC LEDs Using nanoPSS and Photonic Crystals: Updates on Virus Inactivation

Dr. Muhammad Ajmal Khan, Senior Research Scientist, RIKEN, Japan

- 14:00 2025-Tue-S0803-O001

Manuscript ID: 0042

High RF Metrics and Gate-Length Scaling Behavior in InAlGaN/GaN HEMTs Assessed by Small-Signal Modeling

Kun-Yang Jhang, Min-Chun Chung, Ren-Hong Zhang, Graduate Institute of Photonics and Optoelectronics, National Taiwan University; Yi-Lun Huang, Graduate School of Advanced Technology, National Taiwan University

- 14:15 2025-Tue-S0803-O002

Manuscript ID: 0110

Design Optimization of AlInGaN/GaN HEMTs for High Frequency Operation

Chia-Yu Hung, Yuh-Renn Wu, GIPO, National Taiwan University; Po-Tsung Tu, Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan.

- 14:30 2025-Tue-S0803-O003

Manuscript ID: 0119

Analysis of Vertical GaN MOSFET with High Current Density for High-Power Applications

Yi-Chen Ho, Yuh-Renn Wu, GIPO, National Taiwan University

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P0801-P001

Manuscript ID: 0038

Optical Gain Evolution and Field Screening in Wide Polar InGaN and AlGaN Quantum Wells

Marta Gladysiewicz, Robert Kudrawiec, Wroclaw University of Science and Technology

S9. III-N Spin-related Phenomena

Oral Session: 3rd Lecture Room 第三演講室 (B1F)

Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 13:00-13:30, Monday, November 10, 2025

Presider:

Prof. Yu-Hsun Chou (National Cheng Kung University, Taiwan)

Prof. Jesús Zúñiga Pérez (Nanyang Technological University, Singapore)

- 13:00 2025-Mon-S0906-I001

Invited Talk

Quantum sensing with hexagonal BN

Prof. Jesús Zúñiga Pérez, CNRS Research Director

S10. III-N Devices—FETs, LEDs, and Lasers

Oral Session: 3rd Lecture Room 第三演講室 (B1F)
Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 09:15-11:30, Wednesday, November 12, 2025

Presider:

Prof. Zhi-Ting Ye (National Chung Cheng University, Taiwan)

Prof. Tetsuya Takeuchi (Meijo University, Japan)

- 09:15 2025-Wed-S1005-I001

Invited Talk

Highly efficient GaN-based vertical-cavity surface-emitting lasers

Prof. Tetsuya Takeuchi, Satoshi Kamiyama, Motoaki Iwaya, Meijo University

- 09:45 2025-Wed-S1005-O001

Manuscript ID: 0088

Low-voltage operation toward high-efficiency GaN-based vertical-cavity surface-emitting laser

Atsunori Tokushi, Naoki Shibahara, Shoki Arakawa, Taiki Kitamura, Tetsuya Takeuchi, Satoshi Kamiyama, Motoaki Iwaya, Department of Materials Science and Engineering, Meijo University

- 10:00 2025-Wed-S1005-O002

Manuscript ID: 0020

Vertical GaN MOSFETs with Body Trench Structure for Enhanced Electrical Performance

Jun-Xiang Wang, Zhi-Xiang Zhang, Chih-Kang Chang, Ting-Ci Li, Graduate Institute of Photonics and Optoelectronics, National Taiwan University; Jian-Jang Huang, Department of Electrical Engineering, National Taiwan University

- 10:15 2025-Wed-S1005-O003

Manuscript ID: 0089

Laser Lift Off via laser scanning toward high-efficiency UV-C LEDs

Sena Miura, Maho Fujita, Teppei Takehisa, Hibiki Muto, Kenta Takase, Marina Fujita, Haruto Hirota, Hisanori Ishiguro, Motoaki Iwaya, Satoshi Kamiyama, Tetsuya Takeuchi, Department of Materials Science and Engineering, Meijo Univ.; Yoshiki Saito, Koji Okuno, Toyoda Gosei Co., Ltd.

- 10:30 2025-Wed-S1005-O004

Manuscript ID: 0061

Step-Free Monolithic Integration of GaInN-Based Stacked RGB μLEDs with Co-Planar Electrodes

Yuki Shimizu, Koko Fukushima, Keisuke Takeya, Yoshinobu Suehiro, Tetsuya Takeuchi, Satoshi Kamiyama, Motoaki Iwaya, Department of Materials Science and Engineering, Meijo University; Daisuke Iida, Kazuhiro Ohkawa, Electrical and Computer Engineering Programme, Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST)

- 10:45 2025-Wed-S1005-O005

Manuscript ID: 0117

Far-Ultraviolet Second Harmonic Generation in Four-Layer Polarity Inverted AlN Channel Waveguide

Eiki Sato, Hiroto Honda, Masahiro Uemukai, Tomoyuki Tanikawa, Ryuji Katayama, Graduate School of Engineering, The University of Osaka, Osaka 565-0871, Japan; Tomohiro Tamano, Hideto Miyake, Graduate School of Engineering, Mie University, Mie 514-8507, Japan; Kanako Shojiki, Graduate School of Engineering, Kyoto University, Kyoto 615-8510, Japan

- 11:00 2025-Wed-S1005-O006

Manuscript ID: 0079

AlGaN homojunction tunnel junctions with Mg and Si concentrations over 3×10^20cm^-3

Hibiki Muto, Teppei Takehisa, Sena Miura, Marina Fujita, Kenta Takase, Haruto Hirota, Hisanori Ishiguro, Satoshi Kamiyama, Motoaki Iwaya, Tetsuya Takeuchi, Meijo Univ.

- 11:15 2025-Wed-S1005-O007

Manuscript ID: 0137

High-Performance AlInGaN/GaN HEMTs on 8 inch GaN-on-Si Using CMOS BEOL-Compatible Processing

Po-Tsung Tu, Po-Tsung Lee, Hao-Chung Kuo, Department of Photonics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan.; Po-Tsung Tu, Po-Chun Yeh, Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan.; Sheng-Kai Chen, Department of Electrical Engineering, National Central University, Taoyuan, Taiwan; Yuh-Renn Wu, Graduate Institute of Photonic and Optoelectronics and Department of Electrical Engineering,; Jen-Inn Chyi, Department of Electrical Engineering, National Central University, Taoyuan, Taiwan.

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P1001-P001

Manuscript ID: 0004

Directional Optimization of Resonant Cavity Micro Light-Emitting Diodes Using Multilayer DBR and Microlens Integration

Chien-Chi Huang, Li-Yin Chen, Fang-Chung Chen, Department of Photonics, College of Electrical and Computer Engineering, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan; Tzu-Yi Lee, Hao-Chung Kuo, Department of Photonics, College of Electrical and Computer Engineering, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan and Semiconductor Research Center, Hon Hai Research Institute, Taipei 11492, Taiwan; Fu-He Hsiao, Semiconductor Research Center, Hon Hai Research Institute, Taipei 11492, Taiwan and Department of Electrophysics, College of Science, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan; Kuo-Bin Hong, Chin-Wei Sher, Yu-Heng Hong, Semiconductor Research Center, Hon Hai Research Institute, Taipei 11492, Taiwan; Gong-Ru Lin, Graduate Institute of Photonics and Optoelectronics and the Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; Chia-Feng Lin, Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan; Jr-Hau He, Department of Materials Science and Engineering, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong

2025-Tue-P1001-P002

Manuscript ID: 0010

Effect of air hole geometry on the optical properties of InGaN/GaN photonic crystal surface-emitting lasers

Wen-Hsuan Hsieh, nickhsieh.ee08@nycu.edu.tw; Ching-Han Lin, kevin89112016@gmail.com; Chen-Yu Yang, alex.yang.ee13@nycu.edu.tw; Tien-Chang Lu, timtclu@nycu.edu.tw; Chia-Yen Huang, cyhuang06@nycu.edu.tw

2025-Tue-P1001-P003

Manuscript ID: 0014

Tunnel Junctions for New Architecture of Nitride Devices

Czeslaw Skierbiszewski, Grzegorz Muziol, Mikolaj Zak, Marcin Siekacz, Marta Sawicka, Henryk Turski, Institute of High Pressure Physics PAS

2025-Tue-P1001-P004

Manuscript ID: 0015

Observation of Quasi-Saturation in Sidewall-Gate GaN Vertical Transistors

Chih-Kang Chang, Zhi-Xiang Zhang, Ting-Ci Li, Jun-Xiang Wang, Jian-Jang Huang, Graduate Institute of Photonics and Optoelectronics, National Taiwan University

2025-Tue-P1001-P005

Manuscript ID: 0019

Impact of Indium/Aluminum Composition on DC Performance of InAlN/GaN HEMTs on Silicon Substrates

Shyh-Jer Huang, Tzy-Yu Shen, Department of Electro-Optical Engineering, National Formosa University, Huwei Township, Yunlin County 632, Taiwan; Yu-Chen Liu, Yung-Wei Chen, Meng-Chyi Wu, Institute of Electronics Engineering, National Tsing Hua University, Hsinchu 30013, Taiwan; Chun-Yu Lin, Shi-Cheng Huang, Zi-Hao Wang, Yan-Kuin Su, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng-Kung University, Tainan 701, Taiwan.; Takashi Yoda, Takayuki Ohba, WOW Alliance, Institute of Science Tokyo, 4259 Nagatsuta, Midori-ku, Yokohama, 226-8503, Japan

2025-Tue-P1001-P006

Manuscript ID: 0022

Micro AlGaInP-based red light-emitting diode efficiency improvement by sidewall oxidation

Shu-Han Yuan, Yuan-Chao Wang, Cheng-Jui Yu, Jian-Jang Huang, Graduate Institute of Photonics and Optoelectronics, National Taiwan University.

2025-Tue-P1001-P007

Manuscript ID: 0043

Direct correlation of structural and optical properties of a red-emitting InGaN/GaN Mini-LED

Niklas Dreyer, Frank Bertram, Gordon Schmidt, Silke Petzold, Anja Dempewolf, Stefan Sterling, Juergen Christen, University of Magdeburg; Zhaoying Chen, Zexing Yuan, Yan Wang, Xinqiang Wang, Peking University

2025-Tue-P1001-P008

Manuscript ID: 0047

TEGa-Based Non-Recessed β-Ga_2O_3 MOS Structure for High Breakdown Voltage Applications

Jun-Ting Ye, justin201.ee13@nycu.edu.tw

2025-Tue-P1001-P009

Manuscript ID: 0059

Investigation of Normally-off InAlN/GaN HEMTs with Recessed Gate and p-type NiOx Gate Electrodes

Ysui-Yu Hsieh, Chun-Yu Lin, Shi-Cheng Huang, Rong-Ming Ko, Zi-Hao Wang, Yan-Kuin Su, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng-Kung University, Tainan 701, Taiwan.; Jun-Wei Huang, Min-Han Li, Institute of Electronics Engineering, Department of Electrical Engineering, National Cheng Kung University, Tainan 701, Taiwan; Tzy-Yu Shen, Jian-Kai Chen, Shyh-Jer Huang, Department of Electro-Optical Engineering, National Formosa University, Huwei Township, Yunlin County 632, Taiwan

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2025-Tue-P1001-P010

Manuscript ID: 0060

Fabrication and characterization of a stacked GaInN monolithic μLED array with a step-free structure

Koko Fukushima, Yuki Shimizu, Keisuke Takeya, Yoshinobu Suehiro, Satoshi Kamiyama, Tetsuya Takeuchi, Motoaki Iwaya, Department of Materials Science and Engineering, Meijo University

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2025-Tue-P1001-P011

Manuscript ID: 0070

275 nm Deep-Ultraviolet Light-Emitting Diodes with 9.1% Wall-Plug Efficiency

Guo-Dong Hao, Manabu Taniguchi, Shin-ichiro Inoue, National Institute of Information and Communications Technology (NICT)

2025-Tue-P1001-P012

Manuscript ID: 0075

The Photonic Field Distribution Study of InGaN-based U-shape Micro LEDs

Yi-Chia Hwang, Ke-Hsi Chiang, Yu-Long Zhong, Yu-Hsien Wen, Hao-Jen Chang, Chien-Chung Lin, Graduate Institute of Photonics and Optoelectronics, National Taiwan University

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2025-Tue-P1001-P013

Manuscript ID: 0078

Dependence of hole concentration on the AlN mole fraction in polarization-doped AlGaN without Mg doping on AlN

Teppei Takehisa, Hibiki Muto, Sena Miura, Marina Fujita, Kenta Takase, Haruto Hirota, Hisanori Ishiguro, Motoaki Iwaya, Satoshi Kamiyama, Tetsuya Takeuchi, Meijo Univ.; Yoshiki Saito, Koji Okuno, Hiroshi Miwa, TOYODA GOSEI Co. Ltd.

2025-Tue-P1001-P014

Manuscript ID: 0094

The AlGaN-Based Deep Ultraviolet Micro-Light-Emitting Diodes with Thermally Oxidized AlxGa2–xO3 Sidewall

Tien-Yu Wang, Wei-Chih Lai, Qiao-Ju Xie, Jinn-Kong Sheu, Department of Photonics, National Cheng Kung University.; Sheng-Po Chang, Department of Microelectronics Engineering, National Kaohsiung University of Science and Technology.; Cheng-Huang Kuo, Institute of Lighting and Energy Photonics, College of Photonics, National Yang Ming Chiao Tung University.

2025-Tue-P1001-P015

Manuscript ID: 0111

Defect Control of p-GaN Cladding Layer in Red-emission Nanocolumn LED Crystals

Mahiro Oguchi, Rie Togashi, Katsumi Kishino, Sophia University

2025-Tue-P1001-P016

Manuscript ID: 0116

Low-temperature characteristics of GaN-based Ultraviolet Micro LEDs with ALD Passivation

Yu-Hsien Wen, aabbcc112233445566778899@gmail.com; Yu-Long Zhong, a0903195247@gmail.com; Bo-Ming Huang, bomig30414@gmail.com; Yi-Chia Hwang, EricHwang@playnitride.com; Chien-Chung Lin, chienchunglin@ntu.edu.tw

2025-Tue-P1001-P017

Manuscript ID: 0084

High temperature operation and temperature dependence of N-polar GaN/AlN HEMTs

N. Okada, F. Yamanaka, A. H. Zazuli, M. Feng, T. Kimoto, R. Ninoki, N. Hirata, H. Danbata, A. Hayashiuchi, S. Kurai, Y. Yamada, Yamguchi Univ.; M. Hiroki, K. Hirama, Y. Taniyasu, Basic Research Laboratories, NTT, Inc.

2025-Tue-P1001-P018

Manuscript ID: 0135

Monolithically Integrated AlGaN/GaN HEMTs-Based CMOS Logic Circuits

Pei-Yu Ling, aa82603053@gmail.com; Wen-Yao Yang, a0978103282@gmail.com; Yeong-Her Wang, yhw@ee.ncku.edu.tw; Lung-Hsing Hsu, algerhsu@narlabs.org.tw; Wen-Hsien Huang, whhuang@narlabs.org.tw; Kuan-Wei Lee, Department of Electronic Engineering, I-Shou University, Kaohsiung 840, Taiwan

Special Session. Ultrawide-bandgap materials and devices

Oral Session: 2nd Lecture Room 第二演講室 (B1F)
Poster Session: Multifunction Room 多功能廳 (1F)

Oral Session: 09:15-11:30, Wednesday, November 12, 2025

Presider:

Prof. Hsin-Ying Lee (National Cheng Kung University, Taiwan)

Prof. Sheng-Po Chang (National Kaohsiung University of Science and Technology, Taiwan)

- 09:15 2025-Wed-S1105-I001

Invited Talk

Nitrogen doping technology for Ga2O3 devices

Prof. Masataka Higashiwaki, Professor, Osaka Metropolitan University, Japan

- 09:45 2025-Wed-S1105-I002

Invited Talk

Recent Advances in Heteroepitaxial Diamond: From Single Crystal Substrate to Devices

Prof. Okhyun Nam, Tech University of Korea, South Korea

- 10:15 2025-Wed-S1105-O001

Manuscript ID: 0032

Phase Transformation and Ferroelectricity of ε(κ)-Ga2O3

Po-Kai Kung, Dong-Sing Wuu, Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Nantou 54561, Taiwan; Wen-Hao Lee, Department of Materials Science and Engineering, National Chung Hsing University, Taichung 40227, Taiwan; Tung-Han Wu, Po-Liang Liu, Graduate Institute of Precision Engineering, National Chung Hsing University, Taichung 40227, Taiwan

- 10:30 2025-Wed-S1105-O002

Manuscript ID: 0063

Effect of 2D carrier localization on light emission in (Al,Ga)N alloys emitting in the Deep UV range.

Alexandra Ibanez, Bernard Gil, Guillaume Cassabois, Pierre Valvin, Wilfried Desrat, UMR 5221, Laboratoire Charles Coulomb and Université Montpellier 2, Montpellier, 34095,France; Nikita Nikitskiy, Julien Brault, Mathieu Leroux, Antoine Barbier, Fabrice Semond, CNRS-CRHEA, Université Côte d’Azur, Valbonne, 06560, France; Muhammad Khan, Hideki Hirayama, Fumiya Chugenji, Taiga Kirihara, RIKEN Cluster for Pioneering Research (CPR), 2-1 Hirosawa, Wako, Saitama 351-0198, Japan

- 10:45 2025-Wed-S1105-O003

Manuscript ID: 0072

Ultra-Wide Bandgap AlGaN Polarization Doped PolFET Heterostructures for RF Transistors with a Contact Resistance less than 1 ohm.mm

Andrew Allerman, Andrew M. Armstrong, Brianna A. Klein, Sandia National Laboratories, Albuquerque, NM, USA, 87185; Seungheon Shin, Yinxuan Zhu, Jon Pratt, Davide Orlandini, Siddharth Rajan, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio, USA

- 11:00 2025-Wed-S1105-O004

Manuscript ID: 0039

Investigation of Ga2O3-based NO2 Gas Sensors with Roughened Seed Layer

Ting-Chun Chang, Tun-Hui Yang, Hsin-Ying Lee, Department of Photonics, National Cheng Kung University, Tainan 701, Taiwan, Republic of China; Mu-Ju Wu, Program on Key Materials, Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University, Tainan 701, Taiwan, Republic of China; Ching-Ting Lee, Institute of Microelectronics, Department of Electrical Engineering, National Cheng Kung University, Tainan 701, Taiwan, Republic of China

- 11:15 2025-Wed-S1105-O005

Manuscript ID: 0058

Low interface trap density of 4H-SiC MIS capacitor with a boron nitride PECVD layer

Ravi Ranjan Kumar, Promit Kumar Khan, Niall Tumilty, National Yang Ming Chiao Tung University

Poster Session: 15:00~17:00, Tuesday, November 11, 2025

2025-Tue-P1101-P001

Manuscript ID: 0001

Atomic-Scale Characterization of Coherent β-Ga_2O_3/Al_2O_3 Interface Formed by MOCVD

Wei-Chun Chen, Wei-Lin Wang, Kun-An Chiu, Hung-Pin Chen, Yu-Wei Lin, Fong-Zhi Chen, National Center for Instrumentation Research, National Institutes of Applied Research

2025-Tue-P1101-P002

Manuscript ID: 0002

Heteroepitaxial Growth of high-quality β-Ga_2O_3 Films on c-Al_2O_3 substrate with various O2/Ga flow rate by MOCVD

Wei-Chun Chen, Wei-Lin Wang, Kun-An Chiu, Hung-Pin Chen, Yu-Wei Lin, Chao-Te Lee, Fong-Zhi Chen, National Center for Instrumentation Research, National Institutes of Applied Research

2025-Tue-P1101-P003

Manuscript ID: 0006

Investigation of a diamond epitaxial layer with a gradient of Boron doping

Thu Nhi Tran Caliste, Jose Baruchel, European Synchrotron Radiation Facility (ESRF); David Eon, Université Grenoble Alpes, Institut Néel, CNRS UPR2940, BP 166, Grenoble, F-38042, France,; Patrik Straňák, Lutz Kirste, Fraunhofer Institute for Applied Solid State Physics (IAF), Tullastrasse 72, Freiburg, D-79108, Germany

2025-Tue-P1101-P004

Manuscript ID: 0016

Effect of Sapphire Substrate Orientation on the Performance of Enhancement-Mode β-Ga2O3 MOSFETs

Ching-Hsuan Lee, Wei-Jhe Chen, Ray-Hua Horng, Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan, ROC

2025-Tue-P1101-P005

Manuscript ID: 0017

Thermally Enhanced Dopant Activation in Non-Recess β-Ga2O3 MOSFET Fabrication

Chun-Chia Chang, Jun-Ting Ye, Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan, ROC.

2025-Tue-P1101-P006

Manuscript ID: 0023

Impact of Schottky Metal Stacks on Electrical Performance of β-Ga_2O_3 SBDs

Cheng-Jhang Yu, taco012354@gmail.com; Zhong-Lin Ye, gary0612.ii12@nycu.edu.tw; Sheng-Ti Chung, shengti1985.c@gmail.com; Ray-Hua Horng, rayhua@nycu.edu.tw

2025-Tue-P1101-P007

Manuscript ID: 0053

Photoactivated CO Gas Sensor Based on β-Ga2O3 Thin Films Deposited by RF Magnetron Sputtering

Chun-Kai Wang, Department of Microelectronics Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; I-Hsiung Wang, Yu-Zung Chiou, Department of Electronics Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan

2025-Tue-P1101-P008

Manuscript ID: 0077

Thermodynamic and experimental studies of c-In2O3 growth using In2O and H2O source gases

Rie Togashi, Sophia University, Chiyoda, Tokyo 102-8554, Japan; Masato Ishikawa, Gas-Phase Growth Ltd., Koganei, Tokyo 184-0012, Japan

2025-Tue-P1101-P009

Manuscript ID: 0083

Fabrication of Indium Tungsten Gallium Oxide Thin Films for Application in Phototransistors

Yu-Quan Zhang, Feng-Chi Liu, Zi-Zhen Wang, Wei-You Shen, Song-Jing Song, Ming-Chih Tsai, Yi-Cheng Lin, Sheng-Po Chang, National Kaohsiung University of Science and Technology; Yu-Chen Chen, National Cheng Kung University

2025-Tue-P1101-P010

Manuscript ID: 0100

Breaking Circular Polarization Symmetry via Chiral PB-Phase Metasurfaces

Chih-Shan Chuang, m46144102@gs.ncku.edu.tw; Shih-Hsiu Huang, kitgun124@gmail.com; Po-Sheng Huang, louis19950128@gmail.com; Hsiu-Ping Su, samwii888@gmail.com; Pin Chieh Wu, pcwu@gs.ncku.edu.tw

2025-Tue-P1101-P011

Manuscript ID: 0101

Enhanced Efficiency in Visible Metalenses Using Complex Electric Field Optimization

Po-Sheng Huang, Pin Chieh Wu, Department of Photonics, National Cheng Kung University

2025-Tue-P1101-P012

Manuscript ID: 0123

AI-driven Prediction Framework for High-Power SiC Trench MOSFET’s Parameters

Tejender Singh Rawat, Chia-Lung Hung, Yi-Kai Hsiao, Wei-Chen Yu, Surya Elangovan, Wei-Ting Lin, Hao-Chung Kuo, Semiconductor Research Center, Hon Hai Research Institute, Foxconn, Taiwan

Poster Bulletin Board No.

(Please post according to the poster bulletin board number)

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002	2025-Tue-P0101-P002	0093	*From Crystal to Wafer: Advanced Mechanical Processing of Ammonothermal GaN*
003	2025-Tue-P0101-P003	0102	*Properties of defects formed as a result of hillock coalescence in Am- and HVPE-grown GaN crystals.*
004	2025-Tue-P0101-P004	0105	*Thermodynamic Analysis of GaN Solubility in Supercritical Ammonia: Influence of Mineralizer Concentration and Pressure*
005	2025-Tue-P0101-P005	0011	*Bragg Diffraction Imaging Analysis of Crystal Defects in AlN Substrates*
006	2025-Tue-P0101-P006	0057	*Analysis of Growth Discontinuities in Ammonothermal GaN Crystals Using Bragg Diffraction Imaging*
007	2025-Tue-P0201-P001	0033	*Effect of Flux Composition on Growth Behavior of AlN Crystals Using Fe-Cr-Ni Fluxes*
008	2025-Tue-P0201-P002	0067	*Buffer Layer Design toward 1600 V GaN HEMTs on 150 mm Si Substrates*
009	2025-Tue-P0201-P003	0080	*Performance Enhancement of AlGaN/GaN HEMTs on 150 mm Si Substrates by BGaN Buffer Layers*
010	2025-Tue-P0201-P004	0113	*Direct growth of Bulk InGaN nanocolumns on nanotemplates prepared using Ni nanodot mask*
011	2025-Tue-P0201-P005	0114	*Influence of Underlying GaN Nanocolumns on the Selective Area Growth of GaInN*
012	2025-Tue-P0201-P006	0115	*Surface Stoichiometry Control in GaN Pulsed Sputtering Epitaxy Using Sintered Target*
013	2025-Tue-P0201-P007	0124	*USPD-Fabricated Li-Doped p-NiO_x Gates for High-Performance Normally-Off InAlGaN/GaN HEMTs*
014	2025-Tue-P0201-P008	0134	*Growth and characterization of N-polar AlN and strained GaN heterostructures by MOVPE*

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017	2025-Tue-P0401-P002	0097	*Growth of Boron Nitride on (100) Silicon Substrates*
018	2025-Tue-P0401-P003	0054	*Coupling between WSe2 and Plasmonic Structure*
019	2025-Tue-P0401-P004	0052	*Formation of non-polar and semi-polar AlN planes via microwave annealing of AlN on AAO templates*
020	2025-Tue-P0401-P005	0076	*Sensitivity Enhancement of Aluminum Nitride Surface Acoustic Wave Humidity Sensors Using Silica Nanospheres*
021	2025-Tue-P0501-P001	0035	*Comparison of n-Ga_2O_3/p-GaN PN Heterojunction Diode Grown by TMGa and TEGa*
022	2025-Tue-P0501-P002	0036	*Effect of Post-Deposition Annealing on Room-Temperature Sputtered NiO Gate Dielectric for AlGaN/GaN HEMTs*
023	2025-Tue-P0601-P001	0021	*The performance comparison of GaN vertical transistors with sidewalls treated using TMAH and H3PO4 solutions*
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025	2025-Tue-P0601-P003	0045	*Fabrication of Cu2O Biosensor for Photoelectrochemical and Impedance Detection of Lung Cancer Cell*
026	2025-Tue-P0601-P004	0055	*Fermi Level Pinning behaviour of semi-polar (10-11) n-GaN surface before and after passivation*
027	2025-Tue-P0601-P005	0082	*Vacancy defects in III-nitride alloys*
028	2025-Tue-P0701-P001	0034	*Investigation of (Al,Ga)N:Mg p-type doping using UV light excitation during molecular beam epitaxy growth*
029	2025-Tue-P0701-P002	0050	*Photon Recycling-Driven Vertical Light Extraction in InGaN Nanorods for Advanced Micro-LED Efficiency*
030	2025-Tue-P0701-P003	0069	*Open-Circuit Voltage Methods to Detect Micro-LED Characteristics*
031	2025-Tue-P0701-P004	0121	*Thickness-Dependent strain relaxation in Semipolar (11-22) AlN on m-Sapphire*
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033	2025-Tue-P1001-P001	0004	*Directional Optimization of Resonant Cavity Micro Light-Emitting Diodes Using Multilayer DBR and Microlens Integration*

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035	2025-Tue-P1001-P003	0014	*Tunnel Junctions for New Architecture of Nitride Devices*
036	2025-Tue-P1001-P004	0015	*Observation of Quasi-Saturation in Sidewall-Gate GaN Vertical Transistors*
037	2025-Tue-P1001-P005	0019	*Impact of Indium/Aluminum Composition on DC Performance of InAlN/GaN HEMTs on Silicon Substrates*
038	2025-Tue-P1001-P006	0022	*Micro AlGaInP-based red light-emitting diode efficiency improvement by sidewall oxidation*
039	2025-Tue-P1001-P007	0043	*Direct correlation of structural and optical properties of a red-emitting InGaN/GaN Mini-LED*
040	2025-Tue-P1001-P008	0047	*TEGa-Based Non-Recessed* β-Ga_2O_3 *MOS Structure for High Breakdown Voltage Applications*
041	2025-Tue-P1001-P009	0059	*Investigation of Normally-off InAlN/GaN HEMTs with Recessed Gate and p-type NiOx Gate Electrodes*
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047	2025-Tue-P1001-P015	0111	*Defect Control of p-GaN Cladding Layer in Red-emission Nanocolumn LED Crystals*
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052	2025-Tue-P1101-P002	0002	*Heteroepitaxial Growth of high-quality* β*-*Ga_2O_3 *Films on c-*Al_2O_3 *substrate with various O2/Ga flow rate by MOCVD*
053	2025-Tue-P1101-P003	0006	*Investigation of a diamond epitaxial layer with a gradient of Boron doping*
054	2025-Tue-P1101-P004	0016	*Effect of Sapphire Substrate Orientation on the Performance of Enhancement-Mode* β*-Ga2O3 MOSFETs*
055	2025-Tue-P1101-P005	0017	*Thermally Enhanced Dopant Activation in Non-Recess* β*-Ga2O3 MOSFET Fabrication*
056	2025-Tue-P1101-P006	0023	*Impact of Schottky Metal Stacks on Electrical Performance of* β*-*Ga_2O_3 *SBDs*
057	2025-Tue-P1101-P007	0053	*Photoactivated CO Gas Sensor Based on* β*-Ga2O3 Thin Films Deposited by RF Magnetron Sputtering*
058	2025-Tue-P1101-P008	0077	*Thermodynamic and experimental studies of c-In2O3 growth using In2O and H2O source gases*
059	2025-Tue-P1101-P009	0083	*Fabrication of Indium Tungsten Gallium Oxide Thin Films for Application in Phototransistors*
060	2025-Tue-P1101-P010	0100	*Breaking Circular Polarization Symmetry via Chiral PB-Phase Metasurfaces*
061	2025-Tue-P1101-P011	0101	*Enhanced Efficiency in Visible Metalenses Using Complex Electric Field Optimization*
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Akira Uedono	2025-Mon-S0602-O001	Ho, Ai	2025-Tue-P0501-P001
Andrew Allerman	2025-Wed-S1105-O003	Hsieh Wen Hsuan	2025-Tue-P1001-P002
Atsunori Tokushi	2025-Wed-S1005-O001	HSIU-PING SU	2025-Tue-P1101-P011
BEI MA	2025-Tue-P0701-P004	Hung-Yang Lin	2025-Tue-P0201-P003
Bernard Gil	2025-Mon-S0509-O001	Igor Prozheev	2025-Mon-S0602-O005
	2025-Wed-S1105-O002	Jeong Kyun OH	2025-Mon-S0509-O003
Bo-Ming Huang	2025-Tue-P1001-P016	Julien Brault	2025-Mon-S0407-O001
Chang Hao-Wei	2025-Tue-P0501-P002		2025-Tue-P0701-P001
Chao-I (Benny) Liu	2025-Mon-S0602-O006	Jun-Ting Ye	2025-Tue-P1001-P008
Che-Hao Liao	2025-Tue-P0401-P004		2025-Tue-P1101-P005
	2025-Tue-P0401-P005	Jun-Xiang Wang	2025-Wed-S1005-O002
Cheng-Jhang Yu	2025-Tue-P1101-P006	Jun-Young Kwon	2025-Tue-P0601-P004
Chiao-Chih Lin	2025-Tue-P0401-P003	Karol Kawka	2025-Mon-S0602-O004
Chia-Yen Huang	2025-Mon-S0509-O002	Kohei Nomura	2025-Tue-P0201-P006
Chia-Yu Hung	2025-Tue-S0803-O002	Koko Fukushima	2025-Tue-P1001-P010
Chien-Chi Huang	2025-Tue-P1001-P001	Kosei Asao	2025-Mon-S0101-O003
Chien-Chung Lin	2025-Tue-P0701-P003	Krzysztof Gołyga	2025-Mon-S0101-O001
	2025-Tue-P1001-P012		2025-Tue-S0704-O003
Chih-Kang Chang	2025-Tue-P1001-P004	Kuang-Yu Kung	2025-Tue-P0601-P003
Chih-Shan Chuang	2025-Tue-P1101-P010	Kun-Yang Jhang	2025-Tue-S0803-O001
Chin-Jen Huang	2025-Tue-P0601-P002	Kun-Yu Lai	2025-Tue-P0401-P001
Chun-Kai Wang	2025-Tue-P1101-P007		2025-Tue-P0401-P002
Czeslaw Skierbiszewski	2025-Tue-P1001-P003	Lutz Kirste	2025-Tue-P0101-P005
Eberhard Richter	2025-Tue-S0303-O003		2025-Tue-P0101-P006
Eiki Sato	2025-Wed-S1005-O005	Magdalena Alicja Zajac	2025-Tue-P0101-P003
Filip Tuomisto	2025-Tue-P0601-P005	Mahiro Oguchi	2025-Tue-P1001-P015
Go Shinnoda	2025-Tue-P0201-P001	Makoto OHTSUKA	2025-Tue-S0204-O005
Greg Muziol	2025-Tue-S0704-O005	Marek Zak	2025-Tue-P0101-P001
Guo-Dong Hao	2025-Tue-P1001-P011	Marta Gladysiewicz	2025-Tue-P0801-P001
Hibiki Muto	2025-Wed-S1005-O006	Marta Sobanska	2025-Mon-S0407-O002
Hiroki Yasunaga	2025-Tue-S0204-O001	Min-Chun Chung	2025-Tue-S0704-O001
HISASHI MURAKAMI	2025-Mon-S0101-O005	Min-Seok Lee	2025-Tue-P0701-P002

Presenter	Paper No.	Presenter	Paper No.
N. Okada	2025-Tue-P1001-P017	SUNANDA MITRA	2025-Mon-S0602-O003
Naoki Fujimoto	2025-Mon-S0101-O002	Takuto Katogi	2025-Tue-P0201-P005
Niklas Dreyer	2025-Tue-P1001-P007	TEJENDER SINGH RAWAT	2025-Tue-P1101-P012
Okhyun Nam, Prof.	2025-Tue-S0303-O001	Teppei Takehisa	2025-Tue-P1001-P013
Pawel Kempisty	2025-Tue-P0101-P004	Thu Nhi Tran Caliste	2025-Tue-P1101-P003
Petro Sadovyi	2025-Mon-S0101-O004	Ting-Chun Chang	2025-Wed-S1105-O004
Pham Tu Huynh	2025-Mon-S0509-O004	Ting-Ci Li	2025-Tue-P0601-P001
Po-Kai Kung	2025-Wed-S1105-O001	Tomasz Sochacki	2025-Tue-P0101-P002
Po-Tsung Tu	2025-Wed-S1005-O007		2025-Tue-S0303-O004
Ravi Ranjan Kumar	2025-Wed-S1105-O005		2025-Tue-P0301-P001
Rennosuke Hara	2025-Tue-S0204-O004	Tomohiro Tamano	2025-Tue-S0204-O007
Rie Togashi	2025-Tue-P1101-P008	Wei-Chih Lai	2025-Tue-P1001-P014
Robert Kudrawiec	2025-Mon-S0407-O003	Wei-Chun Chen	2025-Tue-P1101-P001
Russel Dupuis	2025-Mon-S0602-O002		2025-Tue-P1101-P002
Samuel Yang	2025-Tue-S0303-O002	Wei-Jhe Chen	2025-Tue-P1101-P004
Satoshi Ishikawa	2025-Tue-P0201-P004	Wen-Yao Yang	2025-Tue-P1001-P018
Sen Li	2025-Mon-S0108-O002	Yi-Chen Ho	2025-Tue-S0803-O003
Sena Miura	2025-Wed-S1005-O003	Yoann ROBIN	2025-Tue-P0201-P008
Shao-Hsiang Hsu	2025-Tue-P0201-P002	Ysui-Yu Hsieh	2025-Tue-P1001-P009
Sheng-Po Chang	2025-Tue-P1101-P009	YU CHI LEE	2025-Tue-S0704-O002
Shinnosuke Mori	2025-Tue-S0204-O002	Yu-Hsuan Chen	2025-Tue-P0201-P007
Shogo Washida	2025-Mon-S0108-O001	Yuki Shimizu	2025-Wed-S1005-O004
Shu-Han Yuan	2025-Tue-P1001-P006	Yu-Ming Chang	2025-Tue-S0303-O005
Shunya Nanri	2025-Tue-S0204-O006	Z.R. Zytkiewicz	2025-Tue-S0204-O003
Shyh-Jer Huang	2025-Tue-P1001-P005	Zheng-Wei Lu	2025-Tue-S0704-O004

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台灣真空學會
Taiwan Vacuum Society

真空技術研討會暨
理論與實務/操作全系列訓練班

日期:2025年12月18-19日
課程地點：高雄市-國立中山大學

課程大綱	講師/現職
真空度量—儀表、量測與校正/測漏與封合	**陳維鈞**/國家實驗研究院國家儀器科技研究中心智慧鍍膜設備發展組研究員兼任組長
真空技術基礎與系統工程綜述/真空系統	**熊高鈺**/國家同步輻射研究中心研究員
材料與真空元件/真空幫浦	**薛心白**/國家同步輻射研究中心助研究員
真空系統組裝封合→抽氣→測漏→補漏與拆解/成果報告	資深真空工程師 班主任－**林煒淳**/國立中山大學光電系副教授

(1) 一天課程：基礎課程、進階課程二擇一，新台幣 3,500 元。
【學會會員價 2,800 元；學生價 2,400 元】

(2) 兩天課程：基礎課程+進階課程，新台幣5,100元。
【學會會員價 4,000 元；學生價 3,200 元】

(3) 三人 (含) 以上一同報名者，每人費用再享 200 元折價優惠。

(4) 結業後由台灣真空學會與台灣儀器科技研究中心共同頒發結業證書。

凡台灣儀器科技研究中心同仁、台灣鍍膜科技協會會員，均屬學會會員價

Connect TVS Secretary

曹櫻歷 小姐 Sherry

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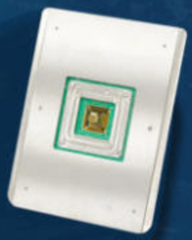
for RF Applications



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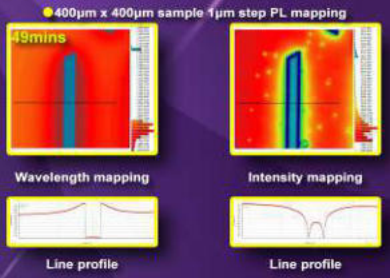
光致螢光光譜儀

PLATO-MicroScan: Micro PL for InP based LD



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DL-1000 series

- ●L/S 0.5μm
- ●高速描畫
- ●3D曝光
- ●最大曝光領域□300mm
- ●與曝光光學系統作同軸觀察

感應耦合電漿蝕刻機

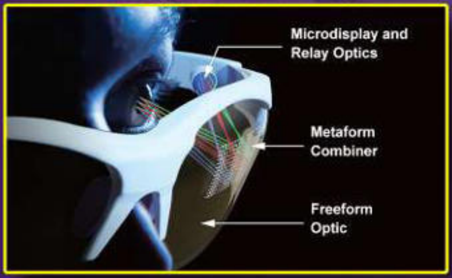
●DRIE Etcher

●ICP Etcher (Non-metal)

●ICP Etcher (Metal)

AR/VR Nano Imprint

●XR(AR/VR Market)



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高溫●無塵●無氧

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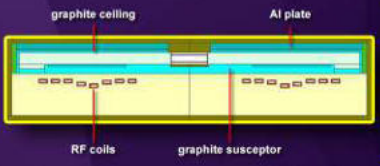
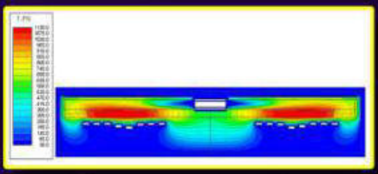
- ●TEMP: 300℃ (option: Max 500℃)
- ●UNIFORMITY: ± 1.5%
- ●Oxygen content : 50ppm

磊晶模擬軟體

- ●化合物半導體MOCVD模擬
- 🟥VR Nitride/ IIIV



AlN MOCVD 8x150mm & 5x200mm行星式反應腔



大型行星式反應腔熱流條件模擬

CRESTEC Nano HORIBA EtaMax Gigalane ATLANT 3D STR

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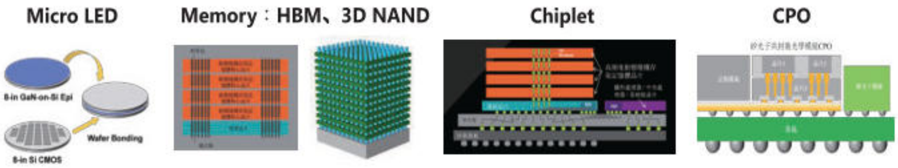
  W2W/C2W Hybrid Bonding Equipment Series
- **表面處理設備系列**
  Surface Treatment Equipment Series

82 CWW Application



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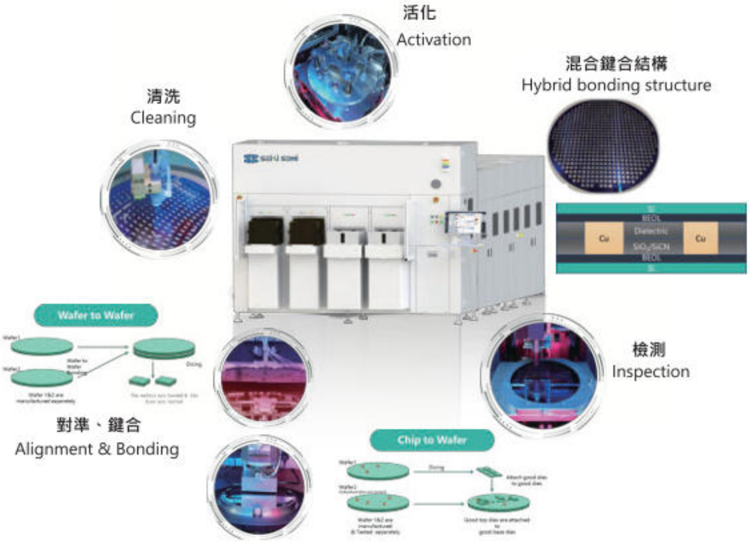

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- Liquid Source CVD

RIE-800iPC

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- Si DRIE
- RIE (ICP-RIE, CCP-RIE)
- XeF_2

AQ-2000

SURFACE TREATMENT

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- Plasma Cleaning
- UV Ozone Cleaning

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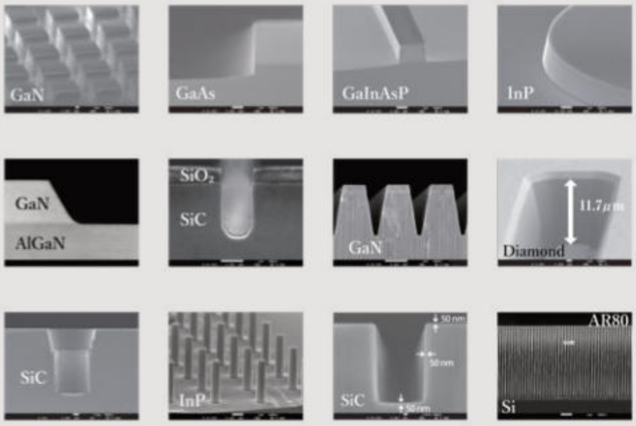

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