TECHNICAL DIGEST

ICNS-14

14TH International Conference on Nitride Semiconductors

November 12–17, 2023 FUKUOKA Japan

Wi-Fi access

Wireless internet service is available on the conference sites.

See printed version for passwords.

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14TH International Conference on Nitride Semiconductors

November 12-17, 2023 FUKUOKA Japan

Welcome to Fukuoka ICNS-14

Welcome to Fukuoka, the host city of the 14th International Conference on Nitride Semiconductors (ICNS-14). As Ű a gateway to the world and a trade hubű, Fukuoka has a long history of international exchange with China, Korea, and Southeast Asia since ancient times. It is my great honor and pleasure to welcome you all to this prestigious world-class event to be held in this historic international city.

As you may know, this conference was originally scheduled to be held in 2021, but it was postponed due to the COVID-19 pandemic. To make matters worse, international conflicts and other political instability have plunged the country into an unsettled situation not long after the pandemic situation took a turn for the better. In fact, we have faced many challenges and difficulties in the past four years, but we have also witnessed the resilience and innovation of the nitride semiconductor community. I would like to express my sincere gratitude to all the participants, speakers, sponsors, organizers, and staff who have made this conference possible under these unprecedented circumstances.

The ICNS-14 will present high-impact scientific and technological advances in materials and devices based on group-III nitride semiconductors, and feature plenary sessions, parallel topical sessions, poster sessions, and an industrial exhibition. For more than a quarter of a century since the first ICNS in 1995, ICNS has provided an excellent forum for nitride semiconductor researchers to exchange information. I hope that this conference will also provide you with a valuable opportunity to exchange ideas and insights with your colleagues from around the world, as well as to enjoy the culture and hospitality of Fukuoka. Fukuoka is also famous for its delicious food, such as ramen, motsunabe, mentaiko, and mizutaki. How about enjoying the unique atmosphere of a food stall offering a variety of food and beverages, while engaging in semiconductor discussions with old friends? I hope that you will have a wonderful time in Fukuoka and make lasting memories.

Many outstanding researchers with the latest data are now gathering in Fukuoka. Let Ů s enjoy fruitful discussions at ICNS after 4 years!

Hiroshi Fujioka

Organizing Committee Chair

President of the Japanese Association for Crystal Growth

Hiroshi Fujioka

The University of Tokyo

Preface

On behalf of the steering committee, we are delighted to welcome all participants of the 14th International Conference on Nitride Semiconductors (ICNS-14) held in Fukuoka, Japan, on November 12 (Sunday) - 17 (Friday), 2023. As indicated in Table I, the ICNS series was inaugurated in 1997, although the initial two international nitride conferences were held in Nagoya and Boston in 1995, and are recognized as the Űfirst ICNSű. The purpose of ICNS-14 is to provide a forum for scientists and engineers from universities, government institutions, and industries to meet and discuss the latest achievements and challenges concerning all aspects of nitride growth, characterization, optical devices, and electronic devices. As of October 20th, the number of ICNS-14 participants exceeds 1030 individuals representing 32 countries.

Table I History of ICNS

	Year	City (Contrry)		Year	City (Contrry)
1st*	1995	Nagoya (Japan), Boston (USA)	8th ICNS	2009	Jeju (Korea)
2nd ICNS	1997	Tokushima (Japan)	9th ICNS	2011	Glasgow (UK)
3rd ICNS	1999	Montpellier (France)	10th ICNS	2013	Washington, D.C. (USA)
4th ICNS	2001	Denver (USA)	11th ICNS	2015	Peking (China)
5th ICNS	2003	Nara (Japan)	12th ICNS	2017	Strasbourg (France)
6th ICNS	2005	Bremen (Germany)	13th ICNS	2019	Seattle (USA)
7th ICNS	2007	Las Vegas (USA)	14th ICNS	2023	Fukuoka (Japan)

* The ICNS originated from two nitride conferences “Topical Workshop on III-V Nitrides” (Nagoya,1995) and “International Symposium on Gallium Nitride and Related Materials” on MRS（Boston, 1995）. The nitride committee regarded the two conferences held in 1995 in Nagoya and Boston as the "first ICNS” on November, 1995, at Boston.

We would like to express our acknowledgements. The ICNS-14 is sponsored by ŰJapan Association for Crystal Growthű, ŰThe Japan Society of Wide Gap Semiconductorsű, ŰR032 Committee on Crystal Growth for Industrial Innovationű of Japan Society for the Promotion of Science (JSPS), and ŰMaterials Science and Advanced Electronics Created by Singularityű of the JSPS KAKENHI grant. We also extend our gratitude to the supporting foundations, Fukuoka Convention and Visitors Bureau, International Exchange Program of National Institute of Information and Communications Technology (NICT), The Murata Science Foundation, and ONR Global Funding. Our heartfelt appreciation goes to the sponsoring companies, listed on a separate page.

We also convey our sincere gratitude to our plenary and invited speakers, as well as the participants in this conference. In closing, we wish that all the attendees relish their time in Fukuoka, discover fresh ideas, forge new friendships, and persist in advancing the promising future of nitride semiconductors.

Hideto Miyake

Steering Committee Chair

Hideto Miyake

Mie University

Preface

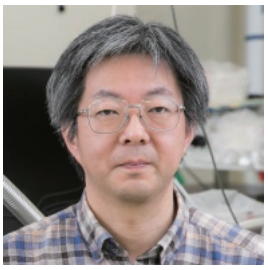
On behalf of the ICNS-14 program committee, I would like to welcome all participants from across the world. The purpose of ICNS-14 is to provide a forum for scientists and engineers from universities, government institutions, and industries to meet and discuss the latest achievements and challenges concerning all aspects of nitride materials and devices. ICNS-14 is designed as four loosely coupled nitride workshops on growth, characterization, optical devices, and electronic devices.

We have collected 916 abstracts from 30 countries and regions (Asia, 541； Europe, 255; America, 104; Middle east, 15; Oceania, 1). This large number clearly reflects the fact that nitride material and device continue to attract attention both academia and industry. In fact, we have noticed an increasing number of papers related to new fields, such as micro-LEDs, UV-LEDs and LDs, VCSELs, and vertical electron devices.

The program of ICNS-14 was prepared in the following way. First, candidates for the plenary and invited speakers were nominated by international advisory committee and program committee members and selected through a committee member vote. Then, contributed papers were collected and reviewed to determine acceptance. Based on the authorÜs preference and content, the papers were categorized into out of 70 sessions, which are distributed across five days. Finally, a limited number of late news papers describing the most up-to date results were accepted for two late news sessions. We have prepared three engaging ramp sessions covering topics of particular importance in recent research developments. We also prepared a number of Best Student Awards and Outstanding Poster Awards to encourage young researchers and students.

I would like to express our sincere thanks to the plenary speakers, invited speakers, rump session panelists, and all contributing presenters at ICNS-14. I also would like to acknowledge the international advisory committee, program committee and all committee members for their earnest activities and supports for ICNS-14. Without their efforts, this conference would not be possible.

We have all the best things to facilitate fruitful discussion in Fukuoka, the best nitride researchers, the best foods, and the best sake. I sincerely hope that the attendants will enjoy their stay in Fukuoka, find next new ideas, and make good friend. I also hope that the conference will contribute to a bright future of nitride semiconductors.



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JACG The Japanese Association for Crystal Growth	The Japanese Association for Crystal Growth
WideG	The Japan Society of Wide Gap Semiconductors
R032	R032 Committee on Crystal Growth for Industrial Innovation
Singularity since 2016	Materials Science and Advanced Electronics Created by Singularity

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The Japan Society of Applied Physics	The Japan Society of Applied Physics

Foundations

FCVB Fukuoka Convention & Visitors Bureau	Fukuoka Convention & Visitors Bureau
NICT National Institute of Information and Communications Technology	International Exchange Program of National Institute of Information and Communications Technology (NICT)
公益財団法人 村田学術振興財団	The Murata Science Foundation
	ONR Global Funding

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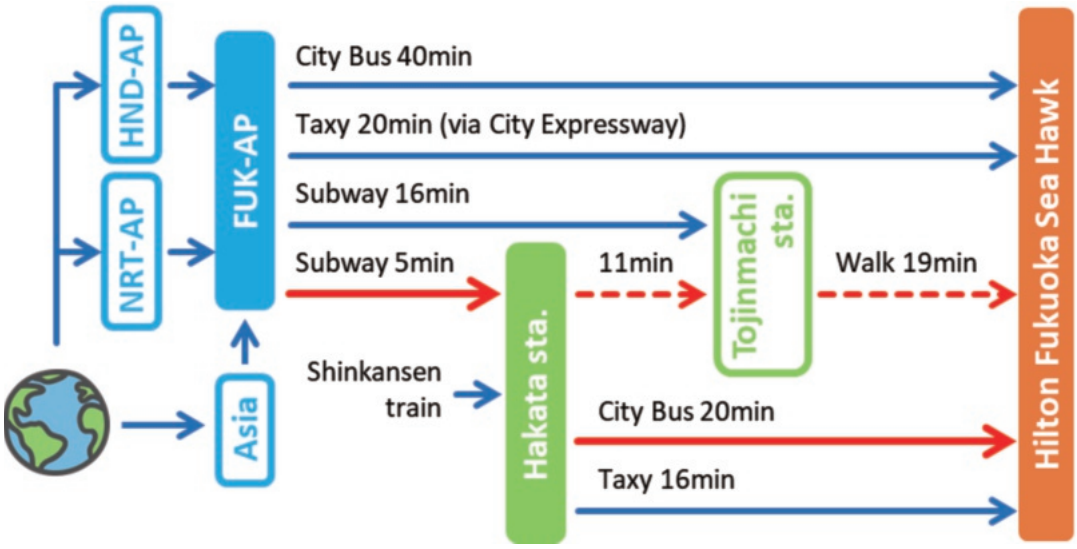
Venue

Hilton Fukuoka Sea Hawk,
2-2-3 Jigyohama, Chuo-ku, Fukuoka-shi, 810-8650, Japan.



Taxi: Take the Fukuoka City Expressway and get off at the Momochi Exit. Approximately a 20-minute ride from the airport.

City bus: Get on the #139 route bus bound for Fukuoka Tower & TNC Hall at Fukuoka Airport International Terminal South bus stop. Get off at Hilton Fukuoka Sea Hawk-mae bus stop. Approximately 40-minute ride from the airport.

Subway: Take the Fukuoka City Subway, getting off at Tojinmachi Station. The hotel is a 19-minute walk from the station. Approximately 16-minute subway ride from the airport.

Lunch Map

Japanese

Social Activities

Welcome Reception

Sunday evening 6:00 PM, November 12, ARGOS D-F

All participants and accompanying persons are invited, free of charge, to join it.

Women in Nitrides Event

Tuesday lunch time, November 14, ARGOS D

This event is the third of its kind after Women in Nitrides at ICNS-13 in Seattle and at IWN2022 in Berlin. It will feature a panel discussion of established and experienced researchers reporting their experiences to inspire the scientific and professional careers of women working with nitride semiconductors. The event will provide a relaxed atmosphere to build and expand your network.

If you have registered for the event, please bring your ticket with you to join it.

Excursion

Wednesday afternoon, November 15,
Meeting point: Group Entrance on the 1st floor of the Hilton Fukuoka Sea Hawk at 12:00. If you have registered for the event, please come to the meeting point with your ticket.

The conference will organize two tour courses, A and B to enjoy open discussion with social activities. The buses are different for these courses, so please be sure not to take the wrong bus.
The Excursions are in part supported by the Japan Tourism Agency.

[Course A]
Lunch at Grand Empire Hotel >> Visit to Dazaifu Tenmangu >> Grand Sumo spectator

◆Dazaifu Tenmangu

Photo provided by Fukuoka Prefecture Tourism Association

Dazaifu Tenmangu, enshrining Sugawara Michizane or “Tenjin-sama”, the deity of learning, culture and the arts for more than 1,100 years, is one of Japan’s most important Shinto shrines. In the precinct, you will see two ponds, an arched bridge, a treasure house, a main hall with cypress bark roof and so on. The main hall, rebuilt in 1591, is currently undergoing its first major renovation in 124 years before “Shikinen-Taisai” in 2027, and a temporary hall has been set up. On the roof of the temporary hall, 46 kinds of plants have been planted.

◆Grand Sumo spectator

The tournaments of Grand “Sumo”, Japan's national sport, are held six times a year. Among them, the November Tournament will be held in Fukuoka from November 12 to 26. Taking this opportunity, you will watch traditional and powerful Sumo matches between Sumo wrestlers in this course.

[Course B]
Lunch at an oyster barbecue house >> Japanese Sake brewery tours and tastings

◆Oyster barbecue house along Kafuri Bay

Oysters from Kafuri Bay in Itoshima City grow while absorbing plenty of nutrients from the sea, which is blessed with conditions conducive to growing oysters. At this oyster house, you will enjoy your lunch by grilling fresh oysters, clams, and other shellfish by yourself.

◆”Hana-no-Tsuyu” Japanese Sake brewery

Japanese Sake brewing has long thrived in Jojima, Kurume City. ”Hana-no-Tsuyu” brewery is a long-established Sake brewery with a history of more than 250 years among the many breweries in this region. You will feel the atmosphere of a traditional Sake brewery and learn how Sake is brewed. At the end of the tour, you can also enjoy tasting several types of Sake.

Banquet

Thursday evening 7:00 PM, November 16, ARGOS D-F

Local Japanese Sake, wine, and delicious course meals will be served. During the Banquet, members of Hakata Geisha girls, "Hakata Geigi" will perform a traditional Japanese dance. “Yagyu Shinkage-ryu” swordsmanship will also be performed.

If you have registered for the event, please bring your ticket with you to join it.

Photo provided by Fukuoka City

Student Event

Thursday evening 7:00 PM, November 16, NAVIS

This event is organized by students from various universities across Japan. Participants can enjoy discussions along with meals and beverages. Events such as bingo with prizes, traditional Japanese art, and many more are planned.

If you have registered for the event, please bring your ticket with you to join it.

Special Issue in physica status solidi

Following a long row of successful publications from previous meetings since 2002, physica status solidi is once again planning to publish a special issue highlighting the most exciting new results presented at this year's 14th International Conference on Nitride Semiconductors. The papers will be divided among pss (RRL), pss (a) and pss (b). This will make your important works available to a large international audience quickly. Plenary and invited speakers are invited to submit their articles to pss (RRL). Both Letter-style Research Articles as well as Reviews are acceptable. Contributed presenters are invited to submit their Research Articles to pss (a)/(b).

General information
pss(RRL): https://onlinelibrary.wiley.com/page/journal/18626270/homepage/author-guidelines
pss (a): https://onlinelibrary.wiley.com/page/journal/18626319/homepage/author-guidelines
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Submitted manuscripts will undergo editorial evaluation and subsequent peer review. According to the editorial policy of pss, two positive recommendations by independent reviewers are a prerequisite of acceptance. Peer review and publication occur rapidly on individual manuscript basis. Published in Wiley Online Library Accepted Articles and Early View shortly after acceptance, your article is citable with DOI or article number immediately; hence there is no waiting for the remainder of the contributions. When all articles are complete, the topical section will be assembled in regular monthly issues of pss. The clustering of related articles raises the visibility of these articles significantly, and we are confident that this will become a quality publication reflected by high article access and citation numbers. We look forward to receiving your contributions!
For more detail, visit our website (https://icns14.jp/publication.html).

Important Date

December 15, 2023: Deadline of Submission

Presentation guidelines,
Plenary and invited speakers

Presentation Guidelines

Allotted time for each presentation

Plenary talk: 40 minutes

Invited talk: 25 minutes (including 5 minute Q&A time)

Contributed oral talk: 15 minutes (including 3 minute Q&A time)

Poster presentation: 110 minutes

Guideline for plenary/invited/contributed oral presenters

A projection laser pointer will be supplied for oral presentations. We request that presenters use their own laptops equipped with HDMI video connectors. It is recommended for oral presenters to prepare slides in the widescreen (16:9) format. We kindly ask the oral presenters to perform a computer check during the break before their session.

Guideline for poster presenters

Boards and push pins will be provided for poster presenters. The boards will fit posters up to vertical A0 format (W841 mm x H1189 mm). Please display the paper title, author names, and affiliations at the top of the posters. The presenters should stand in front of their posters to discuss their results with attendees during the allotted session time.

Posters may be set up from the morning of the day of the poster session. They should be taken down within 1 hour after the session ends. The posters that are left until the end of the day will be discarded by the program committee.

Photography and recording policy

Photography or video/audio recording in the presentation areas without permission from the committee is strictly prohibited.

Award

Young scientists can apply for the "Best Student Award" and/or "Outstanding Poster Award." These awards are presented to young scientists who demonstrate outstanding achievements in their paper, including abstract and presentation, and expect to make significant contributions in the nitride semiconductor field. Each award includes a certificate signed by the conference chair. Some of the winners (for both awards) of highly ranked papers will be awarded in person during the conference.

Rump Sessions

19:00— Tuesday, November 14, 2023
Room: Argos D, E, and F

Rump Session 1 (Room: Argos D)

Vertical GaN Power Devices: A Look Back and Ahead at Ongoing Challenges

GaN lateral power devices have been explosively adopted in USB chargers and are achieving great success in the field of power electronics. On the other hand, GaN vertical power devices are expected to have benefits such as high voltage, large current, and avalanche capability. However, there have been various technical challenges to realize these advantages, and it has been a struggle. Over the past 10 years, various research groups have made continuous efforts, and one by one, the challenges are being resolved. As seen in this conference, significant progress has been reported in the most difficult challenges, such as ion implantation doping and MOS channel technologies. In this rump session, we will discuss the technological advancements of GaN vertical power devices so far and the prospects for the future, as well as discuss new ideas and initiatives different from the conventional ones.

Rump Session 2 (Room: Argos E)

Will deep UV LEDs and LDs become as good as blue LEDs and LDs by evolution or revolution?

Blue LEDs are the most efficient light source in the world with wall plug efficiencies exceeding 80%. Similarly, blue laser diodes exhibit low threshold, high efficiencies and long lifetimes. Deep UV LEDs and LDs present tremendous challenges in terms of epilayer growth, device fabrication and packaging. On the other hand, we find many similarities of these devices, letting us believe that one day deep UV LEDs and LDs can be as efficient and stable as their blue counterparts. In this rump session we want to discuss evolution or revolution will pave the way to a bright future (or if physics will prevent this). This rump session will use the Sugukiku/imakiku network survey system. Online voting during the rump session ca be accessed via https://sugukiku.com/en/ or the QR code.

Rump Session 3 (Room: Argos F)

How nitrides put microLEDs forward?

MicroLED is now the one of the hottest topic among researchers in this field. Rumors tell kinds of future products will be released with it and analysts predict its market grow with high CAGR of >80% to reach a size of >20B USD in several years. Accordingly, this session provides discussion around the latest progress and future of microLED technologies through active discussion to relate them to nitride research, for example, a variety of ways toward red emission from nitride semiconductors that expected to outstrip the classic AsP-based emitters, and monolithic integration that is essential to future AR/VR displays. The panelists are selected among the top-ranked attendees of ICNS-14, to make this hottest topic much hotter than ever!!!

Plenary, Invited speakers

Plenary Speakers

Hiroshi Amano (Nagoya University, Japan)
Tribute to our predecessor, the late Professor Isamu Akasaki, and the role of nitrides in establishing an earth-friendly, comfortable, convenient and people-friendly society

Aurélien David (Google, USA)
Revisiting the physics of III-Nitrides LEDs: myths and facts

Åsa Haglund (Chalmers University of Technology, Sweden)
Vertical-cavity surface-emitting lasers at the end of the rainbow

Debdeep Jena (Cornell University, USA)
Controlling electronic polarization in polar and ferroelectric nitride semiconductor heterostructures for electronic and photonic devices

Elison Matioli (EPFL, Switzerland)
Pushing the limits of GaN electronics: Emerging Technologies for High-Performance Devices

Takashi Mukai (Nichia Corporation, Japan)
Progress and future prospects of InGaN-based high-efficiency, high-power laser diodes

Ken Nakata (Sumitomo Electric, Japan)
Recent Progress of GaN HEMT for Future Communication

Invited Speakers

Robert Armitage (Lumileds, USA)
Recent advances in nitride LED technology for green-to-red wavelengths

Michal Bockowski (Institute of High Pressure Physics, Poland)
Towards GaN Substrates for High-power Electronic Devices

Julien Brault (Côte d'Azur University-CRHEA-CNRS, France)
Growth and transfer of quantum dots UV heterostructure emitting at 280nm using van der Waals epitaxy on hBN

Frank Brunner (Ferdinand-Braun-Institut, Germany)
Vertical GaN Power Transistors on Low-Cost Substrates: Opportunities and Challenges

Guillaume Cassabois (University of Montpellier, France)
Polytypism in hexagonal boron nitride: an optical study

Kevin Chen (The Hong Kong University of Science and Technology, China)
Processing and design techniques for reliability enhancement of lateral GaN HEMTs

Jr-Tai Chen (SweGaN, Sweden)
Progress of buffer-free GaN-on-SiC HEMT heterostructures for RF and power applications

Zhaoying Chen (Peking University, China)
High-Efficiency InGaN Red Mini/Micro-LEDs on Sapphire Toward Full-Color Nitride Displays

Shigefusa F. Chichibu (Tohoku University, Japan)
Impacts of vacancy clusters on the luminescence dynamics in Mg-implanted GaN on GaN structures

Srabanti Chowdhury (Stanford University, USA)
On making GaN more efficient for RF applications

Juergen Christen (University of Magdeburg, Germany)
GaN Quantum Dots in Resonant Cavity Micropillars as deep UV Single Photon Sources

Steven P. DenBaars (University of California, Santa Barbara, USA)
Recent Advances in III-Nitrides for MicroLEDs and Laser Diodes

Theeradetch Detchprohm (Georgia Institute of Technology, USA)
Development of AlGaN based deep UV avalanche photodetectors toward their intrinsic characteristics

Alan Doolittle (Georgia Institute of Technology, USA)
Semiconducting AlN Electrical Devices

Hajime Fujikura (Sumitomo Chemical, Japan)
Recent progress of HVPE-based GaN on GaN technology

Mitsuru Funato (Kyoto University, Japan)
InGaN-based LEDs on arbitrary three-dimensional GaN templates toward tailored spectral control

Nicolas Grandjean (EPFL, Switzerland)
Nanoscale investigation of point defects and carrier dynamics in InGaN/GaN quantum wells

Thierry Guillet (University of Montpellier, France)
GaN-based Waveguide polariton lasers: from quasi-CW to mode-locked lasers

Tatsushi Hamaguchi (Sony Group Corporation, Japan)
Polarization and Modes control of GaN-based VCSELs with curved mirror

Robert Hamwey (University of California, Santa Barbara, USA)
Low Sheet Resistance N-Polar InAlGaN/GaN HEMT

Tamotsu Hashizume (Nagoya University and Hokkaido University, Japan)
MOS interface technologies for high-power and high-frequency GaN transistors

Masahiro Horita (Nagoya University, Japan)
Characterization of nitrogen-displacement-related traps in GaN

Ryota Ishii (Kyoto University, Japan)
Fundamental optical properties of AlN revealed by deep-ultraviolet spectroscopy

Motoaki Iwaya (Meijo University, Japan)
Progress in the development of UV-B laser diodes fabricated on sapphire substrates

Hailing Jiang (Peking University, China)
Atomic Scale Visualization Defect Induced Localized Vibration in III-Nitrides

Tetsu Kachi (Nagoya University, Japan)
Vertical GaN Power Devices Using Selective Area Doping with Ion Implantation

Masakazu Kanechika (Nagoya University, Japan)
A High Channel Mobility and a Normally-off Operation of m-plane GaN Trench MOSFET Using an AlSiO/AlN Gate Stack Deposited by ALD

Ryuji Katayama (Osaka University, Japan)
Nitride-Semiconductor-based Wavelength Converters

Jong-Kyu Kim (Pohang University of Science and Technology, Korea)
Observation of Suspended AA-Stacked Hexagonal Boron Nitride Grown on GaN Substrate by Metal-Organic Chemical Vapor Deposition

Emmanouil Kioupakis (University of Michigan, USA)
Impact of alloy disorder and polarization fields on the efficiency and luminescence spectrum of visible LEDs from predictive calculations

Hirotsugu Kobayashi (Asahi Kasei Corporation, Japan)
Far UV-C LEDs on AlN substrates with high wall-plug efficiency and long lifetime

Tim Kolbe (Ferdinand-Braun-Institut, Germany)
Advances in the epitaxial growth of far-ultraviolet C light emitting diodes

Takao Kozaka (University of Tokyo, Japan)
Fabrication of AlN/AlGaN/AlN multi-channel structures with sputtering-regrown highly degenerate n^+-GaN ohmic contacts

Martin Kuball (University of Bristol, UK)
GaN-on-Diamond Transistors: Challenges and Opportunities

Yoshinao Kumagai (Tokyo University of Agriculture and Technology, Japan)
High-speed growth of thick AlN homoepitaxial layers by HVPE for mass production of high-quality AlN wafers

Maki Kushimoto (Nagoya University, Japan)
Recent Progress of Deep Ultraviolet Laser Diodes on AlN substrate

Jonas Lähnemann (Paul Drude Institute, Germany)
Revisiting the determination of the carrier diffusion length in GaN from cathodoluminescence spectroscopy from cathodoluminescence spectroscopy

Tzu-Yi Lee (National Yang Ming Chiao Tung University, Taiwan)
Introduction to High-Speed Visible Light Communication Using Yellow-Green and Red Micro-LEDs

Ying-Tsang Liu (PlayNitride, Taiwan)
Performance of MicroLED Chip and Display for Emerging Applications

Matteo Meneghini (University of Padova, Italy)
GaN Vertical Devices: challenges for high performance and stability

Zetian Mi (University of Michigan, USA)
Ferroelectric Nitride Semiconductors: Epitaxy, Properties, and Emerging Device Applications

Umesh Mishra (University of California, Santa Barbara, USA)
GaN power electronics: Game on!

Yusuke Mori (Osaka University, Japan)
Recent Progress of Bulk GaN Growth by Na-Flux Method

Okhyun Nam (Tech University of Korea, Korea)
Growth of AlGaN/AlN based power electronic devices

Shugo Nitta (Nagoya University, Japan)
Catalytic enhancement of ammonia reaction by trimethylgallium and its reactants in MOVPE analyzed by TOF-MS isotope tracking

Susumu Noda (Kyoto University, Japan)
Recent progress in photonic-crystal surface-emitting lasers

Kazuhiro Ohkawa (King Abdullah University of Science and Technology, Saudi Arabia)
InGaN-based red micro-LEDs via micro-flow-channel metalorganic vapor-phase epitaxy

Rachel Oliver (University of Cambridge, UK)
Insights into porous GaN from electron microscopy

Tomas Palacios (Massachusetts Institute of Technology, USA)
III-Nitride Electronics for Extreme Environment Operation

Yoshiki Saito (Toyoda Gosei, Japan)
Recent Developments for High Efficiency for Deep UV LEDs

Chandrashekhar Savant (Cornell University, USA)
First Demonstration of Ferroelectricity and High-K Dielectric Constant in Ultrawide Bandgap AlBN MBE Films

Leo Schowalter (Nagoya University, Japan)
The development of pseudomorphic AlGaN on native AlN substrates for UVC and far UVC device applications

Bo Shen (Peking University, China)
Recent progress on the epitaxial growth, doping of AlGaN with high Al fraction and the fabrication of Deep UV LEDs

Keisuke Shinohara (Teledyne Technologies, USA)
Scaling Challenges in Millimeter-Wave GaN HEMTs for High-Power, High-Efficiency, and High-Linearity Operation

Zlatko Sitar (North Carolina State University, USA)
Unlocking the AlN technology one step at a time

James S. Speck (University of California, Santa Barbara, USA)
Progress in Electroemission Spectroscopy of GaN LEDs

Takashi Taniguchi (National Institute for Materials Science, Japan)
Boron Nitride single crystals obtained under high pressure and their impurity control

Kenjiro Uesugi (Mie University, Japan)
Progress in UV-C LEDs on Face-to-Face Annealed Sputter-Deposited AlN Templates

Chris Van de Walle (University of California, Santa Barbara, USA)
Defect-assisted nonradiative recombination in nitrides

Xinqiang Wang (Peking University, China)
Quasi-van der Waals epitaxy of III-nitride semiconductors on graphene

Claude Weisbuch (University of California, Santa Barbara, USA)
Physics of disorder and carrier localization in nitride alloys

Tim Wernicke (Technische Universität Berlin, Germany)
Recent Progress GaN based microled for visible light communication

Thomas Wunderer (PARC, USA)
Hybrid Photonic Integrated III-N Chip Lasers

Atsushi Yamada (Sumitomo Electric Inc. Japan)
Current status of high output power GaN-based HEMTs on AlN substrates

Mohamed Yassine (University of Freiburg, Germany)
Correct modeling of polarization in wz-AlScN

Session Chair

Monday, November 13, 2023

PL1:	**Plenary I**	9:30-12:20	Bernard Gil Jen-Inn Chyi	Hideki Hirayama Hiroshi Fujioka
ED1:	**Lateral Power I**	14:20-15:45	Debdeep Jena	Jun Suda
GR1:	**GaN I**	14:20-15:45	Michal Bockowski	Yohei Otoki
OD1:	**Far UVC LEDs I**	14:20-15:45	Motoaki Iwaya	Markus Weyers
CH1:	**InGaN optical I**	14:20-15:45	Shigefusa F. Chichibu	Nicolas Grandjean
CH2:	**Sc-containing III-Nitrides**	14:20-15:35	Kazuhiko Hara	Chris Van de Walle
JT1:	**Visible Optical Devices**	14:20-15:35	Akihiko Kikuchi	Lars Samuelson
ED2:	**Vertical Power I**	17:35-19:00	Frank Brunner	Jun Suda
GR2:	**GaN II**	17:35-19:00	Hisashi Murakami	Xinqiang Wang
OD2:	**Micro LEDs: Full-Colors**	17:35-19:00	Yasufumi Fujiwara	Baoping Zhang
CH3:	**InGaN optical II**	17:35-19:00	Aurelien David	Yoichi Kawakami
JT2:	**UV Optical Devices**	17:35-18:50	Masataka Imura	Robert Martin
GR3:	**Doping and Defects**	17:35-18:50	Jaime Freitas, Jr.	Shugo Nitta

Tuesday, November 14, 2023

ED3:	**Lateral Power II / ICs**	8:30-10:15	Elison Matioli	Takuma Nanjo
CH4:	**Characterization for Electron Devices I**	8:30-10:25	Masahiro Horita	Filip Tumisto
OD3:	**VCSELs**	8:30-10:10	Åsa Haglund	Masaru Kuramoto
CH5:	**GaN**	8:30-10:25	Andreas Hangleiter	Takao Oto
GR4:	**AlN I**	8:30-10:25	Satoshi Kamiyama	Zlatko Sitar
GR5:	**MOCVD**	8:30-10:25	Ramon Collazo	Yoshio Honda
ED4:	**Vertical Power II**	10:55-12:35	Katsunori Ueno	Shigeyoshi Usami
CH6:	**GaN:Mg**	10:55-12:50	Juergen Christen	Shuhei Ichikawa
OD4:	**Visible LEDs**	10:55-12:45	Tatsushi Hamaguchi	Susumu Noda
LN1:	**Late News I**	10:55-12:50	Subramaniam Arulkumaran	Akio Wakejima
GR6:	**AlGaN I**	10:55-12:50	Michael Kneissl	Narihito Okada
GR7:	**Electron Devices**	10:55-12:45	Alan Doolittle	Maki Kushimoto
ED5:	**MOS Interface / MOSFETs**	14:50-17:00	Masamichi Akazawa	Tohru Oka
CH7:	**Characterization for Electron Devices II**	14:50-16:45	Yasuo Koide	Matteo Meneghini
LN2:	**Late News II**	14:50-16:50	Armin Dadgar	Ryota Ishii
OD5:	**UV Lasers**	14:50-16:40	Raphaël Butté	Yoshiki Saito
GR8:	**AlGaN II**	14:50-16:45	Tomasz Sochacki	Kenjiro Uesugi
GR9:	**MBE and Sputtering**	14:50-16:45	Julien Brault	Takayuki Nakano

Wednesday, November 15, 2023

ED6:	**RF I**	8:30-9:55	Yuji Ando	Debdeep Jena
GR10:	**InGaN I**	8:30-9:55	Kazuhiro Ohkawa	James S. Speck
OD6:	**Far UVC LEDs II**	8:30-9:55	Hirotsugu Kobayashi	Tim Kolbe
OD7:	**PhC and nanowires**	8:30-9:55	Katsumi Kishino	Michael Krames
CH8:	**Mirco- and Nanoscopic Analysis**	8:30-10:00	Rachel Oliver	Akira Sakai
ED7:	**Vertical Power III**	8:30-9:55	Andrew A. Allerman	Jun Suda

ED8:	**RF II / New Materials and Structures I**	10:25-11:45	Tomas Palacios	Akio Wakejima
GR11:	**InGaN II**	10:25-11:50	Mitsuru Funato	Piotr Perlin
OD8:	**Micro LEDs: Process**	10:25-11:50	Robert Armitage	Takashi Matsuoka
OD9:	**Photodetectors**	10:25-11:35	Koichi Okamoto	Hiroto Sekiguchi
CH9:	**AlGaN I**	10:25-11:50	Bo Shen	Ziyi Zhang
JT3:	**Novel Materials and Devices**	10:25-11:40	Vanya Darakchieva	Kohei Shima

Thursday, November 16, 2023

ED9:	**RF III**	8:30-10:15	Farid Medjdoub	Keisuke Shinohara
GR12:	**Bulk GaN**	8:30-10:25	Hajime Fujikura	Siddha Pimputkar
CH10:	**InGaN Optical III**	8:30-10:20	Guillaume Cassabois	Ryuji Katayama
OD10:	**Novel Optical Devices**	8:30-10:25	Jong Kyu Kim	Atsushi Nishikawa
GR13:	**Sc-containing III-Nitrides**	8:30-10:25	Atsushi Kobayashi	Zetian Mi
ED10:	**Thermal Management**	8:30-10:35	Manato Deki	Tomas Palacios
ED11:	**RF IV**	10:55-12:20	Sravanti Chowdhury	Atsushi Yamada
GR14:	**Nanostructures and New Growth Techniques**	10:55-12:20	Detlef Hommel	Kazuyuki Tadatomo
CH11:	**AlGaN II**	10:55-12:20	Momoko Deura	Emmanouil Kioupakis
OD11:	**Micro LEDs: Novel Structures**	10:55-12:20	Theeradetch Detchprohm	Koh Matsumoto
CH12:	**BN**	10:55-12:20	Takashi Taniguchi	Christian Wetzel
ED12:	**Device Process**	10:55-12:25	Kevin Chen	Masakazu Kanechika
ED13:	**New Materials and Structures II**	14:25-16:20	Junji Kotani	Takuya Maeda
GR15:	**Bulk AlN**	14:25-16:20	Hiroyuki Fukuyama	Elke Messner
CH13:	**Quantum Electronics**	14:25-16:15	Yoshihiro Ishitani	Claude Weisbuch
OD12:	**Visible Lasers**	14:25-16:20	Thierry Guillet	Masahiro Uemukai
GR16:	**BN**	14:25-16:20	Izabella Grzegory	Yoshitaka Taniyasu
ED14:	**Reliability**	14:25-16:20	Martin Kuball	Shinya Takashima

Friday, November 17, 2023

OD13:	**UV LEDs**	8:30-10:10	Masafumi Jo	Tim Wernicke
GR17:	**GaN III**	8:30-10:10	Okhyun Nam	Tetsuo Narita
OD14:	**Micro LEDs: Passivation**	8:30-10:00	Bruno Daudin	Makoto Miyoshi
CH14:	**Nanostructures**	8:30-10:00	Martin Feneberg	Shigetaka Tomiya
CH15:	**Defect and Phonon**	8:30-10:10	Yong-Hoon Cho	Kazunobu Kojima
ED15:	**Novel Electron Devices**	8:30-9:45	Yuji Ando	Taketomo Sato
OD15:	**Micro LEDs: on Si**	10:40-12:05	Yun-Li Li	Yasushi Nanishi
GR18:	**AlN II**	10:40-12:00	Yusuke Mori	Leo Schowalter
OD16:	**Waveguides and SHG**	10:40-12:05	Takao Miyajima	Thomas Wunderer
CH16:	**Light Emitters**	10:40-11:55	Ulrich Schwarz	Tomoyuki Tanikawa
CH17:	**GaN and AlN**	10:40-12:10	Frank Bertram	Masatomo Sumiya
ED16:	**Transport**	10:40-11:55	Tetsuo Narita	Jun Suda
PL2:	**Plenary**	14:10-16:50	Hideki Hirayama Yoshihiro Kangawa	Ke Xu Hideto Miyake

Technical program

November 13 (Mon)

Opening

Argos D-F November 13 (Mon) 9:00 -9:30

PL: Plenary

Argos D-F November 13 (Mon) 9:30 -12:20

Chair : Bernard Gil, Hideki Hirayama, Hiroshi Fujioka, Jen-Inn Chyi

PL-1 (Plenary) 9:30 - 10:30

Tribute to our predecessor, the late Professor Isamu Akasaki, and the role of nitrides in establishing an earth-friendly, comfortable, convenient and people-friendly society

Hiroshi Amano[1]
[1] *Nagoya University, Japan*

Break 10:30 -11:00

PL-2 (Plenary) 11:00 - 11:40

Controlling electronic polarization in polar and ferroelectric nitride semiconductor heterostructures for electronic and photonic devices

Debdeep Jena[1]
[1] *Cornell University, United States of America*

PL-3 (Plenary) 11:40 - 12:20

Pushing the limits of GaN electronics: Emerging Technologies for High-Performance Devices

Elison Matioli[1]
[1] *Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland*

Lunch 12:20 -14:20

ED1: Lateral Power I

Argos D November 13 (Mon) 14:20 -15:45

Chair : Debdeep Jena, Jun Suda

ED1-1 (Invited) 14:20 - 14:45

GaN Power Electronics: Game on!

Umesh K Mishra[1]
[1] *UC Santa Barbara/Transphorm, United States of America*

ED1-2 （Oral） 14:45 - 15:00

Improved robustness of p-GaN gate HEMTs by doping profile engineering

Matteo Borga[1], Niels Posthuma[1], Anurag Vohra[1], Benoit Bakeroot[2], Stefaan Decoutere[1]
[1] imec, Belgium, [2] imec, CMST and Gent University, Belgium

ED1-3 （Oral） 15:00 - 15:15

Lateral p-type GaN Schottky barrier diode using annealed Mg ohmic contact layer on low-Mg-concentration p-GaN

Shun Lu[1], Manato Deki[2], Takeru Kumabe[1], Jia Wang[3,4], Kazuki Ohnishi[3], Hirotaka Watanabe[3], Shugo Nitta[3], Yoshio Honda[3], Hiroshi Amano[2,3,4]
[1] Graduate School of Engineering, Nagoya University, Japan, [2] Deep Tech Serial Innovation Center, Nagoya University, Japan, [3] Institute of Materials and Systems for Sustainability, Nagoya University, Japan, [4] Institute for Advanced Research, Nagoya University, Japan

ED1-4 （Oral） 15:15 - 15:30

High-VTH E-mode GaN HEMTs with Robust Gate-Bias-Dependent VTH Stability Enabled by Mg-Doped p-GaN Engineering

Ke Le Wu[2], Yang Yuan Xia[2], Heng Yi Li[2], Gang Ting Zhu[2], Feng Zhou[1], Zong Wei Xu[1], Fang Fang Ren[1], Dong Zhou[1], Jun Dun Chen[1], Rong Zhang[1], Dou You Zheng[1], Hai Lu[1]
[1] Nanjing University, China, [2] CorEnergy Semiconductor Company Ltd, China

ED1-5 （Oral） 15:30 - 15:45

Electron State Analysis under Al_2O_3 Gate Oxide film in EID AlGaN/GaN MOS-HEMT

Takuma Nanjo[1], Akira Kiyoi[1], Takashi Imazawa[1], Masayuki Furuhashi[1], Kazuyasu Nishikawa[1], Takashi Egawa[2]
[1] Mitsubishi electric corporation, Japan, [2] Nagoya Inst. of Tech, Japan

GR1: GaN I

Argos E November 13 (Mon) 14:20 -15:45

Chair : Michal Bockowski, Yohei Otoki

GR1-1 （Invited） 14:20 - 14:45

Recent progress of HVPE-based GaN on GaN technology

Hajime Fujikura[1], Taichiro Konno[1], Takeshi Kimura[1], Shota Kaneki[1], Tetsuji Fujimoto[1], Toshihisa Inoue[1]
[1] Sumitomo Chemical Co. Ltd., Japan

GR1-2 （Oral） 14:45 - 15:00

Large dislocation reduction in N-polar GaN by wet-etch and regrowth

Pietro Pampili[1,3], Vitaly Z Zubialevich[1], Markus Pristovsek[3], Peter J Parbrook[1,2]
[1] Tyndall National Institute, Ireland, [2] School of Engineering, University College Cork, Ireland, [3] CIFRE, IMASS, Nagoya University, Japan

GR1-3 （Oral） 15:00 - 15:15

Realization of high-resistive Ni-doped GaN crystal by hydride vapor phase epitaxy

Takafumi Odani[1], Yuichi Oshima[2], Hirotaka Ikeda[1], Tae Mochizuki[1], Satoru Izumisawa[1]
[1] Mitsubishi Chemical Corporation, Japan, [2] National Institute for Materials Science, Japan

GR1-4 （Oral） 15:15 - 15:30

HVPE growth of thick Sn-doped GaN layers for preparing low-resistivity n-type GaN substrates

Kansuke Hamasaki[1], Kazuki Ohnishi[2], Shugo Nitta[2], Naoki Fujimoto[2], Hirotaka Watanabe[2], Yoshio Honda[2,3,4], Hiroshi Amano[2,3,4]

[1] Department of Electronics, Nagoya University, Japan, [2] Institute of Materials and Systems for Sustainability, Nagoya University, Japan, [3] Deep Tech Serial Innovation Center, Nagoya University, Japan, [4] Institute for Advanced Research, Nagoya University, Japan

GR1-5 （Oral） 15:30 - 15:45

Fairly high temperature growth of GaN thick layers by Cl_2-based HVPE

Hisashi Murakami[1], Xingxing Pan[1], Kota Nemoto[1], Eiji Hase[2], Kentaro Nagamatsu[2]

[1] Tokyo University of Agriculture and Technology, Japan, [2] Tokushima University, Japan

OD1: Far UVC LEDs I

Arogs F November 13 (Mon) 14:20 -15:45

Chair : Motoaki Iwaya, Markus Weyers

OD1-1 （Invited） 14:20 - 14:45

Far UV-C LEDs on AlN substrates with high wall-plug efficiency and long lifetime

Hirotsugu Kobayashi[1], Kosuke Sato[1], Yusuke Okuaki[1], TaeGi Lee[1], Hiromasa Goto[1], Naohiro Kuze[1]

[1] Asahi Kasei Corporation, Japan

OD1-2 （Oral） 14:45 - 15:00

Demonstration of 200 mW Power LED Panel with 230 nm AlGaN far-UVC LEDs and Parabolic Mirror

Hiroyuki Oogami[1], Kengo Mouri[1], Hirokazu Kawashima[1], Yasushi Iwaisako[1], Yukio Kashima[2], Eriko Matsuura[2], Noritoshi Maeda[2], Ajmal Khan[2], Junya Yoshinaga[3], Keitaro Ikejiri[3], Syuuichi Koseki[3], Hideki Hirayama[2]

[1] Nippon Tungsten, Japan, [2] RIKEN, Japan, [3] Taiyo Nippon Sanso, Japan

OD1-3 （Oral） 15:00 - 15:15

Development of a multi-band localization landscape model with a simplified kp model considering strain in UVC-LEDs simulation for TE/TM ratio

Hao Lee[1], Yu-Chieh Chang[1], Claude Weisbuch[2,3], Marcel Filoche[4], James S Speck[3], Yuh-Renn Wu[1]

[1] National Taiwan University, Taiwan, [2] École Polytechnique, CNRS, Institut Polytechnique de Paris, France, [3] University of California, Santa Barbara, United States of America, [4] ESPCI Paris, Université PSL, France

OD1-4 （Oral） 15:15 - 15:30

Realization of EQE 0.008 % operation in 221.5 nm AlGaN far-UVC LED

Yuki Nakamura[1,2], Kou Sumishi[1,3], Sachie Fujikawa[2,1], Hiroyuki Yaguchi[2], Akira Endoh[3], Hiroki Fujishiro[3], Yasushi Iwaisako[4], Hideki Hirayama[1]

[1] RIKEN, Japan, [2] Saitama University, Japan, [3] Tokyo University of Science, Japan, [4] Nippon Tungsten, Japan

OD1-5 （Oral） 15:30 - 15:45

Effect of the quantum well number on the efficiency and lifetime of AlGaN-based 233 nm and 226 nm far-UVC LEDs

Marcel Schilling[1], Jan Ruschel[2], Hyun Kyong Cho[2], Jens Rass[2], Sven Einfeldt[2], Tim Wernicke[1], Michael Kneissl[1]
[1] Technische Universität Berlin, 10623 Berlin, Germany, [2] Ferdinand-Braun-Institut (FBH), 12489 Berlin, Germany

CH1: InGaN Optical I

Navis A November 13 (Mon) 14:20 -15:45

Chair : Shigefusa F. Chichibu, Nicolas Grandjean

CH1-1 （Invited） 14:20 - 14:45

Impact of alloy disorder and polarization fields on the efficiency and luminescence spectrum of visible LEDs from predictive calculations

Nick Pant[1], Emmanouil Kioupakis[1]
[1] University of Michigan, United States of America

CH1-2 （Oral） 14:45 - 15:00

Surface carrier lifetime of (0001) InGaN assessed by time-resolved photoemission spectroscopy

Shuhei Ichikawa[1,2], Yoshinobu Matsuda[3], Heishiroh Dojo[1], Mitsuru Funato[3], Yoichi Kawakami[3], Kazunobu Kojima[1]
[1] Graduate School of Engineering, Osaka University, Japan, [2] Research Center for UHVEM, Osaka University, Japan, [3] Kyoto University, Japan

CH1-3 （Oral） 15:00 - 15:15

Correlative micro-photoluminescence spectroscopy on hybrid quantum-well InGaN red LEDs

Zhaozong Zhang[1], Ryota Ishii[1], Kanako Shojiki[1], Mitsuru Funato[1], Daisuke Iida[2], Kazuhiro Ohkawa[2], Yoichi Kawakami[1]
[1] Kyoto University, Japan, [2] King Abdullah University of Science and Technology, Saudi Arabia

CH1-4 （Oral） 15:15 - 15:30

Improvement of Optical Properties of InGaN-based Red Multiple Quantum Wells

Xin Hou[1], Tao Yang[1], Shao-sheng Fan[1], Huan Xu[1], Daisuke Iida[2], Yang Mei[1], Lei-Ying Ying[1], Zhi-Wei Zheng[1], Hao Long[1], Bao-Ping Zhang[1], Kazuhiro Ohkawa[1,2]
[1] Xiamen university, China, [2]King Abdullah University of Science and Technology (KAUST), Saudi Arabia

CH1-5 （Oral） 15:30 - 15:45

Parameter-Free Calculation for the Optical Band-Gap Energies of InGaN

Takashi Matsuoka[1], Yoshiyuki Kawazoe[1], Talgat M Inerbaev[2]
[1] New Industry Creation Hatchery Center, Tohoku University, Japan, [2] L.N. Gumilyov Eurasian National University, Kazakhstan

CH2: Sc-containing III-Nitrides

Navis B November 13 (Mon) 14:20 -15:35

Chair : Kazuhiko Hara, Chris Van de Walle

CH2-1 （Oral） 14:20 - 14:35

Structural Analysis and Crystallographic Orientation of High-Quality, Metal-Rich, Low Temperature-Grown ScAlN on GaN

Keisuke Motoki[1], Amanda L. Tang[1], Zachary Engel[1], Timothy M. McCrone[1], Christopher M. Matthews[1], Sangho Lee[1], Emily N. Marshall[1], Aheli Ghosh[1], W. Alan Doolittle[1]
[1] Georgia Institute of Technology, United States of America

CH2-2 （Oral） 14:35 - 14:50

Optical properties of rocksalt ScN

Martin Feneberg[1], Jona Grümbel[1], Christopher Lüttich[1], Armin Dadgar[1], Yuichi Oshima[2], Adam Dubroka[3], Manfred Ramsteiner[4], Rüdiger Goldhahn[1]
[1] Otto von Guericke University Magdeburg, Germany, [2] Research Center for Electronic and Optical Materials, National Institute for Materials Science, Japan, [3] Department of Condensed Matter Physics, Masaryk University,Czech Republic, [4] Paul-Drude-Institut für Festkörperelektronik (PDI), Germany

CH2-3 （Oral） 14:50 - 15:05

Characterization of Optical Properties and Bandgaps of $Sc_xAl_{1-x}N$ Epitaxially Grown on GaN Bulk Substrate by Sputtering Method

Takuya Maeda[1], Yusuke Wakamoto[1], Shota Kaneki[2], Hajime Fujikura[2], Atsushi Kobayashi[3]
[1] The University of Tokyo, Japan, [2] Sumitomo Chemical Co., Japan, [3] Tokyo University of Science, Japan

CH2-4 （Oral） 15:05 - 15:20

In-plane ferroelectric polarization reversal in non-polar wurtzite AlScN

Mohamed Yassine[1], Niclas M. Feil[1], Akash Nair[2], Andreas Graff[3], Rachid Driad[2], Fouad Benkhelifa[2], Elisa K. Wade[1], Oliver Ambacher[1]
[1] University of Freiburg, Institute for Sustainable Systems Engineering INATECH, Germany, [2] Fraunhofer Institute for Applied Solid State Physics IAF, Germany, [3] Fraunhofer Institute for Microstructure of Materials andSystems IMWS, Germany

CH2-5 （Oral） 15:20 - 15:35

STEM Investigation of AlScN ferroHEMT

Naomi Ayaka Pieczulewski[1], Thai-son Nguyen[1], Kazuki Nomoto[1], Jimy Encomendero[1], Huili Xing[1], Debdeep Jena[1], David A Muller[1]
[1] Cornell University, United States of America

JT1: Visible Optical Devices

Navis C November 13 (Mon) 14:20 -15:35

Chair : Akihiko Kikuchi, Lars Samuelson

JT1-1 （Oral） 14:20 - 14:35

Blue-Green Semipolar (10-11) InGaN-based µLED on SOI

Beatrice Wannous[1], Fabian Rol[1], Pierre-Marie Coulon[2], Ludovic Dupré[1], Patrick Le Maitre[1], Jesus Zuniga-Perez[2], Anthony Cibié[1], David Cooper[1], Sultan El Badaoui[1], Philippe Vennéguès[2], François Templier[1]
[1] CEA-LETI, France, [2] CRHEA, France

JT1-2 （Oral） 14:35 - 14:50

Fabrication and Characterization of 5 μm-diameter Micro-LED array under injections ranged from 0.1 to 2kA/cm^2

Chuhan Deng[1], Zhizhong Chen[1,2,3], Boyan Dong[1], Zuojian Pan[1], Haodong Zhang[1], Jingxin Nie[1], Weihua Chen[1], Jiao Fei[1,4], Xiangning Kang[1], Qi Wang[2], Guoyi Zhang[1,2], Bo Shen[1,3], Lin Yuan[5], Jianfeng Zhu[5], Chenhui Xia[5]

[1] State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing, China, [2] Dongguan Institute of Optoelectronics, Peking University, Dongguan, Guangdong, China, [3] Yangtze Delta Institute of Optoelectronics, Peking University, Nantong, Jiangsu, China, [4] State Key Laboratory of Nuclear Physics and Technology, School of Physics, Peking University, Beijing, China, [5] NANTONG TONGFANG SEMICONDUCTOR CO.,LTD., China

JT1-3 （Oral） 14:50 - 15:05

Effect of underlying layer on red GaInN-based multi-quantum shells on hexagonal nanopyramid structures

Ayaka Shima[1], Weifang Lu[2], Mizuki Takahashi[1], Yuki Yamanaka[1], Soma Inaba[1], Shiori Ii[1], Yuta Hattori[1], Kosei Kubota[1], Tetsuya Takeuchi[1], Motoaki Iwaya[1], Satoshi Kamiyama[1]

[1] Meijo Univ., Japan, [2] Xiamen Univ., China

JT1-4 （Oral） 15:05 - 15:20

Performance of oxide-based versus to metal-based contacts for InGaN laser diodes

Szymon Grzanka[1,2], Eliana Kamińska[1], Aleksandra Wójcicka[3], Michał Borysiewicz[3], Piotr Perlin[1]

[1] Institute of High Pressure Physics PAS, Poland, [2] Top-GaN sp. z o.o., Poland, [3] Lukasiewicz Research Network - Institute of Microelectronics and Photonics, Poland

JT1-5 （Oral） 15:20 - 15:35

Multi-wavelength single chip integrated GaN microcavity lasers on Si(100)

Lilong Ma[1], Xin Hou[1], Peng Gu[1], Leiying Ying[1], Yang Mei[1], Baoping Zhang[1]

[1] Xiamen University, China

Poster Session I

Argos A-C November 13 (Mon) 15:45 -17:35

ED2: Vertical Power I

Argos D November 13 (Mon) 17:35 -19:00

Chair : Frank Brunner, Jun Suda

ED2-1 （Invited） 17:35 - 18:00

Vertical GaN Power Devices Using Selective Area Doping with Ion Implantation

Tetsu Kachi[1], Maciej Matys[1], Kazuki Kitagawa[1], Tsutomu Uesugi[1], Tetsuo Narita[2], Jun Suda[1]

[1] Nagoya Univ., Japan, [2] Toyota Central R&D Labs., Japan

ED2-2 （Oral） 18:00 - 18:15

kV-class Vertical GaN Junction Barrier Diodes using Mg Implantation

Dolar Khachariya[1], Will Mecouch[1], Seiji Mita[1], Shashwat Rathknathiwar[2], Pramod Reddy[1], Ronny Kirste[1], Kacper Sierakowski[3], Grzegorz Kamler[3], Michal Bockowski[3], Erhard Kohn[2], Spyridon Pavlidis[2], Ramon Collazo[2], Zlatko Sitar[1,2]

[1] Adroit Materials, United States of America, [2] North Carolina State University, United States of America, [3] Institute of High Pressure Physics, Poland

ED2-3 （Oral） 18:15 - 18:30

P-InGaN for high breakdown voltage GaN vertical Schottky diodes

Alessandro Floriduz[1], Zheng Hao[1], Elison Matioli[1]
[1] École Polytechnique Fédérale de Lausanne, Switzerland

ED2-4 （Oral） 18:30 - 18:45

High-power Vertical GaN Diodes using Ammonia Molecular Beam Epitaxy

Esmat Farzana[1], Kai Shek Qwah[1], Zachary J. Biegler[1], Ashley Wissel-Garcia[1], Iris Celupica-Liu[1], Takeki Itoh[1], James S. Speck[1]
[1] University of California, Santa Barbara, United States of America

ED2-5 （Oral） 18:45 - 19:00

First Demonstration of Optically-Controlled Vertical GaN Power FinFETs with High On-Current Density and Photo-Responsivity

Jung-Han Hsia[1], Joshua Perozek[1], Benjamin Briggs[2], Tomás Palacios[1]
[1] Massachusetts Institute of Technology, United States of America, [2] Applied Materials, Inc., United States of America

GR2: GaN II

Argos E November 13 (Mon) 17:35 -19:00

Chair : Hisashi Murakami, Xinqiang Wang

GR2-1 （Invited） 17:35 - 18:00

Quasi-van der Waals epitaxy of III-nitride semiconductors on graphene

Xinqiang Wang[1], F. Liu[1], T. Wang[1], X. Gao[1], H. Y. Yang[1], Z. Y. Chen[1], K. H. Liu[1], X. Z. Li[1], H. L. Peng[1], B. Shen[1]
[1] Peking Univ., China

GR2-2 （Oral） 18:00 - 18:15

Suppression of Polycrystal Formation on for Long-term growth with Halogen-Free Vapor Phase Epitaxy

Hiroki Shimazu[1], Shin-ichi Nishizawa[2], Shugo Nitta[3], Hiroshi Amano[3], Daisuke Nakamura[1]
[1] Toyota Central R&D Labs., Inc., Japan, [2] Kyushu University, Research Institute for Applied Mechanics, Japan, [3] Nagoya University, CIRFE, IMaSS, Japan

GR2-3 （Oral） 18:15 - 18:30

Effect of hydrogen partial pressure on GaN high-speed growth by OVPE

Shigeyoshi Usami[1], Masayuki Imanishi[1], Junichi Takino[2], Tomoaki Sumi[2], Yoshio Okayama[2], Masashi Yoshimura[3], Masahiko Hata[4], Masashi Isemura[5], Yusuke Mori[1]
[1] Graduate school of Engineering, Osaka University, Japan, [2] Panasonic Holdings Corporation, Japan, [3] Institute of Laser Engineering, Osaka Univeristy, Japan, [4] Itochu Plastics Inc., Japan, [5] Sosho-ohshin Inc., Japan

GR2-4 （Oral） 18:30 - 18:45

High temperature and high speed growth of GaN using HVPE-THVPE hybrid method

Hisashi Murakami[1], Kota Nemoto[1], Xingxing Pan[1], Eiji Hase[2], Kentaro Nagamatsu[2]
[1] Tokyo University of Agriculture and Technology, Japan, [2] Tokushima University, Japan

GR2-5 （Oral） 18:45 - 19:00

Precise determination of critical layer properties during MOVPE of blue GaN-based laser structures by in-situ metrology

Kolja Haberland[1], Johannes Enslin[2], Frank Brunner[2], Markus Weyers[2]
[1] LayTec AG, Germany, [2] Ferdinand-Braun-Institut (FBH), Germany

OD2: Micro LEDs: Full-Color

Arogs F November 13 (Mon) 17:35 -19:00

Chair : Yasufumi Fujiwara, Baoping Zhang

OD2-1 （Invited） 17:35 - 18:00

High-Efficiency InGaN Red Mini/Micro-LEDs on Sapphire Toward Full-Color Nitride Displays

Zhaoying Chen[1,2], Zexing Yuan[1], Bowen Sheng[1], Fang Liu[1], Tao Wang[1], Xin Rong[1], Jingsheng Huang[3], Jiangying Qiu[3], Wenji Liang[3], Chunlei Zhao[3], Long Yan[4], Jason Hu[4], Shiping Guo[4], Weikun Ge[1], Bo Shen[1], Xinqiang Wang[1]
[1] Peking University, China, [2] GuSu Laboratory of Materials, China, [3] AET Displays Limited, China, [4] Advanced Micro-Fabrication Equipment Inc, China

OD2-2 （Oral） 18:00 - 18:15

Monolithic Full-color InGaN-based LED with Si-doped Interlayers

Koji Okuno[1], Koichi Goshonoo[1], Masaki Ohya[1]
[1] Toyota Gosei Co., Ltd., Japan

OD2-3 （Oral） 18:15 - 18:30

Fabrication of stacked RGB monolithic GaInN-based μLED arrays

Tatsunari Saito[1], Naoki hasegawa[1], Keigo Imura[1], Yoshinobu Suehiro[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Daisuke Iida[2], Kazuhiro Ohkawa[2], Motoaki Iwaya[1]
[1] Meijo university, Japan, [2] King Abdullah University of Science and Technology (KAUST), Saudi Arabia

OD2-4 （Oral） 18:30 - 18:45

Monolithic integration of small blue and red LEDs for next-generation micro-LED displays with ultrahigh definition

Toshihiro Ishihara[1], Shuhei Ichikawa[1], Genki Tanaka[1], Kazutsune Miyanaga[1], Tsuyoshi Uemura[1], Norio Kanzaki[1], Jun Tatebayashi[1], Yasufumi Fujiwara[1]
[1] Osaka University, Japan

OD2-5 （Oral） 18:45 - 19:00

Influence of stray light in monolithic μLED arrays and its reduction

Naoki Hasegawa[1], Tatsunari Saito[1], Keigo Imura[1], Yoshinobu Suehiro[1], Tetsuya Takeuti[1], Satoshi Kamiyama[1], Motoaki Iwaya[1]
[1] Meijo Univ., Japan

CH3: InGaN Optical II

Navis A November 13 (Mon) 17:35 -19:00

Chair : Aurelien David, Yoichi Kawakami

CH3-1 （Invited） 17:35 - 18:00

Nanoscale investigation of point defects and carrier dynamics in InGaN/GaN quantum wells

Nicolas Grandjean[1]
[1] *Institute of Physics, EPFL, Switzerland*

CH3-2 （Oral） 18:00 - 18:15

Optical Nano-Characterization of a Cascaded InGaN/GaN LED

Frank Bertram[1], Gordon Schmidt[1], Peter Veit[1], Christoph Berger[1], Armin Dadgar[1], Andre Strittmatter[1], Juergen Christen[1]
[1] *University of Magdeburg, Germany*

CH3-3 （Oral） 18:15 - 18:30

Evolution of the Quantum Confined Stark Effect with external electrical or optical excitation in InGaN/GaN structures with single Quantum Well of different width

Tadek Suski[1], Grzegorz Staszczak[1], Katarzyna Pieniak[1], Anna Kafar[1], Witold Trzeciakowski[1], Grzegorz Muzioł[1], Marcin Siekacz[1], Czesław Skierbiszewski[1]
[1] *Institute of High Pressure Physics Polish Academy of Sciences ul. Sokolowska 29/37 01-142 Warsaw POLAND, Poland*

CH3-4 （Oral） 18:30 - 18:45

Evaluation of radiative and non-radiative recombination lifetimes in c-plane InGaN quantum wells with different In composition

Keito Mori-Tamamura[1], Yuya Morimoto[1], Atsushi A. Yamaguchi[1], Susumu Kusanagi[2], Yuya Kanitani[2], Yoshihiro Kudo[2], Shigetaka Tomiya[2]
[1] *Kanazawa Institute of Technology, Japan,* [2] *Sony Semiconductor Solutions Corporation, Japan*

CH3-5 （Oral） 18:45 - 19:00

Significant improvement of light emission of InGaN/GaN quantum wells by depositing oxide thin films and ultraviolet light irradiations

Koichi Okamoto[1], Seiya Kaito[1], Yuki Kamei[1], Kenta Mitoda[1], Kosuke Fujioka[1], Tomohiko Niwa[1], Kenji Wada[1], Mitsuru Funato[2], Yoichi Kawakami[2]
[1] *Osaka Metropolitan University, Japan,* [2] *Kyoto University, Japan*

JT2: UV Optical Devices

Navis B November 13 (Mon) 17:35 -18:50

Chair : Masataka Imura, TBA

JT2-1 （Oral） 17:35 - 17:50

Flexible GaN UV microdisk laser on PET substrate

Peng Gu[1], Shuai Yang[1], Lilong Ma[1], Tao Yang[1], Xin Hou[1], Yang Mei[1], Leiying Ying[1], Hao Long[1], Baoping Zhang[1]
[1] *Xiamen University, China*

JT2-2 （Oral） 17:50 - 18:05

Increase the Efficiency of 228-237 nm AlGaN Far-UVC LEDs with p-Side Graded Layer

Noritoshi Maeda[1], Yasushi Iwaisako[2], Hideki Hirayama[1]
[1] RIKEN, Japan, [2] Nippon Tungsten, Japan

JT2-3 （Oral） 18:05 - 18:20

Flexible nanowire UV-LEDs

Nuno Amador-Medez[1], Roberto Hernandez[1], Jules Duraz[1], Etienne Hertz[1], Sophie Bouchoule[1], François Julien[1], Vincent Grenier[2], Lucie Valéra[2], Sylvain Finot[3], Gwénolé Jacopin[3], Fedor Kochetkov[4], Vladimir Neplokh [4], Ivan Mukhin [4], Maria Tchernycheva[1], Christophe DURAND[2]
[1] C2N-CNRS, Université Paris Saclay, France, [2] Univ. Grenoble Alpes, CEA, PHELIQS, France, [3] Univ. Grenoble Alpes, CNRS, Institut Neel, France, [4] Department of Physics, Alferov University, Russia

JT2-4 （Oral） 18:20 - 18:35

Heteroepitaxy of High Al-content AlGaN on Si Towards Thin-Film Flip-Chip Deep Ultraviolet Light Sources

Qian Sun[1]
[1] Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China

JT2-5 （Oral） 18:35 - 18:50

Generation of multiple ultraviolet optical tweezers with monolithic AlN metasurfaces

Xiaobin Yu[1,2], Yanan Guo[1,2], Zhibin Liu[1,2], Junxi Wang[1,2], Jinmin Li[1,2], Jianchang Yan[1,2]
[1] Institute of Semiconductors, CAS, China, [2] University of Chinese Academy of Sciences, China

GR3: Doping and Defects

Navis C November 13 (Mon) 17:35 -18:50

Chair : Jaime Freitas, Jr., Shugo Nitta

GR3-1 （Oral） 17:35 - 17:50

Pushing the Mg doping limit in N-polar GaN by controlling self-compensation

Masahiro Kamiyama[1], Shashwat Rathkanthiwar[1], Cristyan Quiñones García[1], James Loveless[1], Seiji Mita[2], Pramod Reddy[2], Ronny Kirste[2], Ramón Collazo[1], ZlatkoSitar[1,2]
[1] North Carolina State University, United States of America, [2] Adroit Materials, United States of America

GR3-2 （Oral） 17:50 - 18:05

Optical and Structural Properties of Praseodymium-Implanted AlN Films

Kanako Shojiki[1], Shin-ichiro Sato[2], Ken-ichi Yoshida[3], Hideaki Minagawa[3], Hideto Miyake[1]
[1] Mie University, Grad. Sch. of Eng., Japan, [2] National Institutes for Quantum Science and Technology, Japan, [3] Ion Technology Center Co., Ltd, Japan

GR3-3 （Oral） 18:05 - 18:20

Ultra-high pressure annealing of Mn-implanted HVPE-GaN

Piotr Jaroszynski[1], Kacper Sierakowski[1], Rafal Jakiela[2], Marcin Turek[3], Michal Fijalkowski[1], Tomasz Sochacki[1], Michal Bockowski[1,4]
[1] Institute of High Pressure Physics of the Polish Academy of Sciences, Poland, [2] Institute of Physics Polish Academy of Sciences, Poland, [3] Institute of Physics Maria Curie-Sklodowska University, Poland, [4]CIRFE, IMaSS, Nagoya University, Japan

GR3-4 （Oral） 18:20 - 18:35

Control of point defect density in GaInN/GaN quantum wells: The underlayer as a diffusion barrier, regardless of its composition

Rodrigo De Vasconcellos Lourenco[1,2], Heiko Bremers[1,2], Uwe Rossow[1], Andreas Hangleiter[1,2]
[1] *Technische Universität Braunschweig, Germany,* [2] *Laboratory for Emerging Nanometrology, Germany*

GR3-5 （Oral） 18:35 - 18:50

Half-loop Formation in Low Temperature GaN to Form Large V-defects for Lateral Injection

Jacob Ewing[1], Feng Wu[1], Alejandro Quevedo[1], Tanay Tak[1], Shuji Nakamura[1], Steven P. DenBaars[1], James S. Speck[1]
[1] *Materials Department, UC Santa Barbara, United States of America*

November 14 (Tue)

ED3: Lateral Power II / ICs

Argos D November 14 (Tue) 8:30 -10:15

Chair : Elison Matioli, Takuma Nanjo

ED3-1 (Oral) 8:30 - 8:45

GaN Lateral Schottky Superjunction Diodes

Zachary Biegler[1], Esmat Farzana[1], Wan Ying Ho[1], Sriram Krishnamoorthy[1], James S Speck[1]
[1] *University of California - Santa Barbara, United States of America*

ED3-2 (Oral) 8:45 - 9:00

First Observation of Dynamic Switching-Induced Negative Resistance Characteristics in Spaced Hybrid Drain-Embedded p-GaN HEMTs Using Nanosecond-Scale Transient Characterization Techniques

Wen Feng Wang[1], Feng Zhou[1], Zong Wei Xu[1], Fang fang Ren[1], Dong Zhou[1],Jun Dun Chen[1], Rong Zhang[1], Dou You Zheng[1], Hai Hai[1]
[1] *Nanjing University, China*

ED3-3 (Oral) 9:00 - 9:15

Physics-based trap analysis and compact modeling performance evaluation of AlGaN/GaN HEMTs

Carlo De Santi[1], Nicola Modolo[1], Giulio Baratella[2,3], Matteo Borga[3], Niels Posthuma[3], Benoit Bakeroot[2,3], Stefaan Decoutere[3], Gaudenzio Meneghesso[1], Enrico Zanoni[1], Matteo Meneghini[1]
[1] *Department of Information Engineering, University of Padova, Padova, 35131, Italy,* [2] *CMST, IMEC, Ghent University, B9052 Ghent, Belgium,* [3] *IMEC VZW, B3001 Leuven, Belgium*

ED3-4 (Oral) 9:15 - 9:30

Normally-off Operation of High-Al-Composition AlGaN Channel HEMTs with Gate Recess Structures

Itsuki Nakaoka[1], Makoto Urushiyama[1], Etsushi Kubota[2], Kenjiro Uesugi[2,3], Takao Nakamura[1], Hideto Miyake[1]
[1] *Mie University Graduate School of Engineering, Japan,* [2] *Mie University Graduate School of RIS, Japan,* [3] *Mie University ORIP, Japan*

ED3-5 (Oral) 9:30 - 9:45

Analytical Study of Vertical Leakage Current in AlGaN-based Buffer Layer Grown on Si Substrate

Ryoma Kaneko[1], Hisashi Yoshida[1], Akira Yoshioka[2], Toshiki Hikosaka[1], Shinya Nunoue[1]
[1] *Toshiba Corporation, Japan,* [2] *Toshiba Electronic Devices & Storage Corporation, Japan*

ED3-6 (Oral) 9:45 - 10:00

GaN-based complementary logic integrated circuits with V_{DD} of 0.5V

Xuerui Niu[1], Bolin Wang[1], Bin Hou[1], Ling Yang[1], Xiaohua Ma
[1] *Xidian University, China*

ED3-7 （Oral） 10:00 - 10:15

Band engineering of polarization induced 2D hole gases in GaN/AlGaN heterostructures

Pengfei Shao[1], Songlin Chen[1], Siqi Li[1], Hui Zhou[1], Tao Tao[1], Zili Xie[1], Dunjun Chen[1], Youdou Zheng[1], Rong Zheng[1,2], Ke Wang[1,3]

[1] Nanjing University, China, [2] Xiamen University, China, [3] RIKEN, Japan

CH4: Characterization for Electron Devices I

Argos E November 14 (Tue) 8:30 -10:25

Chair : Filip Tumisto, Masahiro Horita

CH4-1 （Invited） 8:30 - 8:55

GaN Vertical Devices: challenges for high performance and stability

Matteo Meneghini[1,2,6], Manuel Fregolent[1,6], Nicolò Zagni[3,6], Carlo De Santi[1,6], Eldad Bahat Treidel[4], Enrico Brusaterra[4], Frank Brunner[4], Oliver Hilt[4], ChristianHuber[5], Matteo Buffolo[1,6], Alberto Marcuzzi[1,6], Davide Favero[1,6], Andrea Del Fiol[1], Giovanni Verzellesi[3,6], Paolo Pavan[3,6], Gaudenzio Meneghesso[1,6], Enrico Zanoni[1,6]

[1] University of Padova - Department of Information Engineering, Italy, [2] University of Padova - Department of Physics and Astronomy, Italy, [3] University of Modena and Reggio Emilia, Italy, Italy, [4] Ferdinand Braun Institute, Berlin, Germany, Germany, [5] Department for Advanced Technologies and Microsystems, Robert Bosch GmbH, Germany, Germany, [6] Consorzio Nazionale Interuniversitario per la Nanoelettronica (IU.NET), Italy

CH4-2 （Oral） 8:55 - 9:10

Emission and Capture Kinetics of Minority Carrier Trap in GaN Devices by Optical DLTS

Jiaxiang Chen[1], Jin Sui[1], Haolan Qu[1], Xinbo Zou[1]

[1] School of Information Science and Technology of ShanghaiTech University , China

CH4-3 （Oral） 9:10 - 9:25

Leakage Mechanisms in 1.2kV Vertical p-i-n GaN Rectifiers with Nitrogen-Implanted Floating Guard Rings and Premature Breakdown Study by Sub-bandgap Photoluminescence

Zhiyu Xu[1], Matthias A. Daeumer[2], Minkyu Cho[1], Marzieh Bakhtiary-Noodeh[3], Jae-Hyuck Yoo[2], Qinghui Shao[2], Ted A. Laurence[2], Daryl Key[4], Edward Letts[4], Tadao Hashimoto[4], Theeradetch Detchprohm[1], Russell D. Dupuis[1,3], Shyh-Chiang Shen[1]

[1] School of Electrical and Computer Engineering, Georgia Institute of Technology, United States of America, [2] Lawrence Livermore National Laboratory, United States of America, [3] School of Materials Science and Engineering, Georgia Institute of Technology, United States of America, [4] SixPoint Materials, United States of America

CH4-4 （Oral） 9:25 - 9:40

p-GaN/AlGaN/GaN Heterostructure as a Versatile Platform for Extremely-Wide-Temperature-Range (X-WTR) Electronics

Yat Hon Ng[1], Zheyang Zheng[1], Li Zhang[1], Ruizi Liu[1], Tao Chen[1], Sirui Feng[1], Qiming Shao[1], Kevin J. Chen[1]

[1] The Hong Kong University of Science and Technology, Hong Kong, China, Hong Kong

CH4-5 （Oral） 9:40 - 9:55

Remarkably Low Thermal Boundary Resistance between Diamond and GaN for GaN-based Devices Cooling

Haolun Sun[1], Mei Wu[1], Ping Wang[1], Ling Yang[1], Xiaohua Ma[1], Yue Hao[1]
[1] *Xidian University, China*

CH4-6 （Oral） 9:55 - 10:10

Nanoscale mapping of threshold voltage distribution in GaN-based high electron mobility transistor structures

Chen Chen[1], Saptarsi Ghosh[1], Gunnar Kusch[1], Francesca Adams[1], Menno J. Kappers[1], David J. Wallis[1,2], Rachel A. Oliver[1]
[1] *University of Cambridge, UK,* [2] *University of Cardiff, UK*

CH4-7 （Oral） 10:10 - 10:25

Electroluminescence and Gate Carrier Dynamics in a Schottky type p-GaN Gate Double-Channel GaN HEMT

Sirui Feng[1], Hang Liao[1], Tao Chen[1], Junting Chen[2], Yan Cheng[1], Mengyuan Hua[2], Zheyang Zheng[1], Kevin J. Chen[1]
[1] *Hong Kong University of Science and Technology, Hong Kong,* [2] *Southern University of Science and Technology, China*

OD3: VCSELs

Argos F November 14 (Tue) 8:30 -10:10

Chair : Åsa Haglund, Masaru Kuramoto

OD3-1 （Invited） 8:30 - 8:55

Polarization and Modes control of GaN-based VCSELs with curved mirror

Tatsushi Hamaguchi[1], Tomohiro Makino[1], Kentaro Hayashi[1], Maiko Ito[1], Maho Ohara[1], Noriko Kobayashi[1], Hiroyuki Miyahara[1], Koichi Sato[1], Yuki Nakamura[1],Takumi Watanabe[1], Shouetsu Nagane[1], Yuichiro Kikuchi[1], Tatsuro Jyokawa[1], Yukio Hoshina[1], Eiji Nakayama[1], Rintaro Koda[1], Noriyuki Futagawa[1]
[1] *Sony Semiconductor Solutions Corporation, Japan*

OD3-2 （Oral） 8:55 - 9:10

Green VCSELs based on InGaN quantum dots and a submicron cavity

Tao Yang[1], Yan-Hui Chen[1], Ya-Chao Wang[1], Wei Ou[1], Lei-Ying Ying[1], Yang Mei[1], Ai-Qin Tian[2], Jian-Ping Liu[2], Bao-Ping Zhang[1]
[1] *Xiamen University, China,* [2] *Chinese Academy of Sciences, China*

OD3-3 （Oral） 9:10 - 9:25

Long-cavity m-plane GaN-based vertical-cavity surface-emitting lasers with a topside curved dielectric mirror

Nathan C Palmquist[1], Ryan Anderson[1], Jared A Kearns[1], Emily Trageser[1], Stephen Gee[1], Arturo Juan[1], Steven P Denbaars[1], Shuji Nakamura[1]
[1] *UC Santa Barbara, United States of America*

OD3-4 （Oral） 9:25 - 9:40

In-situ layer thickness control of AlInN/GaN DBRs with in-situ reflectivity spectra measurements

Kenta Kobayashi[1], Tsuyoshi Nagasawa[1], Kana Shibata[1], Taichi Nishikawa[1], Tetsuya Takeuchi[1], Motoaki Iwaya[1], Satoshi Kamiyama[1]
[1] *Meijo University, Japan*

OD3-5 （Oral） 9:40 - 9:55

Three-Dimensional Mode Confinement by Burying SiO_2 Nanospheres in the DBRs of GaN-based VCSELs

Huanqing Chen[1], Shukun Li[1], Menglai Lei[1], Guo Yu[1], Xiaodong Hu[1]
[1] *Peking University, China*

OD3-6 （Oral） 9:55 - 10:10

Flexible GaN based VCSELs and microdisk lasers

Yang Mei[1], Peng Gu[1], Lilong Ma[1], Leiying Ying[1], Baoping Zhang[1]
[1] *Xiamen University, China*

CH5: GaN

Navis A November 14 (Tue) 8:30 -10:25

Chair : Andreas Hangleiter, Takao Oto

CH5-1 （Invited） 8:30 - 8:55

Revisiting the determination of the carrier diffusion length in GaN from cathodoluminescence spectroscopy

Jonas Lähnemann[1], Vladimir M. Kaganer[1], Uwe Jahn[1], Karl K. Sabelfeld[2], Anastasia E. Kireeva[2], Timur Flissikowski[1], Carsten Pfüller[1], Caroline Chèze[1], Raffaela Calarco[1], Oliver Brandt[1]
[1] *Paul Drude Institute, Germany,* [2] *Institute of Computational Mathematics and Mathematical Geophysics, Russian Academy of Sciences, Russia*

CH5-2 （Oral） 8:55 - 9:10

Hall Mobilities of High-purity GaN crystals-Record high mobilities and anomalous C-concentration dependence-

Shota Kaneki[1], Taichiro Konno[1], Takeshi Kimura[1], Kazutaka Kanegae[2,3], Jun Suda[3,4], Hajime Fujikura[1]
[1] *Sumitomo Chemical Co. Ltd., Japan,* [2] *Kyoto University, Japan,* [3] *Nayoga University, Japan,* [4] *Nagoya University, IMaSS, Japan*

CH5-3 （Oral） 9:10 - 9:25

Characterization of Micro-Crack Formation and Lattice Distortions in Ammonothermally grown GaN substrates

Nadeemullah A Mahadik[1], Michael E Liao[1], Jennifer K Hite[1], Jaime A Freitas Jr. [1], James C Culbertson[1], Travis J Anderson[1], Edward Letts[2], David Key[2], Tadao Hashimoto[2]
[1] *US Naval Research Laboratory, United States of America,* [2] *SixPoint Materials Incorporated, United States of America*

CH5-4 （Oral） 9:25 - 9:40

Wafer-scale characterization of mosaics and the impact on point defects in GaN studied using 2D birefringence and photoluminescence measurements

Kohei Shima[1], Shigefusa F Chichibu[1]
[1] *Inst. Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*

CH5-5 （Oral） 9:40 - 9:55

Investigation of Sub-Surface Crystal Properties from GaN wafer processing

Nadeemullah A Mahadik[1], Michael E Liao[1], Jaime A Freitas Jr. [1], James C Culbertson[1], Tomasz Sochacki[2], Robert Kucharski[2], Michal Bockowski[2], Travis J Anderson[1]
[1] *US Naval Research Laboratory, United States of America,* [2] *Institute of High Pressure Physics Polish Academy of Sciences, Poland*

CH5-6 （Oral） 9:55 - 10:10

Machine Learning Assisting NanoXRD Based Analysis on HVPE GaN Structure

ZHENDONG WU[1], Yusuke Hayashi[1], Tetsuya Tohei[1], Kazushi Sumitani[2], Yasuhiko Imai[2], Shigeru Kimura[2], Akira Sakai[1]

[1] Grad. Sch. Eng. Sci., Osaka Univ., Japan, [2] JASRI, Japan

CH5-7 （Oral） 10:10 - 10:25

Thermal oxidation of [0001] GaN in water vapor compared with dry and wet oxidation: oxide properties and impact on Ga

Łukasz Janicki[1,2], Ryszard Korbutowicz[3], Mariusz Rudziński[4], Paweł Piotr Michałowski[4], Sebastian Złotnik[5], Miłosz Grodzicki[1,2], Sandeep Gorantla[1], Jarosław Serafińczuk[1,6], Detlef Hommel[1,7], Robert Kudrawiec[1,2]

[1] Łukasiewicz Research Network - PORT Polish Center for Technology Development, Poland, [2] Department of Semiconductor Materials Engineering, Wrocław University of Science and Taechnology, Poland, [3] Department of Microelectronics and Nanotechnology, Wroclaw University of Science and Technology, Poland, [4] Łukasiewicz Research Network - Institute of Microelectronics and Photonics, Poland, [5] Institute of Applied Physics, Military University of Technology, Poland, [6] Department of Nanometrology, Wroclaw University of Science and Technology, Poland, [7] Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Poland

GR4: AlN I

Navis B November 14 (Tue) 8:30 -10:25

Chair : Satoshi Kamiyama, Zlatko Sitar

GR4-1 （Invited） 8:30 - 8:55

Progress in UV-C LEDs on Face-to-Face Annealed Sputter-Deposited AlN Templates

Kenjiro Uesugi[1,2], Kanako Shojiki[3], Shiyu Xiao[3], Shuhei Ichikawa[4,5], Takao Nakamura[3], Masahiko Tsuchiya[6], Kazunobu Kojima[4], Hideto Miyake[3]

[1] Mie University, ORIP, Japan, [2] Mie University, Grad. Sch. of RIS, Japan, [3] Mie University, Grad. Sch. of Eng., Japan, [4] Osaka University, Grad. Sch. of Eng., Japan, [5] Osaka University, Center for UHVEM, Japan, [6] Stanley Electric Co., Japan

GR4-2 （Oral） 8:55 - 9:10

Fabrication of Multiple Polarity Inverted AlN Structures by Multiple Sputtering and High-Temperature Annealing

Tomohiro Tamano[1], Kanako Shojiki[1], Hiroto Honda[2], Eiki Sato[2], Kenjiro Uesugi[3,4], Shiyu Xiao[1], Masahiro Uemukai[2], Tomoyuki Tanikawa[2], Ryuji Katayama[2], Hideto Miyake[1]

[1] Mie University, Grad. Sch. of Eng., Japan, [2] Osaka University, Grad. Sch. of Eng., Japan, [3] Mie University, ORIP, Japan, [4] Mie University, Grad. Sch. of RIS, Japan

GR4-3 （Oral） 9:10 - 9:25

Demonstration of Controllable Si Doping in N-polar AlN by Plasma Assisted Molecular Beam Epitaxy

Md Irfan Khan[1], Cindy Lee[1], Elaheh Ahmadi[1]

[1] Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, United States of America

GR4-4 （Oral） 9:25 - 9:40

Substrate Off-cut Angle Dependence of Crystallinity and Crystal Orientation of a-plane AlN Fabricated by Sputtering and High-Temperature Annealing

Yuki Ogawa[1], Jiei Hayama[1], Kenjiro Uesugi[2,3], Toru Akiyama[1], Hideto Miyake[1]
[1] Graduate School of Engineering, Mie University, Japan, [2] ORIP, Mie University, Japan, [3] Graduate School of RIS, Mie University, Japan

GR4-5 （Oral） 9:40 - 9:55

High conductivity in Ge-doped AlN via implantation

Seiji Mita[1,2], Pegah Bagheri[2], Cristyan Quinones-Garcia[2], Dolar Khachariya[1,2], James Loveless[2], Shashwat Rathkanthiwar[2], Pramod Reddy[1,2], Ronny Kirste[1,2], James Tweedie[1,2], Ramon Collazo[2], Zlatko Sitar[2]
[1] Adroit Materials, United States of America, [2] North Carolina State University, United States of America

GR4-6 （Oral） 9:55 - 10:10

Engineering the High-Temperature Annealing Process of Aluminium Nitride by Ion Implantation

Christoph Margenfeld[1], Lukas Peters[1], Carsten Ronning[2], Jan Krügener[3], Jana Hartmann[1], Andreas Waag[1]
[1] Institute of Semiconductor Technology, Technische Universität Braunschweig, Germany, [2] Institute of Solid State Physics, Friedrich Schiller University Jena, Germany, [3] Institute of Electronic Materials and Devices,Leibniz Universität Hannover, Germany

GR4-7 （Oral） 10:10 - 10:25

Hexagonal BN-Assisted Interfacial Lattice-Polarity-Controlled van der Waals Epitaxy of AlN and Wafer-scale Exfoliation

Lulu Wang[1], Junxi Wang[1], Jinmin Li[1], Tongbo Wei[1]
[1] State Key Laboratory of Solid-State Lighting, Institute of Semiconductors, Chinese Academy of Sciences, China

GR5: MOCVD

Navis C November 14 (Tue) 8:30 -10:25

Chair : Ramon Collazo, Yoshio Honda

GR5-1 （Invited） 8:30 - 8:55

Catalytic enhancement of ammonia reaction by trimethylgallium and its reactants in MOVPE analyzed by TOF-MS isotope tracking

Shugo Nitta[1], Daisuke Yahara[2], Yoshio Honda[1,3,4], Hiroshi Amano[1,3,4]
[1] Institute of Materials and Systems for Sustainability, Nagoya University, Japan, [2] Department of Electronics, Nagoya University, Japan, [3] Deep Tech Serial Innovation Center, Nagoya University, Japan, [4] Institute for Advanced Research, Nagoya University, Japan

GR5-2 （Oral） 8:55 - 9:10

Relation between metal vacancy concentration and diffusion of silicon, magnesium and hydrogen in AlGaInN epi structures

Mike Leszczynski[1], Ewa Grzanka[1], Mikolaj Grabowski[1], Pawel Michalowski[2], Roman Hrytsak[1], Grzegorz Muziol[1], Czeslaw Skierbiszewski[1], Jakub Cizek[4], Alice Hospodkova[4], Rafal Jakiela[3], Robert Czernecki[1], Andrzej Turos[2]
[1] Institute of High Pressure Physics, Poland, [2] Lukasiewicz Network Institute of Micromechanics and Photonics, Poland, [3] Institute of Physics, Poland, [4] Institute of Physics, Czech Republic

GR5-3 （Oral） 9:10 - 9:25

Pressurized MOVPE growth of InN

Yudai Yamashita[1], Kazuhide Kumakura[1], Yoshitaka Taniyasu[1]
[1] NTT Basic Research Laboratories, NTT Corporation, Japan

GR5-4 （Oral） 9:25 - 9:40

GaN Homoepitaxial Growth and Substrate-Dependent Effects for Vertical Power Devices

Jennifer Hite[1], Michael Mastro[1], James Gallagher[1], Jaime Freitas[1], Travis Anderson[1]
[1] US Naval Research Laboratory, United States of America

GR5-5 （Oral） 9:40 - 9:55

Metalorganic Vapor Phase Epitaxy of +c/–c GaN Polarity Inverted Bilayer for Transverse Quasi Phase Matched Photon Pair Generation Device Application

Kazuhisa Ikeda[1,2], Yuya Furukawa[1,2], Tomotaka Murata[1], Shuhei Ichikawa[1], Yasufumi Fujiwara[1], Tomoyuki Tanikawa[1,2], Masahiro Uemukai[1,2], Ryuji Katayama[1,2]
[1] Graduate School of Engineering Osaka University, Japan, [2] OTRI-Spin Osaka University, Japan

GR5-6 （Oral） 9:55 - 10:10

Influence of carrier gas (Nitrogen or Hydrogen) on the properties of Mg-doped GaN/AlGaN layers grown by MOVPE technique.

Robert Czernecki[1,2], Ewa Grzanka[1,2], Rafal Jakiela[3], Elzbieta Litwin-Staszewska[1], Szymon Grzanka[1,2], Mike Leszczynski[1,2]
[1] Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland, Poland, [2] TopGaN Ltd., Solec 24/90, 00-403 Warsaw, Poland, Poland, [3] Institute of Physics, PAS, Al. Lotnikow 32/46, 02-668 Warsaw, Poland, Poland

GR5-7 （Oral） 10:10 - 10:25

GaN/AlN Quantum Wells on Step-Edge Density-Controlled AlN Surface

Kanako Shojiki[1], Yuto Yamanaka[1], Ryota Ishii[2], Kenjiro Uesugi[3,4], Mitsuru Funato[2], Yoichi Kawakami[2], Hideto Miyake[1]
[1] Mie University, Grad. Sch. of Eng., Japan, [2] Kyoto University, Grad. Sch. of Eng., Japan, [3] Mie University, ORIP, Japan, [4] Mie University, Grad. Sch. of RIS, Japan

Break 10:25 -10:55

ED4: Vertical Power II

Argos D November 14 (Tue) 10:55 -12:35

Chair : Katsunori Ueno, Shigeyoshi Usami

ED4-1 （Invited） 10:55 - 11:20

A High Channel Mobility and a Normally-off Operation of m-plane GaN Trench MOSFET Using an AlSiO/AlN Gate Stack Deposited by ALD

Masakazu Kanechika[1], Kenji Ito[2], Tetsuo Narita[2], Kazuyoshi Tomita[1], Shiro Iwasaki[2], Daigo Kikuta[2], Tetsu Kachi[1]
[1] Nagoya University, Japan, [2] Toyota Central R&D Labs., Inc., Japan

ED4-2 （Oral） 11:20 - 11:35

Vertical GaN Trench-MOSFETs Fabricated on Ammonothermally Grown Bulk GaN Substrates

Maciej Kaminski[1,2], Jaroslaw Tarenko[1,2], Oskar Sadowski[1,2], Andrzej Taube[1], Marek Ekielski[1], Magdalena Zadura[1], Kamil Kosiel[1], Iwona Jozwik[1], Ernest Brzozowski[1], Anna Szerling[1], Pawel Prystawko[3], Michal Bockowski[3], Izabella Grzegory[3]

[1] Łukasiewicz Research Network, Institute of Microelectronics and Photonics, Poland, [2] Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Poland, [3] Institute of High Pressure Physics,Polish Academy of Sciences, Poland

ED4-3 （Oral） 11:35 - 11:50

High Current Density 1.2 kV-Class Vertical GaN Trench MOSFETs with HfO_2 Gate Dielectric

Andrew Binder[1], Jeffrey Steinfeldt[1], Andrew Allerman[1], Kevin Reilly[1], Richard Floyd[1], Caleb Glaser[1], Michael Smith[1], Luke Yates[1], Brian Rummel[1], Paul Sharps[1], Robert Kaplar[1]

[1] Sandia National Laboratories, United States of America

ED4-4 （Oral） 11:50 - 12:05

A Record Knee-voltage and Suppressed Leakage Current in N-polar GaN Unipolar Diode

Biplab Sarkar[1], Hirotaka Watanabe[2], Jia Wang[2], Hiroshi Amano[2]

[1] Indian Institute of Technology Roorkee, India, [2] Nagoya University, Japan

ED4-5 （Oral） 12:05 - 12:20

High-Yield Manufacturing Demonstration of Planar 1.2kV and 3.3kV Vertical GaN PiN Diodes

Travis Anderson[1], Alan G Jacobs[1], James C Gallagher[1], James Spencer Lundh[2], Jennifer K Hite[1], Nadeemullah A Mahadik[1], Karl D Hobart[1], Robert J Kaplar[3]

[1] U.S. Naval Research Laboratory, United States of America, [2] National Research Council (residing at NRL), United States of America, [3] Sandia National Labs, United States of America

ED4-6 （Oral） 12:20 - 12:35

Leakage Current Reduction in Vertical p-i-n GaN Diode by Edge Termination Engineering with Shallow Bevel Mesas

Zhiyu Xu[1], Theeradetch Detchprohm[1], Shyh-Chiang Shen[1], Russell D Dupuis[1,2]

[1] School of Electrical and Computer Engineering, Georgia Institute of Technology, United States of America, [2] School of Materials Science and Engineering, Georgia Institute of Technology, United States of America

CH6: GaN:Mg

Argos E November 14 (Tue) 10:55 -12:50

Chair : Shuhei Ichikawa, Juergen Christen

CH6-1 （Invited） 10:55 - 11:20

Impacts of vacancy clusters on the luminescence dynamics in Mg-implanted GaN on GaN structures

Shigefusa F Chichibu[1], Akira Uedono[2], Hiroko Iguchi[3], Tetsuo Narita[3], Keita Kataoka[3], Michal Bockowski[4,5], Jun Suda[5,6], Tetsu Kachi[6], Shinya Takashima[7], Ryo Tanaka[7], Katsunori Ueno[7], Masaharu Edo[7], Shoji Ishibashi[8], Kohei Shima[1]

[1] Tohoku University, Japan, [2] University of Tsukuba, Japan, [3] Toyota Central R&D Labs., Inc., Japan, [4] Inst. High Pressure Physics, Polish Academy of Sciences, Poland, [5] Nagoya University, Japan, [6] Nagoya University, Japan, [7] Fuji Electric Co., Ltd., Japan, [8] National Inst. Advanced Industrial Science and Technology, Japan

CH6-2 （Oral） 11:20 - 11:35

TEM and SIMS analysis of pressure effect on diffusion of point defects in Mg-ion-implanted GaN

Emi Kano[1], Koki Kobayashi[1], Ritsuo Otsuki[1], Keita Kataoka[2], Kacper Sierakowski[3], Michal Bockowski[3], Masahiro Nagao[1], Tetsuo Narita[2], Tetsu Kachi[1], Nobuyuki Ikarashi[1]

[1] Nagoya University, Japan, [2] Toyota Central R&D Labs., Inc., Japan, [3] Institute of High Pressure Physics Polish Academy of Sciences, Poland

CH6-3 （Oral） 11:35 - 11:50

Luminescence studies of Mg-implanted and undoped GaN-on-GaN structures processed by ultra-high-pressure annealing

Kohei Shima[1], Tetsuo Narita[2], Keita Kataoka[2], Shoji Ishibashi[3], Akira Uedono[4], Michal Bockowski[5,6], Jun Suda[6,7], Tetsu Kachi[7], Shigefusa F Chichibu[1]

[1] Inst. Multidisciplinary Research for Advanced Materials, Tohoku University, Japan, [2] Toyota Central R&D Labs., Japan, [3] CD-FMat, National Inst. Advanced Industrial Science and Technology, Japan, [4] Facult.Pure and Applied Science, University of Tsukuba, Japan, [5] Inst. High Pressure Physics, Polish Academy of Sciences, Poland, [6] Dept. Electronics, Graduate School of Engineering, Nagoya University, Japan, [7] Inst. Materials and Systems for Sustainability, Nagoya University, Japan

CH6-4 （Oral） 11:50 - 12:05

Lateral and Vertical Diffusion of Magnesium in Ion-implanted HVPE-GaN

Kacper Pawel Sierakowski[1], Piotr Jaroszynski[1], Rafal Jakiela[2], Michal Fijalkowski[1], Tomasz Sochacki[1], Malgorzata Iwinska[1], Marcin Turek[3], Michal Bockowski[1,4]

[1] Institute of High Pressure Physics PAS, Poland, [2] Institute of Physics PAS, Poland, [3] Institute of Physics Maria Sklodowska Curie University Lublin, Poland, [4] CIRFE, IMaSS, Nagoya University, Japan

CH6-5 （Oral） 12:05 - 12:20

Detection of Gap States Originated from Ga-Interstitial and Divacancy Defects in Mg-Implanted GaN Using MOS Structures

Yuki Hatakeyama[1], Genta Shindo[1], Yuliu Luo[1], Masamichi Akazawa[1]

[1] RCIQE, Hokkaido Univ., Japan

CH6-6 （Oral） 12:20 - 12:35

Depth Analysis of Acceptor and Compensating Donor Concentrations in Mg-implanted p-GaN with Ultra-High-Pressure Annealing

Kensuke Sumida[1], Masahiro Horita[1], Tetsu Kachi[1], Jun Suda[1]

[1] Nagoya University, Japan

CH6-7 （Oral） 12:35 - 12:50

Depth profiling of Mg acceptor concentration by stepwise etching and photoluminescence for Mg ion implanted GaN annealed at 1300 ℃

Keita Kataoka[1], Tetsuo Narita[1], Kazuyoshi Tomita[2], Shinji Yamada[3], Tetsu Kachi[2]

[1] Toyota Central R&D Labs., Inc., Japan, [2] IMaSS, Nagoya University, Japan, [3] Graduate School of Engineering, Nagoya University, Japan

OD4: Visible LEDs

Argos F November 14 (Tue) 10:55 -12:45

Chair : Tatsushi Hamaguchi, Susumu Noda

OD4-1 （Invited） 10:55 - 11:20

Recent advances in nitride LED technology for green-to-red wavelengths

Robert Armitage[1], Zhongmin Ren[1], Mark Holmes[1], Joseph Flemish[1], Xuefeng Li[2], Daniel Feezell[2], Nick Pant[3], Emmanouil Kioupakis[3], Sheikh Ifatur Rahman[4], Siddharth Rajan[4], Andrew Armstrong[5]

[1] Lumileds LLC, United States of America, [2] University of New Mexico, United States of America, [3] University of Michigan, United States of America, [4] The Ohio State University, United States of America, [5] Sandia National Laboratories, United States of America

OD4-2 （Oral） 11:20 - 11:35

Origins of the high-energy electroluminescence peaks in long-wavelength InGaN light-emitting diodes

Yi Chao Chow[1], Tanay Tak[1], Feng Wu[1], Shuji Nakamura[1], Steve DenBaars[1], Claude Weisbuch[1,2], James Speck[1]

[1] University of California, Santa Barbara, United States of America, [2] Ecole Polytechnique, France

OD4-3 （Oral） 11:35 - 11:50

InGaN Red LEDs Fabricated by Hydrogen Plasma Passivation

Cesur ALTINKAYA[1,2], Pavel KIRILENKO[2], Daisuke IIDA[2], Kazuhiro OHKAWA[2]

[1] Material Science and Engineering Program, Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, [2] Electrical and Computer Engineering Program, Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

OD4-4 （Oral） 11:50 - 12:05

Carrier transport dynamics of different InGaN/GaN quantum wells with varying thickness using micro-photoluminescence

Conny Becht[1], Ulrich T. Schwarz[1], Michael Binder[2], Ingrid Koslow[2], Bastian Galler[2], Thomas F.K. Weatherley[3], Jean-François Carlin[3], Nicolas Grandjean[3]

[1] Institute of Physics, Chemnitz University of Technology, Germany, [2] ams-OSRAM International GmbH, Germany, [3] Ecole Polytechnique Fédérale de Lausanne, Switzerland

OD4-5 （Oral） 12:05 - 12:20

GaInN-based blue LED with PEDOT/PSS hole transporting layer

YUMA KATO[1], SATOSHI KAMIYAMA[1], TETSUYA TAKEUCHI[1], MOTOAKI IWAYA[1]

[1] Meijo Univ., Japan

OD4-6 （Invited） 12:20 - 12:45

Recent Advances in III-Nitrides for MicroLEDs and Laser Diodes

Steven P. DenBaars[1], Matt Wong[1], Jordan Smith[1], EMily Trageser[1], Panpan LI[1], Jake Ewing[1], Amy Zhang[1], Vince Rienzi[1], Michael Gordon[1], James Speck[1], Stacia Keller[1], Umesh Mishra[1], Shuji Nakamura[1]

[1] University of California Santa Barbara, United States of America

LN1: Late News I

Navis A November 14 (Tue) 10:55 -12:50

Chair : Subramaniam Arulkumaran, Akio Wakejima

LN1-1 (Invited) 10:55 - 11:20

First Demonstration of Ferroelectricity and High-K Dielectric Constant in Ultrawide Bandgap AlBN MBE Films

Chandrashekhar P Savant[1], Ved Gund[1], Kazuki Nomoto[1], Takuya Maeda[1], Shubham Jadhav[1], Thai-Son Nguyen[1], Yu-Hsin Chen[1], Len Van Deurzen[1], Amit Lal[1], Huili Grace Xing[1], Debdeep Jena[1]
[1] *Cornell University, United States of America*

LN1-2 (Oral) 11:20 - 11:35

Electron mobility enhancement and Shubnikov-de Haas oscillations in delta-doped AlN/GaN/AlN Quantum-well HEMTs on Single-crystal AlN Substrates

Yu-Hsin Chen[1], Jimy Encomendero[1], Chuan Chang[1], Huili Grace Xing[1], Debdeep Jena[1]
[1] *Cornell university, United States of America*

LN1-3 (Oral) 11:35 - 11:50

Suppression of Enhanced Diffusion during High Pressure Annealing of Magnesium Implanted GaN

Alan G Jacobs[1], Boris N Feigelson[1], James S Lundh[1], Joseph A Spencer[1,2], Brendan P Gunning[3], Robert J Kaplar[3], Marko J Tadjer[1], Karl D Hobart[1], Travis J Anderson[1]
[1] *U.S. Naval Research Laboratory, United States of America,* [2] *Virginia Tech, United States of America,* [3] *Sandia National Laboratories, United States of America*

LN1-4 (Oral) 11:50 - 12:05

Fin-length scaling of vertical 100-fin GaN FinFETs on sapphire resulting in maximum frequency of oscillation fmax = 9.5 GHz

Matthias Sinnwell[1], Michael Dammann[1], Rachid Driad[1], Philipp Döring[1], Sebastian Krause[1], Stefan Müller[1], Michael Mikulla[1], Rüdiger Quay[1]
[1] *Fraunhofer Institute for Applied Solid State Physics, Germany*

LN1-5 (Oral) 12:05 - 12:20

State-of-the-art thermal performance in AlN-buffer HEMTs

Austin Hickman[1], Shankar Miller-Murthy[1], Jimy Encomendero[2], Zexuan Zhang[2], Huili Grace Xing[2], Debdeep Jena[2]
[1] *Soctera, Inc., United States of America,* [2] *Cornell University, United States of America*

LN1-6 (Oral) 12:20 - 12:35

Significantly Different Barrier Heights in GaN/NbN Epitaxial Heterostructures on Nitrogen- and Metal-polar single-crystal GaN substrates

Anand Ithepalli[1], John Wright[1], Jimy Encomendero Risco[1], Huili (Grace) Xing[1], Debdeep Jena[1]
[1] *Cornell University, United States of America*

LN1-7 (Oral) 12:35 - 12:50

Study of growth mechanism in novel N-rich nitride AlPN: Toward AlPN/GaN high electron mobility transistors with improved transconductance linearity

Yixin Yao[1], Yachao Zhang[1], Kui Dang[1], Jiaduo Zhu[1], Shengrui Xu[1], Jincheng Zhang[1], Yue Hao[1]
[1] *State Key Laboratory of Wide Bandgap Semiconductor Devices and Integrated Technology, School of Microelectronics, Xidian University, China*

GR6: AlGaN I

Navis B November 14 (Tue) 10:55 -12:50

Chair : Michael Kneissl, Narihito Okada

GR6-1 （Invited） 10:55 - 11:20

Advances in the epitaxial growth of far-ultraviolet C light emitting diodes

Tim Kolbe[1], Arne Knauer[1], Sylvia Hagedorn[1], Jens Rass[1], Hyun Kyong Cho[1], Jan Ruschel[1], Jakob Höpfner[2], Fedir Bilchenko[2], Anton Muhin[2], Martin Guttmann[1], Michael Kneissl[1,2], Sven Einfeldt[1], Markus Weyers[1]
[1] Ferdinand-Braun-Institut (FBH), Germany, [2] Institute of Solid State Physics, Technische Universität Berlin, Germany

GR6-2 （Oral） 11:20 - 11:35

Homoepitaxial regrowth of AlGaN on chemically-mechanically polished AlGaN templates and its application to UV-B laser diodes

Ryoya Yamada[1], Ryosuke Kondo[1], Koki Hattori[1], Toma Nishibayashi[1], Yoshinori Imoto[1], Eri Matsubara[1], Sho Iwayama[1], Motoaki Iwaya[1], Tetsuya Takeuhi[1], Satoshi Kamiyama[1], HIdeto Miyake[2]
[1] Meijo university , Japan, [2] Mie univercity, Japan

GR6-3 （Oral） 11:35 - 11:50

MOCVD of AlGaN-MQWs Grown on Stain Relaxed Superlattice DBR Buffer Layers toward UV top-emission LEDs

Hisashi Yamada[1], Naoto Kumagai[1], Toshikazu Yamada[1]
[1] The National Institute of Advanced Industrial Science and Technology, Japan

GR6-4 （Oral） 11:50 - 12:05

MOCVD overgrowth of μ-honeycomb AlGaN structures

Sandeep M. Singh[1,2], Vitaly Zubialevich[1], Peter James Parbrook[1,2]
[1] Tyndall National Institute, University College Cork, [2] School of Engineering, University College Cork

GR6-5 （Oral） 12:05 - 12:20

High quality a-plane AlGaN films grown on high temperature annealed a-plane AlN/r-sapphire templates

Tingsong Cai[1,2], Yanan Guo[1,2], Zhibin Liu[1,2], Jinmin Li[1,2], Junxi Wang[1,2], Jianchang Yan[1,2]
[1] Institute of Semiconductors, Chinese Academy of Sciences, China, [2] University of Chinese Academy of Sciences, China

GR6-6 （Oral） 12:20 - 12:35

Development of exfoliation technology for AlGaN from sapphire substrates using saturated vapor pressure heated water and analysis of the mechanism

Eri Matsubara[1], Toma Nishibayashi[1], Ryosuke Kondo[1], Ryoya Yamada[1], Yoshinori Imoto[1], Sho Iwayama[1], Motoaki Iwaya[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Shintaro Kobayashi[3], Taiji Yamamoto[3], Hideto Miyake[2]
[1] Meijo University, Japan, [2] Mie University, Japan, [3] Rigaku Corp, Japan

GR6-7 （Oral） 12:35 - 12:50

Relaxed AlGaN on native AlN and GaN substrates realized via heteroepitaxial FACELO

Jack Almeter[1], Ronny Kirste[2], Seiji Mita[2], Shashwat Rathkanthiwar[1], J Houston Dycus[3], James Loveless[1], Ramón Collazo[1], Zlatko Sitar[1,2]
[1] North Carolina State University, United States of America, [2] Adroit Materials, United States of America, [3] Advanced Microscopy, EAG Eurofins, United States of America

GR7: Electron Devices

Navis C November 14 (Tue) 10:55 -12:45

Chair : Alan Doolittle, Maki Kushimoto

GR7-1 (Invited) 10:55 - 11:20

Towards GaN Substrates for High-power Electronic Devices

Michal Bockowski[1,2], Tomasz Sochacki[1], Malgorzata Iwinska[1], Robert Kucharski[1]
[1] Institute of High Pressure Physics Polish Academy of Sciences, Poland, [2] Nagoya University, Japan

GR7-2 (Oral) 11:20 - 11:35

GaN HEMT and SBD absence of plasma damage via polarization modulation

Wei Guo[1], Yijun Dai[1], Jichun Ye[1]
[1] Ningbo Institute of Materials Technology and Engineering, CAS, China

GR7-3 (Oral) 11:35 - 11:50

High Electron Mobility Transistors with Ultrawide Bandgap AlGaN Digital Alloy Channels using GaN-AlN short-period superlattices

Abdullah Mamun[1], Kamal Hussain[1], Shahab Mollah[1], Abdullah Al Mamun Mazumder[1], Tariq Jamil[1], Kenneth Stephenson[1], MD TANVIR HASAN[1], MVS Chandrashekhar[1], Grigory Simin[1], Asif Khan[1]
[1] University of South Carolina, United States of America

GR7-4 (Oral) 11:50 - 12:05

Tuning composition in graded AlGaN channel and high-Al content AlGaN/GaN HEMTs for high frequency and high linearity applications

Alexis Papamichail[1], Axel R. Persson[1], Steffen Richter[1,4], Philipp Kühne[1], Vallery Stanishev[1], Per O. Å. Persson[1], Ragnar Ferrand-Drake Del Castillo[2], Andreas Divinyi[3], Mattias Thorsell[2,3], Hans Hjelmgren[2], Plamen P. Paskov[1], Niklas Rorsman[2], Vanya Darakchieva[1,4]
[1] Center for III-Nitride Technology, C3NiT-Janzén, Linköping University, Sweden, [2] Department of Microtechnology and Nanoscience, Chalmers University of Technology, Sweden, [3] Saab AB, Sweden, [4] Center for III-Nitride Technology, C3NiT-Janzén, and NanoLund, Lund University, Sweden

GR7-5 (Oral) 12:05 - 12:20

MOCVD GaN HEMT epitaxy on high-temperature PVD AlN deposited on 200mm Si (111)

Helen Zhao[1], Donny Yang[1], Shiva Rai[1], Joseph Park[2], Richard Molnard[2], Michel Khoury[1]
[1] Applied Materials, Inc., United States of America, [2] Massachusetts Institute of Technology, United States of America

GR7-6 (Invited) 12:20 - 12:45

Semiconducting AlN Electrical Devices

Alan Doolittle[1], Christopher M. Matthews[1], Habib Ahmad[1], Keisuke Motoki[1], Emily N. Marshall[1], Anusha Krishnan[1], Sangho Lee[1], Samuel Graham[2], Amanda Tang[1]
[1] Georgia Institute of Technology, United States of America, [2] University of Maryland, United States of America

Lunch 12:50 -14:50

Women in Nitrides

Argos D November 14 (Tue) 13:00 -14:30

ED5: MOS Interface / MOSFETs

Argos D November 14 (Tue) 14:50 -17:00

Chair : Masamichi Akazawa, Tohru Oka

ED5-1 （Invited） 14:50 - 15:15

MOS interface technologies for high-power and high-frequency GaN transistors

Tamotsu Hashizume[1,2], Masamichi Akazawa[2]
[1] Nagoya Univ. and Hokkaido Univ., Japan, [2] Hokkaido Univ., Japan

ED5-2 （Oral） 15:15 - 15:30

Over 200 cm^2 V^{-1} s^{-1} of electron inversion channel mobility for AlSiO/AlN/p-type GaN MOSFETs

Tetsuo Narita[1], Kenji Ito[1], Shiro Iwasaki[1], Kazuyoshi Tomita[2], Emi Kano[2], Nobuyuki Ikarashi[2], Keita Kataoka[1], Daigo Kikuta[1]
[1] Toyota Central R&D Labs., Inc., Japan, [2] IMaSS, Nagoya University, Japan

ED5-3 （Oral） 15:30 - 15:45

MOS Channel Characteristics of Mg-implanted Lateral GaN MOSFETs Activated by Ultra-High-Pressure-Annealing method

Ryo Tanaka[1], Shinya Takashima[1], Katsunori Ueno[1], Tsurugi Kondo[1], Takuro Inamoto[1], Masaharu Edo[1], Michal Bockowski[2], Tetsu Kachi[3]
[1] Fuji Electric Co., Ltd., Japan, [2] Polish Academy of Sciences, Poland, [3] Nagoya University, Japan

ED5-4 （Oral） 15:45 - 16:00

Effects of GaN/SiO_2 interfacial oxidation on GaN MOSFET

Tsurugi Kondo[1], Katsunori Ueno[1], Ryo Tanaka[1], Shinya Takashima[1], Masaharu Edo[1], Tomoyuki Suwa[2]
[1] Fuji Electric Co., Ltd., Japan, [2] NICHe, Tohoku University, Japan

ED5-5 （Oral） 16:00 - 16:15

Improvement of AlSiO/n-GaN MOS characteristics by ultra-high-pressure post-deposition annealing

Takumi Hirata[1], Masakazu Kanechika[1], Tomoya Tokozumi[1], Tetsu Kachi[1], Jun Suda[1]
[1] Nagoya University, Japan

ED5-6 （Oral） 16:15 - 16:30

SiO_2/GaN interface improvement by wet etching and in situ annealing for GaN MOSFETs

Mirjam Henn[1,2], Christian Huber[1], Humberto Rodriguez-Alvarez[1], Nando Kaminski[2]
[1] Robert Bosch GmbH, Germany, [2] University of Bremen, Germany

ED5-7 （Oral） 16:30 - 16:45

Real-time observation of oxidation process on GaN surfaces by x-ray photoelectron spectroscopy

Masatomo Sumiya[1], Yasutaka Tsuda[2], Masato Sumita[3], Akitaka Yoshigoe[2]
[1] National Institute for Materials Science, Japan, [2] Japan Atomic Energy Agency, Japan, [3] RIKEN, Japan

ED5-8-LN （Oral） 16:45 - 17:00

Enhanced Field-Effect Mobility (> 250 cm^2/Vs) in GaN MOSFETs featuring Mist-Chemical-Vapor-Deposited Gate Oxides

Kazuki Ikeyama[1], Hidemoto Tomita[1], Hiroki Miyake[1], Yoshitaka Nagasato[1], Li Liu[2], Toshiyuki Kawaharamura[2]
[1] MIRISE Technologies, Japan, [2] Kochi University of Technology, Japan

CH7: Characterization for Electron Devices II

Argos E November 14 (Tue) 14:50 -16:45

Chair : Yasuo Koide, Matteo Meneghini

CH7-1 （Invited） 14:50 - 15:15

Characterization of nitrogen-displacement-related traps in GaN

Masahiro Horita[1], Jun Suda[1]
[1] Nagoya University, Japan

CH7-2 （Oral） 15:15 - 15:30

Impact of Carbon Doping Levels in AlGaN Back-Barriers for GaN HEMTs

Ragnar Michel Ferrand-Drake del Castillo[1], Ding-Yuan Chen[1,2], Jr-Tai Chen[2], Niklas Rorsman[1]
[1] Chalmers University of Technology, Sweden, [2] SweGaN, Sweden

CH7-3 （Oral） 15:30 - 15:45

Presence of High Density Positive Fixed Charges at ALD-Al_2O_3/GaN Interface for Efficient Recovery of 2-DEG in Ultrathin-barrier AlGaN/GaN Heterostructure

Han Zhang[1,2], Sen Huang[1,2], Fuqiang Guo[1,2], Kexin Deng[1,2], Qimeng Jiang[1,2], Haibo Yin[1], Ke Wei[1,2], Xinyu Liu[1,2]
[1] Institute of Microelectronis of China Academy of Sciences, China, [2] University of Chinese Academy of Sciences, China

CH7-4 （Oral） 15:45 - 16:00

Role of Lateral Hole Transport and Evacuation in $dR_{DS,on}$ during Off-State Stress in p-GaN Gate HEMTs

Boris Butej[1,3], Christian Koller[1], Dominik Wieland[2,3], Gregor Pobegen[1], Dionyz Pogany[3], Clemens Ostermaier[2]
[1] KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria, [2] Infineon Technologies Austria AG, Austria, [3] Vienna University of Technology, Austria

CH7-5 （Oral） 16:00 - 16:15

A new insight on the co-existence of two-dimensional electron- and hole-gases and their properties in III-N heterostructures

Ravikiran Lingaparthi[1], Dharmarasu Nethaji[1], Radhakrishanan K[1,2,3], Shashank Patwal[2], Lili Huo[3]
[1] Temasek Laboratories, Nayang Technological University, Singapore, [2] Centre for Micro/Nano-electronics (CMNE), Nanyang Technological University, Singapore, [3] 3UMI3288 CINTRA, (CNRS/NTU/THALES), Singapore

CH7-6 （Oral） 16:15 - 16:30

1000 K operation of SBDs and MESFETs with Si-implanted AlN channel

Hironori Okumura[1], Yasuhiro Watanabe[2], Tomohiko Shibata[2]
[1] University of Tsukuba, Japan, [2] Dowa Electronics Materials Co., Ltd, Japan

CH7-7 （Oral） 16:30 - 16:45

Defect Characterization of GaN stacks for Vertical Device Fabrication on 200 mm Engineered Substrates by TEM, CL and ECCI

Sourish Banerjee[1], Han Han[1], Olivier Richard[1], Anurag Vohra[1], Karen Geens[1], Herwig Hahn[2], Vladimir Odnoblyudov[3], Robert Langer[1], Stefaan Decoutere[1]
[1] IMEC, Belgium, [2] AIXTRON SE, Germany, [3] Qromis, Inc., United States of America

LN2: Late News II

Argos F November 14 (Tue) 14:50 -16:50

Chair : Armin Dadgar, Ryota Ishii

LN2-1 （Oral） 14:50 - 15:05

Homoepitaxial growth of thick AlN layers by HVPE using solid $AlCl_3$

Toshinari Nukaga[1], Hideyuki Sakano[2], Takao Nishida[1], Ken Goto[2], Takayuki Kai[1], Masahiko Tsuchiya[1], Ken Sasakura[1], Yoshinao Kumagai[2]
[1] Stanley Electric Co., Ltd., Japan, [2] Tokyo University of Agriculture and Technology, Japan

LN2-2 （Oral） 15:05 - 15:20

Chemically Pure Hydride Vapor Phase Epitaxy (HVPE) for GaN-on-GaN Device Epilayers

Jacob Leach[1], Kevin Udwary[1], Gregg Dodson[1], Heather Splawn[1]
[1] Kyma Technologies, United States of America

LN2-3 （Oral） 15:20 - 15:35

Sidewall etching effect on internal quantum efficiency and light extraction efficiency of micro-LEDs

Jeong-Hwan Park [1], Markus Pristovsek[1], Wentao Cai[1], Heajeong Cheong[1], Atsushi Tanaka[1], Yuta Furusawa[1], Dong-Pyro Han[2], Tae-Yeon Seong[3], Hiroshi Amano[1]
[1] Nagoya University, Japan, [2] Hanyang University, Korea, [3] Korea University, Korea

LN2-4 （Oral） 15:35 - 15:50

Creation of Sub-micron Light-emitting Diode Pixel Arrays by Helium Ion Irradiation without the Use of Mask and Etching Process

Ji-Hwan Moon[1], Baul Kim[1], Minho Choi[1], Kie Young Woo[1], Byung Su Kim[1], Seonghun Ahn[1], Seongmoon Jun[1], Yong-Ho Song[1], Yong-Hoon Cho[1]
[1] Korea Advanced Institute of Science and Technology , Korea

LN2-5 （Oral） 15:50 - 16:05

Excitons in (Al,Ga)N Quantum Dots and Quantum wells Grown on (0001)-oriented AlN Templates: Emission Diagrams and Valence Band Mixings

Alexandra Ibanez[1], Nikita Nikitskii[2], Aly Zaiter[2], Pierre Valvin[1], Wilfried Desrat[1], Thomas Cohen[1], Muhammad Ajmal Khan[3], Guillaume Cassabois[1], Hideki Hirayama[3], Julien Brault[2], Bernard Gil[1]
[1] Laboratoire Charles Coulomb, CNRS, Université de Montpellier, France, [2] Cote d'Azur University - CRHEA - CNRS, France, [3] RIKEN Cluster for Pioneering Research (CPR), Japan

LN2-6 （Oral） 16:05 - 16:20

Design of highly efficient InGaN-based circularly polarized LEDs integrated with Si_3N_4 metasurface

Yuki Murata[1], Shuhei Ichikawa[1,2], Shintaro Toda[3], Yasufumi Fujiwara[1], Kazunobu Kojima[1]
[1] Graduate School of Engineering, Osaka University, Japan, [2] Research Center for UHVEM, Osaka University, Japan, [3] ULVAC-Osaka University Joint Research Laboratory for Future Technology, Japan

LN2-7 （Oral） 16:20 - 16:35

GaN(1-100): a new platform for the epitaxy of twin-free cubic nitrides?

Philipp John[1], Duc Van Dinh[1], Achim Trampert[1], Lutz Geelhaar[1], Oliver Brandt[1], Thomas Auzelle[1]
[1] Paul-Drude-Institut für Festkörperelektronik, Leibniz-Institut im Forschungsverbund Berlin e.V., Germany

LN2-8 （Oral） 16:35 - 16:50

Transmission electron microscopy of NbN/III-N heterostructures for metal-based transistors

Anna Kaleta[1,4], Antoine Pedeches[2], Helene Rotella[2], Marie-Pierre Chauvat[1], Magali Morales[1], Sylvain Delage[3], Nicolas Delpuech[3], Nicolas Michel[3], Slawomir Kret[4], Piotr Dluzewski[4], Fabrice Semond[2], Pierre Ruterana[1]
[1] CIMAP, UMR 6252 CNRS, Caen, France, [2] Université Côte d'Azur, CNRS, CRHEA, rue Bernard Grégory, 06905 Sophia Antipolis, France, [3] III-V Lab, 91767 Palaiseau, France, [4] Institute of Physics Polish Academyof Sciences, al. Lotnikow 32/46, 02-668 Warsaw, Poland

OD5: UV Lasers

Navis A November 14 (Tue) 14:50 -16:40

Chair : Raphaël Butté, Yoshiki Saito

OD5-1 （Invited） 14:50 - 15:15

Recent Progress of Deep Ultraviolet Laser Diodes on AlN substrate

Maki Kushimoto[1], Ziyi Zhang[1,2], Akira Yoshikawa[1,2], Koji Aoto[1], Yoshio Honda[1], Leo J Schowalter[1], Chiaki Sasaoka[1], Hiroshi Amano[1]
[1] Nagoya University, Japan, [2] Asahi Kasei Corporation, Japan

OD5-2 （Invited） 15:15 - 15:40

Progress in the development of UV-B laser diodes fabricated on sapphire substrates

Motoaki Iwaya[1], Sho Iwayama[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Hideto Miyake[2]
[1] Department of Materials Science and Engineering, Meijo University, Japan, [2] Department of Electrical and Electronic Engineering, Mie University, Japan

OD5-3 （Oral） 15:40 - 15:55

Optical gain in AlGaN quantum wells for low-threshold UVC lasers

Giulia Cardinali[1], Alexander Schulz[1], Sebastian Kölle[2], Friedhard Römer[2], Bernd Witzigmann[2], Norman Susilo[1], Daniel Hauer Vidal[1], Martin Guttmann[1], Tim Wernicke[1], Michael Kneissl[1,3]
[1] Technische Universität Berlin, Insitute of Solid State Physics, Germany, [2] Friedrich-Alexander-Universität Erlangen-Nürnberg, Institute for Optoelectronics, Germany, [3] Ferdinand-Braun-Institut (FBH), Germany

OD5-4 （Oral） 15:55 - 16:10

Improvement of carrier injection efficiency of UV-B LDs by through polarization charge modulation

Ryosuke Kondo[1], Koki Hattori[1], Yoshinori Imoto[1], Ryoya Yamada[1], Sho Iwayama[1], Motoaki Iwaya[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Hideto Miyake[2]
[1] Meijo University, Japan, [2] Mie University, Japan

OD5-5 （Oral） 16:10 - 16:25

UVC photonic crystal surface-emitting lasers with low-divergent far-fields

Dogukan Apaydin[1], Lukas Uhlig[2], Joachim Ciers[1], Hjalmar Andersson[1], Sarina Graupeter[3], Giulia Cardinali[3], Tim Wernicke[3], Michael Kneissl[3,4], Philippe Tassin[1], Ulrich Theodor Schwarz[2], Åsa Haglund[1]
[1] Chalmers University of Technology, Sweden, [2] Chemnitz University of Technology, Germany, [3] Technical University of Berlin, Germany, [4] Ferdinand-Braun-Institut , Germany

OD5-6 （Oral） 16:25 - 16:40

Optically pumped UVC VCSELs with precise cavity length

Estrella Torres Vásquez[1], Joachim Ciers[1], Nelson Rebelo[1], Filip Hjort[1], Michael Bergmann[1], Sarina Graupeter[2], Giulia Cardinali[2], Johannes Enslin[2,3], Tim Wernicke[2], Michael Kneissl[2,3], Åsa Haglund[1]
[1] Chalmers University of Technology, Sweden, [2] Technical University of Berlin, Germany, [3] Ferdinand-Braun-Institut, Germany

GR8: AlGaN II

Navis B November 14 (Tue) 14:50 -16:45

Chair : Tomasz Sochacki, Kenjiro Uesugi

GR8-1 （Invited） 14:50 - 15:15

Progress of buffer free GaN on SiC HEMT heterostructures for RF and power applications

Jr-Tai Chen[1]
[1] SweGaN AB, Sweden

GR8-2 （Oral） 15:15 - 15:30

High-quality N-polar GaN/AlGaN/GaN/AlN HEMTs by multistep temperature and supersaturation regime growth on off-cut SiC substrates

Ingemar Persson[1], Hengfang Zhang[1], Alexis Papamichail[1,2], Per O.Å. Persson[1], Jr-Tai Chen[1,3], Philipp Khüne[1,2], Plamen Paskov[1], Vanya Darakchieva[1,2,4]
[1] Center for III-Nitride Technology, C3NiT – Janzén, Department of Physics, Chemistry and Biology (IFM), Linköping University, Sweden, [2] Terahertz Materials Analysis Center, Linköping University, Sweden, [3] SweGaN AB,Sweden, [4] Center for III-Nitride Technology, C3NiT – Janzén, Division of Solid State Physics and NanoLund, Lund University, Sweden

GR8-3 （Oral） 15:30 - 15:45

Highly conductive n- and p- type (AlN)m/(GaN)n digital alloys with high average Al compositions grown by molecular beam epitaxy

Siqi Li[1], Pengfei Shao[1], Xiao Liang[1], Songlin Chen[1], Yiyang Wang[1], Xiaoquan Xing[1], Tao Tao[1], Zili Xie[1], Bin Liu[1], Xiangqian Xiu[1], Youdou Zheng[1], Rong Zhang[1,2], Ke Wang[1,3]
[1] Nanjing University, China, [2] Xiamen University, China, [3] RIKEN, Japan

GR8-4 （Oral） 15:45 - 16:00

Strain and Energy Band Engineering in thick AlGaN Drift Layers for High Power Vertical Transistors

Byeongchan So[1], Philipp Gribisch[2], Adamantia Logotheti[1], André Andersen[2], Andri Dhora[1], Dat Tran[3], Philipp Kühne[3], Viktor Rindert[1], Steffen Richter[1], Erik Lind[2], Vanya Darakchieva[1,3]
[1] Center for III-Nitride Technology, C3NiT-Janzén, Solid State Physics and NanoLund, Lund University, Sweden, [2] Department of Electrical and Information Technology and NanoLund, Lund University, Sweden, [3] Center for III-Nitride Technology, C3NiT-Janzén, Chemistry and Biology (IFM), Linköping University, Sweden

GR8-5 （Oral） 16:00 - 16:15

Regrowth Contacts Technology for Extreme Bandgap AlN/$Al_xGa_{1-x}N$ (x > 0.6) Heterostructures

Kamal Hussain[1], Abdullah Mamun[1], Kenneth Stephenson[1], Richard Floyd[1], Abdullah Al Mamun Mazumder[1], Mafruda Rahman[1], Tariq Jamil[1], MD TANVIR HASAN[1], Grigory Simin[1], MVS Chandrashekhar[1], Asif Khan[1]
[1] University of South Carolina, United States of America

GR8-6 （Oral） 16:15 - 16:30

Growth and characterization of highly Si-doped $Al_xGa_{1-x}N$ ($0 < x \leqq 0.81$) films prepared via pulsed sputtering deposition

Kohei Ueno[1], Yuto Nishikawa[1], Atsushi Kobayashi[2], Hiroshi Fujioka[1]
[1] Institute of Industrial Science, The University of Tokyo, Japan, [2] Depertment of Materials Science and Technology, Tokyo University of Science, Japan

GR8-7 （Oral） 16:30 - 16:45

Preliminary Studies on Halide Vapor Phase Epitaxy of AlGaN Alloy on GaN Substrates

Tomasz Sochacki[1], Slawek Sakowski[1], Pawel Kempisty[1], Piotr Jaroszynski[1], Kacper Sierakowski[1], Boleslaw Lucznik[1], Michal Fijalkowski[1], Michal Bockowski[1,2]
[1] Institute of High Pressure Physics Polish Academy of Sciences, Poland, [2] CIRFE, IMaSS, Nagoya University, Japan

GR9: MBE and Sputtering

Navis C November 14 (Tue) 14:50 -16:45

Chair : Julien Brault, Takayuki Nakano

GR9-1 （Invited） 14:50 - 15:15

Fabrication of AlN/AlGaN/AlN multi-channel structures with sputtering-regrown highly degenerate n^+-GaN ohmic contacts

Takao Kozaka[1], Ryota Maeda[1], Kohei Ueno[1], Hiroshi Fujioka[1]
[1] Institute of Industrial Science, the University of Tokyo, Japan

GR9-2 （Oral） 15:15 - 15:30

Si-doping characteristics of GaN/AlN SPSL structures used in Silanna UV far UVC LEDs

Jessica Chai[1]
[1] Silanna UV, Australia

GR9-3 （Oral） 15:30 - 15:45

Sputtering Epitaxial Integration of AlN and NbN for Polarity Control and Crystal-Phase Manipulation

Atsushi Kobayashi[1], Shunya Kihira[2], Takahito Takeda[2], Masaki Kobayashi[2], Takuya Maeda[2], Takayuki Harada[3], Toru Akiyama[4], Takahiro Kawamura[4], Kohei Ueno[2], Hiroshi Fujioka[2]
[1] Tokyo University of Science, Japan, [2] The University of Tokyo, Japan, [3] National Institute for Materials Science, Japan, [4] Mie University, Japan

GR9-4 （Oral） 15:45 - 16:00

Selectively regrown heavily Si-doped degenerate GaN contact to AlN/AlGaN HEMTs prepared via pulsed sputtering

Ryota Maeda[1], Takao Kozaka[1], Kohei Ueno[1], Atsushi Kobayashi[2], Hiroshi Fujioka[1]
[1] Institute of Industrial Science, The University of Tokyo, Japan, [2] Department of Materials Science and Technology, Tokyo University of Science, Japan

GR9-5 （Oral） 16:00 - 16:15

Controlling Polarity of Bilayer Polarity Inverted AlN Fabricated by Single High-Temperature Annealing of Sputtered AlN

Kanako Shojiki[1], Takumi Hashimoto[2], Kenjiro Uesugi[2,3], Hideto Miyake[1]
[1] Mie University, Grad. Sch. of Eng., Japan, [2] Mie University, Grad. Sch. of RIS, Japan, [3] Mie University, ORIP, Japan

GR9-6 （Oral） 16:15 - 16:30

NbN/AlGaN Heterostructures Grown by NH_3-MBE on Silicon Substrates

Fabrice Semond[1], Antoine Pedeches[1], Hélène Rotella[1]
[1] Université Côte d'Azur, CNRS-CRHEA, France

GR9-7 （Oral） 16:30 - 16:45

Highly doped N-type Gallium Nitride Growth Technology by Nitrogen Radical-assisted Sputtering

Masanori Shirai[1], Hiroki Kobayashi[1]
[1] ULVAC,Inc., Japan

Poster Session II

Argos A-C November 14 (Tue) 16:45 -18:35

Light Meal 18:35 -19:00

Rump Session

November 14 (Tue) 19:00 -21:00

R1: GaN Vertical Power Devices

Argos D November 14 (Tue) 19:00 -21:00

R2: Deep UV Lasers and LEDs, AlN/AlGaN

Argos E November 14 (Tue) 19:00 -21:00

R3: Visible, MicroLEDs, VCSELs

Argos F November 14 (Tue) 19:00 -21:00

November 15 (Wed)

ED6: RF I

Argos D November 15 (Wed) 8:30 -9:55

Chair : Yuji Ando, Debdeep Jena

ED6-1 (Invited) 8:30 - 8:55

Current status of high output power GaN-based HEMTs on AlN substrates

Atsushi Yamada[1], Yuichi Minoura[1], Shiro Ozaki[1], Masaru Sato[1], Toshihiro Ohki[1], Norikazu Nakamura[1]

[1] *Fujitsu Limited, Japan*

ED6-2 (Oral) 8:55 - 9:10

Device characteristics of AlGaInN/GaN HEMTs with a thin 150-nm-thick UID-GaN channel fabricated on single-crystal AlN substrate

Tomoyuki Kawaide[1], Yoshinobu Kometani[1], Sakura Tanaka[1], Takashi Egawa[1], Makoto Miyoshi[1]

[1] *Nagoya Institute of Technology, Japan*

ED6-3 (Oral) 9:10 - 9:25

RF GaN HEMTs on Engineered Substrate for High Temperature Applications

Pradyot Yadav[1], Qingyun Xie[1], John Niroula[1], Gillian K. Micale[1], Hridibrata Pal[1], Tomás Palacios[1]

[1] *Massachusetts Institute of Technology, United States of America*

ED6-4 (Oral) 9:25 - 9:40

Epi-design optimization in AlN/GaN HEMTs for superior drain bias operation and reduced trapping effects

Kathia Harrouche[1], Lyes Ben Hammou[1], François Grandpierron[1], Ajay Shanbhag[1], Etienne Okada[1], Farid Medjdoub[1]

[1] *IEMN-CNRS, France*

ED6-5 (Oral) 9:40 - 9:55

Low Dielectric Constant Fluorocarbon-Based Passivation for Current Collapse Mitigation of RF GaN HEMTs

John Prakash[1], Qingyun Xie[1], Pradyot Yadav[1], Gillian K Micale[1], Elham Rafie Borujeny[1], Tomas Palacios[1]

[1] *Massachusetts Institute of Technology, United States of America*

GR10: InGaN I

Argos E November 15 (Wed) 8:30 -9:55

Chair : Kazuhiro Ohkawa, James S. Speck

GR10-1 (Invited) 8:30 - 8:55

InGaN-based LEDs on arbitrary three-dimensional GaN templates toward tailored spectral control

Mitsuru Funato[1], Yoshinobu Matsuda[1], Yoichi Kawakami[1]

[1] *Kyoto University, Japan*

GR10-2 （Oral） 8:55 - 9:10

Development of micropattern active region for improving the high In content InGaN quantum wells

Adam Brejnak[1], Anna Kafar[1,2], Conny Becht[3], Krzysztof Gibasiewicz[1], Jacek Kacperski[1,2], Lucja Marona[1,2], Szymon Grzanka[1,2], Ulrich Theodor Schwarz[3], Piotr Perlin[1,2]
[1] Institute of High Pressure Physics PAS, 01-142 Warsaw, Poland, Poland, [2] TopGaN Ltd., 00-403 Warsaw, Poland, Poland, [3] Chemnitz University of Technology, 09111 Chemnitz, Germany, Germany

GR10-3 （Oral） 9:10 - 9:25

Red emitting InGaN nanopyramids grown on graphene/SiC

Amelie Dussaigne[1], Colin Paillet[1], Adeline Grenier[1], Nevine Rochat[1], Zineb Zaghi[1], Audrey Jannaud[1], Adrien Michon[2], Stéphane Vézian[2], Benjamin Damilano[2], Berangere Hyot[1]
[1] CEA/Leti, France, [2] CRHEA/CNRS, France

GR10-4 （Oral） 9:25 - 9:40

Towards full-color µLEDs by selective area MOVPE

Cedric Lacam[1], Joel Eymery[2], Olivier Parillaud[1]
[1] III-VLab / Thales Reasearch & Technology, France, [2] CEA-MEM, France

GR10-5 （Oral） 9:40 - 9:55

Demonstration of efficient ultra-small 5×5 µm^2 InGaN red micro-light-emitting diodes

Panpan Li[1], Hongjian Li[1], Yunxuan Yang[2], Haojun Zhang[1], Pavel Shapturenka[3], Matthew Wong[1], Cheyenne Lynsky[1], Jake Ewing[1], Mike Iza[1], Michael J. Gordon[3], James S. Speck[1], Shuji Nakamura[1,2], Steven P. DenBaars[1,2]
[1] Materials Department, University of California, Santa Barbara, United States of America, [2] Department of Electrical and Computer Engineering, University of California, Santa Barbara, United States of America, [3] Department of Chemical Engineering, University of California, Santa Barbara, United States of America

OD6: Far UVC LEDs II

Argos F November 15 (Wed) 8:30 -9:55

Chair : Hirotsugu Kobayashi, Tim Kolbe

OD6-1 （Invited） 8:30 - 8:55

Analyzing carrier transport and radiative recombination in AlGaN based UVC LEDs

Tim Wernicke[1], Jakob Höpfner[1], Anton Muhin[1], Marcel Schilling[1], Massimo Grigoletto[1,2], Giulia Cardinali[1], Martin Guttmann[1,2], Verena Montag[1], Norman Susilo[1], Sarina Graupeter[1], Luca Sulmoni[1], Jan Ruschel[2], Sylvia Hagedorn[2], Neysha Lobo-Ploch[2], Jens Rass[2], Hyun Kyong Cho[2], Åsa Haglund[3], Sven Einfeldt[2],Markus Weyers[2], Michael Kneissl[1,2]
[1] Technische Universität Berlin, Institute of Solid State Physics, Germany, [2] Ferdiand-Braun-Institut (FBH), Germany, [3] Chalmers University of Technology, Sweden

OD6-2 （Oral） 8:55 - 9:10

Efficiency Improvement of 225 nm Far-UVC LED by optimizing n-AlGaN Buffer Layer

Taiga Kirihara[1,2], Yukio Kashima[1], Hiroyuki Yaguchi[2], Yasushi Iwaisako[3], Hideki Hirayama[1]
[1] RIKEN, Japan, [2] Saitama University, Japan, [3] Nippon Tungsten, Japan

OD6-3 （Oral） 9:10 - 9:25

Far-UVC LEDs with high external quantum efficiency by micro LED array design

Jens Rass[1], Hyun Kyong Cho[1], Martin Guttmann[1], Deepak Prasai[1], Steffen Breuer[1], Jan Ruschel[1], Tim Kolbe[1], Tamukanashe Anthony Musengezi[1], Sven Einfeldt[1]
[1] Ferdinand-Braun-Institut (FBH), Germany

OD6-4 （Oral） 9:25 - 9:40

Demonstaration of 3.9 times efficiency increase in 232 nm AlGaN far-UVC LED with Reflective Photonic Crystal

Yukio Kashima[1], Eriko Matsuura[1], Hidetoshi Shinohara[2], Mitsunori Kokubo[2], Makoto Fukuda[3], Yamato Osada[3], Ryuichirou Kamimura[3], Makoto Hara[4], Takeshi Iwai[4], Tugumu Nagano[5], Junya Yoshinaga[6], Keitaro Ikejiri[6], Syuuichi Koseki[6], Hiroyuki Oogami[7], Yasushi Iwaisako[7], Minoru Kawahara[8], Masato Yamada[8], Hideki Hirayama[1]
[1] RIKEN, Japan, [2] Shibaura machine, Japan, [3] ULVAC, Japan, [4] Tokyo Ohka Kogyo, Japan, [5] DNP, Japan, [6] Taiyo Nippon Sanso, Japan, [7] Nippon Tungsten, Japan, [8] Shin-Etsu Chemical, Japan

OD6-5 （Oral） 9:40 - 9:55

MBE-grown AlN nanowire-based LEDs for UV-C emission

Rémy VERMEERSCH[1,2], Damien CALISTE[1], Gwénolé JACOPIN[2], Julien PERNOT[2], Bruno DAUDIN[1]
[1] Université Grenoble-Alpes/ CEA-Grenoble, France, [2] Université Grenoble-Alpes/ CNRS-Institut Néel, France

OD7: PhC and nanowires

Navis A November 15 (Wed) 8:30 -9:55

Chair : Katsumi Kishino, Michael Krames

OD7-1 （Invited） 8:30 - 8:55

Recent progress in photonic-crystal surface-emitting lasers

Susumu Noda[1]
[1] Kyoto University, Japan

OD7-2 （Oral） 8:55 - 9:10

Topological Edge State Propagation of GaN-PhC in Visible Region

Yamato Takano[1], Umito Kurabe[1], Mirai Akimoto[1], Takuto Honda[1], Xiao Hu[2], Akihiko Kikuchi[1]
[1] Sophia University, Japan, [2] WPI-MANA, NIMS, Japan

OD7-3 （Oral） 9:10 - 9:25

Gan on Si Nanowire Technology Paves the Way to µLEDs for Display Applications

Pierre Tchoulfian[1], Romain Cipro[1], Zaiyuan Ren[1], Timothée Lassiaz[1], Yoann Malier[1], Thomas Sannicolo[1], Philippe Gilet[1]
[1] Aledia, France

OD7-4 （Oral） 9:25 - 9:40

Ultrahigh Efficiency Excitonic Micro-LEDs

Yixin Xiao[1], Ayush Pandey[1], Maddaka Reddeppa[1], Yakshita Malhotra[1], Yuanpeng Wu[1], Yifu Guo[1], Zetian Mi[1]
[1] University of Michigan, United States of America

OD7-5 （Oral） 9:40 - 9:55

Morphological and emission properties of GaInN/GaN multi-quantum shell nanowires with GaInN/GaN superlattice

Soma Inaba[1], Weifang Lu[2], Ayaka Shima[1], Shiori Ii[1], Mizuki Takahashi[1], Yuki Yamanaka[1], Yuta Hattori[1], Kosei Kubota[1], Satoshi Kamiyama[1], Tetsuya Takeuchi[1], Motoaki iwaya[1]
[1] Meijo University, Japan, [2] Xiamen University, China

CH8: Micro- and Nanoscopic Analysis

Navis B November 15 (Wed) 8:30 -10:00

Chair : Rachel Oliver, Akira Sakai

CH8-1 （Oral） 8:30 - 8:45

In-situ TEM Investigation of the Lattice-Asymmetry-Driven Anisotropic Sublimation in GaN

Tao Wang[1], Shanshan Sheng[1], Weikun Ge[1], Ping Wang[1], Bo Shen[1], Xinqiang Wang[1]
[1] Peking University, China

CH8-2 （Oral） 8:45 - 9:00

XRD Measurement Strategies for complex Heterostructures

Lars Grieger[1], Andrey Zameshin[1], Gareth Tye[1]
[1] Malvern Panalytical B.V., Netherlands

CH8-3 （Oral） 9:00 - 9:15

In-situ dynamics of (a+c)-type misfit dislocations imaged by full-field X-ray diffraction microscopy

Robert Kernke[1], Carsten Richter[1], Joanna Moneta[2], Julita Smalc-Koziorowska[2], Tobias Schülli[3], Martin Albrecht[1], Tobias Schulz[1]
[1] Leibniz Institute for Crystal Growth, Germany, [2] Institute of High Pressure Physics, Poland, [3] ESRF – The European Synchrotron, France

CH8-4 （Oral） 9:15 - 9:30

Observation of dislocations in thick GaN substrates using synchrotron-radiation X-ray topography based on anomalous transmission

Yongzhao Yao[1], Yoshiyuki Tsusaka[2], Keiichi Hirano[3], Koji Sato[1], Yoshihir Sugawara[1], Yukari Ishikawa[1]
[1] Japan Fine Ceramics Center, Japan, [2] University of Hyogo, Japan, [3] High Energy Accelerator Research Organization (KEK), Japan

CH8-5 （Oral） 9:30 - 9:45

Electrical properties of dislocations in GaN structures for power devices: an approach based on ultraviolet light assisted Kelvin Probe Force Microscopy

Jesús Ortiga-Fibla[1], Núria Garro[1], Frank Brunner[2], Eldad Bahat Treidel[2], Oliver Hilt[2], Sven Besendörfer[3], Elke Meissner[3], Ana Cros[1]
[1] Institute of Materials Science (ICMUV), Spain, [2] Ferdinand-Braun-Institut (FBH), Germany, [3] Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany

CH8-6 （Oral） 9:45 - 10:00

Characterization of distributed polarization doping based AlGaN p-n diodes grown by molecular beam epitaxy on bulk AlN substrates

Shivali Agrawal[1], Len van Deurzen[2], Jimy Encomendero[3], Huili (Grace) Xing[4], Debdeep Jena[5]
[1] Cornell University, United States of America, [2] Cornell Univeristy , United States of America, [3] Cornell University, United States of America, [4] Cornell University, United States of America, [5]Cornell University, United States of America

ED7: Vertical Power III

Navis C November 15 (Wed) 8:30 -9:55

Chair : Andrew A.Allerman, Jun Suda

ED7-1 （Invited） 8:30 - 8:55

Vertical GaN Power Transistors on Low-Cost Substrates:Opportunities and Challenges

Frank Brunner[1], Eldad Bahat Treidel[1], Enrico Brusattera[1], Oliver Hilt[1], Sven Besendoerfer[2], Elke Meissner[2], Herwig Hahn[3], Michael Heuken[3], Sondre Michler[4], Christian Huber[5], Markus Weyers[1]
[1] Ferdinand-Braun-Institut (FBH), Germany, [2] Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany, [3] AIXTRON SE, Germany, [4] Siltronic AG, Germany, [5] Robert Bosch GmbH,Germany

ED7-2 （Oral） 8:55 - 9:10

Process optimization of Fully Vertical GaN-on-Silicon PIN diodes

Idriss ABID[1], Youssef HAMDAOUI[1], Sondre MICHLER[2], Katir ZIOUCHE[1], Farid MEDJDOUB[1]
[1] CNRS-IEMN, France, [2] Department Innovation Management, Siltronic AG, Germany

ED7-3 （Oral） 9:10 - 9:25

Vertical GaN FinFET devices on SiC and GaN substrates

Philipp Gribisch[1,2], Rosalia Delgado Carrascon[4], Byeongchan So[2,3], Vanya Darakchieva[2,3,4], Erik Lind[1,2]
[1] Electrical and Information Technology, Lund University, 22 100 Lund, Sweden, Sweden, [2] NanoLund and Center for III-Nitride Technology, C3NiT-Janzén, Lund University, 22 100 Lund, Sweden, Sweden, [3] Physics Department, Lund University, 22100 Lund, Sweden, Sweden, [4] Department of Physics, Chemistry and Biology and Center for III-Nitride Technology, C3NiT-Janzén, Linköping University, 581 83 Linköping, Sweden, Sweden

ED7-4 （Oral） 9:25 - 9:40

Enhanced Thermal Dissipation in Substrate-Transferred GaN Schottky Barrier Diode Devices by Laser Lift-Off Technology

Qi Wei[1], Feng Zhou[1], zong ei Xu[1], Yu lei Jin[1], Tian yang Zhou[1], Fang fang Ren[1], Dong Zhou[1], jun Dun Chen[1], Rong Zhang[1], You dou Zheng[1],Hai Lu[1]
[1] Nanjing University, China

ED7-5 （Oral） 9:40 - 9:55

High Forward Current Density in Si-doped AlN Schottky Barrier Diodes

Cristyan Eduardo Quiñones[1], Dolar Khachariya[2], Pramod Reddy[2], Jack Almeter[1], Pegah Bagheri[1], Ronny Kirste[2], Seiji Mita[2], Spyridon Pavlidis[1], Erhard Kohn[1], Ramón Collazo[1], Zlatko Sitar[1,2]
[1] North Carolina State University, United States of America, [2] Adroit Materials, United States of America

Break 10:00 -10:25

ED8: RF II / New Materials and Structures I

Argos D November 15 (Wed) 10:25 -11:45

Chair : Tomas Palacios, Akio Wakejima

ED8-1 (Invited) 10:25 - 10:50

On making GaN more efficient for RF applications

Srabanti Chowdhury[1]
[1] *Stanford University, United States of America*

ED8-2 (Invited) 10:50 - 11:15

Growth of AlGaN/AlN based power electronic devices

Okhyun Nam[1]
[1] *Tech University of Korea, Korea*

ED8-3 (Oral) 11:15 - 11:30

High-Linearity Planar-Nano-Channel AlN/GaN-on-Si MISHEMTs with AM-PM Distortion Suppression

Hanghai Du[1,2], Zhihong Liu[1,2], Lu Hao[1], Shuning Xu[2], Weichuan Xing[2], Jin Zhou[2], Jincheng Zhang[1,2], Yue Hao[1,2]
[1] *School of Microelectronics, Xidian University, China,* [2] *Guangzhou Institute of Technology, Xidian University, China*

GR11: InGaN II

Argos E November 15 (Wed) 10:25 -11:50

Chair : Mitsuru Funato, Piotr Perlin

GR11-1 (Oral) 10:25 - 10:40

Regrown MOCVD Highly Doped InGaN Source/Drain Layers for RF Transistors

Sourish Banerjee[1], Ming Zhao[1], Benjamin Vanhove[1], Uthayasankaran Peralagu[1], Alireza Alian[1], Albert Minj[1], Herwig Hahn[2], Robert Langer[1], Bertrand Parvais[1], Nadine Collaert[1]
[1] *IMEC, Belgium,* [2] *AIXTRON SE, Germany*

GR11-2 (Oral) 10:40 - 10:55

MBE growth of cubic $In_xGa_{1-x}N$ over the entire GaN/InN composition range

Mario Fabian Zscherp[1], Silas Aurel Jentsch[1], Marius Johannes Müller[1], Vitalii Lider[2], Celina Becker[2], Limei Chen[1], Mario Littmann[3], Falco Meier[3], Andreas Beyer[2], Detlev Michael Hofmann[1], Donat Josef As[3], Peter Jens Klar[1], Kerstin Volz[2], Sangam Chatterjee[1], Jörg Schörmann[1]
[1] *Justus Liebig University Giessen, Germany,* [2] *Philipps University Marburg, Germany,* [3] *University of Paderborn, Germany*

GR11-3 (Oral) 10:55 - 11:10

Large critical thickness of InGaN grown by plasma-assisted MBE

Greg Muziol[1], Marcin Krysko[1], Marcin Siekacz[1], Anna Feduniewicz-Zmuda[1], Grzegorz Staszczak[1], Ewa Granka[1], Julita Smalc-Koziorowska[1], Czeslaw Skierbiszewski[1]
[1] *Institute of High Pressure Physics PAS, Poland*

GR11-4 (Oral) 11:10 - 11:25

Fabrication of InGaN/GaN periodic heterostructure via THVPE method

Chiho Yamada[1], Iori Kobayashi[1], Hisashi Murakami[1]
[1] *Tokyo University of Agriculture and Technology, Japan*

GR11-5 （Invited） 11:25 - 11:50

Low Sheet Resistance N-Polar InAlGaN/GaN HEMT

Robert Hamwey[1], Nirupam Hatui[1], Emre Akso [1], Feng Wu[2], Stacia Keller[1], James S. Speck[2], Umesh Mishra[1]

[1] Department of Electrical and Computer Engineering, University of California, Santa Barbara, United States of America, [2] Materials Department, University of California, Santa Barbara, United States of America

OD8: Micro LEDs: Process

Argos F November 15 (Wed) 10:25 -11:50

Chair : Robert Armitage, Takashi Matsuoka

OD8-1 （Invited） 10:25 - 10:50

InGaN-based red micro-LEDs via micro-flow-channel metalorganic vapor-phase epitaxy

Kazuhiro Ohkawa[1], Daisuke Iida[1], Martin Velazquez-Rizo[1], Pavel Kirilenko[1]

[1] KAUST, Saudi Arabia

OD8-2 （Oral） 10:50 - 11:05

Demonstration of etching-free pixel definition through selective thermal oxidization in InGaN-based micro-LEDs

Zhiyuan Liu[1], Yi Lu[1], Xiaohang Li[1]

[1] King Abdullah University of Science and Technology, Saudi Arabia

OD8-3 （Oral） 11:05 - 11:20

Optimization of gate structure in hollow-structured MicroLED array for batch transfer technique towards flexible LED film

Taiki Kitade[1], Atsushi Nishikawa[2], Alexander Loesing[2], Masaki Shirai[3], Hiroki Kobayashi[3], Izumi Fukunaga[4], Hiroto Sekiguchi[1]

[1] Toyohashi University of Technology, Japan, [2] ALLOS, Germany, [3] ULVAC, Japan, [4] OIST, Japan

OD8-4 （Oral） 11:20 - 11:35

Regrowth on Strain-relaxed Patterned GaN Templates to Achieve High-efficiency Green Micro Light-emitting Diodes

pan zuojian[1], chen zhizhong[1]

[1] peking university, China

OD8-5 （Oral） 11:35 - 11:50

Exploring the influence of fabrication methods on the optoelectronic performance of µLEDs

Krzysztof Gibasiewicz[1], Anna Kafar[1,2], Łucja Marona[1,2], Katarzyna Piotrowska-Wolińska[1], Jacek Kacperski[2], Tadeusz Suski[1], Piotr Perlin[1,2]

[1] Institute of High Pressure Physics "Unipress" PAS, Poland, [2] Top-GaN Lasers Ltd. , Poland

OD9: Photodetectors

Navis A November 15 (Wed) 10:25 -11:35

Chair : Koichi Okamoto, Hiroto Sekiguchi

OD9-1 (Invited) 10:25 - 10:50

Development of AlGaN based deep-ultraviolet avalanche photodetectors toward their intrinsic characteristics

Theeradetch Detchprohm[1], Hoon Jeong[1], Zhiyu Xu[1], Minkyu Cho[1], Alexandra V. Dolgashev[1], Davide Balzerani[1], Frank Menhke[1], Shyh-Chiang Shen[1], Nepomuk Otte[1], Russell Dupuis[1]
[1] Georgia Institute of Techonology, United States of America

OD9-2 (Oral) 10:50 - 11:05

Effect of Planarization and Device Architecture in Ultraviolet Photodetectors based on GaN Nanowire Ensembles

Elçin Akar[1], Arthur Bertot[1], Martien den Hertog[2], Eva Monroy[1]
[1] CEA Grenoble, France, [2] Institut Néel, France

OD9-3 (Oral) 11:05 - 11:20

Enhanced transport of photo-excited carriers in (0001) InGaN photodiodes by introducing compositionally graded layer

Heishiroh Dojo[1], Shuhei Ichikawa[1,2], Yoshinobu Matsuda[3], Mitsuru Funato[3], Yoichi Kawakami[3], Kazunobu Kojima[1]
[1] Osaka University, Japan, [2] Rsearch Center for UHVEM, Osaka Univ, Japan, [3] Kyoto University, Japan

OD9-4 (Oral) 11:20 - 11:35

InGaN MQW photonic power converter under 394 nm laser irradiation

Ryusei Takahashi[1], Shunki Hayashi[1], Shunsuke Shibui[1], Masahiro Koga[1], Junichi Suzuki[1], Reo Aoyama[1], Takahiro Noguchi[1], Takahiro Fujisawa[2], Toshihiko Fukamachi[3], Koichi Naniwae[3], Shiori Ii[4], Ruka Watanabe[4], Makoto Miyoshi[2], Tetsuya Takeuchi[4], Satoshi Kamiyama[4], Shiro Uchida[1]
[1] Chiba Institute of Technology, Japan, [2] Nagoya Institute of Technology, Japan, [3] Usio Inc., Japan, [4] Meijyo University, Japan

CH9: AlGaN I

Navis B November 15 (Wed) 10:25 -11:50

Chair : Bo Shen, Ziyi Zhang

CH9-1 (Invited) 10:25 - 10:50

Fundamental optical properties of AlN revealed by deep-ultraviolet spectroscopy

Ryota Ishii[1], Akira Yoshikawa[2], Mitsuru Funato[1], Yoichi Kawakami[1]
[1] Kyoto University, Japan, [2] Nagoya University, Japan

CH9-2 (Oral) 10:50 - 11:05

Effect on QWs Qualities of Thickness of Homoepitaxial AlN on AlN/sapphire Prepared by Sputtering and High-temperature Annealing

Ryota Akaike[1], Kenjiro Uesugi[1], Kohei Shima[2], Shigefusa F. Chichibu[2], Akira Uedono[3], Hideto Miyake[1]
[1] Mie University, Japan, [2] Tohoku University, Japan, [3] University of Tsukuba, Japan

CH9-3 （Oral） 11:05 - 11:20

Temperature dependence of efficiency curves in AlGaN-based MQWs with emission wavelengths from 220 to 260 nm

Hideaki Murotani[1,2], Kosuke Inai[1], Kunio Himeno[1], Kaichi Tani[1], Hiromasa Hayashi[1], Satoshi Kurai[1], Narihito Okada[1], Kenjiro Uesugi[3], Hideto Miyake[3], Yoichi Yamada[1]

[1] Yamaguchi University, Japan, [2] National Institute of Technology, Tokuyama College, Japan, [3] Mie University, Japan

CH9-4 （Oral） 11:20 - 11:35

Localized deep-ultraviolet luminescence of AlGaN grown on high-temperature annealed AlN templates

Shuhei Ichikawa[1,2], Kenjiro Uesugi[3,4], Kazuki Saito[1], Shiyu Xiao[5], Kanako Shojiki[1,5], Takao Nakamura[5], Hideto Miyake[5], Kazunobu Kojima[1]

[1] Graduate School of Engineering, Osaka University, Japan, [2] Research Center for UHVEM, Osaka University, Japan, [3] Organization for Research Initiative and Promotion, Mie University, Japan, [4] Graduate School of Regional Innovation Studies, Mie University, Japan, [5] Graduate School of Engineering, Mie University, Japan

CH9-5 （Oral） 11:35 - 11:50

Ultra-low ionization energy level of Mg dopant in the $Al_{0.9}Ga_{0.1}N$ and $Al_{0.8}Ga_{0.2}N$ (11-20) Digital Alloy

Xinhao Wang[1], Jiaduo Zhu[1], Shengrui Xu[1], Jincheng Zhang[1], Yue Hao[1]

[1] Xidian University, China

JT3: Novel Materials and Devices

Navis C November 15 (Wed) 10:25 -11:40

Chair : Vanya Darakchieva, Kohei Shima

JT3-1 （Oral） 10:25 - 10:40

Electrical properties of ScN layers grown on GaN(0001) by plasma-assisted molecular beam epitaxy

Duc Dinh[1], Oliver Brandt[1]

[1] Paul-Drude-Institut für Festkörperelektronik, Germany

JT3-2 （Oral） 10:40 - 10:55

Electronic States at the Interface of β-Nb_2N/AlN Superlattices

Takahiro Kawamura[1], Toru Akiyama[1], Atsushi Kobayashi[2]

[1] Graduate School of Engineering, Mie University, Japan, [2] Department of Materials Science and Technology, Tokyo University of Science, Japan

JT3-3 （Oral） 10:55 - 11:10

Room Temperature Green Single Photon Emission from InGaN Quantum Dot Positioned atop a GaN Nanowire

Swagata Bhunia[1], Ayan Majumder[2], Soumyadip Chatterjee[2], Ritam Sarkar[2], Dhiman Nag[2], Kasturi Saha[2], Suddhasatta Mahapatra[1], Apurba Laha[2]

[1] Department of Physics, Indian Institute of Technology Bombay, Mumbai-400076, India, India, [2] Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai-400076, India, India

JT3-4 （Oral） 11:10 - 11:25

Soft X-ray single photon detector based on GaN-on-GaN epi-layer with photon energy analysis capability

Yiqiao Wei[1], Weizong Xu[1], Qunsi Yang[1], Dong Zhou[1], Feng Zhou[1], Fangfang Ren[1], Rong Zhang[1], Youdou Zheng[1], Hai Lu[1]
[1] *Nanjing University, China*

JT3-5 （Oral） 11:25 - 11:40

Design and Fabrication of High Performance Porous GaN DBRs

Frederik Lüßmann[1,2], Matthias Hoormann[1,2], Jana Hartmann[1,2], Florian Meierhofer[1,2], Andreas Waag[1,2]
[1] *Institute of Semiconductor Technology, Technische Universität Braunschweig, Hans-Sommer-Str. 66, 38106 Braunschweig, Germany,* [2] *Laboratory for Emerging Nanometrology (LENA), Technische Universität Braunschweig, Langer Kamp 6,38106 Braunschweig, Germany*

Excursion	12:00 -

November 16 (Thu)

ED9: RF III

Argos D November 16 (Thu) 8:30 -10:15

Chair : Farid Medjdoub, Keisuke Shinohara

ED9-1 (Oral) 8:30 - 8:45

Improved Turn-On Voltage Controllability in AlGaN/GaN Gated-Anode Diodes Using Etch Endpoint Detection Process

Yuji Ando[1], Kensuke Oishi[1], Hidemasa Takahashi[1], Ryutaro Makisako[1], Akio Wakejima[2], Jun Suda[1]
[1] Nagoya University, Japan, [2] Nagoya Institute of Technology, Japan

ED9-2 (Oral) 8:45 - 9:00

Improvement of Breakdown Voltage by Utilizing Moderately-Doped Contact Layers in AlGaN/GaN Gated-Anode Diodes for Microwave Rectification

Tomoya Watanabe[1], Hidemasa Takahashi[1], Akio Wakejima[2], Yuji Ando[1,3], Jun Suda[1,3]
[1] Department of Electronics, Nagoya University, Japan, [2] Nagoya Institute of Technology, Japan, [3] IMaSS, Nagoya University, Japan

ED9-3 (Oral) 9:00 - 9:15

Effects of surface treatments after gate recess etching on AlGaN/GaN MIS-HFETs with an ALD-SiO_2/Al_2O_3 double insulator

Toshiharu Kubo[1], Takashi Egawa[1]
[1] Nagoya Institute of Technology, Japan

ED9-4 (Oral) 9:15 - 9:30

High-Al-Composition $Al_{0.65}Ga_{0.35}N$/GaN-on-Si MISHEMTs Fabricated with CMOS-Compatible Metallization for mm-Wave Applications

Hanlin Xie[1], Zhongzhiguang Lu[2], Hanchao Li[2], Yue Wang[3], Zhihong Liu[4], Kumud Ranjan[5], Lakshmi Kanta Bera[1], Huamao Lin[1], Navab Singh[1], Surasit Chung[1], Yuanjin Zheng[2], Kenneth Eng Kian Lee[3], Subramaniam Arulkumaran[5], Geok Ing Ng[2]
*[1] Institute of Microelectronics, A*STAR (Agency for Science, Technology and Research), Singapore, [2] School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, [3] Low Energy ElectronicSystems, Singapore-MIT Alliance for Research and Technology, Singapore, [4] Guangzhou Institute of Technology, Xidian University, China, [5] Temasek Laboratories@NTU, Nanyang Technological University, Singapore*

ED9-5 (Oral) 9:30 - 9:45

Modal analysis of electronic metadevices: Understanding their ultra-high cut-off frequency

Mohammad Rezaei[1], Mohammad Samizadeh Nikoo[1], Önder Soydal[1], Elison Matioli[1]
[1] EPFL, Switzerland

ED9-6 (Oral) 9:45 - 10:00

15 GHz GaN Hi-Lo IMPATT diodes with pulsed peak power of 25.5 W

Seiya Kawasaki[1], Takeru Kumabe[1], Manato Deki[1], Hirotaka Watanabe[1], Atsushi Tanaka[1], Yoshio Honda[1], Manabu Arai[1], Hiroshi Amano[1]
[1] Nagoya University, Japan

ED9-7-LN （Oral） 10:00 - 10:15

Nitrogen-polar Deep-Recess GaN MISHEMT with Bias-Insensitive OIP3/PDC Through Channel Corrugation

Henry Collins[1], Emre Akso[1], Nirupam Hatui[1], Christopher Clymore[1], Robert Hamwey[1], Matthew Guidry[1], Stacia Keller[1], Umesh K Mishra[1]
[1] *University of California Santa Barbara, United States of America*

GR12: Bulk GaN

Argos E November 16 (Thu) 8:30 -10:25

Chair : Hajime Fujikura, Siddha Pimputkar

GR12-1 （Invited） 8:30 - 8:55

Recent Progress of Bulk GaN Growth by Na-Flux Method

Yusuke Mori[1], Shigeyoshi Usami[1], Masayuki Imanishi[1]
[1] *Osaka University, Japan*

GR12-2 （Oral） 8:55 - 9:10

Study of gallium nitride solubility in ammonothermal alkaline solution under various physicochemical conditions

Karolina Grabianska[1], Robert Kucharski[1], Tomasz Sochacki[1], Michał Bockowski[1,2]
[1] *Institute of High Pressure Physics Polish Academy of Sciences, Poland,* [2] *CIRFE, IMaSS, Nagoya University, Japan*

GR12-3 （Oral） 9:10 - 9:25

Fundamental Studies on Crystallization and Reaching the Equilibrium Shape of GaN Crystal in Basic Ammonothermal Method

Tomasz Sochacki[1], Robert Kucharski[1], Karolina Grabianska[1], Jan L Weyher[1], Lutz Kirste[2], Malgorzata Iwinska[1], Michal Bockowski[1,3]
[1] *Institute of High Pressure Physics Polish Academy of Sciences, Poland,* [2] *Fraunhofer Institute for Applied Solid State Physics (IAF), Germany,* [3] *CIRFE, IMaSS, Nagoya University, Japan*

GR12-4 （Oral） 9:25 - 9:40

Evolution of temperature and ammonia flow at selected time points of alkaline-ammonothermal growth of gallium nitride crystals

Marek Zak[1], Pawel Kempisty[1], Boleslaw Lucznik[1], Robert Kucharski[1], Michal Bockowski[1,2]
[1] *Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland , Poland,* [2] *CIRFE, IMaSS, Nagoya University, Nagoya 464-8601, Japan, Japan*

GR12-5 （Oral） 9:40 - 9:55

Toward mass production of GaN substrates by acidic ammonothermal technology

Yutaka Mikawa[1], Yuji Kagamitani[1], Takayuki Ishinabe[1], Hirotaka Ikeda[1], Tae Mochizuki[1], Satoru Izumisawa[1], Takaya Ohuchi[2], Kouhei Kurimoto[2], Quanxi Bao[2]
[1] *Mitsubishi Chemical Corporation, Japan,* [2] *Japan Steel Works, Japan*

GR12-6 （Oral） 9:55 - 10:10

Dislocation Reduction in GaN Crystals Using Facet Growth Caused by Meltback in the Na-flux Method

Shogo Washida[1], Masayuki Imanishi[1], Kazuma Hamada[1], Ricksen Tandryo[1], Kosuke Murakami[1], Shigeyoshi Usami[1], Mihoko Maruyama[1], Masashi Yoshimura[1,2], Yusuke Mori[1]
[1] *Osaka University, Japan,* [2] *ILE, Osaka University, Japan*

GR12-7 （Oral） 10:10 - 10:25

Analysis of Crystal Defects in GaN Substrates using Bragg Diffraction Imaging Techniques and Defect Selective Etching – Comparison of the Growth Method and the Seed Approach

Lutz Kirste[1], Thu Nhi Tran Caliste[2], Tomasz Sochacki[3], Robert Kucharski[3], Karolina Grabianska[3], Jan L. Weyher[3], Magdalena A. Zajac[3,4], Malgorzata Iwinska[3], JoséBaruchel[2], Michal Bockowski[3]
[1] Fraunhofer Institute for Applied Solid State Physics (IAF), Germany, [2] European Synchrotron Radiation Facility (ESRF), France, [3] Institute of High Pressure Physics (UNIPRESS), Poland, [4] Military University of Technology, Poland

CH10: InGaN Optical III

Argos F November 16 (Thu) 8:30 -10:20

Chair : Guillaume Cassabois, Ryuji Katayama

CH10-1 （Invited） 8:30 - 8:55

Physics of disorder and carrier localization in nitride alloys

Claude Weisbuch[1,2], Tsung-Yin Tsai[1,3], Kai Shek Qwah[1], Jean-Philippe Banon[2], Yuh-Renn Wu[3], Mylène Sauty[2], Yi Chao Chow[1], Jacques Peretti[2], Aurélien David[4], James S. Speck[1]
[1] UCSB, United States of America, [2] CNRS, France, [3] National Taiwan Univ., Taiwan, [4] Google, United States of America

CH10-2 （Oral） 8:55 - 9:10

Investigation of non-radiative recombination channels in InGaN/GaN quantum wells with high dislocation densities

Pierre Lottigier[1], Davide Maria Di Paola[1], Duncan Alexander[1], Thomas Fjord Kjaersgaard Weatherley[1], Pablo Sáenz de Santa María Modroño[2], Danxuan Chen[1], Gwénolé Jacopin[2], Jean-François Carlin[1], Raphaël Butté[1], Nicolas Grandjean[1]
[1] LASPE - EPFL, Switzerland, [2] Institut Néel - CNRS, France

CH10-3 （Oral） 9:10 - 9:25

Modelling nonradiative recombination at individual point defects in an InGaN/GaN quantum well

Thomas Weatherley[1], Gunnar Kusch[2], Duncan T. L. Alexander[1], Rachel A. Oliver[2], Jean-François Carlin[1], Raphaël Butté[1], Nicolas Grandjean[1]
[1] Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, [2] University of Cambridge, UK

CH10-4 （Oral） 9:25 - 9:40

How many dislocations are too many for InGaN alloys?

Zydrunas Podlipskas[1], Kazimieras Nomeika[1], Ramunas Aleksiejunas[1]
[1] Vilnius University, Institute of Photonics and Nanotechnology, Lithuania

CH10-5 （Oral） 9:40 - 9:55

Polarized luminescence from c-plane InGaN/GaN quantum wells induced by anisotropic strain originated from stripe-shaped GaN-on-Si structure via epitaxial lateral overgrowth

Yoshinobu Kawaguchi[1], Kazuma Takeuchi[1], Kentaro Murakawa[1], Motohisa Usagawa[1], Akiko Komoda[1], Mizuki Tonomura[1], Takeshi Yokoyama[1], Yuuta Aoki[1], Hiroyuki Ogura[1], Takeshi Kamikawa[1], Shuhei Ichikawa[2], Kazunobu Kojima[2]
[1] Kyocera Corporation, Japan, [2] Osaka University, Japan

CH10-6 （Invited） 9:55 - 10:20

Defect-assisted nonradiative recombination in nitrides

Chris G. Van de Walle[1]
[1] *University of California, Santa Barbara, United States of America*

OD10: Novel Optical Devices

Navis A November 16 (Thu) 8:30 -10:25

Chair : Jong Kyu Kim, Atsushi Nishikawa

OD10-1 （Invited） 8:30 - 8:55

Observation of Suspended AA-Stacked Hexagonal Boron Nitride Grown on GaN Substrate by Metal-Organic Chemical Vapor Deposition

Jong Kyu Kim[1], Seokho Moon[1], Adrien Rousseau[2], Youngjae Kim[3], Yunjae Park[4], Wilfrid Desrat[2], Jiye Kim[1], Pierre Valvin[2], Giorgia Fugallo[5], Feng Ding[4], Jaedong Lee[3], Bernard Gil[2], Guillaume Cassabois[2], Si-Young Choi[1]
[1] *Pohang University of Science and Technology, Korea,* [2] *Universite de Montpellier, France,* [3] *Daegu Gyeongbuk Institute of Science and Technology, Korea,* [4] *Institute for Basic Sciecne, Korea,* [5] *Universite de Nantes, France*

OD10-2 （Oral） 8:55 - 9:10

Telecom single-photon emitters in GaN: operation at room temperature and coupling to photonic structures

Max Meunier[1,2], John J. H. Eng[3,4,1], Haoran Zhang[3], Sebastien Chenot[2], Virginie Brandli[2], Febiana Tjiptoharsono[4], Zhaogang Dong[4], Weibo Gao[1,3,5], Jesus Zuniga-Perez[1,3]
[1] *Majulab, IRL 3654, CNRS, NTU, Université Côte d'Azûr, Sorbonne Université, NUS, Singapore,* [2] *CRHEA, UCA, CNRS, Rue Bernard Gregory, 06560 Valbonne, France, France,* [3] *Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, NTU, 21 Nanyang Link 637371, Singapore, Singapore,* [4] *ASTAR, (Agency for Science, Technology and Research), Institute of Materials Research and Engineering, 2 Fusionopolis Way 138634, North Tower, Singapore, Singapore,* [5] *Center forQuantum Technologies, National University of Singapore, Singapore 117543, Singapore, Singapore*

OD10-3 （Oral） 9:10 - 9:25

Ambient Visible Quantum Light Source in Aluminum Nitride

Sam Bishop[1], Joseph Cannon[1], Huseyin Yacgi[1], John Hadden[1], Anthony Bennett[1]
[1] *Cardiff University, UK*

OD10-4 （Oral） 9:25 - 9:40

Future optics with high-aspect ratio GaN nano-resonators

Yan Liang Liu[1], Wen Sheng Peng[1], Meng Hsin Chen[1], Ting Yu Wu[1], VIN CENT SU[1]
[1] *Department of Electrical Engineering, National United University, Taiwan*

OD10-5 （Oral） 9:40 - 9:55

Enhancing the emission in V^-_B in hBN for practical quantum sensing

Honbing Cai[2,3], Xyaodan Lyu[3], Shihao Ru[3], Z. Jiang[3], John J. H. Eng[1,3], Ruihua He[4], Y. Miao[3], Qinghai Tan[3], L. Wu[3], Chuseng Zhang[3], Zhaowei Zhang[3], Zhao Mu[3], Weibo Gao[1,2,3], Jesus Zuniga-Perez[1,3]
[1] *Majulab, IRL 3654, CNRS, NTU, UCA, SU, NUS, Singapore, Singapore,* [2] *The Photonics Institute and Centre for Disruptive Photonic Technologies, NTU, Singapore 637371, Singaore, Singapore,* [3] *Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, NTU, 21 Nanyang Link 637371, Singapore, Singapore,* [4] *School of Biological Sciences, NTU, Singapore 637551, Singapore, Singapore*

OD10-6 （Oral） 9:55 - 10:10

Progress of electrically injected GaN-on-Si microdisk lasers

Meixin FENG[1], Jianxun LIU[1], Qian SUN[1], Hui YANG[1]
[1] Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China

OD10-7 （Oral） 10:10 - 10:25

Development of MicroLED neural device for effective optogenetic stimulation

Hiroki Yasunaga[1], Atsushi Nishikawa[2], Alexander Loesing[2], Mikiko Ishikawa[3], Chikako Kamiyoshihara[3], Susumu Setogawa[4], Noriaki Ohkawa[3], Hiroto Sekiguchi[1]
[1] Toyohashi University of Technology, Japan, [2] ALLOS Semiconductors GmbH, Germany, [3] Dokkyo Medical University, Japan, [4] Osaka City University, Japan

GR13: Sc-containing III-Nitrides

Navis B November 16 (Thu) 8:30 -10:25

Chair : Atsushi Kobayashi, Zetian Mi

GR13-1 （Invited） 8:30 - 8:55

Ferroelectric Nitride Semiconductors: Epitaxy, Properties, and Emerging Device Applications

Zetian Mi[1], Ding Wang[1], Ping Wang[1], Danhao Wang[1], Shubham Mondal[1], Mingtao Hu[1], Samuel Yang[1]
[1] University of Michigan, United States of America

GR13-2 （Oral） 8:55 - 9:10

Structural Properties of Epitaxial ScAlN Films Grown by Sputtering: Experimental and Machine Learning Approaches

Atsushi Kobayashi[1], Yoshio Honda[2], Takuya Maeda[3], Kohei Ueno[4], Hiroshi Fujioka[4]
[1] Tokyo University of Science, Japan, [2] Nagoya University, Japan, [3] The University of Tokyo, Japan, [4] The University of Tokyo, Japan

GR13-3 （Oral） 9:10 - 9:25

Epitaxial growth of Aluminium Yttrium Nitride

Stefano Leone[1], Isabel Streicher[1], Franziska C. Beyer[2], Jan Beyer[3], Kuei-Shen Hsu[3], Mario Prescher[1], Christian Röder[2,3], Patrik Straňák[1], Lutz Kirste[1]
[1] Fraunhofer IAF, Germany, [2] Fraunhofer IISB, Germany, [3] TU Bergakad. Freiberg, Germany

GR13-4 （Oral） 9:25 - 9:40

Pushing the Limits of Low-Temperature Growth of High-Quality ScAlN Via Metal-Rich Epitaxy

Emily N. Marshall[1], Zachary Engel[1], Keisuke Motoki[1], Christopher M. Matthews[1], Sangho Lee[1], Amanda L. Tang[1], W. Alan Doolittle[1]
[1] Georgia Institute of Technology, United States of America

GR13-5 （Oral） 9:40 - 9:55

Giant apparent polarization in ferroelectric AlScN

Georg Schönweger[1,2], Niklas Wolff[1,3], Adrian Petraru[1], Hermann Kohlstedt[1,3], Lorenz Kienle[1,3], Simon Fichtner[1,2]
[1] Kiel University, Germany, [2] Fraunhofer Institute for Silicon Technology, Germany, [3] Kiel Nano, Surface and Interface Science (KiNSIS), Germany

GR13-6 （Oral） 9:55 - 10:10

Charged Polarization Domain Walls in Ferroelectric Wurtzite-Type AlN-ScN Solid Solutions

Georg Schönweger[1,2], Niklas Wolff[1], Adrian Petraru[1], Hermann Kohlstedt[1], Lorenz Kienle[1], Simon Fichtner[1,2]
[1] Kiel University, Germany, [2] Fraunhofer Institut for Silicon Technology, Germany

GR13-7 （Oral） 10:10 - 10:25

Charge/Lattice Ordering in Ferroelectric ScAlN/GaN Heterostructures

Ping Wang[1], Haotian Ye[1], Jinlin Wang[1], Rui Wang[1], Tao Wang[1], Bo Shen[1], Xinqiang Wang[1]
[1] Peking University, China

ED10: Thermal Management

Navis C November 16 (Thu) 8:30 -10:35

Chair : Manato Deki, Tomas Palacios

ED10-1 （Invited） 8:30 - 8:55

GaN-on-Diamond Transistors: Challenges and Opportunities

Martin Kuball[1]
[1] University of Bristol, UK

ED10-2 （Oral） 8:55 - 9:10

Diamond Integration into RF N-Polar GaN HEMTs Fabrication Process

Mohamadali Malakoutian[1], Rohith Soman[1], Jeong-kyu Kim[1], Kelly Woo[1], Anna Kasperovich[1], Ashley Soojin Jun[1], Srabanti Chowdhury[1]
[1] Stanford University, United States of America

ED10-3 （Oral） 9:10 - 9:25

Fabrication of nitride/3C-SiC/polycrystalline diamond heterostructures for efficient thermal management of power devices

Chiharu Moriyama[1], Keisuke Kawamura[2], Sumito Ouchi[2], Hiroki Uratani[2], Yutaka Ohno[3], Koji Inoue[3], Yasuyoshi Nagai[3], Naoteru Shigekawa[1], Jianbo Liang[1]
[1] Osaka Metropolitan University, Japan, [2] Air Water Inc. , Japan, [3] Tohoku University, Japan

ED10-4 （Oral） 9:25 - 9:40

Composite Single/Poly Crystalline AlN Passivation Grown by PEALD for Topside Heat Spreading in GaN-based Power Devices

Guanjun Jing[1,2], Xinhua Wang[1,2], Kexin Deng[1,2], Fangyuan Sun[3], Sen Huang[1,2], Haibo Yin[1], Qimeng Jiang[1,2], Ke Wei[1,2], Xinyu Liu[1,2]
[1] Institute of Microelectronics, Chinese Academy of Sciences, China, [2] University of Chinese Academy of Sciences, China, [3] University of Science and Technology Beijing, China

ED10-5 （Oral） 9:40 - 9:55

Embedded liquid cooling for efficient integrated power ICs

Remco Van Erp[1], Nirmana Perera[1], Luca Nela[1], Ibrahim Osama Elhagali[1], Elison Matioli[1]
[1] EPFL, Switzerland

ED10-6 （Oral） 9:55 - 10:10

Electrothermal Measurements for Co-designed III-Nitride Transistors

MD TANVIR HASAN[1], Abdullah Al Mamun Mazumder[1], Didarul Alam[1], Richard Floyd[1], Abdullah Mamun[1], Kamal Hussain[1], Grigory Simin[1], Asif Khan[1], MVS Chandrashekhar[1]
[1] University of South Carolina, United States of America

ED10-7 （Invited） 10:10 - 10:35

III-Nitride Electronics for Extreme Environment Operation

John Niroula[1], Mengyang Yuan[1], Qingyun Xie[1], Tomas Palacios[1]
[1] *Massachusetts Institute of Technology, United States of America*

Break 10:25 -10:55

ED11: RF IV

Argos D November 16 (Thu) 10:55 -12:20

Chair : Sravanti Chowdhury, Atsushi Yamada

ED11-1 （Invited） 10:55 - 11:20

Scaling Challenges in Millimeter-Wave GaN HEMTs for High-Power, High-Efficiency, and High-Linearity Operation

Keisuke Shinohara[1], Dean Regan[1], Casey King[1], Eric Regan[1], Petra Rowell[1], Andrea Arias[1], Joshua Bergman[1], Miguel Urteaga[1], Berinder Brar[1], Nicholas Miller[2]
[1] *Teledyne Scientific and Imaging, United States of America,* [2] *Air Force Research Laboratory, United States of America*

ED11-2 （Oral） 11:20 - 11:35

Sub-micron thick AlN/GaN-on-Si HEMTs grown by MBE with reduced trapping effects and superior blocking voltage for RF applications

Elodie Carneiro[1,2], Stéphanie Rennesson[2], Sebastian Tamariz[2,3], Lyes Ben Hammou[1], Kathia Harrouche[1], Etienne Okada[1], Fabrice Semond[3,2], Farid Medjdoub[1]
[1] *IEMN, France,* [2] *EasyGaN, France,* [3] *CRHEA, France*

ED11-3 （Oral） 11:35 - 11:50

High RF Performance GaN HEMTs for X-band Application Fabricated by Si-rich SiN/Si_3N_4 Bilayer Passivation Technology

Shiming Li[1], Mei Wu[1], Ling Yang[1], Qingyuan Chang[1], Bin Hou[1], Meng Zhang[1], Xiaohua Ma[1], Yue Hao[1]
[1] *XIDIAN UNIVERSITY, China*

ED11-4 （Oral） 11:50 - 12:05

RF Performances of E-mode p-GaN Gate HEMT on 200mm-Si Substrates for Sub-6GHz Applications

Yan Cheng[1], Zheyang Zheng[1], Yat Hon Ng[1], Kevin J. Chen[1]
[1] *The Hong Kong University of Science and Technology, Hong Kong*

ED11-5 （Oral） 12:05 - 12:20

Microwave Power Performance of AlGaN/GaN HEMT on Semi-insulating Mn-doped GaN Substrate

Tomoharu Sugino[1], Kenji Osaki[1], Kentaro Nonaka[2], Tomohiko Sugiyama[2], Yoshitaka Kuraoka[2], Akio Wakejima[1]
[1] *Ngoya Institute of Technology, Japan,* [2] *NGK Insulators, Japan*

GR14: Nanostructures and New Growth Techniques

Argos E November 16 (Thu) 10:55 -12:20

Chair : Detlef Hommel, Kazuyuki Tadatomo

GR14-1 (Invited) 10:55 - 11:20

Growth and transfer of quantum dots UV heterostructure emitting at 280nm using van der Waals epitaxy on hBN

Julien Brault[1], Aly Zaiter[1], Antoine Reserbat-Plantey[1], Nikita Nikitskiy[1], Maud Nemoz[1], Mohamed Al Khalfioui[1], Sébastien Chenot[1], Philippe Vennéguès[1], Phuong Vuong[2], Vishnu Ottapilakkal[2], Suresh Sundaram[2], Guillaume Cassabois[3], Bernard Gil[3], Abdallah Ougazzaden[2,4]

[1] Côte d'Azur University - CRHEA - CNRS, France, [2] IRL 2958 Georgia Tech – CNRS, Georgia Tech Europe, France, [3] Laboratoire Charles Coulomb and Université Montpellier 2, France, [4] School Electrical & Computer Engineering, Georgia Institute of Technology, France

GR14-2 (Oral) 11:20 - 11:35

Nanoscopic (In,Ga)N light emitters in ultra-thin GaN nanowires

Thomas Auzelle[1], Farshad Doustipour[1], Maximilian Pudelski[1], Mikel Gómez Ruiz[1], Jonas Lähnemann[1], Oliver Brandt[1], Lutz Geelhaar[1]

[1] Paul-Drude-Institut für Festkörperelektronik Leibniz-Institut im Forschungsverbund Berlin e.V., Germany

GR14-3 (Oral) 11:35 - 11:50

Dodecagonal III-nitride microrods – a basis for future UV device

Łukasz Janicki[1], Paulina Ciechanowicz[1], Dominika Majchrzak[1,2], Sandeep Gorantla[1], Robert Kudrawiec[1,3], Detlef Hommel[1,2]

[1] Łukasiewicz Research Network - PORT Polish Center for Technology Development, Poland, [2] Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Poland, [3] Department of Semiconductor Materials Engineering, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland

GR14-4 (Oral) 11:50 - 12:05

Strain Relaxation Effects on Overgrowth Crystal Quality and Emission Behavior Caused by Subsurface GaN Porous Structures

Shaobo Yang[1], Hao-Yu Hsieh[1], Ping-Wei Liou[1], Wei-Cheng Chen[1], Li-Ping Liang[1], Yu-Sheng Lin[1], Hsuan-Yu Liu[1], C. C. (Chih-Chung) Yang[1]

[1] National Taiwan University, Taiwan

GR14-5 (Oral) 12:05 - 12:20

Scaling up IBAD Template for Very-Large-Scale GaN Epitaxy

Vladimir Matias[1], Chris Sheehan[1]

[1] iBeam Materials, United States of America

CH11: AlGaN II

Argos F November 16 (Thu) 10:55 -12:20

Chair : Momoko Deura, Emmanouil Kioupakis

CH11-1 (Invited) 10:55 - 11:20

Recent progress on the epitaxial growth, doping of AlGaN with high Al fraction and the fabrication of Deep UV LEDs

Bo Shen[1], F. J. Xu[1]

[1] Peking Univ., China

CH11-2 （Oral） 11:20 - 11:35

P-GaN interfacial degradation as the dominant failure mode in UVC light-emitting diode on high-quality AlN template

Chia-Yen Huang[1], Wen-Hsuan Hsieh[1], Chang-Hsieh Wu[1], Tien-Chang Lu[1]
[1] National Yangming Chiaotung University, Taiwan

CH11-3 （Oral） 11:35 - 11:50

Theoretical study on carrier transport and recombination processes in deep UV (Al,Ga)N light emitters

Robert Finn[1], Michael O'Donovan[2], Patricio Farrell[2], Timo Streckenbach[2], Julien Moatti[3], Thomas Koprucki[2], Stefan Schulz[1,4]
[1] Tyndall National Institute, University College Cork, Cork, T12 R5CP, , Ireland, [2] Weierstrass Institute (WIAS), Mohrenstr. 39, 10117 Berlin, , Germany, [3] Inria, Univ. de Lille, CNRS, UMR 8524 - Laboratoire Paul Painleve, F-59000 Lille,, France, [4] School of Physics, University College Cork, Cork, T12 YN60,, Ireland

CH11-4 （Oral） 11:50 - 12:05

Electrical properties of V-based Ohmic contacts on n-type AlGaN with high Al content

Kazuaki Ebata[1], Masanobu Hiroki[1], Kouta Tateno[1], Kazuhide Kumakura[1], Yoshitaka Taniyasu[1]
[1] NTT Basic Research Laboratories, Japan

CH11-5 （Oral） 12:05 - 12:20

Three-dimensional tomographic analysis of AlGaN-based UV-B wavelength laser diodes

Shota Taniguchi[1], Yusuke Hayashi[1], Tetsuya Tohei[1], Kazushi Sumitani[2], Yasuhiko Imai[2], Shigeru Kimura[2], Motoaki Iwaya[3], Hideto Miyake[4], Akira Sakai[1]
[1] Graduate School of Engineering Science, Osaka University, Japan, [2] Japan Synchrotron Radiation Research Institute (JASRI), Japan, [3] Department of Materials Science and Engineering, Meijo University, Japan, [4] Graduate School of Engineering, Mie University, Japan

OD11: Micro LEDs: Novel Structures

Navis A November 16 (Thu) 10:55 -12:20

Chair : Theeradetch Detchprohm, Koh Matsumoto

OD11-1 （Invited） 10:55 - 11:20

Introduction to High-Speed Visible Light Communication Using Yellow-Green and Red Micro-LEDs

Tzu-Yi Lee[1], Wen-Chien Miao[2,3], Fu-He Hsiao[2,3], Yi-Hong Bai[1], Yi-Hua Pai[1], Chien-Chung Lin[4], Hao-Chung Kuo[1,2]
[1] Department of Photonics, National Yang Ming Chiao Tung University, Taiwan, [2] Hon Hai Research Institut, Taiwan, [3] Department of Electrophysics, National Yang Ming Chiao Tung University, Taiwan, [4] Department of Electrical Engineering, National Taiwan University, Taiwan

OD11-2 （Oral） 11:20 - 11:35

High-efficiency Color Conversion for Micro-LED Display Application Based on Nanoscale-cavity effect and Förster Resonance Energy Transfer

Shaobo Yang[1], Chen-Hua Chen[1], Yi-Chen Lai[1], Sheng-Yang Kuo[1], His-Yu Feng[1], Zong-Han Li[1], Shung-Hsiang Wu[1], Yueh-Chi Lee[1], Yu-Sheng Lin[1], Hsuan-Yu Liu[1], Yang Kuo[1], C. C. (Chih-Chung) Yang[1]
[1] National Taiwan University, Taiwan

OD11-3 （Oral） 11:35 - 11:50

Dualtronics: Expanding the functionality of polar substrates

Len van Deurzen[1], Eungkyun Kim[1], Henryk Turski[2], Zexuan Zhang[1], Anna Feduniewicz-Zmuda[2], Mikolaj Chlipala[2], Marcin Siekacz[2], Huili Grace Xing[2,1], Debdeep Jena[1]
[1] Cornell University, United States of America, [2] UNIPRESS, Poland

OD11-4 （Oral） 11:50 - 12:05

Flexible MicroLED array film adhering to the brain surface for in vivo optogenetic stimulation

Ryota Kanda[1], Taiki Kitde[1], Atsushi Nishikawa[2], Alexander Loesing[2], Masaki Sirai[3], Hiroki Kobayashi[3], Izumi Fukunaga[4], Takuya Hikima[5], Noriaki Ohkawa[5],Hiroto Sekiguchi[1]
[1] Toyohashi University of Technology, Japan, [2] ALLOS Semiconductors, Germany, [3] ULVAC, Japan, [4] Okinawa Institute of Science and Technology, Japan, [5] Dokkyo Medical University, Japan

OD11-5 （Oral） 12:05 - 12:20

Flexible and transparent micro-LED array for multifunctional applications

Runze Lin[1], Xinyi Shan[1], Daqi Shen[1], Xugao Cui[1], Pengfei Tian[1]
[1] Fudan University, China

CH12: BN

Navis B November 16 (Thu) 10:55 -12:20

Chair : Takashi Taniguchi, Christian Wetzel

CH12-1 （Invited） 10:55 - 11:20

Polytypism in hexagonal boron nitride: an optical study

Guillaume Cassabois[1]
[1] Montpellier University, France

CH12-2 （Oral） 11:20 - 11:35

Impact of alloy disorder on the electronic and optical properties of boron containing III-N alloys

Cara-Lena Nies[1], Stefan Schulz[1,2]
[1] Tyndall National Institute, University College Cork, Cork, Ireland, [2] School of Physics, University College Cork, Cork, Ireland

CH12-3 （Oral） 11:35 - 11:50

Spatially resolved cathodoluminescence studies of graphitic BN segments formed in hexagonal BN epilayers grown on a (0001) sapphire by CVD

Shigefusa F Chichibu[1], Naoki Umehara[2], Kazuhiko Hara[2], Kohei Shima[1]
[1] Tohoku University, Japan, [2] Shizuoka University, Japan

CH12-4 （Oral） 11:50 - 12:05

hBN bubbles as a tool for deterministic activation of single-photon emission

Piotr Tatarczak[1], Johannes Binder[1], Katarzyna Ludwiczak[1], Jakub Iwanski[1], Tomasz Fąs[1], Aleksandra Krystyna Dąbrowska[1], Mateusz Tokarczyk[1], Jan Suffczynski[1], Andrzej Wysmołek[1]
[1] Faculty of Physics, University of Warsaw, Poland

CH12-5 （Oral） 12:05 - 12:20

Deep-UV defect emitters in thin hBN

Markus R. Wagner[1,2], Nils Bernhard[2], Luca Choi[2], Benjamin M. Janzen[2], Felix Nippert[2], Neha Aggarwal[1], Joao Marcelo J. Lopes[1], Angus Gale[3], Igor Aharonovich[3], Milos Toth[3]

[1] Paul Drude Institute for Solid State Electronics, Leibniz Institute Berlin, Germany, [2] Technische Universität Berlin, Insitute of Solid State Physics, Berlin, Germany, [3] University of Technology Sydney, Sydney, Australia

ED12: Device Process

Navis C November 16 (Thu) 10:55 -12:25

Chair : Kevin Chen, Masakazu Kanechika

ED12-1 （Oral） 10:55 - 11:10

High Efficiency, High Mobility Ion Implanted Silicon Doped GaN for Scalable High Power Vertical Devices

Alan G Jacobs[1], Boris N Feigelson[1], Jennifer K Hite[1], Joseph A Spencer[1,2], Yuhao Zhang[2], Marko J Tadjer[1], Karl D Hobart[1], Travis J Anderson[1]

[1] U.S. Naval Research Laboratory, United States of America, [2] Virginia Tech, United States of America

ED12-2 （Oral） 11:10 - 11:25

High Temperature Si Ion Implantation for Ohmic Contact Technology in III-Nitride Heterostructures

Minsik Oh[1], Qingyun Xie[1], Pao-Chuan Shih[1], Michel Khoury[2], Archana Kumar[2], Ryan Ley[2], Benjamin D. Briggs[2], Tomás Palacios[1]

[1] Microsystems Technology Laboratories, Massachusetts Institute of Technology, United States of America, [2] Applied Materials, Inc., United States of America

ED12-3 （Oral） 11:25 - 11:40

Impacts of subsequent nitrogen radical treatment on surface roughness and electrical properties of n-type GaN films deposited by reactive sputtering

Shinji Yamada[1], Kiho Tanaka[1], Manabu Arai[1], Tetsu Kachi[1], Jun Suda[1]

[1] Nagoya University, Japan

ED12-4 （Oral） 11:40 - 11:55

High Aspect Ratio Al-Rich AlGaN Etching Technology with Smooth Vertical Sidewalls for FinFET Fabrication

Hridibrata Pal[1], Qingyun Xie[1], John Niroula[1], Pao-Chuan Shih[1], Andrew A Allerman[2], Andrew M Armstrong[2], Brianna Klein[2], Tomas Palacios[1]

[1] Massachusetts Institute of Technology, United States of America, [2] Sandia National Laboratories, United States of America

ED12-5 （Oral） 11:55 - 12:10

Efficient Retrieval of Atomic Steps on GaN Surface by High Temperature Remote Plasma Pretreatments

Kexin Deng[1,2], Xinhua Wang[1,2], Sen Huang[1,2], Pengfei Li[3], Qimeng Jiang[1,2], Haibo Yin[1], Jie Fan[1], Ke Wei[1,2], Yingkui Zheng[1], Jingyuan Shi[1], Xinyu Liu[1,2]

[1] Institute of Microelectronics, Chinese Academy of Sciences, China, [2] University of Chinese Academy of Sciences of Sciences, China, [3] Institute of Solid State Physics, Chinese Academy of Sciences, China

ED12-6 （Oral） 12:10 - 12:25

P-GaN/AlGaN/GaN heterojunction field-effect transistors fabricated by reactivation annealing process

Yeo-Reum Yang[1], Jun-Hyeok Yim[1], Dong-Guk Kim[1], Hyeon-Ji Kim[1], Ho-Young Cha[1]
[1] *Hongik University, Korea*

Lunch	12:25 -14:25

ED13: New Materials and Structures II

Argos D November 16 (Thu) 14:25 -16:20

Chair : Junji Kotani, Takuya Maeda

ED13-1 （Invited） 14:25 - 14:50

Correct modeling of polarization in wz-AlScN

Mohamed Yassine[1], Ali Yassine[1], Elisa Wade[1], Akash Nair[2], Lutz Kirste[2], Oliver Ambacher[1]
[1] *Institute for Sustainable Systems Engineering, University of Freiburg, Germany,* [2] *Fraunhofer Institute for Applied Solid State Physics IAF, Germany*

ED13-2 （Oral） 14:50 - 15:05

Record high electron mobility near pinch-off on N-polar GaN/AlN heterostructures grown on on-axis N-polar GaN substrates by plasma assisted molecular beam epitaxy

oguz odabasi[1], Sandra Diez[2], Md Irfan Khan[1], Kamruzzaman Khan[3], Elaheh Ahmadi[1]
[1] *Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Michigan 48109, United States of America,* [2] *Applied Physics Program, University of Michigan, Ann Arbor, Michigan 48109, United States of America,* [3] *Electrical and Computer Engineering Department, University of California at Santa Barbara, Santa Barbara, CA 93106, United States of America*

ED13-3 （Oral） 15:05 - 15:20

First Demonstration of High-Frequency InAlN/GaN HEMT using GaN-on-Insulator Technology via Wafer Bonding

Hanchao Li[1], Hanlin Xie[2], Yue Wang[3], Lekina Yulia[5], Kumud Ranjan[4], Navab Singh[2], Surasit Chung[2], Kenneth Eng Kian Lee[3], Subramaniam Arulkumaran[4], GeokIng Ng[1,2,3]
[1] *School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore,* [2] *Institute of Microelectronics, A*STAR (Agency for Science, Technology and Research), Singapore,* [3] *Low Energy ElectronicSystems, Singapore-MIT Alliance for Research and Technology, Singapore,* [4] *Temasek Laboratories@NTU, Nanyang Technological University, Singapore,* [5] *School of Physical and Mathematical Sciences, Nanyang Technological University,Singapore, Singapore*

ED13-4 （Oral） 15:20 - 15:35

Polarization-Graded HEMTs for Improved Johnson's Figure of Merit

Nivedhita Venkatesan[1], Wesley Turner[1], Jeong-sun Moon[2], Patrick Fay[1]
[1] *University of Notre Dame, United States of America,* [2] *HRL Laboratories LLC, United States of America*

ED13-5 （Oral） 15:35 - 15:50

First Demonstration of AlBN/GaN High Electron Mobility Transistors

Kazuki Nomoto[1], Chandrashekhar Prakash Savant[1], Thai-Son Tran Nguyen[1], Huili Grace Xing[1], Debdeep Jena[1]
[1] *Cornell University, United States of America*

ED13-6 （Oral） 15:50 - 16:05

AlN-based polarization doped FETs with graded $Al_xGa_{1-x}N$ channel layer

Masanobu Hiroki[1], Kazuhide Kumakura[1], Yoshitaka Taniyasu[1]
[1] *NTT Basic Research Laboratories, Japan*

ED13-7 （Oral） 16:05 - 16:20

Progress Toward N type and P type AlN Channel MESFETs

Sangho Lee[1], Habib Ahmad[1], Chris Matthews[1], Emily Marshall[1], Keisuke Motoki[1], Amanda Tang[1], William Alan Doolittle[1]
[1] *Georgia Intuition of Technology, United States of America*

GR15: Bulk AlN

Argos E November 16 (Thu) 14:25 -16:20

Chair : Elke Meissner, Hiroyuki Fukuyama

GR15-1 （Invited） 14:25 - 14:50

The development of pseudomorphic AlGaN on native AlN substrates for UVC and far UVC device applications

Leo John Schowalter[1,2,3,4]
[1] *Lit Thinking, Orlando, FL, United States of America,* [2] *University of Central Florida, United States of America,* [3] *Cornell University, United States of America,* [4] *Nagoya University, United States of America*

GR15-3 （Oral） 15:05 - 15:20

Industrial Growth of AlN Single-Crystals

James Grandusky[1], Robert T. Bondokov[1], Justin Mark[1], Kasey Hogan[1], Griffin Q. Norbury[1], Toru Kimura[2], Makoto Ikeda[2], Masato Kobayashi[2], Shingo Ishii[2],Jun Yoshida[2], Masato Toita[2], Naohiro Kuze[2]
[1] *Crystal IS, United States of America,* [2] *Asahi Kasei Corporation, Japan*

GR15-4 （Oral） 15:20 - 15:35

Growth and Structural Characterization of Bulk AlN Crystals with Efficient Diameter Enlargement

Carsten Hartmann[1], Carsten Richter[1], Merve Kabukcuoglu[2], Uta Juda[1], Andrew Klump[1], Lutz Kirste[3], Matthias Bickermann[1], Daniel Hänschke[2], Thomas Straubinger[1]
[1] *Leibniz-Institut für Kristallzüchtung, Berlin, Germany,* [2] *Institute for Photon Science and Synchrotron Radiation (IPS), Karlsruhe Institute of Technology (KIT), Germany,* [3] *Fraunhofer Institute for Applied Solid State Physics (IAF), Freiburg, Germany*

GR15-5 （Oral） 15:35 - 15:50

Development towards 4” AlN substrates for the fabrication of AlN-based power devices

Elke Meissner[1,2], Besendörfer Sven[1], Andreas Lesnik[1], Gleb Lukin[1], Roland Weingärtner[1], Marc Hainke[3], Jochen Friedrich[1]
[1] *Fraunhofer Institute for Integrated Systems and Device Technology, Germany,* [2] *Chair for Electron Devices, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany,* [3] *Department of Industrial Engineering and Healthcare, Technical University Amberg-Weiden , Germany*

GR15-6 （Oral） 15:50 - 16:05

Mapping Analysis of Crystalline Perfection and UV-C Transparency of 2-Inch AlN Substrates Grown by PVT

Rafael Dalmau[1], Samuel Kirby[1], Jeffrey Britt[1], Raoul Schlesser[1]
[1] *HexaTech, Inc., United States of America*

GR15-7 （Oral） 16:05 - 16:20

2-inch AlN Substrates with Absorption Coefficient below 15/cm at 220-240nm for Far-UVC Optoelectronics

Liang WU[1], Dan Lei[1], Qikun Wang[1], Xiaojuan Sun[2,3], Dabing Li[2,3]
[1] Ultratrend Technologies Co. Ltd., China, [2] Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences (CAS), China, [3] Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, China

CH13: Quantum Electronics

Argos F November 16 (Thu) 14:25 -16:15

Chair : Yoshihiro Ishitani, Claude Weisbuch

CH13-1 （Invited） 14:25 - 14:50

Nitride-Semiconductor-based Wavelength Converters

Ryuji Katayama[1], Masahiro Uemukai[1], Tomoyuki Tanikawa[1]
[1] Osaka University, Japan

CH13-2 （Invited） 14:50 - 15:15

GaN Quantum Dots in Resonant Cavity Micropillars as deep UV Single Photon Sources

Juergen Christen[1], Hannes Schuermann[1], Frank Bertram[1], Gordon Schmidt[1], Olga August[1], Christoph Berger[1], Armin Dadgar[1], Andre Strittmatter[1], Kong Gao[2],Marc Holmes[2], Yasuhiko Arakawa[2]
[1] University of Magdeburg, Germany, [2] University of Tokyo, Japan

CH13-3 （Oral） 15:15 - 15:30

Significant emission enhancement from InGaN/GaN nanocolumn arrays owing to strong coupling between photonic and plasmonic band states

Takao Oto[1], Shotaro Hayakawa[1], Koichi Okamoto[2], Rie Togashi[3,4], Katsumi Kishino[4]
[1] Yamagata University, Japan, [2] Osaka Metropolitan University, Japan, [3] Sophia University, Japan, [4] Sophia Nanotechnology Research Center, Japan

CH13-4 （Oral） 15:30 - 15:45

Optical and structural characterization of an AlInN/GaN-based longitudinal photonic bandgap crystal laser structure

Gordon Schmidt[1], Christoph Berger[1], Peter Veit[1], Jürgen Bläsing[1], Frank Bertram[1], Armin Dadgar[1], André Strittmatter[1], Jürgen Christen[1]
[1] Otto-von-Guericke-University Magdeburg, Germany

CH13-5 （Oral） 15:45 - 16:00

Polariton lasing in AlGaN microring with GaN/AlGaN quantum wells

Anthonin Delphan[1], Maxim M. Makhonin[1], Tommi Isionemi[1], Paul M. Walker[1], Maurice S. Skolnick[1], Dmitry N. Krizhanovskii[1], Dmitry V. Skryabin[2], Jean-François Carlin[3], Nicolas Grandjean[3], Raphaël Butté[3]
[1] University of Sheffield, UK, [2] University of Bath, UK, [3] Ecole Polytechnique Fédérale de Lausanne, Switzerland

CH13-6 （Oral） 16:00 - 16:15

Photoluminescence excitation spectroscopy of stimulated emission from AlGaN-based UV-C multiple quantum wells

Hideaki Murotani[2,1], Kunio Himeno[1], Hayate Ohkawara[1], Kaichi Tani[1], Satoshi Kurai[1], Narihito Okada[1], Noritoshi Maeda[3], Muhammad Ajmal Khan[3], Masafumi Jo[3], Hideki Hirayama[3], Yoichi Yamada[1]
[1] Yamaguchi University, Japan, [2] National Institute of Technology, Tokuyama College, Japan, [3] RIKEN, Japan

OD12: Visible Lasers

Navis A November 16 (Thu) 14:25 -16:20

Chair : Thierry Guillet, Masahiro Uemukai

OD12-1 （Invited） 14:25 - 14:50

Hybrid Photonic Integrated III-N Chip Lasers

Thomas Wunderer[1]
[1] *PARC, part of SRI International, United States of America*

OD12-2 （Oral） 14:50 - 15:05

Greatly suppressed potential inhomogeneity and performance improvement of c-plane InGaN green laser diodes

Ai Qin Tian[1], Lei Hu[1], Xuan Li[1], Fang Zhi Li[1], Wei Zhou[1], Deyao Li, Masao Ikeda[1], Hui Yang[1], Jian Ping Liu[1]
[1] *Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China*

OD12-3 （Oral） 15:05 - 15:20

Low-threshold, high-confinement blue and green edge emitting lasers based on AlInN/GaN multilayer n-type cladding.

Marco Malinverni[1], Marco Rossetti[1], Antonino Castiglia[1], Adin Ferhatovic[1], Denis Martin[1], Marcus Duelk[1], Christian Vélez[1]
[1] *EXALOS AG, Switzerland*

OD12-4 （Oral） 15:20 - 15:35

Characterization of 430nm - InAlGaN laser diode with polarization doped p-cladding layer

Muhammed AKTAS[1], Anna KAFAR[1,2], Łucja MARONA[1,2], Szymon GRZANKA[1,2], Szymon STANCZYK[1,2], Przemysław WISNIEWSKI[1,2], Piotr PERLIN[1,2]
[1] *Institute of High Pressure Physics PAS, Poland,* [2] *TopGaN Ltd., Poland*

OD12-5 （Oral） 15:35 - 15:50

From quantum confinement to bulk-like behavior: carrier-dependent transition in wide InGaN quantum wells

Lukas Uhlig[1], Jannina Tepaß[1], Mateusz Hajdel[2], Grzegorz Muziol[2], Ulrich Theodor Schwarz[1]
[1] *Chemnitz University of Technology, Germany,* [2] *Institute of High Pressure Physics, Polish Academy of Sciences, Poland*

OD12-6 （Oral） 15:50 - 16:05

Dynamics of tunnel junction laser diodes with wide quantum well

Jannina Tepaß[1], Lukas Uhlig[1], Mateusz Hajdel[2], Grzegorz Muziol[2], Ulrich Theodor Schwarz[1]
[1] *Chemnitz University of Technology, Germany,* [2] *Institute of High Pressure Physics, Polish Academy of Sciences, Poland*

OD12-7 （Oral） 16:05 - 16:20

Electrically-injected lasers based on thin film GaN platform

Wai Yuen Fu[1], Yuk Fai Cheung[1], Hoi Wai Choi[1]
[1] *The University of Hong Kong, Hong Kong*

GR16: BN

Navis B November 16 (Thu) 14:25 -16:20

Chair : Izabella Grzegory, Yoshitaka Taniyasu

GR16-1 （Invited） 14:25 - 14:50

Boron Nitride single crystals obtained under high pressure and their impurity control.

Takashi Taniguchi[1]
[1] *National Institute for Materials Science, Japan*

GR16-2 （Oral） 14:50 - 15:05

High nitrogen pressure growth of hexagonal BN using Ni-Cr solvent

Bohdan Sadovyi[1], Petro Sadovyi[1], Andrii Nikolenko[2], Viktor Strelchuk[2], Alexandra Ibanez[3], Pierre Valvin[3], Guillaume Cassabois[3], Bernard Gil[3], Izabella Grzegory[1]
[1] *Institute of High Pressure Physics Polish Academy of Sciences, Poland,* [2] *V.E. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine,* [3] *Université de Montpellier Laboratoire Charles Coulomb, France*

GR16-3 （Oral） 15:05 - 15:20

On the solubility of boron nitride in supercritical ammonia-sodium solutions

Jacob Dooley[1], Nathan Stoddard[1], Kai Landskron[1], Siddha Pimputkar[1]
[1] *Lehigh University, United States of America*

GR16-4 （Oral） 15:20 - 15:35

Growth of BN on Sapphire Substrates Using Cu (111) Buffer Layers by MBE

Takashi Momiyama[1], Kousuke Kimura[1], Takashi Azuhata[1], Hideki Nakazawa[1], Masanobu Hiroki[2], Kazuhide Kumakura[2], Yasuyuki Kobayashi[1]
[1] *Hirosaki University, Japan,* [2] *NTT Basic Research Lab., Japan*

GR16-5 （Oral） 15:35 - 15:50

Structural and optical characterization of $B_xAl_yGa_{1-x-y}N$/AlGaN MQWs for ultraviolet emission

Thomas O'Connor[1,2], Vitaly Z. Zubialevich[1], Praveen Kumar[3], Miryam Arredondo[3], Stefan Schulz[1,4], Peter J. Parbrook[1,2]
[1] *Tyndall National Institute, University College Cork, Cork, Ireland,* [2] *School of Engineering, University College Cork, Cork, Ireland,* [3] *School of Mathematics and Physics, Queens University Belfast, Belfast, UK,* [4] *Department of Physics, University College Cork, Cork, Ireland*

GR16-6 （Oral） 15:50 - 16:05

Impact of aluminum alloying on hBN excitonic absorption properties

Jakub Iwański[1], Mateusz Tokarczyk[1], Aleksandra Krystyna Dąbrowska[1], Jan Pawłowski[1], Piotr Tatarczak[1], Johannes Binder[1], Andrzej Wysmołek[1]
[1] *Faculty of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw, Poland, Poland*

GR16-7 （Oral） 16:05 - 16:20

MOVPE Growth of Hexagonal Boron Nitride on 150 mm sapphire substrates and Integration of III-nitride Based LEDs on h-BN

Suresh Sundaram[1,2,3], Phuong Vuong[1,2], Vishnu Ottapilakkal[2], Ashuthosh Srivastava[3], Rajat Gujrati[3], Andre Perepeliuc[3], Simon Gautier[4], Tarik Moudakir [4], Paul L Voss[1,3], Jean Paul Salvestrini[1,2,3], Abdallah Ougazzaden[1,3]

[1] Georgia Tech Europe , France, [2] CNRS, IRL 2958 Georgia Tech - CNRS, France, [3] Georgia Institute of Technology, School of Electrical and Computer Engineering, Atlanta, United States of America, [4] InstitutLafayette, , France

ED14: Reliability

Navis C November 16 (Thu) 14:25 -16:20

Chair : Martin Kuball, Shinya Takashima

ED14-1 （Invited） 14:25 - 14:50

Process and Design Techniques for Reliability Enhancement of Lateral GaN HEMTs

Kevin J. Chen[1]

[1] The Hong Kong University of Science and Technology, China

ED14-2 （Oral） 14:50 - 15:05

Physical Mechanism of Single Event Effects in E-mode GaN HEMTs Induced by Pulsed Laser under Power Switching Conditions

Yang Tian Zhou[1], Feng Zhou[1], zong Wei Xu[1], Fang Fang Ren[1], Dong Zhou[1], jun Dun Chen[1], Rong Zhang[1], dou You Zheng[1], Hai Lu[1]

[1] Nanjing University, China

ED14-3 （Oral） 15:05 - 15:20

Detail Analysis of defects on GaN-on-Si Epitaxial Wafers related to the High Voltage GaN Power Devices

Yasuhiro Isobe[1], Shintaro Ueda[1], Hideki Sakurai[1], Kazuki Kiyohara[1], Akira Yoshioka[1], Jumpei Tajima[2], Hajime Nago[2], Toshiki Hikosaka[2], Shinya Nunoue[2]

[1] Toshiba Electronic Devices & Storage Corporation, Japan, [2] Corporate Research & Development Center, Toshiba Corporation, Japan

ED14-4 （Oral） 15:20 - 15:35

Hardening Against X-ray Irradiation for Normally-Off p-GaN HEMTs Using Multiple Floating Field Plate Structures

Yu Rong[1], Feng Zhou[1], zong Wei Xu[1], Fang Fang Ren[1], Dong Zhou[1], jun Dun Chen[1], Rong Zhang[1], dou You Zheng[1], Hai Lu[1]

[1] Nanjing University, China

ED14-5 （Oral） 15:35 - 15:50

Transconductance overshoot as a signature of trapping effects at backbarrier interface of GaN HEMTs : dependence on device epitaxial structure

Zhan Gao[1], Mirko Fornasier[1], Francesco De Pieri[1], Carlo De Santi[1], Fabiana Rampazzo[1], Matteo Meneghini[1], Gaudenzio Meneghesso[1], Enrico Zanoni[1]

[1] University of Padova, Italy

ED14-6 （Oral） 15:50 - 16:05

Analysis of trapping and detrapping mechanisms in 0.15 um-gate AlGaN/GaN High Electron Mobility Transistors: explanation of dynamic behaviour of threshold voltage and on-resistance

Francesco De Pieri[1], Mirko Fornasier[1], Fabiana Rampazzo[1], Zhan Gao[1], Carlo De Santi[1], Matteo Meneghini[1], Gaudenzio Meneghesso[1], Enrico Zanoni[1]
[1] *University of Padova, Italy*

ED14-7 （Oral） 16:05 - 16:20

Impact of post-deposition anneal on threshold voltage instability due to bias stress in GaN planer MOSFETs with SiO_2 gate dielectric

Yuki Ichikawa[1], Katsunori Ueno[2], Tsurugi Kondo[2], Ryo Tanaka[2], Shinya Takashima[2], Jun Suda[1]
[1] *Nagoya University, Japan,* [2] *Fuji Electric, Japan*

Poster Session III

Argos A-C November 16 (Thu) 16:20 -18:10

Banquet

Argos D-F November 16 (Thu) 19:00 -21:00

Student Event

Navis A-C November 16 (Thu) 19:00 -21:00

November 17 (Fri)

OD13: UV LEDs

Argos D November 17 (Fri) 8:30 -10:10

Chair : Masafumi Jo, Tim Wernicke

OD13-1 (Invited) 8:30 - 8:55

Recent developments in high efficiency for deep UV LEDs

Yoshiki Saito[1], Kengo Nagata[1], Atsushi Miyazaki[1], Shinya Boyama[1], Koji Okuno[1], Masaki Oya[1], Keita Kataoka[2], Tetsuo Narita[2], Kayo Horibuchi[2], Maki Kushimoto[3], Yoshio Honda[3], Hiroshi Amano[3], Hisanori Ishiguro[4], Tetsuya Takeuchi[4], Kohei Shima[5], Shigefusa F Chichibu[5]

[1] Toyoda Gosei Co., LTD., Japan, [2] Toyota Central R&D labs., Inc., Japan, [3] Nagoya University, Japan, [4] Meijo University, Japan, [5] Tohoku University, Japan

OD13-2 (Oral) 8:55 - 9:10

Demonstration of UV-C LEDs utilizing p-GaN/MgZnO:Ga hetero-tunnel junction

Tatsuhiro Tanaka[1], Maki Kushimoto[1], Yoshio Honda[2,3,4], Hiroshi Amano[2,3,4]

[1] Department of Electronics, Nagoya university, Japan, [2] Institute of Materials and Systems for Sustainability, Nagoya university, Japan, [3] Deep Tech Serial Innovation Center, Nagoya university, Japan, [4] Institute for Advanced Research, Nagoya university, Japan

OD13-3 (Oral) 9:10 - 9:25

Short-term degradation mechanisms of 275-nm-band AlGaN-based deep-ultraviolet light emitting diodes on a sapphire substrate

Shigefusa F Chichibu[1], Kengo Nagata[2], Kouji Okuno[2], Masaki Oya[2], Yoshiki Saito[2], Hisanori Ishiguro[3], Tetsuya Takeuchi[3], Kohei Shima[1]

[1] Tohoku University, Japan, [2] Toyoda Gosei Co. Ltd, Japan, [3] Meijo University, Japan

OD13-4 (Oral) 9:25 - 9:40

On the degradation mechanisms of state-of-the-art UV-C LEDs

Matteo Buffolo[1], Francesco Piva[1], Nicola Roccato[1], Carlo De Santi[1], Nicola Trivellin[2,1], Marco Pilati[1], Norman Susilo[3], Anton Muhin[3], Luca Sulmoni[3], Tim Wernicke[3], Michael Kneissl[3,4], Gaudenzio Meneghesso[1], Enrico Zanoni[1], Matteo Meneghini[1,5]

[1] University of Padova, Department of Information Engineering, Italy, [2] University of Padova, Department of Industrial Engineering, Italy, [3] Technische Universität Berlin, Institute of Solid State Physics, Germany, [4] Ferdidnand-Braun-Institut (FBH), Germany, [5] University of Padova, Department of Physics and Astronomy, Italy

OD13-5 (Oral) 9:40 - 9:55

Degradation mechanism of GaN-based UV LEDs under electrical stress

Yingzhe Wang[1], Xuefeng Zheng[1], Xiaohua Ma[1], Yue Hao[1]

[1] Xidian University, China

OD13-6 (Oral) 9:55 - 10:10

Boron-containing UV LED emitting at 350 nm

Peter Milner[1,2], Vitaly Z. Zubialevich[1], Thomas O'Connor[1,2], Brian Corbett[1], Peter J. Parbrook[1,2]

[1] Tyndall National Institute, Ireland, [2] Univerisity College Cork, Ireland

GR17: GaN III

Argos E November 17 (Fri) 8:30 -10:10

Chair : Okhyun Nam, Tetsuo Narita

GR17-1 (Invited) 8:30 - 8:55

Progress in Electroemission Spectroscopy of GaN LEDs

Wan Ying Ho[1], Yi Chao Chow[1], Jacques Peretti[2], Claude Weisbuch[1,2], James S. Speck[1]
[1] UCSB, United States of America, [2] Ecole Polytechnique, France

GR17-2 (Oral) 8:55 - 9:10

Selective-Area Metalorganic Vapor Phase Epitaxy of Semipolar (1-101) GaN Stripes on Patterned Si Substrates for MicroLED Application

Naofumi Takeda[1,2], Masahiro Uemukai[1,2], Tomoyuki Tanikawa[1,2], Ryuji Katayama[1,2]
[1] Graduate School of Engineering Osaka University, Japan, [2] Spintronics Research Network Division, Institute for Open and Transdisciplinary Research Initiatives, Osaka University, Japan

GR17-3 (Oral) 9:10 - 9:25

In-situ MOCVD Etching of GaN using XeF_2 for Selective-Area-Epitaxial-Regrowth of p-type GaN for High Voltage PN Diodes

Andrew A. Allerman[1], Andrew T. Binder[1], Andrew M. Armstrong[1], Jeff Steinfeldt[1], Luke Yates[1], Michael L Smith[1], Robert K. Kaplar[1]
[1] Sandia National Laboratories, United States of America

GR17-4 (Oral) 9:25 - 9:40

Localized epitaxial growth of 402V BV quasi-vertical GaN-on-Si p-n diode on 200mm-diameter wafers

Thomas Kaltsounis[1,2], David Arguello Plaza[1], Hala El Rammouz[1], Mohammed El Amrani[1], Julien Buckley[1], Matthieu Lafossas[1], Simona Torrengo[1], Helge Haas[1], LaurentMendizabal[1], Alain Gueugnot[1], Denis Mariolle[1], Yvon Cordier[2], Matthew Charles[1]
[1] CEA - Leti, France, [2] CNRS - CRHEA, France

GR17-5 (Oral) 9:40 - 9:55

Formation of 2-Dimensional Electron Gas in N-Polar GaN/AlN Grown by MOVPE

Aina Hiyama Zazuli[1], Taketo Kowaki[1], Minagi Miyamoto[1], Koki Hanasaku[1], Daisuke Inahara[1], Kai Fujii[1], Satoshi Kurai[1], Narihito Okada[1], Yoichi Yamada[1]
[1] Grad. School of Sci. & Tech. for Innovation, Yamaguchi University, Japan

GR17-6 (Oral) 9:55 - 10:10

Revisiting Mg doping in GaN by plasma-assisted MBE: The relevance of the substrate temperature

Elçin Akar[1], Bruno Da Silva[2], Martien den Hertog[2], Eva Monroy[1]
[1] CEA Grenoble, France, [2] Institut Néel, France

OD14: Micro LEDs: Passivation

Argos F November 17 (Fri) 8:30 -10:00

Chair : Bruno Daudin, Makoto Miyoshi

OD14-1 (Oral) 8:30 - 8:45

Red and blue InGaN µLEDs: Lessons learned for sidewall recombination

Jeong-Hwan Park[1], Markus Pristovsek[1], Dong-Seon Lee[2], Tae-Yeon Seong[3], Hiroshi Amano[1]
[1] Nagoya University, Japan, [2] Gwangju Institute of Science and Technology, Korea, [3] Korea University, Korea

OD14-2 (Oral) 8:45 - 9:00

Determining the effects of sidewall passivation on III-nitride µLEDs

Matthew Wong[1], Stephen Gee[1], Norleakvisoth Lim[2], James Speck[1], Shuji Nakamura[1,3], Steve DenBaars[1,3]
[1] Materials Department, UC Santa Barbara, United States of America, [2] Department of Chemical Engineering, United States of America, [3] Department of Electrical and Computer Engineering, United States of America

OD14-3 (Oral) 9:00 - 9:15

Demonstration of 3.5 × 3.5 µm^2 GaN blue micro-LEDs with negligible sidewall surface nonradiative recombination

Xuelun Wang[1], Xixi Zhao[1], Tokio Takahashi[1], Daisuke Ohori[2], Seiji Samukawa[2]
[1] National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2] Tohoku University, Japan

OD14-4 (Oral) 9:15 - 9:30

Flexible spectral control using chip-scale multi-wavelength InGaN LEDs

Yoshinobu Matsuda[1], Mitsuru Funato[1], Yoichi Kawakami[1]
[1] Kyoto University, Japan

OD14-5 (Oral) 9:30 - 9:45

Atomic Layer Etching (ALE) of III-Nitrides

Wan Ying Ho[1], Yi Chao Chow[1], Zachary Biegler[1], Kai Shek Qwah[1], Tanay Tak[1], Ashley Wissel-Garcia[1], Iris Liu[1], Feng Wu[1], Shuji Nakamura[1], James S Speck[1]
[1] University of California, Santa Barbara, United States of America

OD14-6 (Oral) 9:45 - 10:00

Impact of doped barriers on the recombination coefficients of c-plane InGaN light-emitting diodes

Yi Chao Chow[1], Cheyenne Lynsky[1], Shuji Nakamura[1], Steven DenBaars[1], Claude Weisbuch[1,2], James Speck[1]
[1] University of California, Santa Barbara, United States of America, [2] Ecole Polytechnique, France

CH14: Nanostructures

Navis A November 17 (Fri) 8:30 -10:10

Chair : Martin Feneberg, Shigetaka Tomiya

CH14-1 (Invited) 8:30 - 8:55

Insights into porous GaN from electron microscopy

Rachel Oliver[1]
[1] University of Cambridge, UK

CH14-2 （Oral） 8:55 - 9:10

Morphological, structural and strain relaxation properties of porous InGaN-based pseudo-substrate for long wavelength μ-LEDs

Yihong Ji[1], Martin Frentrup[1], Xiaotian Zhang[1], Jakub Pongrácz[1,2,3], Simon M. Fairclough[1], Yingjun Liu[4], Tongtong Zhu[4], Rachel A. Oliver[1,4]

[1] University of Cambridge, UK, [2] Czech Academy of Science, Czech Republic, [3] Brno University of Technology, Czech Republic, [4] Poro Technologies Ltd, UK

CH14-3 （Oral） 9:10 - 9:25

Surface charge effects in GaN NWs: An advantage for enhancing the piezoelectric conversion efficiency

Noelle GOGNEAU[1], Pascal Chrétien[2], Amaury Chevillard[1], Tanbir Sodhi[1,2], Laurent Couraud[1], Laurent Travers[1], Jean-Christophe Harmand[1], François H Julien[1], Maria Tchernycheva[1], Frédéric Houzé[2]

[1] Center for Nanosciences and Nanotechnologies / CNRS / Paris-Saclay University, France, [2] Université Paris-Saclay, CentraleSupélec, Sorbonne Université, CNRS, Laboratoire de Génie électrique et électronique de Paris, France

CH14-4 （Oral） 9:25 - 9:40

Structural Analysis of a Single $Ga_{1-x}In_xN$/GaN Multi-quantum Shell by using an X-ray Nano-beam from Synchrotron Radiation

Takao Miyajima[1], Takato Ichikawa[1], Nobuhiro Yasuda[2], Ryota Kobayashi[1], Shoya Ota[1], Yasuhiko Imai[2], Kazushi Sumitani[2], Shigeru Kimura[2], Tomoyo Nakao[3], Sakiko Enomoto[3], Shigeo Arai[3], Satoshi Kamiyama[1], Daichi Imai[1]

[1] Meijo University, Japan, [2] Japan Synchrotron Radiation Research Institute, Japan, [3] Nagoya University, Japan

CH14-5 （Oral） 9:40 - 9:55

High-Performance Machine Vision System by GaN n-i-n Nanowire

Haitao Du[1], Xu Zhang[2], Qifeng Lyu[2], KeiMay Lau[2], Xinbo Zou[1]

[1] ShanghaiTech University, China, [2] Hong Kong University of Science and Technology, Hong Kong

CH14-6 （Oral） 9:55 - 10:10

Top-down Fabrication of Nitride Semiconductor Nanowires

Kouta Tateno[1,2], Masato Takiguchi[1,2], Kazuaki Ebata[1], Satoshi Sasaki[1], Kazuhide Kumakura[1], Yoshitaka Taniyasu[1]

[1] NTT Basic Research Labs, Japan, [2] NTT Nanophotonics center, Japan

CH15: Defects and Phonon

Navis B November 17 (Fri) 8:30 -10:10

Chair : Yong-Hoon Cho, Kazunobu Kojima

CH15-1 （Invited） 8:30 - 8:55

Atomic Scale Visualization Defect Induced Localized Vibration in III-Nitrides

Hailing Jiang[1], Tao Wang[1,2], Weikun Ge[1], Ping Wang[1], Bo Shen[1], Lucas R Lindsay[3], Xinqiang Wang[1]

[1] State Key Laboratory for Mesoscopic Physics and Frontiers Science Center for Nano-optoelectronics, School of Physics, Peking University, China, [2] Electron Microscopy Laboratory, School of Physics, Peking University, China, [3] Materials Science and Technology Division, Oak Ridge National Laboratory, United States of America

CH15-2 （Oral） 8:55 - 9:10

Longitudinal optical phonon dynamics analysis in GaInN/GaN heterostructures by Raman spectroscopy

Thee Ei Khaing Shwe[1], Tastuya Asaji[1], Ryota Kimura[1], Yuki Kikuchi[1], Daisuke Iida[2], Mohammed A. Najmi[2], Kazuhiro Ohkawa[2], Yoshihiro Ishitani[1]
[1] Chiba University, Japan, Japan, [2] King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia, Saudi Arabia

CH15-3 （Oral） 9:10 - 9:25

Influence of phonon process on two-dimensional exciton in quantum well analyzed by phononic–excitonic–radiative model

Masaya Chizaki[1], Yoshihiro Ishitani[1]
[1] Chiba University, Japan

CH15-4 （Oral） 9:25 - 9:40

Theoretical calculation of Mg_{Ga}-V_O complexes in GaO_x intermediate layer at GaN/SiO_2 interface

Shuto Hattori[1], Atsushi Oshiyama[2], Kenji Shiraishi[1,2]
[1] Nagoya University, Japan, [2] IMaSS, Nagoya University , Japan

CH15-5 （Oral） 9:40 - 9:55

Evaluation of recombination centers originating from nitrogen-displacement-related defects in homoepitaxial n-type and p-type GaN

Meguru Endo[1], Masahiro Horita[1], Jun Suda[1]
[1] Nagoya University, Japan

CH15-6 （Oral） 9:55 - 10:10

Hall-effect Measurement of Homoepitaxial N-type GaN with Nitrogen-displacement-related Point Defects Formed by Electron Beam Irradiation

Chihiro Kojima[1], Masahiro Horita[1], Jun Suda[1]
[1] Nagoya University, Japan

ED15: Novel Electron Devices

Navis C November 17 (Fri) 8:30 -9:45

Chair : Yuji Ando, Taketomo Sato

ED15-1 （Oral） 8:30 - 8:45

Single-Crystalline AlN Thin-Film Piezoelectric Sensors Operating at 900 °C and in Extreme Environments

Jae-Hyun Ryou[1], Nam-In Kim[1], Muhammad Aqib[1], Miad Yarali[1]
[1] University of Houston, United States of America

ED15-2 （Oral） 8:45 - 9:00

Interface Charge Management in Ferroelectric HEMTs

Brendan Hanrahan[1], Daniel Drury[2,1], Keisuke Yazawa[3,2], Randy Tompkins[1], Srabanti Chowdhury[4], Geoff Brennecka[2]
[1] DEVCOM Army Research Laboratory, United States of America, [2] Colorado School of Mines, United States of America, [3] National Renewable Energy Laboratory, United States of America, [4] Stanford University, United States of America

ED15-3 （Oral） 9:00 - 9:15

Coherent Resonant Tunneling Transport and Negative Diferential Conductance in GaN/AlN Multi-barrier Heterostructures

Jimy Encomendero[1], Vladimir Protasenko[1], Debdeep Jena[1], Grace Xing[1]
[1] *School of Electrical and Computer Engineering, Cornell University, United States of America*

ED15-4 （Oral） 9:15 - 9:30

High-Speed and High-Endurance GaN-based Charge Trapping Memory

Tao Chen[1], Zheyang Zheng[1], Sirui Feng[1], Li Zhang[1], Kevin Jing Chen[1]
[1] *The Hong Kong University of Science and Technology, Hong Kong*

ED15-5 （Oral） 9:30 - 9:45

Advancing Neutron Detection: Fabrication, Characterization and Performance Evaluation of Self-Powered PIN BGaN/GaN Superlattices Based Neutron Detectors

Ashutosh Srivastava[1,2], Adama Mballo[2], Suresh Sundaram[1,2,3], Vishnu Ottapilakkal[2], Phuong Vuong[2,3], Soufiane Karrakchou[2], Mritunjay Kumar[4], Xiaohang Li[4], YacineHalfaya[5], Simon Gautier[5], Paul L Voss[1,2], Jean Paul Salvestrini[1,2,3], Abdallah Ougazzaden[1,2]
[1] *Georgia Institute of Technology, United States of America,* [2] *CNRS, France,* [3] *Georgia Institute of Technology, France,* [4] *King Abdullah University of Science and Technology, Saudi Arabia,* [5] *Institute Lafayette, France*

Break	10:10 -10:40

OD15: Micro LEDs: on Si

Argos D November 17 (Fri) 10:40 -12:05

Chair : Yun-Li Li, Yasushi Nanishi

OD15-1 （Invited） 10:40 - 11:05

Performance of MicroLED Chip and Display for Emerging Applications

Ying-Tsang Liu[1], Ching-Liang Lin[1], Tzu-Yang Lin[1], Yun-Li Li[1]
[1] *PlayNitride Inc., Taiwan*

OD15-2 （Oral） 11:05 - 11:20

Study of the size-dependence of the performance of blue and green µLEDs made from LED structures grown on 200mm silicon wafers

Fabian ROL[1], Patrick Le Maitre[1], Anthony Cibié[1], Séverine Poncet[1], Valentin Chambinaud[1], Simon Litschgi[1], Bastien Miralles[1], Marion Volpert[1], Clément Ballot[1], Bernard Aventurier[1], Matthew Charles[1], Paolo De Martino[1], Julia Simon[1]
[1] *Université Grenoble Alpes, CEA-LETI, France*

OD15-3 （Oral） 11:20 - 11:35

Flat bow of 300 mm GaN-on-Si LED epiwafers with thickness of 775 µm for manufacturing of micro LEDs in Si fabs

Atsushi Nishikawa[1], Alexander Loesing[1], Burkhard Slischka[1]
[1] *ALLOS Semiconductors GmbH, Germany*

OD15-4 （Oral） 11:35 - 11:50

Two Color microLED Photoluminescence Emission from 3.5 µm sub-pixels by Successive Epitaxial Growth on 200 mm GaN on silicon

Matthew Charles[1], Simona Torrengo[1], Matthieu Lafossas[1], Guillaume Veux[1], Frederic Barbier[1], Pierre Ferret[1], Fabian Rol[1], Jean-Christophe Pillet[1], Bernard Aventurier[1], Marion Douma[1], Florian Fedeli[1], Patrick Le Maitre[1], Julia Simon[1], François Levy[1], Amélie Dussaigne[1]
[1] CEA-LETI, France

OD15-5 （Oral） 11:50 - 12:05

Fabrication method of ultra-low dislocation density micro-LEDs using epitaxial lateral overgrowth GaN layers on silicon (EGOS) substrate

Takeshi Kamikawa[1], Toshihiro Kobayashi[1], Yuuta Aoki[1], Noboru Suda[1], Hiroyuki Ogura[1], Mitsunari Seida[1], Kazuma Takeuchi[1], Kosuke Mishima[1], Yuki Taniguchi[1], Fumio Yamashita[1], Akiko Komoda[1], Moon Sooyong[1], Yuuichiro Hayashi[1], Katsuaki Masaki
[1] Research institute for advanced material and devices, Corporate R&D Group, Kyocera , Japan

GR18: AlN II

Argos E November 17 (Fri) 10:40 -12:00

Chair : Yusuke Mori, Leo Schowalter

GR18-1 （Invited） 10:40 - 11:05

Unlocking the AlN technology one step at a time

Zlatko Sitar[1]
[1] North Carolina State University, United States of America

GR18-2 （Oral） 11:05 - 11:20

Surface Oxide Removal on AlN Substrates via Low Temperature Aluminum Flashing

Christopher M Matthews[1], Habib Ahmad[1], Zachary Engel[1], Keisuke Motoki[1], Sangho Lee[1], Emily N Marshall[1], Anusha Krishnan[1], W. Alan Doolittle[1]
[1] Georgia Institute of Technology, United States of America

GR18-3 （Oral） 11:20 - 11:35

Effects of Interlayer Thickness on AlN Templates with Sapphire Substrates

Tomoaki Kachi[1], Hayata Takahata[1], Ryunosuke Oka[1], Hisanori Ishiguro[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Motoaki Iwaya[1], Yoshiki Saito[2], Koji Okuno[2]
[1] Meijo University, Japan, [2] TOYODA GOSEI Co.,Ltd., Japan

GR18-4 （Invited） 11:35 - 12:00

High-Speed Growth of Thick AlN Homoepitaxial Layers by HVPE for Mass Production of High-Quality AlN Wafers

Yoshinao Kumagai[1], Ken Goto[1], Toru Nagashima[2], Reo Yamamoto[2], Michał Boćkowski[3], Atsushi Yamada[4]
[1] Tokyo University of Agriculture and Technology, Japan, [2] Tokuyama Corporation, Japan, [3] Polish Academy of Sciences, Poland, [4] Fujitsu Limited, Japan

OD16: Waveguides and SHG

Argos F November 17 (Fri) 10:40 -12:05

Chair : Takao Miyajima, Thomas Wunderer

OD16-1 （Invited） 10:40 - 11:05

GaN-based Waveguide polariton lasers: from quasi-CW to mode-locked lasers

Thierry Guillet[1], Hassen Souissi[1], Maksym Gromovyi[2,3], Valentin Develay[1], Christelle Brimont[1], Laetitia Doyennette[1], Edmond Cambril[2], Sophie Bouchoule[2], BlandineAlloing[3], Eric Frayssinet[3], Jesus Zuniga-Perez[3], Guillaume Malpuech[4], Dmitry Solnyshkov[4,5]

[1] Laboratoire Charles Coulomb (L2C), Université de Montpellier, CNRS, France, [2] Centre de Nanosciences et de technologies, CNRS, Université Paris-Saclay, France, [3] UCA, CRHEA-CNRS, Rue Bernard Gregory, 06560 Valbonne,France, [4] Université Clermont Auvergne, CNRS, Institut Pascal, Clermont-Ferrand, France, [5] Institut Universitaire de France (IUF), 75231 Paris, France

OD16-2 （Oral） 11:05 - 11:20

Towards light combiners using InAlGaN waveguides

Anna Kafar[1,2], Kiran Saba[1], Adam Brejnak[1], Krzysztof Gibasiewicz[1], Jacek Kacperski[1,2], Lucja Marona[1,2], Szymon Grzanka[1,2], Piotr Perlin[1,2]

[1] Institute of High Pressure Physics PAS, Poland, [2] TopGaN Ltd., Poland

OD16-3 （Oral） 11:20 - 11:35

Fabrication of AlN Polarity Inverted Transverse QPM Rib WaveGuide for Second Harmonic Generation Fabricated by Patterned Wafer Bonding

Ryo Momosaki[1,2], Hiroto Honda[1,2], Yuya Furukawa[1,2], Takehiro Asahi[3], Yoshio Okayama[4], Masahiro Uemukai[1,2], Tomoyuki Tanikawa[1,2], Ryuji Katayama[1,2]

[1] Graduate School of Engineering Osaka University, Japan, [2] Spintronics Research Network Division, Institute for Open and Transdisciplinary Research Initiatives, Osaka University, Japan, [3] Panasonic Production Engineering Co., Ltd., Japan, [4] Panasonic Holdings Corporation, Japan

OD16-4 （Oral） 11:35 - 11:50

Fabrication of transverse quasi-phase-matched channel waveguide using 4-layer polarity inverted AlN structure for second harmonic generation

Eiki Sato[1,2], Hiroto Honda[1,2], Ryo Momosaki[1,2], Tomohiro Tamano[3], Kanako Shojiki[3,4], Hideto Miyake[3], Masahiro Uemukai[1,2], Tomoyuki Tanikawa[1,2], Ryuji Katayama[1,2]

[1] Graduate School of Engineering Osaka University, Japan, [2] Spintronics Research Network Division, Institute for Open and Transdisciplinary Research Initiatives Osaka University, Japan, [3] Graduate School of Engineering Mie University, Japan, [4] Graduate School of Engineering Kyoto University, Japan

OD16-5 （Oral） 11:50 - 12:05

Design of AlN/Ta_2O_5 Horizontally Stacked Transverse-QPM Channel Waveguide for Squeezed Light Generation

Hiroto Honda[1,2], Masahiro Uemukai[1,2], Tanikawa Tomoyuki[1,2], Ryuji Katayama[1,2]

[1] Graduate School of Engineering Osaka University, Japan, [2] OTRI-Spin, Osaka University, Japan

CH16: Light Emitters

Navis A November 17 (Fri) 10:40 -11:55

Chair : Ulrich Schwarz, Tomoyuki Tanikawa

CH16-1 （Oral） 10:40 - 10:55

Evidence of Lateral Injection at V-Defect Sidewalls in III-Nitride Light Emitting Diodes Using Electron Emission Microscopy

Tanay Tak[1], Cameron W. Johnson[2], Wan Ying Ho[1], Mylène Sauty[3], Feng Wu[1], Yuh-Renn Wu[4], Andreas K. Schmid[2], Jacques Peretti[3], Claude Weisbuch[1,3], James S. Speck[1]

[1] Materials Department, University of California, Santa Barbara, United States of America, [2] Molecular Foundry, Lawrence Berkeley National Laboratory, United States of America, [3] Laboratoire de Physique de la MatièreCondensée, Ecole Polytechnique, France, [4] Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taiwan

CH16-2 （Oral） 10:55 - 11:10

Size-dependent sidewall defect effect of GaN blue micro-LEDs by photoluminescence and fluorescence lifetime imaging

Zhou Wang[1], Xinyi Shan[1], Shijie Zhu[1], Xugao Cui[1], Gengzhao Xu[2], Zhenghui Liu[2], Ke Xu[2], Pengfei Tian[1]

[1] Fudan University, China, [2] Suzhou Institute of Nano-Tech and Nano-Bionics, China

CH16-3 （Oral） 11:10 - 11:25

Efficiency Droop in Zincblende InGaN/GaN Quantum Wells

Daniel Dyer[1], Stephen A Church[1], Ruben Ahumada-Lazo[1], Menno J Kappers[2], Matthew P Halsall[3], Patrick Parkinson[1], David J Wallis[2,4], Rachel A Oliver[2], David J Binks[1]

[1] Department of Physics and Astronomy & Photon Science Institute, University of Manchester, Manchester, UK, [2] Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK, [3] Department of Electrical and Electronic Engineering & Photon Science Institute, University of Manchester, Manchester, UK, [4] Centre for High Frequency Engineering, Cardiff University, Cardiff, UK

CH16-4 （Oral） 11:25 - 11:40

Enhanced luminous efficiency of Eu,O-codoped GaN due to luminescent site reconfiguration induced by high-temperature thermal annealing

Takenori Iwaya[1], Shuhei Ichikawa[1,2], Dolf Timmerman[1], Jun Tatebayashi[1], Yasufumi Fujiwara[1]

[1] Osaka University, Japan, [2] Research Center for Ultra-High Voltage Electron Microscopy, Osaka University, Japan

CH16-5 （Oral） 11:40 - 11:55

Ultra-high-pressure doping of gallium nitride with Europium

Piotr Jaroszynski[1], Ewa Grzanka[1], Mikolaj Grabowski[1], Grzegorz Staszczak[1], Rafal Jakiela[2], Kacper Sierakowski[1], Igor Prozheev[3], Filip Tuomisto[3], Michal Bockowski[1,4]

[1] Institute of High Pressure Physics Polish Academy of Sciences, Poland, [2] Institute of Physics Polish Academy of Sciences, Poland, [3] Department of Physics, University of Helsinki, Finland, [4] CIRFE, IMaSS,Nagoya University, Japan

CH17: GaN and AlN

Navis B November 17 (Fri) 10:40 -12:10

Chair : Frank Bertram, Masatomo Sumiya

CH17-1 （Oral） 10:40 - 10:55

Polarity determination of multilayer polarity-inverted AlN using focused-ion-beam oblique etching and KOH immersion

Yusuke Hayashi[1], Tetsuya Tohei[1], Kenjiro Uesugi[2,3], Hideto Miyake[4], Akira Sakai[1]
[1] Graduate School of Engineering Science, Osaka University, Japan, [2] Organization for Research Initiative and Promotion, Mie University, Japan, [3] Graduate School of Regional Innovation Studies, Mie University, Japan, [4] Graduate School of Engineering, Mie University, Japan

CH17-2 （Oral） 10:55 - 11:10

Polarity determination of crystal defects in zincblende GaN by aberration-corrected electron microscopy

Huixin Xiu[1,2], Simon M Fairclough[1], Abhiram Gundimeda[1], Menno J Kappers[1], David J Wallis[1,3], Rachel A Oliver[1], Martin Frentrup[1]
[1] University of Cambridge, UK, [2] University of Shanghai for Science and Technology, China, [3] University of Cardiff, UK

CH17-3 （Oral） 11:10 - 11:25

Synchrotron-radiation X-ray topographic and X-ray reticulographic observation of AlN single-crystal substrates

Yongzhao Yao[1], Yoshiyuki Tsusaka[2], Keiich Hirano[3], Koji Sato[1], Yoshihiro Sugawara[1], Narihito Okada[4], Kazuyuki Tadatomo[4], Yukari Ishikawa[1]
[1] Japan Fine Ceramics Center, Japan, [2] University of Hyogo, Japan, [3] High Energy Accelerator Research Organization, Japan, [4] Yamaguchi University, Japan

CH17-4 （Oral） 11:25 - 11:40

Guidelines for selecting appropriate dopants and concentrations for semi-insulating GaN substrates

Daiki Tanaka[1], Kenji Iso[1,2], Jun Suda[1]
[1] Nagoya University, Japan, [2] Mitsubishi Chemical Corporation, Japan

CH17-5 （Oral） 11:40 - 11:55

Inversion of the Internal Electric Field due to Inhomogeneous Incorporation of Ge Dopants in GaN/AlN Heterostructures Studied by Off-Axis Electron Holography

Lou Denaix[1], Florian Castioni[1], Jing Li[1], Matthew Bryan[1], David Cooper[1], Eva Monroy[2]
[1] Univ. Grenoble-Alpes,CEA,Leti, France, [2] Univ. Grenoble-Alpes, CEA, Grenoble INP, IRIG, PHeliqs, France

CH17-6 （Oral） 11:55 - 12:10

Effect of twist crystallinity of N-polar AlN underlayer on electrical properties of GaN/AlN structure

Taketo Kowaki[1], Koki Hanasaku[1], Minagi Miyamoto[1], Daisuke Inahara[1], Aina hiyama Binti Zazuli[1], Kai Fuji[1], Taisei kimoto[1], Ryosuke Ninoki[1], Satoshi Kurai[1], Narihito Okada[1], Yoichi Yamada[1]
[1] Grad.School of Sci.& Tech. for Inovation Yamaguchi Univ., Japan

ED16: Transport

Navis C November 17 (Fri) 10:40 -11:55

Chair : Tetsuo Narita, Jun Suda

ED16-1 (Oral) 10:40 - 10:55

Signatures of mesoscopic transport in single Ge-doped GaN-nanowire field-effect transistors

Hannes Hergert[1], Mario F. Zscherp[1], Philip Klement[1], Jörg Schörmann[1], Sangam Chatterjee[1], Matthias T. Elm[1], Peter J. Klar[1]
[1] *Justus-Liebig-Universität Gießen, Germany*

ED16-2 (Oral) 10:55 - 11:10

Weak antilocalization and spin-orbit coupling in 2DEG and 2DHG in GaN/AlN heterostructures

Chuan Chang[1], Yu-Hsin Chen[1], Zexuan Zhang[1], Debdeep Jena[1], Huili (Grace) Xing[1]
[1] *Cornell University, United States of America*

ED16-3 (Oral) 11:10 - 11:25

Transport properties of thin InN layers grown on Mg-doped InAlN buffers

Roman Stoklas[1], Stanislav Hasenöhrl[1], Edmund Dobročka[1], Filip Gucmann[1], Alica Rosová[1], Dagmar Gregušová[1], Michal Blaho[1], Michal Kučera[1], Pierre Ruterana[2], Marie Pierre Chauvat[2], Slawomir Kret[3], Anna Kaleta[3], Ján Kuzmík[1]
[1] *Institute of Electrical Engineering, Slovak Academy of Sciences, 84104 Bratislava, Slovakia, Slovakia,* [2] *Centre de Recherche sur les Ions les Matériaux et la Photonique, UMR CNRS 6252, ENSICAEN, 6 Boulevard Juin, 14050, Caen France, France,* [3] *Institute of Physics, PAS, al. Lotnikow 32/46, 02-668 Warsaw, Poland, Poland*

ED16-4 (Oral) 11:25 - 11:40

Pulsed Measurement of Hole Storage Induced Conductivity Enhancement in p-GaN Gate Double Channel HEMT

Hang Liao[1], Zheyang Zheng[1], Ji Shu[1], Kevin Chen[1]
[1] *The Hong Kong University of Science and Technology, China*

ED16-5 (Oral) 11:40 - 11:55

High temperature stability of electron mobility in AlGaN channel heterostructures with different Al fractions

Julien Bassaler[1], Jash Mehta[2], Leszek Konczewicz[3,4], Sandrine Juillaguet[3], Sylvie Contreras[3], Maud Nemoz[5], Sebastian Tamariz[5], Stéphanie Rennesson[6], Fabrice Semond[5], Yvon Cordier[5], Julien Pernot[1], Farid Medjdoub[2], Philippe Ferrandis[1]
[1] *Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, 38000 Grenoble, France,* [2] *IEMN, CNRS, Université de Lille, 59650 Villeneuve d'Ascq, France,* [3] *Laboratoire Charles Coulomb, UMR 221, Univ Montpellier, CNRS, Montpellier, France,* [4] *Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, 01-142, Poland,* [5] *Université Côte d'Azur, CNRS, CRHEA, rue Bernard Grégory, 06560 Valbonne, France,* [6] *EasyGAN SAS, Rue Bernard Grégory, 06905 Sophia Antipolis, France*

Lunch 12:10 -14:10

PL: Plenary

Argos D-F November 17 (Fri) 14:10 -16:50

Chair : Hideki Hirayama, Ke Xu, Hideto Miyake, Yoshihiro Kangawa

PL-4 （Plenary） 14:10 - 14:50

Progress and future prospects of InGaN-based high-efficiency, high-power laser diodes

Takashi Mukai[1]

[1] *Nichia Corp., Japan*

PL-5 （Plenary） 14:50 - 15:30

Vertical-cavity surface-emitting lasers at the end of the rainbow

Åsa Haglund[1]

[1] *Chalmers University of Technology, Sweden*

PL-6 （Plenary） 15:30 - 16:10

Revisiting the physics of III-Nitrides LEDs: myths and facts

Aurélien David[1]

[1] *Google, United States of America*

PL-7 （Plenary） 16:10 - 16:50

Recent Progress of GaN HEMT for Future Communication

Ken Nakata[1]

[1] *Sumitomo Electric Industries, Ltd, Japan*

Closing

Argos D-F November 17 (Fri) 16:50 -17:20

November 13 (Mon)

Poster Session I

Argos A-C November 13 (Mon) 15:45 -17:35

MoP-GR-1 (Poster)

Centimeter-Transferable III-Nitride Membrane Enabled by Interfacial Adhesion Control for a Flexible Photosensitive Device

Yang Chen[1], Zhiming Shi[1], Shanli Zhang[1], Jianwei Ben[1], Ke Jiang[1], Xiaojuan Sun[1], Dabing Li[1,2]
[1] Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, China, [2] Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, China

MoP-GR-2 (Poster)

Effect of post-growth annealing with trimethylgallium on structural quality of AlN layers grown on c-plane sapphire substrate by MOVPE

Masataka Imura[1], Hideki Inaba[1], Takaaki Mano[1], Yasuo Koide[1]
[1] National Institute for Materials Science (NIMS), Japan

MoP-GR-3 (Poster)

Two-Step Growth and Crystal Quality Improvement of Zinc-blende AlN Transformed from Wurtzite AlN on Si (111) by MOCVD

Che Hao Liao[1], Feras AlQatari[2], Mingtao Nong[2], Xiao Tang[2], Dhanu Chettri[2], Vishal Khandelwal[2], Alaa Almushaikeh[2], Glen Isaac Maciel Garcia[2], Xiaohang Li[2]
[1] National Yunlin University of Science and Technology, Taiwan, [2] King Abdullah University of Science and Technology (KAUST), Saudi Arabia

MoP-GR-4 (Poster)

Surface control of AlN single-crystal growth on SiC substrate

Jiahao Chen[1], Qiyue Zhao[2], Huangshu Zhang[1], Zeren Wang[1], Hao Yang[1], Tong Han[1], Jiejun Wu[1], Tongjun Yu[1]
[1] School of physics, Peking University, China, [2] NAURA Technology Group Co.,Ltd., China

MoP-GR-5 (Poster)

High Quality AlN Film on Polycrystalline Diamond by ALD-Assisted AlN Nucleation Layers

Yuan Gao[1], Ruobing Wang[1], Shengrui Xu[1], Huake Su[1], Yue Hao[1]
[1] Xidian University, China

MoP-GR-6 (Poster)

Fabrication of AlN Single Crystal by Solution Growth Method using Ferritic Stainless Steel Flux

Sen LI[1], Masayoshi Adachi[1], Makoto Ohtsuka[1], Hiroyuki Fukuyama[1]
[1] Tohoku University, Japan

MoP-GR-7 （Poster）

GaN localization in high-temperature AlGaN growth over 1500°C

Atsushi Tomita[1], Koki Fujii[1], Takuya Kawakami[1], Yusuke Takashima[1,2], Yoshiki Naoi[1,2], Kentaro Nagamatsu[1,2]
[1] Tokushima University, Japan, [2] Institute of Post-LED Photonics, Japan

MoP-GR-8 （Poster）

Realization of AlN electron blocking layer with abrupt interface and its subsequent improvement in UV-C light-emitting device characteristics

Akira Yoshikawa[1], Ziyi Zhang[1], Maki Kushimoto[1], Koji Aoto[1], Chiaki Sasaoka[1], Hiroshi Amano[1]
[1] Nagoya University, Japan

MoP-GR-9 （Poster）

Wet etching effect of AlN nanopillars in AlGaN grown on AlN nanopillars

Yoshinori Imoto[1], Ryota Hasegawa[1], Ayumu Yabutani[1], Koki Hattori[1], Ryosuke Kondo[1], Ryoya Yamada[1], Keigo Imura[1], Naoki Hasegawa[1], Sho Iwayama[1], MotoakiIwaya[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Hideto Miyake[2]
[1] Meijo University, Japan, [2] Mie University, Japan

MoP-GR-10 （Poster）

Self-Assembly Nanopillar/Superlattice Hierarchical Structure: Boosting AlGaN Crystalline Quality and Achieving High-Performance Ultraviolet Avalanche Photodetector

Qing Cai[1], Haifan You[1], Bin Liu[1], Hai Lu[1], Youdou Zheng[1], Rong Zhang[1], Dunjun Chen[1]
[1] Nanjing University , China

MoP-GR-11 （Poster）

246 nm DUVC LEDs using ultra-thin (0.3 nm) AlGaN-delta-AlGaN quantum wells

Hongjian Li[1]
[1] Physics Department, Peking University, China

MoP-GR-12 （Poster）

(Al,Ga)N heterostructures growth on AlN on Graphene

Julien Brault[1], Aly Zaiter[1], Maud Nemoz[1], Aimeric Courville[1], Mohamed Al Khalfioui[1], Inukai Masanari[2], Yu Doko[2], Takayuki Makino[3], Akihiro Hashimoto[2]
[1] Côte d'Azur University - CRHEA - CNRS, France, [2] Graduate School of Engineering, University of Fukui, Japan, [3] Faculty of Advanced Research, FIR Research Center, University of Fukui, Japan

MoP-GR-13 （Poster）

AlGaN and AlGaN/AlN superlattice growth by using ultra high-temperature MOVPE

Atsushi Tomita[1], Koki Fujii[1], Takuya Kawakami[1], Hideki Hirayama[3], Yusuke Takashima[1,2], Yoshiki Naoi[1,2], Kentaro Nagamatsu[1,2]
[1] Tokushima University, Japan, [2] Institute of Post-LED Photonics, Japan, [3] RIKEN, Japan

MoP-GR-14 （Poster）

Two-step growth of crack-free 5 μm-thick $Al_{0.2}Ga_{0.8}N$ on sapphire substrate with sputtered AlN nucleation layer

Yaqin Li[1,2], Aiqin Tian[1,2], Jianpin Liu[1,2]
[1] University of Science and Technology of China, China, [2]Suzhou lnstitute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences, China

MoP-GR-15 （Poster）

Origin of black color in heavily doped n-type GaN

Tomoaki Sumi[1], Takino Junichi[2], Yoshio Okayama[1], Shigeyoshi Usami[2], Msayuki Imanishi[2], Masashi Yoshimura[2], Yusuke Mori[2]
[1] Panasonic Holdings Corporation, Japan, [2] Osaka University, Japan

MoP-GR-16 （Poster）

Selective Area Epitaxy of Degenerate n-GaN by MOCVD for Low Voltage RF Applications

Jianxun Liu[1,2], Haoran Qie[1,2], Qian Li[1,2], Yu Zhou[1,2], Qian Sun[1,2], Hui Yang[1,2]
[1] Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China, [2] University of Science and Technology of China, China

MoP-GR-17 （Poster）

Multiple Negative-differential resistance regions based on AlN/GaN resonant tunneling structures by the vertical growth of molecular beam epitaxy.

Jiajia Yao[1], Guanlin Wu[1], Fang Liu[1], Junshuai Xue[1], Jincheng Zhang[1], Yue Hao[1]
[1] Xidian University, China

MoP-GR-18 （Poster）

Principles for 2D Material Assisted Nitrides Epitaxial Growth

Zhiqiang Liu[1], Peng Gao[2], Qi Chen[1], Junxi Wang[1], Zhongfan Liu[2], Jinmin Li[1]
[1] institute of semiconductors, chinese academy of sciences, China, [2] peking university, China

MoP-GR-20 （Poster）

Growth of high quality GaN on Si (111) substrate employing pulse atomic layer epitaxy (PALE) AlN buffer layer.

Muhammad Iznul Hisyam[1], Norhaniza Rizuan[1], Ahmad Shuhaimi[1], Marwan Mansor[1], Adam Williams[2], Mohd Rofei Mat Hussin[3]
[1] Low Dimensional Materials Research Centre (LDMRC), Department of Physics, Faculty of Science, Universiti Malaya, 50603, Kuala Lumpur, Malaysia, Malaysia, [2] Silterra Malaysia Sdn.Bhd., Lot 8, Phase II Kulim Hi-Tech Park, 09090Kulim, Kedah, Malaysia, Malaysia, [3] MIMOS Berhad, Technology Park Malaysia, 57000 Kuala Lumpur, Malaysia, Malaysia

MoP-GR-21 （Poster）

Investigation of barriers in green GaInN quantum wells on GaN substrates

kotaro Nozu[1], Motoki Nakano[1], Ruka watanabe[1], Mitsuki Yanagawa[1], Tetsuya Takeuchi[1], Motoaki Iwaya[1], Satoshi Kamiyama[1], Kentaro Nonaka[2], Yoshitaka Kuraoka[2], Takashi Yoshino[2]
[1] Meijo Univ. , Japan, [2] NGK Insurators,Ltd, Japan

MoP-GR-22 （Poster）

Crack analysis of 4-inch Freestanding GaN HVPE Growth

Deang Liu[1], Shuliang Wei[1], Liqing Wu[1], Simon Tang[1], Qiming Li[1]
[1] Eta Research Ltd., China

MoP-GR-23 （Poster）

Growth and Decomposition of GaN Microstructures: Route to Wide Lateral Overgrowth

Irene Manglano Clavero[1], Christoph Margenfeld[1], Jana Hartmann[1], Andreas Waag[1]
[1] Institute of Semiconductor Technology, Technische Universität Braunschweig, Germany

MoP-GR-24 （Poster）

Development of reliable 200 mm Si-foundry compatible GaN/Si substrates using established GaN/Si suppliers

Kwang Hong LEE[1], Lina KHAW[1], Keith Cheng Yeow NG[1], Kenneth LEE[1], Eugene FITZGERALD[1,2]
[1] Singapore-MIT Alliance for Research and Technology, Singapore, [2] Massachusetts Institute of Technology, United States of America

MoP-GR-25 （Poster）

Selective epitaxial growth of hBN on micron-sized epigraphene patterns using MOVPE

Vishnu Ottapilakkal Ottapilakkal[1], Abhishek Juyal[1], Suresh Sundaram[1,2,3], Phuong Voung[1,3], Adama Mballo[1], L Beck[4], G Nunn[4], A Loiseau[5], F Fossard[5], J SMerot[5], D Chapron[6], T H Kauffmann[6], J P Salvestrini[1,2,3], P L Voss[1,2], W A de Heer[4], C Berger[1,4], A Ougazzaden[1,2]
[1] CNRS, IRL 2958 Georgia Tech - CNRS, France, [2] Georgia Institute of Technology, School of Electrical and Computer Eng., United States of America, [3] Georgia Tech-Europe, France, [4] Georgia Institute of Technology, School of Physics, United States of America, [5] Lab. d'Etude des Microstructures, ONERA-CNRS, Universite Paris Saclay, France, [6] Lab. Matériaux Optiques, Photonique et Systèmes, Université de Lorraine & CentraleSupélec, France

MoP-GR-26 （Poster）

Effects of growth temperature on properties of ultrathin B(N) layers grown on sapphire by molecular beam epitaxy

Emil Mihai Pavelescu[1], Iuliana Mihalache[2], Raluca Gavrila[3], Cosmin Romanitan[4], Octavian Ligor[5], Esperanza Luna[7], Achim Trampert[8], Marius Stoian[6]
[1] IMT-Bucharest, Romania, [2] IMT-Bucharest, Romania, [3] IMT-Bucharest, Romania, [4] IMT-Bucharest, Romania, [5] IMT-Bucharest, Romania, [6] IMT-Bucharest, Romania, [7] PDI Berlin, Germany, [8] PDI Berlin, Germany

MoP-GR-27 （Poster）

Epitaxial Growth of Hexagonal Boron Nitride on Silicon Substrates by Metal-Organic Chemical Vapor Deposition

Muzafar Ahmad Rather[1], Ming-Yuan Lee[1], Yeng-Fong Lu[1], Shao-Shiang Hsue[1], Tran Thuy Quy Hien[1], Yung-Ling Kao[1], I-Chen Chen[1], Kun-Yu Lai[1], Jen-Inn Chyi[1]
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MoP-GR-28 （Poster）

Epitaxial c-BN growth by magnetron sputtering

Kazuyuki Hirama[1], Kazuhide Kumakura[1], Yoshitaka Taniyasu[1]
[1] NTT Basic Research Laboratories, Japan

MoP-GR-29 （Poster）

Low-Pressure Chemical Vapor Deposition of Hexagonal Boron Nitride on a-Plane Sapphire

Kazuhiko Hara[1], Taiki Oishi[1], Soma Ota[1], Ruki Aoike[1], Yuma Takahashi[1], Akira Takemura[1], Hiroko Kominami[1]
[1] *Shizuoka University, Japan*

MoP-GR-30 （Poster）

Attojoule Hexagonal Boron Nitride-Based Memristor for High-Efficient Neuromorphic Computing

Jiye Kim[1], Jaesub Song[1], Hyunjoung Kwak[1], Chang-Won Choi[1], Kyungmi Noh[1], Seokho Moon[1], Inyong Hwang[1], Hokyeong Jeong[1], Si-Young Choi[1], Seyoung Kim[1], Jong Kyu Kim
[1] *Pohang University of Science and Technology, Korea*

MoP-GR-31 （Poster）

Growth of high optical quality $MoSe_2$ monolayers on epitaxial hBN

Katarzyna Ludwiczak[1], Aleksandra Krystyna Dąbrowska[1], Johannes Binder[1], Mateusz Tokarczyk[1], Jakub Iwanski[1], Bogusława Kurowska[2], Jan Turczynski[2], Grzegorz Kowalski[1], Roman Stępniewski[1], Wojciech Pacuski[1], Andrzej Wysmołek[1]
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MoP-GR-32 （Poster）

Development of thick III-N layers by plasma-assisted HVPE growth technique

Galia Pozina[1], Natalia Abrikossova[1], Chih-Wei Hsu[1], Carl Hemmingsson[1]
[1] *Linköping University, Sweden*

MoP-GR-33 （Poster）

HVPE growth of Mn-doped GaN single crystals

Friederike Zimmermann[1], Sven Jachalke[2], Patrick Hofmann[2], Dirk Bastin[2], Roman Doradzinski[2], Andreas Großer[1], Thomas Mikolajick[1,3], Stefan Eichler[2]
[1] *NaMLab gGmbH, Germany,* [2] *Freiberger Compound Materials GmbH, Germany,* [3] *Institute of Semiconductors and Microsystems, TU Dresden, Germany*

MoP-GR-34 （Poster）

Thermodynamic analysis for halide vapor phase epitaxy of Sn-doped n-type GaN

Kazuki Ohnishi[1], Kansuke Hamasaki[2], Naoki Fujimoto[1], Shugo Nitta[1], Hirotaka Watanabe[1], Yoshio Honda[1,3,4], Hiroshi Amano[1,3,4]
[1] *Institute of Materials and Systems for Sustainability, Nagoya University, Japan,* [2] *Graduate School of Engineering, Nagoya University, Japan,* [3] *Deep Tech Serial Innovation Center, Nagoya University, Japan,* [4] *Institute for Advanced Research, Nagoya University, Japan*

MoP-GR-35 （Poster）

Stress Analysis for III-Nitride Epitaxy Based on An Extended Stoney's Equation

Mengda Li[1], Huangshu Zhang[1], Yutian Cheng[1], Jinmin He[2], Nanliu Liu[3], Zhijian Yang[1], Tong Han[1], Jiejun Wu[1], Guoyi Zhang[1,2,3], Tongjun Yu[1]
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MoP-GR-36 （Poster）

Crystallization of HVPE-GaN on Semi-polar Ammonothermal GaN Seeds. Analysis of Growth Conditions.

Tomasz Sochacki[1], Piotr Jaroszynski[1], Kacper Sierakowski[1], Boleslaw Lucznik[1], Michal Fijalkowski[1], Michal Bockowski[1,2]

[1] Institute of High Pressure Physics Polish Academy of Sciences, Poland, [2] CIRFE, IMaSS, Nagoya University, Japan

MoP-GR-37 （Poster）

SAG of InGaN NWs and self-organized GaN micro-domains by HVPE

Elias Semlali[1], Arthur Sauvagnat[1], Jihen Jridi[1], Geoffrey Avit[1], Yamina Andre[1], Evelyne Gil[1], Dyhia Tamsaout[2], Camille Barbier[2], Jean-Christophe Harmand[2], Maria Tchernycheva[2], Vladimir Dubrovskii[3], Philip Shields[4], Agnès Trassoudaine[1]

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MoP-GR-38 （Poster）

Boule and wafer orientation quantification in less than 10 seconds

Lars Grieger[1]

[1] Malvern Panalytical B.V., Netherlands

MoP-GR-39 （Poster）

Buried defect-free GaN microcolums as a procesless approach for threading dislocation density reduction

Damian Pucicki[1,2], Wojciech Olszewski[1,3], Paulina Ciechanowicz[1,3], Jarosław Serafińczuk[1,2], Adrianna Piejko[1,2], Detlef Hommel[1,4]

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MoP-GR-40 （Poster）

Liquid Phase Epitaxy of GaN Films on Sapphire Substrates under an Atmospheric Pressure Nitrogen Ambience

Masataka Katsuumi[1], Tetsuya Akasaka[1]

[1] Meisei University, Japan

MoP-GR-41 （Poster）

Pore-assisted separation for fabrication of free-standing GaN substrates based on electro-chemically formed porous layer

Masafumi Yokoyama[1], Fumimasa Horikiri[1], Hisashi Mori[1], Taichiro Konno[1], Hajime Fujikura[1]

[1] SUMITOMO CHEMICAL Co., Ltd., Japan

MoP-GR-42 （Poster）

Low temperature plasma-enhanced atomic layer epitaxy of ultrathin indium nitride films

Jeffrey Woodward[1], Jennifer Hite[1], Daniel Pennachio[1], David Boris[1], Michael Johnson[2], Michael Mastro[1], Scott Walton[1]
[1] U.S. Naval Research Laboratory, United States of America, [2] Huntington Ingalls Industries, United States of America

MoP-GR-43 （Poster）

Epitaxy of thick GaN drift layers on Si (111) for vertical power devices

Sondre Michler[1], Sarad Thapa[1], Sven Besendörfer[2], Roland Weingärtner[2], Youssef Hamdaoui[3], Idriss Abid[3], Farid Medjdoub[3], Eldad Bahat Treidel[5], Enrico Brusaterra[5], Frank Brunner[5], Oliver Hilt[5], Elke Meissner[2,4]
[1] Siltronic AG, Germany, [2] Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany, [3] CNRS IEMN, France, [4] Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany, [5] Ferdinand-Braun-Institut, Germany

MoP-GR-44 （Poster）

The study on the depth dependent strain profiling of GaN-based power electronics using surface plasmon enhanced Raman spectroscopy

Jae Sang Kang[1], Jae Sun Kim[1], Jung Ki Park[1], Gyeong Eun Choi[1], Gyu Hwi Jeong[1], Young Boo Moon[2], Deok Gyu Bae[3], Seongyoung Lim[4], Jung Hoon Song[1,4]
[1] Kongju National University, Korea, [2] UJL Inc, Korea, [3] Hexasolution Co., Ltd, Korea, [4] AccuOptotec Co., Korea

MoP-GR-45 （Poster）

A Study of vertical GaN PiN diodes with intrinsic AlGaN drift layer grown using metal-organic chemical vapor deposition

Yunseok Heo[1], Joocheol Jeong[1], Minho Kim[1], Jooyong Park[1], Joonhyuk Lee[1], Okhyun Nam[1]
[1] Tech university of Korea, Korea

MoP-GR-46 （Poster）

Study of 2-DEG in AlGaN/AlGaN/AlN buffer HEMTs grown on SiC substrate by MOCVD

Joon Hyuk Lee[1], Joocheol Jung[1], Minho Kim[1], Yunseok Heo[1], Jooyong Park[1], Jaejin Heo[1], Okhyun Nam[1]
[1] Tech University Korea (TUK), Korea

MoP-GR-47 （Poster）

Red electroluminescence from Eu-doped ZnO in p-GaN/Al_2O_3/n-ZnO heterostructures

Kazuto Nishimura[1], Jun Tatebayashi[1], Shuhei Ichikawa[1], Shinya Yamada[1], Yoshikata Nakajima[1], Kazuhisa Sato[1], Kohei Hamaya[1], Yasufumi Fujiwara[1]
[1] Osaka University, Japan

MoP-CH-1 （Poster）

Structural and electrical characteristics of GaN, n-GaN and $A1_xGa_{1-x}N$ for UV LEDs

Arivazhagan P[1], Baskar K[2]
[1] Anna University, India, [2] Indian Institute of Information Technology, India

MoP-CH-2 （Poster）

Strain-inducing Nanostructures for Large Spectral Red-shift on InGaN/GaN Single Quantum Well

WAI YUEN FU[1], BO LU[1], FABRICE SEMOND[2], HOI WAI CHOI[1]
[1] University of Hong Kong, Hong Kong, [2]Université Côte d'Azur, CNRS, CRHEA, France

MoP-CH-3 （Poster）

Cathodoluminescence spectroscopy revealing the interplay of structural and point defects in GaN nanowires grown by molecular beam epitaxy

Mikel Gómez Ruiz[1], Matthew Brubaker[2], Kris Bertness[2], Oliver Brandt[1], Jonas Lähnemann[1]
[1] Paul-Drude-Institut für Festkörperelektronik, Germany, [2] National Institute of Standards and Technology, United States of America

MoP-CH-4 （Poster）

The analysis of the surface band bending by numerical simulation of the absorption edge

Sha Han[1], Juemin Yi[1], Wentao Song[1], Kebei Chen[1], Shunan Zheng[1], Yumin Zhang[1], Ke Xu[1]
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MoP-CH-5 （Poster）

Deep UV Quantum Well Growth Temperatures: A Microscopy Study

Douglas Cameron[1], Marcel Schilling[2], Gunnar Kusch[3], Paul R. Edwards[1], Tim Wernicke[2], Michael Kneissl[2], Rachel A. Oliver[3], Robert W. Martin[1]
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MoP-CH-6 （Poster）

Strong impact of quantum electrodynamics on photoluminescence from GaInN/GaN quantum wells

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MoP-CH-7 （Poster）

Carrier dynamics of LED structure based on InGaN/GaN multiple quantum wells under the effect of numbers of superlattice layers

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MoP-CH-8 （Poster）

Relationship between Internal Quantum Efficiency and Point Defects in AlGaN Quantum Wells on Low-Dislocation Sputtered AlN Templates

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MoP-CH-9 （Poster）

Microstructral Analysis of Fully Epitaxial Ferroelectric ScAlN

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MoP-CH-10 （Poster）

In-plane lattice parameter behaviour versus temperature of relaxed InGaN pseudo-substrates

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MoP-CH-11 （Poster）

Characterization of Van der Waals Crystals and GaN Hybridized Structures by Surface-Sensitive Techniques

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MoP-CH-12 （Poster）

Fast and reliable determination of the critical layer properties in enhancement-mode (Al,Ga)N/GaN HEMT structures through UV spectral reflectance

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MoP-CH-13 （Poster）

Spatial Patterning of Porous GaN by Ion Implantation

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MoP-CH-14 （Poster）

Optimisation of GaN / porous GaN distributed Bragg reflectors grown on Si

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MoP-CH-15 （Poster）

On the Threading Dislocation Distribution in Gallium Nitride Epilayers

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MoP-CH-16 （Poster）

Misorientation and strain in GaN microfins

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MoP-CH-17 （Poster）

Microstructures in the single-crystalline/twin-free semipolar (10-13) AlN epilayers grown on the m-Al_2O_3 (10-10) substrates

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MoP-CH-18 （Poster）

Analysis of Zn Diffusion in Various Crystallographic Directions of GaN Grown by HVPE

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MoP-CH-19 （Poster）

HVPE GaN:Ge vs Ion-Implanted HVPE GaN: Electrical Properties Investigation

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MoP-CH-20 （Poster）

Stucture of V-defects in Long Wavelength GaN-based Light Emitting Diodes

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MoP-CH-21 （Poster）

Current Saturation Behavior in GaN Polarization Superjunction (PSJ) Hybrid Diodes

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MoP-CH-22 （Poster）

High Thermal Coefficient Resistance for Heavily Si-doped GaAsN after Annealing

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MoP-CH-23 （Poster）

Carrier diffusion coefficient in a matter of minutes?

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MoP-CH-24 （Poster）

Investigation of non-destructive and non-contact electrical characterization of < 1mm thick GaN thin films on $ScAlMgO_4$ substrates by THz-TDSE

Hayato Watanabe[1], Dingding Wang[1], Takashi Fujii[1,3,4], Toshiyuki Iwamoto[3], Tsuguo Fukuda[4], Momoko Deura[2], Tsutomu Araki[1]
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MoP-CH-26 （Poster）

Energization time dependence of electrical properties of anodized n-GaN in two-step wet etching method

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MoP-CH-27 （Poster）

Study on the contact between p-GaN with Pd/Ni/Au electrode

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MoP-CH-28 （Poster）

Full ceramic layer stacks for harsh environment magnetoelectric sensors

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MoP-CH-29 （Poster）

Effect of Donor and Acceptor Doping on the Thermal Conductivity of GaN

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MoP-CH-30 （Poster）

Structural and electronic properties of rock salt (Al,Sc)N random alloys from ab initio

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MoP-CH-31 （Poster）

First report on Analytical Model for Optimization of GaN Vertical Power Fin-MOSFET Device-Design

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MoP-CH-32 （Poster）

Fluorine termination on dangling bonds of gallium nitride surfaces and defects

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MoP-CH-33 （Poster）

Simulation-based analysis of the effect of alpha irradiation on GaN particle detectors

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MoP-CH-34 （Poster）

Natural band alignments of rock-salt structured AlScN and GaScN alloys

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MoP-CH-35 （Poster）

Spectroscopic Investigation on the Impact of Si and Mg Doping in Self-assembled GaN Nanowires Grown on Si(111) by Molecular Beam Epitaxy

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MoP-OD-1 （Poster）

Preparation and Characterization of High Stability Perovskite Nanocrystals in Color-converted AlGaN Micro-LED

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MoP-OD-2 （Poster）

The effects of frequency and bias on negative capacitance in InGaN/GaN LED devices

Yuchen Li[1], Zhizhong Chen[1,2,3], Chuhan Deng[1], Boyan Dong[1], Daqi Wang[1], Zuojian Pan[1], Haodong Zhang[1], Jingxin Nie[1], Weihua Chen[1], Fei Jiao[1,4], Xiangning Kang[1], Qi Wang[2], Guoyi Zhang[1,2], Bo Shen[1,3], Wenji Liang[5]

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MoP-OD-3 （Poster）

Selective patterning of high-depth nanopillar on InGaN/GaN wafer

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MoP-OD-4 （Poster）

Wafer-Scale Monolithic Integration of Micro-Light-Emitting Diodes and Quantum Dots for Full-Color Displays

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MoP-OD-6 （Poster）

Origin of Size-Dependent Efficiency Droop in InGaN-Based Micro LEDs

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MoP-OD-7 （Poster）

Uniform Strain-Free InGaN Virtual Substrate: Optimization at Nanoscale

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MoP-OD-8 （Poster）

A Strategy to Grow Three Dimensional InGaN/GaN Heterostructure Exclusively on Non-Polar m-Plane of Two-Step Etched GaN Nanorods

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MoP-OD-9 （Poster）

MBE-grown Wavelength-switchable Ultraviolet Light Emitting Diodes

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MoP-OD-10 （Poster）

Transparent p-type layer with highly reflective p-type electrodes for improving the performance of AlGaN-based DUV-LEDs

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MoP-OD-11 （Poster）

Enhancement of Deep Ultraviolet AlGaN-based LEDs via the Piezo-phototronic Effect-Simulation Aspect

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MoP-OD-12 （Poster）

Investigations of p-type doping and multiple quantum wells for AlGaN-based deep ultraviolet and far deep ultraviolet light-emitting diodes

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MoP-OD-13 （Poster）

High speed AlGaN-based monolithically integrated photonic chips for solar-blind communications

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MoP-OD-14 （Poster）

Effect of Extended Defects on the Performance of AlGaN QDs for Far-UVC Electron-Beam Pumped Emitters

Jesus Cañas[1], Nevine Rochat[2], Adeline Grenier[2], Edith Bellet-Amalric[1], Anjali Harikumar[1], Zineb Saghi[2], Audrey Jannaud[2], Samba Ndiaye[3], Catherine Bougerol[4], Lorenzo Rigutti[3], Eva Monroy[1]
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MoP-OD-15 （Poster）

Effect of Mg doping on graded Al $Al_xGa_{1-x}N$ for UVA and UVB LEDs

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MoP-OD-16 （Poster）

Effect of sidewall passivation on AlGaN-based deep ultraviolet light-emitting diodes

Zesen Liu[1], Fangfang Ren[1,2], Jiandong Ye[1], Weizong Xu[1], Jianhong Zhang[1], Xinghua Liu[1], Dong Zhou[1], Rong Zhang[1], Hai Lu[1]
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MoP-OD-17 （Poster）

Comparison of optical and electrical properties of Ga-polar and N-polar GaN-based green VCSELs

Yachao Wang[1], Yanhui Chen[1], Zhongming Zheng[1], Tao Yang[1], Yang Mei[1], Baoping Zhang[1]
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MoP-OD-18 （Poster）

Improved performance of GaInN multiple-quantum-well photovoltaic cells on free-standing GaN substrates with TMAH treatment

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MoP-OD-19 （Poster）

Advances towards higher efficiency in group III nitride photovoltaics: a-Si interlayer

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MoP-OD-20 （Poster）

High-Responsivity and Fast-Response Ultraviolet Phototransistors Based on Enhanced p-GaN/AlGaN/GaN HEMTs

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MoP-OD-21 （Poster）

Thermally Stable Ultra Low Dark Current Visible Blind GaN Based MSM Photodetector

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MoP-OD-22 （Poster）

$Al_{0.1}Ga_{0.9}N$ p-i-n Ultraviolet Avalanche Photodiodes with Suppressed Surface Leakage Current and Uniform Avalanche Breakdown

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MoP-OD-23 （Poster）

Visible/Solar blind UV Photodetectors based on AlGaN/GaN

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MoP-OD-24 （Poster）

GaN/Ga_2O_3 p-n junction using mechanical exfoliation for photonics applications

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MoP-OD-25 （Poster）

Highly responsive UV photodetectors based on the p-GaN HEMTs structure with a transparent ITO gate

Zhanfei Han[1], Hongyue Wang[2], Xiangdong Li[1,3], Weitao Yang[1], Zesheng Lv[4], Yuebo Liu[2], Meng Wang[1,2], Shuzhen You[1,3], Jincheng Zhang[1,3], Yue Hao[1,3]
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MoP-OD-26 （Poster）

Non-Planar ITO/AlGaN/GaN Ultraviolet Photodetector with Broadband Spectrum and High Responsivity

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MoP-OD-27 （Poster）

Hybrid Integration of GaN-based MicroLED Arrays with Metal Nanowires

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MoP-OD-28 （Poster）

Process for separating AlGaN-based LED structures from sapphire substrates by photoelectrochemical etching

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MoP-OD-29 （Poster）

Impact of free-standing GaN substrate back surface preparation for laser ohmic contact

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MoP-OD-30 （Poster）

Improved hole injection efficiency in AlGaN DUV LEDs with minimized band offset at the p-EBL/hole supplier interface

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MoP-ED-1 （Poster）

A Fast Novel Method for Predicting Load-pull Impedance in RF AlGaN/GaN HEMT

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MoP-ED-2 （Poster）

Study of the kink effect in AlN/GaN HEMTs on Si substrate

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MoP-ED-3 （Poster）

Half-FinFET based on double-channel AlGaN/GaN heterostructure

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MoP-ED-4 （Poster）

GaN-based MIS-HEMT Nominally Free of Access Resistances with Excellent Linear Performances and a Steep Rising g_m

Xinkun Zhang[1,2], Yu Zhou[2], Qian Li[2], Shuqian Xu[1,2], Haoran Qie[1,2], Qingru Wang[1,2], Jianxun Liu[2], Xiujian Sun[1,2], Quan Dai[2], Xiaoning Zhan[1,2], Qian Sun[1,2], Hui Yang[1,2]
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MoP-ED-5 （Poster）

On GaN HEMT Small Signal Models at mm-wave Bands: Importance of Identifying the Poles

Biplab Sarkar[1], Hiroshi Amano[2]
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MoP-ED-6 （Poster）

Optimized Transconductance and Cut-off Frequency Linearity of InAlN HEMT via Asymmetrical Regrown Ohmic Contact Technology

Can Gong[1], Minhan Mi[1], Yuwei Zhou[2], Xiaohua Ma[1]
[1] *School of Microelectronics, Xidian University, China,* [2] *School of School of Advanced Materials and Nanotechnology, Xidian University, China*

MoP-ED-7 （Poster）

Examining the Influence of AlGaN Back Barrier on Drain Lag in GaN HEMTs

Chin-Jung Chiu[1], Po-Tsung Tu[2], Hui-Yu Chen[2], Chang-Yan Hsieh[2], Po-Chun Yeh[2], hyh-Shyuan Sheu[2], Yuh-Renn Wu[1,2]
[1] *National Taiwan University, Taiwan,* [2] *Industrial Technology Research Institute, Taiwan*

MoP-ED-8 （Poster）

Study of dielectric and passivation in buffer-free microwave GaN-on-SiC HEMT

Amit Bansal[1], Rijo Baby[1], Aniruddhan Gowrisankar[1], Sai Charan Vanjari[1], Anirudh Venugopalarao[1], R Muralidharan[1], Hareesh Chandrasekar[2], Srinivasan Raghavan[1], Digbijoy Nath[1]
[1] *Indian Institute of Science, Bangalore, India,* [2] *Agnit Semiconductors Private Limited, India*

MoP-ED-9 （Poster）

Gate leakage mechanisms depending on high temperatures in AlN/GaN HEMTs

lingjie qin[1], jiejie zhu[1], siyu liu[1], jingshu guo[1], bowen zhang[1], yuxi zhou[1]
[1] *Xidian University , China*

MoP-ED-10 （Poster）

RF loss reduction by a carbon-regulated Si substrate engineering in GaN-based HEMT buffer stacks

Zidong Cai[1], Xuelin Yang[1], Hongcai Yang[1], Bo Shen[1]
[1] *Peking University, China*

MoP-ED-11 （Poster）

p-GaN/p-AlGaN/AlGaN/GaN heterojunction field-effect transistor

DongGuk Kim[1], MinKuen Lee[1], MinGi Jeong[1], HoYoung Cha[1]
[1] *Hongik University, Korea*

MoP-ED-12 （Poster）

AlGaN/GaN/AlGaN HEMTs with high vertical breakdown voltage on patterned silicon substrate

Reda Elwaradi[2], Julien Bassaler[3], Eric Frayssinet[1], Sébastien Chenot[1], Yohan Bouyer[1], Maud Nemoz[1], Julien Pernot[3], Philippe Ferrandis[3], Yvon Cordier[1]
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MoP-ED-13 （Poster）

P-GaN cap E-mode GaN HEMTs Fabricated Through Acceptor De-activation by PECVD NH3 Plasma

Zhaofeng Wang[1,2], Jin Li[2], Zhihong Liu[1,2], Mei Xu[1], Weichuan Xing[1], Xiaojin Chen[1,2], Weihang Zhang[1], Shenglei Zhao[1,2], Xiangdong Li[1], Jincheng Zhang[1,2], Yue Hao[1,2]
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MoP-ED-14 （Poster）

Thermal Characteristics of E-mode AlGaN/GaN HEMTs on QST Substrate

Yue-ming Hsin[1], Hao-Hsuan Lo[1], Wei-Chia Chen[1]
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MoP-ED-15 （Poster）

Effects of substrate termination and negative gate bias on dynamic R_{on} under high drain reverse bias stress in GaN E-mode HEMTs

Nan Sun[1], Huolin Huang[1], Kaiming Ma[1], Yanhong Liu[1], Jianxun Dai[1]
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MoP-ED-16 （Poster）

Optimizing Buffer Layer for High Voltage GaN HEMTs Grown on Si

Yeng-Fong Lu[1]
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MoP-ED-17 （Poster）

Dynamic R_{ON} degradation in Recessed-gate GaN MIS-HEMTs with Different Gate Field Plate Lengths

ye liang[1,2], Xiuyuan He[1,2], Xi Feng[1,2], Yuanlei Zhang[1,2], Wen Liu[1,2]
[1] Xi'an Jiaotong-Liverpool University, China, [2] University of Liverpool, UK

MoP-ED-18 （Poster）

A Normally-off AlGaN/GaN HEMT with PGaN LDD technology for Enhanced Breakdown

Xinyue Dai[1,2], Qimeng Jiang[1,2], Sen Huang[1,2], Baikui Li[3], Xinhua Wang[1,2], Jie Fan[1], Xinyu Liu[1,2]
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MoP-ED-19 （Poster）

NiOx-based Positive V_{th} GaN HEMTs for Power Electronic Applications

Mahalaxmi Patil[1], Bhanu B Upadhyay[1], Arpit Sahu[1], Jyoti Sahu[1], Subhajit Basak[1], Swaroop Ganguly[1], Dipankar Saha[1]
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MoP-ED-20 （Poster）

Influence of Al fraction, gate stack, and temperature on gate leakage mechanisms in AlGaN channel high electron mobility transistors

Julien Bassaler[1], Jash Mehta[2], Leszek Konczewicz[3,4], Sandrine Juillaguet[3], Sylvie Contreras[3], Maud Nemoz[5], Sebastian Tamariz[5], Stéphanie Rennesson[6], Fabrice Semond[5], Yvon Cordier[5], Julien Pernot[1], Farid Medjdoub[2], Philippe Ferrandis[1]
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MoP-ED-21 （Poster）

Topology Optimization of Junction Termination Extension in Vertical GaN Power Device

Takuma Yamaguchi[1], Katsuya Nomura[1], Yoshiyuki Hattori[2]
[1] Kwansei Gakuin University, Japan, [2] Daido University, Japan

MoP-ED-22 （Poster）

The Influence of the p-GaN Body Doping Concentration on Performance of Regrown Channel GaN-Based Quasi-Vertical MOSFETs

Mengdi Li[1], Jiejie Zhu[1], Peng Zhang[1], Qingyuan Chang[1], Bin Hou[1], Ling Yang[1], Xiaohua Ma[1]
[1] Xidian University, China

MoP-ED-23 （Poster）

Improvement of GaN p-n Diode Characteristics by Interface Treatment in HVPE/MOVPE Hybrid Growth

Hiroshi Ohta[1], Hajime Fujikura[2], Yoshinobu Narita[2], Tomoyoshi Mishima[1]
[1] Hosei University, Japan, [2] Sumitomo Chemical Co., Ltd., Japan

MoP-ED-24 （Poster）

Optimization of a sputtered-SiO_2 passivation layer of p-n diodes for GaN vertical power devices

Jiun Oh[1], Tae Kyoung Kim[1], Hyeondong Lee[1], Minji Kim[1], Abu Bashar Mohammad Hamidul Islam[1], Hyeon-Cheol Kim[2], Taehoon Jang[3], Jongseob Kim[4], Joon Seop Kwak[1], Jaehee Cho[2]
[1] Korea Institute of Energy Technology, Korea, [2] Jeonbuk National University, Korea, [3] Sigetronics, Inc, Korea, [4] Samsung Electronics, Korea

MoP-ED-25 （Poster）

Structural Optimization of GaN Vertical PN Diode Incorporating Trench MIS Field Plate

Sung-Hoon Lee[1], Jeongjin Kim[1], Chol Ho Kwak[2], Ho-Young Cha[1,2]
[1] Hongik University, Korea, [2]ChipsK, Korea

MoP-ED-26 （Poster）

GaN p-i-n Diodes Homoepitaxially Grown on 2 and 4-inch GaN Substrates

Rachid Driad[1], Stefan Müller[1], Heiko Czap[1], Lutz Kirste[1], Patrick Waltereit[1], Michael Mikulla[1]
[1] Fraunhofer - IAF, Germany

MoP-ED-27 （Poster）

High-Speed Analog-controlled Synchronous Rectification Circuit using Normally-on/off GaN-HEMTs

Toshihide Ide[1,2], Mitsuaki Shimizu[2], Noriyuki Takada[2]
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MoP-ED-28 （Poster）

A Monolithically Integrated GaN E/E-mode GaN Inverter with High-Temperature Degradation Resistance

Fangqing Li[1,2], Yaozong Zhong[2], Xin Chen[2], Qian Sun[1,2], Hui Yang[1,2]
[1] University of Science and Technology of China, China, [2] Suzhou Institute of Nano-tech and Nano-Bionics Chinese Academy of Sciences, China

MoP-ED-29 （Poster）

Fluorine-based low damage selective etching process for p-GaN/AlGaN/GaN HFET fabrication

Hyeon-Ji Kim[1], Jun-Hyeok Yim[1], You-Jin Shin[1], Min-Jeoung Kim[1], Dong-Ik Oh[1], Ho-Young Cha[1]
[1] Hongik university, Korea

MoP-ED-30 （Poster）

Optimization of Ohmic Contact on N-Face GaN for Vertical Power Devices

Hala El Rammouz[1], Mohamed Reda Irekti[1], Helge Haas[1], Matthew Charles[1]
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MoP-ED-31 （Poster）

Control of ± 0.5 nm AlGaN barrier depth repeatability and realisation of 3.4 V_{TH} and 830 V of breakdown voltage gate recessed AlGaN/GaN MIS-HEMT by atomic layer etch process with in-situ etch depth monitoring

Sungjin Cho[1], Matthew Loveday[1], Andrew Newton[1], David Cornwell[2], Marcello Binetti[2], Thomas Zettler[2], Hsin-Chu Chen[3], Li-Heng Lee[3], Po-Tsung Tu[3], Po-Chun Yeh[3]
[1] Oxford Instruments Plasma Technology, UK, [2] LayTec AG, Germany, [3] Industrial Technology Research Institute, Taiwan

MoP-ED-32 （Poster）

Epitaxial boron nitride - processing and membrane fabrication

Jakub Jan Rogoża[1], Johannes Binder[1], Aleksandra Krystyna Dąbrowska[1], Rafał Bożek[1], Katarzyna Ludwiczak[1], Roman Stępniewski[1], Andrzej Wysmołek[1]
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MoP-ED-33 （Poster）

Analysis of Ohmic Contact Formation to High Aluminum Content $Al_xSc_{1-x}N$/GaN Heterostructures

Peter D.B. Fischer[1], Alexander Schmid[1], Ali Yassine[2], Isabel Streicher[3], Stefano Leone[3], Oliver Ambacher[2], Johannes Heitmann[1]
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MoP-ED-34 （Poster）

Low resistivity Ti/Al/TiN/Au ohmic contacts to Ga- and N-face n-GaN for vertical power devices

Oskar Artur Sadowski[1,2], Maciej Kamiński[1,2], Andrzej Taube[1], Jarosław Tarenko[1,2], Marek Guziewicz[1], Marek Wzorek[1], Anna Szerling[1], Paweł Prystawko[3], Michał Boćkowski[3], Izabella Grzegory[3]
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MoP-ED-35 （Poster）

Etch damage mitigation with combination dry and novel wet etching for GaN regrowth and gate recess

Gillian K. Micale[1], Joshua A. Perozek[1], Qingyun Xie[1], John Niroula[1], Hridibrata Pal[1], Pradyot Yadav[1], Pao-Chuan Shih[1], Tomás Palacios[1]
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MoP-ED-36 （Poster）

Formation of In/Au low-temperature contact for vertical superjunction GaN devices with laser-activated p-GaN region

Maria Emma Villamin[1], Naotaka Iwata[1]
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MoP-GR-LN1 （Poster）

Investigation of Ga Localization in AlGaN Growth with Step-Bunching at ultra-high temprature MOVPE growth

Koki Fujii[1], Atsushi Tomita[1], Yuto Matsubara[1], Yusuke Takashima[1,2], Yoshiki Naoi[1,2], Kentaro Nagamatsu[1,2]
[1] Tokushima Univercity, Japan, [2] Institute of Post-LED Photonics, Japan

MoP-GR-LN3 （Poster）

Ultra-small size (1–20 µm) InGaN red micro-LEDs based on GaN substrates

Luming Yu[1], Lai Wang[1,2], Zhibiao Hao[1,2], Yi Luo[1,2], Changzheng Sun[1,2], Bing Xiong[1,2], Yanjun Han[1,2], Jian Wang[1,2], Hongtao Li[1,2], Lin Gan[1,2]

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MoP-CH-LN1 （Poster）

Enhancement of Single-Photon Purity of InGaN Single Quantum Dot by Adopting Quasi-Resonant Excitation

Seongmoon Jun[1], Minho Choi[1], Baul Kim[1], Martina Morassi[2], Maria Tchernycheva[2], HyunGyu Song[1], Hwan-Seop Yeo[1], Noelle Gogneau[2], Yong-Hoon Cho[1]

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MoP-CH-LN2 （Poster）

Energy upconversion in core/shell nanowire heterostructures based on dilute nitride alloys

Mattias Jansson[1], Fumitaro Ishikawa[2], Weimin Chen[1], Irina Buyanova[1]

[1] Linköping University, Sweden, [2] Hokkaido University, Japan

MoP-CH-LN3 （Poster）

Nitrogen isotope effects on hexagonal boron nitride

Juliette Plo[1], Adrien Rousseau[1], Pierre Valvin[1], Vincent Jacques[1], Bernard Gil[1], Guillaume Cassabois[1], Eli Janzen[2], H Schutte[2], James H Edgar[2]

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MoP-OD-LN1 （Poster）

Thermal characteristics and a novel packaging design of GaN-based VCSEL with a curved mirror

Xiner Chen[1], Huanqing Chen[1], Shukun Li[1], Menglai Lei[1], Guo Yu[1], Xiaodong Hu[1]

[1] Peking University, China

MoP-OD-LN2 （Poster）

High-efficiency GaInN-based photovoltaic cells on free-standing GaN substrate for optical wireless power transmission system

Takahiro Fujisawa[1], Nan Hu[1], Tomoki Kojima[1], Takashi Egawa[1], Makoto Miyoshi[1]

[1] Nagoya Institute of Technology , Japan

MoP-OD-LN3 （Poster）

Improve 248 nm solar blind property by nonplanar structure Metal-Semiconductor-Metal UV Photodetector with $Al_{0.5}Ga_{0.5}N$/AlN Superlattice Absorption Layer

Tong-Wen Wang[1], Jin-Rong Zhang[2], Chia-Lung Tsai[3], Cheng-Kai Xu[4], Chia-Yu Chiu[5], Jia-Hao Xu[6], Liang-Wei Chen[7]

[1] Feng Chia University, Taiwan, [2] Feng Chia University, Taiwan, [3] Chang Gung University, Taiwan, [4] Chang Gung University, Taiwan, [5] Chang Gung University, Taiwan, [6] Feng Chia University, Taiwan, [7] Feng Chia University, Taiwan

November 14 (Tue)

Poster Session II

Argos A-C November 14 (Tue) 16:45 -18:35

TuP-GR-1 (Poster)

Elastic and Plastic Properties of Bulk Single Crystal AlN at Elevated Temperatures

Shingo Ishii[1], Masato Toita[1], Sho Sugiyama[1], Jun Yoshida[1], Toru Kimura[1], Masato Kobayashi[1], James Grandusky[2], Robert T Bondokov[2], Naohiro Kuze[1]
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TuP-GR-2 (Poster)

Highly Textured Mixed Sputtered/MOVPE AlN films on MoS_2 seed layer

Berangere HYOT[1], Amelie DUSSAIGNE[1], Matthieu BERNARD[1], Remy GASSILLOUD[1], Stephane CADOT[1], Julien PATOUILLARD[1,2], Frederic BARBIER[1], Guillaume VEUX[1], Nicolas BERNIER[1], Frederic GIANESELLO[2], Christine RAYNAUD[1]
[1] CEA, Leti, France, [2] STMicroelectronics, France

TuP-GR-3 (Poster)

Oxygen reduction through specific surface area control of AlN powder for PVT-AlN single crystal growth

ZeRen Wang[1], XingYu Zhu[1], QiYue Zhao[1], JieJun Wu[1], TongJun Yu[1]
[1] peking university School of Physics, China

TuP-GR-4 (Poster)

Improved AlN regrown layer via surface treatment based on high-temperature-annealing templates

Dadi Wang[1,2], Zhibin Liu[1,2], Yanan Guo[1,2], Jianchang Yan[1,2], Jinmin Li[1,2], Junxi Wang[1,2]
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TuP-GR-5 (Poster)

Graphene-Induced Strain Release and Dislocation Reduction of Single-Crystal AlN Films in Remote Epitaxy

yuning wang[1], yu xu[1,2], bing cao[3,4], ke xu[1,2,5]
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TuP-GR-6 (Poster)

An ab-initio Study for Oxygen Adsorption Behavior on Polar GaN Surfaces

Toru Akiyama[1], Takahiro Kawamura[1]
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TuP-GR-7 （Poster）

Cubic GaN epilayers grown by Remote Epitaxy on Graphene covered 3C-SiC (001)/Si(001) substrates

Mario Littmann[1], Olga August[2], Karsten Harnisch[3], Thorsten Halle[3], Frank Bertram[2], Jürgen Christen[2], Dirk Reuter[1], Donat J. As[1]
[1] Paderborn University, Germany, [2] OvG Universität Magdeburg, Germany, [3] OvG Universität Magdeburg, Germany

TuP-GR-8 （Poster）

Influence of Growth Conditions on Impurity Incorporation During Crystallization of High Purity HVPE-GaN Layers

Tomasz Sochacki[1], Piotr Jaroszynski[1], Kacper Sierakowski[1], Michal Fijalkowski[1], Leszek Konczewicz[1], Malgorzata Iwinska[1], Jan L Weyher[1], Rafal Jakiela[2], Michal Bockowski[1,3]
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TuP-GR-9 （Poster）

Crystallization of high-resistivity Zn-doped GaN monocrystal via hydride vapor phase epitaxy

Takafumi Odani[1], Kenji Iso[1], Yuichi Oshima[2], Hirotaka Ikeda[1], Tae Mochizuki[1], Satoru Izumisawa[1]
[1] Mitsubishi Chemical Corporation, Japan, [2] National Institute for Materials Science, Japan

TuP-GR-11 （Poster）

GaN nanowires grown on Si by plasma-assisted molecular beam epitaxy using graphene as buffer

Yang Li[1], Tron Arne Nilsen[1], Gulzhan Baigarinova[1], Dishiti Gupta[1], Dingding Ren[1], Bjørn Ove Fimland[1], Helge Weman[1]
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TuP-GR-12 （Poster）

Influence of Carrier Concentration of GaN Substrate on Etch-pit Size of Dislocation in GaN Substrate

Bhavpreeta Pratap Charan[1], Masayuki Imanishi[1], Ricksen Tandryo[1], Kosuke Murakami[1], Shigeyoshi Usami[1], Mihoko Maruyama[1], Masahi Yoshimura[2], Yusuke Mori[1]
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TuP-GR-13 （Poster）

GaN-based LED with boron nitride nanotubes as a heat sinking layer

TaeHoon Seo[1], Chanyoung Ju[1], Min Mo Koo[1], Eun Mi Kim[1], Jongho Lee[1]
[1] Korea Institute of Industrial and Technology, Korea

TuP-GR-14 （Poster）

Growth temperature dependence of lattice relaxation process in RF-MBE growth of GaInN with insertion of GaInN buffer layer on GaN

Jo Takeuchi[1], Takuo Sasaki[2], Go Okuma[1], Takeyoshi Onuma[1], Tohru Honda[1], Tomohiro Yamaguchi[1], Yasushi Nanishi[3]
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TuP-GR-15 （Poster）

Vapor Phase Mass Transport of InGaN by Gap Face-to-Face Annealing with Ammonia

Atsuto Nakata[1], Ayano Sasaki[1], Satoshi Kurai[1], Narihito Okada[1], Yoichi Yamada[1]
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TuP-GR-16 （Poster）

Growth of Long Wavelength InGaN/GaN Multiple-Quantum-Well Light Emitting Diodes with Pre-strained InGaN Layers

Lianshan Wang[1,2], Yulin Meng[1], Guijuan Zhao[1], Weizhen Yao[1], Shaoyan Yang[1], Zhanguo Wang[1]
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TuP-GR-17 （Poster）

RF-MBE growth and characterization of InGaN thermoelectric thin film

Momoko Deura[1], Shota Hattori[2], Tsutomu Araki[2]
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TuP-GR-18 （Poster）

Temperature depended structural and optical changes in InGaN QWs

Ewa Grzanka[1,2], Pawel P Michalowski[3], Szymon Grzanka[1,2], Roman Hrytsak[1], Julita Smalc-Koziorowska[1,2], Artur Lachowski[1], Mikolaj Grabowski[1], Robert Czernecki[1,2],Michal Leszczynski[1,2]
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TuP-GR-19 （Poster）

Fabrication of InGaN-based Red Light-Emitting Diodes via Trench Defects

pan zuojian[1], chen zhizhong[1]
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TuP-GR-20 （Poster）

Impact of nitrogen plasma treatment in plasma-assisted MOCVD grown InN film on sapphire substrate

Takahiro Gotow[1], Naoto Kumagai[1], Tetsuji Shimizu[1], Hisashi Yamada[1], Toshihide Ide[1], Tatsuro Maeda[1]
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TuP-GR-21 （Poster）

RF-MBE growth of InAlN thermoelectric thin film

Shota Hattori[1], Tsutomu Araki[1], Momoko Deura[2]
[1] Col. of Sci. & Eng., Ritsumeikan University, Japan, [2]R-GIRO, Ritsumeikan University, Japan

TuP-GR-22 （Poster）

Growth model for predicting InGaN growth by MOVPE

Matthew Charles[1], Simona Torrengo[1], Matthieu Lafossas[1]
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TuP-GR-23 （Poster）

Broadband emission from semipolar InGaN quantum wells on GaN microlens structures

Shogo Fukushige[1], Yoshinobu Matsuda[1], Mitsuru Funato[1], Yoichi Kawakami[1]
[1] *Kyoto University, Japan*

TuP-GR-24 （Poster）

MOVPE of high-quality GaN on Al-pretreated sapphire substrates without using low-temperature buffer layers

Kodai Takemura[1], Takato Fukui[1], Yoshinobu Matsuda[1], Mitsuru Funato[1], Yoichi Kawakami[1]
[1] *Kyoto University, Japan*

TuP-GR-25 （Poster）

Growth mechanism of N-polar Ga Non vicinal N-polar AlN templates in MOVPE

Minagi Miyamoto[1], Kouki Hanasaku[1], Taketo Kowaki[1], Daisuke Inahara[1], Aina Hiyama Zazuli[1], Kai Fujii[1], Taisei Kimoto[1], Ryosuke Ninoki[1], Satoshi Kurai[1],Narihito Okada[1], Yoichi Yamada[1]
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TuP-GR-26 （Poster）

Fabrication and evaluation of BGaN neutron detectors using Si and QST substrate

Shun Nishikawa[1], Yusaku Hashimoto[1], Seiya Kawasaki[2], Genichiro Wakabayashi[3], Yoshio Honda[2], Hiroshi Amano[2], Norikazu Ito[4], Taketoshi Tanaka[4], Ken Nakahara[4], Yoku Inoue[1], Toru Aoki[1], Takayuki Nakano[1]
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TuP-GR-27 （Poster）

Realization of InGaN-based red LEDs on 8-inch Silicon Substrates

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TuP-GR-28 （Poster）

Optimization of in-situ SiN_x Grown on AlGaN/GaN HEMT by Metal-Organic Chemical Vapor Deposition

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TuP-GR-29 （Poster）

Time-of-flight mass spectrometry gas-phase reaction analysis of trimethylindium in MOVPE

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TuP-GR-30 （Poster）

Low temperature in-situ MOCVD AlN as a gate dielectric for GaN on Si HEMT's

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TuP-GR-31 （Poster）

Theoretical analysis of TMI degradation pathway in InN MOVPE growth

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TuP-GR-32 （Poster）

Effective removal of Si contamination at GaN regrowth interface by in situ TBCl etching

Haoran Qie[1,2], Yaozong Zhong[1,2,3], Qian Sun[1,2,3], Jianxun Liu[1,2,3], Hongwei Gao[1,2,3], Xunfei Wu[1,2,3], Xiujian Sun[1,2], Hui Yang[1,2,3]
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TuP-GR-33 （Poster）

Non-radiative recombination centers in InGaN/GaN nanowires heterostructure studied by statistical analysis using Cathodoluminescence and Scanning Transmission Electron Microscopy

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TuP-GR-34 （Poster）

Si-doped n-GaN sputtered at low temperature from a liquid target

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TuP-GR-35 （Poster）

InGaN/GaN Nanowire UV LEDs Grown by Plasma-Assisted Molecular Beam Epitaxy

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TuP-GR-36 （Poster）

A path towards an all-PVD HEMT: GaN/AlN magnetron sputter epitaxy

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TuP-GR-37 （Poster）

Control of In content in InGaN on $ScAlMgO_4$ substrates using RF-MBE

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TuP-GR-38 （Poster）

Impact of In irradiation on RF-MBE growths of high Al content AlGaN films on AlN templates

Ruka Nakamura[1], Mahiro Hayasaki[1], Tomoya Yamaguchi[1], Tomohiro Yamaguchi[1], Tohru Honda[1], Takeyoshi Onuma[1]
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TuP-GR-39 （Poster）

Alternating metal-modulated Molecular Beam Epitaxy of cubic (Ga,In)N

Jörg Schörmann[1], Mario Fabian Zscherp[1], Silas Aurel Jentsch[1], Nicolai Merlin Gimbel[1], Marius Johannes Müller[1], Vitalii Lider[2], Celina Becker[2], Limei Chen[1], Andreas Beyer[2], Detlev Michael Hofmann[1], Donat Josef As[3], Peter Jens Klar[1], Kerstin Volz[2], Sangam Chatterjee[1]
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TuP-GR-40 （Poster）

GaAs/GaInNAs/GaAs Core-Multishell Nanowires with Multiple Quantum-Wells Emitting at 1.2 µm for Telecommunications

Kaito Nakama[1], Keisuke Minehisa[1], Akio Higo[2], Fumitaro Ishikawa[1]
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TuP-GR-41 （Poster）

Development of NPN structures for Vertical GaN Trench-MOSFETs

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TuP-GR-42 （Poster）

Modeling and validation of carbon incorporation in GaN epitaxial growth by MOVPE method

Yuji Mukaiyama[1], Hirotaka Watanabe[2], Shugo Nitta[2], Masaya Iizuka[1], Hiroshi Amano[2]
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TuP-GR-43 （Poster）

Dislocation density reduction for vertical GaN devices on 200 mm Si

Ziyao Gao[1], Cengiz Kuruoglu[1], Dirk Fahle[1], Herwig Hahn[1], Youssef Hamdaoui[2], Idriss Abid[2], Farid Medjdoub[2], Sven Besendörfer[3], Elke Meißner[3,4], MichaelHeuken[1,5]
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TuP-GR-44 （Poster）

Effect of Threading Dislocations on the Diffusion of Implanted Donors and Acceptors in Gallium Nitride

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TuP-GR-45 （Poster）

MOCVD growth of highly Si doped GaN from triethylgallium

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TuP-CH-1 （Poster）

Influence of carrier localization on the emission of InGaN/GaN coupled quantum wells

Huan Xu[1], Xin Hou[1], Ya-chao Wang[1], Rong-bin Xu[1], Yang Mei[1], Bao-Ping Zhang[1]
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TuP-CH-2 （Poster）

Analysis of the sub-bandgap optical absorption processes in $Al_{1-x}In_xN$ thin films grown on a c-plane GaN/Sapphire template

Kouki Noda[1], Yuto Murakami[1], Hayata Toyoda[1], Kana Shibata[1], Daichi Imai[1], Makoto Miyoshi[2], Tetsuya Takeuchi[1], Takao Miyajima[1]
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TuP-CH-3 （Poster）

Well-Number-Dependence of Internal Quantum Efficiency in AlGaN Quantum Wells on Low-Dislocation Sputtered AlN Templates

Kosuke Inai[1], Ryota Oshimura[1], Kunio Himeno[1], Megumi Fujii[1], Yuta Onishi[1], Satoshi Kurai[1], Narihito Okada[1], Kenjiro Uesugi[2], Hideto Miyake[2], Yoichi Yamada[1]
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TuP-CH-4 （Poster）

Imbalance of left and right circulation lasing mode in GaN microdisk resonator

Atsushi Syouji[1], Tetsuya Kouno[2], Masaru Sakai[1]
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TuP-CH-5 （Poster）

Defect characteristics of ammonothermally grown GaN substrates and effects on the performance of test devices

Christian Röder[1], Christian Miersch[1], Marius H. Wetzel[1], Kuei-Shen Hsu[2], Alexander Schmid[1,2], Jan Beyer[2], Lutz Kirste[3], Franziska C. Beyer[1]
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TuP-CH-6 （Poster）

Spectroscopic ellipsometry evaluation of damage and its recovery in Mg-implanted GaN

Steffen Richter[1], Vallery Stanishev[2], Dat Tran[2], Enrico Brusaterra[4], Eldad Bahat-Treidel[4], Frank Brunner[4], Stephane Morata[3], Frank Torregrosa[3], Vanya Darakchieva[1,2]
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TuP-CH-7 （Poster）

Structural and optical properties of cubic GaN films on high thermal-conductivity substrates

Jaime A. Freitas[1], James C. Culbertson[1], David F. Storm[1], Neeraj Nepal[1], Nadeemullha A. Mahadik[1]
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TuP-CH-8 （Poster）

Saturated dynamic R_{ON} in GaN HEMTs: Role of Operation Modes

Yifei Huang[1,2], Qimeng Jiang[1,2], Sen Huang[1,2], Xinhua Wang[1,2], Xinyu Liu[1,2]
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TuP-CH-9 （Poster）

The observation of electron accumulation at N-polar face in n-type GaN induced by the self-screening effect of polarization electric field

Zhenxing Liu[1], Miao Zhang[1], Qianshu Wu[1], Jinwei Zhang[1], Zhuoran Luo[1], Yang Liu[1]
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TuP-CH-10 （Poster）

Study of conduction properties and defect states of n-type AlGaN having AlN content of 59–89% with various Si doping concentrations

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TuP-CH-11 （Poster）

The role of surface and dissolved arsenic in GaN(0001) on electronic properties

Miłosz Grodzicki[1,2], Dominika Majchrzak[1], Paweł Kempisty[3], Wojciech Olszewski[1], Damian Pucicki[1], Robert Kudrawiec[1,2], Detlef Hommel[1,4]
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TuP-CH-12 （Poster）

Carrier density and mobility of nitride semiconductors determined by Raman scattering: achievements and limitations

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TuP-CH-13 （Poster）

Relative Permittivity Engineering through Amorphous Silicon Nitride PECVD Process Variations for MMIC Applications

Arthur Collier[1], Wesley Sampson[1], Abdalla Eblabla[1], Arathy Varghese[1], Paul Tasker[1], Jash Patel[2], Liang Tian[2], Huma Ashraf[2], Khaled Elgaid[1]
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TuP-CH-14 （Poster）

Application of the graded AlGaN:Mg layer to obtain low resistivity ohmic contact in deep UV emitters

Dominika Majchrzak[1,2], Lan Maria Tran[2], Michał Babij[2], Katarzyna Opołczynska[1,3], Wojciech Olszewski[1,3], Jarosław Serafinczuk[1,4], Detlef Hommel[1,2]
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TuP-CH-15 （Poster）

Evaluation of Electrical Properties of Mg Ion-implanted GaN Single Crystals using THz-TDSE

Dingding Wang[1], Hayato Watanabe[1], Takashi Fujii[1,3], Momoko Deura[2], Toshiyuki Iwamoto[3], Atsushi Suyama[4], Hitoshi Kawanowa[4], Tsutomu Araki[1]
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TuP-CH-16 （Poster）

Gain measurements using Hakki-Paoli method

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TuP-CH-17 （Poster）

Experimental Method of Quantifying the Carrier Dynamics in Active Quantum Wells of Light-Emitting Diodes

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TuP-CH-18 （Poster）

Extraction of transport properties of bulk GaN material in multi-layer epitaxial structure

Qianshu Wu[1], Jinwei Zhang[1], Miao Zhang[1], Zhuoran Luo[1], Yang Liu[1]
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TuP-CH-20 （Poster）

Vertical Current Transport in p-GaN/AlGaN structures

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TuP-CH-21 （Poster）

High-pressure study of color centers emitting in 3.3–4 eV spectral region in hexagonal boron nitride

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TuP-CH-22 （Poster）

Local environment-controlled activation of Si dopants in AlGaN

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TuP-CH-23 （Poster）

Interface Properties of p-type GaN MOS Structures Examined by Sub-Bandgap-Light-Assisted Capacitance–Voltage Measurement

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TuP-CH-24 （Poster）

Electron Beam Irradiation Induced Deep Levels in AlN Characterized by Hyperspectral Cathodoluminescence Spectroscopy

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TuP-CH-26 （Poster）

Trap analysis in an $Al_{0.60}Ga_{0.40}N$ channel heterostructure grown on a Si (111) substrate

Julien Bassaler[1], Jash Mehta[2], Leszek Konczewicz[3,4], Sandrine Juillaguet[3], Sylvie Contreras[3], Maud Nemoz[5], Sebastian Tamariz[5], Stéphanie Rennesson[6], Fabrice Semond[5], Yvon Cordier[5], Julien Pernot[1], Farid Medjdoub[2], Philippe Ferrandis[1]

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TuP-CH-27 （Poster）

Deep-Level Trap States Characterization of Commercial p-GaN Schottky Gate AlGaN/GaN HEMTs by Deep-Level Transient Spectroscopy

Xiaohu Wang[1], Xuefeng Zheng[1], Danmei Lin[1], Xiaohua Ma[1], Yue Hao[1]

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TuP-CH-28 （Poster）

First-Principles Calculated Electronic Properties of InGaMgN Alloys for Optoelectronic Applications

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TuP-CH-29 （Poster）

Adiabatic potential for conformational change of V_{Ga}-V_N complex defects in GaN

Jota Nakamura[1], Masato Oda[1,2], Yoshihiro Kangawa[2]
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TuP-CH-30 （Poster）

Mechanical property and deformation mechanism of GaN materials with Indium-doping by molecular dynamics simulation

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TuP-CH-31 （Poster）

Surface oxidization of GaN(0001) simulated by charge-transfer type molecular dynamics

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TuP-CH-32 （Poster）

Thermal Effect on the Photoluminescence of InGaN/AlGaN Multiple Quantum Wells

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TuP-CH-33 （Poster）

Accessible Chemical Space for Metal Nitride Perovskites

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TuP-CH-34 （Poster）

Tuning GaN/AlGaN quantum well emission by deposition of Few-Layed Graphene and Nickel/Gold films.

Christelle Brimont[1], Rémi Aristegui[1], Pierre Lefebvre1[1], Thierry Guillet[1], Masha Vladimirova[1], Ioannis Paradisanos[2], Cédric Robert[2], Xavier Marie[2], Bernhard Urbaszek[2], Sébastien Chenot[3], Yvon Cordier[3], Benjamin Damilano[3]
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TuP-OD-1 （Poster）

Carrier dynamics and structural properties of hybrid orange-red LED based on In-rich InGaN/GaN multiple quantum wells

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TuP-OD-2 （Poster）

Evaluating Nanorod LED Assembly for Display Applications Using High-Resolution Optical Inspection

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TuP-OD-3 （Poster）

Bright red emission and small peak shift in InGaN multiple quantum well structure with low indium contents through tunneling injection and barrier recombination

Jae-Sun Kim[1], Jung-Hoon Song[1,3], Jae-Sang Kang[1], Gyeong-Eun Choi[1], Jung-Ki Park[1], Gyu-Hwi Jeong[1], Sung-Min Hwang[2], In-Sung Jo[2], Won-Taek Lim[2], Seung-Young Lim[3]

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TuP-OD-4 （Poster）

Electrical Characterization of Micro LEDs on Semipolar GaN Substrates and ELO Wings

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TuP-OD-5 （Poster）

Self-aligned microLED processing and its impact on device performance

Georg Schöttler[1,2], Steffen Bornemann[1,2], Maximilian Vergin[1,2], Florian Meierhofer[1,2], Jana Hartmann[1,2], Mayra Garcés-Schröder[1,2], Andreas Waag[1,2]

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TuP-OD-6 （Poster）

A comprehensive study of pyramidal micro light emitting diodes obtained by selective area growth

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TuP-OD-7 （Poster）

Current-Induced Stress Effect in GaN-Based Micro-LEDs with Different Distances between the p-Contact and the Mesa Edge

A B M Hamidul Islam[1], Tae Kyoung Kim[1], Yu-Jung Cha[1], Jae Won Seo[1], Jiun Oh[1], Minji Kim[1], Hyeondong Lee[1], Dong-Soo Shin[2], Jong-In Shim[2], Joon Seop Kwak[1]

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TuP-OD-8 （Poster）

Study on the Size-dependent Effect and Reducing Sidewall Leakage of InGaN Red Micro-LEDs

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TuP-OD-9 （Poster）

Monolithic integration of GaN-based green micro-LED and quasi-vertical MOSFET utilizing a hybrid tunnel junction

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TuP-OD-10 （Poster）

Development of High-Power Single-Chip UVC-LED Devices

Yoshiki Wada[1], Hiroshi Chiba[1], Yuji Karakane[1], Shunsuke Matsuno[1]
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TuP-OD-11 （Poster）

Optical properties of AlGaN multiple quantum wells grown on different AlN/4H-SiC templates

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TuP-OD-12 （Poster）

Beam collimation and light extraction efficiency enhancement for deep-ultraviolet micro-LEDs with Fresnel zone plate nano-diffraction patterns

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TuP-OD-13 （Poster）

Estimation of Junction Temperature in 227nm Far-UVC and UVB LED

Muhammad Ajmal Khan[1], Pablo Fredes[2], Ulrich Raff[3], Ernesto Gramsch[3], Hideki Hirayama[1]
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TuP-OD-15 （Poster）

Efficiency Increase in 230 nm AlGaN far-UVC LED by Changing Quantum Well Structure

Yuya Nagata[1,2], Fumiya Chugenji[1,2], Noritoshi Maeda[1], Ajmal Khan[1], Sachie Fujikawa[2,1], Hiroyuki Yaguchi[2], Yasushi Iwaisako[3], Hideki Hirayama[1]
[1] *RIKEN, Japan,* [2] *Saitama University, Japan,* [3] *Nippon Tungsten, Japan*

TuP-OD-16 （Poster）

Study on p- and n-type doping of Al-rich AlGaN

Jiaming Wang[1], Fujun Xu[1,2], Lisheng Zhang[1,2], Jing Lang[1], Xiangning Kang[1,2], Zhixin Qin[1,2], Xinqiang Wang[1], Weikun Ge[1], Bo Shen[1,2]
[1] *Peking University, China,* [2] *Beijing SinoGaN Semiconductor Technology Co., Ltd., China*

TuP-OD-17 （Poster）

Improved Optical-Electrical-Solar Blind Communication Performance of AlGaN-Based UV Micro-LED by Optimizing Ohmic Contact of the New Alloy p-Electrode

Xuejiao Sun[1], Chunhui Guo[2], Bing Wang[1,2], Jianchang Yan[1,2], Jinmin Li[1,2], Naixin Liu[1,2]
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TuP-OD-18 （Poster）

Electrical properties of Mg-doped $Al_{0.35}Ga_{0.65}N$ contact/graded AlGaN layer

Hayata Takahata[1], Tomoaki Kachi[1], Maho Fujita[1], Naoki Hamashima[1], Ryunosuke Oka[1], Hisanori Ishiguro[1], Tetsuya Tackeuchi[1], Satoshi Kamiyama[1], Motoaki Iwaya[1], Yoshiki Saito[2], Koji Okuno[2]
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TuP-OD-19 （Poster）

Room-temperature optical gain of terahertz quantum cascade lasers based on GaN/AlGaN, ZnO/MgZnO materials

Li Wang[1], Mingxi Chen[1], Tsung-Tse Lin[1], Ke Wang[1,2], Hideki Hirayama[1]
[1]RIKEN, Japan, [2] Nanjing university, China

TuP-OD-20 （Poster）

Development of needle-shaped MicroLED/Microfluidic device for optogenetic stimulation and drug delivery

Kakeru Oya[1], Gota Shinohara[1], Hibiki Takeuchi[1], Shogo Okada[1], Atsushi Nishikawa[2], Alexander Loesing[2], Mikiko Ishikawa[3], Nobuyuki Kai[3], Noriaki Ohwaka[3],Hiroto Sekiguchi[1]
[1] Toyohashi University of Technology, Japan, [2] ALLOS, Germany, [3] Dokkyo Medical University, Japan

TuP-OD-22 （Poster）

Widening emission spectrum of nitride superluminescent diodes. Selected approaches to the active region.

Grzegorz Staszczak[1], Szymon Grzanka[1,2], Łucja Marona[1,2], Ewa Grzanka[1,2], Julita Smalc-Koziorowska[1], Grzegorz Targowski[1], Grzegorz Muziol[1], Anna Kafar[1], Piotr Perlin[1,2], Czesław Skierbiszewski[1], Tadeusz Suski[1]
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TuP-OD-23 （Poster）

Strain-Engineering of Electronic and Magnetic Properties of Chemical Passivated Zigzag GaN Nanoribbons: An Ab-initio Study

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TuP-OD-24 （Poster）

Highly-Efficient Metalenses Composed of GaN Hexagonal Resonators

Ting Yu Wei[1], Bo Wen Chen[1], Meng Hsin Chen[1]
[1] Department of Electrical Engineering, National United University, Taiwan

TuP-OD-25 （Poster）

Insights into the emission characteristics of deep ultraviolet PCSELs by band structure simulations

Lukas Uhlig[1], Dogukan Apaydin[2], Joachim Ciers[2], Hjalmar Andersson[2], Sarina Graupeter[3], Giulia Cardinali[3], Tim Wernicke[3], Michael Kneissl[3,4], Philippe Tassin[2], Ulrich Theodor Schwarz[1], Åsa Haglund[2]
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TuP-OD-26 （Poster）

Comparative Analysis of Gain in Wide and Thin Quantum Wells: Experimental Investigation and Theoretical Modeling

Marta Gładysiewicz[1], Robert Kudrawiec[1], Grzegorz Muziol[2], Henryk Turski[2], Czeslaw Skierbiszewski[2]
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TuP-OD-27 （Poster）

Resolving radiative and non-radiative processes in GaN/InGaN nano-disks through time-resolved photoluminescence and absorption measurements

Kanchan Singh Rana[1], Navneet Kumar Thakur[1], Ankit Udai[1], Swaroop Ganguly[1], Dipankar Saha[1]
[1] Indian Institute of Technology Bombay, India

TuP-OD-28 （Poster）

Thermal Interaction between Exitons in III-Nitride Semiconductors

Aayami Kadono[1], Masato Oda[1]
[1] Wakayama University, Japan

TuP-OD-29 （Poster）

Carrier localization in III-nitrides versus conventional III-V semiconductors: a study on the effects of alloy disorder using landscape theory and the Schrödinger equation

Tsung-Yin Tsai[1,2], Kai Shek Qwah[2], Jean-Philippe Banon[3], Marcel Filoche[3], Claude Weisbuch[3,2], Yuh-Renn Wu[2], James S Speck[2]
[1] National Taiwan University, Taiwan, [2] University of California, Santa Barbara, United States of America, [3] École Polytechnique, Paris, France

TuP-OD-30 （Poster）

A numerical study of UV AlGaN heterostructures with polarization doping

Konrad Sakowski[1,2], Ashfaq Ahmad[1], Pawel Strak[1], Pawel Kempisty[1], Yoshihiro Kangawa[3], Jacek Piechota[1], Stanislaw Krukowski[1]
[1] Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, [2] Institute of Applied Mathematics and Mechanics, University of Warsaw, Banacha 2, 02-097 Warsaw, Poland, [3] Research Institute for Applied Mechanics, Kyushu University, Kasuga, Fukuoka 816-8580, Japan

TuP-ED-1 （Poster）

Understanding of Dynamic On-resistance Improvement in Carbon Heavily Doping AlGaN/GaN HEMT

Jinwei Zhang[1], Qianshu Wu[1], Yuhao Zhou[1], Zhuoran Luo[1], Miao Zhang[1], Yang Liu[1,2]
[1] Sun Yat-Sen University, China, [2] Sun Yat-Sen University Shenzhen Institute, China

TuP-ED-2 （Poster）

Simulation of i-GaN layer in normally-off AlGaN/GaN HEMTs with a P-I-N gate structure

Mao Jia[1], Bin Hou[1], Ling Yang[1], Xiaohua Ma[1]
[1] *Xidian University, China*

TuP-ED-4 （Poster）

Lateral integration of WBG In_2O_3 NMOS inverter and GaN HEMT for power electronics

MRITUNJAY KUMAR[1], Saravanan Yuvaraja[1], Na Xiao[1], Manoj Kumar Rajbhar[1], Ganesh Mainali[1], Vishal Khandelwal[1], Xiao Tang[1], Xiaohang Li[1]
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TuP-ED-5 （Poster）

Electrical properties of N-polar GaN/AlGaN/AlN HEMTs fabricated by MOVPE

Daisuke Inahara[1], Aina Hiyama Zazuli[1], Ryosuke Ninoki[1], Koki Hanasaku[1], Taketo Kowaki[1], Minagi Miyamoto[1], Kai Fujii[1], Taisei Kimoto[1], Satoshi Kurai[1], Narihito Okada[1], Yoichi Yamada[1]
[1] *Grad. School of Sci. & Tech. for Innovation, Yamaguchi Univ, Yamaguchi 755-0097, Japan, Japan*

TuP-ED-6 （Poster）

Relation between threshold voltage and Schottky p-GaN HEMT structure parameters based on depletion states

Qianshu Wu[1], Zhuoran Luo[1], Jinwei Zhang[1], Miao Zhang[1], Xi Yuan[1], Yang Liu[1]
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TuP-ED-7 （Poster）

Demonstration of high-permittivity $BaTiO_3$ integrated AlGaN/GaN HEMTs with instructive breakdown performance

Lin Hao[1], Hui Guo[1], Tian cheng Hu[1], Chuan qi Liu[1], Jian dong Ye[1], Dun jun Chen[1], Rong Zhang[1], You dou Zheng[1]
[1] *Nanjing University, China*

TuP-ED-8 （Poster）

Effect of Buffer Traps on Contact Resistance in AlGaN/GaN HEMT

A. V. Nandini Devi[1], Bhavana Prasannanjaneyulu[2], Shreepad Karmalkar[3]
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TuP-ED-9 （Poster）

The fabrication and characterization of a 1200V GaN HEMT device

Yuanyang Xia[1], Ke Wang[1], Yiheng Li[1], Tinggang Zhu[1], Sheng Li[2], Weihao Lu[2]
[1] *Corenergy Semiconductor Co., China,* [2] *Southeast University, China*

TuP-ED-10 （Poster）

GaN Vertical Trench Gate Power MOSFET with embedded p-type shielding rings beneath the gate trench

Hongjie Shao[1,2], Yongchen Ji[1,2], Xuyang Liu[1,2], Chao Liu[1,2]
[1] *Shandong University, China,* [2] *Shenzhen Research Institute, Shandong University, China*

TuP-ED-11 （Poster）

Optimization of Two-zone Step-Etched Junction Termination Structures for Vertical GaN Power Devices

Andrzej Taube[1], Maciej Kaminski[1,2]
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TuP-ED-12 （Poster）

1.2 kV-class Vertical GaN Power MOSFETs with Monolithically Integrated Freewheeling Merged P-i-N Schottky Diodes

Yuchuan Ma[1,2], Heng Wang[1,2], Sihao Chen[1,2], Chao Liu[1,2]
[1] Shandong University, China, [2] Shenzhen Research Institute, Shandong University, China

TuP-ED-13 （Poster）

Polarization-induced doping in n-channel vertical Aluminum-Nitride transistors

Bernd Witzigmann[1], Samuel Faber[1], Rany Miranti-Augustin[2], Friedhard Römer[1], Jana Hartmann[2], Christoph Margenfeld[2], Mayra Garces-Schröder[2], Andreas Waag[2]
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TuP-ED-14 （Poster）

WSe_2/BN Heterostructure-based Optically Modulated Synapse Devices

Atul Chandrakant Khot[1], Navaj B. Mullani[2], Donghyun Kim[1], Junyoung Choi[1], Jun Hong Park[2], Tae Geun Kim[1]
[1] Korea University , Korea, [2] Gyeongsang National University, Korea

TuP-ED-15 （Poster）

Comparison of switching characteristics of 650V GaN power device and SiC/Si power devices

Yoshiyuki Hattori[1], Tetsu Kachi[2]
[1] Daido University, Japan, [2] Nagoya University, Japan

TuP-ED-16 （Poster）

Effect of ultra-thin AlGaN regrown layer on the electrical properties of ZrO2/AlGaN/GaN structures

Toi Nezu[1], Shogo Maeda[1], Joel Tacla Asubar[1], Ali Baratov[1], Itsuki Nagase[1], Kishi Sekiyama[1], Suguru Terai[1], Masaaki Kuzuhara[2], Akio Yamamoto[1]
[1] University of Fukui, Japan, [2] Kwansei Gakuin University, Japan

TuP-ED-17 （Poster）

Performance Enhancement of AlGaN/GaN MIS-HEMT & MIS-Diode using Magnesium silicate as dielectric

Seshasainadh Pudi[1], Navneet Bhardwaj[1], Ritam Sarkar[1], Swagata Bhunia[2], Umang Singh[1], Anshul Jain[3], V S Santhosh N Varma Bellamkonda[1], Apurba Laha[1]
[1] Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai 400076, India, India, [2] Department of Physics, Indian Institute of Technology Bombay, Mumbai 400076, India , India, [3] Center for Research in Nano Technology and Sciences, Indian Institute of Technology Bombay, Mumbai 400076, India, India

TuP-ED-18 （Poster）

GaN-based MOS-HEMTs with Mist Chemical Vapor Deposited Gate Insulator

Keigo Bito[1], Hikaru Hiroshige[1], Ren Hashimoto[1], Masaki Ishiguro[2], Joel T. Asubar[2], Yusui Nakamura[1], Zenji Yatabe[1]
[1] Kumamoto University, Japan, [2] University of Fukui, Japan

TuP-ED-19 （Poster）

Hole Traps in SiO_2/GaN MOS structures Evaluated by Below-gap Light Illumination

Kazuki Tomigahara[1], Takuma Kobayashi[1], Mikito Nozaki[1], Takayoshi Shimura[1], Heiji Watanabe[1]
[1] Osaka university, Japan

TuP-ED-20 （Poster）

Effects of doped Mg concentrations on the reduction of hole traps in the vicinity of the SiO_2/p-GaN MOS interface

Hidetoshi Mizobata[1], Mikito Nozaki[1], Takuma Kobayashi[1], Takayoshi Shimura[1], Heiji Watanabe[1]
[1] Osaka University, Japan

TuP-ED-21 （Poster）

Demonstration of Depletion Mode AlN MOSFET

Dhanu Chettri[1], Ganesh Mainali[1], Haicheng Cao[1], Mingtao Nong[1], Xiaohang Li[1]
[1] King Abdullah University of Science and Technology (KAUST), Saudi Arabia

TuP-ED-22 （Poster）

Expansion of Optimized Dose Range in Junction Termination Extension Structure for GaN Vertical Power Devices by Utilizing Mg Channeling Implantation

Kazuki Kitagawa[1], Maciej Matys[1], Testu Kachi[1], Jun Suda[1]
[1] Nagoya University, Japan

TuP-ED-23 （Poster）

Improving the insulating properties of C-doped GaN buffer layers

Armin Dadgar[1], Thorsten Zweipfennig[2], Jasmin Ehrler[2], Ralf Borgmann[1], Jürgen Bläsing[1], Holger Kalisch[2], Andrei Vescan[2], André Strittmatter[1]
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TuP-ED-24 （Poster）

First-principles calculations on defect energetics and diffusion mechanism of Mg impurity in GaN

Kaori Seino[1,2], Kenji Shiraishi[2], Atsushi Oshiyama[2]
[1] Kyushu Institute of Technology, Japan, [2] Nagoya University, Japan

TuP-ED-25 （Poster）

Fabrication and device characteristics of GaN-based npn-type HBTs using a Quaternary AlGaInN Emitter and a GaInN Base

Masaya Takimoto[1], Akira Mase[1], Tomoki Kojima[1], Takashi Egawa[1], Makoto Miyoshi[1]
[1] Nagoya Institute of Technology, Japan

TuP-ED-26 （Poster）

Skin-Attachable Microbalance Using Flexible GaN Thin Film for Stress Hormone Monitoring from Sweat

Jae-Hyun Ryou[1], Nam-In Kim[1], Asad Ali[1]
[1] *University of Houston, United States of America*

TuP-ED-27 （Poster）

Selectivity and Response-time of AlN SAW Humidity Sensor Enhancement with ZnO Nanorods Grown by Hydrothermal Method

Che Hao Liao[1], Tai-Chin Huang[1], Zhong-Hong Yen[1], Chien-Sheng Huang[1], Walter Water[2], Shih-Hung Lin[1]
[1] *National Yunlin University of Science and Technology, Taiwan,* [2] *National Formosa University, Taiwan*

TuP-ED-28 （Poster）

Effective spin injection into GaN via optimized spin tunneling barriers

Zhenhao Sun[1], Ning Tang[1], Shixiong Zhang[1], Xiaoyue Zhang[1], Xingchen Liu[1], Shuaiyu Chen[1], Jiayang Jiang[1], Guoping Li[1], Weikun Ge[1], Bo Shen[1]
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TuP-ED-29 （Poster）

Enhanced triboelectric effect in an N-polar GaN/p-Si dynamic p-n junction for DC generators

Jia Wang[1,2], Haitao Wang[3], Yasuyoshi Kurokawa[3], Noritaka Usami[3], Hiroshi Amano[1,2]
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TuP-ED-30 （Poster）

Degradation Study of GaN-based HEMT Under High-temperature Thermal Storage

Huixin Xiu[1], Lingyu Huang, Mengen An, Zhenyuan Tian, Zhongyi Lv
[1] *University of Shanghai for Science and Technology, China*

TuP-ED-31 （Poster）

The Electrical Performance Variation and Trap Characterization of AlGaN/GaN HEMTs under Proton Irradiation

Tian Zhu[1], Xuefeng Zheng[1], Xiaohua Ma[1], Yue Hao[1]
[1] *Xidian University, China*

TuP-ED-32 （Poster）

Hot carrier degradation under semi-on DC stress in 0.18 μm AlGaN/GaN HEMTs

Junwoo Jung[1], Hyungtak Kim[1], Byungkyu Min[2], Kyujun Cho[2], Jongmin Lee[2], Yujin Jang[2], Dongmin Kang[2]
[1] *Hongik University, Korea,* [2] *Electronic and Telecommunications Research Institute, Korea*

TuP-ED-33 （Poster）

Investigating the degradation mechanism of p-GaN HEMT under Short Circuit stress

Meng Wang[1], Xiangdong Li[2], Jincheng Zhang[3], Hongyue Wang[4], Jiahui Yuan[5], Zhanfei Han[6], Junbo Wang[7], Yue Hao[8]

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TuP-ED-34 （Poster）

Characterization and distinction of the hole behaviors in p-GaN gate HEMT through a pre-state double pulse test method

Xin Chen[1], Yaozong Zhong[1], Yu Zhou[1], Qian Sun[1], Hui Yang[1]

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TuP-ED-35 （Poster）

Precise Thermal Characterization of AlGaN/GaN HEMTs Channel using Integrated Gold Thermistor

Arpit Sahu[1], Bazila Parvez[1], Subhajit Basak[1], Jyoti Sahu[1], Mahalaxmi Patil[1], Swaroop Ganguly[1], Dipankar Saha[1]

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TuP-ED-36 （Poster）

Thermal Management in GaN High Electron Mobility Transistors (HEMTs)

Deniz Irem Erus[1], Tomas Palacios[1]

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TuP-ED-37 （Poster）

All Epitaxy Nd_2O_3/AlGaN/GaN MOSHEMT on semi insulating (0001) 4H-SiC: Increased thermal stability at 473 K

Umang Singh[1], Hannah Genath[2], Ritam Sarkar[1], Jan Kruegener[2], H. Joerg Osten[2], Apurba Laha[1]

[1] IIT Bombay, India, [2] Leibniz University Hannover, Germany

TuP-ED-38 （Poster）

Design of an accurate GaN SenseFET based on a distributed electro-thermal network model

Xiaotian Tang[1,2], Qimeng Jiang[1,2], Sen Huang[1,2], Xinhua Wang[1,2], Xinyu Liu[1,2]

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TuP-GR-LN1 （Poster）

In-situ monitoring of GaN crystal growth via electroresistometry of Ga-Na solution in the Na-flux growth

Ricksen Tandryo[1], Kosuke Murakami[1], Hitoshi Kubo[1], Masayuki Imanishi[1], Shigeyoshi Usami[1], Mihoko Maruyama[1], Masashi Yoshimura[2], Yusuke Mori[1]

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TuP-GR-LN2 （Poster）

Highly Uniform Growth of Site-Selective InGaN Single Quantum Dot Emitters in Hexagonal Symmetric Micro-Pyramidal Arrays

Jeongho Kim[1], Yongho Song[1], Hwanseop Yeo[1], Chanyoung Sung[1], Byungsu Kim[1], Seonghun Ahn[1], Yonghoon Cho[1]
[1] *KAIST, Korea*

TuP-GR-LN3 （Poster）

2DEG InGaN based heterostructures: impact of In-content fluctuations on the in-plane electron transport at low-temperature.

Joerg Malindretos[1], Hendrik Jäckel[1], Angela Rizzi[1]
[1] *Georg-August-University Goettingen, Germany*

TuP-GR-LN4 （Poster）

Top-down (In,Ga)N nanowires fabricated from molecular beam epitaxial layers with high structural perfection

Jingxuan Kang[1], Mikel Gómez Ruiz[1], Duc Van Dinh[1], Aidan Campbell[1], Achim Trampert[1], Miriam Oliva[1], Philipp John[1], Jonas Lähnemann[1], Thomas Auzelle[1], Oliver Brandt[1], Lutz Geelhaar[1]
[1] *Paul-Drude-Institute, Germany*

TuP-CH-LN1 （Poster）

Investigation of AlGaN(0001) properties through DFTcalculations

Pawel Strak[1], Ashfaq Ahmad[1], Karol Kawka[1], Pawel Kempisty[1]
[1] *Institute of High Pressure Physics PAS, Poland*

TuP-CH-LN2 （Poster）

Novel wurtzite AlP_xN_{1-x} semiconductor alloy for feasible hole generation and giant ambipolar sheet carrier density

Wei Shang[1], Jiaduo Zhu[1,2], Yachao Zhang[1], Shengrui Xu[1], Jincheng Zhang[1,2], Lixin Guo[3], Yue Hao[1,2]
[1] *State Key Laboratory of Wide Bandgap Semiconductor Devices and Integrated Technology, School of Microelectronics, Xidian University, China,* [2] *Shaanxi Joint Laboratory of Graphene, Xidian University, China,* [3] *Schoolof Physics, Xidian University, China*

TuP-OD-LN1 （Poster）

High-Brightness µLEDs from InGaN/GaN Pyramidal Structure Arrays

Chih-Wei Hsu[1,2], Son Phoung Le[1,2], Ivan Martinovic[1,2], Eric Néstor Tseng[1], Zahra Mohammadian Rasnani[1], Per Olof Holtz[1,2]
[1] *Polar Light Technologies AB, Sweden,* [2] *Department of Physics, Chemistry and Biology, Linköping university, Sweden*

TuP-OD-LN2 （Poster）

Accelerated learning in wide bandgap AlN artificial photonic synaptic devices: Impact on suppressed shallow trap level

Jeechan Yoon[1], Myung Gwan Hahm[1], Moonsang Lee Lee[1]
[1] *Inha university, Korea*

TuP-ED-LN1 （Poster）

$Ti_3C_2T_x$ MXene van der Waals gate contact for GaN high electron mobility transistors

ChuanJu Wang[1], Xiangming xu[1], Husam N. Alshareef[1], Xiaohang Li[1]
[1] *King Abdullah University of Science and Technology., Saudi Arabia*

TuP-ED-LN2 （Poster）

Performance Enhancement of n-type AlN Schottky Barrier Diodes Using Rapid Thermal Annealing Treatment in Oxygen Environment

Haicheng Cao[1], Mingtao Nong[1], Tingang Liu[1], Zhiyuan Liu[1], Xiao Tang[1], Mritunjay Kumar[1], Biplab Sarkar[2], Ying Wu[1], Xiaohang Li[1]
[1] *King Abdullah University of Science and Technology, Saudi Arabia,* [2] *Indian Institute of Technology, Roorkee, India*

TuP-ED-LN3 （Poster）

High Reliability Normally-Off $Al_{0.23}GaN/GaN$ MIS HEMT With high-K Gate Dielectric and 1280 MW/cm^2 Figure of Merit

Yutong Fan[1,2], Weihang Zhang[1,2], Xi Liu[1], Yu Wen[1], Jincheng Zhang[1,2], Zhihong Liu[1,2], Shenglei Zhao[1], Yue Hao[1,2]
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TuP-ED-LN4 （Poster）

Demonstration of an Enhancement-Mode p-Channel GaN/InAlN T-shaped nanowire FinFETs With High ON-Current and Low ON-Resistance

Xi Liu[1]
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TuP-ED-LN5 （Poster）

Angle Resolved X-ray Photoelectron Spectroscopy Study of SiO_2/GaN Formed by Atomic-Species-Enhanced Chemical Vapor Deposition

Hiroshi Okada[1], Sho Yamagata[1], Sogo Shikata[1], Akihiro Wakahara[1], Masakazu Furukawa[2]
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November 16 (Thu)

Poster Session III

Argos A-C November 16 (Thu) 16:20 -18:10

ThP-GR-1 (Poster)

Epitaxy of GaN-on-GaN materials and devices with high performance

Guobin Wang[1,2], Qi-ang Yan[1], Yang Wang[1], Zongliang Liu[1], Jianfeng Wang[2,3], Ke Xu[1,2,3]
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ThP-GR-2 (Poster)

Role of Surface Chemistry of Ta Metal Foil on the Growth of Vertically Aligned GaN Nanorods by Laser MBE

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ThP-GR-3 (Poster)

Improving quality of GaN on sapphire by stacked epitaxial lateral overgrowth

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ThP-GR-4 (Poster)

Plasma enhanced chemical mechanical polishing for high efficiency surface finishing of GaN substrate

Yuto Sawayama[1], Kyosuke Nakagawa[1], Keito Ishibashi[1], Hidetoshi Takeda[1], Toshiro Doi[2], Chihiro Miyagawa[3], Masaki Wada[3], Toshiyuki Kawasaki[4], Kiyoshi Arita[4], Hideo Aida[1]
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ThP-GR-5 (Poster)

Dislocation Reduction and Stress Relaxation of GaN Film via Hexagonal 3D Serpentine Mask

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ThP-GR-6 (Poster)

Terrace Engineering of the Buffer Layer: Laying the Foundation of Thick GaN Drift Layer on Si Substrates

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ThP-GR-7 （Poster）

Research progress of GaN growth by Na Flux

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ThP-GR-8 （Poster）

Controlling stress behavior of sputtered a-plane $Al_{1-x}Sc_xN$ films

Akash Nair[1], Lutz Kirste[1], Mohammed Yassine[2], Balasubramanian Sundarapandian[1], Patrik Stranak[1], Mario Prescher[1], Mohit Raghuwanshi[1], Oliver Ambacher[2]
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ThP-GR-9 （Poster）

Sputter deposition of scandium aluminum nitride films – correlating refractive index and c-axis texture with intrinsic stress

Minghua Li[1], Huamao Lin[1], Zhan Jiang Quek[1], Peng Liu[1], Binni Varghese[1], Navab Singh[1], Yao Zhu[1]
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ThP-GR-10 （Poster）

Progresses and challenges in MOCVD of AlScN/GaN heterostructures

Isabel Streicher[1], Stefano Leone[1], Daniel Alquier[2], Meiling Zhang[2], Taoufik Slimani Tlemcani[2], Micka Bah[2], Patrik Straňák[1], Mario Prescher[1], Lutz Kirste[1], Oliver Ambacher[3]
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ThP-GR-11 （Poster）

Origins of Abnormal Oriented Grains in $Sc_{0.2}Al_{0.8}N$-based piezoelectric bimorph structure

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ThP-GR-12 （Poster）

New phase diagrams to guide the rational ammonothermal synthesis of complex ternary nitrides

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ThP-GR-13 （Poster）

Effect of Seed Crystal Orientation on the Basic Ammonothermal Growth of GaN: from +c-axis to m- or a-axis to -c-axis

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ThP-GR-14 （Poster）

Effects of growth pressure on TMGa decomposition and carbon incorporation in GaN MOVPE

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ThP-GR-15 （Poster）

Development of a MOCVD system with an integrated cleaning system and improved efficiency for the mass production of GaN epi-wafers

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ThP-GR-16 （Poster）

Optical Characteristics of BGaN Films Using Oblique Polishing

Ryoya Ozeki[1], Daisuke Nakamura[1], Ryohei Kudo[1], Tetsu Ito[1,2], Kohei Shima[3], Shigefusa F Chichibu[3], Takayuki Nakano[1,2]

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ThP-GR-17 （Poster）

Growth of N-polar AlN and GaN on sapphire by MOVPE

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ThP-GR-18 （Poster）

Advancing GaN-on-Si HEMT manufacturing to the next level using the next-generation Planetary MOCVD batch reactor

Christof Mauder[1], Dirk Fahle[1], Matthias Marx[1], Ziyao Gao[1], Ian Booker[1], Herwig Hahn[1], Niels Posthuma[2], Stefaan Decoutere[2], Michael Heuken[1]

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ThP-GR-19 （Poster）

P incorporation into wurtzite AlP_yN_{1-y} by metal-organic vapor phase epitaxy

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ThP-GR-20 （Poster）

Unveiling the Atomic Step Dynamics during Nitride Growth by OMVPE

Guangxu Ju[1], Dongwei Xu[2], Carol Thompson[3], Matthew J. Highland[4], Jeffery A. Eastman[5], Weronika Walkosz[6], Peter Zapol[5], Bo Shen[1], Gregory Brian Stephenson[5]

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ThP-GR-21 （Poster）

Systematic Analysis of a Novel High Pressure Spatial Chemical Vapor Deposition (HPS-CVD) Reactor for Flow and Temperature Stability

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ThP-GR-22 （Poster）

Preparation of heavily Ge-doped GaN and AlGaN by pulsed sputtering

Aiko Naito[1], Kohei Ueno[1], Hiroshi Fujioka[1]
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ThP-GR-23 （Poster）

High Al-content Quasi-AlGaN Epilayers Grown on GaN-on-sapphire Templates by Plasma-assisted Molecular Beam Epitaxy Using Binary AlN and GaN Monolayer Digital Alloying Technique

JunShuai Xue[1], GuanLin Wu[1], JiaJia Yao[1], ZhiPeng Sun[1], ZeHui Li[1], JinCheng Zhang[1], Yue Hao[1]
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ThP-GR-24 （Poster）

Al/N Ratio Dependence of Low Temperature AlN Growth by RF-MBE

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ThP-GR-25 （Poster）

Nanowire Driven Epitaxial Lateral Overgrowth (ELOG) of Single Crystal GaN Layer on Sapphire Substrate

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ThP-GR-26 （Poster）

Self-selection of orientation of GaN nanowires grown by plasma assisted MBE on metallic polycrystalline ZrN buffer layers

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ThP-GR-27 （Poster）

Cracking of films formed by coalescence of GaN nanowires on Si substrate

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ThP-GR-28 （Poster）

Suppression of Metastable Cubic Phase Inclusion in GaN Growth on $ScAlMgO_4$ Substrates by RF-MBE

Tsutomu Araki[1], Yuuichi Wada[1], Yuuya Kuroda[1], Naoki Goto[1], Yuta Kubo[1], Momoko Deura[2], Shinichiro Mouri[1], Takashi Fujii[1]
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ThP-GR-29 （Poster）

Controlled Reactive Sputtering and its Benefits in Magnetron Sputter Epitaxy of AlN and GaN

Alexander Martin Hinz[1,2], Katrin Pingen[1,2], Dominic Hecker[1], Hagen Bartzsch[1], Elizabeth von Hauff[1,2]
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ThP-GR-30 （Poster）

Influence of substrate types and annealing conditions on superconducting properties of niobium nitride

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ThP-GR-31 （Poster）

Optimization of in-reactor in-situ activation annealing conditions for tunnel junction layers of multi-quantum shell GaN-based LDs

Mizuki Takahashi[1], Yuki Yamanaka[1], Shiori Ii[1], Ayaka Shima[1], Soma Inaba[1], Kosei Kubota[1], Yuta Hattori[1], Tetsuya Takeuchi[1], Motoaki Iwaya[1], Satoshi Kamiyama[1]
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ThP-GR-32 （Poster）

InGaN/GaN ordered nanocolumn arrays on AlN/ Si (111) substrates grown by nanotemplate selective area growth

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ThP-GR-33 （Poster）

Catalyst-free growth of high quality single crystalline GaN NWs on a wide-range of substrates simultaneously by pulsed laser deposition

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ThP-GR-34 （Poster）

Nanostructured GaN Photoanodes for Enhanced Photoelectrochemical Water Splitting with ZnO and CdS Cocatalysts

Fawad Tariq[1]
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ThP-GR-35 （Poster）

GaN Porous Nanopyramids: Outclassing the Conventional Nanostructures for Nano-LEDs Fabrication.

Hamza Thaalbi[1], Mandar A. Kulkarni[1], Fawad Tariq[1], Sang-Wan Ryu[1]
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ThP-GR-36 （Poster）

Elimination of Defects in N-Polar GaN Nanostructures on Si

Alexana Roshko[1], Matt Brubaker[1], Todd Harvey[1], Kris Bertness[1]
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ThP-GR-37 （Poster）

Study of stacking mismatch boundaries in InGaN platelet red nanoLEDs

Axel R Persson[1,2], Anders Gustafsson[3,4], Zhaoxia Bi[4,5,6], Vanya Darakchieva[2,3], Per O. Å Persson[1], Lars Samuelson[3,4,5]

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ThP-GR-38 （Poster）

Epitaxial integration of GaN micro-pillars on a metallic thin film

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ThP-GR-39 （Poster）

Deep-UV emission coming from GaN monolayers grown on AlN top-down µ-wires sidewalls

Lucie Valera[1,2], Lucas Jaloustre[3], Saron Rosy Sales de Mello[2,3], Erwine Pargon[3], Camille Petit-Étienne[3], Gwénolé Jacopin[2], Christophe Durand[1]

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ThP-GR-40 （Poster）

GaN/Ga_2O_3 core/shell nanowires: towards high-efficient CO-sensors

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ThP-GR-41 （Poster）

Ab initio thermodynamic study of the metallic surface wetting layer during MBE (In)GaN growth and its consequences for dopants incorporation

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ThP-GR-42 （Poster）

Faceted Rough Surface Leads to Low Stacking Fault Nucleation-Limited Crystal Growth

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ThP-GR-43 （Poster）

Polygonal Spiral Growth Model on N-polar GaN

Takashi Hanada[1], Rikito Murakami[1], Takahiko Horiai[1], Masao Yoshino[1], Akihiro Yamaji[1], Shunsuke Kurosawa[1], Kei Kamada[1], Yuji Ohashi[1], Hiroki Sato[1], YuuiYokota[1], Akira Yoshikawa[1]

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ThP-GR-44 （Poster）

Strain and Quality Engineering for InGaN-based Red LEDs

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ThP-CH-1 （Poster）

Characterization of InGaN/GaN MQWs grown on semipolar (10-11) on SOI

Beatrice Wannous[1], Pierre-Marie Coulon[2], Fabian Rol[1], Ludovic Dupré[1], Amélie Dussaigne[1], Philippe Vennéguès[2], Jesus Zuniga-Perez[2], François Templier[1]
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ThP-CH-2 （Poster）

Whispering gallery mode oscillation in wurtzite and zinc-blende GaN microdisks

Yuki Kawaguchi[1], Yuka Iwamoto[1], Atsushi Syouji[1], Tetsuya Kouno[2], Akihiko Kikuchi[3], Katsumi Kishino[3], Masaru Sakai[1]
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ThP-CH-3 （Poster）

Study of heat effects of quantum dots as color conversion layer in InGaN based light emitting diodes

Pei-Chun Chen[1], Yung-Ting Chen[1], Yun-Zhen Liu[1], Hung-Pin Hsu[1], Yi-Ping Wang[1], Chin-Cheng Weng[2], Tsung-Pei Chiang[3]
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ThP-CH-4 （Poster）

Characterization of GaN crystals with low carbon concentration grown by halide vapor phase epitaxy based on photoluminescence spectroscopy

Koshi Sano[1], Hajime Fujikura[2], Taichiro Konno[2], Shota Kaneki[2], Shuhei Ichikawa[1], Kazunobu Kojima[1]
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ThP-CH-5 （Poster）

Non-radiative recombination in 230 nm-emitting AlGaN quantum wells

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ThP-CH-6 （Poster）

Time-correlated Luminescence Blinking in InGaN Single Quantum Wells

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ThP-CH-7 （Poster）

Carrier dynamic and optical properties of pyramid-shaped InGaN/GaN micro-light-emitting diodes (μ-LEDs) based multiple quantum wells (MQWs)

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ThP-CH-10 （Poster）

Strain and lattice rotation mapping of GaN at early stage of coalescence by synchrotron x-ray nano diffraction

Maya Wehbe[1,2], Matthew Charles[1], Daniel Pino Munoz[2], Kilian Baril[3], Blandine Alloing[3], Jesús Zuniga Perez[3,4], Nabil Labchir[5], Sebastien Labau[5], Edoardo Zatterin[6], Patrice Gergaud[1]

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ThP-CH-11 （Poster）

Qualification of GaN and AlN substrates and homoepitaxial layers by laboratory X-Ray Topography

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ThP-CH-12 （Poster）

Imitative misfit dislocations – plastic deformation of GaN adjacent to strained InGaN

Joanna Moneta[1], Grzegorz Staszczak[1], Ewa Grzanka[1], Piotr Tauzowski[2], Paweł Dłużewski[2], Julita Smalc-Koziorowska[1]

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ThP-CH-13 （Poster）

Observation of magnetic properties in high-energy proton-irradiated AlGaN/GaN heterostructure

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ThP-CH-14 （Poster）

Tailoring structural and functional characteristics of a-plane AlScN films grown using Magnetron Sputter Epitaxy

Akash Nair[1], Lutz Kirste[1], Balasubramanian Sundarapandian[1], Martina Baeumler[1], Mohit Raghuwanshi[1], Oliver Ambacher[2]
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ThP-CH-15 （Poster）

Polarity Effects in Ion Implanted GaN

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ThP-CH-16 （Poster）

ToF-SIMS analysis of AlScN and AlYN/GaN heterostructures

Patrik Stranak[1], Isabel Streicher[1], Stefano Leone[1], Mario Prescher[1], Lutz Kirste[1]
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ThP-CH-17 （Poster）

Analysis of sub-surface damages induced by mechanical process toward establishment of highly efficient wafering process for GaN substrates

Natsuko Omiya[1], Hideo Aida[2], Hidetoshi Takeda[2], Toshiro Doi[3]
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ThP-CH-18 （Poster）

Anisotropy of strain state and crystallographic tilt of (0001) InGaN on GaN templates

Joanna Moneta[1], Marcin Krysko[1], Jaroslaw Z. Domagala[2], Ewa Grzanka[1], Michal Leszczynski[1], Julita Smalc-Koziorowska[1]
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ThP-CH-19 （Poster）

Comparative study of Ni/Au, Ni/AZO and Ni/ITO bilayer structures for Ohmic Contacts to p-GaN

Taoufik Slimani Tlemcani[1], Clément Mauduit[1,2], Micka Bah[1], Meiling Zhang [1], Zihao Lyu[1], Geoffroy Rouvre[1], Matthew Charles[3], Romain Gwoziecki[3], Arnaud Yvon[2], Daniel Alquier[1]
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ThP-CH-20 （Poster）

Investigation of leakage path in buffer-free heterostructure

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ThP-CH-21 （Poster）

Two-Dimensional Characterization of Au/Ni/Thin Heavily-Mg-Doped p-/n-GaN Schottky Contacts under Applied Voltage by Scanning Internal Photoemission Microscopy

Hiroki Imabayashi[1], Haruto Yoshimura[1], Fumimasa Horikiri[2], Yoshinobu Narita[2], Hajime Fujikura[2], Hiroshi Ohta[3], Tomoyoshi Mishima[3], Kenji Shiojima[1]
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ThP-CH-22 （Poster）

Microscopic evaluation of SiO_2/GaN interface for power device applications by scanning nonlinear dielectric microscopy

Kohei Yamasue[1], Katsunori Ueno[2], Tsurugi Kondo[2], Ryo Tanaka[2], Shinya Takashima[2], Yasuo Cho[1]
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ThP-CH-23 （Poster）

Low-damage Photo-electrochemical Etching and Electrochemical Characterization of p-GaN Surface

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ThP-CH-24 （Poster）

THz ellipsometry and optical Hall effect of group-III-Nitride epitaxial layers and device structures

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ThP-CH-25 （Poster）

Frequency Domain THz-EPR of the Fe^{3+} Defect in GaN

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ThP-CH-26 （Poster）

Impact of doping and current density on universal conductance fluctuations in Ge-doped GaN nanowires

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ThP-CH-27 （Poster）

Carbon Doping Effects on Threading Mixed Dislocations Dissociation in GaN

Han Yang[1], Xuelin Yang[1], Zhaohua Shen[1], Guangxu Ju[1], Bo Shen[1]
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ThP-CH-28 （Poster）

Annealing behavior of deep levels induced by ultra-low-dose Si-ion implantation and subsequent annealing in homoepitaxial n-type GaN

Hiroko Iguchi[1], Masahiro Horita[1,2], Jun Suda[1,2]
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ThP-CH-29 （Poster）

Surface Defects and Electronic Impact in GaN-on-GaN

Andrew Winchester[1], Michael Mastro[2], Travis Anderson[2], Jennifer Hite[2], Sujitra Pookpanratana[1]
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ThP-CH-30 （Poster）

Nitrogen vacancies in GaN templates and their critical role on the luminescence efficiency of blue quantum wells

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ThP-CH-31 （Poster）

Study on the in-gap emissions form C, O ion-implanted GaN films by photothermal deflection spectroscopy and photoluminescence

Masatomo Sumiya[1], Tasuke Saito[1,2], Yuki Arai[1,2], Isao Sakaguchi[1], Yoshitake Onuma[2], Toru Honda[2]
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ThP-CH-32 （Poster）

Observation of Nitrogen Vacancies in Semi-Insulating Ammonothermal GaN:Mg

Marcin Zajac[1], Leszek Konczewicz[1], Elzbieta Litwin Staszewska[1], Ryszard Piotrzkowski[1], Robert Kucharski[1], Pawel Kaminski[2], Roman Kozlowski[2]
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ThP-CH-34 （Poster）

Exploring Room-Temperature Opto-Spintronic Functionality in Dilute Nitride Nanostructures

Y.Q. Huang[1], V. Polojärvi[2], S. Hiura[3], P. Höjer[1], A. Aho[2], R. Isoaho[2], T. Hakkarainen[2], M. Guina[2], S. Sato[3], J. Takayama[3], A. Murayama[3], I. A. Buyanova[1], Weimin M Chen[1]
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ThP-CH-35 （Poster）

How Can InGaN/GaN Heterostructures Be Advantageous for the Piezoelectric Conversion of GaN Nanowires and their Applications?

Amaury Chevillard[1], Quang-Chieu Bui[1,2], Pascal Chrétien[2], Nuño Amador[1], Arup Kunti[1], Laurent Travers[1], Martina Morassi[1], Frédéric Houzé[2], Maria Tchernycheva[1], Noëlle Gogneau[1]
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ThP-CH-36 （Poster）

Phonon Behavior of 2D GaN Observed by STEM-EELS

Zhenyu Zhang[1], Tao Wang[1,2], Weikun Ge[1], Ping Wang[1], Bo Shen[1], Xinqiang Wang[1]
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ThP-OD-1 （Poster）

The effect of AlN multilayer (ML) growth rate on the growth of semipolar (11-22) InGaN/GaN LED

Gary Tan[1], Ahmad Shuhaimi Abu Bakar[1], Hann Sen Low[1], Chong Seng Ooi[1], Omar Al-Zuhairi[1], Yew Hoong Wong[2], Wan Haliza Abdul Majid[1]
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ThP-OD-2 （Poster）

Investigation of the Voltage Efficiency of GaN-Based Light-Emitting Diodes at Cryogenic Temperatures

Changeun Park[1], Sangjin Min[1], Jong-In Shim[1], Dong-Soo Shin[1]
[1] Hanyang University, Korea

ThP-OD-3 （Poster）

Optical and Electrical Noise in RGB LEDs

Danylo Bohomolov[1,2], Ulrich T. Schwarz[1], Vita Ivanova[2]
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ThP-OD-4 （Poster）

Formation of porous 4H-SiC by modified voltage controlled anodic oxidation for realization of high color rendering nitride-based white LEDs

Taisei Mizuno[1], Syota Akiyoshi[1], Motoaki Iwaya[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], Yiyu Ou[2], Haiyan Ou[2]
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ThP-OD-5 （Poster）

Group III-Nitride Based Visible Light Emitting Diode: Design, Optimization and Fabrication

Arnab Mondal[1], Umang Singh[1], Apurba Laha[1]
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ThP-OD-6 （Poster）

The Optoelectric probe with Resonant Cavity enhance Green LEDs array for optogenetics applications

Binru Zhou[1,2], Xiaoping Zhou[1], Xiaoyan Yi[1], Yiyun Zhang[1], Xingfei Zhang[1], Quanyong Lu[2], Jinmin Li[1]
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ThP-OD-7 （Poster）

InGaN-based light-emitting diodes grown on a graphene interlayer/patterned sapphire substrate

Ashutosh Shirsat[1], Wei-Tong Po[1], Ya-Sin Hsiao[1], Wen-Cheng Ke[1]
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ThP-OD-8 （Poster）

Orthogonal linearly polarized electroluminescence from a semiconductor resonant-cavity light emitting diode

Wei Ou[1], Yang Mei[1], Hao Long[1], Yukun Wang[1], Tao Yang[1], Zhongming Zheng[1], Leiying Ying[1], Baoping Zhang[1]
[1] *Xiamen University, China*

ThP-OD-9 （Poster）

Emitting-color distribution characteristics of GaN-based nanopillar LEDs on multi-crystalline Si substrate

Houyao Xue[1], Jinyang Li[1], Shuhang Gou[1], Shingo Taniguchi[1], Tsubasa Saito[1], Yuichi Sato[1]
[1] *Akita University, Japan*

ThP-OD-10 （Poster）

Optimization of p-AlGaN electron blocking layer in GaInN/GaN multi-quantum-shell LEDs

Yuta Hattori[1], Soma Inaba[1], Ayaka Shima[1], Shiori Ii[1], Mizuki Takahashi[1], Yuki Yamanaka[1], Kosei Kubota[1], Satoshi Kamiyama[1], Tetusya Takeuchi[1], Motoaki Iwaya[1]
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ThP-OD-11 （Poster）

M-plane AlGaN digital alloy for microwire UV-B LEDs

Lucie Valera[1,2], Vincent Grenier[1], Sylvain Finot[2], Catherine Bougerol[2], Joël Eymery[3], Gwénolé Jacopin[2], Christophe Durand[1]
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ThP-OD-12 （Poster）

Fabrication on GaInN nanocolumns LEDs on the underlying bulk GaInN

Hiromi Akagawa[1], Ryuta Shindo[1], Jumpei Yamada[2], Tomohiro Yamaguchi[1], Rie Togashi[2,3], Takeyoshi Onuma[1], Ichirou Nomura[2,3], Tohru Honda[1], Katsumi Kishino[2]
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ThP-OD-13 （Poster）

Carrier Kinetics in optically pumped InGaN/GaN Nanowire Mesh Structure Fabricated by Top-down Approach

Navneet Kumar Thakur[1], Kanchan Singh Rana[1], Swaroop Ganguly[1], Dipankar Saha[1]
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ThP-OD-14 （Poster）

Plasma-Assisted Molecular Beam Epitaxy Grown InGaN/GaN Based Multi-Quantum Disk Nanowire Light Emitting Diodes with High Indium Content (<20%)

Soumyadip Chatterjee[1], Ajoy Biswas[1], Subhranshu Sekhar Sahu[1], Umang Singh[1], Shashank Rai[1], Swagata Bhunia[1], Apurba Laha[1]
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ThP-OD-15 （Poster）

Design and fabrication of large modulation bandwidth InGaN/GaN laser diodes for high-speed visible light communications

Junhui Hu[1,2], Junfei Wang[1,2], Shulan Yi[1,2], Haolin Jia[1,2], Chao Shen[1,2]
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ThP-OD-16 （Poster）

Significant effect of thin oxide layer on characteristics of p-InGaN/GaN nonalloyed ohmic contacts

Fan Zhang[1,2], Rongxin Wang[1], Fangzhi Li[1], Aiqin Tian[1], Jianping Liu[1], Hui Yang[1,2]
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ThP-OD-17 （Poster）

High-resolution spectroscopy of blue high-power laser diodes with a Fabry-Pérot interferometer

Dominic J. Kunzmann[1], Raphael Kohlstedt[1], Lukas Uhlig[1], Ulrich T. Schwarz[1]
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ThP-OD-18 （Poster）

Analytical Models of the Overflow Currents in GaN-based LEDs and LDs

Shukun Li[1], Huanqing Chen[1], Menglai Lei[1], Guo Yu[1], Xiaodong Hu[1]
[1] *Peking University, China*

ThP-OD-19 （Poster）

Heterogeneously integrated InGaN-based green microdisk light-emitters on Si (100)

Yiyun Zhang[1], Xiaoyan Yi[1], Binru Zhou[1], Xiaoping Zhou[1], Xingfei Zhang[1], Zhicong Li[1], Guohong Wang[1], Jinmin Li[1]
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ThP-OD-20 （Poster）

Characteristics of n-GaN buried multi-quantum-shell LDs with facet coating

Shiori Ii[1], Mizuki Takahashi[1], Yuki Yamanaka[1], Soma Inaba[1], Ayaka Shima[1], Kosei Kubota[1], Yuta Hattori[1], Satoshi Kamiyama[1], Tetsuya Takeuchi[1], Motoaki Iwaya[1], Kentaro Nonaka[2], Yoshitaka Kuraoka[2], Takashi Yoshino[2]
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ThP-OD-21 （Poster）

Enhanced performance of GaN Microdisk laser with a dielectric DBR

Zhongqi WANG[1], Yuk Fai Cheung[1], Wai Yuen Fu[1], Hoi Wai Choi[1]
[1] *The University of Hong Kong, Hong Kong*

ThP-OD-22 （Poster）

Gradual Degradation of InAlGaN-based Green Laser Diodes

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ThP-OD-23 （Poster）

Crack suppression of high Al-mole-fraction AlGaN layers onpatterned GaN substrates for ultraviolet laser diodes

Yuto Ando[1], Zhiyu Xu[1], Theeradetch Detchprohm[1], Preston Young[2], Russell D Dupuis[1]
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ThP-OD-24 （Poster）

Study on degradation of deep ultraviolet laser diode

Ziyi Zhang[1,2], Maki Kushimoto[2], Akira Yoshikawa[1,2], Chiaki Sasaoka[2], Hiroshi Amano[2]
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ThP-OD-25 （Poster）

Towards long lifetime and ultra-low losses InGaN laser diodes by means of tunnel junction MOVPE structures.

Lucja Marona[1,2], Szymon Grzanka[1,2], Julita Smalc Koziorowska[1], Krzysztof Gibasiewicz[1], Piotr Perlin[1,2]
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ThP-OD-26 （Poster）

Droplet Flow Sensors based on GaN Integrated Devices

Gaofei Lu[1], Xiaoshuai An[1], Yumeng Luo[1], Hongying Yang[1], Kwai Hei Li[1]
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ThP-OD-27 （Poster）

GaN-based Optical Hydrophones for Underwater Acoustic Sensing

Liushu Pan[1,2], Jian Chen[1,2], Xiaoshuai An[1], Yumeng Luo[1], Gaofei Lu[1], Xinke Tang[2], Kwai Hei Li[1,2]
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ThP-OD-28 （Poster）

Viscosity Sensing based on Chip-Scale GaN Optical Integrated Devices

Yumeng Luo[1], Jiahao Yin[1], Gaofei Lu[1], Kwai Hei Li[1]
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ThP-OD-29 （Poster）

III-Nitride Microsensor for Magnetic Field Detection

Jian Chen[1,2], Xinke Tang[2], Kwai Hei Li[1,2]
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ThP-OD-30 （Poster）

Monolithically Integrated GaN Optical Devices for Proximity Detection

Xiaoshuai An[1], Kwai Hei Li[1]
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ThP-ED-1 （Poster）

High Power-Linearity RF AlN/GaN/InGaN Coupling-Channel HEMTs

Hao Lu[1]
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ThP-ED-2 （Poster）

A Comparative Study on the DC and RF Performance of GaN HEMTs with a Graded InAlGaN Barrier

DE SHIEH[1], Zheng-fong Lee[1], Ming-Yuan Lee[1], Hui-Yu Chen[2], Po-Tsung Tu[2], Po-Chun Yeh[2]
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ThP-ED-3 （Poster）

InAlN/GaN HFET for RF-Operation Grown on Silicon Substrate

Thorsten Zweipfennig[1], Yuan Ji[1], Jasmin Ehrler[1], Achim Noculak[2], Dominik Meyer[3], Christof Mauder[3], Jens Bolten[4], Holger Kalisch[1], Max Christian Lemme[4,5], Michael Heuken[3,1], Renato Negra[2], Andrei Vescan[1]
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ThP-ED-4 （Poster）

Epitaxial AlN-based High-Q Bulk Acoustic Wave Resonators: Simulation and Fabrication

Padmalochan Panda[1], Anshul Jain[2], Soumyadip Chatterjee[1], Siddharth Tallur[1], Apurba Laha[1]
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ThP-ED-5 （Poster）

Temperature-Stable Performance of E-mode p-GaN Gate RF HEMT at Cryogenic Temperatures

Yat Hon Ng[1], Zheyang Zheng[1], Yan Cheng[1], Kevin J. Chen[1]
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ThP-ED-7 （Poster）

Comparison of AlGaN/GaN High Electron Mobility Transistor (HEMTs) on Silicon with GaN cap and In-situ SiN with Trapping Analysis

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ThP-ED-8 （Poster）

Tri-gate normally-off AlN/GaN HEMTs with excellent RF power performance for both low-voltage and high-voltage applications

Jingshu Guo[1], Jiejie Zhu[1], Siyu Liu[1], Lingjie Qin[1], Yuxi Zhou[1], Xiaohua Ma[1]
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ThP-ED-9 （Poster）

InAlN/GaN HEMTs on Si with Excellent Mm-Wave Noise Performance

Guangjie Gao[1,2], Zhihong Liu[1,2], Lu Hao[1,2], Hanghai Du[1], Weichuan Xing[2], Hong Zhou[1], Weihang Zhang[2], Xiangdong Li[2], Jincheng Zhang[1,2], Yue Hao[1,2]
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ThP-ED-10 （Poster）

A Graded-Gate Structure for improving linearity of AlN/GaN HEMT

Bowen Zhang[1], Jiejie Zhu[1], Siyu Liu[1], Jingshu Guo[1], Lingjie Qin[1], Yuxi Zhou[1], Yuanyuan Zhou[1], Xiaohua Ma[1]
[1] Xidian University, China

ThP-ED-11 （Poster）

A 12-16 GHz GaN-on-Si Power Amplifier with >38dBm Output Power and >28% PAE for Very Small Aperture Terminal Application in SatCom

ROBIN KALYAN[1], Nur Aisyah Binte Kuyob[1], Xie Hanlin[1], Gao Yuan[1], Kumud Ranjan[2], Raja Muthusamy Kumarasamy[1], Kevin Chai Tshun Chuan[1], Kafai Leung[1], Navab Singh[1]
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ThP-ED-12 （Poster）

High-performance Broad C-band Power Amplifier without Vias

Bazila Parvez[1], Bhanu Bhakta Upadhyay[1], Jaya Jha[1], Nishant Goel[1], Subhajit Basak[1], Jyoti Sahu[1], Arpit Sahu[1], Mahalaxmi Patil[1], Jayanti Paul[1], Gaurav Garg[1], Swaroop Ganguly[1], Dipankar Saha[1]
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ThP-ED-13 （Poster）

Design of GaN based Envelope Tracking Power Amplifier

Weijun Luo[1,2], Xin Jiang[1,2], Chenhao Li[1,2], Ke Wei[1,2]
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ThP-ED-14 （Poster）

Fabrication of ultralow bevel angle mesa structures for vertical GaN devices

Jarosław Tarenko[1,2], Maciej Kamiński[1,2], Andrzej Taube[1], Marek Ekielski[1], Renata Kruszka[1], Magdalena Zadura[1], Anna Szerling[1], Paweł Prystawko[3], Michał Boćkowski[3], Izabella Grzegory[3]
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ThP-ED-15 （Poster）

Source/Drain Regrowth of Si-doped III-arsenide for GaN-channel HEMTs

Takuya Hoshi[1], Yuki Yoshiya[1], Hiroki Sugiyama[1], Fumito Nakajima[1]
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ThP-ED-16 （Poster）

Influence of Different Trench Etching Methods on Schottky Diode Characteristics for Etch Damage Investigation

Thorsten Zweipfennig[1], David Schippers[1], Qi Shu[1], Jasmin Ehrler[1], Arne Debald[2], Holger Kalisch[1], Michael Heuken[2,1], Andrei Vescan[1]
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ThP-ED-18 （Poster）

Optimization of Schottky barriers for ohmic contacts on p-type GaN

Yuanlei Zhang[1,2], Weisheng Wang[1,2], Zhiwei Sun[1,2], Ye Liang[1,2], Zhijie Kong[1,2], Jiudun Yan[2], Wen Liu[1,2]
[1] Xi'an Jiao-tong Liverpool University, China, [2] University of Liverpool, UK

ThP-ED-19 （Poster）

High-Quality Ohmic Contacts and Carrier Transport Mechanism of Ni/Ag to P-GaN/AlGaN/GaN/Si Platform

Zhiwei Sun[1], Maoqing Ling[1], Yujin Wu[1], Tianyu Zhao[1], Weisheng Wang[1], Yuanlei Zhang[1], Wen Liu[1]
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ThP-ED-20 （Poster）

Ohmic contacts process to n-GaN irradiated by KrF excimer laser

Yasutsugu Usami[1], Kaname Imokawa[1], Ryouichi Nordomi[1], Tetsu Kachi[2]
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ThP-ED-21 （Poster）

Epitaxial κ-Ga_2O_3/GaN heterostructure for high electron-mobility transistors

Ha Young Kang[1], Min Jae Yeom[2], Yoonho Choi[1], Chanheok Park[1], Chan Woong Kim[1], Seonchang Kim[1], Gyeong Ryul Lee[1], Geonwook Yoo[2], Roy Byung Kyu Chung[1]
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ThP-ED-22 （Poster）

High-Performance AlGaN/GaN heterojunction Hall Sensors on Si Substrate

Kaiming Ma[1], Huolin Huang[1], Nan Sun[1], Nannan Ding[1], Jianxun Dai[1], Yanhong Liu[1]
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ThP-ED-24 （Poster）

Monolithic Integrated GaN Resonant Tunneling Diode Pair with Picosecond Switching Time for High-speed Multiple-valued Logic System

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ThP-ED-25 （Poster）

Fabrication and characterization of BGaN diodes for nuclear instrumentation system

Ryohei Kudo[1], Tatsuhiro Sakurai[1], Seiya Kawasaki[2], Tetsuichi Kishishita[3], Yoshinori Sakurai[4], Hiroshi Yashima[4], Takahiro Makino[5], Takeshi Ohshima[5], Yoshio Honda[2], Hiroshi Amano[2], Yoku Inoue[1], Toru Aoki[1], Takayuki Nakano[1]
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ThP-ED-26 （Poster）

UV-Assisted Room Temperature Hydrogen Detection of AlGaN/GaN Heterojunction Field-Effect Sensor

Hee-Jae Oh[1], Won-Tae Choi[1], Jeong-Jin Kim[1], Ho-Young Cha[1]
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ThP-ED-27 （Poster）

Overvoltage Failure Process of Cascode GaN FETs

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ThP-ED-28 （Poster）

Experimental study and characterization on the Thermo-electro multi-physics coupling failure of GaN HEMTs under high-power microwave pulse

Jiahui Yuan[1], Xiangdong Li[2], Hongyue Wang[3], Zongqi Cai[4], Weiheng Shao[5], Yiqiang Chen[6], Jincheng Zhang[1,7], Yue Hao[1,8]

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ThP-ED-29 （Poster）

The degradation of threshold voltage induced by forward gate voltage stress in the p-GaN/AlGaN/GaN HEMTs

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ThP-ED-30 （Poster）

Investigation of the V_{TH} Instability Induced by Different Trap States in AlGaN/GaN MIS-HEMTs under High Reverse Gate Stress

Hao Zhang[1], Xuefeng Zheng[1], Yuehua Hong[1], Jialong Wang[1], Xiaohua Ma[1], Yue Hao[1]

[1] Xidian University, China

ThP-ED-31 （Poster）

Mg Concentration Dependence of Threshold Voltage Shift under Sub-Eg Light Illumination and Positive Bias Stress in Vertical GaN Trench MOSFETs

Mitsuki Inagaki[1], Tohru Oka[1,2], Nariaki Tanaka[2], Kazuya Hasegawa[2], Takatomi Izumi[2], Tsutomu Ina[2], Go Nishio[2], Takaki Niwa[2], Jun Suda[1]

[1] Nagoya University, Japan, [2] Toyoda Gosei, Japan

ThP-ED-32 （Poster）

Effect of GaN Channel Thickness on Device Performances of AlGaN/GaN HEMT Grown on AlN Buffer Layer

Jeong-Won Yang[1], Geon-Woo Kim[1], Jae-Jin Kim[1], Na-Yeon Kang[1], Hee-Gu Kwak[1], Hee-Su Kim[1], Okhyun Nam[2], Ki-Sik Im[1]

[1] Daegu Campus, Korea Polytechnics, Korea, [2] Tech University of Korea, Korea

ThP-ED-33 （Poster）

Interface and transport properties of N-polar GaN/AlGaN MIS-HEMTs with different gate dielectrics

Yuxi Zhou[1], Haotian Ma[2], Gaoqiang Deng[2], Jiejie Zhu[1], Jingshu Guo[1], Siyu Liu[1], Yuantao Zhang[2], Xiaohua Ma[1]

[1] The National Key Discipline Laboratory of Wide Bandgap Semiconductor, School of Microelectronics, Xidian University, China, [2] State Key Laboratory of lntegrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, China

ThP-ED-34 （Poster）

Novel Analysis of Noise in TMAH-treated Normally-off GaN Transistors

Hee-Su Kim[1], Hee-Gu Kwak[1], Na-Yeon Kang[1], Jeong-Won Yang[1], Geon-Woo Kim[1], Jae-Jin Kim[1], Ki-Sik Im[1]

[1] Daegu Campus, Korea Polytechnics, Korea

ThP-ED-35 （Poster）

Study on 2DEG Density in ScAlN/GaN and AlGaN/GaN Heterostructures Based on Simulation and Analytical Modeling

Yusuke Wakamoto[1], Atsushi Kobayashi[2], Yoshiaki Nakano[1], Takuya Maeda[1]

[1] The University of Tokyo, Japan, [2] Tokyo University of Science, Japan

ThP-GR-LN1 （Poster）

Metastable shallow Si donors in AlN

Yujie Liu[1], Sieun Chae[1], Emmanouil Kioupakis[1]

[1] University of Michigan, United States of America

ThP-GR-LN2 （Poster）

Investigation of Polarization Doping in Nitrogen Polar Graded $Al_xGa_{1-x}N$ (1>x>0.5) Film by Plasma Assisted Molecular Beam Epitaxy

Md Irfan Khan[1], Cindy Lee[3], Elaheh Ahmadi[1,2]

[1] Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, United States of America, [2] Department of Electrical and Computer Engineering, University of California, Los Angeles, United Statesof America, [3] Department of Mechanical Engineering, University of Michigan, Ann Arbor, United States of America

ThP-GR-LN3 （Poster）

A New Tool for the Quantification of Impurities in PVT-AlN Bulk Crystals: UV Absorption

Andrew Klump[1], Carsten Hartmann[1], Matthias Bickermann[1], Thomas Straubinger[1]

[1] Leibniz-Institut für Kristallzüchtung, Germany

ThP-GR-LN4 （Poster）

Buffer-free GaN-on-X engineered substrates fabricated by Smart Cut^{TM} technology

Gweltaz Gaudin[1], Christelle Veytizou[1], Jan Strate[1], Florence Servant[1], Amélie Thomas[1], Ionut Radu[1], Amal Sediri[2], Pierrick Gilles[2], Marc Rabarot[2], Frank Fournel[2], Frédéric Mazen[2], Sophie Giroud[2], Cécile Moulin[2], Yann Bogumilowicz[2]

[1] Soitec SA, France, [2] Univ. Grenoble Alpes, CEA, LETI, France

ThP-GR-LN5 （Poster）

Computational investigation of GaN growth for power electronics applications

Kana Ishisone[1], Mauro Boero[1,2], Kieu My Bui[2], Atsushi Oshiyama[2], Yoshihiro Kangawa[2,3], Kenji Shiraishi[2,4]

[1] University of Strasbourg, Institut de Physique et Chimie des Matériaux de Strasbourg, CNRS, UMR 7504, France, [2] Institute of Materials and Systems for Sustainability, Nagoya University, Japan, [3] Research Institute for Applied Mechanics, Kyushu University, Japan, [4] Graduate School of Engineering, Nagoya University, Japan

ThP-CH-LN1 （Poster）

Deep-UV hyperspectral microscopy of high quality epitaxial hBN monolayers grown by MBE

Adrien Rousseau[1], Pierre Valvin[1], Juliette Plo[1], Alexandra Ibanez[1], Tin S. Cheng[2], Jonathan Bradford[2], Tyler S.S. James[2], Christopher J. Mellor[2], Peter H. Beton[2], Sergei V. Novikov[2], Guillaume Cassabois[1], Bernard Gil[1]
[1] *Laboratoire Charles Coulomb, France,* [2] *University of Nottingham, UK*

ThP-OD-LN1 （Poster）

Fabricating Dot-LEDs for Display Applications: A Novel Approach Using Electrochemical Etching and Sonochemical Separation

Minji Ko[1], SeungJe Lee[1], Yun Jae Eo[1], Keyong Nam Lee[1], Young Rag Do[1]
[1] *Kookmin University, Korea*

ThP-OD-LN2 （Poster）

Improved Alignment Orientation of Individually Separated Nanorod Light-Emitting Diodes through DC offset-AC Dielectrophoresis

Yun Jae Eo[1], Minji Ko[1], SeungJe Lee[1], Keyong Nam Lee[1], Young Rag Do[1]
[1] *Kookmin University, Korea*

ThP-OD-LN3 （Poster）

Enhancing AlGaN UV laser emission by hyperbolic metamaterial resonator

Kun-Ching Shen[1], Lung-Hsing Hsu[1], Yuh-Jen Cheng[1]
[1] *Academia Sinica, Taiwan, Taiwan*

ThP-ED-LN1 （Poster）

Multi-Gate Finger Microwave GaN HEMTs on Si substrates with Individual Source Vias

Lu Hao[1], Zhihong Liu[1], Hanghai Du[1], Guangjie Gao[1], Jincheng Zhang[1], Weichuan Xing[1], Hu Wei[1], hong Zhou[1], Yue Hao[1]
[1] *Xidian University, China*

ThP-ED-LN2 （Poster）

Investigating the Short Channel Effects and Scaling Capability between N-polar and Ga-polar GaN HEMTs

Hao Lee[1], Yuh-Renn Wu[1]
[1] *National Taiwan University, Taiwan*

ThP-ED-LN3 （Poster）

Strain Engineered Unified SiN Deposition for Device Passivation and Capacitance Dielectric in GaN MMIC

Jyoti Sahu[1], Bazila Parvez[1], Jayanti Paul[1], Ranie J. [1], Subhajit Basak[1], Mahalaxmi Patil[1], Arpit Sahu[1], Nishant Goel[1], Swaroop Ganguly [1], Dipankar Saha[1]
[1] *Department of Electrical Engineering, IIT Bombay, India*

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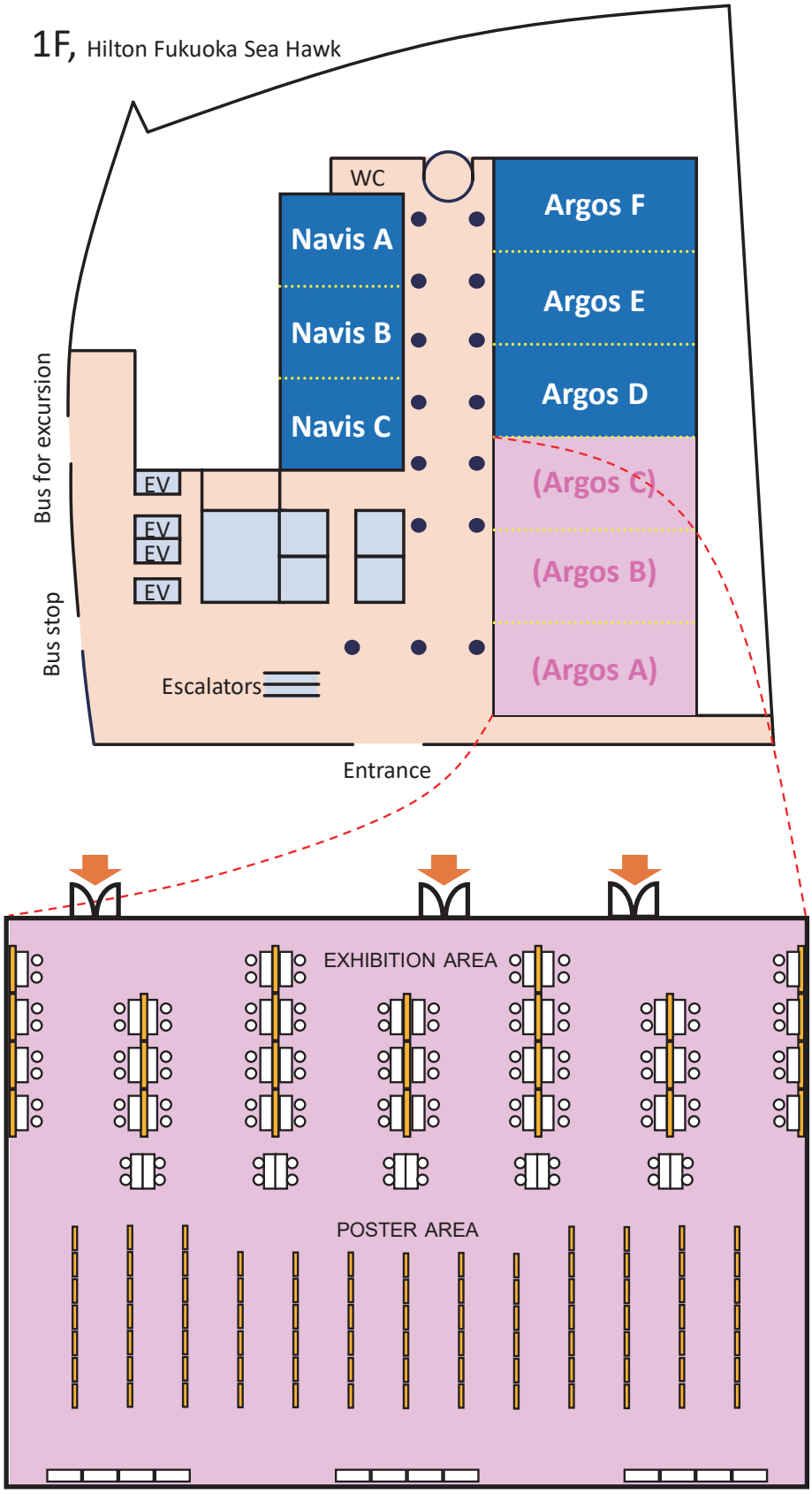
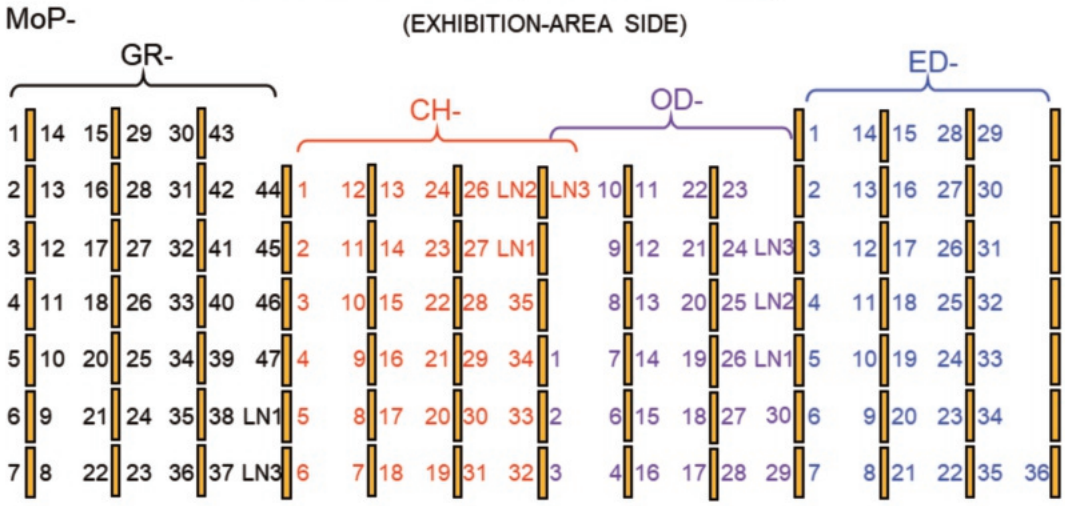
Location of Presentations and Exhibitions

Session Rooms

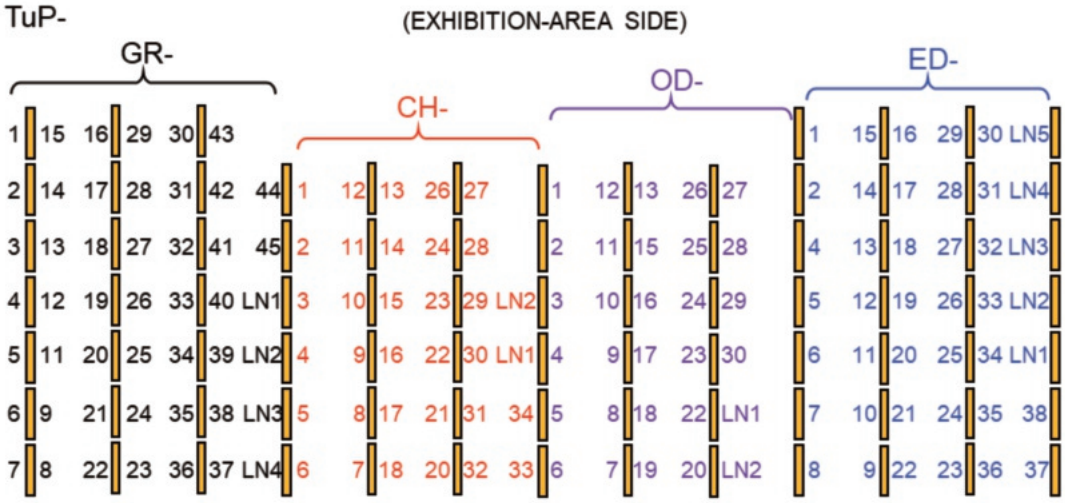


Arrangement of Posters

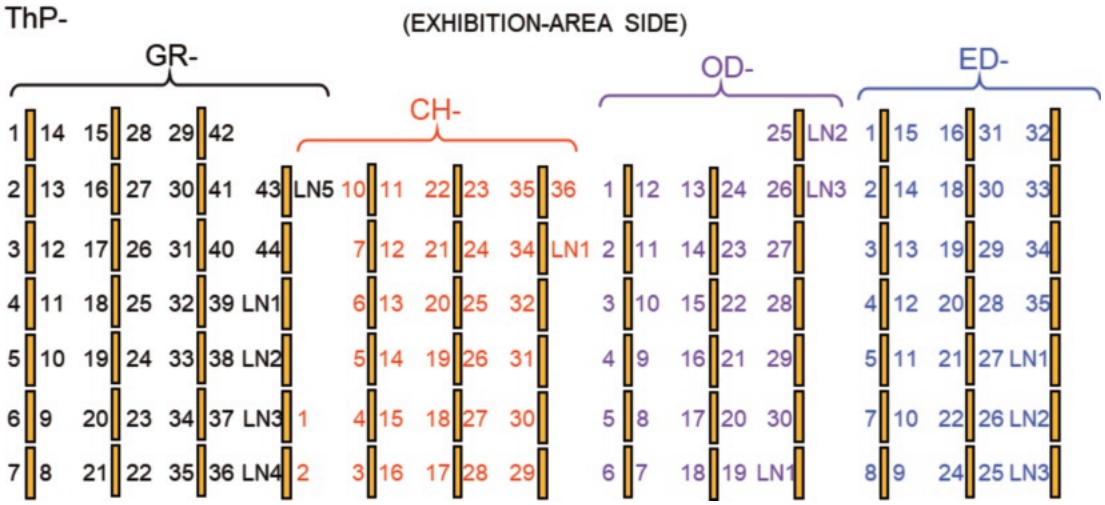
Poster Session I (Nov. 13, Monday)



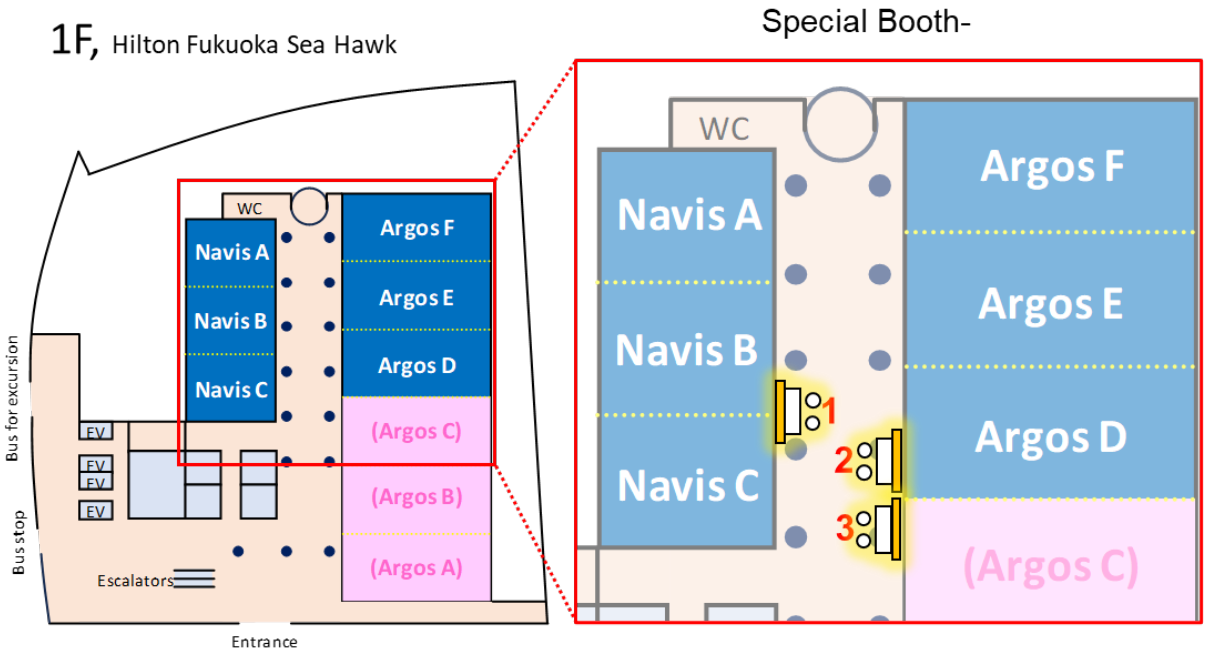
Poster Session II (Nov. 14, Tuesday)



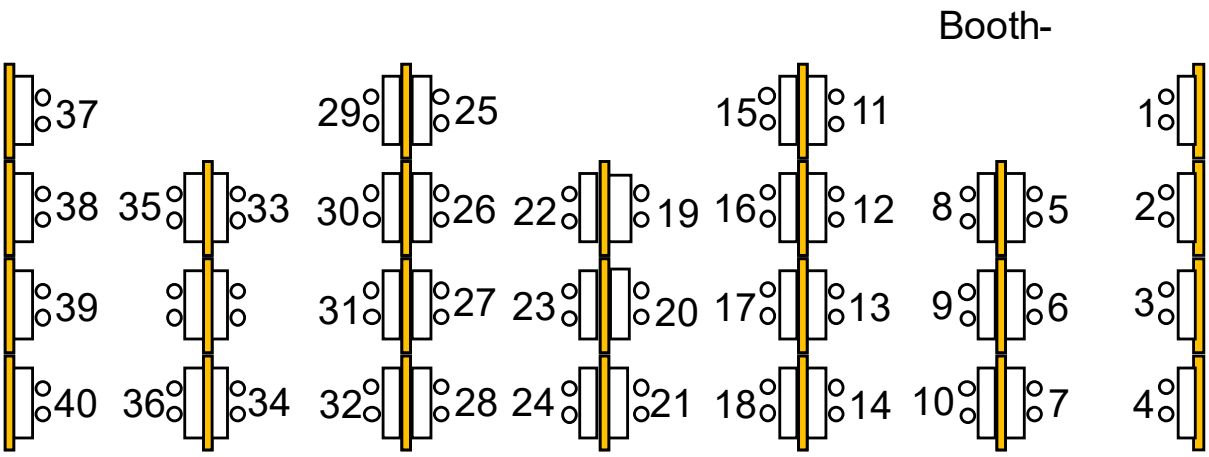
Poster Session III (Nov. 16, Thursday)



Arrangement of Special Exhibitions



Arrangement of Exhibitions



Special Exhibition

Special Booth 1	HEXATECH	HexaTech, Inc. www.hexatechinc.com
HexaTech is an industry-leading manufacturer of single crystal aluminum nitride (AlN) substrates. This substrate material is enabling long life UV-C light emitting diodes (LEDs) for disinfection applications, deep UV lasers for biological threat detection, high voltage switching devices for efficient power conversion, and RF components for satellite communications.		

Special Booth 2	Malvern Panalytical a spectris company	Malvern Panalytical Ltd. https://www.malvernpanalytical.com/en/
Malvern Panalytical's dedicated X-ray diffraction systems provide absolute, calibration-free, and accurate information on crystal growth, giving material composition, film thickness, grading profile, and phase and crystal quality. The instruments perform host-controlled wafer analysis, using the SECS/GEM protocols while retaining flexibility to perform applications across the board.		

Special Booth 3	STR	STR Japan K.K. www.str-soft.com
STR provides specialized commercial software, charged calculation and consulting services for modeling of crystal growth in bulk growth, epitaxy and semiconductor devices. Comprehensive research is behind every consulting activity and software product, which enables careful validation of physical models and approaches applied. STR's expertise in the crystal growth science and device engineering is presented in variety of publications in the peer-reviewed journals and conference presentations.		

Exhibition

Booth 1	AIXTRON	AIXTRON SE https://www.aixtron.com/en
AIXTRON's product portfolio includes MOCVD Equipment based on the Planetary Reactor® or Close Coupled Showerhead® concept for compound semiconductor materials, high-temperature CVD batch systems for SiC applications, and MOCVD, CVD for the deposition of carbon-nanotubes and other 2D nanomaterials.		

Booth 2	CHINO	CHINO CORPORATION https://www.chino.co.jp/
Radiation thermometers with video scope, temperature controllers for pipes, temperature sensors, etc.		

Booth 3	LAYTEC MEMBER OF THE NYNOMIC GROUP	LayTec AG www.laytec.de
LayTec is a major provider of in-situ and in-line optical metrology for thin-film processes. These metrology tools are used in a broad range of thin-film applications such as LED & LASER production, thin-film photovoltaics, oxide and organic deposition as well as other large area deposition processes. LayTec's integrated metrology provides access to all key thin-film parameters in real-time – either in-situ, during the deposition process, or in-line. Recently, also in-situ metrology tools for wet and dry etching have been added expanding LayTec's portfolio along the production chain. Beyond these integrated methods, LayTec also offers mapping solutions which ideally complement in-situ measurements by providing uniformity analysis of the deposited layers. The implementation of LayTec metrology systems in production processes significantly shortens development cycles and enables an efficient quality control that helps to considerably reduce production and development costs		

Booth 4	CERAMIC FORUM	Ceramicforum Co., Ltd http://www.ceramicforum.co.jp/
Bulk and Epi: GaN (on GaN, Si, SA, SiC) and SiC (on SiC) || LED/VCSEL/HEMT/Power structures || Device processing services || Laytec: Epi in-situ measurement and mapper systems || DLTS and Hall effect measurement service || Crystal evaluation equipment || KOH etching machines || Grinding/polishing, edge grinding machines		

Booth 5	Solution Provider KYODO INTERNATIONAL INC.	Kyodo International Inc. https://www.kyodo-inc.co.jp/electronics/wafer-process/data/thinfilm-powericelectrode.html
Processing services for R&D of GaN, etcProcessing services for R&D of VCSEL and power devices.ScAlN sputtering service for R&D.Nanoimprint Lithography Total Solution: from mold to imprint services. Nanowire prototyping service for UV lasers. Realizing Nano-Micro Order Structures: Nanoimprint Solution TEX Series.		

Booth 6	松田産業株式会社	MATSUDA SANGYO CO., LTD https://www.matsuda-sangyo.co.jp/ja/index.html
Precious metal deposition materials, plating solutions		

Booth 7	EpiQuest	EpiQuest,Inc. https://www.epiquest.co.jp/
MOCVD, HVPE, MBE, KOH-Etching System		

Booth 8	R-DEC Co.,Ltd.	R-DEC Co., Ltd. https://g.rdec.co.jp/e/
We R-DEC provide self-developed vacuum equipment as well as sell domestic and overseas leading suppliers' products as a distributor. We are exhibiting Veeco MBE components (Plasma Source for Nitrogen and SUMO Cell), in-situ metrology systems for thin-film from k-Space, RHEED, and a vacuum pumping system.		

Booth 9	TII 東京インスツルメンツ TOKYO INSTRUMENTS	Tokyo Instruments, Inc. https://www.tokyoinst.co.jp/products/list_function/cathode_luminescence.html
Tokyo Instruments is an authorized representative of Attolight, manufacturer of the only quantitative cathodoluminescence (CL) systems that deliver superior performance, maximum ease-of-use. Attolight firmly believes in the potential of CL and aims at establishing the technology as a standard in-line inspection method in semiconductor industry.		

Booth 10	attolight™	ATTOLIGHT AG www.attolight.com
Attolight AG is an emerging leader in defect inspection for advanced semiconductor materials and devices. Attolight's core expertise lies in the applications of quantitative Cathodoluminescence (qCL), advanced data analysis, and design & production of integrated CL tools. CL is a non-destructive characterization method that produces spectroscopic data at the nanoscale and provides a deeper understanding of the structure of materials.		

Booth 11	BRUKER	Bruker Japan K.K. https://www.bruker-nano.jp/20190403150156
Bruker XRD system is the long-established and well-proven QC system for epilayers. It is a high-resolution X-ray diffraction tool that is ideal for quality control. It is used for the measurement of composition and thickness in epitaxial layers of almost any material.		

Booth 12	KFK Furuya Metal Co., Ltd.	Furuya metal co.,LTD. https://www.furuyametals.co.jp/english/
Ir and Pt crucible. Thermocouple. Sputtering target.		

Booth 13	Orbray	Orbray Co., Ltd. https://orbray.com/
Contract processing (GaN wafer、AlN wafer), Ceramic wafer (SiC, AlN) , and NAPHIA series		

Booth 14	JLC JAPAN LASER	Japan Laser Corporation https://www.japanlaser.co.jp/en/
We will introduce our high-quality photonic components and equipment for a wide range of scientific applications, including Picosecond Pulsed Lasers and LEDs, products for Photon Counting and Timing, Fluorescence Spectrometers, and Fluorescence Microscopes		

Booth 15	中博芯 -SinoGaN-	Beijing SinoGaN Semiconductor Technology Co., Ltd. www.sino-gan.com
SinoGaN is a high-tech enterprise specializing in the R & D, production and service of nitride wide band gap semiconductor materials and chips.		

Booth 16	SEIKEN	Seiken Co., Ltd. https://www.seiken.co.jp/
SEMICONDUCTOR CARRIER ANALYZER		

Booth 17	IASEMI	Jiangsu Institute of Advanced Semiconductors Ltd. www.iasemi.cn
Jiangsu Institute of Advanced Semiconductors Ltd. (IASEMI) is a new research institution registered in Suzhou Industrial Park in July 2019. With the goal of fostering and developing the advanced semiconductor technology application industry, the Institute aims to establish an innovation platform covering the whole industry chain and system of the advanced semiconductor to realize the sustainable supply and supporting capacity of technology, talents, achievements and other resources.		

Booth 18	ITC Ion Technology Center Co.,Ltd	Ion Technology Center Co.,Ltd https://www.iontc.co.jp
The Ion Technology Center provides materials and failure analysis, and semiconductor processing services such as ion implantation, annealing, and deposition. As we have sufficient experience on compound semiconductors GaN, etc., we can support R&D and quality improvement. We will propose the best method including consultation about our services.		

Booth 19	TOSOH	TOSOH CORPORATION https://www.tosoh.co.jp/product/?category=functionality
Tosoh Corporation is one of the international suppliers of sputtering targets. We have recently developed a high-purity GaN sputtering target, and will be exhibiting our GaN target and deposition products. Sputter epitaxy has great potential for low cost and high productivity of GaN devices.		

Booth 20	NTT AT NTT Advanced Technology Corporation	NTT Advanced Technology Corporation https://www.ntt-at.com/
NTT-AT provides GaN epitaxial wafers for power and RF HEMT devices and related products including GaN HEMT processed wafers, GaN power HEMT chips, and GaN HEMT applied devices such as USB PD charger, LED power supply, UVC sterilization box, and so on.		

Booth 21	SEMILAB	Semilab Japan K.K. https://www.semilab-j.jp/
Hall Measurement, Deep Level Transient Spectrometer, Ellipsometer		

Booth 22	LIGHT CONVERSION	Light Conversion https://lightcon.com/
LIGHT CONVERSION designs and manufactures femtosecond lasers, wavelength-tunable sources (OPAs), optical parametric chirped-pulse amplifiers (OPCPAs), microscopy sources, and spectroscopy systems for industrial, scientific, and medical applications. LIGHT CONVERSION provides unique solutions for today's most challenging ultrafast laser technology and application problems.		

Booth 23	TOHO	Toho Koki Seisakusyo Co., Ltd. http://www.tohokoki.jp
CARE-TEC, AlN Template		

Booth 24	OS TECH 30 YEARS ANNIVERSARY SINCE 1992	OS TECH CO., LTD. https://www.ostech.co.jp
Electronic Materials Supporting Power Devices & 5G（SiC Wafer, AlN Template）		

Booth 25	Sunric	Sunric Co., Ltd. https://www.sunric.com
Rare metal processed products such as Molybdenum, Tantalum Tungsten and others.		

Booth 26	HORIBASTEC	HORIBA STEC, Co., Ltd. https://www.horiba.com/jpn/semiconductor/about-us/corporate-profile/company-introduction/

Although renowned in the semiconductor market, due to our comprehensive knowledge, we are able to complement a wide variety of industries, applications and markets needing gas or liquid mass flow control, gas or chemical monitoring and analysis of processes.

Booth 27	Nanowin	Suzhou Nanowin Science a Technology CO. , Ltd. www.nanowin.com.cn

Suzhou Nanowin Science and Technology Co., Ltd founded in Suzhou Industry Park, China in 2007, is a high-tech company devoting to fabricate high-quality Gallium Nitride substrates and develop the related technologies. Nanowin's key advantage is unrivaled materials expertise owning essential patents in GaN substrates and growth technologies. Nanowin offers standard and customized free-standing GaN substrates and thick GaN/sapphire templates with extra low dislocation densities which are suitable for applications in high-power LED, blue LD and high-power electric device. Our strategic goal is to become a leading nitride semiconductor material provider and a pioneer in the industry applications of nitride semiconductors.

Booth 28	Nikon	NIKON SOLUTIONS Co., Ltd. https://www.microscope.healthcare.nikon.com/ja_JP/products/multiphoton-microscopes/axrmp

Multi Photon Microscope System

Booth 29	OXFORD INSTRUMENTS	Oxford Instruments https://plasma.oxinst.com/

Oxford Instruments Plasma Technology offers flexible, configurable process tools and leading-edge processes for precise and controllable etch, deposition and growth. These solutions are based on core technologies in plasma-enhanced deposition and etch, ion-beam deposition and etch, atomic layer deposition and etch, deep silicon etch and physical vapour deposition. Our innovative processes specifically address the needs of power electronics and RF applications, offering optimised ALE, interface preparation, and ALD solutions for GaN and AlGaN layers, including high rate + ALE for GaN HEMT and ALE recess etch + ALD for GaN MISHEMT.

Booth 30	SPT	SPP Technologies Co., Ltd. https://www.spp-technologies.co.jp/

Products of SPP Technologies Co., Ltd.: Plasma process equipment of etching and deposition for the compound materials; Si Nitride, Gallium Nitride, Silicon Carbide, etc. SPP Technologies develops, manufactures, imports, sells, and maintains equipment for the volume production and R&D of MEMS devices and Semiconductor devices.

Booth 31	晶湛半导体 Enkris Semiconductor	Enkris Semiconductor, Inc. http://en.enkris.com/
Enkris is dedicated to developing and producing high-quality GaN epitaxial materials for the applications like power electronics, micro-displays, etc. Enkris is also the only supplier globally which is able to provide 300mm GaN epi-wafers. This represents Enkris' leading position in the GaN industry internationally.		

Booth 32	samco PARTNERS IN PROGRESS	Samco Inc. https://www.samco.co.jp/en/
ICP Etch, Si DRIE, ALD, PECVD, Aqua Plasma®, UV-ozone Cleaners.		

Booth 33	SANOh	Sanoh Industrial Co., Ltd. https://www.sanoh.com/ja/
Introduction to Sanoh's Gallium Nitride (GaN) Semiconductor Substrate Processing Service		

Booth 34	TAIYO NIPPON SANSO The Gas Professionals	TAIYO NIPPON SANSO CORPORATION https://www.mocvd.jp/en/
MOCVD Systems for GaN, Ga_2O_3, GaAs/InP		

Booth 35	meiwafosis	Meiwafosis Co., Ltd. https://to.meiwanet.co.jp/l/990542/2023-06-20/3zxfn2
Multi-Wavelength Ellipsometer (FS-1), DIAMOND WIRE SAW (DWS 3500P)		

Booth 36	TOMOE	TOMOE SHOKAI CO, LTD. http://www.tomoeshokai.co.jp/about_j/overview/
MO precursors		

Booth 37	ROHM SEMICONDUCTOR	ROHM CO., LTD. https://www.rohm.co.jp/
EcoGaN (TM) : 150V/650V GaN (Gallium Nitride) HEMTs, Gate driver for GaN devices, Controllers for GaN devices		

Booth 38,39	EtaMax	EtaMax Co., LTD. http://etamax.kr/
EtaMax was established in 2008 starting with the development and production of PLATO, automatic photoluminescence (PL) mapping system that evaluates epi-wafers for LEDs. Since then, EtaMax has been developing optical metrology instruments not only through LEDs but also throughout the power device and VCSEL production processes. In particular, PLATO occupies a dominant position in the PL mapping system market worldwide and has contributed to the development of the semiconductor industry by providing the best measurement solution to users through the know-how accumulated by supplying more than 10 countries around the world. EtaMax continues to invest more than 20% of sales in R&D to grow into the best company in optical measurement.		

Booth 40	苏州汉骅半导体有限公司 Suzhou HanHua Semiconductor Co.,Ltd	Suzhou HanHua Semiconductor Co.,Ltd cloud.hanhuasemi.com
Hanhua Semiconductor is a leading semiconductor wafer and chip supplier located in the Suzhou Industrial Park（SIP）.Founded in 2017, the company has established a state-of-the-art semiconductor facility over 20000 ㎡ in size, a 5000 ㎡ class 100/1000 clean room, 20 MOCVDs, and 6-8 inch chip line for the mass production of MEMS and optoelectronics. HanHua offers a comprehensive GaN-on-Sapphire and GaN-on-Si epi-wafer products for HEMTs, LEDs and other advanced structures. In addition, HanHua offers RGB mini-micro LED chip products, as well as MEMS-based semiconductor microfluid chip products that utilize our unique 3DIC hybrid bonding technology. HanHua has been certified to ISO 9001 since 2019.HanHua's epi wafer and chip products now have been serving Several hundred customers across Asia, North America, and Europe.		

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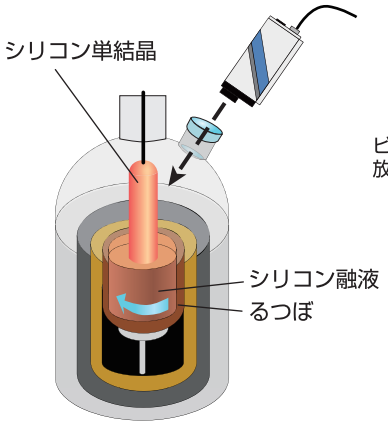

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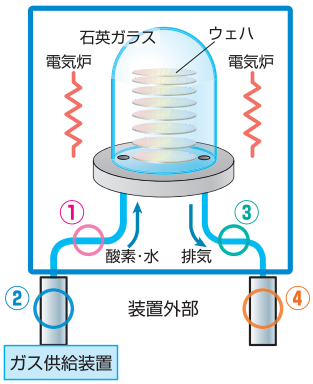

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ガス供給配管保温

②装置外部：
ガス供給装置からの配管保温

③装置 (拡散炉) 内部：
排気配管保温

④装置外部：
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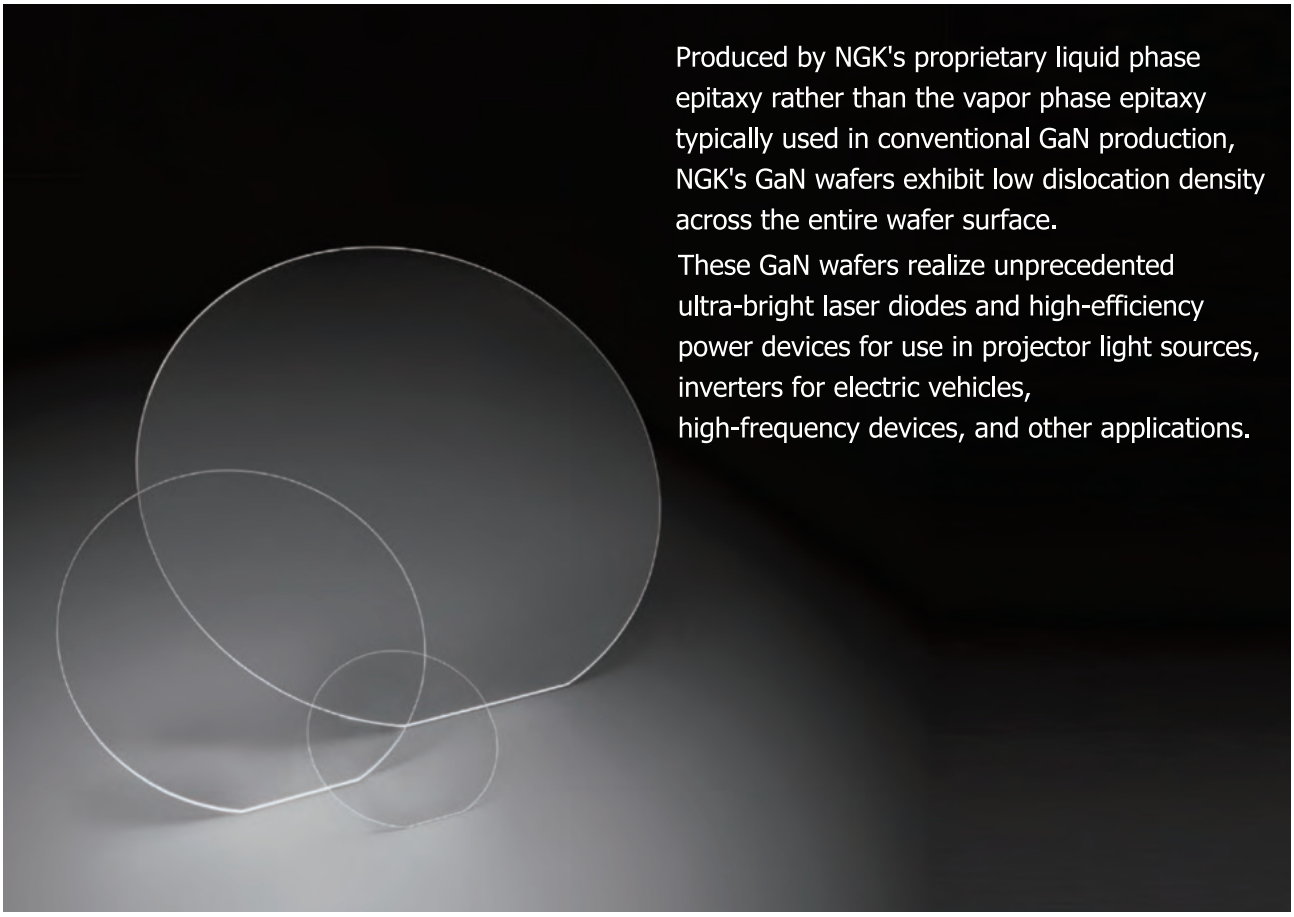
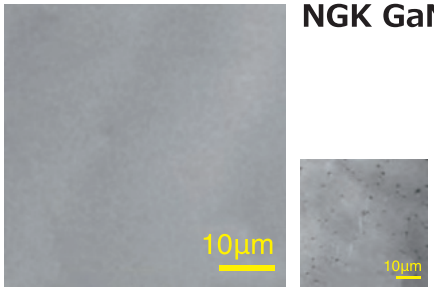
Gallium Nitride Wafer



Produced by NGK's proprietary liquid phase epitaxy rather than the vapor phase epitaxy typically used in conventional GaN production, NGK's GaN wafers exhibit low dislocation density across the entire wafer surface.

These GaN wafers realize unprecedented ultra-bright laser diodes and high-efficiency power devices for use in projector light sources, inverters for electric vehicles, high-frequency devices, and other applications.

■ Cathodoluminescence image

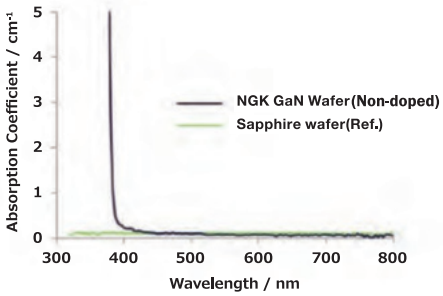


NGK GaN Wafer

Less than 1/100

Conventional product (HVPE-GaN)

■ Absorption coefficient



■ Example applications

Laser diodes / LEDs


Projectors


Headlamps


Street lightings


Factory lightings

Power devices / RF devices


HEV & EV


Servers for data centers


LTE-A & 5G base stations


Weather radars

Surprising Ceramics. NGK INSULATORS

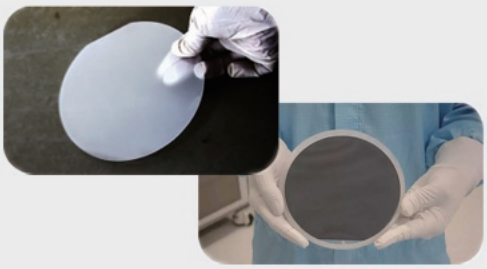
https://www.ngk-insulators.com/en/

HANHUA

CONTACT sales@hanhuasemi.com

HanHua Semiconductor

HanHua Semiconductor is a leading semiconductor wafer and chip supplier located in the Suzhou Industrial Park (SIP). Founded in 2017, the company has established a state-of-the-art semiconductor facility over 20000㎡ in size, a 5000 ㎡ class 100/1000 clean room, 20 MOCVDs ,and a 6/8-inch chip line for the mass production of MEMS and optoelectronics.

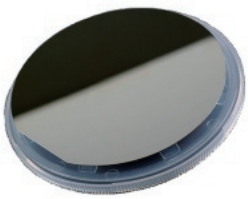


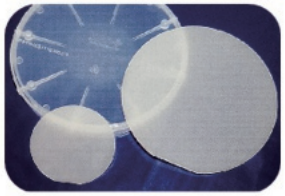
Power Epitaxial Products

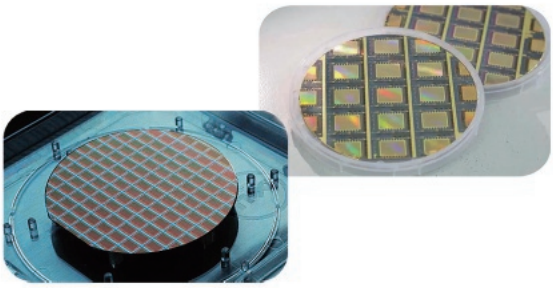
- 6/8 Inch GaN on Silicon Power Electronics Epitaxial Wafers
- 4/6 Inch GaN on Sapphire Power Electronics Epitaxial Wafers

Photoelectric Epitaxial Products

- 6-8-Inch GaN on Silicon RGB Epitaxial Wafers
- 4-6 Inch GaN on Sapphire RGB Epitaxial Wafers
- Micro LED GaN Red Epitaxial Wafers





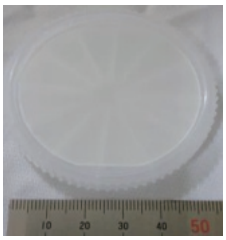


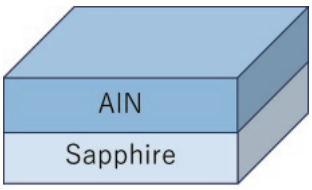
Micro LED Chip Products

- 6-8 Inch Silicon Based RGB Chips
- 4-6 Inch Sapphire Based RGB Chips
- 6-8 Inch Hybrid Integrated RGB Chips

サファイア基板上AlNテンプレート

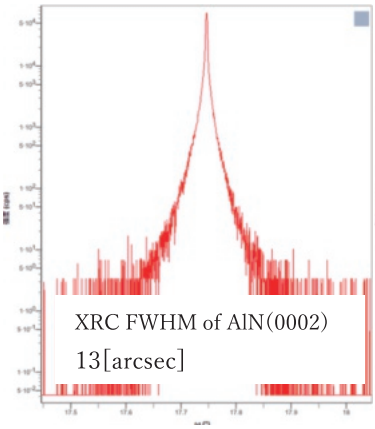
深紫外線の殺菌効果並びに水銀ランプ代替用途により、深紫外LEDの需要は高まっています。深紫外LEDについては、予てより高効率化と低コスト化が大きな課題となっていましたが、この度、弊社においては、三重大学（三宅教授）との共同研究を経て、この課題を克服し、高効率且つ低コストなサファイヤ基板上AlNテンプレートを実現しました。
＊弊社は、三重大学が保有する特許につき、独占実施権を得ています。

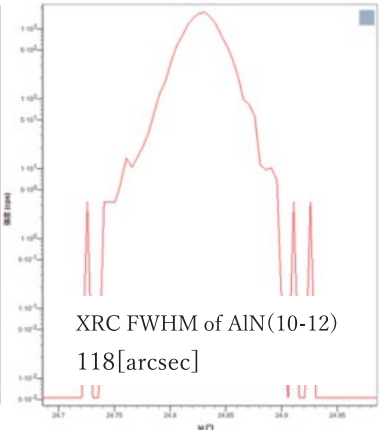


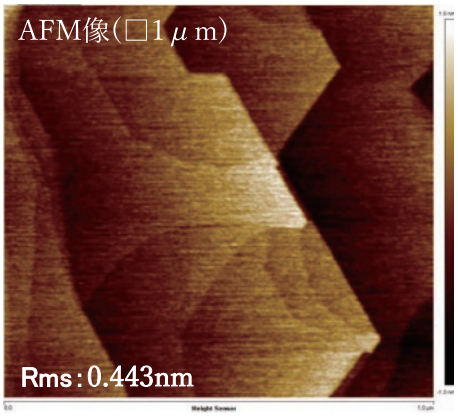


（評価結果）
AlN膜厚350nmの本製品をX線回折装置にて結晶性評価を実施した結果、AlN(0002)XRC-FWHMが30arcsec以下、AlN(10-12)XRC-FWHMが200arcsec以下であり、非常に高品質なAlN膜であることがわかります。またAFM評価結果から、表面粗さRmsの小さいことがわかります。

X線回折による結晶性評価







	仕様値
基板サイズ	50.8 mm ± 0.25 mm (2インチ)
基板材料 / 成膜材料	サファイア(片面研磨) / 窒化アルミニウム
基板厚さ/ 成膜厚さ	430 μm ± 50 μm / 350nm± 20 nm
面方位 / オフ角	C面(0001) / 0.2° ± 0.1°
伝導タイプ	絶縁
結晶品質	XRD FWHM of (0002) < 30 arcsec XRD FWHM of (10-12) < 200 arcsec
表面粗さ	AFM Rms < 1.0nm (1μm x 1 μm)

TOHO 株式会社東邦鋼機製作所
電話:059-365-4381
FAX:059-365-4383

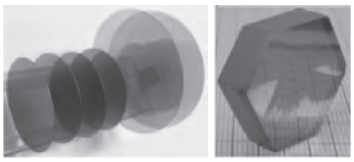
Ceramicforum Co., Ltd

Empowering Innovation with Wide Bandgap Technology

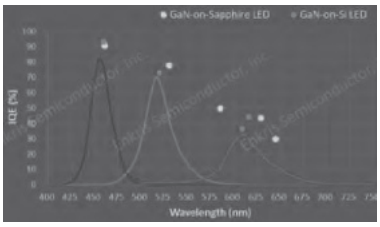
■ GaN / SiC substrates and Epi Services

Unipress, Eta Research, Nanowin, SiCrystal, NovelCrystal, Enkris Semiconductor, SweGaN, etc.

- GaN (ammonothermal, HVPE), SiC, Ga2O3 substrates
- GaN-on-Si / SA / SiC / GaN epi for (micro)LED/Power/RF
- QuanFINE™ GaN-on-SiC
- Device processing services



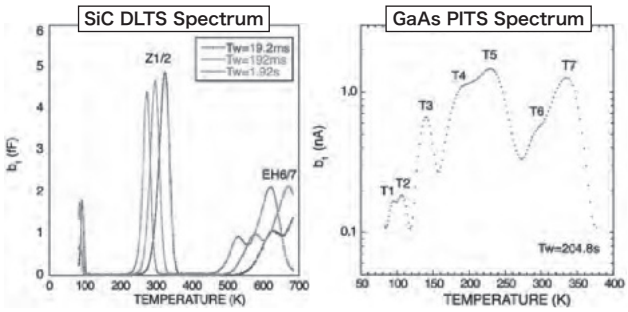
QuanFINE™
Thinner, Colder, Faster



■ DLTS/Hall Effect Measurement System measurement services

Phystech (Germany), Ceramicforum

- Advanced DLTS system with high-sensitivity analytics.
- Features multiple modes: Photo DLTS, Laplace, and more.
- Measures activation energy, trap density, depth profile, etc. with 0.01fF sensitivity.
- Also offering DLTS & Hall effect measure ments at our domestic lab



■ CS2: Rapid/Non-destructive Diagnostics for Crystalline Quality

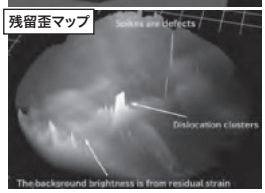
Ceramicforum

Quick diagnosis of the entire wafer to detect abnormalities within the crystal.
→ Doping concentration distribution
→ Residual strain distribution
→ Defect classification

Fast and fully automatic diagnosis
→ 90 sec per ϕ6" wafer
→ Diagnostic report output

ドープ濃度分布(光学吸収係数:αを表示)

残留歪マップ

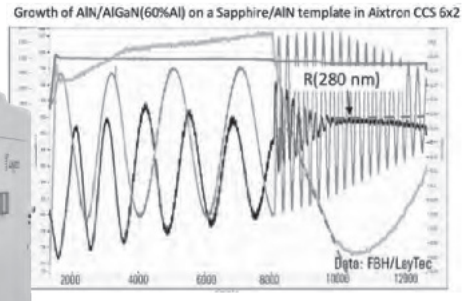


■ In-situ metrology and wafer mapper systems

Laytec (Germany)

LayTec AG's in-situ monitoring system.
- measures film deposition speed, thickness, wafer temperature, and warpage in real-time.
- Compatible with nano-scale structures.
- Crucial for GaN deposition due to wafer surface temperature importance.
- Achieves temperature accuracy of ±1K.
- Diverse measurement capabilities.
- Supports multi-wafer susceptors for selective measurements.

NEW: EpiX
- C2C wafer mapping metrology system



CERAMIC FORUM
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101-0054 Japan
Tel +81-3-5577-2947
semi@ceramicforum.co.jp

Multiphoton Conforcal Microscope

高速多光子共焦点レーザー顕微鏡システム

AX R MP

多光子フォトルミネッセンス（MPPL）法により、GaN、SiCウェハーの貫通転位や積層欠陥を非破壊で高速3次元観察！

高速、高画素

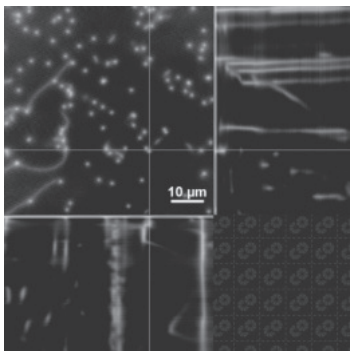
1024×1024画素を15fpsで2光子PLを観察可能。

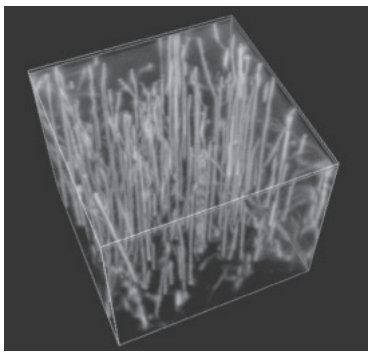
3次元

IR光を用いることで深部観察可能。

マルチカラー

4色以上のPLを検出可能。





GaNのバルク結晶の多光子励起フォトルミネッセンス像。GaN基板中の貫通転位と基底面転位が暗線として観察された。太さや角度、形状などが異なる様々な転位が存在することが判る。なお、暗線を可視化するためにコントラストを反転して表示している。
3次元IR光を用いることで深部観察可能。マルチカラー4色以上のPLを検出可能。

試料ご提供：大阪大学 工学研究科 電気電子情報通信工学専攻 谷川智之先生

多光子観察だけではないマルチモーダル化も実現

- 反射微分干渉モードにより、エッチピットやスクラッチ観察も圧倒的なコントラストで観察
- カメラオプションによる通常PL観察モードで、BPDやSSFの全面観察
- 3D-PLスペクトル撮影＆解析により、発光輝度だけではなく3Dでの波長分布観察も可能

様々なオプションによるシステム機能アップが可能

- 電動XYステージによるウェハ全面撮影
- 自動転位密度計測ソフトウェア
- 高NA対物レンズ
- 冷却・加熱試料ホルダ　など

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booth No.
ブース番号 24

Materials
Supporting Power Devices

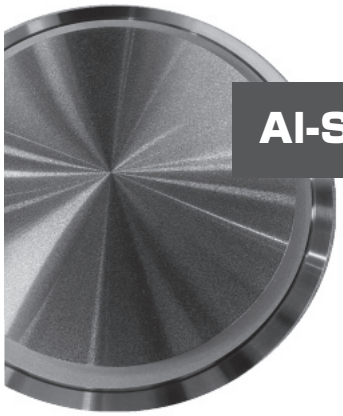
SiC Single Crystal Wafer and Epitaxial Wafer

SiC N-type 6-inch & 8-inch wafers and epitaxial wafer for power devices are available.

GaN Single Crystal Wafer

We sell GaN 2-inch/4-inch wafers for power devices.

We also supply MONCD AlGaN on Sapphire and HVPE MONCD AlGaN on Sapphire.



Al-Sc sputtering target

Radio frequency (RF) filters operating in the 800 to 2500 MHz band are used in mobile communication terminals. SAW filters, which utilize surface acoustic waves (SAW) propagating on the surface of piezoelectric substrates, are widely used for these RF filters.

Please contact us for compound semiconductor raw materials, various ceramics (AlN, BN, SiC, Si3N4, Al2O3, ZrO2, etc.), various sputtering targets, high-purity metals, and special rare metals.

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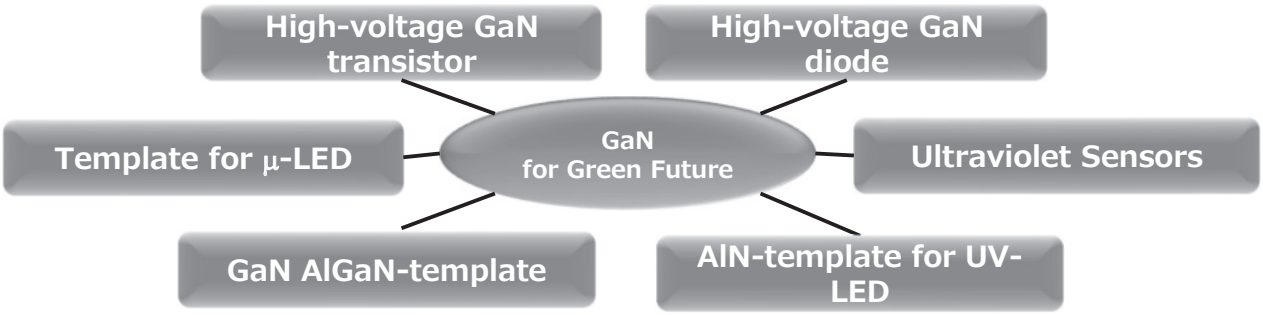
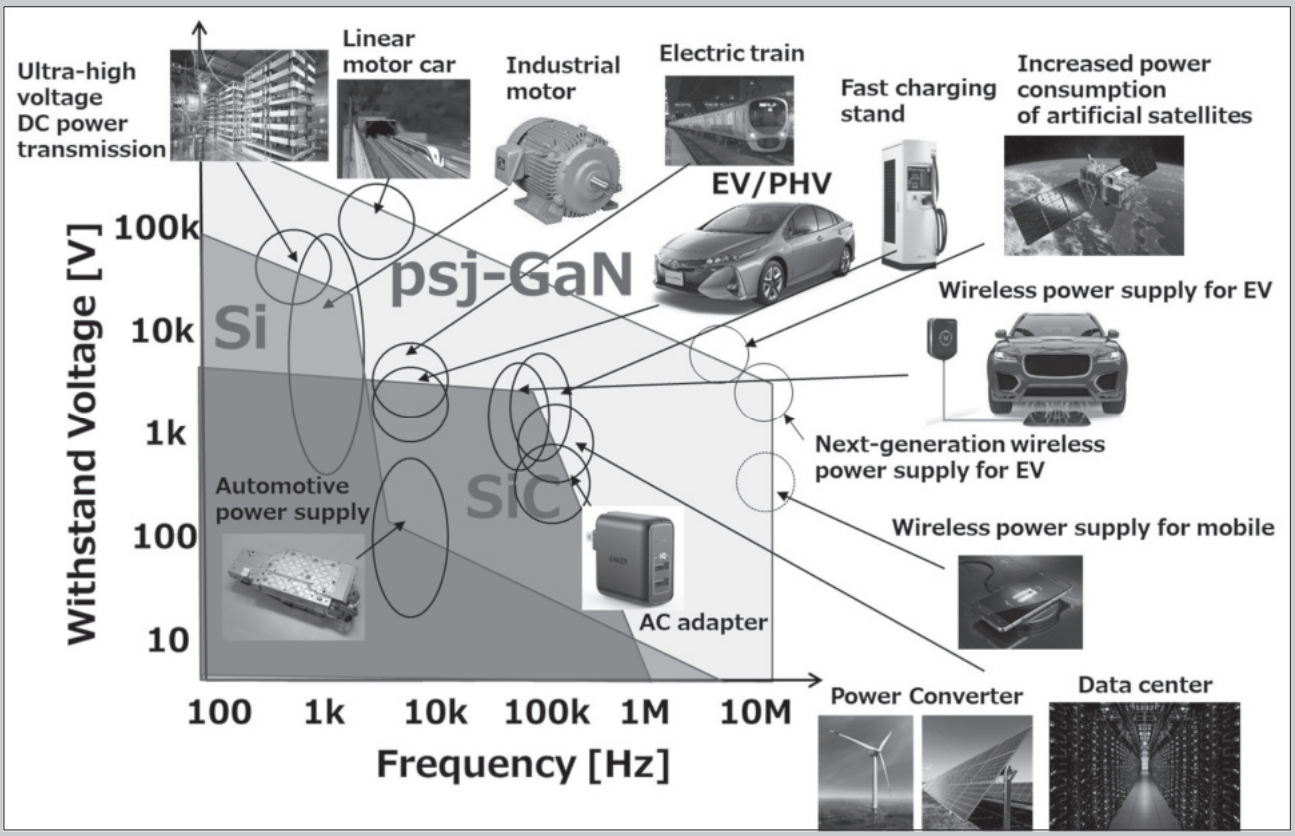
Gallium nitride epitaxial wafers, devices

Powdec provides GaN epitaxial wafers by using uniquely designed face-down MOCVD (metal organic chemical vapor deposition) equipment. Taking advantage of the characteristics of gallium nitride, we also develop and manufacture novel high-efficiency, high-voltage devices: polarization super-junction (psj)-GaN, light-emitting devices, μ-LED, and sensors.



Anticipated application of psj-GaN power semiconductors

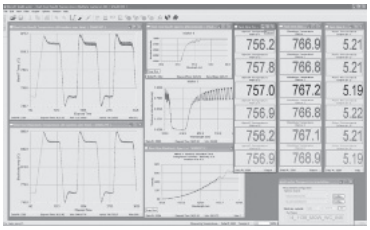


URL : http://www.powdec.co.jp/, E-mail : info@powdec.co.jp

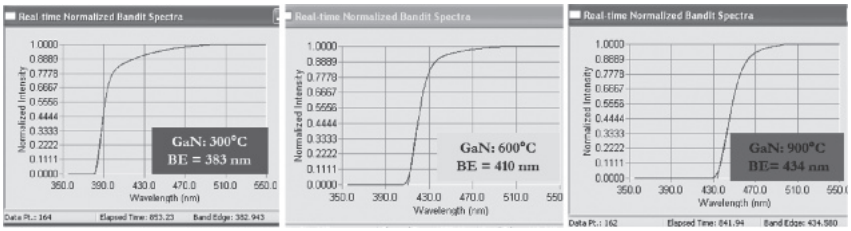
kSA BandiT

Wafer and Thin Film Temperature Monitor

- Non-contact, non-invasive and real-time temperature monitoring
- Three models with different spectrometer for various substrates
  BandiT-NIR: 875-1400 nm (ideal for GaAs, InP, and Si)
  BandiT-VIS: 350-600 nm (ideal for GaN, SiC, ZnO and $SrTiO_3$)
  UV- BandiT: 190-500 nm (ideal for AlN and Ga_2O_3)
- Band Edge Temperature Measurement
- Blackbody Temperature Measurement
- Other measurements including Film Thickness/Growth Rate and Surface Roughness

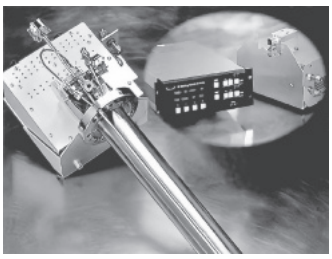


Software snapshot of multi-wafer temperature and film thickness measurements



GaN band edge shift with temperature

UNI-Bulb RF Plasma Source for Nitrogen and Hydrogen



- All-PBN, oxide-free plasma bulb construction
- Optimized exit aperture minimizes ion content and provides excellent film uniformity
- Excellent plasma stability and reproducibility
- Autotuner ensures stable growth conditions and optimizes power efficiencies

SUMO Effusion Cells

400g SUMO Effusion Cell

400g Cold-Lip SUMO Source for Al

- SUMO design combines excellent flux stability and uniformity with large charge capacity
- Hot-lip heating (for Ga and In) to prevent condensation at the crucible orifice
- Cold-Lip heating (for Al) limits Al creep
- Significantly reduced flux transients and defect levels
- PBN crucible construction optimizes material quality

R-DEC Co., Ltd.

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High-Resolution Measurement of Nitride Semiconductor Materials By XRD Equipped With “HyRES” Unit

Rigaku
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AUTOMATED MULTIPURPOSE X-RAY DIFFRACTOMETER

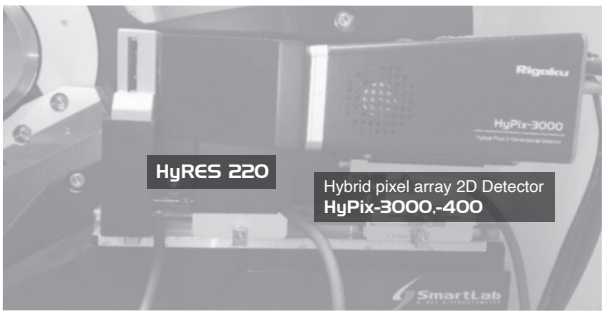
SmartLab

Multiple Measurements / Analysis Applications

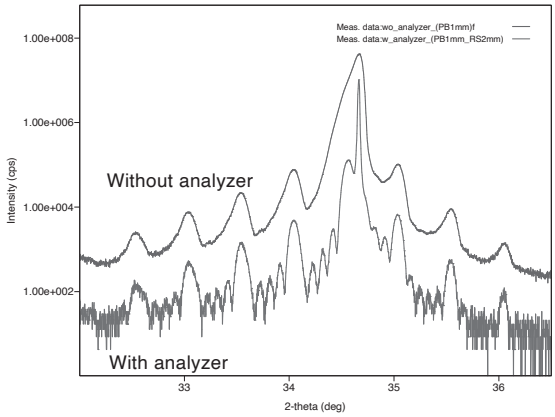
- Film Thickness and composition measurement by HR rocking curve
- Crystal quality and curvature analysis by Rocking Curve
- Texture analysis by high-speed pole figure by 2D detector
- Mapping analysis
- Lattice strain/relaxation evaluation by fast Reciprocal Space Map
- Automatic measurement with macro function from crystal orientation alignment to the measurement

HyRES 220,400

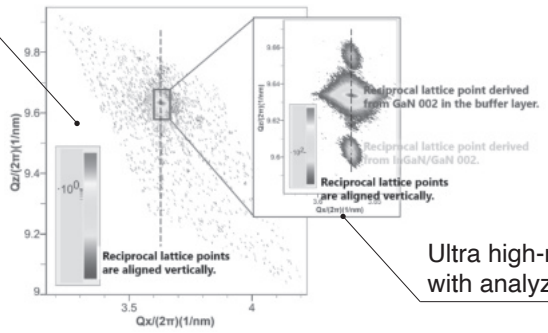
Slit⇔Analyzer crystal Switching unit



High-resolution rocking curve with analyzer path to reduce the effect of the curvature



Fast RSM with slit path



Ultra high-resolution RSM with analyzer path

MICROSITE
HyRES

Rigaku Corporation

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Head Office, Tokyo Plant,
X-ray Research Laboratory
3-9-12, Matsubara-cho, Akishima-shi,
Tokyo 196-8666, Japan
Tel. 81-42-545-8111 Fax. 81-42-544-9795

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Rigaku Americas Corporation
9009 New Trails Drive, The Woodlands,
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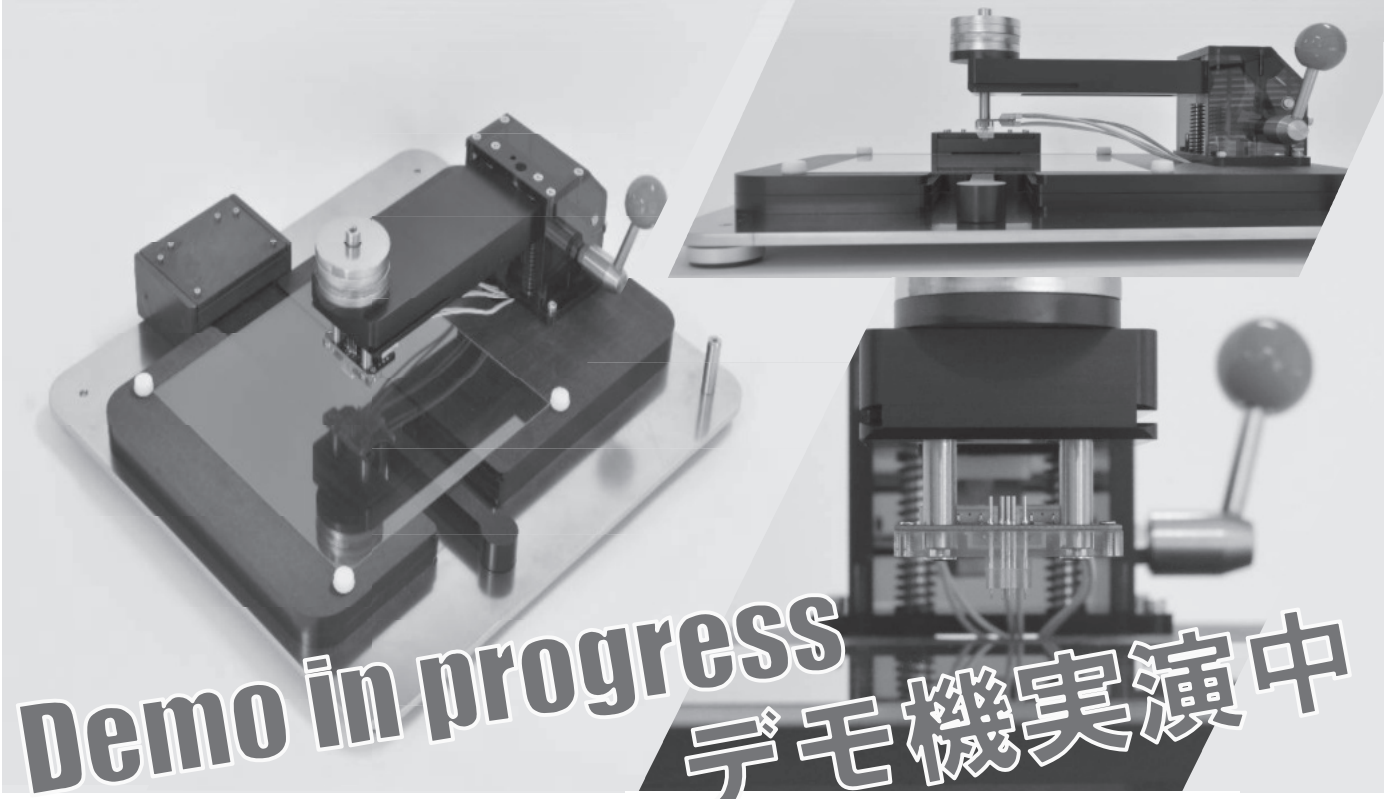
半導体キャリア濃度アナライザー

MEASURE WBG WAFERS WITHOUT METAL CONTACTS!
電極形成が不要!!WBG半導体の測定が可能!!



No metal pads
金属電極を使用せずに

Our technology enables ohmic contact on a WBG semiconductor wafer (SiC, GaN, etc.) without metal contact pads. *Patent pending
ワイドバンドギャップ(WBG)半導体(SiC、GaN等)とのオーミック接触が可能。※特許出願申請中

Two in one step
2つの測定を同時に

Conduct four-probe and Hall measurement in one step, obtaining sheet resistance, carrier concentrations, and mobility.
4端子測定とホール測定を同時に行い、シート抵抗、キャリア濃度、移動度を測定可能。

USB interface
USB接続

Use an USB interface for measurement control and data export.
USB接続により測定条件設定、測定データ取得可能。

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Contact form

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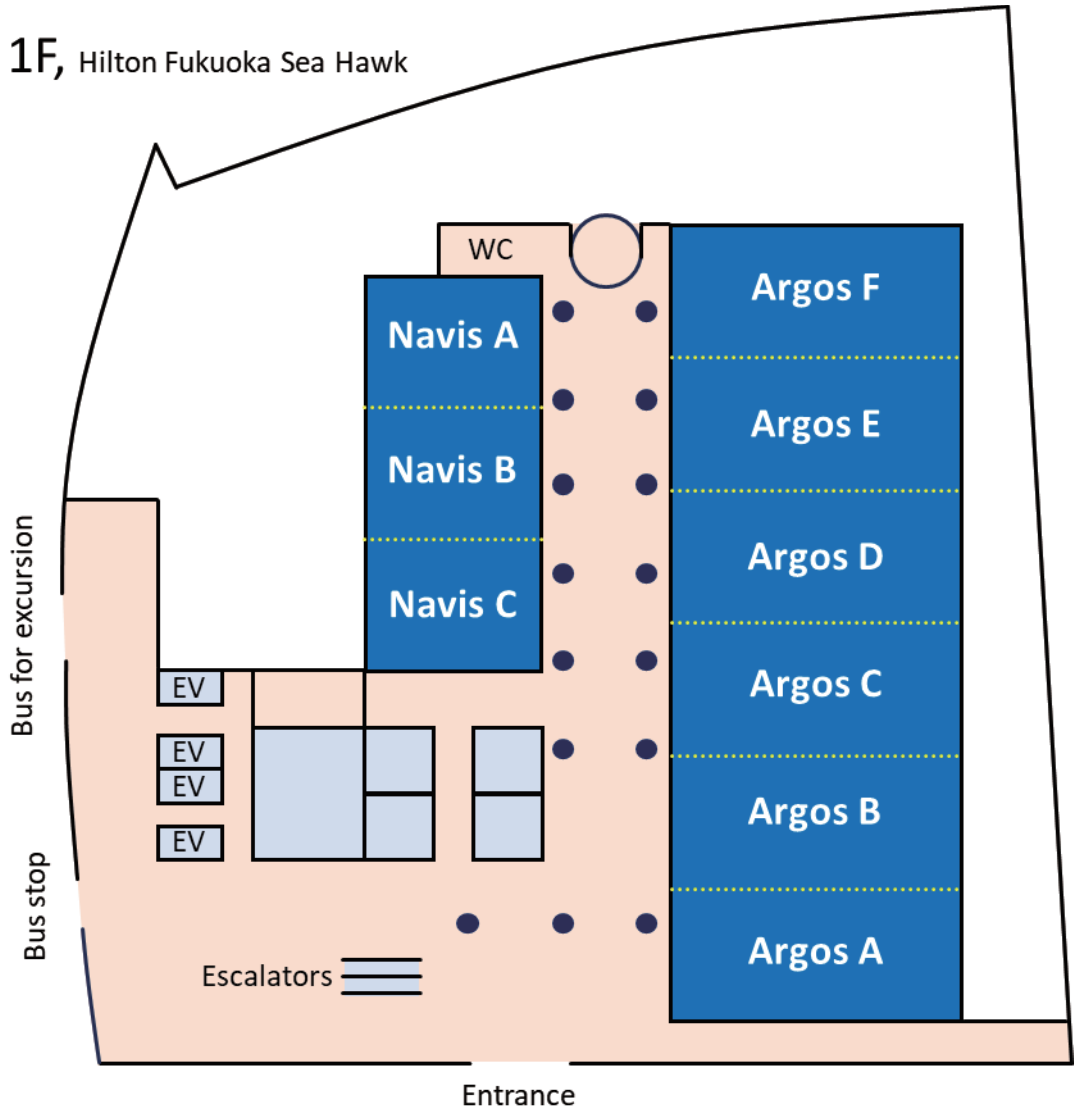
主要取扱品目

【ガス】	
工業用ガス	窒素・酸素・水素・アルゴン・ヘリウム・二酸化炭素・一酸化炭素・メタン・アセチレン・エチレン・ エタン・アンモニア・六フッ化硫黄・硫化水素・塩化水素・フッ素
半導体・液晶用ガス	モノシラン・ホスフィン・ジボラン・アルシン・アンモニア・塩化水素・ジクロルシラン・ ジシラン・三塩化シラン・四塩化ケイ素・三塩化ホウ素・三フッ化窒素・六フッ化タングステン・ 臭化水素・塩素・三フッ化ホウ素・一酸化炭素・フッ素・六フッ化硫黄・フロン－116・プロパン・ フロン－316・フロン－316C・フロン－418・フロン－32・フロン－41・フロン－23・三フッ化塩素・ 四フッ化ケイ素・亜酸化窒素・フッ化水素・テトラエトキシシラン・トリエキシルアルシン・ トリエトキシボロン・トリメトキシボロン・トリメチルシラン・ テトラキスジメチルアミノチタン
電子・照明用特殊ガス	ネオン・キセノン・クリプトン・各種混合ガス
【機器】	
設備(設計・施工)	ガス・薬液・供給設備・排ガス処理設備・制御システム・安全システム・配管(高圧・高純度・低温)・ 熱交換器
ガス機器	ガス発生装置・ガス精製装置・ガス混合装置・ガス回収装置・排ガス除害装置・シリンダーキャビネット・ 残ガス監視計器・ボンベ・圧力調整器・圧力計・流量計・露点計・各種分析計・測定器・ガス検知器・ 検知警報装置・配管部分(継手・バルブ・フィルター・逆止弁)・圧力容器・ボンベ自動開閉器
その他機器	CVD装置・PVD装置・洗浄装置・重量センサー・燃焼試験装置・撹拌脱泡装置・CO_2洗浄装置
【表面処理】	
	次世代表面皮膜実験システム・フィルタードアークイオン蒸着装置、その他各種コーティング装置・ 薄膜評価試験機・受託コーティング・受託プラズマ溶射

Site Map


1F, Hilton Fukuoka Sea Hawk
WC
Navis A
Navis B
Navis C
Argos F
Argos E
Argos D
Argos C
Argos B
Argos A
EV
EV
EV
EV
Escalators
Bus for excursion
Bus stop
Entrance

Program at a Glance

Date	Nov. 12 (Sun)		Nov. 13 (Mon)						
Room	Argos	foyer	Argos A-C	Argos D	Argos E	Argos F	Navis A	Navis B	Navis C
8:00									
9:00				Opening					
10:00				Special Plenary 1					
				Break					
11:00			Exhibition	Plenary 2					
12:00				Plenary 3					
13:00				Lunch					
14:00									
15:00				ED1	GR1	OD1	CH1	CH2	JT1
16:00		Registration	Poster MoP Exhibition						
17:00									
18:00	Welcome reception		Exhibition	ED2	GR2	OD2	CH3	JT2	GR3
19:00									
20:00									

Date	Nov. 14 (Tue)					
Room	Argos A-C	Argos D	Argos E	Argos F	Navis A	Navis B	Navis C
8:00							
9:00		ED3	CH4	OD3	CH5	GR4	GR5
10:00		Break					
11:00	Exhibition	ED4	CH6	OD4	LN1	GR6	GR7
12:00							
13:00		Women in Nitrides	Lunch				
14:00							
15:00		ED5	CH7	LN2	OD5	GR8	GR9
16:00							
17:00	Poster TuP Exhibition						
18:00		Light Meal					
19:00		Rump 1	Rump 2	Rump 3			
20:00							

Date	Nov. 15 (Wed)						
Room	Argos A-C	Argos D	Argos E	Argos F	Navis A	Navis B	Navis C
8:00							
9:00	Exhibition	ED6	GR10	OD6	OD7	CH8	ED7
10:00		Break					
11:00		ED8	GR11	OD8	OD9	CH9	JT3
12:00							
13:00							
14:00							
15:00							
16:00	Excursion						
17:00							
18:00							
19:00							
20:00							

Date	Nov. 16 (Thu)						
Room	Argos A-C	Argos D	Argos E	Argos F	Navis A	Navis B	Navis C
8:00							
9:00	Exhibition	ED9	GR12	CH10	OD10	GR13	ED10
10:00		Break					
11:00		ED11	GR14	CH11	OD11	CH12	ED12
12:00							
13:00		Lunch					
14:00							
15:00		ED13	GR15	CH13	OD12	GR16	ED14
16:00	Poster ThP Exhibition						
17:00							
18:00							
19:00		Banquet			Student Event		
20:00							

Date	Nov. 17 (Fri)						
Room	Argos A-C	Argos D	Argos E	Argos F	Navis A	Navis B	Navis C
8:00							
9:00	Exhibition	OD13	GR17	OD14	CH14	CH15	ED15
10:00		Break					
11:00		OD15	GR18	OD16	CH16	CH17	ED16
12:00							
13:00		Lunch					
14:00		Plenary 4					
15:00		Plenary 5					
16:00		Plenary 6					
17:00		Plenary 7					
18:00		Closing					
19:00							
20:00							