12th International Conference on Nitride Semiconductors (ICNS12)

24th-28th July 2017

Strasbourg, France
Welcome to the 12th international conference on nitride semiconductors
July 24-28, 2017 - Strasbourg, France

This biennial conference is the twelfth of a series. It follows the first conference held in Nagoya, Japan (ICNS-1); the second in Tokushima, Japan (ICNS-2); the third in Montpellier, France (ICNS-3); the fourth in Denver, USA (ICNS-4); the fifth in Nara, Japan (ICNS-5); the sixth in Bremen, Germany (ICNS-6); the seventh in Las Vegas, USA (ICNS-7); the eighth in Jeju, Korea (ICNS-8); the ninth in Glasgow, UK (ICNS-9); the tenth in Washington D.C., USA (ICNS-10) and the 11th in Beijing, China (ICNS-11).

The ICNS-12 conference will present high impact scientific and technological advances in materials and devices based on group-III nitride semiconductors. The conference is featured by plenary sessions, parallel topical sessions, poster sessions and an industrial exhibition.

We look forward to entertain you to the beautiful and mesmerizing city of Strasbourg and hope that this conference will be a memorable experience for all of you. We are sure that this conference will be a great platform for you to promote further cooperations, to develop closer friendship and to effectively support scientific collaborations.

The Organizing Committee
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Conference floor plan back cover
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1. Select the conference network: ICNS12
2. Open your browser
3. Fill in all fields marked with an asterisk (first connection only)
4. You are connected
Exhibition

Around 20 international exhibitors will display a full spectrum of equipment, instrumentation, products, software, publications and services. To be held on July 24 – 27 at the Convention Centre of Strasbourg (Hall Rhin – Ground Floor), the exhibit will be convenient to the technical session rooms and scheduled to coincide with the technical program. For exhibitors, it will mean an excellent opportunity to meet just the right customers and disseminate information effectively.

For meeting attendees, the ICNS'12 exhibition will offer the convenience of visiting with multiple vendors all under one roof. So, pick up some literature, enjoy a hands-on product demonstration or meet face-to-face with company representatives.

The following exhibitors are confirmed for the ICNS'12 meeting (21/06/2017):

- AIXTRON
- AKZONOBEL
- ATTOLIGHT
- CROSSLIGHT SOFTWARE
- EAG Laboratories
- EULITHA
- HEXATECH
- KITECH
- NOVASIC
- NTT Advanced Technology
- OSRAM Opto Semiconductors
- SAES Pure Gas
- STR GROUP
- SUZHOU NANOWIN SCIENCE AND TECHNOLOGY
- TAIYA NIPPON SANSO

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Company profiles

**AIXTRON**

AIXTRON is a leading provider of deposition equipment to the semiconductor industry. The Company's technology solutions are used to build advanced components for electronic and opto-electronic applications based on compound, silicon, organic semiconductor materials, carbon nanotubes (CNT) and other nanomaterials. Such components are used in fiber optic communication systems, wireless and mobile telephony applications, optical and electronic storage devices, computing, signaling, lighting and other leading-edge technologies.

**AkzoNobel**

AkzoNobel High Purity Metalorganics (HPMO) services the semiconductor industry. We are specialized in the production of high purity metalorganics sources based on indium, gallium, aluminum, zinc and magnesium. Our products are used in a wide range of industrial and consumer applications, including lasers, solar cells, LEDs and smartphones. We have a strong base in industrial scale metalorganics production and are a fully vertical integrated high purity metalorganics supplier. As part of the global AkzoNobel organization, we leverage on its network for distribution, service, manufacturing expertise, global R&D, and expertise in safe handling of metalorganics. AkzoNobel HPMO strives continually to address our customers' future needs, looking ahead to find answers to questions they will face tomorrow. Our dedicated global technical marketing and sales team, comprised of scientists and engineers with experience in both the chemical and semiconductor industry, is available to meet your needs!

**Attolight**

Attolight builds fully integrated cathodoluminescence systems with best-in-class collection efficiency and reproducibility. All products feature Attolight's proprietary quantitative cathodoluminescence technology. The company's products are used in FA laboratories, material research laboratories, and semiconductor industry. Major application fields include: R&D and reliability assessment for LEDs, lasers, power transistors, nano-electronic devices, and solar cells. The company also provides analytical services in its privately owned laboratory in Switzerland.

**EULITHA**

Eulitha provides nanolithography services and equipment for research and production. Its revolutionary PHABLE photolithography systems enable low-cost fabrication of periodic nanostructures over large areas. This proprietary technology has wide ranging uses in photonics, optoelectronics, displays, electronics, biotechnology, telecommunication, photovoltaics, lasers, sensors and other areas. Eulitha's custom and standard ranges of nano-patterned substrates are made with electron-beam or its own PHABLE lithography techniques and are widely used as nanoimprint templates. 

**Crosslight Software Inc.**

Crosslight Software Inc. is an industry leader in TCAD simulation tools headquartered in the greater Vancouver area. For almost twenty years, Crosslight has been dedicated to providing state-of-the-art TCAD tools for the simulation of semiconductor devices and processes. Crosslight Software, was the first commercial company to provide TCAD software for electrical and optical modeling of quantum well laser diodes (LD) and has continued to maintain a leadership position ever since. Crosslight is among the world's top suppliers of semiconductor TCAD tools with a customer list extending to hundreds of semiconductor companies and research institutions.

**EAG Laboratories**

EAG Laboratories provides nanolithography services and equipment for research and production. Its revolutionary PHABLE photolithography systems enable low-cost fabrication of periodic nanostructures over large areas. This proprietary technology has wide ranging uses in photonics, optoelectronics, displays, electronics, biotechnology, telecommunication, photovoltaics, lasers, sensors and other areas. Eulitha's custom and standard ranges of nano-patterned substrates are made with electron-beam or its own PHABLE lithography techniques and are widely used as nanoimprint templates.

**Featured Products:** PhableR 100 lithography system, nanoimprint stamps, lithography services
NOVASiC provides SiC epitaxy and wide bandgap polishing services.

NOVASiC provides 4H-SiC on 4H-SiC and 3C-SiC epitaxy on silicon – useful templates for nitride growth.

We specialize in high-quality polishing of SiC, GaN, AIN, diamond, ZnO... Our polishing is widely recognized as the industry’s benchmark. NOVASiC provides reclaim, planarization and thinning services – from removing as little as 1000Å to thinning substrates to 150 microns, or even less.

NOVASiC’s headquarters are in the French Alps, near Grenoble.

Key Products:
3C-SiC and 4H-SiC epitaxy
Polishing, reclaim, thinning and planarization services

HexaTech is the world leader commercial manufacturer of high quality, single crystal Aluminum Nitride (AlN) substrates. This substrate material is enabling advanced technologies such as high performance, long life UV/VC light emitting diodes (LEDs) for disinfection applications, deep UV lasers for biological threat detection, as well as high voltage and high frequency power semiconductors.

HexaTech’s current product portfolio includes 35 mm diameter substrates, with 2 inch diameter substrates to be commercially available in late 2017.

Founded in 2001, and being driven by a team of industry experts in IIßnitride semiconductors, HexaTech has successfully solved the complex material science and engineering challenges to commercialize high quality bulk AlN for volume production.

For additional company and product information, please visit us at www.hexatechinc.com.

KITEC is supplier of advanced resistance measurement tools. M-RES is a series of non contact resistance and resistivity measurement systems with and without automatic sample thickness compensation. Manual and mapping systems including automatic wafer loading option. Applications such as wafer measurements and EPI, implant or metallization process monitoring. Bow and warp measurement compensation.

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mfscher@kitec.de
www.kitec.de

NTT Advanced Technology Corporation (NTT-AT) has developed GaN epitaxial wafers on a variety of substrates – Si, Sapphire, SiC, and GaN. These wafers come in several sizes, including a 6” GaN wafer on a silicon substrate. NTT-AT can manufacture customized wafers to meet both R&D specialized needs as well as mass production requirements.

OSRAM Opto Semiconductors is one of the world’s leading opto component manufacturers and offers its customers a spectrum of infinite possibilities. Components and solutions based on semiconductor technology for lighting, sensor and visualization applications. The expertise of OSRAM Opto Semiconductors extends from basic semiconductor technologies to individual customer applications. The product portfolio comprises high-performance light-emitting diodes (LEDs) [e.g. for automotive and general lighting applications], high performance infrared diodes (IRD) for consumer applications [e.g. gesture recognition], visible and IR-semiconductor lasers and detectors.
Suzhou Nanowin Science and Technology Co., Ltd
Company Profile
Suzhou Nanowin Science and Technology Co., Ltd (NANOWIN) founded in Suzhou Industry Park, China in May, 2007, is a high-tech company devoting to fabricate high-quality Gallium Nitride (GaN) 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 electronic/electric devices. The main products of NANOWIN are 2-inch GaN/sapphire templates with GaN thickness of 15 to 30 microns, 2-inch free-standing GaN substrates with thickness around 350 microns and Ga face dislocation density within 10^5 cm^-2, small square free-standing GaN substrates, non-polar GaN substrates (a/m face), high-crystallinity GaN powder and AlN substrates. All the GaN templates and substrates produced by NANOWIN include three categories: n-type doped, undoped and semi-insulating doped.

Our strategic goal is to become a leading nitride semiconductor material provider and a pioneer in the industry applications of nitride semiconductors.

Our website: www.nanowin.com.cn

SAES Pure Gas
The Technology of Pure Gas
SAES Pure Gas, Inc., a member of the SAES Group, is the world leader in gas purification technology. SAES develops ultra-high purity gas-handling equipment, supplying gas purifiers for a wide range of bulk and specialty gas applications. SAES continues to set the standard for the market with its superior impurity capacities and longer purifier lifetimes. In order to meet individual customer requirements and the needs of an increasing technological market, SAES’s extensive R&D has resulted in the largest portfolio of gas purifiers available for all gas purification needs. Factory regenerable in-line ambient temperature purifiers are available in a wide range of sizes for purifying gases such as H2, N2, NH3, AsH3, PH3, Ar, Corrosive Gases, etc. For H2 Purification SAES Pure Gas offers four different technologies depending on which impurities need to be removed: Heated Getter Purifiers, Factory Regenerable in-line purifiers Purifiers, Micro-Channel Palladium Purifiers and Cryogenic. Through our 25 year history we continue to be a flexible supplier offering customized solutions ensuring our customers receive cost effective and efficient gas purification equipment. For more information please contact SAES Pure Gas at spg@saes-group.com or online at www.saespuregas.com

STR provides consulting services and specialized software for development/optimization of industrial growth equipment and engineering of advanced semiconductor devices. STR offers a number of software products allowing comprehensive simulation of LEDs/LDs, HEMTs, solar cells, modeling of MOCVD and HVPE of Group-III nitrides, Oxides, III-V and II-VI materials, and simulation of wide bandgap crystal growth (AIN, AlGaN, AlN, SiC).

BAIYO NIPPON SANSO Corporation is a world-class MOCVD system supplier as well as a manufacturer of industrial and specialty gases. It is providing a wide variety of MOCVD system from small R&D scale to mass production scale for GaN and GaAs/InP application. Its unique GaN MOCVD System SR4000HT for UVC application has been selected by world renowned research center such as SNL, UCSB and RIKEN.

Our website: www.nanowin.com.cn

Our strategic goal is to become a leading nitride semiconductor material provider and a pioneer in the industry applications of nitride semiconductors.

Our website: www.nanowin.com.cn
Monday Program

- Plenary Session
- A - Materials
- B - Optical devices
- C - Electronic devices
- E - Theory-basics
Plenary

Monday - July 24

08:45 - 09:15: Opening ceremony - J. Y. Duboz - B. Gil

Session chair: B. Gil

09:15 - 10:00: Plenary talk 1
Wide-band-gap semiconductors: present and future
Chris G. Van de Walle
Materials Department, University of California, Santa Barbara, California, USA

The adoption of nitride semiconductors has progressed startlingly fast, from initial discoveries to widespread applications. This is not because the materials are simple and trouble-free; to the contrary, throughout their history they have confronted us with physics problems that were known to be nuisances in other materials but could have been showstoppers for the nitrides. The issues include lattice-mismatched heteroepitaxy, dopant passivation, shallow-versus-deep character of acceptors, the role of polarization fields, and nonradiative recombination processes such as Auger and defect-assisted Shockley-Read-Hall. These problems have forced us to develop new understanding, resulting in insights into physical mechanisms that will now benefit other semiconductors and encourage us to explore other materials, such as the II-IV-V2 analogues of nitrides. Now we are entering the era of ultrawide-band-gap semiconductors, with band gaps significantly wider than the 3.4 eV of GaN, which will enable deep-UV optoelectronics and have compelling advantages in high-power and RF electronics, quantum information science, and extreme-environment applications. Building on what we have learnt, I will highlight areas in which further progress could have high payoffs. Work performed in collaboration with A. Alkauskas, C. Dreyer, A. Janotti, E. Kioupakis, J. Lyons, L. Gordon, J. Shen, J. Varley, D. Wickramaratne, and Q. Yan, and supported by DOE and NSF.

10:00 - 10:30: Coffee break

Session chair: J. Christen

10:30 - 11:15: Plenary talk 2
Successes of Wide-Bandgap Electronics, and Future Directions
Debdeep Jena
Cornell University, USA

Riding on the success of GaN photonic devices, wide-bandgap nitride electronic devices have made significant inroads into new regimes of device operation. Exploiting the high breakdown fields, and the high mobility of 2-dimensional electron gases, GaN HEMTs are now capable of generating enormous amounts of microwave power at high frequencies, and have become very attractive for RF amplifiers that power communications. At the same time, both lateral GaN HEMTs, and vertical GaN FETs are making inroads into high-voltage power electronics. Surprisingly, GaN also has a significant role to play in low-power energy-efficient electronics. This talk will review these successes and discuss the physics underlying them. Then, the same physics and a slew of new nitride materials to augment the 'conventional' nitrides and to take Wide-bandgap electronics well into the future will be discussed.

11:15 - 11:30: Break

11:30 - 12:15: Plenary talk 3
Solid State Lighting
Martin Strassburg
OSRAM Opto Semiconductors GmbH,
Leibnizstr. 4, 93055 Regensburg, Germany

Optoelectronic devices based on group III nitrides (i.e., LEDs) provided a completely new technology in the lighting sector, the solid state lighting. There has been an incredible development in the recent more than 20 years: LEDs for illumination and projectors in mobile devices were just a vision for a far away future. Meanwhile, such devices are commodity based on the significant increase in their efficiency. This has been the driving force for about one decade. However this development has not fully accomplished yet. The recent improvements of the device design and in doping strategies yielded efficiencies close to the fundamental limit reaching internal quantum efficiencies of more than 90 % and corresponding wall-plug efficiencies well above 70%. Nowadays, it is recognized that LED offer a big variety of opportunities beyond efficient lighting. There are many applications that could only be addressed by the unique characteristics of semiconductor LED light sources. Thus, it is much more than cost cutting triggering further research on group III nitride optoelectronics. A brief history of group III nitride based SSL developments along with an introduction to OSRAM Opto Semiconductors’ numerous activities in research and development of next generation LEDs / Lasers and future trends for lighting applications will be given. Examples of technology and products for various application fields will illustrate the claimed technology leadership that is based on the close interplay of material development, thorough understanding of scientific background and of technological solutions yielding.
parallel sessions
13:45 - 15:45

**Bulk nitrides : Izabella Grzegory**

**13:45**

HVPE-grown GaN substrate with overall low dislocation density and relation between lattice bowing and defects

Narihito Okada, Keisuke Yamane, Tohoru Matsubara, Shin Goubara, Hiroshi Ihara, Kota Yukizane, Tatsuya Ezakii, Satoru Fujimoto, Ryo Inomoto, Kazuyuki Tadatomo

1 Yamaguchi University, 2 Toyohashi University of Technology 3 UBE Scientific Analysis Laboratory, Inc. Japan

**14:15**

Low-dislocation Density and 6 Inch GaN Substrates Grown by Hydride Vapor Phase Epitaxy

Jianfeng Wang, Guoqiang Ren, Yu Xu, Demin Cai, Mingyue Wang, Yuming Zhang, Xiaojian Hu, and Ke Xu

1 Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, China 2 Suzhou Nanoin Science and Technology Co. Ltd., Suzhou Industry Park, China *Corresponding author’s Tel: 86-512-6287-2501, E-mail: kxu2006@sinano.ac.cn

**14:45**

Realization of thick GaN bulk crystals by hardness control in HVPE growth

Hajime Fujikura, Takayuki Suzuki, Toshio Kitamura, and Tetsuji Fujimoto

SCIOCS Co. Ltd.

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**Halogen-free vapor phase epitaxy to grow GaN bulk crystals at high rate**

Daisuke Nakamura, Taishi Kimura, Kayo Horibuchi

Toyota Central R&D Labs., Inc. Nagakute, Aichi, 480-1192, Japan

**Interfacial structure control of AlN on sapphire fabricated from Al metal and N2 gas**

Katsuhiro Kishimoto, Mitsuru Funato, Yoichi Kawakami

Kyoto University

**Study on AlN growth by high-temperature HVPE**

Jicai Zhang, Jun Huang, Maosong Sun, Xuewei Li, Guoqiang Ren, Jianfeng Wang, Ke Xu

1 Platform for Characterization and Test, Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou215123, China 2 Suzhou Nanoin Science and Technology Co., Ltd, Suzhou 215123, China

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**UV sources : Tetsuya Akasaka**

**13:45**

Deep UV Light Emitting Diodes – Development and Applications

Marc Patrick Hoffmann, Christian Brandl, Mohammad Tollabi-Mazraehno, Mariel Grace Jama, Nadine Tiller, Matthew John Davies, Georg Rossbach, Hans-Juergen Lugauer

OSRAM Opto Semiconductors GmbH, Leibnizstr. 4, 93055 Regensburg, Germany

**14:15**

Optical characteristics of c-plane AlGaN multiple-quantum-well light-emitting diode structures with macro-size steps

Kazunobu Kojima, Yosuke Nagasawa, Akira Hirano, Masamichi Ipponmatsu, Yoshio Honda, Hiroshi Amano, Isamu Akasaki, Shigeiwa, F. Chichibu

14:30  **High-efficiency top-emitting deep UV LEDs using AlN-based glass electrodes**

Tae Ho Lee1, Byeong Ryong Lee1, Kyung Rock Son1, Tae Hoon Park1, Hyeok Jun Choi1, Hee Woong Shin1,2, Tae Geun Kim1,*  
1School of Electrical Engineering, Korea University, Seoul 136-701, Republic of Korea  2LED R&D Center, LED Division, LG Innotek Co., Ltd., Paju 413-901, Republic of Korea

14:45  **Enhanced efficiencies from UVB light emitting diodes with transparent p-AlGaN superlattices**

Johannes Enslin1, Norman Susilo1, Martin Guttmann1, Martin Hermann1, Sarina Graupeter1, Luca Sulmoni1, Christian Kuhn1, Frank Mehrke1, Tim Wernicke1, Michael Kneissl1,2  
1) Technische Universität Berlin, Institute of Solid State Physics, Hardenbergstr. 36, EW 6-1, 10623 Berlin, Germany  2) Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Str. 4, 12489 Berlin, Germany

15:00  **Determination of current injection efficiency at low current density in AlGaN-based deep-ultraviolet light-emitting diodes**

Guo-Dong Hao, Manabu Taniguchi, Naoki Tamari, Shin-ichiro Inoue  
Advanced ICT Research Institute, National Institute of Information and Communications Technology (NICT), Kobe 651-2492, Japan, Tsukuba Research Laboratories, Tokuyama Corporation, Tsukuba, Ibaraki 300-4247, Japan

15:15  **New field effect Deep-UV LEDs developpement**

Jean Rottner, Christophe Largeron, David Vaufrey, Ivan-Christophe Robin  
Univ. Grenoble Alpes, CEA-LETI, Minatec Campus, Grenoble, France, Univ. Grenoble Alpes, CEA-LETI, Minatec Campus, Grenoble, France, Univ. Grenoble Alpes, CEA-LETI, Minatec Campus, Grenoble, France, Univ. Grenoble Alpes, CEA-LETI, Minatec Campus, Grenoble, France

15:25  **Degradation effects in AlGaN-based UVC light-emitting diodes**

Johannes Glaab, Joscha Haefke, Jan Ruschel, Moritz Brendel, Jens Rass, Tim Kolbe, Christian Kuhn, Johannes Enslin, Tim Wernicke, Sven Einfeldt, Markus Weyers, Michael Kneissl  
Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Str. 4, 12489 Berlin, Germany, Technische Universität Berlin, Institute of Solid State Physics, Hardenbergstr. 36, EW 6-1, 10623 Berlin, Germany

15:45  **Coffee break**

**RF technologies : Rüdiger Quay**

13:45  **Comparing both GaAs and GaN technologies for RF**

J. Jimenez  
QORVO, USA

14:15  **Advanced HEMTs and MMICs Technologies for Next Generation Millimeter-wave Amplifiers**

Kozo Makiyama1, Shirou Ozaki1, Yoshitaka Niida2, Toshihiro Ohki1, Naoya Okamoto1, Yuichi Minoura1, Masaru Satoh1, Yoichi Kamada1, Kazukiyo Joshin1, Norikazu Nakamura1, Yasuyuki Miyamoto3  
1 Fujitsu Limited, Fujitsu Laboratories Ltd., 2 Fujitsu Laboratories Ltd., 3 Tokyo Institute of Technology

14:45  **AlN-based HEMTs grown on silicon substrate by NH3-MBE**

S. Rennesson1, F. Semonz1, M. Nemoz1, J. Massies1, S. Chenot1, L. Largeau2, E. Dogmus3, M. Zegaoui3 and F. Medjdoub3  
1Université Côte d’Azur, CRHEA-CNRS, 06560 Valbonne, France, 2C2N, CNRS, Univ. Paris-Sud, Univ. Paris-Saclay, 91460 Marcoussis, France, 3IEMN/CNRS, 59650 Villeneuve d’Ascq, France

15:00  **Determination of current injection efficiency at low current density in AlGaN-based deep-ultraviolet light-emitting diodes**

Guo-Dong Hao, Manabu Taniguchi, Naoki Tamari, Shin-ichiro Inoue  
Advanced ICT Research Institute, National Institute of Information and Communications Technology (NICT), Kobe 651-2492, Japan, Tsukuba Research Laboratories, Tokuyama Corporation, Tsukuba, Ibaraki 300-4247, Japan
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<tr>
<td>15:16</td>
<td>Impact of AlN/Si nucleation layers grown either by NH3-MBE or MOCVD on the properties of AlGaN/GaN HFETs</td>
<td>1) H. Yacoub, T. Zweipfennig, H. Kalisch, and A. Vescan 2) A. Dadgar, M. Wieneneke, J. Blasing and A. Strittmatter 3) S. Rennesson and F. Semond</td>
<td>1) GaN Device Technology, RWTH Aachen University, Sommerfeldstr. 25, 52074 Aachen, Germany 2) Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Universitätsplatz 2, 39106 Magdeburg, Germany 3) Université Côte d’Azur, CRHEA-CNRS, rue B. Grégory, F-06560 Valbonne, France</td>
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<td>15:30</td>
<td>High Temperature operation of n-Al0.65Ga0.35N Channel Metal Semiconductor Field Effect Transistors on low-defect AlN Templates w</td>
<td>Sakib Muhtadi, Seong Mo. Hwang, Antwon. Coleman, Fatima Asif, Alexander Lunev, MVS Chandrashekhar, and Asif Khan</td>
<td>Electrical Engineering, University of South Carolina, Columbia, SC 29208</td>
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<td>15:45</td>
<td>Coffee break</td>
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**Localization, LED physics : Aurélien David**

13:45 The Role of Random Alloy Fluctuations in the InGaN/GaN LED | Aldo Di Carlo(a), Matthias Auf der Maur (a), Alessandro Pecchia (b)  
(a) Dept. Electronics Engineering, University of Rome "Tor Vergata", Rome (Italy)  (b) CNR-ISMN, Rome (Italy)

14:15 3D Modeling of Green InGaN QW LEDs with Random Alloy fluctuation | Shuan Wang (1), Chi-Kang Li(1), Marcel Floche(2), Claude Weisbuch (2,3), James S. Speck(3), and Yuh-Renn Wu(1)  
(1) Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taipei 10617, Taiwan  (2) Laboratoire de Physique de la Matière Condensée, CNRS-Ecole Polytechnique, 91128 Palaiseau Cedex, France (3) Materials Departments, University of California, Santa Barbara, California 93106, USA

14:30 Modeling of carrier dynamics in GaInN QWs with different In content. | Piotr A. Dróżdż(1,2), Krzysztof P. Korona(1), Marcin Sarzyński(2), Tadeusz Suski(2), Czesław Skierbiszewski(2), Henryk Turski(2)  
(1) Faculty of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw, Poland, (2) Institute of High Pressure Physics "Unipress", Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland

14:45 Re-hybridization and strain induced reconstructions on InGaN surfaces: Implications on alloy ordering and stoichiometric limits | Liverios Lymperakis 1, Christoph Freysoldt 1, Tobias Schulz 2, Martin Albrecht 2, Jörg Neugebauer 1  
1 Computational Materials Design department, Max-Planck-Institut für Eisenforschung GmbH, 40237 Düsseldorf, Germany, 2 Leibniz-Institut für Kristallzüchtung, Max-Born-Straße 2, 12489 Berlin, Germany
Effect of carrier localization on recombination processes and efficiency of polar LEDs operating in the “green gap”
S. Yu. Karpov
STR Group - Soft-Impact, Ltd., P.O.Box 83, 27 Engels ave., St.Petersburg, 194156 Russia

A high internal quantum efficiency of the emission in GaN single crystals observed by omnidirectional photoluminescence (ODPL)
Kazunobu Kojima, Hirotaka Ikeda, Kenji Fujito, Shigefusa F. Chichibu
Tohoku University, Mitsubishi Chemical Corporation

Polarization-induced fixed surface charge
Dan Ritter (1), Chris G. Van de Walle (2)
(1) Department of Electrical Engineering, Technion- Israel Institute of Technology, Haifa, Israel (2) Materials Department, University of California, Santa Barbara, California 93106-5050, USA

parallel sessions
16:15 – 18:00

Bulk nitride : Narihito Okada

GaN bulk crystallization by HVPE on ammonothermal seeds and some new approaches
Izabella Grzegory
Institute of High Pressure Physics PAS Unipress ul. Sokolowska 29/37, 01-142 Warsaw, Poland

High Quality Bulk GaN Crystal Grown by Acidic Ammonothermal Method
Makoto Saito, Quanxi Bao, Kohei Kurimoto, Daisuke Tomida, Kazunobu Kojima, Yuji Kagamitani, Rinzo Kayano, Toru Ishiguro, Shigefusa F. Chichibu
IMRAM Tohoku University, Mitsubishi Chemical Corporation, The Japan Steel Works

Nano beam X-ray diffraction analysis of Na flux GaN bulk crystals grown with controlling seed crystal surfaces and growth mode
Shotaro Takeuchi1, Yuki Mizuta1, Masayuki Imanishi2, Mamoru Imade2, Yusuke Mori2, Yasuhiko Imai3, Shigeru Kimura3, Akira Sakai1
1Graduate School of Engineering Science, Osaka University, 2Graduate School of Engineering, Osaka University, 3Research & Utilization Division, Japan Synchrotron Radiation Research Institute (JASRI)

New spontaneous AlN single crystal growth method on the top surface of sintered AlN source by PVT method
Q.K. Wang, K. Cao, J. Wang, Z.H. Wang, L.X. Liu, J.W. Gong, L. Wu
State Key Laboratory of Advanced Special Steel & Shanghai Key Laboratory of Advanced Ferrometallurgy & School of Materials Science and Engineering, Shanghai University, Shanghai 200072, China, Suzhou Ultratrend Technologies Co. Ltd, Suzhou City 215699, Jiangsu Province, China

Quality Improvement of AlN Crystals Grown on AlN Buffer Layer by Alumina Decomposition-Nitridation Method
Makoto OHTSUKA, Keigo FUJIWARA, Hideot MIYAKE, Hiroyuki FUKUYAMA
Tohoku University, Tohoku University, Mie University, Tohoku University
Monday

17:45  a-plane AlN layer fabricated by Ga-Al liquid phase epitaxy on nitrided r-plane sapphire substrate with off-cut angle
Masayoshi Adachi, Hiroyuki Fukuyama
Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University

UV sources: Michael Kneissl

16:15  Electron-beam-pumped UV lasers
Thomas Wunderer
PARC, Inc.  3333 Coyote Hill Road  Palo Alto, CA 94304  USA

16:45  AlGaN LEDs on AlN Substrates Emitting at 230 nm
Craig G. Moe, Sho Sugiyama, Jumpei Kasai, James R. Grandusky, and Leo J. Schowalter
Crystal IS, Green Island, NY, USA, and Asahi Kasei, Fuji-shi, Shizuoka, Japan

17:00  Ultraviolet AlGaN Nanowire Light Emitting Diodes Operating at 279 nm by Selective Area Epitaxial Growth
X. Liu(1)(2), B. H. Le(1)(2), A. Pofelski(3), S. Zhao(1), G. A. Bottom§, Ilishiang Shih(1), and Z. Mi(1)(2) " Author for correspondence: zetian.mi@mcgill.ca
(1) Department of Electrical and Computer Engineering, McGill University, Montreal, QC H3A0E9, Canada, (2) Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI 48109-2099, USA, (3) Department of Materials Science and Engineering, Canadian Centre for Electron Microscopy, McMaster University, 1280 Main Street West, Hamilton, ON L8S4M1, Canada.

17:15  245 nm GaN/AlN deep UV LED grown by MBE on bulk AlN substrates
Shyam Bharadwaj, SM Islam, Kevin Lee, Vladimir Protasenko, Huili (Grace) Xing, Deiddeep Jena
Cornell University for everyone

17:30  Deep UV Emission from Simple Tunnelling MIS Diodes
C. S. Lin1, K. Cavanagh2, A. Mihai1, B. Zou1, D. Allsopp2, M. A. Moram1
1 Department of Materials, Imperial College London, United Kingdom 2 Department of Electronic and Electrical Engineering, University of Bath, United Kingdom

17:45  Highly Ultraviolet-Transparent ITO/ZGO Contact Layers for AlGaN Deep-Ultraviolet Light-Emitting Diodes
Ray-Hua Horng1,2*, Yu-Yuan Zeng2, Ching-Ho Tien3, Chia-Lung Tsai4, Yi-Keng Fu4, Wei-Hung Kuo4and Dong-Sing Wu3
1 Institute of Electronics, National Chiao Tung University, Hsinchu 300, Taiwan 2Graduate Institute of Precision Engineering, National Chung Hsing University, Taiwan 3Department of Materials Science and Engineering, National Chung Hsing University, Taiwan 4 Electronic and Optoelectronic System Research Laboratories, ITRI, Hsinchu 310, Taiwan *E-mail: rhh@ nctu.edu.tw (MOST 104-2221-E-009-199-MY3, 104-2221-E-005-036-MY3, ITRI G101W3402W)

RF Technologies: Jose Jimenez

16:15  High-power Microwave GaN/AlGaN HEMTs and MMICs on SiC and Si Substrates
Rüdiger Quay, Dirk Schwantuschke, Erdin Ture, Friedbert van Raay, Christian Friesicke, Stefan Müller, Steffen Breuer, and Peter Brückner
Fraunhofer Institute of Applied Solid-State Physics (IAP) Tullastr. 72  D-79108 Freiburg, Germany, ph: ++49-761-5159-843, ruediger.quay@iap.fraunhofer.de
16:45 **Improved MOS gate control in Al2O3/AlGaN/GaN HEMTs with reverse-bias annealing**  
Kenya Nishiguchi, Syota Kaneki, Tamotsu Hashizume  
Research Center for Integrated Quantum Electronics, Hokkaido University, Sapporo, Japan

17:00 **Suppression of flat-band voltage shift for AISiO/GaN MOS structure**  
Daigo Kikuta1, Kenji Ito1, Tetsuo Narita1, and Tetsu Kachi2  
1 Toyota Central R&D Labs., Inc., 2 Nagoya University

17:15 **DC-6GHz GaN Based SPDT Switch MMIC**  
Weijun Luo, Miao Geng, Pengpeng Sun, Ke Wei, Xiaojuan Chen, Tingting Yuan, Yingkui Zheng and Xinyu Liu  
Institute of Microelectronics, Chinese Academy of Sciences, Beijing, CHINA The School of Microelectronics, University of Chinese Academy of Sciences, Beijing, CHINA E-mail: luoweijun@ime.ac.cn

17:30 **Low reduction rate of ID, gm, fT and fmax with Drain Voltage in AlGaN/GaN HEMTs on CVD-Diamond**  
K. Ranjan1 2, S. Arulkumaran1, G.I. Ng2, C M Manoj Kumar1, S. Vicknesh1 2, K.S. Ang1 M. Bryan1, S.C. Foo1  
1Temasek Laboratories@NTU, Nanyang Technological University, Singapore 637553. 2School of EEE, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798. *E-mail: kranjan@ntu.edu.sg, Phone: +65-6592-7796, Fax: +65-6790-0215

17:45 **Two-dimensional electron gas in InGaN/InN heterostructure**  
Tao Wang1, Zhaoying Cheng1, Ping Wang1, Xiantong Zheng1, Jun Li2, Xin He2, Peng Li2, Xixiang Zhang2, Xuelin Yang1, Bo Shen1, Xinqiang Wang1  
1State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing, 100871, China 2King Abdullah University of Science and Technology (KAUST), Division of Physical Science and Engineering and Core Labs, Thuwal 23955-6900, Kingdom of Saudi Arabia
Tuesday Program

A - Materials
B - Optical devices
C - Electronic devices
D - Other devices
E - Theory-basics
G - Late news
parallel sessions
8:30 – 10:00

Growth and polarity : Ferdinand Scholz

08:30 MOCVD of N-polar (Al,Ga,In)N heterostructures and their application in electronic devices

S. Keller and U.K. Mishra

University of California Santa Barbara Electrical and Computer Engineering Department

09:00 Polarity Control in III-Nitrides beyond Pragmatism

Stefan Mohn, 1 Natalia Stolyarchuk, 1,2 Toni Markurt, 1 Ronny Kirste, 3 Marc P. Hoffmann, 3 Ramón Collazo, 3 Aimeric Courville, 2 Rosa Di Felice, 4,5 Zlatko Sitar, 3 Philippe Vennéguès, 2 and Martin Albrecht 1

1 Leibniz Institute for Crystal Growth, Max-Born-Strasse 2, 12489 Berlin, Germany, 2 Centre de Recherche sur l’HétéroÉpitaxie et ses Applications, CNRS-CRHEA, rue Bernard Gréory, 06560 Valbonne, France, 3 Material Science and Engineering, North Carolina State University, 1001 Capability Drive, Raleigh, North Carolina 27695-7919, USA, 4 Center S3, CNR Institute of Nanoscience, Via Campi 213/A, 41125 Modena, Italy, 5 Department of Physics, University of Southern California, Los Angeles, California 90033, USA,

09:30 AlN seed layers from atomic layer deposition on sapphire for MOVPE growth of AlN

Sylvia Hagedorn 1, Hassan Gargouri 2, Franziska Naumann 2, Ame Knauer 1, Ute Zeimer 1, and Markus Weyers

1 Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Str. 4, D-12489 Berlin, Germany 2 SENTECH Instruments GmbH, Schwarzschildstraße 2, D-12489 Berlin, Germany

10:00 Coffee break

Devices based on LEDs : Guy Feuillet

08:30 GaN micro-LED arrays for multi-Gb/s visible light communications

Martin D. Dawson

University of Strathclyde

09:00 Core-Shell P-N Junction Nanowire LEDs Fabricated by N-polar Selective Area Growth Process

Matt D. Brubaker, Joel C. Weber, Paul T. Blanchard, Bryan T. Spann, Alexana Roshko, Todd E. Harvey, Norman A. Sanford, and Kris A. Bertness

Physical Measurement Laboratory, National Institute of Standards and Technology, Boulder, CO 80305, United States

09:45 MOVPE growth of nitrogen-polar AlN on C-face 4H-SiC with miscut

Jori Lemettinen, Iurii Kim, Hironori Okumura, Sami Sulihkonen

Aalto University Department of Electronics and Nanoengineering, Aalto University Department of Electronics and Nanoengineering, Faculty of pure and applied science, Tsukuba University and Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Aalto University Department of Electronics and Nanoengineering
09:15 **High Aspect Ratio 3D GaN Fin LEDs with Nonpolar a-Plane Sidewalls grown by MOVPE**
Jana Hartmann1,2, Frederik Steib1,2, Hao Zhou1, Johannes Ledig1,2, Felix Blumenröther1, Lars Nicolai4, Sönke Fündling1,2, Tilman Schimpke3, Adrian Avramescu3, Tansen Varghese3, Herz-Heinrich Wehmann1,2, Achim Trampert4, Martin Straßburg3, Hans-Jürgen Lugauer3, Andreas Waag1,2

1Institut für Halbleitertechnik and Laboratory for Emerging Nanometrology, Technische Universität Braunschweig, 38092 Braunschweig, Germany, 2 epitaxy competence center ec2, Hans-Sommer-Straße 66, 38106 Braunschweig, Germany, 3Osmar Opto Semiconductors GmbH, Leibnizstraße 4, 93055 Regensburg, Germany, 4Paul-Drude-Institut für Festkörperlektronik, Hausvogteiplatz 5-7, 10117 Berlin, Germany

09:30 **LED based microdisplays with integrated collimating lenses**
Kunook Chung, Brandon Demory, Jingyang Sui, P.C. Ku
University of Michigan, University of Michigan, University of Michigan, University of Michigan

09:45 **3D GaN Photonic Integrated Circuits**
K.H. Li, Y.F. Cheung, H.W. Choi
Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong

09:00 **Coffee break**

**Detectors : Martin Kuball**

08:30 **Polarization and energy-band engineering on AlGaN avalanche photodiodes**
the Key Laboratory of Advanced Photonic and Electronic Materials, School of electronic Science and Engineering, Nanjing University, Nanjing, China

09:00 **Semipolar (10-1-1) GaInN/GaN p-i-n light-emitting solar cells**
N. Muramatsu, T. Takenishi, S. Mitsufuji, M. Iwaya, T. Takeuchi, S. Kamiyama, and I. Akasaki
Department of Materials Science and Engineering, Department of Materials Science and Engineering, Department of Materials Science and Engineering, Department of Materials Science and Engineering, Department of Materials Science and Engineering, Akasaki Research Center, Nagoya University,

09:15 **Solar blind UV detection using high-Al content AlxGa1-xN devices with responsivity >106A/W**
Sakib Muhtadi, Seong Mo Hwang, Antwon L. Coleman, Alexander Lunev, Fatima Asif, V.S.N. Chava, MVS Chandrashekhar, Asif Khan
Electrical Engineering, University of South Carolina, Columbia, SC 29208

09:30 **Growth, Fabrication, and Characterization of GaN p+i-p+i Ultraviolet Avalanche Photodiodes**
Mi-Hee Ji, Jeomoh Kim*, Theeradetch Detchprohm, Yuanzheng Zhu, Shyh-Chiang Shen, and Russell D. Dupuis
Georgia Institute of Technology, Atlanta, Georgia, USA, Georgia Institute of Technology, Atlanta, Georgia, USA *Currently LG Electronics, Seoul, South Korea

09:45 **Fabrication of GaInN/GaInP/GaAs/Ge 4-junction solar cell using wafer bonding technology**
[2] Isamu Akasaki, Hiroshi Amano
[3] Hiroshi Amano

10:00 **Coffee break**
parallel sessions 10:30 - 12:15

Exploratory growth : Stacia Keller

10:30 Impact of InGaN epitaxy lattice matched to ScAlMgO4 substrates on future photonic devices

Yoichi Kawakami, Takuya Ozaki and Mitsuru Funato

Department of Electronic Science and Engineering, Kyoto University, Kyoto 606-8501, Japan

11:00 Evaluation of stacking faults free semipolar \{11-22\} GaN substrate grown by Na-flux point seed technique

Narihito Okada1, Hiroki Ikeuchi1, Naoki Morishita1, Tohoru Matsubara1,2, Tomoyuki Tanikawa3, Kim DoHun4, Masayuki Imashii4, Mamoru Imade4, Yusuke Mor4, Kazuyuki Tadatomo1

1 Yamaguchi University, 2 UBE Scientific Analysis Laboratory, Inc., 3 Institute for Materials Research, Tohoku University, 4 Osaka University

11:15 Pulsed DC Sputtering Deposition of GaN and ternary nitrides for LED applications

Frederik Steib1,2, Jan Gülink1, Johannes Ledig1,2, Thilo Remmele4, Alexander Behrens3, Sönke Fündling1,2, Martin Albrecht1, Martin Straussburg3, Hans-Jürgen Lugauer3, Hergo-Heinrich Wehmann1,2, Andreas Waag1,2

1 Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, Braunschweig University of Technology, 38092 Braunschweig, Germany 2 epitaxy competence center ec2, Hans-Sommer-Straße 66, 38106 Braunschweig, Germany 3 Osrám Opto Semiconductors GmbH, Leibnizstraße 4, 39055 Regensburg, Germany 4 Leibniz Institute for Crystal Growth, Max-Born-Straße 2, 12489 Berlin, Germany

11:30 GaN-on-Si epitaxial defects – Impact on device yield and their corresponding control through Epitaxy process.

a) Srinivasan Kannan, Brian Gruver, Chankyung Choi, Jianwei Wan, Mihir Tungare, Seong-Eun Park, Troy Larsen, Peter W. Kim b) Lauri Knuttila, Ingo Daumiller, Utiyli Chowdhury, Werner Sebastian, Markus Harfmann

a) Infineon Technologies Americas Corporation, Mesa, Arizona, USA b) Infineon Technologies Austria, Villach, Austria

11:45 Structural and optical characterization of Si-doped polar and (11-22) semipolar wide bandgap AlGaN


1 Department of Physics, SUPA, University of Strathclyde, 107 Rottenrow East, Glasgow G4 0NG, United Kingdom 2 Institute of Solid State Physics, Technische Universität Berlin, Hardenbergstr. 36, 10623 Berlin, Germany, 3 Tyndall National Institute, University College Cork, Lee Maltings, Dyke Parade, Cork, Ireland, 4 Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Str. 4, 12489 Berlin, Germany

12:00 HVPE of Thick GaN Layers on ScAlMgO4 Substrates and their Self-Separation for Fabricating Free-Standing wafers

Kazuki Ohnishi1, Masaya Kanhö2, Tomoyuki Tanikawa1, Shigeyuki Kuboya1, Takashi Mukai2, Takashi Matsuo1,2

1 Institute for Materials Research, Tohoku University, 2 Nichia Corporation

12:15 lunch
Optics and physics: Andreas Hangleiter

10:30 Challenge to highly efficient wavelength-stable red light-emitting diodes using Eu-doped GaN
Yasufumi Fujiiwa1, Tomohiro Inaba1, Wanxin Zhu1, Brandon Mitchell1,2, Takanori Kojima1, and Tom Gregorkiewicz1,3
1 Graduate School of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan 2 Department of Physics, West Chester University, West Chester, PA 19383, USA 3 Van der Waals-Zeeman Institute, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands

11:00 Towards Lowest-Threshold Lasing for InGaN/GaN Quantum Dots in High Quality Nanocavities
Danqing Wang1, Tongtong Zhu2, Rachel A. Oliver2 and Evelyn L. Hu1
1 John A. Paulson School of Engineering and Applied Sciences, Harvard University, USA 2 Department of Materials Science and Metallurgy, University of Cambridge, UK

11:30 Feasibility study on limited area formation of GaN nanowires for multi-quantum shell LDs

11:45 Crystal-phase quantum wires in GaN nanowires: One-dimensional heterostructures with atomically flat interfaces
Pierre Corfdir, David van Treeck, Timur Flissikowski, Johannes K. Zettler, Sergio Fernandez-Gamir, Holger T. Grahn, Oliver Brandt
Paul-Drude-Institut für Festkörperelektronik, Leibniz Institut im Forschungsverbund Berlin e. V., Hausvogteiplatz 577, 10117 Berlin, Germany

12:00 Quantitative electroluminescence characteristics of packaged LED devices from ensembles of AlInGaN based core-shell microrods
Johannes Ledig1, Adrian Avramescu2, Tilman Schimpke3, Tansen Varghese3, Georg Roßbach3, Bastian Galler3, Helena Doblinger3, Thorsten Gerloff3, Frederik Steib1, Sönke Fündling2, Martin Strassburg3, Hans-Jürgen Lugauer2, Andreas Waag3, Armin Sperling1
1 Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany, 2 Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, TU Braunschweig, 38092 Braunschweig, Germany, 3 Osram Opto Semiconductors GmbH, Leibnizstraße 4, 93055 Regensburg, Germany

Chemistry, Biology, Sensors: Patrick Ruther

10:30 Photocatalytic water splitting on (oxy)nitride semiconductors
Tsuyoshi Takata, Kazunari Domen
Department of Chemical System Engineering, School of Engineering, The University of Tokyo

11:00 Efficient Direct Hydrogen Generation using InGaN Nanowires treated by Nanoscale Surface Passivation and Metal Co-catalyst
Mohamed Ebaid1, Davide Priante1, Guangyu Liu1, Chao Zhao1, Tayirjan T. Isimjan2, Tien Khee Ng1, Hicham Idriss1, 2 SABIC-Corporate Research and Development Center (CRD) at KAUST, Thuwal 23955-6900, Kingdom of Saudi Arabia, 2 King Abdullah University of Science and Technology (KAUST), Photonics Laboratory, Thuwal 23955-6900, Kingdom of Saudi Arabia
11:15 Conductometric gas nanosensors based on sub-100 nm vertical 3D GaN nanopillars

Tony Granz 1/2, Shinta Mariana 1, Gerry Hamdana 1/2, Feng Yu 1/2, Alaeldin Gad 1/2, Muhammad Fahlesa Fatallah1/2, Jana Hartmann 1/2, Nurhalis Majid 3/4, Olga Casals 5, Gerhard Lilienkamp 3, Sönke Fündling 1/2, Erwin Peiner 1/2, Winfried Daum 3, Joan Daniel Prades 5, Andreas Waag 1/2, Hutomo Suryo Wasisto1/2

1 Institut für Halbleitertechnik (IHT), Technische Universität Braunschweig, Hans-Sommer-Str. 66, D-38106 Braunschweig, Germany
2 Laboratory for Emerging Nanometrology (LENA), Technische Universität Braunschweig, Langer Kamp 6a, D-38106 Braunschweig, Germany
3 Institut für Energieforschung und Physikalische Technologien (IEPT), Technische Universität Clausthal, Leibnizstr. 4, D-38678 Clausthal, Germany
4 Research Center for Physics, Indonesian Institute of Sciences (LIPI), Gd. 442 Kawasan Puspiptek Serpong, 15314 Tangerang Selatan, Indonesia
5 MIND-IN2UB, Department of Engineering: Electronics, University of Barcelona, C/Marti i Franquès 1, E-08028 Barcelona, Spain

11:30 Detection of anticancer drugs action on cells by AlGaN/GaN field effect transistors

Can Li1, Paul Bertani2, Yuji Wang2, Peng Zhao1, Hao Wu1, Jianfei Sun1, Ning GU*1, and Wu Lu

1 School of Biological Science and Medical Engineering, Southeast University, Nanjing, 210009, China
2 Department of Electrical and Computer Engineering, the Ohio State University, Columbus, OH 43210, USA

11:45 Functionalization of (In)GaN quantum well structures for selective optical (bio)chemical sensing


1) Institute of Optoelectronics, Ulm University, Ulm, Germany
2) Institute of Organic Chemistry III, Ulm University, Ulm, Germany
3) Institute of Quantum Matter / Semiconductor Physics Group, Ulm University, Ulm, Germany

12:00 Deep UV photodetector prototype on flexible wafer-scale thick boron nitride layers grown by MOVPE

Xin Li1, Matthew B. Jordan1,2, Taha Ayari1,2, Suresh Sundaram1, Youssef El Gmili1, Saiful Alam1,2, Muhbub Alam1,2, Gilles Patriarche4, Paul L. Voss1,2, Jean Paul Salvestrini1,5, and Abdallah Ougazzaden 1,2,

1 UMI 2958, Georgia Tech - CNRS, 57070 Metz, France
2 Georgia Institute of Technology, School of Electrical and Computer Engineering, GT-Lorraine, 57070 Metz, France
3 CEA-LETI, Minatec Campus, F-38054 Grenoble, France
4 Centre de Nanosciences et de Nanotechnologies, Université Paris-Saclay, C2N – Site de Marcoussis, route de Nozay, F-91460 Marcoussis, France
5 Université de Lorraine, LMOPS, EA 4423, 57070 Metz, France

12:15 Lunch

parallel sessions
13:45 - 15:45

B containing nitrides:
Sergei Novikov

13:45 MOVPE growth of wurtzite BN-related alloys

Tetsuya Akasaka

NTT Basic Research Laboratories, NTT Corp. 3-1 Morinosato-Wakamiya, Atsugi, Japan
14:15 The surface evolution of hexagonal boron nitride on sapphire by pulsed-mode MOVPE
X. Yang*, S. Nitta, K. Nagamatsu, M. Pristovsek, Y. H. Liu, Y. Honda, and H. Amano
Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya 464-8603, Japan, Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya 464-8603, Japan, School of Information Engineering, Zhengzhou University, Zhengzhou, 450001, China, Akasaki Research Center, Nagoya University, Nagoya 464-8603, Japan, Venture Business Laboratory, Nagoya University, Nagoya 464-8603, Japan.

14:30 Fine structure of phonon replicas and exciton-phonon interaction in the strong coupling regime in hexagonal boron nitride
Laboratoire Charles Coulomb, UMR 5221 CNRS-Université de Montpellier, 34095 Montpellier, France, Institut Jaume Almera, Consejo Superior de Investigaciones Científicas (ICTJA-CSIC), 08028 Barcelona, Spain, Department of Chemical Engineering, Kansas State University, Manhattan, Kansas 66506, USA.

14:45 Wafer scale MOVPE growth of AlGaN/GaN HEMTs structure on 2D h-BN buffered sapphire templates.
Suresh Sundaram 1, Xin Li 1,2, Taha Ayari 1,2, Saiful Alam 1,2, Youssel El Gmil 1, Gilles Patriarche 4, Paul L. Voss 1,2, Jean Paul Salvestrini 1,3, Abdallah Ougazzaden 1,2.
1 Georgia Tech Lorraine, UMI 2958, Georgia Tech - CNRS, 57070 Metz, France, 2 School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, 30332, USA, 3 Université de Lorraine and CentraleSupélec, LMOPS, EA 4423, 57070 Metz, France, 4 Laboratoire de Photonique et de Nanostructures (LPN), CNRS, Université Paris-Saclay, route de Nozay, F-91460 Marcoussis, France.

15:00 Crystal structure of BAIN thin films: effect of boron concentration in the gas flow
Shuo Wang, Xiaohang Li, Alec M. Fischer, Theeradetch Dechproum, Russell D. Dupuis, Fernando A. Ponce
Department of Physics, Arizona State University, Tempe, Arizona 85287-1504, USA, Center for Compound Semiconductors and School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332, USA, Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology, Thuwal 23955, KSA.

15:15 Extremely high-temperature molecular beam epitaxy of boron-nitride.
T.S. Cheng1, A. Summerfield1, J. D. Albar1, A. Davies1,2, C.J. Mello1, L. Eaves1, C.T. Foxon1, A.N. Khlobystov2, T.Q.P. Vuong3, G. Cassabois3, P. Valvin3, B. Gil3, P.H. Beton1, S.V. Novikov1
1School of Physics and Astronomy, University of Nottingham, Nottingham NG7 2RD, UK, 2School of Chemistry, University of Nottingham, Nottingham NG7 2RD, UK, 3Laboratoire Charles Coulomb, UMR5221 CNRS-Université de Montpellier, 34095 Montpellier, France.

15:30 Coffee break

Visible LEDs: Benjamin Damilano
14:30 Internal Quantum Efficiency (IQE)  
Characterization of LEDs by Bias Dependent Resonant Photoluminescence  
Matthias Wachs, Christian Mounir, Ulrich T. Schwarz  
Experimental Sensor Science, Chemnitz University of Technology, Germany, Department of Microsystems Engineering, IMTEK, University of Freiburg, Germany, Experimental Sensor Science, Chemnitz University of Technology, Germany

14:45 Internal Quantum Efficiency in InGaN-GaN heterostructures emitting from blue to red  
Thi Huong Ngo1, Nicolas Chery2, Pierre Valvin1, Aimeric Courville3, Philippe de Mierry3, Benjamin Damilano3, Pierre Ruterana2 and Bernard Gil1  
1-Laboratoire Charles Coulomb, CNRS and Univ.Montpellier, case courrier 074, 34095 Montpellier CEDEX 5, France  
2-Centre de Recherche sur les Ions, les Matériaux et la Photonique, Boulevard du Maréchal Juin 14050 Caen CEDEX 4, France  
3-Université Côte d’Azur, CRHEA-CNRS, Centre de Recherche sur l’HétéroÉpitaxie et ses Applications, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France

15:00 Investigations into high energy emission band from InGaN/GaN quantum well structures under high excitation power densities  
George M. Christian [1], Simon Hammersley [1], Menno J. Kappers [2], Colin J. Humphreys [2], Rachel A. Oliver [2], David J. Binks [1], Phil Dawson [1]  
[1] School of Physics and Astronomy, Photon Science Institute, University of Manchester, Manchester, M13 9PL, United Kingdom  
[2] Department of Materials Science and Metallurgy, 27 Charles Babbage Road, University of Cambridge, Cambridge, CB3 0FS, United Kingdom

15:15 New insights into III-Nitride LED designs through quantitative modeling  
Junzhe Geng, Kuang-Chung Wang, Prasad Sarangapani, Ben Browne, Carl Wordelman, Erik Nelson, Tillmann Kubis and Gerhard Klimeck  
Purdue University, Lumileds

15:30 InGaN quantum wells with reduced quantum-confined Stark effect and their application to laser diodes  
G. Muziol,1 H. Turski,1 M. Siekacz,1 S. Grzanka,1,2 P. Perlin,1,2 M. Baranowski,3 L. Janicki,3 S. Zolud,3 M Gladysiewicz,3 R. Kudrawiec,3 and C. Skierbiszewski,1,2  
1 Institute of High Pressure Physics Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland  
2 TopGaN Ltd, Sokolowska 29/37, 01-142 Warsaw, Poland  
3 Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland

Power: Farid Medjdoub

To be announced  
A. Hanson  
Macom, USA

Large-Diameter, Thermal-Expansion Matched Substrates for GaN  
Vladimir Odnoblyudov, Cem Basceri, Shari Farrens, Ozgur Aktas, Steve Lester, Jeff Honeycutt  
Quora Technology, Inc.

Characterization and Analysis of Dynamic RON of GaN-on-Si Lateral Power Devices with Grounded and Floating Si Substrate  
Gaofei Tang, Jin Wei, Zhaofu Zhang, Mengyuan Hua, Xi Tang, Hanxing Wang, Kevin J. Chen  
Dept. of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong
**14:45** Novel Mechanism Responsible for RDSON Shift in GaN-on-Si Power Devices

Hyeongnam Kim (a), Mihir Tungare (a), J. Sun (a), H. Kannan (a), Y. Pan (a), D. Veereddy (a), B. Pandya (a), R. Garg (a), S. Khalil (a), C. Choi (a), J. Wan (a), S. Park (a), S. Kannan (a), S. Sicre (b), S. Hardikar (c), D. Macfarlane (b), M. Vorwerk (b), M. Imam (a), P. Kim (a), & A. Charles (a)

(a) Infineon Technologies Americas Corp. (IFAM), (b) Infineon Technologies Austria (IFAT), (c) Infineon Technologies AG (IFAG)

**15:00** AlGaN/GaN HFETs on intentionally C-doped 200 mm GaN-on-Si (111)

H. Yacoub, C. Mauder, S. Leone, M. Eickelkamp, D. Fahle, M. Heuken, H. Kalisch, A. Vescan

GaN Device Technology, RWTH Aachen University, Sommerfeldstr. 24, 52074 Aachen, Germany  AIXTRON SE, Dornkaustral 2, 52134 Herzogenrath, Germany

**15:15** Thermal resistance of AlGaN/GaN HEMTs transferred to various foreign substrates

Masanobu Hiroki, Kazuhide Kumakura

NTT Basic Research Labs.

**15:30** Growth and Characterization of Buffer Structures for High Power Enhancement-Mode AlGaN/GaN HEMT

M. Eickelkamp(1), D. Fahle(1), C. Mauder(1), M. Zhao(2), H. Liang(2), N. Posthuma(2), M. Van Hove(2), and M. Heuken(1)

(1) AIXTRON SE, Dornkaustral 2, 52134 Herzogenrath (Germany)  (2) Interuniversity Microelectronics Center (IMEC), Kapeldreef 75, B-3000, Leuven (Belgium)

**15:45** Coffee break

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**MEMS and piezo : Julien Pernot**

**13:45** Implantable MEMS-based tools for optogenetics

Patrick Ruther, Eric Klein, Suleman Ayub, Christian Gossler, Michael Schweizerle, Oliver Paul

Department of Microsystems Engineering (IMTEK) and BrainLinks-BrainTools Cluster of Excellence, University of Freiburg, Freiburg, Germany

**14:15** Design and Growth of III-Nitride Dipole Induced Diodes by Molecular Beam Epitaxy

Micha N. Fireman, David A. Browne, Haoran Li, Stacia Keller, Umesh K. Mishra, James S. Speck

Micha N. Fireman - Materials Department, UC Santa Barbara, David A. Browne - CEA Grenoble, Haoran Li - ECE Department, UC Santa Barbara, Stacia Keller - ECE Department, UC Santa Barbara, Umesh K. Mishra-ECE Department, UC Santa Barbara, James S. Speck-Materials Department, UC Santa Barbara

**14:30** Piezoelectric conversion with InGaN/GaN nanowire heterostructures

N. Jegenyes(1), M. Morassi(1), P. Chrétien(2), L. Travers(1), L. Lu(3), J.-C. Harmand(1), F. Houzé(2), M. Thernycheva(3), N. Gognneau(1)

1) Centre de Nanosciences et de Nanotechnologies - Site Marcoussis, CNRS-UMR9001, Université Paris-Saclay, Route de Nozay, 91460 Marcoussis, France  2) Laboratoire de Génie Électrique et Electronique de Paris, UMR 8507 CNRS-CentraleSupélec, Université Paris-Sud et UPMC, 11 rue Joliot-Curie, 91192 Gif-sur-Yvette, France  3) Centre de Nanosciences et de Nanotechnologies – Site Orsay, CNRS-UMR9001, Université Paris-Saclay, 91405 Orsay, France
14:45 **Gallium nitride nanowire based flexible piezoelectric sensor: design, fabrication and electrical performances.**

Amine El Kacimi (1), Emmanuelle Pauliac-Vaujour (1), Joël Eymery(2)
1 University Grenoble Alpes, CEA, LETI, MINATEC Campus, F-38054, Grenoble, France  2 University Grenoble Alpes, CEA, INAC-MEM, Nanostructures and Synchrotron Radiation Laboratory, F-38000 Grenoble, France

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15:00 **Optimization of process fabrication of GaN-based heterostructure on h-BN for flexible gas sensors**

Taha Ayari1,2, Chris Bishop3, Matthew B. Jordon1,2, Suresh Sundaram4, Xin Li1, Youssef ElGmili1, Jean Paul Salvestrini4, Paul L. Voss1,2, Abdallah Ouagazzaden1,2
1CNRS, UMI 2958, G T - CNRS, 2 rue Marconi, 57070 Metz, France  , 2Georgia Institute of Technology, School of Electrical and Computer Engineering, GT-Lorraine, 57070 Metz, France  , 3Institut Lafayette, 57070 Metz, France  , 4GT Lorraine, UMI 2958, G T - CNRS, 2 rue Marconi, 57070 Metz, France

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15:15 **GaN HEMTs and LEDs transferred from Silicon substrate to flexible tapes (FLEXIGaN)**

Di Zhou1, S. Mhedhbi1, G. Tabares-Jimenez2, M. Lesecq1, N. Defrance1, B. Damilano2, E. Okada1, E. Frayssinet2, J. Brault2, S. Chenot2, A. Ebongu6, Y. Cordier2, and V. Hoel1
1) IEMN-CNRS UMR8520, Av. Poincaré, Cité Scientifique, 59650 Villeneuve d’Ascq, France  2) Université Côte d’Azur, CNRS, CRHEA, rue Bernard Grégory, 06560 Valbonne, France  3) 3M France, CTC, Avenue Boulé, 95250 Beauchamp, France

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15:30 **GaN Nanowire-based piezo-generators for Powering Nomad Electronics**

N. Gogneau1, N. Jamond1, P. Chrétien2, N. Jegenyes1, M. Morassi1,3, L. Lu3, L. Travers1, J. C. Harmand1, F. H. Julien3, F. Houzé2, M. Tchernycheva3
1 Centre des Nanosciences et des Nanotechnologies, site-Marcoussis, CNRS-UMR 9001, Université Paris-Saclay, Route de Nozay, 91460 Marcoussis, France  , 2 Laboratoire de Génie Électrique et Électronique de Paris, UMR 8507 CNRS-CentraleSupélec, Université Paris-Sud et UPMC, 11 rue Joliot-Curie, 91192 Gif-sur-Yvette, France  , 3 Centre des Nanosciences et des Nanotechnologies, site-Orsay, CNRS-UMR 9001, Université Paris-Saclay, 91405 Orsay, France

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15:45 **Coffee break**
17:00  **Van der Waals molecular beam epitaxy of GaN on graphene**  

M. Gruart [1,2], T. Journot [1,3], B. Hyot [1,3], B. Gayral [1,2], B. Daudin [1,2]  


17:15  **Combined experimental and theoretical study of the structural and electronic properties of alloyed AlN and MgSiN2 semiconductors**  

Mikael Råsander, James B. Quirk, Michelle A. Moram  
Department of Materials, Imperial College London

17:30  **Selective area growth and optical properties of nitride nanowires on prepatterned graphene substrates**  

Maria Tchernycheva, Vishnuvarthan Kumaresan, Ludovic Largeau, Nan Guan, Lorenzo Mancini, Ali Madouri, Frank Glas, Hezhi Zhang, Fabrice Oehler, Antonella Cavanna, Martina Morassi, Andrea Cattoni, François H. Julien, Andrey Babichev, Noelle Gogneau and Jean-Christophe Harmand  
Center of Nanoscience and Nanotechnologies (C2N), UMR9001 CNRS site Orsay & Marcoussis, Université Paris-Sud, Université Paris-Saclay, France

17:45  **Analyses on the separation processes for GaN epilayer from sapphire substrate**  

Yutian Cheng1, Duanjun Cai2, Jiejun Wu*, Xiangshun Liu1, Xiaohui Feng1, Guoyi Zhang1*, Tongjun Yu1*  
1 Research Center for Wide-gap Semiconductors, State Key Laboratory for Artificial Microstructures and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, P. R. China  
2 Fujian Key Laboratory of Semiconductor Materials and Applications and Department of Physics, Xiamen University, Xiamen 361005, China

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**Visible LEDs : James Speck**

16:15  **GaN on Silicon - Has it's light gone out or will it shine brightly**  

K. Strickland  
Plessey, UK

16:45  **InGaN LEDs fabricated directly on flexible metal foils**  

Vladimir Matias, Christopher Yung, Christopher Sheehan, Mary Crawford and Daniel Koleske  
iBeam Materials, Inc., Santa Fe, NM, USA, Sandia National Laboratories, Albuquerque, NM, USA.

17:00  **Flexible light emitting diodes based on InGaN/ GaN nanowires**  

Nan Guan 1, Xing Dai 1, Hezhi Zhang 1, Valerio Piazza 1, Lorenzo Mancini 1, François H. Julien 1, Martin Foldyna 2, Akanksha Kapoor 3, Catherine Bougerol 4&5, Eric Gautier 4, Joël Eymery 3, Christophe Durand 3, Maria Tchernycheva 1  
1. C2N-Orsay, UMR 9001 CNRS, Université Paris Sud, Université Paris-Saclay, 91405 Orsay, France, 2. LPICM-CNRS, Ecole Polytechnique, Université Paris-Saclay, 91128 Palaiseau, France, 3. CEA/CNRS/Université Joseph Fourier, CEA, INAC, SP2M, 17 rue des Martyrs, 38054 Grenoble, France 4. Univ. Grenoble Alpes, F-38000 Grenoble, France 5. CNRS, Inst. NEEL, F-38042 Grenoble, France

17:15  **Colour-crafted phosphor-free white light emitters via in-situ nanostructure engineering**  

Daehong Min, Donghwy Park, Kyuseung Lee, and Okhyun Nam*  
Convergence Center for Advanced Nano Semiconductors (CANS), Department of Nano- Optical Engineering, Korea Polytechnic University, 237, Sangidaehak-ro, Siheung-si, Gyeonggi-do 15073, Republic of Korea
Fabrication of a vertically-stacked passive-matrix LED array structure for vertical light emission
Chang-Mo Kang, Seung-Hyun Mun, Soo-Young Choi, Woo-Lim Jeong, Hae-Sun Kim and Dong-Seon Lee
School of Electrical Engineering and Computer Science, Gwangju Institute of Science and Technology, 123 Cheomdangwagi-ro, Buk-gu, Gwangju 61005, Republic of Korea

Wavelength tuning of InGaN/GaN light-emitting diode on flexible metal substrate by bending process
Sang-Jo Kim, Kwang Jae Lee, Semi Oh, Jang Hwan Han, and Seong-Ju Park*
School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju 61005, Republic of Korea

Vertical Devices: Elison Matioli

Review of vertical GaN based FETs
E. Bahat Treidel, O. Hilt, F. Brunner, A. Thies, M. Weyers and J. Würfl
Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Straße 4, 12489 Berlin, Germany

Current Status of Vertical GaN Power Devices on GaN Substrates
Tohru Oka
Toyoda Gosei Co., Ltd.

Low vertical leakage current of 0.07 µA/mm2 at 600 V without intentional doping for 7 µm thick GaN-on-Si
Atsushi Nishikawa
ALLOS Semiconductors GmbH

Crystal Plane Dependence of Interface States Density in c- and m-plane GaN MOS Capacitors
Manato Deki (1), Kazushi Sone (2), Junya Matushita (2), Kentarou Nagamatsu (1), Atsushi Tanaka (1), Maki Kushimoto (2), Shugo Nitta (1), Yoshio Honda (1), Hiroshi Amano (1)(3)(4)
(1) Institute of Materials and Systems for Sustainability, (2) Nagoya University, (3) Akasaki Research Center, (4) Venture Business Laboratory

Correlation between dislocations and leakage current of p-n diodes on free-standing GaN substrate
Shigeyoshi Usami 1, Yuto Ando 1, Atsushi Tanaka 2, Kentaro Nagamatsu 2, Maki Kushimoto 1, Manato Deki 2, Shugo Nitta 2, Yoshio Honda 2, Hiroshi Amano 2 3 4
1. Dept. of Electorical Engineering and Computer Science, Nagoya University 2. Institute of Materials and Systems for Sustainability, Nagoya University 3. Akasaki Research Center, Nagoya University 4. Venture Business Laboratory, Nagoya University

Defect controlling in epitaxial GaN nanowire arrays
Baodan Liu, Qingyun Liu, Xin Jiang
Shenyang National Laboratory for Materials Science (SYNL), Institute of Metal Research (IMR) Chinese Academy of Sciences (CAS)
18:00 Defect related PL bands between 1.68 eV and 2.4 eV in AlN bulk crystals and epilayers
M. Lamprecht 1, V.N. Jmerik 2, R. Collazo 3, Z. Sitar 3, S.V. Ivanov 2, K. Thonke 1
1 Institute of Quantum Matter / Semiconductor Physics Group, University of Ulm, Albert-Einstein-Allee 45, 89069 Ulm, Germany, 2 Ioffe Institute, Politekhnicheskaya 26, 194021 St. Petersburg, Russia, 3 Department of Materials Science and Engineering, North Carolina State University, Raleigh, North Carolina 27606, USA

18:00 Characterizations of MOVPE-grown GaN layers on GaAs (110) substrate
I. Daldoul(a), N. Chaaben(a), Y. El Gmili(b), A. Bchetnia(a), J. P. Salvestrini(b,c) and A. Rebey(a).
(a)Unité de Recherche sur les Hétéro-Epitaxies et Applications, Faculté des Sciences de Monastir 5019, Université de Monastir, Tunisia. (b)CNRS, UMI 2958 Georgia Tech - CNRS, 57070 Metz, France. (c)Université de Lorraine, Centrale Supelec, LMOPS, EA4423, 57070 Metz, France Corresponding authors. Tel: +216 73 500 274, fax: +216 73 500 578. E-mail: imendaldoul9@gmail.com

18:00 Suppression of surface instability of highly-compressive Al0.6Ga0.4N epitaxial layer on AlN template with transition layers
Chia-Yen Huang, Kai-Shiang Chang, Yun-Hsiang Lin, Wei-Chih Peng, Hao-Chung Kuo, Ray-Lin Min,
Department of Photonics and Institute of Electro-Optical Engineering, National Chiao Tung University,1001 Ta Hsueh Rd., Hsinchu 300, Taiwan R.O.C., 2. Department of Materials Science and Engineering, National Chiao-Tung University,1001 Ta Hsueh Rd., Hsinchu 300, Taiwan R.O.C., 3. Research & Development Center, Epistar Corp., 21, Li-hsin Rd., Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C., 4. Advanced Technology Development Div., Crystalwise Technology Inc., No. 8, Ke bei 5th Rd., Jhunan Science Park, Miaoli County 35053, Taiwan R.O.C., 5. Department of Materials Science and Engineering, National Chiao-Tung University, No. 1, Sec. 4, Roosevelt Road, 10617, Taipei, Taiwan R.O.C.

18:00 High quality and highly-transparent AlN template on annealed sputter-deposited AlN buffer layer for DUV-LEDs
Chia-Yen Huang1, Kai-Shiang Chang1, Pei-Yu Wu2, Yun-Hsiang Lin3, Wei-Chih Peng3, Yan-Yu Chang4, Jui-Ping Li4, Hung-Wei Yen5, Yew-Chung Sermon Wu2, and Hao-Chung Kuo1,
1. Department of Photonics and Institute of Electro-Optical Engineering, National Chiao Tung University,1001 Ta Hsueh Rd., Hsinchu 300, Taiwan R.O.C., 2. Department of Materials Science and Engineering, National Chiao-Tung University,1001 Ta Hsueh Rd., Hsinchu 300, Taiwan R.O.C., 3. Research & Development Center, Epistar Corp., 21, Li-hsin Rd., Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C., 4. Advanced Technology Development Div., Crystalwise Technology Inc., No. 8, Ke bei 5th Rd., Jhunan Science Park, Miaoli County 35053, Taiwan R.O.C., 5. Department of Materials Science and Engineering, National Chiao-Tung University, No. 1, Sec. 4, Roosevelt Road, 10617, Taipei, Taiwan R.O.C.

18:00 Substrate Effect on the Growth of Indium Nitride Micro-columns by Chemical Vapor Deposition
R. Garcia-Gutierrez 1, A. Ramos-Carrazco 1, D. Bermant-Mendoza 1, M. Barboza-Flores 1, G. A. Hirata 2, O. E. Contreras 2
1 Department of Research in Physics, University of Sonora, Hermosillo, Sonora, 83000, México, 2 Center of Nanosciences and Nanotechnology, National University of Mexico, Baja California, 22800, México.

18:00 High-quality AlN grown with a single substrate temperature below 1200 °C
Chun-Pin Huang 1, Chao-Hung Wang 2, Chuan-Pu Liu 2, and Kun-Yu Lai 1*
1 Department of Optics and Photonics, National Central University, Chung-Li 320, Taiwan. 2 Department of Materials Science and Engineering, National Cheng Kung University, Tainan 701, Taiwan *(kylai@ncu.edu.tw)
Room temperature bandedge luminescence from h-BN thin film grown on sapphire substrate by LP-CVD
Naoki Umehara, Takurou Adachi, Tetsuya Kouno, Hiroko Kominami, Kazuhiro Hara
Shizuoka University

High-temperature growth of AlN in a production scale 19x2 HT-MOCVD
Xiaoliang Gong, Yiming Yang, Fengwu Chen, Wei Wei, Yongdong Shu, Jingying Jia
48th Research Institute of China Electronics Technology Group Corporation, Changsha, Hunan, P.R. China

Study of TMAl-induced carbon impurity on AlN film polarity and growth mode on sapphire
Haiding Sun, Feng Wu, Talal M. Altahtamouni, Nasir Alfaraj, Theeradetch Detchprohm, Russell D. Dupuis, Xiaohang Li
1Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal 23955, Saudi Arabia 2Materials Science and Technology Program, College of Arts and Sciences, Qatar University, Doha 2713, Qatar 3Center for Compound Semiconductors and School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332, USA

Low energy electron beam irradiation effect on optical properties of MQW InGaN/GaN structures
E.B. Yakimov, A.Y. Polyakov, P.S. Vergeles
Institute of Microelectronics Technology RAS, 142432, Chernogolovka, Russia & National University of Science and Technology MISIS, Moscow, Russia, Institute of Microelectronics Technology RAS, 142432, Chernogolovka, Russia

Dislocation densities reduction in MBE-grown AlN thin films by high-temperature annealing
Maud Nemoz, Roy Dagher, Samuel Matta, Adrien Micheon, Philippe Vennéguès, and Julien Brault
1 Université Côte d’Azur, CNRS, CRHEA, France 2 L2C, UMR 5221, Case courrier 074-34095 Montpellier Cedex 5, France

Insights into the growth of GaN and Fe based nitrides using Electron Beam Physical Vapour Deposition.
R.J. Davies, S. Pace, N.I.M. Nadzri, M.A. Moram.
Department of Materials, Imperial College London, Exhibition Rd., London SW7 2AZ.

Optical bandgap shrinkage in GaN nanotubes grown by molecular beam epitaxy
Youngsin Park, Yongcheol Jo, Woohul Yang, Hyunsik Im, Seung W. Lee, Mark J. Holmes, Christopher C. S. Chan, Benjamn P. L. Reid, Robert A. Taylor
School of Natural Science, Ulsan National Institute of Science and Technology (UNIST), Ulsan 44919, Korea, Division of Physics and Semiconductor Science, Dongguk University, Seoul 04620, Korea, Institute for Nano Quantum Information Electronics, The University of Tokyo, Tokyo 153-8505, Japan, Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford OX1 3PU, UK

Highly conductive n-type GaN with high electron mobility prepared by pulsed sputtering
Kohei Ueno, Yasuaki Arakawa, Atsushi Kobayashi, Jitsuo Ohta, Hiroshi Fujioka
Institute of Industrial Science, The University of Tokyo, JST-PRESTO, JST-ACCEL
18:00 Characteristics of AlN Layer on 4 inch Sapphire Substrate by High Temperature Annealing in Nitrogen Atmosphere

Akira Mishima1, Yuji Tomita1, Yoshiki Yano1, Toshiya Tabuchi1, Koh Matsumoto1, and Hideto Miyake2

1 Taiyo Nippon Sanso Corporation Tsukuba-city, Ibaraki 300-2611, Japan, 2 Graduate School of Regional Innovation Studies, Mie University, Tsu-city, Mie 514-8507, Japan

18:00 High Temperature Electrical Transport Study of MBE grown Mg-doped AlGaN


(1) Laboratoire Charles Coulomb (L2C), UMR 5221 CNRS-Université de Montpellier, Montpellier, FR-34095, France (2) CRHEA-CNRS, Centre de Recherche sur l’Hétéro-Epitaxie et ses Applications, CNRS, Rue B. Grégory, Valbonne 06560, France

18:00 Eu-implanted AlGaN/GaN diode structures towards efficient solid-state lighting


1 Departamento de Física e I3N, Universidade de Aveiro, Campus Universitário de Santiago.3810-193 Aveiro, Portugal 2IPFN, Instituto Superior Técnico, Campus Tecnológico e Nuclear, Estrada Nacional 10, P-2695-066 Bobadela LRS, Portugal 3Univ. Grenoble Alpes, CEA/CNRS Group, “Nanophysique et Semiconducteurs”, F-38000 Grenoble, France

18:00 Modification of internal mechanical stresses of epitaxial GaN by weak magnetic field treatment

Red’ko R.A., Milenin G.V., Red’ko S.M.

V. Lashkaryov Institute of Semiconductor Physics, NAS of Ukraine

18:00 Radiative Atomic Transition from Rare Earth Doped GaN

Pratim Kumar Saha, Swaroop Ganguly and Dipankar Saha

Indian Institute of Technology Bombay

18:00 Role of point defects on the luminescent properties of epitaxial and ion-implanted Mg-doped GaN fabricated on a GaN substrate

S. F. Chichibu[1,2], K. Kojima[1], S. Takashima[3], M. Edo[3], K. Ueno[3], M. Shimizu[4], T. Takahashi[4], S. Ishibashi[4], and A. Uedono[5]

1 IMRAM, Tohoku University, 2 IMaSS, Nagoya University, 3 Fuji Electric Co. Ltd., 4 AIST, 5 Univ. of Tsukuba

18:00 Spatio-Time-Resolved Cathodoluminescence studies of h-BN microcrystals

S. F. Chichibu[1], Y. Ishikawa[1], Y. Kominami[2], and K. Hara[2]

1 IMRAM, Tohoku University, 2 RIE, Shizuoka University
18:00 **Alleviating parasitic reactions of III-nitride epitaxy in MOCVD systems with a spatial separated source delivery method**

Ziguang Ma, Haojun Yang, Haiyan Wu, Wei Hu, Yang Jiang, Wenxin Wang, Haiqiang Jia, Junming Zhou and Hong Chen

Key Laboratory for Renewable Energy, Beijing Key Laboratory for New Energy Materials and Devices, Beijing National Laboratory for Condense Matter Physics, Institute of Physics, Chinese Academy of Sciences

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18:00 **Potential Barrier formed around Dislocations in InGaN Quantum Well Structures by Spot Cathodoluminescence Measurements**

Satoshi Kurai, Shota Higaki, Narihito Okada, Kazuyuki Tadatomo, Yoichi Yamada

Yamaguchi University

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18:00 **Spatial Resolved Spectroscopy of Blue and Green InGaN Quantum Wells by Scanning Near-Field Optical Microscopy**

Satoshi Kurai, Renma Mihara, Genki Nobata, Kohei Okawa, Narihito Okada, Kazuyuki Tadatomo, Yoshiki Yano, Toshiya Tabuchi, Koh Matsumoto, Yoichi Yamada

Yamaguchi University, TAIYO NIPPON SANSO Corporation

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18:00 **Surface morphology and microstructure of pulsed DC magnetron sputtered piezoelectric AlN and AlScN thin films**

Yuan Lu1, Markus Reusch1, 2, Nicolas Kurz1, 2, Tim Christoph1, Lutz Kirste1, Vadim Lebedev1 and Agnė Žukauskaite1

1Fraunhofer Institute for Applied Solid State Physics IAF, Tullastraße 72, 79108 Freiburg, Germany, 2Laboratory for Compound Semiconductor Microsystems, IMTEK-Department of Microsystems Engineering, University of Freiburg, Georges-Koehler-Allee 103, 79110 Freiburg, Germany

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18:00 **ITO nanowire networks applied on GaN-based LEDs as current spreading layer to enhance light extraction**

Qiang Li, Feng Yun, Yufeng Li, XilinSu, Wen Ding, Ye Zhang

Key Laboratory of Physical Electronics and Devices for Ministry of Education and Shaanxi Provincial Key Laboratory of Photonics & Information Technology, Xi’an Jiaotong University, Xi’an, China, Solid-State Lighting Engineering Research Center, Xi’an Jiaotong University, Xi’an, China,

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18:00 **Optimization of timing in growing InN epilayers by pulsed MOCVD**


Institute of Applied Research and Semiconductor Physics, Department, Vilnius University, Saulėtekio al. 3, Vilnius, LT-10257, Lithuania

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18:00 **Spatial inhomogeneities in different thickness InN layers grown by pulsed MOCVD**


Semiconductor Physics Department and Institute of Applied Research, Vilnius University, Saulėtekio 3-III, LT-10257 Vilnius, Lithuania

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18:00 **Spectroscopy of InGaN quantum wells by far field and near field techniques**

Maximilian Ries, Norbert Esser, Volker Deckert

School of Analytical Sciences Adlershof (SALSA), Albert-Einstein-Strasse 5-9, 12489 Berlin, Germany, Leibniz Institut für Analytische Wissenschaften–ISAS e.V., Schwarzschildstrasse 8, 12489 Berlin, Germany, School of Analytical Sciences Adlershof (SALSA), Albert-Einstein-Strasse 5-9, 12489 Berlin, Germany, Leibniz Institut für Analytische Wissenschaften–ISAS e.V., Schwarzschildstrasse 8, 12489 Berlin, Germany, Leibniz Institute of Photonic Technology (IPHT), Albert-Einstein-Strasse 9, 07745 Jena, Germany
Estimation of maximum excess carrier concentration in GaN under the electron beam irradiation

E.B. Yakimov
Institute of Microelectronics Technology RAS, Chernogolovka, Russia National University of Science and Technology MISiS, Moscow, Russia

Structural, optical, and electrical properties of highly conductive HVPE-GaN doped with Si or Ge and grown on native seeds

Małgorzata Iwinska, Tomasz Sochacki, Bolesław Lucznik, Michał Fijalkowski, Mikołaj Amilusik, Michał Bockowski
Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland

Optical properties of GaN nanowires with wide-bandgap-oxide shells

K. P. Korona1, M. Sobanska2, F. Sosada1, A. Kamińska2, K. Klosek2, P. Dróżdż1, G. Tchutchulashvili2, and Z. R. Żytkiewicz2
1 Institute of Experimental Physics, Faculty of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw, Poland, 2 Institute of Physics, Polish Academy of Sciences, al. Lotnikow 32/46, 02-668 Warsaw, Poland

Highly resistive HVPE-GaN grown on native seeds with solid iron or methane as a source of dopants

Tomasz Sochacki, Małgorzata Iwinska, Bolesław Lucznik, Michał Fijalkowski, Mikołaj Amilusik, Michał Bockowski
Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland

Investigation of Boron containing AIBN and AlBGaN Layers grown by MOVPE

O. Rettig1, J.-P. Scholz2, N. Steiger2, S. Bauer2, T. Hubáček1,4, Y. Li3, H. Qi3, J. Biskupek3, U. Kaiser3, K. Thornton2, F. Scholz1
1) Institute of Optoelectronics, Ulm University, Albert-Einstein-Allee 45, 89081 Ulm, Germany, 2) Institute of Quantum Matter / Semiconductor Physics Group, Ulm University, Albert-Einstein-Allee 45, 89081 Ulm, Germany, 3) Central Facility of Electron Microscopy, Ulm University, 89081 Ulm, Germany, 4) Permanent address: Institute of Physics CAS, v. v. i., Cukrovarnická 10, 162 00 Prague 6, Czech Republic

Correlated Transmission Electron Microscopy and Atom Probe Tomography study of Boron distribution in BGaN

Bastien Bonef 1, Richard Cramer 1, James S. Speck 1
1 Materials Department, University of California, Santa Barbara, CA 93106, USA

Ultra-Smooth/ Planar Diamond and GaN Substrates for GaN on Diamond Applications

Rajiv K. Singh, Arul Chakkaravarthi. Arjunan
Sinmat Inc Gainesville Fl 32653 -USA

Monolayer-thick compositional inhomogeneities in AlGaN layers grown by plasma-assisted MBE with asymmetric nitrogen flux diagram

D.V. Nechaev1, M.V. Rzheutski2, E.V. Lutsenko2, S. Rouvimov3, S.V. Ivanov1, and V.N. Jmerik1
1Ioffe Institute, Polytekhnicheskaya 26, St. Petersburg 194021, Russia, 2 Stepanov Institute of Physics, Nezalezhnosti Ave. 68, Minsk 220072, Belarus, 3 University of Notre Dame, Notre Dame, Indiana 46556, USA
18:00 XRD analysis of volatiles deposited on furnace walls during ALN sintering and crystal growth process by PVT method
Q.K. Wang, J.Wang, J.W. Gong, L.X. Liu, K. Cao, Z.H. Wang, L. Wu
State Key Laboratory of Advanced Special Steel & Shanghai Key Laboratory of Advanced Ferrometallurgy & School of Materials Science and Engineering, Shanghai University, Shanghai 200072, China, Suzhou Ulratrend Technologies Co. Ltd, Suzhou City 215699, Jiangsu Province, China

18:00 Narrow pitch pattern process at GaN double polarity selective area growth using MOVPE
H. Yagi, N. Osumi, Y. Inoue, T. Nakano
Dept. of Electronics and Materials Science, Shizuoka Univ., 3-5-1 Johoku, Hamamatsu, Japan

18:00 Electrical property and band-structure in carbon nanotube/GaN hetero-interface and its application for device
Toshiya Yokogawa and Syota Miyake
Yamaguchi University

18:00 High quality GaN epilayers grown on Si(110) substrates by MOCVD- Designing the buffer layers using ultra-thin AlN/GaN SL-
X.Q. Shen, T. Takahashi, T. Ide, and M. Shimizu
National Institute of Advanced Industrial Science and Technology (AIST), Japan

18:00 A Study on the relation between impurity incorporation and bowing of the Freestanding GaN
Hae-Gon Oh, Young Jun, Choi, Seoug-Kuk Lee, Hae-Yong Lee, Ju-Hyung Ha, Jung-Young Jung, Jonghee Hwang
LumiGNtech Co., Ltd, Room 902, E-Dong, 60, Haan-ro Gwangmyeong-si, Gyeonggi-do, 14322 Korea, Korea Institute of Ceramic Engineering & Technology (KICET), Jinju-si, Gyeongsangnam-do, 52851 Korea

18:00 Morphological study of InGaN layer growth on GaN substrate by metalorganic vapor phase epitaxy
Zhibin Liu, Ryosuke Miyagoshi, Shugo Nitta, Yoshio Honda, Hiroshi Amano,
Department of Electrical Engineering and Computer Science, Nagoya University, Institute of Materials and Systems for Sustainability, Nagoya Univ., Akasaki Research Center, Nagoya Univ., Venture Business Laboratory, Nagoya Univ.,

18:00 Localization-enhanced biexciton binding in Ga-rich InGaN and AlGaN epitaxial layers
Kyohei Umezawa, Eiji Kobayashi, Hideaki Murotani, Satoshi Kurai, and Yoichi Yamada
Department of Electrical and Electronic Engineering, Yamaguchi University, Japan

18:00 Effect of High Pressure on Optical Vibrations in Wurtzite InN
J. S. Reparaz[a], K. Pereira da Silva[a,b], M. R. Wagner[c], G. Callsen[c], J. Serrano[d], A. H. Romero[e], A. Hoffmann[c], A. R. Goñi[a,f]
[a] Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Spain  [b] Facultade de Fisica, Universidade Federal do Pará, CEP 66075-110, Belém, PA, Brazil  [c] Institut für Festkörperphysik, Technische Universität Berlin, Hardenbergstr. 36, 10623 Berlin, Germany  [d] School of Physics, Yachay Tech, Yachay City of Knowledge 100119-Urcuqui, Ecuador  [e] Physics & Astronomy Department, West Virginia University, USA  [f] ICREA, Passeig Lluís Companys 22, 08010 Barcelona, Spain

18:00 Polarity Inversion of AlN Layer Grown on a Nitrided a-Plane Sapphire Substrate using Pulsed DC Reactive Sputtering
Marsetio Noorprajuda, Makoto Ohtsuka, Hiroyuki Fukuyama
Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku Univ.
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<tr>
<td>18:00</td>
<td>Atomic structure of inclined dislocation observed in GaN grown Si(111)</td>
<td>Yewon Jo1, Wontaek Ryu2, Hionsuck Baik1, Mino Yang1*</td>
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<td>1 Seoul Center, Korean Basic Science Institute, Seoul 02841, Korea, 2 Center for Inter-University Research Facility, Kookmin university, Seoul 02707, Korea</td>
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<td>18:00</td>
<td>Polarized ultraviolet light emission from nonpolar a-plane n-ZnO/i-ZnO/p-AlGaN heterojunction light emitting diode</td>
<td>Jun Zhang, Jingwen Chen, Feng Wu, Shuai Wang, Renli Liang, Jangnan Dai, Changqing Chen</td>
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<td>Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China</td>
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<td>18:00</td>
<td>Structural impact on the nanoscale optical properties of InGaN core-shell nanorods</td>
<td>J.T. Griffiths1, C. X. Ren1, P.-M Coulon2, E.D. Le Boulbar2, C.G. Bryce3, I. Girge4, A. Howkins4, I. Boyd4, R. W. Martin3, D. W.E. Allsopp2, P. A. Shields2, C.J. Humphreys1, and R.A. Oliver1</td>
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<td>1. Department of Materials Science and Metallurgy, Charles Babbage Road, Cambridge, CB3 0FS, United Kingdom, 2. Department of Electronic and Electrical Engineering, University of Bath, Bath, BA2 7AY, United Kingdom, 3. Department of Physics, SUPA, University of Strathclyde, Glasgow, G4 0NG, United Kingdom, 4. Experimental Techniques Centre, Brunel University, Uxbridge, UB8 7QG, United Kingdom</td>
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<td>18:00</td>
<td>Raman study of GaN and AlGaN single nanowire pn junctions for ultraviolet emitters</td>
<td>A. Cros, N. Garro, S. Murcia-Mascaros, M. Belloeil, A.M. Siladie, B. Gayral, B. Daudin</td>
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<td>Materials Science Institute (ICMUV), University of Valencia, P.O. Box 22085, 46071, Valencia, Spain, Univ. Grenoble Alpes, France and CEA, INAC-PHELIQS, &quot;Nanophysics and semiconductors&quot; group, F38000 Grenoble</td>
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<td>18:00</td>
<td>Correlation between photoluminescence and structural properties in InGaN/GaN heterostructures</td>
<td>A. Minj, Q-T. Li, M. F. Romero, Y. Wang, O. Tuna, M. Feneberg, R. Goldhahn, G. Schmerber, C. Giesen, M. Heuken, P. Ruterana, CIMAP, CNRS UMR 6252, 6 Boulevard du Maréchal Juin, 14050 Caen Cedex, France, Instituto de Sistemas Optoelectronicos y Microtecnologia and Opto. de Ingenieria Electronica, E.T.S.I.Telecommunication, Universidad Politecnica de Madrid, Avda. Complutense 30, Ciudad Universitaria, 28040 Madrid, Spain, AIXTRON SE, Kaiserstr. 98, 52134 Herzogenrath, Germany, Institut fur Experimentelle Physik, Otto-von-Guericke-Universitat Magdeburg, Universitaetsplatz 2.39106 Magdeburg, Germany, Institut de Physique et Chimie des Materiaux de Strasbourg (IPCMS), UMR 7504 CNRS-UdS, 23 rue du Loess, BP 43, 67034-Strasbourg Cedex 2, France</td>
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<td>18:00</td>
<td>Probing the electrical properties of thin nitride heterostructures below surface by electric force microscopy</td>
<td>A. Minj, A. Cros, N. Garro, P. Ruterana</td>
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<td>CIMAP, UMR 6252, ENSICAEN, 6 Bd Maréchal Juin, 14050 Caen Cedex 4, France, Institute of Nanoscience (ICMUV), Universidad de Valencia, P.O. Box 22085, E-46071, Valencia, Spain</td>
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<td>18:00</td>
<td>Controlled-Growth GaN Nanowires Using HVPE by Catalyst Engineering</td>
<td>Zhiqiang Liu, Xiaoyan Yi, Shaoteng Wu, Junxi Wang, Jinmi Li</td>
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<td>R&amp;D Center for Semiconductor Lighting, Chinese Academy of Sciences, Beijing 100083, P. R. China</td>
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</table>
18:00 **Nanoscopic Optical Properties of InGaN/GaN Quantum Wells with V-Pit Using Near-Field Scanning Optical Microscopy and Correlation**

Minkwan Kim1, Sunghan Choi2, Joo-Hyung Lee2, ChungHyun Park2, 3, Tae-Hoon Chung4, Jong Hyeob Bae4, Yong-Hoon Cho2,3

1Department of Nanoscience and Technology, Korea Advanced Institute of Science and Technology 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea , 2Department of Physics, Korea Advanced Institute of Science and Technology 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea , 3KI for the NanoCentury, Korea Advanced Institute of Science and Technology, Daejeon 305-701, Republic of Korea , 4LED Research and Business Division, Korea Photonics Technology Institute, Gwangju 61007, Korea

18:00 **Maskless and Polarity-Controlled Selective Area Epitaxy of 3D-GaN on Si(111)**

C. Blumberg(1), S. Grosse(1), W.-A. Quitsch(2), G. Bacher(2), W. Prost(1)

1) University of Duisburg-Essen, Solid-State Electronics Department, Faculty of Engineering, and CENIDE, Duisburg 2) University of Duisburg-Essen, Werkstoffe der Elektrotechnik, Faculty of Engineering, and CENIDE, Duisburg

18:00 **Effect of Boron Incorporation into Thin AlGaN Quantum Wells Grown by MOVPE**

Tomas Hubacek1,2, Oliver Rettig1, Marketa Zikova1,2, Jan-Patrick Scholz3, Matthias Hocker3, Natja Steiger3, Klaus Thonke3, Yueliang Li4, Ute Kaiser4, and Ferdinand Scholz1

1 Institute of Optoelectronics, Ulm University, Albert-Einstein-Allee 45, 89081 Ulm, Germany, 2 Permanent address: Institute of Physics CAS, v. v. i., Cukrovarnická 10, 162 00 Prague 6, Czech Republic, 3 Institute of Quantum Matter/ Semiconductor Physics Group, Ulm University, Albert-Einstein-Allee 45, 89081 Ulm, Germany, 4 Central Facility of Electron Microscopy, Ulm University, 89081 Ulm, Germany,

18:00 **Reflectivity of plasmon–phonon modes in grating-coupled AlGaN/GaN heterostructures grown on SiC and GaN substrates**


* Center for Physical Sciences and Technology, Saulėtekio al. 3, LT-10222 Vilnius, Lithuania, ** Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland

18:00 **Carbon nanotube assisted Lift off of GaN layers on sapphire**

HaoLong (a), Xiaohui.Feng (b), Yang Wei (c), Tongjun Yu (*b), Shoushan Fan (c), Leiyong, Ying (a) and Baoping Zhang (*a)

(a) Department of Electronic Engineering, Optoelectronics Engineering Research Center, Xiamen University, Xiamen, 361005, China (b) State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China (c) Department of Physics and Tsinghua-Foxconn Nanotechnology Research Center, Tsinghua University, Beijing, 100084, China

18:00 **One-step fabrication of porous GaN crystal membrane and its application in energy storage**

Lei Zhang, Shouzhi Wang, Yongzhong Wu, Xiaopeng Hao

State Key Lab of Crystal Materials, Shandong University, Jinan, 250100, P.R. China

18:00 **Terahertz electroluminescence of shallow impurities in AlGaN/GaN heterostructures at temperatures above 80 K**

I. Grigelionis1, V. Jakštas1, V. Janonis1, I. Kašalynas1, P. Prystawko2, P. Kruszewski2, M. Leszczynski2

1Center for Physical Sciences and Technology, Saulėtekio al. 3, LT-10222 Vilnius, Lithuania, 2Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland
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<tr>
<td>18:00</td>
<td>Electrical and optical properties of oxygen-doped ammonothermal GaN</td>
<td>W. Jiang, D. Ehrentraut, and M. P. D’Evelyn Soraa, Inc., Goleta, California 93117, USA</td>
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<td>18:00</td>
<td>Solution process of graphene induced ohmic contact between metal and AlGaN/GaN for HEMTs</td>
<td>Kang Bok Ko, Do Trong Thanh, Min Han, Beo Deul Ryu, Jo Chang Hee, Joo Kwan Seon, Tran Viet Cuong, Chang-Hee Hong Semiconductor Physics Research Center, School of Semiconductor and Chemical Engineering, Chonbuk National University, Deokjin-gu, Jeonju, 561-756, South Korea</td>
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<td>18:00</td>
<td>Characteristics comparison between GaN layer grown on patterned sapphire substrate and planar sapphire substrate by HVPE method</td>
<td>Won-Jun Lee, Mi-Seon Park, Won-Jae Lee, Young-Jun Choi, Hae-Yong Lee Department of Advanced Materials Engineering, Electronic Ceramics Center, Dong-Eui University, Busan 47340, Republic of Korea, LumiGNTech Co., Ltd., Room 902, E-dong, Gwangmyeong Techno-Park, 1345 Soha-dong, Gwangmyeong-si, Gyeonggi-do 14322, Republic of Korea</td>
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<td>18:00</td>
<td>Crack statistics and stress analysis of thick crack free GaN on patterned silicon substrate</td>
<td>T. Hossain1,2, M. J. Rashid1,2, E. Frayssinet1, N. Baron1, B. Damilano1, F. Semond1, J. Wang3, L. Durand3,4, A. Ponchet3, F. Demangeot3,4 and Y. Cordier1 1CRHEA-CNRS, Rue Bernard Grégory, Sophia Antipolis, 06560 Valbonne, France. 2Université de Nice Sophie Antipolis, Parc Valrose, F-06102 Nice Cedex 2, France. 3CEMES-CNRS UPR-8011, 29 rue Jeanne Marvig, 31055 Toulouse Cedex 4, France 4Université de Toulouse, UPS, 118 Route de Narbonne, 31062 Toulouse, France</td>
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<td>18:00</td>
<td>GaN/AlGaN Heterostructure Integration on Si Substrates: Hillock Growth Phenomena and Control</td>
<td>P. Sana1, H. Tetzner1, R. Delgado1, L. Lupina1, A. Schubert1, W. Seifert1, S. Thapa2, P. Storck2, M. Zöllner1 and T. Schroeder1 1IHP, Im Technologiepark 25, 15236 Frankfurt (Oder), Germany 2Siltronic AG, Hans Seidel Platz 4, 81737 Munich, Germany</td>
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<td>18:00</td>
<td>Reduction of Defect States in n-GaN Due to AlN Underlayer Revealed by Below-Gap Excitation</td>
<td>M. D. Haque, M. Julkarnain, N. Kamata, and T. Fukuda M. D. Haque, N. Kamata, and T. Fukuda. Department of Functional Materials Science, Saitama University, Saitama 338-8570, Japan M. Julkarnain, Faculty of Engineering, University of Rajshahi, Rajshahi 6205, Bangladesh</td>
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<td>18:00</td>
<td>Effective Cross-Plane Thermal Conductivity of GaN-on-Si (111) Epi-layers Evaluated by 3-Omega Technique</td>
<td>Qilong Bao, Yang Li, Zhaofu Zhang, Qingkai Qian, Jiacheng Lei, Gaofei Tang, Baoling Huang and Kevin J. Chen Dept. of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong, China. Dept. of Mechanical and Aerospace Engineering, The Hong Kong University of Science and Technology, Hong Kong, China</td>
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<td>18:00</td>
<td>Optical properties of cubic GaN quantum dot pairs grown by molecular beam epitaxy</td>
<td>S. Blumenthal, D. Reuter, D. J. As University of Paderborn, Faculty of Physics, Department of Optoelectronic Semiconductors</td>
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<td>18:00</td>
<td>Photoluminescence characterization of germanium doped cubic AlxGa1-xN grown by molecular beam epitaxy</td>
<td>Michael Deppe, Fabian Tacken, Dirk Reuter, Donat J. As University of Paderborn, Department of Physics, Warburger Str. 100, 33098 Paderborn, Germany</td>
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<td>18:00</td>
<td>Highly Mg-doped GaN dots and films grown at low temperature by VLS transport</td>
<td>A. Jaud, T. Abi Tannous, A. Kahouli, S. Linas, G. Ferro, C. Brylinski, L. Auvray</td>
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| 18:00 | In depth investigations of the threading dislocations in GaN epitaxial films using X-ray diffraction methods | C. Romanitan[1, 2]  
1 National Institute for R&D in Microtechnologies, 72996, Bucharest, Romania  
2 Faculty of Physics, 405 Atomistilor Street, Magurele RO-077125, Romania |                                                        |                        |
| 18:00 | Correlation of decay time and barrier thickness for Asymmetric Cubic GaN/Al0.64Ga0.36N DQWs | Tobias Wecker1, Gordon Callisen2, Axel Hoffmann2, Dirk Reuter1, and Donat J. As1  
1Department of Physics, University of Paderborn, Warburger Strasse 100, 33098 Paderborn, Germany  
2Institut für Festkörperphysik, Technische Universität Berlin, Straße des 17. Juni 135, 10623 Berlin, Germany |                                                        |                        |
| 18:00 | Dislocation Formation in Nano-Indented GaN with Different Dislocation Densities | K Jones, R Tompkins, E Krimsky, M Derenge, D Magagnosc, B Schuster  
US Army Research Lab |                                                        |                        |
| 18:00 | Investigation of the growth of GaN films on 3C-SiC/Si(111) epilayers by Vapor-Liquid-Solid transport | T. Abi-Tannous, A. Jaud, A. Kahouli, L. Auvray, G. Ferro, C. Brylinski | Laboratoire des Multimatériaux et Interfaces, Centre National de la Recherche Scientifique, University of Lyon, Lyon 69621, France |                        |
| 18:00 | Charge trapping in Au mono-atomic layer islands grown on AlN(0001) | Bulent Baris, Hassan Khoussa, Benoit Eydoux, Thibault Ardhuin, David Martrou, Olivier Guillermet and Sébastien Gauthier | CEMES-CNRS, 29 rue J. Marvig, 31055 Toulouse Cedex, France |                        |
| 18:00 | Effect of the interface properties on the electrical characteristics in InGaN-based multijunction solar cell | Abdououwahab Adaine, Sidi Ould Saad Hamady and Nicolas Fressengeas | Université de Lorraine, Laboratoire Matériaux Optiques, Photonique et Systèmes, Metz, F-57070, France. Laboratoire Matériaux Optiques, Photonique et Systèmes, CentraleSupélec, Université Paris-Saclay, Metz, F-57070, France. |                        |
| 18:00 | Examination of the Plasma Parameters of Aluminum Nitride Atomic Layer Epitaxy with Grazing Incidence Small Angle X-ray Scatter | V. R. Anderson1, N. Nepal1, S. D. Johnson1, D. R. Boris1, S. G. Walton1, Z. R. Robinson2, A. C. Kozen1, A. Nath3, S. G. Rosenberg1, C. Wagenbach4, J. K. Hite1, K. F. Ludwig, Jr.4, C. R. Eddy, Jr.1  
1U.S. Naval Research Laboratory, 2The College at Brockport SUNY, 3George Mason University, 4Boston University |                                                        |                        |
<p>| 18:00 | Compositional modulation and plastic relaxation in semipolar (11-22) AlGaN grown by MOVPE | P. de Mierry, R. Mantach, F. Tendille, O. Tottereau, P. Vennéguès, M. Nemoz, G. Feuillet, Y. Cordier | Université Côte d’Azur, CRHEA-CNRS, rue B. Grégory, F-06560 Valbonne |                        |</p>
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<td>18:00</td>
<td><strong>N2 carrier gas as an alternative to H2 for improved surface morphology and structural quality of MOVPE-grown m-plane (10-10) GaN</strong></td>
<td>Ousmane I Barry1, Si-Young Bae2, Kaddour Lekhal2, Yoshio Honda2, and Hiroshi Amano2,3</td>
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<td>1Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Aichi 464-8603, Japan, 2Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Aichi 464-8603, Japan, 3Akasaki Research Center, Nagoya University, Nagoya, Aichi 464-8603, Japan</td>
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<td><strong>Incorporation of Europium into GaN nanowires by ion implantation</strong></td>
<td>M. Peres1, D. Nd. Faye1, X. Biquard2,4, E. Nogales3, M. Felizardo1, A. Redondo-Cubero1, T. Auzelle4,5, B. Daudin4,5, L.H.G. Tizei6, M. Kociak6, P. Ruterana7, B. Méndez3, E. Alves1, K. Lorenz1</td>
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<td>1IPFN, Instituto Superior Técnico, Universidade de Lisboa, Campus Tecnológico e Nuclear, Estrada Nacional 10, 2695-066 Bobadela LRS, Portugal 2 CEA, INAC-MEM, CEA-Grenoble, 17 av des Martyrs, 38054 Grenoble cedex 9, France 3 Departamento de Física de Materiales, Universidad Complutense, 28040 Madrid, Spain 4 Univ. Grenoble Alpes, 38000 Grenoble, France 5 CEA, INAC-PHELISCEA-Grenoble, 17 av des Martyrs, 38054 Grenoble cedex 9, France 6 Laboratoire de Physique des Solides, Université Paris-Sud, CNRS-UMR 8502, Orsay 91405, France 7Centre de recherche sur les Ions les Matériaux et la Photonique (CIMAP) ENSICAEN, Boulevard Maréchal Juin 14050 Caen France</td>
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<td><strong>A study and development of ZrTiN thin films (1 nm ~ 50 nm) are deposited by HiPIMS at room temperature</strong></td>
<td>Yu-Wei Lin, Jia-Hong Huang, Ge-Ping Yu, Chien-Nan Hsiao, Fong-Zhi Chen 1. Instrument Technology Research Center, National Applied Research Laboratories 2. Department of Engineering and System Science National Tsing Hua University 3. Institute of Nuclear Engineering and Science National Tsing Hua University</td>
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<td><strong>Structural and electronic characterization of III-nitride material ScGaN</strong></td>
<td>Simona Pace, Robert J Davies, Michelle A Moram  Department of Materials, Imperial College London, Exhibition Road, London SW7 2AZ, UK</td>
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<td><strong>Stabilization of Au mono-atomic layer islands on the AlN(0001) (2x2) reconstructed surface</strong></td>
<td>Hassan Khoussa, Bulent Baris, Olivier Guillermet, Benoit Eydoux, Sébastien Gauthier, Xavier Bouj, David Martrou  Centre d’élaboration de matériaux et d’études structurales, CEMES-CNRS, UPR 8011, Nanosciences Group, 29 rue Jeanne Marvig, F-31055 Toulouse, France, Université Toulouse III, UPS, 118 route de Narbonne, F-31062 Toulouse, France, Laboratoire LSMC, Université d’Oran 1 Ahmed Ben Bella, 31100 Oran, Algérie</td>
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<td><strong>Heteroepitaxy of GaN on sapphire by high temperature vapor phase epitaxy</strong></td>
<td>G. Lukin1, T. Schneider1, C. Schirmpf2, M. Barchuk2, F. Zimmermann3, C. Röder4, E. Niederschlag1, O. Pätzold1, M. Stelter1 1 Institute of Nonferrous Metallurgy and Purest Materials, TU Bergakademie Freiberg, Leipziger Str. 32, 09599 Freiberg 2 Institute of Material Science, TU Bergakademie Freiberg, Gustav-Zauner-Str. 5, 09599 Freiberg 3 Institute of Applied Physics, TU Bergakademie Freiberg, Leipziger Str. 23, 09599 Freiberg 4 Institute of Theoretical Physics, TU Bergakademie Freiberg, Leipziger Str. 23, 09599 Freiberg</td>
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<td><strong>Connection Between Carrier Diffusivity, Lifetime, and Localization in AlGaN</strong></td>
<td>Žydrūnas Podlipskas, Ramūnas Aleksiejūnas, Jūras Mickevičius, Martynas Riauka  Institute of Applied Research, Vilnius University, Vilnius, Lithuania</td>
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</table>
**18:00 Developments in Periodically Oriented Gallium Nitride**

Jennifer K. Hite1, Steven R. Bowman1, Christopher G. Brown1, Jacob H. Leach2, Kevin Udwary2, Michael A. Mastro1, Jaime A. Freitas, Jr.1, Francis J. Kub1, and Charles R. Eddy, Jr.1

1 U.S. Naval Research Laboratory, 4555 Overlook Ave, SW, Washington, DC 20375 2Kyma Technologies, Inc., 8829 Midway West Rd. Raleigh NC 27617 USA

**18:00 In-situ observation of AlN formation from Ni-Al melts**

Sonoko Hamaya, Akari Sato, Masayoshi Adachi, and Hiroyuki Fukuyama

Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University.

**18:00 The structure of InGaN/GaN QWs for long wavelength emission**

N. Chery1, T. H. Ngo3, M.P. Chauvat1, A. Minj1, B. Damilano2, B. Gill2, T. Grieb4, M. Schowalter4, K. Müller-Caspary4, A. Rosenauer4, and P. Ruterana1


**18:00 Optical properties of InGaN alloys in the entire composition range**

S.A. Kazazis1, E. Papadomanolaki1, M. Androulidaki2, P. Tsotsis2, S.I. Tsiatzios2, P.G. Savvidis2, E. Iliopoulos1 2

1Department of Physics, University of Crete, Heraklion, Greece 2Microelectronics Research Group, IESL-FORTH, Heraklion, Greece 3Department of Materials Science and Technology, University of Crete, Heraklion, Greece

**18:00 Mechanical properties of cubic-BN bulk single crystal evaluated by nanoindentation**

Momoko Deura, Kentaro Kutsukake, Yutaka Ohno, Ichiro Yonenaga, and Takashi Taniguchi

Tohoku University, National Institute for Materials Science

**18:00 The compressive strain release in InxGa1−xN/GaN heterostructures**

Q.T. Li, A. Minj, M.P. Chauvat, P. Ruterana, N. Grandjean, C. Giesen and M. Heuken

CIMAP, UMR 6252, CNRS ENSICAEN UCBN CEA, 6 Boulevard du Maréchal Juin, 14050 Caen, France, Ecole Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland, AIXTRON SE, Kaiserstr. 98, 52134 Herzogenrath, Germany

**18:00 Growth of InN nanorods by MOVPE**

C. Tessarek1,2,3, S. Rechberger4, C. Dieker4, E. Spiecker4, M. Eichkoff1, and S. Christiansen2,3

1Institute of Solid State Physics, University of Bremen, Otto-Hahn-Allee 1, 28359 Bremen, Germany, 2Max Planck Institute for the Science of Light, Günther-Scharowsky-Str. 1, 91056 Erlangen, Germany, 3Helmholtz Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner Platz 1, 14109 Berlin, Germany, 4Institut für Mikro- und Nanostrukturforschung & Center for Nanoanalysis and Electron Microscopy (CENEM), Friedrich-Alexander-University Erlangen-Nürnberg, Cauerstr. 6, 91058 Erlangen, Germany

**18:00 Epitaxial Growth Evolution of N-polar GaN Films Grown on In Situ Deposited Porous SiNx Interlayer**

Gaoqiang Deng, Yuantao Zhang, Zhen Huang, Baozhu Li, Baolin Zhang, and Guotong Du

State Key Laboratory on Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Qianjin Street 2699, Changchun 130012, China
**18:00 Ab initio investigations of In segregation in InGaN Grain boundary**
Assa Aravindh S and Iman S Roqan
Spectroscopy and semiconductor group, Division of Physical Sciences and Engineering, King Abdullah University of Science and Technology, Saudi Arabia

**18:00 RF-MBE Growth of Indium Nitride on Graphene Substrate**
Shingo Arakawa, Yuto Kubonaka, Shinichiro Mouri, Tsutomu Araki, Yasushi Nanishi
Department of Electrical and Electronic Engineering, Ritsumeikan University, Kusatsu, Shiga, 525-8577, Japan

**18:00 First-Principles Study of Non-Polar GaN Surfaces under the OVPE Growth Conditions**
Takahiro Kawamura 1,2, Akira Kitamoto 2, Mamoru Imade 2, Masashi Yoshimura 2, Yusuke Mori 2, Yoshitada Morikawa 2, Yoshihiro Kangawa 3, Koichi Kakimoto 3
1 Graduate School of Engineering, Mie University, 2 Graduate School of Engineering, Osaka University, 3 Research Institute for Applied Mechanics, Kyushu University

**B poster : Bruno Daudin**

**18:00 Enhanced optical output and reduction of the QCSE in surface plasmon-enhanced green light-emitting diodes with gold nanoparticle**
Chuyoung Cho, Seong-Ju Park
Korea Advanced Nano fab Center, Suwon 443-270, Republic of Korea, Gwangju Institute of Science and Technology, Gwangju 500-712, Republic of Korea

**18:00 Photochromic switching of Eu-Mg defects in GaN(Mg):Eu**
A.K. Singh1, K.P. O'Donnell1, P.R. Edwards1, M. Yamaga2, K. Lorenz3, M.J. Kappers4 and M. Bockowski5
1SUPA Physics, Strathclyde University, 107 Rottenrow, Glasgow G4 0NG, Scotland, UK, 2Department of Mathematical and Design Engineering, Gifu University, Gifu 501-1193, Japan, 3Instituto Superior Técnico, Universidade de Lisboa Campus Tecnológico e Nuclear, Estrada Nacional 102695-066 Bobadela LRS Portugal, 4Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge CB3 0FS, England, UK, 5Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland

**18:00 Room-temperature Lasing of Coupled GaN/InGaN Core-shell Nanorod Array**
Chia-Yen Huang , Tsu-Ying Dai, Jing-Jie Lin , Tsu-Chi Chang , Che-Yu Liu , Kuo-Bin Hong, Tien-Chang Lu and Hao-Chung Kuo
Department of Photonics & Institute of Electro-Optical Engineering, National Chiao Tung University, Hsinchu 30010, Taiwan

**18:00 Ultrathin Al-doped Ag film as transparent conductive electrode in GaN-based ultraviolet light-emitting diodes**
Mengling Liu1, Cheng Zhang2, Qinyu Cui2, Shengjun Zhou1, L. Jay Guo2
1Mechanical Engineering, School of Power and Mechanical Engineering, Wuhan University
2Electrical Engineering and Computer Science, Michigan University
Investigation of AlGaN-Based High-Voltage Ultraviolet Light-Emitting Diodes

Ray-Hua Horng, Chen-Hao Kuo, Ching-Ho Tien, and Dong-Sing Wuu
1. Department of Electronics Engineering, National Chiao Tung University, Hsinchu 300, Taiwan
2. Graduate Institute of Precision Engineering, National Chung Hsing University, Taiwan
3. Department of Materials Science and Engineering, National Chung Hsing University, Taiwan

Enhanced performance of nano-structured light-emitting diodes using localized surface plasmons

Jin Hyeon Yun, Kyu Cheol Kim, Won Wook Lee, A. Y. Polyakov, In Hwan Lee
School of Materials Science and Engineering, Korea University, Seoul 02841, Korea,
School of Materials Science and Engineering, Korea University, Seoul 02841, Korea,
Department of Semiconductor Electronics and Semiconductor Physics, National University of Science and Technology MISiS,
Moscow, Russia,
School of Materials Science and Engineering, Korea University, Seoul 02841, Korea

Characteristics of HVPE vertical-type light emitting diode

(1) Injun Jeon, (1,2) Hunsoo Jeon, (1) Sung Geun Bae, (1) Min Yang, (1,2) Sam Nyung Yi, (1) Hyung Soo Ahn, (3) Young Moon Yu, (4) Yoshiho Honda, (5) Nobuhiko Sawaki, and (6) Suck-Whan Kim
(1) Department of Electronic Material Engineering, Korea Maritime and Ocean University, Busan 49112, Korea,
(2) Compound Semiconductor Fabrication Technology Center, Korea Maritime and Ocean University, Busan 49112, Korea,
(3) LED-Marine Convergence Technology R&D Center, Pukyong National University, Busan 48513, Korea,
(4) Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya 464-8603, Japan,
(5) Department of Electrical and Electronics Engineering, AIT, AICH, 470-0392, Japan,
(6) Department of Physics, Andong National University, Andong 36729, Korea

Mg doped-AlN epilayer grown by hydride vapor phase epitaxy

(1) Sung Geun Bae, (1) Injun Jeon, (1,2) Hunsoo Jeon, (1) Min Yang, (1,2) Sam Nyung Yi, (1) Hyung Soo Ahn, (3) Young Moon Yu, (4) Suck-Whan Kim, (5) Yoshiho Honda, and (6) Nobuhiko Sawaki
(1) Department of Electronic Material Engineering, Korea Maritime and Ocean University, Busan 49112, Korea,
(2) Compound Semiconductor Fabrication Technology Center, Korea Maritime and Ocean University, Busan 49112, Korea,
(3) LED-Marine Convergence Technology R&D Center, Pukyong National University, Busan 48513, Korea,
(4) Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya 464-8603, Japan,
(5) Department of Electrical and Electronics Engineering, AIT, AICH, 470-0392, Japan,
(6) Department of Physics, Andong National University, Andong 36729, Korea
18:00 Properties of AlGaN-based vertical-type white LED grown by HVPE

(1)Injun Jeon, (1,2)Hunsoo Jeon, (1)Sung Geun Bae, (1)Min Yang, (1,2)Sam Nyung Yi, (1)Hyung Soo Ahn, (3)Young Moon Yu, (4)Yoshio Honda, (5)Nobuhiko Sawaki, and (6)Suck-Whan Kim

(1)Department of Electronic Material Engineering, Korea Maritime and Ocean University, Busan 49112, Korea (2)Compound Semiconductor Fabrication Technology Center, Korea Maritime and Ocean University, Busan 49112, Korea (3)LED-Marine Convergence Technology R&D Center, Pukyong National University, Busan 48513, Korea (4)Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya 464-8603, Japan (5)Department of Electrical and Electronics Engineering, AIT, AICHI, 470-0392, Japan (6)Department of Physics, Andong National University, Andong 36729, Korea

18:00 Deep traps and low frequency noise in MQW GaN/InGaN UV LEDs

A.Y. Polyakov 1, N.B. Smirnov 1, N.M. Shmidt 2, E.I. Shabunina 2, Han-Su Cho 3, Sung-Min Hwang 4, In-Hwan Lee 3, I.V. Shchemerov 1, S.J. Pearton 5

1 National University of Science and Technology MISiS, Moscow, Russia, 2 Ioffe Physico-Technical Institute, 26 Polytekhnicheskaya Str., St. Petersburg 194021, Russia, 3 School of Materials Science and Engineering, Korea University, Seoul 02841, Korea, 4 Soft-Epi Inc., Opo-ro 240, Gwangju-si, Gyeonggi-do 464-892, South Korea, 5 University of Florida, Gainesville, FL 32611, USA

18:00 The evolution of deep traps spectra in GaN-based LEDs when moving from NUV to green spectral regions

A.Y. Polyakov 1, N.B. Smirnov 1, In-Hwan Lee 2, Han-Su Cho 2, Tae-Hoon Chung 3, Sung-Min Hwang 4, J.H. Baek 3, S.J. Pearton 5

1 National University of Science and Technology MISiS, Moscow, Russia, 2 Ioffe Physico-Technical Institute, 26 Polytekhnicheskaya Str., St. Petersburg 194021, Russia, 3 School of Materials Science and Engineering, Korea University, Seoul 02841, Korea, 4 Soft-Epi Inc., Opo-ro 240, Gwangju-si, Gyeonggi-do 464-892, South Korea, 5 University of Florida, Gainesville, FL 32611, USA

18:00 High power 3D flip-chip LEDs

Chenju Zheng, Jiajiang Lv, Shengjun Zhou, Sheng Liu
School of Power and Mechanical Engineering, Wuhan University

18:00 Study on Thermal Dynamics of Flip-Chip GaN Light-Emitting Diodes

Byungjin Ma, Taehee Jung, and Kwanhun Lee
Korea Electronics Technology Institute

18:00 Asymmetric ITO/Ag/AlN/Al2O3 multilayer electrodes for UV LEDs

Byeong Ryong Lee, Kyung Rock Son, Tae Ho Lee, Hyun Tae Kim, Young Woon Kim, Taegun Kim
School of Electrical Engineering, Korea University, Seoul 136-701, Republic of Korea

18:00 Growth of high quality GaN layer on partially crystallized cavity engineered sapphire substrate

Jeonghwan Jang 1, Seungmin Lee 1, Daeyoung Moon 1, Yongjo Park 1, 2, and Euijoon Yoon 1,*
1Department of Materials Science and Engineering, Seoul National University, Seoul 151-744, Korea 2Energy Semiconductor Research Center, Advanced Institutes of Convergence Technology, Seoul National University, Suwon 443-270, Korea *Corresponding author: Tel: 82-2-880-7169, E-mail address: eyoon@snu.ac.kr

18:00 Flexibly and Repeatedly Tuning Lasing Wavelengths in Single GaN/InGaN Core-Shell Microrod

Hua Zong, Yue Yang, Chuang Ma, Tiantian Wei, Caofeng Pan, Xiaodong Hu
State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, P. R. China, Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, Beijing 100083, P. R. China
18:00 Monolithic wideband InGaN/GaN LED: from green to blue light emission in one device.
Piotr A. Dróżdż(1,2), Marcin Sarzyński(1), Krzysztof P. Korona(2),
Robert Czernecki(1) and Tadeusz Suski(1)
(1) Institute of High Pressure Physics “Unipress”, Polish Academy of
Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, (2) Faculty
of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw,
Poland.

18:00 Lateral Energy Transport in InGaN LED Structure on Patterned GaN Substrate.
Piotr A. Dróżdż(1,2), Marcin Sarzyński(2), Krzysztof P. Korona(1),
Robert Czernecki(2), Szymon Grzanka(2), Tadeusz Suski(2)
(1) Faculty of Physics, University of Warsaw, Pasteura 5, 02-093
Warsaw, Poland, (2) Institute of High Pressure Physics “Unipress”,
Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw,
Poland.

18:00 Pressure-dependence of the built-in electric field in GaN/AlGaN multi-quantum-wells: experimental and ab-initio studies
A. Kaminska1,2, K. Koronski1, P. Strak3, A. Wierzbicka1, E. Grzanka3, K. Sobczak1, M. Sobanska1, K. Klosek1, E. Monroy4,5, Z. R. Zytkiewicz1, S. Krukowski3
1 Institute of Physics, Polish Academy of Sciences, Aleja Lotnikow 32/46, PL-02668 Warsaw, Poland, 2 Cardinal Stefan Wyszynski University, College of Science, Department of Mathematics and Natural Sciences, Dewajtis 5, 01-815 Warsaw, Poland, 3 Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, 4 Université Grenoble-Alpes, 38000 Grenoble, France, 5 CEA Grenoble, INAC-PHELIQS, 17 av. des Martyrs, 38054 Grenoble, France.

18:00 Strain and compositional analysis of BAlN/Al(Ga)N structures for distributed Bragg reflector application
Haiding Sun1, Feng Wu1, T. M. Altahtamouni2, Dalaver H. Anjum3, Theraderetch Detchprohm4, Russell D. Dupuis4, XiaoHang Li1
1 Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal 23955, Saudi Arabia 2 Materials Science and Technology Program, College of Arts and Sciences, Qatar University, Doha 2713, Qatar 3 King Abdullah University of Science and Technology (KAUST), Imaging and Characterization Core Lab, Thuwal 23955, Saudi Arabia 4 Center for Compound Semiconductors and School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332, USA

18:00 Highly efficient GaN micro-light-emitting diodes using AlN rod-shaped glass electrodes
Kyung Rock Son, Hyun Tae Kim, Tae Ho Lee, Byeong Ryong Lee, Tae Geun Kim
School of Electrical Engineering, Korea University

18:00 Polariton Luminescence in InGaN Quantum Wells Microcavity at Room Temperature
JinZhao Wu1, Hao Long1, BaoPing Zhang1*
1 Department of Electronic Engineering, Optoelectronics Engineering Research Center, Xiamen University, DXiamen 361005, China

18:00 Enhanced optical output power of blue light-emitting diode grown on sapphire substrate with distributed Bragg reflector mask
Chu-Young Cho, Yumin Koh, Kyung-Ho Park, Won-Kyu Park, Seong-Ju Park
Korea Advanced Nano fab Center, Suwon 443-270, Republic of Korea, Gwangju Institute of Science and Technology, Gwangju 500-712, Republic of Korea
18:00 Investigation of electron blocking layers in AlGaN-based 280 nm ultraviolet light emitting diodes
Yi-Keng Fu, Chia-Lung Tsai, Chien-Pin Lu
Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu 31040, Taiwan, R.O.C.

18:00 From large-size to micro-LEDs: scaling trends revealed by modeling
S. S. Konoplev, K. A. Bulashevich, S. Yu. Karpov
STR Group - Soft-Impact, Ltd., P.O.Box 83, 27 Engels ave., St.Petersburg, 194156 Russia

18:00 Large area polymer films embedded with colloidal semiconductor quantum dots for efficient white light generation
Kang-Bin Bae, Won-Wok Lee, Hyeon-Yong Song, In-Hwan Lee
Korea University Department of Materials Science and Engineering

18:00 Performance improvement of InGaN/GaN MQW Visible-light Photodiodes by optimizing TEGa flow
Bin Li1, Shan-jin Huang1, Hai-long Wang1, Hua-long Wu1, Zhi-sheng Wu2, Gang Wang2 and Hao Jiang2
1School of physics and engineering, Sun Yat-Sen University, Guangzhou 510275, China, 2State Key Laboratory of Optoelectronic Materials and Technologies, School of Electronics and Information Technology, Sun Yat-Sen University, Guangzhou 510275, China

18:00 Effects of pattern size on performance of nitride-based ultraviolet light-emitting diodes grown on patterned sapphire substrate
Hongpo Hu, Shengjun Zhou, Chengqun Gui, Sheng Liu
School of Power and Mechanical Engineering, Wuhan University, Wuhan 430072, China

18:00 Resin encapsulation using amorphous fluorine polymer with robustness against deep-ultraviolet-induced photolysis
Yosuke Nagasawa1, Kiho Yamada1, Shoou Nagai1, Akira Hirano1, Masamichi Ipponmatsu1, Ko Aosaki2, Yoshiro Honda3, Hiroshi Amano3, 4, Katsuaki Akasaki4, 5
UV Craftory Co., Ltd. 1, Asahi Glass Co. Ltd. 2, IMaSS-Nagoya University 3, ARC-Nagoya University 4, Meijo University 5

18:00 Temperature dependence of Stokes shifts of excitons and biexcitons in Al_{0.61}Ga_{0.39}N epitaxial layers
Hideaki Murotani1, Kazuki Ikeda2, Takuto Tsurumaru2, Ryota Fujiwara2, Satoshi Kurai2, Hideto Miyake3, Kazumasa Hiramatsu3, Yoichi Yamada2
1Department of Computer Science and Engineering, National Institute of Technology, Tokuyama College, Gakuendai, Shunan, Yamaguchi 745-8585, Japan, 2Department of Electrical and Electronic Engineering, Yamaguchi University, 2-16-1 Tokiwadai, Ube, Yamaguchi 755-8611, Japan, 3Department of Electrical and Electronic Engineering, Mie University, 1577 Kurimamachiya, Tsu, Mie 514-8507, Japan

18:00 Effects of saturation of nonradiative recombination centers on internal quantum efficiency in InGaN-based light emitting diodes
Hideaki Murotani1, Yoichi Yamada2
1Department of Computer Science and Engineering, National Institute of Technology, Tokuyama College, Gakuendai, Shunan, Yamaguchi 745-8585, Japan, 2Department of Electrical and Electronic Engineering, Yamaguchi University, 2-16-1 Tokiwadai, Ube, Yamaguchi 755-8611, Japan
**18:00** Distance-Engineered Surface Plasmon-Coupled Photoluminescence of GaN-based Quantum Well LEDs

Yufeng Li, Shuai Wang, Weihan Tang, Xilin Su, Feng Yun*, Xun Hou

1Key Laboratory of Physical Electronics and Devices of Ministry of Education and Shaanxi Provincial Key Laboratory of Photonics & Information Technology, Xi’an Jiaotong University, Xi’an, China, 2Solid-State Lighting Engineering Research Center, Xi’an Jiaotong University, Xi’an, China,

**18:00** Direct Growth of InGaN-based Blue Quantum Wells on Y3Al5O12:Ce3+ Single Crystal Substrate for White Light Emitting Diode

Yufeng Li, WeiHan Zhang, XiLin Su, Geng Shang, Feng Yun*, Xun Hou

1Key Laboratory of Physical Electronics and Devices of Ministry of Education and Shaanxi Provincial Key Laboratory of Photonics & Information Technology, Xi’an Jiaotong University, Xi’an, Shaanxi 710049, P.R. China, 2Solid-State Lighting Engineering Research Center, Xi’an Jiaotong University, Xi’an Shaanxi, 710049, P.R. China,

**18:00** Phosphor-free InGaN white light emitting diodes overgrown on semi-polar GaN templates

N. Poyiatzis, J. Bai, M. Athanasiou, L. Jiu, L. C Wang, Y. Gong, T. Wang

Department of Electronic and Electrical Engineering, University of Sheffield, United Kingdom

**18:00** Transformation of localizing potential in InGaN MQWs as the emission shifts from blue to amber spectral region


Institute of Applied Research and Semiconductor Physics Department, Vilnius University, Saulėtekio al. 3, Vilnius, LT-10257, Lithuania

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**18:00** Influence of metalorganic precursor flow interruption timing on carrier localization in cyan InGaN/GaN MQWs

J.Mickevičius, D.Dobrovolskas, M.Kolenda, M.Dmukauskas, and G.Tamulaitis

Institute of Applied Research and Semiconductor Physics Department, Vilnius University, Saulėtekio al. 3, Vilnius, LT-10257, Lithuania

**18:00** Origin of strong blue light emission from Ce-doped aluminum nitride thin films

Alaa Eldin Giba1,2,*, Philippe Pigeat1, Stéphanie Bruyere1, Hervé Rinnert1, Flavio Soldera2, Frank Mücklich2, Raul Gago-Fernandez3, David Horwat1

1Institut Jean Lamour - UMR CNRS 7198? Université de Lorraine, Nancy, France. 2Department Materials Science and Engineering, Saarland University, D-66123 Saarbrücken, Germany. 3Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, E-28049 Madrid, Spain. *Corresponding author: alaa-eldin-abeldel-azi.giba@univ-lorraine.fr

**18:00** Practical methods of fabrication of sub-micrometer size, columnar InGaN light emitting diodes

Krzysztof Gibasiewicz1, Jacek Kaperski2, Irina Makarowa2, Szymon Grzanka12, Tadeusz Suski1, Piotr Perlin12

1Institute of High Pressure Physics, „Unipress” Sokolowska 29/37 01-142 Warsaw, Poland 2TopGaN Limited, Sokolowska 29/37 01-142 Warsaw, Poland
18:00 Growth, characterization and application of high quality separated GaN-based pyramid array on laser drilling micro-patterned sapphire

Zhenhuan Tian, Feng Yun*, Ricky Lee, Yufeng Li, Xilin Su, Lungang Feng, Shuai Wang, Wen Ding, Qiang Li, Ye Zhang, and Maofeng Guo

1 Key Laboratory for Physical Electronics and Devices of the Ministry of Education and Shaanxi Provincial Key Laboratory of Photonics & Information Technology, Xi’an Jiaotong University, Xi’an, Shaanxi 710049, P. R. China, 2 Solid-State Lighting Engineering Research Center, Xi’an Jiaotong University, Xi’an, Shaanxi 710049, P. R. China, 3 Department of Mechanical and Aerospace Engineering, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong.

18:00 A new way to achieve fluorescence enhancement of YAG:Ce3+ based on Au nanoparticles LSPR

Yanxin Xing, Wen Ding, Zhenhuan Tian, Lungang Feng, Shuai Wang, Yufeng Li, Qiang Li, Xilin Su, Ye Zhang, Maofeng Guo, and Feng Yun*

1 Key Laboratory for Physical Electronics and Devices of the Ministry of Education and Shaanxi Provincial Key Laboratory of Photonics & Information Technology, Xi’an Jiaotong University, Xi’an, Shaanxi 710049, P. R. China, 2 Solid-State Lighting Engineering Research Center, Xi’an Jiaotong University, Xi’an, Shaanxi 710049, P. R. China,

18:00 Frequency measurement using noise setup for iii-nitrides based photodiode

Bandar Alshehri1, Karim Dogheche1, Abderrahim Ramdane2, Didier Decoster1, Elhadj Dogheche1

1 IEMN, Institute of Electronics, Microelectronics and Nanotechnology, CNRS & University of Lille 1, Avenue Poincaré, 59652 Villeneuve d’Ascq, Cedex, France. 2 C2N, Centre for Nanoscience and Nanotechnology, CNRS, Route de Nozay, 91460 Marcoussis, France

18:00 Impact of strain on radiative and non-radiative recombination in m-plane GaInN/GaN quantum wells

Philipp Henning, Torsten Langer, Manuela Klisch, Fedor Alexej Ketzer, Philipp Horenburg, Heiko Bremers, Uwe Rossow, Andreas Hangleiter

Institute of Applied Physics, Braunschweig University of Technology, Mendelssohnstrasse 2, 38106 Braunschweig

18:00 Femtosecond-laser irradiation onto sapphire substrates in N2 ambient

Reina Miyagawa, Kenzo Goto, Osamu Eryu

Nagoya Institute of Technology

18:00 Improved light output power of micro-LEDs for headlamp with enhanced reflectivity and coverage of p-type electrode

Tae Kyoung Kim, Moon Uk Cho, Seung Kyu Oh, Yu Lim Lee, Bikramjit Chatterjee, Sukwon Choi, Joon Seop Kwak

Dept. of printed Electronics Engineering (BK21 plus), Sunchon National University, Jeonnam, 540-742, Korea, Dept. of Mechanical Engineering, University of Houston, Houston, TX 77204-4006, USA, Dept. of Mechanical and Nuclear Engineering, Pennsylvania State University, University Park, PA 16802, USA

18:00 Resonant Tunneling in InGaN/GaN Superlattices and Multiple Quantum Wells

Prudaev, V. Kopyev, I. Romanov, V. Oleynik, A. Lozinskaya, A. Shemeryankina, D. Zasukhin, A. Marmalyuk, A. Padalitsa, A. Mazalov, V. Kureshov, and D. Sabitov

Functional Electronics Laboratory, Tomsk State University, Tomsk, Russia, JSC Research Institute of Semiconductor Devices, Tomsk, Russia, M. F. Steimakh Research Institute “Polyus”, Moscow, Russia
18:00 Optimization of active region embedded in compositionally graded AlGaN films for deep ultraviolet laser application
Haiding Sun, Jian Yin, Emanuele Francesco Pecora, Luca Dal Negro, Roberto Paieila, and Theodore D. Moustakas
1. Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal 23955, Saudi Arabia, 2. Electrical and Computer Engineering Department, Boston University, Boston, MA, 02215, USA

18:00 Tailored CVD graphene on silver nanowire as a transparent conductive electrode in GaN-based UV-LEDs
Tae Hoon Seo, Gun Hee Lee, Dong Kyu Yeo, Hee Su Kim, Myung Jong Kim, and Eun-Kyung Suh
1. Applied Quantum Composites Research Center, Korea Institute of Science and Technology, Jeonbuk 565-905, South Korea, 2. School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju 561-756, South Korea

18:00 Electrically Injected III-Nitride Microdisk lasers for a Nanophotonic Platform on Silicon
Farsane Tabataba-Vakili, Iannis Roland, Stephanie Rennesson, Eric Fraysinet, Julien Brault, Mustafa El Kurdi, Xavier Checoury, Bruno Paulillo, Raffaele Colombelli, Thierry Guillet, Christelle Brimont, Benjamin Damilano, Bruno Gayral, Bruno Paulillo, Robert Czernecki, Tadeusz Suski, and Piotr Perlin
1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, F-91405 Orsay, France, 2. CEA, INAC-PHELIQS, Nanophysique et semiconducteurs group, F-38000 Grenoble, France, 3. Université Côte d’Azur, CRHEA-CNRS, F-06560 Valbonne, France, 4. Laboratoire Charles Coulomb (L2C), UMR 5221 CNRS-Université de Montpellier, F-34095 Montpellier, France, 5. Univ. Grenoble Alpes, F-38000 Grenoble, France

18:00 Optical characterization of (11-22) semi-polar InGaN/GaN single quantum well by using a novel nano-patterning approach
Y. Zhang, M. Athanasiou, R. M. Smith, Y. Hou, Y. Gong, J. Bai, and T. Wang
Department of Electronic and Electrical Engineering, University of Sheffield, United Kingdom

18:00 Electroreflectance and photocurrent study of built-in electric field distribution in GaN/InGaN multiple quantum wells.
Avakants L.P., Aslanyan A.E., Bokov P. Yu., Chervyakov A.V.
Physics Department, M.V. Lomonosov Moscow State University, Leninskie Gory 1 b. 2, 119991, Moscow, Russia

18:00 Influence of the Electron Blocking Layer design on parameters of nitride laser diodes
Agata Bojarska, Jakub Goss, Szymon Stanczyk, Julita Smalc-Koziorowska, Ewa Grzanka, Irena Makarowa, Robert Czernecki, Tadeusz Suski, and Piotr Perlin
1. Institute of High Pressure Physics, “Unipress” Sokolowska 29/37 01-142 Warsaw, Poland, 2. TopGaN Limited, Sokolowska 29/37 01-142 Warsaw, Poland

18:00 Polychromatic emission from semi/nonpolar faceted 3D-InGaN quantum wells with high radiative recombination probabilities
Yoshinobu Matsuda, Mitsuru Funato, Yoichi Kawakami
Kyoto University
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<th>Time</th>
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<tr>
<td>18:00</td>
<td>Investigation of InGaN/GaN multiple quantum well solar cells with different barrier thickness</td>
<td>X.M. Cai1,<em>, X.Q. Lv2, X.L. Wang1, H.L. Zhu1, M.S. Wang1, L. Yang1 and B.P. Zhang3,</em></td>
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<td>1 Department of Physics, Jimei University, Fujian, People’s Republic of China 2 MEMS Research Center, Xiamen University, Fujian, People’s Republic of China 3 Laboratory of Micro/Nano Optoelectronics, Department of Electronic Engineering, Xiamen University, Fujian, People’s Republic of China</td>
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<td>18:00</td>
<td>Improved Performance of AlGaN based UV LEDs with sidewall roughed sapphire and nanoparticles doped silicone packaging</td>
<td>Jiangnan Dai*, Renli Liang, Shuai Wang, Jun Zhang, Feng Wu, J. W. Chen, Wei Zhang, Changqing Chen</td>
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<td>Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China</td>
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<td>18:00</td>
<td>Impact of carrier diffusion on photoluminescence dynamics in cyan and green InGaN led structures</td>
<td>Kazimieras Nomeika (1), Ramunas Aleksiejunas (1), Saulius Misiyedovas (1), Rolandas Tomasiunas (1), Kirkutis Jarasiunas (1), Ines Pietzonika (2), Martin Strassburg, (2) and Hans-Jürgen Lugauer (2)</td>
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<td>(1) - Vilnius University, Institute of Applied Research, Saulėtekis av. 3, Vilnius, Lithuania,  (2) - OSRAM Opto Semiconductors GmbH, Leibnizstr. 4, 93055 Regensburg, Germany</td>
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<td>18:00</td>
<td>Enhancement of hole injection by electrostatically-doped carbon nanotube electrode in AlGaN-based DUV LEDs</td>
<td>Mitsutoshi Soda, Shigeru Kishimoto, Hiroshi Amano, Yutaka Ohno</td>
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<td>Institute of Materials and Systems for Sustainability, Nagoya University, Japan</td>
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<td>18:00</td>
<td>Structural analysis of GaInN/GaN multi-quantum wells grown on a GaN (1-100) sidewall of nanowire by using an x-ray micro beam</td>
<td>Ryoma Seiki1), Hiroki Shibuya1), Yasuhiko Ima1), Kazushi Sumitani2), Shigeru Kimura2), Kohi Iwase1), Takao Miyajima1), Satoshi Kamiya1), Daichi Ima1), Tetsuya Takeuchi1), Motoaki Iwaya1) and Isamu Akasaki1)</td>
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<td>1) Department of Materials Science and Engineering, Faculty of Science and Technology, Meijo University, 1-501 Shiogama-guchi, Tempaku-ku, Nagoya 468-8502, Japan 2) Japan Synchrotron Radiation Research Institute, Mikazuki-cho, Hyogo 679-5198, Japan</td>
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<tr>
<td>18:00</td>
<td>Microstructured Hollow Cavities as Strong-Diffraction Growth Substrates</td>
<td>Ji-Hyun Kim, Yoon-Jong Moon, Da-Som Kim, Duk-Kyu Bae, Euijoon Yoon, Sun-Kyung Kim</td>
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<td>Department of Applied Physics, Kyung-hee University, Department of Applied Physics, Kyung-hee University, Department of Applied Physics, Kyung-hee University, Hexa Solution Co., Ltd, Department of Materials Science and Engineering, Seoul National University, Department of Applied Physics, Kyung-hee University</td>
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<td>18:00</td>
<td>Full-Color Nanowire Light-Emitters on Bulk-Metal Substrates</td>
<td>Chao Zhao, Tien Khee Ng, and Boon S. Ooi</td>
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<td>King Abdullah University of Science and Technology, Photonics Laboratory</td>
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<td>18:00</td>
<td>Quantum Dot based UV Light Emitting Diodes</td>
<td>J. Brautl1,*, S. Matta1,2, M. Al Khalfioui1, M. Leroux1, B. Damilano1, S. Chenot1, M. Korytov1, H. Peyre2, L. Konczewicz2, S. Contreras2, C. Chaix3, J. Massies1, and B. Gil2</td>
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<td>1: CNRS-CRHEA, Rue B. Gregory, 06560 Valbonne, France 2: L2C, UMR 5221, Case courrier 074-34095 Montpellier Cedex 5, France 3: RIBER SA, 31 Rue Casimir Périer, 95870 Bezons</td>
</tr>
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</table>
Polarized light emission from AlGaN-based UV emitters with subwavelength aluminum wire-grid polarizers

Semi Oh1, Jung Hye Lee2, Hyo-Ju Lee1, Yoon Seok Kim3, Kyoung-Kook Kim3, Jaehee Cho4, Yeon Sik Jung2, Seong-Ju Park1,*

1School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju 61005, Republic of Korea, 2Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon 34141, Republic of Korea, 3Department of Advanced Convergence Technology, Research Institute for Advanced Convergence Technology, Korea Polytechnic University, Siheung 15073, Republic of Korea, 4School of Semiconductor and Chemical Engineering, Semiconductor Research Center, Chonbuk National University, Jeonju 54896, Republic of Korea

P-type activation in MOVPE grown GaN tunnel junctions

Silvio Neugebauer, Andreas Lesnik, Florian Hörich, Hartmut Witte, Jürgen Bläsing, Armin Dadgar, and André Strittmatter

Otto-von-Guericke-Universität Magdeburg, Institut für Experimentelle Physik, Universitätsplatz 2, 39106 Magdeburg, Germany

Ohmic V-based contacts on n-Al0.8Ga0.2N for deep UV LEDs

Luca Sulmoni1, Martin Guttmann1, Johannes Enslin1, Christian Kuhn1, Frank Mehrke1, Tim Wernicke1, and Michael Kneissl1,2

1Technische Universität Berlin, Institute of Solid State Physics, Hardenbergstr. 36, EW 6-1, 10623 Berlin, Germany, 2Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Gustav-Kirchhoff-Str. 4, 12489 Berlin, Germany

Electron beam induced current and cathodoluminescence investigation of GaN nanowires containing AlN/GaN quantum discs

V. Piazza 1, A. Babichev 2, N. Guan 1, M. Morassi 1, L. Mancini 1, P. Quach 1, P. Rale 3 F. Bayle 1, L. Largeau 3, F. H. Julien 1, J.-C. Harmand 3, S. Collin 3, N. Gogneau 3, M. Tchernycheva 1

1 Centre de Nanosciences et de Nanotechnologies, UMR9001 CNRS, University Paris Sud, Université Paris-Saclay, Orsay 91405, France, 2 ITMO University, St. Petersburg, 197101, Russia, 3 Centre de Nanosciences et de Nanotechnologies, CNRS, University Paris-Sud, Université Paris-Saclay, Marcoussis 91460, France.

The effect of the three-dimensional strain variation on the emission properties of LEDs based on (In,Ga)N/GaN nanowires

M. Musolino (1), F. Sacconi (2), C. De Santi (3), F. Panetta (2), A. Tahraoui (1), M. Meneghini (3), E. Zanoni (3), and L. Geelhaar (1)

(1) Paul-Drude-Institut für Festkörperelektronik, Hausvogteiplatz 5–7, 10117 Berlin, Germany (2) TiberLAB s.r.l., Via del Politecnico 1, 00133 Rome, Italy (3) Department of Information Engineering, University of Padova, Via Gradenigo 6/B, 35131 Padova, Italy

Luminescence enhancement with increased QW number in multiple InGaN/GaN QW structure

A. Hospodková, J. Oswald, M. Zíková, J. Pangrác, K. Kuldová, V. Jarý

Institute of Physics, Czech Academy of Science, v.v.i., Cukrovarnická 10, Praha 6, 162 00, Czech Republic
18:00 Breakdown Voltage Enhancement in AlGaN/GaN HEMTs with Double Passivation Layers
K. Horio, H. Hanawa
Shibaura Institute of Technology

18:00 Effects of Acceptors in a Buffer Layer on Breakdown Characteristics of AlGaN/GaN HEMTs with a High-k Passivation Layer
Y. Kawada, H. Hanawa and K. Horio
Shibaura Institute of Technology

18:00 Drain Current DLTS and MCTS Studies of Traps in AlGaN/GaN HEMTs
Yutaka Tokuda, Kouta Takabayashi
Aichi Institute of Technology, Toyota 470-0392, Japan

18:00 Vertical GaN p-n junction diodes with a highly Mg-doped thin layer as hole injector
1Hiroshi Ohta, 1Hiroyuki Tsuge, 1Kentaro Hayashi, 2Fumimasa Horikiri, 2Yoshinobu Narita, 2Takehiro Yoshida, 1Tohru Nakamura, and 1Tomoyoshi Mishima
1Hosei University, Japan, 2SCIOCS , Japan

18:00 The influence of passivation layer on AlGaN/GaN HEMTs
H. Mosbahi, M. Gassoumi, C. Gaquiere, M.A. Zaidi, R. M’Ghaieith
Laboratoire de Micro-Optoélectronique et Nanostructures, Faculté des Sciences de Monastir, Avenue de l’environnement5000 Monastir, Tunisia

18:00 Study of Nanoscale AlGaN/GaN HEMT devices using a Metal Gate Field-Plated Structure
Mourad Kaddeche, Azzedine Tella, Lemia Semra and Ali Soltani
Département de Technologie, Faculté des Sciences et de la Technologie Université de Djillali Bounaâma Khemis Miliana, Algérie Laboratoire de Microsystème et Instrumentation (LMI), Département d’électronique, Université Mentouri de Constantine, 25000 Constantine, Algérie IEMN-CNRS UMR 5520, Université des Sciences et Technologie de Lille, Cité Scientifique avenue Poincaré 59655 Villeneuve d’ascq- France

18:00 Ti0.5Al0.5O-Dielectric AlGaN/GaN MOS-HEMTs by Using Non-Vacuum Ultrasonic Spray Pyrolysis Deposition
C. S Lee*,1, W. C. Hsu2, H. Y. Liu1, B. J. Chiang1, Y. C. Chen1, S. T. Yang1, C. G. Lin1, X. C. Yao1, J. Y. Lin1, Y. T. Shen1, and Y. C. Lin1
1 Department of Electronic Engineering, Feng Chia University, 100, Wenhuwa Road, Taichung, Taiwan 40724, R.O.C. 2 Institute of Microelectronics, Department of Electrical Engineering, National Cheng-Kung University, 1, University Road, Tainan, Taiwan 70101, R.O.C.

18:00 Development of AlGaN/GaN HEMT based sensor platform and its hydrogen sensor application
Korea Advanced Nano Fab Center, Suwon 16229, Republic of Korea, Department of Chemical Engineering, Dankook University, Yongin 16890, Republic of Korea

18:00 Field Emission in double barrier reverse-biased Graphene/Oxide/n-semiconductor Schottky junctions, via a Landauer formalism
AC Varonides
Physics & ECE Dept, University of Scranton, Scranton, PA 18510, USA
18:00  **Thermal oxidation fabrication of p-type NiO gate for normally-off AlGaN/GaN HFETs application**  
Lian Li1, Wenjing Wang1, Liang He1, Jialin Zhang1, Bajun Zhang1, Yang Liu1 2  
1School of Electronics and Information Technology, Sun Yat-Sen University, Guangzhou 510275, P.R. China, 2Institute of Power Electronics and Control Technology, Sun Yat-Sen University, Guangzhou 510275, P.R. China

18:00  **Direct observation of high current density area by microscopic electroluminescence mappings in vertical GaN p-n junction diodes**  
Kentaro Hayashi, Hiroshi Ohta, Fumimasa Horikiri, Yoshinobu Narita, Takehiro Yoshida, Tomoyoshi Mishima  
Hosei University, SCIIOCS

18:00  **1370 V Tri-gate GaN MOSHEMTs on Silicon Substrate**  
Jun Ma and Elison Matioli  
Power and Wide-band-gap Electronics Research Laboratory (POWERlab), École polytechnique fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland

18:00  **The recessed trapezoidal groove dual-gate AlGaN/GaN E-mode transistor by using depletion enhancement effect**  
Ling Yang, Minhan Mi, Bin Hou, Jiejie Zhu, Meng Zhang, Yang Lu, Yunlong He, Qi Zhu, Lixiang Chen, Xiaowei Zhou, Xiaohua Ma, and Yue Hao  
State Key Discipline Laboratory of Wide Band-gap Semiconductor Technology, Xidian University, Xi’an 710071, China

18:00  **Mg-related CL emissions from ion-implanted GaN(000-1) substrate**  
Keita Kataoka, Tetsuo Narita, Tetsu Kachi, Tsutomu Uesugi  
Toyota Central Research and Development Laboratories, Inc., Nagakute, Aichi 480-1192, Japan, Toyota Central Research and Development Laboratories, Inc., Nagakute, Aichi 480-1192, Japan, Nagoya University, Nagoya, Aichi 464-8603, Japan, Toyota Central Research and Development Laboratories, Inc., Nagakute, Aichi 480-1192, Japan

18:00  **Molecular control over Ni/AlGaN/GaN Schottky barrier diode using Thiol Porphyrin**  
Manjari Garg, Tejas R. Naik, S. Nagarajan, V. Ramgopal Rao, Rajendra Singh  
Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016, India, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai-400 076, Maharashtra, India, Department of Micro and Nanosciences, Aalto University, P.O. Box 13500, FI-00076, Aalto, Finland

18:00  **AlGaN/GaN heterojunction bipolar transistors with selective-area regrown n-AlGaN emitter**  
Lian Zhang1, Jianping Zeng3, Yun Zhang1,2, Zhe Cheng1, Hongxi Lu1, Hongrui Lv1,2, Junxi Wang1,2, Wei Tan3, Jinmin Li1,2  
1. Institute of Semiconductor, Chinese Academy of Sciences, Beijing 100083, People’s Republic of China  
2. University of Chinese Academy of Sciences, Beijing 100049, People’s Republic of China  
3. Terahertz Physics Laboratory, Microsystem and Terahertz Research Center, Chinese Academy of Engineering Physics, Chengdu, 610299, People’s Republic of China  
*corresponding author

18:00  **Temperature Dependence of Equivalent Circuit Model for GaN Gate Injection Transistor Bi-directional Switch**  
Toshihide Ide1, Mitsuaki Shimizu1, Xu-Qiang Shen1, Hidetoshi Ishii2, Tsuyaguchi Hatsu2, Tetsumo Ueda2  
1Advanced Industrial Science and Technology (AIST), 2Panasonic Corporation
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<th>Authors</th>
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<tr>
<td>18:00</td>
<td><strong>Determination of Primary Indicators of AlGaN/GaN HEMT Wafers Based on Nondestructive Wafer Test and Device Characteristics</strong></td>
<td>Yi-Nan Zhong, Shun-Wei Tang, Yue-ming Hsin Department of Electrical Engineering, National Central University</td>
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<td>18:00</td>
<td><strong>Off-State Negative Differential Capacitance in Low-Temperature AlGaN/GaN Heterostructures</strong></td>
<td>Jie-Jie Zhu, Bin Hou, Hua-Mao Chen, Ting-Chang Chang, Xiao-Hua Ma, Yue Hao Xidian University, National Sun Yat-Sen University, Xidian University, Xidian University, Xidian University</td>
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<td>18:00</td>
<td><strong>A Novel Interface Treatment Process Used in GaN-based MOS-HEMTs: Diffusion-Control Surface Plasma Oxidation</strong></td>
<td>Jiejie Zhu, Qing Zhu, Lixiang Chen, Yi Zhang, Bin Hou, Ling Yang, Xiaohua Ma, and Yue Hao Xidian University, Xi’an, China</td>
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<td>18:00</td>
<td><strong>Influence of Fin Architectures on Linearity Characteristics of AlGaN/GaN FinFETs</strong></td>
<td>Kai Zhang, Guangrun Zhu, Jianjun Zhou, Yuechan Kong, and Tangsheng Chen Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, Nanjing Electronic Devices Institute, Nanjing, P. R. China</td>
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<td>18:00</td>
<td><strong>The Role of Buffer Traps on the Time Dependent Off-State Leakage in AlGaN/GaN MIS-HEMT on Silicon</strong></td>
<td>Ming Tao1, Maojun Wang1, Shaofei Liu1, Cheng P. Wen1, Jinyan Wang1, Yilong Hao1, Wengang Wu1, Bo Shen2 1Institute of Microelectronics, Peking University, Beijing, China, 2School of Physics, Peking University, Beijing, China</td>
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<td>18:00</td>
<td><strong>Analysis of Peak Field Reduction in AlGaN/GaN HFETs with a Curved Field Plate.</strong></td>
<td>Chih-Wei Hsu and Yuh-Renn Wu Graduate Institute of Photonics and Optoelectronics, National Taiwan University</td>
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<td>18:00</td>
<td><strong>Microwave Leakage through Buffer Layer of AlGaN/GaN HEMT on Si</strong></td>
<td>Y. Ikedo1, Y. Ito1, T. Egawa1, M. Kuzuhara2, K. Hosoya3, and A. Wakejima1 1Nagoya Institute of Technology, Aichi 466-8555, Japan, 2University of Fukui, Fukui 910-8507, Japan 3Hiroshima Institute of Technology, Hiroshima 731-5193, Japan Nagoya Institute of Technology</td>
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<td>18:00</td>
<td><strong>Quaternary barrier GaN High Electron Mobility Transistors with fT/fmax of 200/310 GHz</strong></td>
<td>Guangrun Zhu, Kai Zhang, Yuechan Kong, Xinxin Yu, Tangsheng Chen Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, Nanjing Electronic Devices Institute, Nanjing, 210016, China</td>
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<td>18:00</td>
<td><strong>Threshold voltage shifts induced by acceptor-like interface states in Al2O3/AlGaN/GaN HEMTs</strong></td>
<td>Shota Kaneki*, Zenji Yatabe**, Kenya Nishiguchi*, Tamotsu Hashizume* *RCIQE, Hokkaido University, **Kumamoto University</td>
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<td>18:00</td>
<td><strong>Development of mask-less p-GaN regrowth on partially etched n-GaN template</strong></td>
<td>Ryo Tanaka, Stacia Keller, Umesh Mishra Fuji Electric Co., Ltd., Department of Electrical and Computer Engineering, University of California, Santa Barbara, Department of Electrical and Computer Engineering, University of California, Santa Barbara</td>
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</table>
A high electron mobility (\(\geq 1300\) cm²/Vs) in AlGaN/GaN heterostructures prepared by direct AlGaN regrowth on RIE-GaN

Akio Yamamoto, Satoshi Yoshida, Kento Kanatani, Masaaki Kuzuhara
Graduate School of Engineering, University of Fukui, Japan

Threshold Voltage Instabilities in Integrated E/D-mode InAlN/GaN MOS HEMTs.

M. Blaho, D. Gregušová, Š. Haščík, M. Ťapajna, K. Fröhlich, A. Šatka, and J. Kuzmík
Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia

Direct observation of leakage paths in AlGaN/GaN high electron mobility transistors by electron-beam induced current

Li-Xiang Chen, Xiao-Hua Ma, Jie-Jie Zhu, Bin Hou, Qing Zhu, Meng Zhang, Ling Yang, Yue Hao
School of Advanced Materials and Nanotechnology, Xidian University, Xi’an 710071, People’s Republic of China, Key Lab of Wide Band-Gap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, Xi’an 710071, People’s Republic of China

Improving Thermal and Electrical Performance in InAlN/GaN HEMTs with Nanocrystalline Diamond Gate

Chenjie Tang, Koon Hoo Teo, Junxia Shi
Department of Electrical and Computer Engineering, University of Illinois at Chicago, Chicago, IL. Mitsubishi Electric Research Laboratories, Cambridge, MA, USA

Ohmic contact-free measurement of mobility in ultra-wide band gap AlGaN/AlGaN structures

Peter Butler (1,2), William Waller (1), Michael J Uren (1), Andrew Allerman (3), Andrew Armstrong (3), Robert Kaplar (3), Martin Kuball (1)
(1) H.H. Wills Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol, United Kingdom, (2) AWE Plc., Aldermaston, Reading, United Kingdom, (3) Sandia National Laboratories, Albuquerque, New Mexico, USA.

Dielectric Engineering of HfO2 Gate Stacks for Normally-ON and Normally-OFF AlGaN/GaN Transistors

Hareesh Chandrasekar, Sandeep Kumar, K L Ganapathi, Shreesha Prabhu, Srinivasan Raghavan, R Muralidharan, Sangeneeri Mohan, Navakanta Bhat, Digbijoy N Nath
Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India

Fabrication and characterization of aluminum nitride surface acoustic wave devices

Shuai Yang, Yujie Ai*, Yun Zhang, Lifang Jia, Lili Sun, Lian Zhang, Zhe Cheng, Junxi Wang, Jinmin Li
Institute of Semiconductors, Chinese Academy of Sciences, A35, Qinghua East Road, Haidian District Beijing, Beijing 100083, China

Precise thickness control in recess-etching for normally-off AlGaN/GaN HEMTs using a low damage photo-electrochemical reaction

Taketomo Sato, Keisuke Uemura, Yusuke Kumazaki, Tamotsu Hashizume
Research Center for Integrated Quantum Electronics, Hokkaido University
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<th>Title</th>
<th>Authors</th>
<th>Institution disclosures</th>
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<tr>
<td>Effect of Boron Nitride passivation on AlGaN GaN High Electron Mobility Transistors</td>
<td>Gun Hee Lee, Tae Hoon Seo, Hee Su Kim, Dong Kye Yeo, Eun-Kyung Suh</td>
<td>1. School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju 561-756, South Korea; 2. Applied Quantum Composites Research Center, Korea Institute of Science and Technology, Jeonbuk 565-905, South Korea</td>
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<tr>
<td>Development of the ammonia-MBE growth technique in view of monolithic integration of GaN transistors with Si-based technologies</td>
<td>Rémi Comyn, Yvon Cordier, Benjamin Damilano, Abdelatif Jaouad, Vincent Aimez, Hassan Maher</td>
<td>UCA, CRHEA-CNRS, Rue Bernard Gregory, Valbonne, 06560, France; Laboratoire Nanotechnologies Nanosystèmes (LN2)- CNRS UMI-3463, Université de Sherbrooke, 3000 Boulevard Université, Sherbrooke, J1K OAS, Québec, Canada</td>
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<td>Short gate-length technology for European high frequency GaN HEMTs and MMICs</td>
<td>P. Brückner, M. Dammann, R. Quay, M. Mikulla</td>
<td>Fraunhofer Institute for Applied Solid State Physics, Tullastrasse 72, 79108 Freiburg, Germany</td>
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<td>Investigation of deep level transient spectroscopy in AlGaN/GaN heterostructure</td>
<td>Qing Zhu, Xiao-Hua Ma, Bin Hou, Jie-Jie Zhu, Li-Xiang Chen, Meng Zhang</td>
<td>School of Advanced Materials and Nanotechnology, Xidian University</td>
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<tr>
<td>Electrically driven terahertz emission from plasma oscillations in grating gate of AlGaN/GaN heterostructures</td>
<td>I. Grigelionis, V. Jakštaitė, V. Janonis, I. Kašalynas, G. Seniutinas, S. Juodkazis, P. Prystawko, M. Leszczynski, W. Knap</td>
<td>1. Center for Physical Sciences and Technology, Saulėtekio al. 3, LT-10222 Vilnius, Lithuania; 2. Swinburne University of Technology, John St. Mail H34, Hawthorn, VIC 3122, Australia; 3. Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland; 4. Laboratoire Charles Coulomb, University of Montpellier and CNRS, Place Eugène Bataillon, Montpellier F-34905, France</td>
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<tr>
<td>Optimisation of barrier doping profile in AlGaN/AlN/GaN high electron mobility transistors</td>
<td>Filip Dominec</td>
<td>Institute of Physics, CAS</td>
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<tr>
<td>“Kink“ in AlGaN/GaN-HEMTs: Impact on Devices and Demonstration of Suppression</td>
<td>Manikant, Trevor Martin, M J Uren, Serge Karboyan, Hareesh Chandrasekar, Martin Kuball</td>
<td>1H H Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, U.K.; 2IQE Europe, St Mellons, Cardiff, U.K.</td>
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</table>
18:00 Formation of contacts with high thermal tolerance by using Si/GaN junctions  
Jianbo Liang1, Takuya Nishimura1, Moeko Matsubara2, Marwan Dhamrin2, Yoshitaka Nishio2, and Naoteru Shigekawa1  
1Electronic Information System, Osaka City University, Sumiyoshi-ku, Osaka 5588585, Japan  2Core Technology Center, Toyo Aluminium K. K., Chuo-ku, Osaka 5410056, Japan

18:00 Theoretical study on the formation of gallium oxide at the n-type GaN/SiO2 interface  
K. Chokawa, E. Kojima, M. Araida, K. Shiraishi  
Graduate School of Engineering, Nagoya University, Graduate School of Engineering, Nagoya University, Institute of Materials and Systems for Sustainability, Nagoya University, Graduate School of Engineering, Nagoya University, Institute of Materials and Systems for Sustainability, Nagoya University, Graduate School of Engineering, Nagoya University

18:00 Improvement of Ohmic Contact by Surface Plasma Treatment on AlGaN/GaN Heterostructures  
Yogendra K. Yadav, Bhanu B. Upadhyay, Mudassar Meer, Swaroop Ganguly, Dipankar Saha  
Applied Quantum Mechanics Laboratory, Centre of Excellence in Nanoelectronics, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India

18:00 Low damage plasma etch processes for AlGaN and GaN substrates  
Matthew Loveday, Andy Goodyear, Mike Cooke, Andrew Newton, Mark Dineen, Stephanie Baclet, Paolo Abrami  
Oxford Instruments Plasma Technology, Bristol University

18:00 N2 plasma treatment for gate leakage reduction in AlGaN/GaN HEMT  
Weike, Liuguoguo, Chenshizhe, Zhangyichuan, Huangsen, Wangxinghua, Zhegyingkui, Chenxiaojuan luoweijun and Liuxinyu  
Institute of Microelectronics, Chinese Academy of Sciences

18:00 GaN lateral Schottky Diodes and FinFETs for THz applications  
G. Cywiński1*, P. Kruszewski1,2, K. Szkudlarek1, I. Yahniuk1, G. Muzioli1, C. Skierbiszewski1, D. But3, W. Knap1,3, and S. L. Rumyantsev4,5  
1Institute of High Pressure Physics, Polish Academy of Sciences, ul. Sokolowska 29/37, 01-142 Warsaw, Poland  2Top-GaN Ltd., ul. Sokolowska 29/37, 01-142 Warsaw, Poland  3University of Montpellier and CNRS, UMR 5221, Laboratoire Charles Coulomb (L2C), Pl. E. Bataillon, 34095 Montpellier, France  4iolfie Institute, Russian Academy of Sciences, Politekhnicheskaya ul. 26, 194021 St. Petersburg, Russia  5National Research University of Information Technologies, Mechanics, and Optics, 197101 St. Petersburg, Russia

18:00 Improvement of channel mobility of GaN-MOSFETs with thermal treatment for recess surface  
Kenjiro Uesugi, Aya Shindome, Hisashi Saito, Masahiko Kuraguchi, Shinya Nunoe  
Corporate Research & Development Center, Toshiba Corporation

18:00 AlGaN/GaN/AlGaN DH-HEMT grown on patterned Silicon substrate  
R.Comyn, S.Chenot, M.Nemoz, E.Frayssinet, B.Damilano, Y.Cordier  
Université Côte d’Azur, CNRS, CRHEA, rue B.Grégory, 06560, Valbonne, FRANCE.

18:00 Lower growth temperature: a major advantage of Molecular Beam Epitaxy for GaN HEMTs on Silicon  
Y.Cordier, S.Rennesson, R.Comyn, E.Frayssinet  
Université Côte d’Azur, CNRS, CRHEA, rue B.Grégory, 06560, Valbonne, FRANCE.
18:00 **Enhancement-mode Ultrathin-Barrier GaN-cap/AlN/GaN HEMT with High Ion/Ioff, Low Leakage Current and Low On-resistance**

Ming Xiao, Jincheng Zhang, Xiaoling Duan and Yue Hao
Key Lab of Wide Band-Gap Semiconductor Technology, Taibai South Road, 710071, Xi’an, China

18:00 **m-plane GaN Schottky barrier diode fabricated with MOVPE layer on several off-angled GaN substrate**

Atsushi Tanaka, Ousmane Barry, Kentaro Nagamatsu, Manato Deki, Maki Kushimoto, Shugo Nitta, Yoshio Honda, Hiroshi Amano
Institute of Materials and Systems for Sustainability Nagoya University, Department of Electrical Engineering and Computer Science Nagoya University, Akasaki Research Center Nagoya University

18:00 **Barrier inhomogeneity of Ni Schottky contacts to bulk GaN**

Fabrizio Roccaforte 1, Filippo Giannazzo 1, Ferdinando Iucolano 2, Giuseppe Greco 1

1) Consiglio Nazionale delle Ricerche - Istituto per la Microelettronica e Microsistemi (CNR-IMM), Strada VIII, n.5 – Zona Industriale, 95121 Catania (Italy), 2) STMicroelectronics, Stradale Primosole 50, 95121 Catania (Italy)

18:00 **Comparison of E-mode Fully-recessed GaN MIS-FETs and Partially-recessed MIS-HEMTs with PECVD-SiNx/LPCVD-SiNx Gate Stack**

Jiabei He, Mengyuan Hua, Gaofei Tang, Zhaofu Zhang, and Kevin J. Chen
Dept. of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong

18:00 **GaN-based high electron mobility transistors on Si(111) with Au-free device processing**

S. Tripathy, L. K. Bera, T. N. Bhat, S. B. Dolmanan
Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore

18:00 **Improvement of the GaN/AlGaN HEMTs’ performance with BCl3/Ci2/Ar-Based Inductively Coupled Plasma Etching**

Zheng Yingkui, Wei Ke, Yuan Tingting, Liu Guoguo and Fan Jie
Institute of Microelectronics of Chinese Academy of Sciences

18:00 **Study of different metal contacts to GaN-based heterostructures for application in normally-off HEMT technology with a pGaN gate**

Giuseppe Greco1, Monia Spera1, Salvatore Di Franco1, Domenico Corso1, Alessandra Alberti1, Emanuele Smecca1, Ferdinando Iucolano2, Filippo Giannazzo1, Fabrizio Roccaforte1

1) Consiglio Nazionale delle Ricerche - Istituto per la Microelettronica e Microsistemi (CNR-IMM), Strada VIII, n.5 – Zona Industriale, 95121 Catania (Italy), 2) STMicroelectronics, Stradale Primosole 50, 95121 Catania (Italy)

18:00 **Modification of Fermi-level pinning at metal/GaN interface by inserting ultrathin Al2O3 interlayers**

M. Akazawa and T. Hasezaki
RCIQE, Hokkaido University
D poster : Bruno Daudin

18:00 Ni pattern guided GaN nanowire humidity sensor with high sensitivity enhanced by UV photoexcitation  
Mingzeng Peng  
University of Science and Technology Beijing, China

18:00 High-Performance Ultraviolet Photodetectors Based on Lattice-Matched InAlN/AlGaN HFETs Gated by Transparent ITO Films  
Lei Li, Daiki Hosomi, Makoto Miyoshi and Takashi Egawa  
Research Center for Nano Devices and Advanced Materials, Nagoya Institute of Technology, Japan

18:00 Ionization-enhanced AlGaN heterostructure avalanche photodiodes  
Nanjing University

18:00 Light-emitting diodes fabricated on an electrical conducting flexible substrate  
Won-Sik Choi, Jun Beom Park, Sin Jae Kim, Jun-Seok Ha, Tak Jeong  
Micro LED Research Center, Korea Photonics Technology Institute, Gwangju 500-779, Republic of Korea

18:00 Self-powered low-dark current AlGaN MSM UV detector with record high responsivity at zero bias  
Anisha Kalra, Shashwat Rathkanthiwar, Rangarajan Muralidharan, Srinivasan Raghavan, Digbijoy Nath  
Center for Nanoscience and Engineering, Indian Institute of Science, Bangalore, India, 560012

18:00 Million-fold dark current reduction in AlGaN solar-blind photodetectors  
Shashwat Rathkanthiwar, Anisha Kalra, Rangarajan Muralidharan, Digbijoy Nath and Srinivasan Raghavan  
Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore, India, 560012

18:00 Gain mechanism and carrier transport in highest responsivity AlGaN-based solar blind Metal Semiconductor Metal photodetectors  
Shashwat Rathkanthiwar, Anisha Kalra, Swanand Solanke, Neha Mohta, Rangarajan Muralidharan, Digbijoy Nath and Srinivasan Raghavan  
Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore, India, 560012

18:00 Improved performance of AlGaN/GaN heterojunction bipolar phototransistors with a thin low-doped n-AlGaN insertion layer  
Shaoji Tang1, Lingxia Zhang1, Hualong Wu1, Changshan Liu1, Hailong Wang1, Zhisheng Wu2, Gang Wang2 and Hao Jiang2  
1 Sun Yat-Sen University, Guangzhou 510275, China, 2State Key Laboratory of Optoelectronic Materials and Technologies, School of Electronics and Information Technology, Sun Yat-Sen University, Guangzhou 510275, China

18:00 Influence of underlying substrates on material and device properties of MOCVD-grown InGaN/ GaN MQW solar cells  
Makoto Miyoshi, Miki Ohta, Takuma Mori, Takashi Egawa  
Nagoya Institute of Technology

18:00 Improved performance of AlGaN/GaN heterojunction bipolar phototransistors with a thin low-doped n-AlGaN insertion layer  
Shaoji Tang1, Lingxia Zhang1, Hualong Wu1, Changshan Liu1, Hailong Wang1, Zhisheng Wu2, Gang Wang2 and Hao Jiang2  
1 Sun Yat-Sen University, Guangzhou 510275, China, 2State Key Laboratory of Optoelectronic Materials and Technologies, School of Electronics and Information Technology, Sun Yat-Sen University, Guangzhou 510275, China

18:00 Influence of underlying substrates on material and device properties of MOCVD-grown InGaN/ GaN MQW solar cells  
Makoto Miyoshi, Miki Ohta, Takuma Mori, Takashi Egawa  
Nagoya Institute of Technology
18:00  **Ill-nitrides based electro-optic modulators**  
Bandar Alshehri1, Mohammed El Gibari2, Hong Wu Li2, Dimitris Pavlidis3, Elhadj Dogheche1

1  IEMN, Institute of Electronics, Microelectronics and Nanotechnology, CNRS & University of Lille 1, Avenue Poincaré, 59652 Villeneuve d’Ascq, Cedex, France       2  UBL, IETR (Institute of Electronics and Telecommunications of Rennes), UMR CNRS 6164, Université de Nantes, 2 Rue de la Houssinière, BP 32229, 44322 Nantes, France       3  Boston University, Department of Electrical and Computer Engineering, 8 Saint Mary?s Str., Boston, MA 02215 USA

18:00  **High output voltage generation from Cu2O/GaN Heterojunction Piezoelectric nanogenerator via suppressed carrier screening**  
Muhammad Ali Johar, Jin-Ho Kang, Dae Kyung Jeong, Sang-Wan Ryu

Department of Physics, Chonnam National University, Gwangju 61186, Republic of Korea

18:00  **Fabrication and evaluation of vertical type BGaN diodes by MOVPE using trimethylboron.**  
K. Mochizuki1, T. Arikawa1, Y. Inoue1, H. Nakagawa2, S. Usami3, M. Kushimoto3, Y. Honda4, H. Amano4.5, K. Kojima6, S. Chichibu4.6, H. Mimura7, T. Aoki7, T. Nakano1

1. Dept. of Electronics and Materials Science, Shizuoka Univ., 3-5-1 Johoku, Hamamatsu, Japan, 2Dept. of Nanovision Technology, Shizuoka Univ., 3-5-1 Johoku, Hamamatsu, Japan, 3 Dept. of Engineering and Institute of Materials and Systems for Sustainability, Nagoya Univ., Furo-cho Chikusa-ku, Nagoya, Japan, 4 Institute Materials Systems for Sustainability, Nagoya Univ., Furo-cho Chikusa-ku, Nagoya, Japan, 5 Akasaka Research Center, Nagoya Univ., Furo-cho Chikusa-ku, Nagoya, Japan, 6 Institute of Multidisciplinary Research for Advanced Materials, Tohoku Univ., 1-1-2 Katahira, Sendai, Japan, 7 Research Institute of Electronics, Shizuoka Univ., 3-5-1 Johoku, Hamamatsu, Japan

18:00  **Fabrication and characterization of hybrid n-GaN/p-PEDOT structures for optoelectronic applications by oxidative CVD**  
Linus Krieg 1, Florian Meierhofer 1, Priya Moni 2, Karen Gleason 2, Tobias Voss 1

1  Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, Braunschweig University of Technology, 38092 Braunschweig, 2 Department of Chemical Engineering, Massachusetts Institute of Technology, 02139 Cambridge USA

18:00  **Design and simulation of InGaN/GaN pin photodiodes**  
M. Elbar1, B. Alshehri2, S. Tobbeche1, E. Dogheche2

1 Laboratory of Metallic and Semiconducting Materials, University of Biskra, BP.145, 07000 Biskra RP, Algeria. 2 IEMN, Institute of Electronics, Microelectronics and Nanotechnology, CNRS & University of Lille 1, Avenue Poincaré, 59652 Villeneuve d’Ascq, Cedex, France

18:00  **The study of photoenhanced chemical etching for GaN and AlGaN/GaN HEMTs**  
Luu Thi Lan Anh, Nguyen Tuyet Mai, Nguyen Van Do, Nguyen Ngoc Trung and Nguyen Xuan Sang


18:00  **Investigation of dual-wavelength InGaN/ GaN multiple-quantum well for scintillation application**  
J. Oswald, F. Hájek, A. Hospodková, K. Kuldová, J. Pangrác and M. Ziková

Institute of Physics of the Czech Academy of Sciences, Cukrovarnická 10, 162 00 Prague, Czech Republic
Fine control of the electric field distribution in the heterostructure multiplication region of AlGaN avalanche photodiodes

Haifan You, Zhenguang Shao, Dunjun Chen, Hai Lu, Rong Zhang, and Youdou Zheng

Key Laboratory of Advanced Photonic and Electronic Materials, School of Electronic Science and Engineering, Nanjing University, Nanjing, China

The Effects of CaMn2O4 co-Catalyst Decorated GaN Photoelectrode for High Efficiency photoelectro chemical Water Splitting

Hyojung Bae1, Haseong Kim1, Soon Hyung Kang1, Hyo-Jong Lee2, Koike Kayo3, Katsushi Fuji4, and Jun-Seok Ha1,*

Chonnam National University, Gwangju 61186, Korea, Dong-A University, Busan, 49315, Korea, The University of Tokyo, komaba kampus, Tokyo, 113-8656, Japan, The University of Kitakyushu, Kitakyushu, Fukuoka, 802-8577, Japan

GaN for Thermoelectric Applications

Ashish Kumar1, R. C. Meena1, Parmod Kumar1, R. Singh2, K. Asokan1 and D. Kanjilal1

1-Inter-University Accelerator Centre, Aruna Asaf Ali Marg, Vasant Kunj, New Delhi, India – 110067, 2-Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India –110016,

18:00

Polarization-engineered InGaN solar cells

S. A. Kazazis1, E. Papadomanolak1i, E. Iliopoulos1 2

1Department of Physics, University of Crete, Heraklion, Greece
2Microworld Electronics Research Group, IESL-FORTH, Heraklion, Greece

Towards Voltage Controlled GaN-based Waveguide Phase Modulator

Ohad Westreich1 2, Moti Katz1, Yossi Patiel2, Noam Sicron1

1Solid State Physics department, Applied Physics Division, Soreq NRC, Yavne 81800, Israel, 2Applied Physics Department, Hebrew University, Jerusalem 91904, Israel

18:00

E poster: Bruno Daudin

Structural, electronic and optical properties of the wurtzite InxGa1-xN alloy matched on GaN substrate, within modified Becke-Jo

Amina Benzina1, 2, Abdelhadi Lachebi1, Ahmad Shuhaimi2, Saadah Abdul Rahman2, Hamza Abid1.

1Applied Materials Laboratory, Research Center, Dijlali Liabes University of Sidi Bel Abbes, 22000, Sidi Bel Abbes, Algeria. 2Low Dimensional Materials Research Centre (LDMRC), Department of Physics, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia.

Systematic theoretical investigations of polytypism in AlN

Tomonori Ito, Toru Akiyama, Kohji Nakamura

Department of Physics Engineering, Mie University

Structures and polarity of III-nitrides: phase diagram calculations using absolute surface and interface energies

Toru Akiyama, Harunobu Nakane, Motoshi Uchino, Kohji Nakamura, Tomonori Ito

Department of Physics Engineering, Mie University

Strain detection in AlInN/GaN-based heterostructures using two-dimensional blocking patterns of channeled particles


1Department of Applied Physics, Universidade Autónoma de Madrid, 28049 Madrid, Spain, 2Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, 2695-066, Bobadela LRS, Portugal, 3University Tecnológica Metropolitana, Las Palmeras, Santiago de Chile, Chile, 4Centro de Física Nuclear, Universidade de Lisboa, 1649-003 Lisboa, Portugal, 5IPFN, Instituto Superior Técnico, Universidade de Lisboa, Estrada Nacional 10, 2695-066, Bobadela LRS, Portugal
18:00 Modeling and investigation of photoinduced entropy of InGaN/GaN p-i-n double-heterostructure nanowires
Nasir Alfaraj, Somak Mitra, Feng Wu, Idris A. Ajia, Bilal Janjua, Aditya Prabaswara, Renad A. Aljefri, Haiding Sun, Tien Khee Ng, Boon S. Ooi, Iman S. Roqan, Xiaohang Li
King Abdullah University of Science and Technology, Thuwal 23955-6900, Kingdom of Saudi Arabia

18:00 Quantum-Wire-Like Density of States in c-plane AlGaN Quantum Wells in Polarization-Crossover Composition Region
S. Sakai, T. Minami, K. Kojima, S. F. Chichibu, A. A. Yamaguchi
Kanazawa Institute of Technology, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

18:00 Thermodynamic Analysis of the TMG Decomposition Process Considering the Activation Energy
K. Sekiguchi, H. Shirakawa, M. Araidai, Y. Kangawa, K. Kakimoto, and K. Shiraishi
Graduate School of Engineering, Nagoya University, Institute of Materials and Systems for Sustainability, Nagoya University, Research Institute for Applied Mechanics, Kyushu University

18:00 Dissipation/thermalization of the excess energy of the adsorbate via electron transfer - application to nitride growth
Pawe? Strak1, Konrad Sakowski1, Pawel Kempisty2, Agata Kaminska3, Stanislaw Krukowski1
1.Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, 2.Center for Integrated Research of Future Electronics (CIRFE), Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, Nagoya 464-8603, Japan, 3.Institute of Physics, Polish Academy of Sciences, Al. Lotnikow 32/46, 01-142 Warsaw, Poland and Cardinal Stefan Wyszyński University, College of Science, Department of Mathematics and Natural Sciences, Dejwati5, 01-815 Warsaw, Poland

18:00 Tight Binding Modeling of AlGaN/GaN and InGaN/GaN Spherical Core/Shell Quantum Dots
Hilmi Ünlü
Department of Physics Engineering, Faculty of Science and Letters, Istanbul Technical University, Maslak 34469 Istanbul, TURKEY
E-mail: hunlu@itu.edu.tr Phone: 90-212-285 3201, Fax: 90-212-285 6386

18:00 Combined XPS model and growth kinetic model of passivating GaN thin film elaborated on GaAs
Hussein Mehdí(a), Guillaume Monier(a), Christine Robert-Goumet(a), Vladimir G. Dubrovskii (b,c,d)
(a)Institut Pascal, Université Clermont Auvergne, CNRS, SIGMA Clermont, F-63000 Clermont-Ferrand, France (b)St. Petersburg Academic University, Khloppina 8/3, 194021 St. Petersburg, Russia (c)Ioffe Physical Technical Institute of the Russian Academy of Sciences, Politekhnicheskaya 26, 194021 St. Petersburg, Russia (d)ITMO University, Kronverskii prospekt 49, 197101 St. Petersburg, Russia

18:00 Numerical study of MOCVD reactor growth conditions based on 3D thermo-kinetic model.
Przemyslaw Niedzielski, Ewa Raj, Zbigniew Lisik.
Lodz University of Technology, Department of Semiconductor and Optoelectronic Devices, 211/215 Wolczańska str., 90-924 Lodz, Poland, E-mail: przemyslaw.niedzielski@p.lodz.pl, http://www.dsod.p.lodz.pl

18:00 Nano-cathodoluminescence reveals the effect of electron damage on the optical properties of III-nitride optoelectronics and the
James T. Griffiths, Siyuan Zhang, Jeremy Lhuillier, Dandan Zhu, Ashley Howkins, Ian Boyd, David Stowe, David J. Wallis, Colin J. Humphreys, and Rachel A. Oliver
1 Department of Materials Science and Metallurgy, 27 Charles Babbage Road, Cambridge, CB3 0FS, United Kingdom, 2 Experimental Techniques Centre, Brunel University, Uxbridge, UB8 3PH, United Kingdom, 3 Gatan UK, 25 Nuffield Way, Abingdon, Oxon, OX14 1RL, United Kingdom
18:00 **Using embedded clusters to elucidate the defect-related optical and electronic properties of GaN**

John Buckeridge1, Zijaun Xie2, Yu Su2, C. Richard A. Catlow1, Aron Walsh3, David O. Scanlon1, Alexey A. Sokol1

1 University College London, Kathleen Lonsdale Materials Chemistry, Department of Chemistry, 20 Gordon Street, London WC1H 0AJ, U.K., 2 Department of Physics, Harbin Institute of Technology, 92 Xidazhi Street, Harbin 150001, P. R. China 3 Department of Materials, Imperial College London, London WC1H 0AJ, U.K.

18:00 **Density Functional Theory study on stability of carbon and oxygen at GaN(0001) and GaN(000-1) surfaces**

Pawel Kempisty(1,3), Yoshihiro Kangawa(2,1), Kenji Shiraishi(1), Stanislaw Krukowski(3), Michal Bockowski(3), Koichi Kakimoto(2), and Hiroshi Amano(1)

(1) Center for Integrated Research of Future Electronics (CIRFE), Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, Japan, (2) Research Institute for Applied Mechanics, Kyushu University, Japan, (3) Institute of High Pressure Physics, Polish Academy of Sciences, Poland

18:00 **Investigation of atomic structures and interfacial properties of HfO2 thin films deposited on a GaN wafer by MD simulation**


School of Engineering Physics, Hanoi University of Science and Technology, Hanoi, Vietnam

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**G Poster session : Bruno Daudin**

18:00 **MOCVD growth of N-polar InN quantum dots and thin films on vicinal GaN**

Cory Lund1, Massimo Catalano2, Thomas E. Mates3, Luhua Wang2, Moon Kim2, Shuji Nakamura3, Steven P. DenBaars3, Umesh K. Mishra1, Stacia Keller1

1 Electrical & Computer Engineering Department, University of California, Santa Barbara, CA 93106, USA, 2 Materials Science & Engineering Department, University of Texas at Dallas, Richardson, TX 75080, USA, 3 Materials Department, University of California, Santa Barbara, CA 93106, USA

18:00 **Nondestructive measurement of a homoepitaxially grown GaN film thickness with FT-IR**

Fumimasa Horikiri, Yoshinobu Narita, and Takehiro Yoshida

SCIIOCS Co., Ltd

18:00 **GaN/AlGaN Ultraviolet Light-Emitting Diodes with Porous-AlGaN Reflectors**

Chia-Feng Lin

Department of Materials Science and Engineering, National Chung Hsing University, 145 Xingda Rd., South Dist., Taichung City 402, Taiwan

18:00 **Suppression of Iron memory-effect in GaN epitaxial layers**

S. Leone, F. Benkhelifa, L. Kirste, C. Manz, S. Mueller, R. Quay, T. Stadelmann

Fraunhofer Institute for Applied Solid State Physics IAF, Tullastrasse 72, 79108 Freiburg, Germany
18:00 GaN-Based Light-Emitting Memory Devices Using ZnO Resistive Switching Materials as N-Type Contact Electrodes
Hyun Tae Kim, Ju Hyun Park, Byeong Ryong Lee, Tae Ho Lee, Kyung Rock Son, Sang Hoon Oh
Tae Geun Kim

18:00 Optimization of Hybrid GaN Tunnel Junction Contacts to III-Nitrides
Asad J. Mughal, Erin C. Young, Joonho Bak, Shuji Nakamura, James S. Speck, and Steven P. DenBaars
Materials Department, University of California, Santa Barbara, CA 93106, U.S.A.

18:00 Sublimation growth of 2 inch AlN bulk crystal: exploration of various substrates and growth parameters
Zhangyong Cheng1; Liwen Yang1; Zhenzhou Yuan1; Zhiyuan Dong2; Youwen Zhao2; Xinyu Liu1*  
* Corresponding author: xinyu.liu@cengol.com
1 Beijing Huajin Chuangwei Electronics Co., Ltd. Beijing 100176, China.  
2 Materials Science Center, Institute of Semiconductor, Chinese Academy of Sciences, P.O.Box 912, Beijing 100083, China

18:00 Impacts of Carrier Transport and Deep Level Defects on Delayed Cathodoluminescence in Droop-Mitigating InGaN/GaN LEDs
Zhibo Zhao1, Akshay Singh1, Jordan Chesin1, Rob Armitage2, Isaac Wildeson2, Parijat Deb2, Andrew Armstrong3, Kim Kisslinger4, Eric Stach4, Silvija Gradecek1
1 Massachusetts Institute of Technology, Cambridge, MA, USA, 2 Lumileds, San Jose, CA, USA, 3 Sandia National Laboratories, Albuquerque, NM, USA, 4 Brookhaven National Laboratory, Upton, NY, USA

18:00 Achievement of high-EQE (9.5%) AlGaN deep-UV LED using highly-reflective photonic crystal (HR-PhC) on p-contact layer
Yukio Kashima1,2*, Noritoshi Maeda1, Eriko Matsuura1,2, Masafumi J01, Takeshi Iwai3, Toshito Morita3, Mitsunori Kobu4, Takaharu Tashiro4, Ryuichi Kamiura5, Yamato Osada5, Hideki Takagi5, Hideki Hirayama1
1-RIKEN, 2-1 Hiroswa Wako, Saitama 351-0198, Japan, 2-Marubun Corporation, 8-1 Oodenma-cho, Nihonbash, Chuo Ward, Tokyo, 100-8577, Japan, 3-Tokyo Ohka Kogyo Co., Ltd. 150 Nakamaruko, Nakahara, Kawasaki, Kanagawa 211-0012, Japan, 4-Toshiba Machine Co., Ltd. 2068-3, Ohoka, Numadu, Shizuoka 410-8510, Japan, 5-ULVAC, Inc. 2500, Hagizono, Chigasaki, Kanagawa 253-8543, Japan 6-AIST, Tsukuba-East, Namik1-2-1, Tsukuba, Ibaraki 305-8564, Japan

18:00 Homoepitaxial GaN growth by halogen-free vapor phase epitaxy on native GaN substrates
T. Kimura, K. Horibuchi, K. Kataoka, and D. Nakamura
Toyota central R&D labs., inc.

18:00 InGaN Resonant Cavity Light Emitting Diode with an embedded Porous-GaN Distributed Bragg Reflector
Chia-Feng Lin1, Tsung-Lian Tsai1, Jung Han2
1) Department of Materials Science and Engineering, National Chung Hsing University, 145 Xingda Rd., South Dist., Taichung City 402, Taiwan. 2) Department of Electrical Engineering, Yale University, 15 Prospect Street, New Haven, Connecticut 06511, United States
Analysis of the radial growth of GaN nanowires for the fabrication of homogeneous multi-shell nanowire heterostructures

D. van Treeck, O. Brandt, L. Geelhaar, S. Fernández-Garrido
Paul-Drude-Institut für Festkörperelektronik, Hausvogteiplatz 5-7, 10117 Berlin, Germany

Determination of Partial Ordering in Pseudomorphic AlGaN Films Grown on AlN Single Crystals

Milena B. Graziano (1), Randy P. Tompkins (1), Kenneth A. Jones (1)
(1) - Sensors and Electron Device Directorate, Army Research Laboratory, 2800 Powder Mill Rd., Adelphi, Maryland 20783

First demonstration of lateral thin-film flip-chip ultraviolet light emitting diodes grown on SiC

Burhan SaifAddin, Humberto Foronda, Abdullah Almogbel, Chris Zollner, M.E.A. Samsudin, Michael Iza, Shuji Nakamura, Steven P. DenBaars, James S. Speck
Materials Department, UCSB, CA 93106, USA. Department of Electrical and Computer Engineering, UCSB, CA 93106, USA.
Wednesday
Program

- A - Materials
- B - Optical devices
- C - Electronic devices
- D - Other devices
- E - Theory-basics
- F - Nano
parallel sessions
8:30 - 10:00

Molecular Beam Epitaxy : Fabrice Semond

08:30 **Role of MBE in the Development of GaN Optoelectronics**
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James S. Speck
Materials Department, University of California, Santa Barbara, CA 93106 USA

09:00 **Germanium vs. silicon doping of GaN/AlN quantum wells and nanowire heterostructures for intersubband optoelectronics at 1.55 µm**
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Akhil Ajay, Caroline B. Lim, David A. Browne, Jakub Polaczynski, Joel Bleuse, Edith Bellet-Amalric, Martien I. den Hertog, Eva Monroy
University Grenoble-Alpes, CEA-INAC-PHELIQS and CNRS-Institut Néel, 38000 Grenoble, France

09:15 **Morphology control of GaN nanowires: from needles to nanoparasols**
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Xin Zhang [1, 2, 5], B. Haas [1,3], M. Gruart [1,2], A. M. Siladie [1,2], E. Robin [1,3], C. Bougerol [1,4], J.L. Rouvière [1,3] and B. Daudin [1,2]
[1] Univ. Grenoble Alpes, 38000 Grenoble, France  
[2] CEA, INAC-PHELIQS «Nanophysics and semiconductors» group, F-38000 Grenoble, France  
[3] CEA, INAC-MEM, F-38000 Grenoble, France  
[4] CNRS, Inst. NEEL, F-38042 Grenoble, France  
[5] ALEDIA, 17 rue des martyrs, Bât. M23, 38054 Grenoble Cedex 9, France

09:30 **Monolayer-thick GaN/(Al,Ga)N quantum wells grown by plasma-assisted molecular beam epitaxy for UV emitters in spectral range of**
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V.N. Jmerik1, D.V. Nechaev1, A.A. Toropov1, E.A. Evropeytsev1, V.I. Kozlovsky2,3, D.E. Sviridov2, S. Rouvimov4, and S.V. Ivanov1
1Ioffe Institute, Polytechnicheskaya 26, St. Petersburg 194021, Russia, 2 Lebedev Physical Institute, Leninsky ave.53, Moscow 119991, Russia, 3 National Research Nuclear University MEPhI, Moscow 115409, Russia, 4 University of Notre Dame, Notre Dame, Indiana 46556, USA

09:45 **In-situ X-ray Reciprocal Space Mapping Measurements in GaInN growth on GaN and InN by RF-MBE**
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T. Yamaguchi1, T. Sasaki2, M. Takahashi2, T. Onuma1, T. Honda1, Y. Nanishi3
[1] Department of Applied Physics, Kogakuin University, Hachioji, Tokyo, Japan, 2 Synchrotron Radiation Research Center, National Institutes for Quantum and Radiological Science and Technology, Sayo-cho, Hyogo, Japan, 3 Department of Electrical and Electronic Engineering, Ritsumeikan University, Kusatsu, Shiga, Japan

10:00 Coffee break

Lasers : Thomas Wunderer

08:30 **Watt-class Green (530 nm) and Blue (462 nm) Laser Diodes**
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Masahiro Murayama (a), Yusuke Nakayama (a), Kenji Yamazaki (a), Yukio Hoshina (a), Hideki Watanabe (a), Noriyuki Fuutagawa (a), Hidekazu Kawanishi (a), Toshiya Uemura (b), and Hironobu Narui (a)
(a) Sony Corporation, Japan, (b) Toyoda Gosei Co., Ltd., Japan

09:00 **Status, Applications and Future Perspectives of Visible InGaN Lasers**
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Harald König
Osram Opto Semiconductors GmbH
09:30 Green laser diodes with low threshold current density via interface engineering of InGaN/GaN quantum well active region
Jianping Liu, Aiqin Tian, Liqun Zhang, Zengcheng Li, Masao Ikeda, Shuming Zhang, Deyao Li, Pengyan Wen, Feng Zhang, Yang Cheng, Xiaowang Fan and Hui Yang
Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Science, University of Chinese Academy of Sciences, Suzhou 215123, People’s Republic of China

09:45 Optoelectrical properties of (Al,In)GaN optical amplifiers
S. Stanczyk1, A. Kafar1, A. Nowakowska-Swińska2, I. Makarowa2, M. Sarzynski1 2, T. Suski1, P. Perlin1 2
1Institute of High Pressure Physics PAS, Al. Prymasa Tysiąclecia 98, 01-142 Warsaw, Poland, 2TopGAN Ltd., ul. Sokolowska 29/37, 01-142 Warsaw, Poland

10:00 Coffee break
Doping, defects: Kazunobu Kojima

08:30 Carrier Transport and Impurity Modeling in III-nitride LEDs
Bernd Witzigmann, Friedhard Römer
University of Kassel and CINsaT, Electrical Engineering and Computer Science Department Kassel, Germany

09:00 Unconventional electronic complexes in highly doped GaN:Ge
A. Hoffmann1, G. Callsen1, C. Nenstiel1, F. Nippert1, T. Kure1, S. Schlichting1, N. Jankowski1, M. R. Wagner1, M. P. Hoffmann2, S. Fritz2, A. Dadgar2, A. Krost2, F. Bechstedt3
1Institut für Festkörperphysik, Technische Universität Berlin, Berlin, Germany, 2Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany, 3Institut für Festkörpertheorie und -optik, Friedrich-Schiller-Universität, Jena, Germany.

09:15 First principles investigation of defect equilibria in AlN
Douglas L. Irving1, Joshua S. Harris1, Jonathon N. Baker1, Kelsey J. Mirrielees1, Brian D. Behrhorst1, Dorian Alden1, Ronny Kirste2, James Tweedie2, Ramón Collazo1, Zlatko Silar1
1Department of MSE, North Carolina State University, Raleigh, NC USA, 2Ardoit Materials Inc., Cary, NC USA

09:30 Ab initio direct slab calculations of polarization in nitrides - the model and experimental verification
Pawel Strak1, Pawel Kempisty1 2, Konrad Sakowski1, Agata Kaminska2,3, Dawid Jankowski2, Krzysztof P. Korona4, Kamil Sobczak2, Jolanta Borysiuk2,4, Mark Beeler5, Ewa Grzanka1,6, Eva Monroy5 and Stanislaw Krukowie1
1) Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland 2) Institute of Physics, Polish Academy of Sciences, Al. Lotników 32/46, 01-142 Warsaw, Poland 3) Cardinal Stefan Wyszyński University, College of Science, Department of Mathematics and Natural Sciences, Dewajtis 5, 01-815 Warsaw, Poland 4) Faculty of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw, Poland 5) CEA Grenoble, INAC-SP2M, 17 av. des Martyrs, 38000 Grenoble, France 6) TopGAN Ltd. Sokolowska 29/37, 01-142 Warsaw, Poland 7) Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya 464-8603, Japan

09:45 Lattice location of Mg in GaN of different doping types: direct evidence for amphoteric nature of Mg
1Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, 2695-066, Bobadela LRS, Portugal, 2KU Leuven, Instituut voor Kern- en Stralingsfysica, 3001 Leuven, Belgium, 3Centro de Física Nuclear da Universidade de Lisboa, Lisboa, 1649-003 Lisboa, Portugal, 4Cambridge Centre for Gallium Nitride, University of Cambridge, Cambridge CB3 0FS, U.K.

10:00 Coffee break
08:30 3D GaN architectures: from core-shell LEDs to a defect free multipurpose material platform
A. Waag (a,d,e), J. Hartmann (a,d), H. Zhou (a), S. Fündling (a,d), H.-H. Wehmann (a,d), F. Steib (a,d), H.S. Wasisto (a,e), M. Müller (b), P. Veit (b), F. Bertram (b), J. Christen (b), T. Schimpke (c), M. Mandl (c), A. Avramescu (c), I. Stoll (c), M. Strassburg (c), H.-J. Lugauer (c)

a) Inst. of Semiconductor Technology, Braunschweig University of Technology, Germany, b) Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany, c) Osram Opto Semiconductors GmbH, Regensburg, Germany, d) Epitaxy Competence Center, Braunschweig, Germany, e) Laboratory of Emerging Nanometrology, Braunschweig, Germany

09:00 Nanowires, Nanosheets, and Beyond: Three-Dimensional, High Aspect Ratio Nanostructures by Top-Down Etching of GaN
George T. Wang1, Benjamin Leung1, Miao-Chan Tsai2, Changyi Li2, Ganesh Balakrishnan1
1 Sandia National Laboratories, Albuquerque, New Mexico 87185, USA, 2 Center for High Technology Materials, University of New Mexico, Albuquerque, NM, 87106, USA

09:30 Reduction of Dislocation in GaN on Silicon Substrate Using In-situ Etching
Koji Matsumoto 1, 2, Toshiaki Ono 1, Yoshio Honda 3, Tetsuya Yamamoto 2, Shigeyoshi Usami 2, Maki Kusimoto 2, Satoshi Murakami 1, Hiroshi Amano 3 4 5
1 SUMCO Corporation, 2 Department of Electrical Engineering and Computer Science, Nagoya University, 3 Institute of Materials and Systems for Sustainability, Nagoya University, 4 Venture Business Laboratory (VBL), Nagoya University, 5 Akasaka Research Center, Nagoya University

09:45 Unidirectional Emission of Single Quantum Dot Formed on Site-Controlled Inverted Pyramid Structure
Sejeong Kim, Su-Hyun Gong, Jong-Hoi Cho, Yong-Hoon Cho
Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

10:00 Coffee break

Parallel sessions
10:30 - 12:15

Characterization: Martin Albrecht

10:30 Atom probe tomography nanometer scale characterization of alloy fluctuations in ternary nitrides
Bastien Bonef1, Micha N Fireman1, Richard Cramer1, Marco Piccardo2, Yuh-Renn Wu3, Claude Weisbuch1,2, James S Speck1
1Materials Department, University of California, Santa Barbara, California 93106, USA, 2Laboratoire de Physique de la Matière Condensée, École Polytechnique, CNRS, Université Paris Saclay, 91128 Palaiseau Cedex, France, 3Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taipei 10617, Taiwan
**11:00 Novel SEM techniques for rapid structural characterisation of III-N films**

C. Trager-Cowan [1], G. Naresh-Kumar [1], M. Nouf-Allehiani [1], J. Bruckbauer [1], G. Kusch [1], P. R. Edwards [1], C. Brasser [1], E. Pascal [1], S. Vespucci [1], S. Kraeuse [1], B. Hournahine [1], R. W. Martin [1], Y. Zhang [2], M. Athanasiou [2], Y. Gong [2], J. Bai [2], K. Xing [2], X. Yu [2], B. Xu [2], Z. Li [2], Y. Hou [2], R. M. Smith [2], T. Wang [2], E. Le. Boulbar [3], J. Priors [3], D. W. E. Alssop [3], P.A. Shields [3], F. Menhke [4], T. Werner [4], C. Kuhn [4], J. Ensslin [4], M. Kneissel [4,5], A. Knauer [5], V. Kueller [5], M. Weyers [5], A. Winkelmann [6], A. Vilalta-Clemente [7], A. J. Wilkinson [7]


**11:30 Three-dimensional analysis of threading dislocation in HVPE-grown GaN using two-photon-excitation photoluminescence spectroscopy**

Tomoyuki Tanikawa, Kazuki Ohnishi, Masaya Kanoh, Takashi Mukai, and Takashi Matsuoka

Institute for Materials Research, Tohoku University, Nichia Corporation

**11:45 Mg dopant analysis in (Al)GaN by atom probe tomography and off-axis electron holography**

Catherine Bougerol1-2, Lynda Amichi1-3, Isabelle Mouton1-4, David Cooper1-4, Philippe Vennegrès5, Philippe De Mierry5, Amélie Dussaigne1-4, Pierre-Henri Jouneau1-3, Adeline Grenier1-4

1 Univ. Grenoble Alpes, F-38000 Grenoble, France , 2 CNRS, Inst. NEEL, F-38042 Grenoble, France , 3 CEA-INAC, F-38054 Grenoble, France , 4 CEA-LETI, F-38054 Grenoble, France , 5 Université Côte d’Azur, CRHEA, Rue Bernard Grégory, 06560 Valbonne, France

**12:00 Point defect reduction in MOCVD AlGaN by chemical potential and defect quasi Fermi level control**

Ramon Collazo [1], Pramod Reddy [1,2], Shun Washiyama [1], Felix Kaess [1], Ronny Kiste [2], Seiji Mita [2], James Tweedie [2], Michael Gerhold [3] and Zlatko Sitar [1]


**12:15 Lunch**

Lasers and optical properties : Gwénoëlé jacopin

**10:30 III-Nitride Laser Diode Directly Grown on Si**

Qian Sun, Meixin Feng, Zengcheng Li, Yu Zhou, Jianping Liu, Liqun Zhang, Deyao Li, Shuming Zhang, Hui Yang

Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou 215123, China, Key Laboratory of Nano-devices and Applications, Chinese Academy of Sciences (CAS), Suzhou 215123, China

**11:00 A way to achieve more than 90% of the overlap integral of electron and hole wavefunctions in high AlN mole fraction AlGaN MQWs**

Shigeufusa F. Chichibu[1], Kazunobu Kojima[1], Kentaro Furusawa[1], Yoshiki Yamazaki[1], Kazumasa Hiramatsu[2], and Hideto Miyake[2,3]

1 Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Katahira, Aoba, Sendai 980-8577, Japan, 2 Department of Electrical and Electronic Engineering, Mie University, Tsu, Mie, Japan, 3 Graduate School of Regional Innovation Studies, Mie University, Tsu, Mie, Japan
11:15 Proposal of AlGaN-based uneven multiple quantum well with high internal quantum efficiency grown on macrosteps

Akira Hirano1, Michiko Kaneda1, Yusuke Nagaasawa1, Masamichi Ipponmatsu1, Yoshih Honda2, Hiroshi Amano2,3,4, and Isamu Akasaki3,5


11:30 Highly polarised electrically driven single photon emission from a non-polar InGaN quantum dot

C. C. Kocher1, T. J. Puchtler1, J. C. Jarman2, T. Zhu2, R. A. Oliver2, R. A. Taylor1

1 Department of Physics, University of Oxford, Parks Road, Oxford, OX1 3PU, UK. 2 Department of Material Science, University of Cambridge, Pembroke Street, Cambridge CB2 3QZ, UK.

11:45 Dominance of Radiative Recombination under Electron-beam Excitation of AlGaN MQW's

Noble Johnson (presenting author)1, Thomas Wunderer1, Jorg Jeschke1, Farsane Tabataba-Vakili1, Michael Kneissl1, Zhihong Yang1, Mark Teepe1, Max Batres1, Martin Feneberg2, Bernard Vancil3

1PARC, a Xerox Company, Palo Alto, CA 94304 USA, 2Institut für Experimentelle Physik, Otto-von-Guericke-Universität, Magdeburg 39106, Germany, 3e beam Inc., Beaverton, OR 97007 USA

12:00 Polarization Fields in AlGaN Multiple Quantum Wells

Qiang Guo, Ronny Kirste, Seiji Mita, Pramod Reddy, Ramón Collazo, and Zlatko Sitar

Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC 27695, USA, Adroit Materials, 2054 Kildaire Farm Rd, Cary, NC 27518, USA

Power : Mike Uren

10:30 High speed GaN HEMT for power electronics

Y. Miyamoto1,2), D. Nakajun1), R. F. T. Fathulah1), H. Fujita1), and E. Yagyu3)

1) Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Meguro, Tokyo 152-8552, Japan, 2) Center for Integrated Research of Future Electronics, Institute of Materials and Systems for Sustainability, Nagoya University, Chikusa, Nagoya 464-8601, Japan, 3) Advanced Technology R&D Center, Mitsubishi Electric Corporation, Amagasaki, Hyogo 661-8661, Japan

11:00 Dynamic ON-Resistance Characteristics of N-polar GaN HEMTs Exhibiting Breakdown Voltage Over 1400 V

Onur S. Koksaldı, Jeffrey Haller, Haoran Li, Brian Romanczyk, Steven Wienecke, Matthew Guidry, Stacia Keller, Umesh K. Mishra

1, 2, 3, 4, 5, 6, 7, 1 - University of California Santa Barbara, Santa Barbara, CA 93106, USA 2 - PowerAmerica Institute, 930 Main Campus Dr, Ste 200, Raleigh, NC 27609, USA 3 - Transphorm Inc., 115 Castilian Dr, Goleta, CA 93117, USA

11:15 Substrate grounded GaN-on-Si HEMTs with record vertical breakdown above 2 kV

Ezgi Dogmus, Astrid Linge, Malek Zegaoui and Farid Medjdoub

IEMN, Institute of Electronics, Microelectronics and Nanotechnology, Av. Poincaré, 59650 Villeneuve d’Ascq, France

11:30 Nearly lattice-matched InAlN/AlGaN 2DEG heterostructures and field-effect transistors for high power applications

Makoto Miyoshi, Daiki Hosomi, Mayuko Okada, Riku Nakashima, Joseph J. Freedman, and Takashi Egawa

Nagoya Institute of Technology
11:45 MOCD Growth and Characterization of 200 V E-mode p-GaN HEMTs on 200 mm GaN-on-SOI for Monolithic Integration
Ming Zhao1, Karen Geens1, Xiangdong Li1,2, Marleen Van Hove1, Vesa-Pekka Lempinen3, Jaakko Sormunen3, Robert Langer1, Stefaan Decoutere1
1imec, Kapeldreef 75, 3001 Leuven, Belgium, 2Department of Electrical Engineering (ESAT), KU Leuven, 3001 Leuven, Belgium, 3Okmetic Oy, P.O. Box 44, FI-01301, Vantaa, Finland

12:00 Essential strategies for the realization of monolithically integrated half-bridges operating at 3 MHz using
Patrick Waltereit, Richard Reiner, Beatrix Weiss, Matthias Wespel, Stefan Müller, Dirk Meder, Rüdiger Quay
Fraunhofer IAF Tullastrasse 72 79108 Freiburg Germany

12:15 Lunch

Nano : Christophe Durand

10:30 Selective area sublimation: a top-down approach for the fabrication of InGaN/GaN nanostructures
B. Damilano, S. Vézian, M. Portail, B. Altoing, J. Brault, A. Courville, V. Brändli, M. Leroux, J. Massies
Université Côte d’Azur, CRHEA-CNRS, France

11:00 Self-assembled growth of GaN nanowires in plasma-assisted molecular beam epitaxy: from dense to sparse nanowire ensembles
S. Fernández-Garrido1, D. van Treeck1, G. Calabrese1, Z. S. Schieber2, V. M. Kaganer1, G. Gao1, X. Kong1, J. Goertz1, C. Hauswald1, P. Corfdir1, B. Jenichen1, J. H. da Silva2, A. Trampert1, O. Brandt1 and L. Geelhaar1
1Paul-Drude-Institut für Festkörperphysik, Hausvogteiplatz 5-7, 10117 Berlin, Germany, 2Laboratorio de Films Semiconductores, Universidade Estadual Paulista Bauru, 17033-360 Sao Paulo, Brazil

11:30 Internal structural and optical properties characterization of InGaN/GaN core-shell microLEDs grown by selective area MOVPE
Hao Zhou1, Jana Hartmann1,2, Angelina Vogt1, Johannes Ledi1,2, Felix Blumenröther1, Heiko Bremers3, Sonia Estrade4, Tilman Schimpe5, Adrian Avramescu5, Sönke Fördling1,2, Hergo-Heinrich Wehmann1,2, Andreas Hangleiter3, Francesca Paier3, Martin Straußburger5, Tobias Voss1 and Andreas Waag1,2
1. Institut of Semiconductor Technology and Laboratory for Emerging Nanometrology, Technische Universität Braunschweig, 38092 Braunschweig, Germany, 2. epitaxy competence center ec2, Hans-Sommer-Straße 66, 38106 Braunschweig, Germany, 3. Institute of Applied Physics, Technische Universität Braunschweig, 38192 Braunschweig, Germany, 4. LENS-MIND-IN2UB, Department of Electronics, Universitat de Barcelona, C. Martí Franquès 1, Barcelona 08028, Spain. 5. Osram Opto Semiconductors GmbH, Leibnizstraße 4, 93055 Regensburg, Germany.

11:45 Kelvin probe force microscopy study of polarity and doping in III-Nitrides nanowires

12:00 InGaN Quantum Dots by Quantum Size Controlled Photoelectrochemical Etching
George T. Wang, Benjamin Leung, Xiaoyin Xiao, Arthur J. Fischer, Daniel D. Koleske, Ping Lu, Philip R. Miller, Miao-Chan Tsai, Michael E. Coltrin, Jeffrey Y. Tsao
Sandia National Laboratories

12:15 Lunch
## Parallel Sessions 13:45 - 15:45

### InN and InGaN: Peter Parbrook

**13:45** Advanced microscopy of InGaN/GaN heterostructures  
Department of Materials Science and Metallurgy, University of Cambridge, Cambridge CB3 0FS, U.K., Department of Materials, University of Oxford, Oxford OX1 3PH, U.K., Department of Electrical Engineering and Automation, Aalto University, Espoo 02150, Finland, Experimental Techniques Centre, Brunel University, Uxbridge UB8 3PH, U.K., School of Physics and Astronomy, Photon Science Institute, Alan Turing Building, University of Manchester, Manchester M13 9PL, U.K., Photonics Theory Group, Tyndall National Institute, Dyke Parade, Cork, Ireland, Gatan U.K., 25 Nuffield Way, Abingdon, Oxon OX14 1RL, U.K.,

**14:15** Enhanced indium incorporation into N-polar (In,Ga)N films grown on relaxed InGaN pseudo-substrates  
Cory Lund1, Karine Hestroffer1, Nirupam Hatui1, Shuji Nakamura2, Steven P. DenBaars2, Umesh K. Mishra1, Stacia Keller1  
1Electrical & Computer Engineering Department, University of California, Santa Barbara, CA 93106, USA, 2Materials Department, University of California, Santa Barbara, CA 93106, USA

### 14:30 Localization effects in InGaN/GaN heterostructures evidenced by scanning tunneling luminescence spectroscopy

P. Polovodov (1), W. Hahn (1), J. S. Speck (2), A. Alhassan (2), J.-M. Lentati (1), M. Filoche (1), L. Martinelli (1), C. Weisbuch (1,2), Y. Lassailly (1) and J. Peretti(1).  
1- Laboratoire de Physique de la Matière Condensée, CNRS-Ecole Polytechnique, Université Paris-Saclay, 91128 Palaiseau, France 2- Department of Materials, University of California, Santa Barbara, California 93106, USA

### 14:30 Fine structural characterizations in green emitting full InGaN structures grown on relaxed InGaN pseudo-substrate

Armelle Even1, Adeline Grenier1, David Cooper1, Eric Robin2, Benedikt Haas2, Pierre Ferret1, François Lévy1, Ivan-Christophe Robin1, Amélie Dussaigne1  
1CEA-Leti, 2CEA-INAC

### 14:30 Peculiarities in growth of InN/GaN Short Period Superlattices by Plasma Assisted MBE

P. Wolny,1 M. Sawicka,2,4 H. Turski,2 G. Muziol,2 M. Siekacz,2,4 M. Anikeeva,3 T. Schulz,3 M. Albrecht,3 and C. Skierbiszewski,2,4  
1. Paul-Drude-Institut für Festkörperelektronik, Hausvogteiplatz 5-7, 10117 Berlin, Germany 2. Institute of High Pressure Physics, PAS, Sokolska 29/37, 01-142 Warsaw, Poland 3. Leibniz-Institute for Crystal Growth, Max-Born-Str. 2 12489 Berlin, Germany 4. TopGaN, Sokolowska 29/37, 01-142 Warsaw, Poland

### 15:00 Kinetics of InN Films Growth by Atomic Layer Epitaxy at Low Temperatures (Tg < 250 °C)

N. Nepal1, V.R. Anderson2, S.D. Johnson1, S.G. Rosenberg2, A.C. Kozen2, C. Wagenbach3, D.J. Meyer1, B.P. Downey1, J.K. Hite1, V.D. Wheeler1, Z.R. Robinson4, D. R. Bons1, S. G. Walton1, K.F. Ludwig3, and C.R. Eddy, Jr1  
1U.S. Naval Research Laboratory, 4555 Overlook Avenue SW, Washington, DC 20375, USA 2Postdoctoral Fellow, ASEE, 1816 N Street NW, Washington, DC 20036 3Physics Department, Boston University, Boston, Massachusetts 02215, USA 4Department of Physics, SUNY College at Brockport, Brockport, NY 14420, USA
Small Inhomogeneous Linewidth Broadening of an InGaN/GaN Single Quantum-Dot Formed on a Nano-Pyramid Structure

Jong-Hoi Cho, Y. M. Kim, Hwan-Seop Yeo, Seung-Hyuk Lim, Sejeong Kim, Su-Hyun Gong, Yong-Hoon Cho

Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea.

Coffee break

Vertical lasers: Raphael Butte

GaInN vertical-cavity surface-emitting lasers with AlInN/GaN DBRs

Tetsuya Takeuchi, Satoshi Kamiyama, Motoaki Iwaya, Isamu Akasaki

Meijo University, Nagoya University

AlGaN based Optically Pumped Vertical Cavity Surface Emitter Laser Heterostructure in Sub 250 nm Deep Ultra Violet Range

T. Detchprohm1, Y. Park1, K. Mehta1, S. Wang2, O. Moreno1, Y.-S. Liu1, S.-C. Shen1, P.D. Yoder1, F. Ponce2, R.D. Dupuis1

1Georgia Institute of Technology, 2Arizona State University

Vertical-cavity surface-emitting lasers emitting in the ‘green gap’

Yang Mei1, Guoen Weng1,2, Leiying Ying1, Rongbin Xu1, Zhiwei Zheng1, Werner Hofmann1, Jianping Liu3, Hui Yang3, and Baoping Zhang1*

1. Department of Electronic Engineering, Optoelectronics Engineering Research Center, Xiamen University, Xiamen 361005, China 2. Department of Electronic Engineering, East China Normal University, Shanghai 200062, China 3. Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou 215123, China *E-mail:bzhang@xmu.edu.cn
14:15 III-Nitride Vertical Devices for High Frequency Electronics

Choong Hee Lee, Zhichao Yang, Yuwei Zhang, Edwin Lee, Sriram Krishnamoorthy, Siddharth Rajan
Electrical and Computer Engineering, The Ohio State University

14:45 Impact of plasma-damaged-layer removal on GaN HEMT devices

Masako Kodera 1, Akira Yoshioka 1, Toru Sugiyama 1, Tatsuya Oghuro 1, Takeshi Hamamoto 1, Naoto Miyashita 1, Koji Kanomaru 2, Miki Yumoto 3, Masahiro Koyama 3, Zhang Xinyu, Steve Lester, Tatsuyoshi Kawamoto 4, Tatsuya Yamanaka 4
1 Advanced Discrete Development Center, Toshiba Corp., 2 Corporate Manufacturing Engineering Center, Toshiba Corp., 3 Research and Development Center, Toshiba Corp., 4 Yokkaichi Research Center, JSR Corp.

15:00 Nanoscale AlGaN/GaN in-plane gate field effect transistors

Giovanni Santoruvo, Elison Matioli
Ecole Polytechnique Fédérale de Lausanne, Switzerland

15:15 Superconducting and Metallic epitaxial Nb2N thin films grown by MBE on SiC substrates and integrated with GaN HEMTs

John Wright1, Rusen Yan1, Suresh Vishwanath1, Guru Bahadur Singh Khalsa1, Yimo Han1, Ed Lochock1, Scott Katzer2, Neeraj Nepal2, Brian Downey2, Kyle Shen1, David Muller1, David Meyer2, Huili Grace Xing1, and Debdeep Jena1
1Cornell University 2Naval Research Laboratory

15:30 Vertical GaN nanowire-based transistors: an outlook for 3D logic stacking

Feng Yu 1/2, Klaas Strempel 1/2, Muhammad Fahlesa Fatahlah 1/2, Andrey Bakin 1/2, Friedhard Römer 3, Bernd Witzigmann 3, Tilman Schimpke 4, Martin Strassburg 4, Hutomo Suryo Wasisto 1/2, Andreas Waag 1/2
1 Institut für Halbleitertechnik (IHT), Technische Universität Braunschweig, Hans-Sommer-Str. 66, D-38106 Braunschweig, Germany 2 Laboratory for Emerging Nanometrology (LENA), Technische Universität Braunschweig, Langer Kamp 6a, D-38106 Braunschweig, Germany 3 Computational Electronics and Photonics (CEP), University of Kassel, Wilhelmshöher Allee 71, D-34121 Kassel, Germany 4 OSRAM Opto Semiconductors GmbH, Leibnizstraße 4, 90055 Regensburg, Germany

15:45 Coffee break

Nano : Hans-Jürgen Lugauer

13:45 Visualization of Axial p-n Junction on Single GaN Nanowire

Zhihua Fang 1,2,3, Fabrice Donatini 1,2, Bruno Daudin 1,3, Julien Pernot 1,2,4
1 Univ. Grenoble Alpes, F-38000 Grenoble, France 2 CNRS, Inst. NEEL, F-38042 Grenoble, France 3 CEA, INAC-SP2M, "Nanophysique et semiconducteurs” group, F-38000 Grenoble, France 4 Institut Universitaire de France, 103 boulevard Saint-Michel, F-75005 Paris, France

14:15 Microscopic study of the efficiency and optical polarization of core-shell InGaN/GaN microrods

Ines Trenkmann1, Christian Mounir2, Tilman Schimpke3, Georg Rossbach3, Adrian Avramescu3, Martin Strassburg3, Ulrich T. Schwarz1
1Experimental Sensor Science, Chemnitz University of Technology, Germany, 2Department of Microsystems Engineering, IMTEK, University of Freiburg, Germany, 3OSRAM opto Semiconductors GmbH, Regensburg, Germany
14:30  **Time-resolved cathodoluminescence of InGaN/GaN core-shell microwires**


1. Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland, 2. Department of Microsystems Engineering (IMTEK), University of Freiburg, Freiburg, Germany, 3. OSRAM Opto Semiconductors GmbH, Regensburg, Germany, 4. Institute of Physics, Technische Universität Chemnitz, Chemnitz, Germany

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14:45  **Growth of self-assembled AlN nanowires on SiO2/Si substrates**

Ž. Gačević,1 J. Grandal,2 S. Lazić,3 M. Varela2 and E. Calleja1

1 ISOM-ETSIT, Universidad Politécnica de Madrid, Avda. Complutense s/n, 28040 Madrid, Spain 2 ICTS Centro Nacional de Microscopía Electrónica, 28040 Madrid, Spain 3 Instituto Nicolás Cabrera and Instituto de Física de Materia Condensada (IFIMAC)

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15:00  **Impact of threading dislocations on the growth and optical properties of GaN/AlGaN quantum dots**

M. Korytov1, P. Vennéguès1*, S. Matta1, J. Brault1, and M. Kociak2

1 - Université Côte d’Azur, CNRS, CRHEA, 06560 Valbonne, France 2 - Laboratoire de Physique des Solides, Université Paris Sud, Orsay, France

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15:15  **III-nitride-based photovoltaic applications on silicon: Comparison between axial and core-shell InGaN nanowire devices**

Kaddour Lekhal1, Geoffrey Avit2, Si-Young Bae1, Ho-Jun Lee3, Barry I Oussman3, Elissa Roche2, Yamina André2, Yoshihito Honda1, Agnès Trassoudaine2, Hiroshi Amano1

1Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Aichi 464-8603, Japan, 2Université Clermont Auvergne, CNRS, SIGMA Clermont, Institut Pascal, F-63000 Clermont-Ferrand, France, 3Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Aichi 464-8603, Japan

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15:30  **Radial dopant segregation in Mg-doped GaN nanowires**

A.M. Siladie1*., L. Amichi1, N. Molland1, E. Robin1, C. Bougerol2, A. Grenier3, I. Mouton3, P.H. Jouneau1, A. Cros4, N. Garro4 and B. Daudin1

1 Univ. Grenoble Alpes,CEA,INAC, F-38000 Grenoble  2Univ. Grenoble Alpes,CNRS, Institut Néel, F-38000 Grenoble  3CEA-LETI, F-38054 Grenoble, France4 Institute of Materials Science (ICMUV), 4Universidad de Valencia, P.O. Box 22085, E-46071, Valencia, Spain

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**Characterization : Philippe Vennéguès**

16:15  **Mapping of atomic electric fields and charge densities by four-dimensional STEM**

Knut Müller-Caspary [1], M. Duchamp [2], F.F. Krause [3], A. Beche [1], F. Winkler [2], S. Löffler [4], M. Huth [5], S. Ihle [5], R. Ritz [5], H. Soltau [5], J. Zweck [6], P. Schattschneider [7], J. Verbeeck [1], S. van Aert [1], R.E. Dunin-Borkowski [2], A. Rosenauer [3]


16:45  **Isoelectronic doping of GaN by Indium: impurity band formation**

Gordon Callsen, Marina Castelli, Wei Liu, Gwénolé Jacopin, Shoijki Kanako, Sebastian P. Tamariz Kaufmann, Ian M. Rousseau, Camille Haller, Joachim Ciers, Pirouz Sohi, Denis Martin, Jean-François Carlin, Raphaël Butté, and Nicolas Grandjean

Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland
**17:00 Calcium impurity as non-radiative recombination center in (In,Ga)N grown by molecular beam epitaxy**

Erin C. Young[1], Thomas E. Mates[1], Christian Robertson[1], Saulius Marcinkevicius[2], Nicolas Grandjean[3], James S. Speck[1]


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**17:15 High electron concentrations in MOCVD-grown Si-doped dilute AlxGa1-xN on sapphire**

B. Monemar1, P. P. Paskov1, J. P. Bergman1, K. Takeda2, M. Iwaya2, T. Takeuchi2, S. Kamiyama2 and I. Akasaka2

1Department of Physics, Chemistry and Biology, IFM, Linköping University, S-58183 Linköping, Sweden, 2Faculty of Science and Technology, Meijo University, Nagoya 468-8502, Japan

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**17:30 Plasmonic properties of degenerately Ge-doped cubic GaN**

Elias Baron1, Martin Feneberg1, Rüdiger Goldhahn1, Michael Deppe2, and Donat J. Ass2

1Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Germany, 2Department Physik, Universität Paderborn, Germany

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**17:45 Nanoscale cathodoluminescence of a narrow band distributed Bragg reflector realized by GaN:Ge modulation doping**

Frank Bertram1, Andreas Voß1, Alexander Reuper1, Gordon Schmidt1, Peter Veit1, Sebastian Metzner1, Christoph Berger1, Jürgen Bläsing1, Armin Dadgar1, Emanuele Pollani2, Markus Wagner2, Janina Maultzsch2, André Strittmatter1, and Jürgen Christen1

1 Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Germany, 2 Institut für Festkörperphysik, Technische Universität Berlin, Germany, 3 Institut für Physik der Kondensierten Materie, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
17:15 Comparison of UV-C and blue emitting nitride-on-silicon microdisk lasers


1Laboratoire Charles Coulomb (L2C), UMR 5221, CNRS-Université de Montpellier, Montpellier, France 2Univ. Grenoble Alpes, F-38000 Grenoble, France et CEA, INAC-PHELIQS, “Nanophysique et Semi-conducteurs” group, F-38000 Grenoble, France 3Université Côte d’Azur, CRHEA-CNRS, rue Bernard Gréory, 06560 Valbonne-Sophia Antipolis, France 4Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris Sud, Université Paris-Saclay, Bâtiment 220, F-91045 Orsay, France

10.5

17:30 Synergistic Effect of In and Sb in Dilute-Antimonide InGaSbN Nanowire Heterostructures for Deep-visible Light Emitting Devices

Faqrul Alam Chowdhury (1), Renjie Wang (1), Ishiang Shih (1), Hong Guo (2), Zetian Mi (1,3)

(1) Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec H3A0E9, Canada, (2) Department of Physics, McGill University, Montreal, Quebec H3A0E9, Canada, (3) Department of Electrical Engineering and Computer Science, Centre for Photonics and Multiscale Nanomaterials, University of Michigan, Ann Arbor, MI 48105, USA.

17:45 Modified Shockley diode equation suitable for InGaN-based light-emitting diodes

Dong-Pyo Han, Jong-In Shim, Dong-Soo Shin, Tetsuya Takeuchi, Motoki Iwaya, Satoshi Kamiyama, Isamu Akasaki

Faculty of Science and Technology, Meijo University, Nagoya, Japan, Hanyang University, ERICA Campus, Ansan, Korea

10.6

17:15 Latest Progress in the Non-destructive Optical Characterization of III-N Electronic Devices

Martin Kuball

University of Bristol, Center for Device Thermography and Reliability, Bristol BS8 1TL, United Kingdom

10.7

17:30 PBTI and NBTI of Fully-recessed E-mode LPCVD-SiNx/GaN MIS-FETs with PECVD-SiNx Interfacial Protection Layer

Mengyuan Hua, Qingkai Qian, Jin Wei, Zhaofu Zhang, Gaofei Tang, and Kevin J. Chen

Department of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, China

16:15 Device characterization and reliability : Matteo Menneghini

16:45 Reliability physics of GaN HEMTs for power switching applications: role of the gate structure

Enrico Zanoni, Alessandro Barbato, Davide Bisi (*), Carlo De Santi, Fabiana Rampazzo, Isabella Rossetto, Maria Ruzzarin, Nicola Trivellin, Alessandro Chini (**), Giovanni Verzellesi, Gaudenzio Meneghesso, Matteo Menneghini

Department of Information Engineering, University of Padova, 1DEI, Via Gradenigo 6/B, 35131 Padova, Italy, phone: +39-049-827-7658, fax: +39-049-827-7699, e-mail: corresponding author enrico.zanoni@unipd.it (*) Davide Bisi is now with Transphorm, USA (**) Alessandro Chini and Giovanni Verzellesi are with the Department of Engineering&8220;.Enzo Ferrari&8221., University of Modena and Reggio Emilia

17:15 Design Principles for Suppression of Buffer Induced Current-Collapse in GaN Power HEMTs

Michael J Uren, Serge Karboyan, Martin Kuball

H H Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, UK

17:30 Reliability physics of GaN HEMTs for power switching applications: role of the gate structure

Enrico Zanoni, Alessandro Barbato, Davide Bisi (*), Carlo De Santi, Fabiana Rampazzo, Isabella Rossetto, Maria Ruzzarin, Nicola Trivellin, Alessandro Chini (**), Giovanni Verzellesi, Gaudenzio Meneghesso, Matteo Menneghini

Department of Information Engineering, University of Padova, 1DEI, Via Gradenigo 6/B, 35131 Padova, Italy, phone: +39-049-827-7658, fax: +39-049-827-7699, e-mail: corresponding author enrico.zanoni@unipd.it (*) Davide Bisi is now with Transphorm, USA (**) Alessandro Chini and Giovanni Verzellesi are with the Department of Engineering&8220;.Enzo Ferrari&8221., University of Modena and Reggio Emilia

17:30 PBTI and NBTI of Fully-recessed E-mode LPCVD-SiNx/GaN MIS-FETs with PECVD-SiNx Interfacial Protection Layer

Mengyuan Hua, Qingkai Qian, Jin Wei, Zhaofu Zhang, Gaofei Tang, and Kevin J. Chen

Department of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, China
17:45 Graphene-base Hot Electron Transistor with GaN emitter
Ahmad Zubair1, Amirhasan Nourbakhsh1, Jin-Yong Hong1, Meng Qi, Yi Song2, Debdeep Jena1, Jing Kong3, Mildred Dresselhaus1, Tomás Palacios1
1Massachusetts Institute of Technology, 2University of Notre Dame, 3Cornell University

poster sessions:

18:00 Development of a GaN epi-stack on 200mm Si (111) for Semi-vertical Power Devices
Hu Liang, Steve Stoffels, Karen Geens, and Stefaan Decoutere
imec vzw

18:00 Characterization of basal stacking faults of (11-22) GaN using X-ray scattering techniques
Markus Pristovsek1*, Martin Frentrup, Tongtong Zhu, Fengzai Tang, Rachel A. Oliver, Colin J. Humphreys
Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge, CB3 0FS, UK *1 current address: Center for Integrated Research for Future Electronics, Institute for Materials and Systems for Sustainability, Nagoya University, Furo-Cho, Chikusa-Ku, 464-8603 Nagoya, Japan

18:00 Optically Active Dilute-Antimonide GaSbN Nanowire Heterostructures for Visible Optoelectronic Devices
Faqrul Alam Chowdhury (1), Sharif Sedaf (1), Qing Shi (2), Ishiang Shih (1), Hong Guo (2), Zetian Mi (1,3).
(1) Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec H3A0E9, Canada, (2) Department of Physics, McGill University, Montreal, Quebec H3A0E9, Canada, (3) Department of Electrical Engineering and Computer Science, Centre for Photonics and Multiscale Nanomaterials, University of Michigan, Ann Arbor, MI 48105, USA.

18:00 Characteristics of hexagonal boron nitride buffer layer for the direct growth of III-Nitride materials using MOCVD
Min Han, Beo Deul Ryu, Kang Bok Ko, Chang Hee Jo, Yongsu Lim, Kwan Seon Joo, Do Trong Thanh, Tran Viet Cuong and Chang-Hee Hong
School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju, Jeollabuk-do 54896, Korea

A 2.1 Spontaneous strain accumulation and growth disruption in lattice matched InAl(Ga)N/GaN heterostructures
H. Ben Ammar1, R. Mohamad1, M. P. Chauvat1, A. Minj1, P. Gamarra2, C. Lacam2, M. Tordjman2, M. Morales1, Jun Chen1 and P. Ruterana1
1 Centre de Recherche sur les Ions, les Matériaux et la Photonique UMR 6252, CNRS ENSICAEN UCBN CEA, 6 Boulevard du Maréchal Juin, 14050 Caen Cedex, and Domaine Universitaire du Mont Foulon, 61000 Damigny, France 2 III-V Lab, 1 Avenue Augustin Fresnel, Campus Polytechnique, 91767 Palaiseau, France

A 2.2 Growth of Nitrides over graphene/SiC
B. Pécz1, I. Cora1, I. Lukacs1, A. Georgakilas2, A. Adikimenakis2 and R. Yakimova3
1 Institute of Technical Physics and Materials Sciences, MTA EK, Konkoly T. M. út 29-33, H-1121 Budapest, Hungary 2 Microelectronics Research Group, IESL, FORTH and Physics Department, University of Crete, P.O. Box 1527, GR-71110 Heraklion, Crete, Greece 3 Department of Physics Chemistry and Biology Linköping University S81 83 , Linköping , Sweden

A 2.3 Development of a GaN epi-stack on 200mm Si (111) for Semi-vertical Power Devices
Hu Liang, Steve Stoffels, Karen Geens, and Stefaan Decoutere
imec vzw

A 2.4 Characterization of basal stacking faults of (11-22) GaN using X-ray scattering techniques
Markus Pristovsek1*, Martin Frentrup, Tongtong Zhu, Fengzai Tang, Rachel A. Oliver, Colin J. Humphreys
Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge, CB3 0FS, UK *1 current address: Center for Integrated Research for Future Electronics, Institute for Materials and Systems for Sustainability, Nagoya University, Furo-Cho, Chikusa-Ku, 464-8603 Nagoya, Japan

A 2.5 Optically Active Dilute-Antimonide GaSbN Nanowire Heterostructures for Visible Optoelectronic Devices
Faqrul Alam Chowdhury (1), Sharif Sadaf (1), Qing Shi (2), Ishiang Shih (1), Hong Guo (2), Zetian Mi (1,3).
(1) Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec H3A0E9, Canada, (2) Department of Physics, McGill University, Montreal, Quebec H3A0E9, Canada, (3) Department of Electrical Engineering and Computer Science, Centre for Photonics and Multiscale Nanomaterials, University of Michigan, Ann Arbor, MI 48105, USA.

A 2.6 Characteristics of hexagonal boron nitride buffer layer for the direct growth of III-Nitride materials using MOCVD
Min Han, Beo Deul Ryu, Kang Bok Ko, Chang Hee Jo, Yongsu Lim, Kwan Seon Joo, Do Trong Thanh, Tran Viet Cuong and Chang-Hee Hong
School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju, Jeollabuk-do 54896, Korea
Investigation of the sputtered AlN films qualitative improvement process by high-temperature annealing
Shi-yu Xiao 1*, Yi-kang Liu 2, Hideto Miyake 1 2, Kazumasa Hiramatsu 2, Shunta Harada 3, Toru Ujihara 3
1. Graduate School of Regional Innovation Studies, Mie University, Tsu, Japan, 2. Department of Electrical and Electronics Engineering, Mie University, Tsu, Japan, 3. Department of Materials Science and Engineering and Center for Integrated Research of Future Electronics (CIRFE), Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, Furo-cho, Chikusa-ku, Nagoya, Japan

Crystalline quality improvement of sputtered AlN on sapphire substrates by high-temperature annealing
Yanan Guo1,2, Lu Zhao1,2, Yun Zhang1,2*, Shuo Zhang1,2, Kun Yang3, Jun Wang4, Boyu Dong4, Shuai Yang1,2, Yujie Ai1,2, Junxi Wang1,2 Jinmin Li1,2
1 Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China, 2 University of Chinese Academy of Sciences, Beijing 100049, China, 3 Hebei Sylight Crystal Co. Ltd., Baoding 071000, Hebei, China, 4 North Microelectronics, Beijing 100178, China

Polarity control at the GaN/ZnO interface
S. Q. Li1, H. Lei2, Y. Wang3, M. B. Ullah4, H. Morkoç4, P. A. van Aken3, J. Chen1 and P. Ruterana1
1 CIMAP, UMR 6252 CNRS, ENSICAEN, UCBN, CEA, 6 Boulevard du Maréchal Juin, 14050 Caen Cedex, France 2 Institute of Solid State Physics, Hefei Institutes of Physical Science, CAS, 350 Shushanhui Road, Hefei 230031, China 3 Max Planck Institute for Solid State Research, Heisenbergstrasse 1, 70569 Stuttgart, Germany 4 Department of Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, Virginia 23284, USA

Strain effects in the (In,Ga)N/GaN short-period superlattices on lattice-matched substrates grown by MBE
Mariia Anikeeva1, Tobias Schulz1, Tadeusz Suski2, Marcin Siekacz2,3, Thorsten Ernst3, Ewa Grzanka2,3, Grzegorz Staszczyk2,3, Czeslaw Skierbiszewski2,3, and Martin Albrecht1
1 Leibniz-Institute for Crystal Growth, Berlin, Germany, 2 Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland, 3 TopGaN Ltd, Warsaw, Poland

Influence of the electron beam on the initial stage of AlN formation in ammonia MBE
A.V.Rzhanov Institute of Semiconductor Physics of the Siberian Branch of the Russian Academy of Science, pr. Lavrentieva 13, Novosibirsk 630090, Russia

Defect reduction methods for heteroepitaxial semipolar GaN: a trip from mid 107cm-2 to mid 106cm-2 dislocation density
R. Mantach1,2, F. Tendille1, M. Khoury1,2, P. De Miery1, J. Zuniga-Perez1, G. Feuillet2, D. Martin3, N. Grandjean3, P. Vennéguès1
1 Université Côte d’Azur, CRHEA-CNRS, rue B. Grégoire, F-06560 Valbonne, France, 2 Université Grenoble Alpes, CEA, LETI, MINATEC Campus, F-38054 Grenoble, France, 3 Institute of Physics, EPFL, CH-1015 Lausanne, Switzerland

The structure of residual crystallographic defects in 4H SiC substrates for high performance InAlGaN/GaN HEMTs
M-P. Chauvat1, A. Minj1, P. Gamara2, C. Lacam2, S. Delage2, J. ul Hassan3, Ö. Daniëlssson3 and P. Ruterana1
1 Centre de Recherche sur les Ions, les Matériaux et la Photonique UMR 6252, CNRS ENSICAEN UCBN CEA, 6 Boulevard du Maréchal Juin, 14050 Caen Cedex, France 2 III-V Lab, 1 Avenue Augustin Fresnel, Campus Polytechnique, 91767 Palaiseau, France 3 Dept. of Physics, Chemistry and Biology, Linköping University, 581 83 Linköping, Sweden
18:00 Photoluminescence properties of polycrystalline zinc nitride thin films
A. Trapalis (1), J. Heffernan (1), I. Farrer (1), A. Kean (2,3), J. Sharman (2)
1 Department of Electronic and Electrical Engineering, University of Sheffield, Mappin Street, Sheffield S1 3JD, United Kingdom  2 Johnson Matthey, Blount’s Court, RG4 9NH, United Kingdom  3 NikaWorks Ltd, United Kingdom

18:00 Fast growth of smooth AlN in a 3x2” showerhead type vertical flow MOVPE reactor
V. Z. Zubialevich 1,* , P. Pampili 1,2, P. J. Parbrook 1,2
1 Tyndall National Institute, Dyke Parade, Cork City, Ireland, * E-mail: vitaly.zubialevich@tyndall.ie,  2 School of Engineering, University College Cork, Cork City, Ireland

18:00 Defect-free InGaN nanowires on silicon whatever the indium composition
Geoffrey Avit 1, Elissa Roche 1, Mohammed Zeghouane 1, Yamina André 1, Catherine Bougerol 2,3, Joël Leymarie 1, François Méard 1, Benjamin Damilano 4, Evelyne Gil 1, Dominique Castellucci 1 and Agnès Trassoudaine 1
1Université Clermont Auvergne, CNRS, SIGMA Clermont, Institut Pascal, F-63000 Clermont-Ferrand, France  2Univ. Grenoble Alpes, F-38000 Grenoble, France  3CNRS, Institut Néel, F-38042 Grenoble, France  4CRHEA, CNRS, Rue Bernard Gregory, F-06560 Valbonne, France

18:00 Thermal Stability of Bare and Capped GaN Under Moderate Nitrogen Pressures
Alan Jacobs(1), Boris N. Feigelzon(2), Jennifer K. Hite(2), Francis J. Kub(2)
(1)ASEE Postdoctoral Fellow at U.S. Naval Research Laboratory  (2)U.S. Naval Research Laboratory, 4555 Overlook Ave., SW, Washington, DC 20375, USA

18:00 Structural and optical properties in InGaN/GaN single quantum wells on GaN nanocolumns
Takao Oto 1, Yutaro Mizuno 1, Jun Yoshida 1, Ai Yanagihara 1, Rin Miyagawa 1, Kazuhiro Ema 1,2, and Katsumi Kishino 1,2
1. Department of Engineering and Applied Sciences, Sophia University, Japan, 2. Sophia nanotechnology Research Center, Sophia University, Japan

18:00 Biexciton emission from single quantum-confined structures in N-polar (000-1) InGaN/ GaN multiple quantum wells
Kengo Takamiya, Shuhei Yagi, Hiroyuki Yaguchi, Hidefumi Akiyama, Kanako Shoji, Tomoyuki Tanikawa, and Ryuji Katayama,
Saitama University, University of Tokyo, Tohoku University, Osaka University

18:00 Nitrogen-rich growth of Atomically Smooth N-polar GaN Layers by Plasma-assisted MBE
H. Turski, A. Feduniewicz-Żmuda, D. Jena, C. Skierbiszewski
Department of Electrical and Computer Engineering, Cornell University, Ithaca, NY 14853 USA, Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, Department of Electrical and Computer Engineering, Cornell University, Ithaca, NY 14853 USA, Department of Material Science and Engineering, Cornell University, Ithaca, NY 14853, USA, Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland

18:00 Study on the growth mechanism of In(Ga)N monolayer embedded in GaN
Zhaoying Chen1, Tao Wang1, Ping Wang1, Xiantong Zheng1, Tobias Schulz2, Martin Albrecht2, Bo Shen1, Xinqiang Wang1
1State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing, 100087, China.  2Leibniz-Institute for Crystal Growth, Berlin, Germany
18:00 Fabrication and characterization of AlGaN templates on annealed sputtering AlN layer

Junya Hakamata1, Yuta Kawase1, Sho Iwayama1, Motoaki Iwaya1, Tetsuya Takeuchi1, Satoshi Kamiyama1, Isamu Akasaki1,2, Hiakte Miyake3
1, Faculty of Science and Technology, Meijo University, Japan, 2, Akasaki Research Center, Nagoya University, Japan, 3, Graduate School of Regional Innovation Studies, Meio University, Japan

18:00 Polarity imaging of GaN nanowires grown by PA-MBE on various substrates at different growth conditions

Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

18:00 Optical gain of heavily silicon doped AlGaN:Si layers grown by ammonia MBE

Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences

18:00 Structural disturbances in GaN HEMT layers as source of leakage current, influencing device performance and reliability

S. Besendörfer1, E. Meissner2, S. Müller3, S. Breuer3, J. Friedrich2, L. Frey1
1, Chair of Electron Devices, Friedrich-Alexander-University of Erlangen-Nuremberg, Cauerstr. 6, 91058 Erlangen, Germany, 2, Fraunhofer Institute for Integrated Systems and Device Technology (IISB), Schottkystr. 10, 91058 Erlangen, Germany, 3, Fraunhofer Institute for Applied Solid State Physics (IAF), Tullastr. 72, 79108 Freiburg, Germany

18:00 Studies of Surface Structure and Surface Chemistry During Plasma-Assisted Atomic Layer Epitaxial Growth of InN Thin Films on GaN

Samatha G Rosenberg 1, Dan Pennachio 2, Virginia Anderson 1, Neeraj Nepal 3, Christa Wagenbach 4, Alexander C. Kozen 1, Zachary Robinson 5, John A. Logan 2, Sukgeun Choi 2, Jennifer Hite 3, Karl Ludwig 4, Chris J. Palmstrø 2, Charles R. Eddy, Jr. 3
ASEE, Washington DC (residing at NRL) 1, University California, Santa Barbara, Santa Barbara, CA 2, U.S. Naval Research Laboratory, Washington DC 3, Boston University, Physics Department, Boston, MA 4, SUNY Brockport, Brockport, NY 5

18:00 Effects of Ga supply on the growth of (11-22) AlN on m-plane (1-100) sapphire substrates

Masafumi Jo, Hideki Hirayama
RIKEN

18:00 Effect of nitrogen-doped carbon additives on the LPE-Growth of GaN single crystal using the Na flux method

Z. L. Liu(a), G. Q. Ren(a,b), X. J. Su(a), J. F. Wang(a,b), K. Xu(a,b)
(a) Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou 215123, People’s Republic of China, (b) Suzhou Nanowin Science and Technology Co., Ltd., Suzhou 215123, People’s Republic of China
Anharmonic decay of the E2g modes in layered BN
Ramon Cuscó, Guillaume Cassabois, Bernard Gil, and Luis Artús
(1) Institut Jaume Almera, Consejo Superior de Investigaciones Científicas (ICTJA-CSIC), 08028 Barcelona, Spain
(2) Laboratoire Charles Coulomb (L2C), UMR 5221 CNRS-Université de Montpellier, F-34095, Montpellier, France

Circular Ring Defects on In0.7Ga0.3N films Studied by Reflectance Difference Spectroscopy Microscope
Wei Huang, Yu Liu, Xiantong Zheng, Yuan Li, Qing Wu, Xinqiang Wang, Yonghai Chen
1. Key Laboratory of Semiconductor Materials Science, Institute of Semiconductors, CAS, Beijing, 100083, China 2. School of Physics, Peking University, Beijing, 100871, China

AlN Crystal Growth Using Vaporized Al from Ga-Al flux with Nitrogen Injection
Keigo Takahashi, Masayoshi Adachi, and Hiroyuki Fukuyama
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

Nanoscopic cathodoluminescence study of optical and structural properties of preferentially nucleated InGaN on GaN microrods
1. Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, 39106 Magdeburg, Germany

Surface and Bulk Electronic Structures of Mg-doped In0.7Ga0.3N Epilayer by Hard X-ray Photoelectron Spectroscopy
Masataka Imura, Shunsuke Tsuda, Takahiro Nagata, AnLi Yang, Yoshiyuki Yamashita, Hideki Yoshikawa, Keisuke Kobayashi, Yasuo Koide, Tomohiro Yamaguchi, Masamitsu Kaneko, Ke Wang, Tautou Araki, and Yasushi Nanishi
1. National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan 2. Synchrotron X-ray Station at SPring-8, NIMS, Ibaraki 319-1195, Japan
3. Faculty of Engineering, Tohoku University, 4-1-1 Katahira, Aoba-ku, Sendai 980-8577, Japan

Understanding the effect of stoichiometric variation on structural and electrical properties of InN thin films grown by PA-MBE
Kankat Ghosh, S. Bhunia, and Apurba Laha
1. Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India 2. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India.

Edge Dislocations Triggered Surface Instability in Tensile Epitaxial Hexagonal Nitride Semiconductor
Jianpeng Cheng, Xuelin Yang, and Bo Shen
School of Physics, Peking University, Beijing 100871, China
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<tr>
<td>18:00</td>
<td><strong>Margin-mask effect on NSAG for InGaN nanopyramids grown by MOCVD on AlN/Si(111) substrates</strong></td>
<td>Y. EL Gmili1, P. L. Bonanno1,2, S. Sundaram1, X. Li1, R. Puybaret3, G. Patriarche4, C. Pradalier3, J. Decobert5, P. L. Voss1,2, J.P. Salvestrini1,6, A. Ougazzaden1,2,*</td>
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<td><strong>Transient capacitance analysis of thin carbon-doped GaN layers</strong></td>
<td>Christian Koller1,3, Gregor Pobegen1, Clemens Ostermaier2, Martin Huber2, Dionyz Pogany3</td>
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<td><strong>Effects of Mask Patterns on Threading Dislocation Density during the Na-Flux GaN Growth on a Point Seed Technique</strong></td>
<td>Yuki Sawada1, Takumi Yamada1, Kousuke Murakami1, Masatomo Honjo1, Hiroki Imabayashi1, Keisuke Kakinouchi1, Kenta Harimiya1, Kousuke Nakamura1, Tomoko Kitamura1, Masayuki Imanishi1, Mamoru Imade1, Masashi Yoshimura2, Yusuke Mori1</td>
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<td><strong>Growth of highly homogeneous In-rich InGaN NW heterostructures by Plasma-Assisted MBE</strong></td>
<td>Martina Morassi1, L. Largeau1, F. Oehler1, L. Mancini1, V. Piazza1, L. Travers1, F.-H. Julien1, J.-C. Harmand1, M. Tchernycheva1, N. Gogneau1</td>
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<td>18:00</td>
<td><strong>Pressure Dependence of Band Gap in InGaN/GaN Short Period Superlattices Grown by Molecular Beam Epitaxy</strong></td>
<td>G. Staszczak1, I. Gorczyca1, M. Siekacz1, C. Skierbiszewski1,2, E. Grzanka1,2, J. Smalc-Koziorowska1,2, X. Q. Wang3, M. Anikeeva4, T. Schulz4, M. Albrecht4 and T. Suski1</td>
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<td><strong>Effect of gaseous carbon addition in GaN crystal growth by Na-flux method</strong></td>
<td>Naoki Takeda, Masayuki Murakami, Masatoshi Hayashi, Mamoru Imade, Masashi Yoshimura, Yusuke Mori</td>
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<td><strong>Microscopic structural and optical properties of AlGaN/AIn quantum discs embedded in nanowires correlated by cathodoluminescence</strong></td>
<td>B. Sheng1,2, F. Bertram2, P. Wang1, X. Sun1, M. Müller2, P. Veit2, T. Hempel2, J. Christen2 and X. Wang1</td>
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<td><strong>Study of HEMT capping layers, including GaN, SiN and a combination of these</strong></td>
<td>Matthew Charles, Yannick Baines, Renan Bousi, Anne-Marie Papon</td>
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1. CNRS, UMI 2958 GT - CNRS, 2 Rue Marconi, 57070 Metz, France, 2 School of Electrical and Computer Engineering, GIT, Atlanta, Georgia 30332-0250, USA, 3GT Lorraine, GT-CNRS, UML2958, 57070, Metz, France, 4 CNRS, UPR LPN, Route de Nozay, 91460 Marcoussis, France, 5 III-V Lab, joint laboratory between Nokia Bell Labs France, Thales Research and Technology, and CEA-LETI, 1 av Augustin Fresnel, 91767 Palaiseau, France, 6 Université de Lorraine et CentraleSupélec, LOMOPS, EA44231, 57070 Metz, France, A 2.37

1. 1KAI GmbH, Europastrasse 8, 9524 Villach, Austria, 2 Infineon Technologies Austria AG, Siemensstrasse 2, 9500 Villach, Austria, 3 Institute of Solid State Electronics, Vienna University of Technology, Floragasse 7, 1040 Wien, Austria A 2.38

1. 1 Grad. Sch. of Eng. Osaka Univ., 2 ILE. Osaka Univ. A 2.39

1. State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing, 100871, China; 2 Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, 39106 Magdeburg, Germany A 2.40

1. Center for Nanoscience and Nanotechnologies (C2N), CNRS, Univ. Paris-Sud, Univ. Paris-Saclay, Orsay & Marcoussis sites, France A 2.41

1. Institute of High Pressure Physics, Sokolowska 29/37, 01-142 Warsaw, Poland; 2 TopGaN Ltd, Sokolowska 29/37, 01-142 Warsaw, Poland; 3 State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, Beijing, P.R. China; 4 Leibniz Institute for Crystal Growth, 1248 Berlin, Germany A 2.42

1. Université de Lorraine et CentraleSupélec, LMOPS, EA44231, 57070 Metz, France, A 2.43

1. Univ. Grenoble Alpes, F-38000 Grenoble, France, CEA, LETI, MINATEC Campus, F-38054 Grenoble, France A 2.44
18:00 Control of dislocation propagation behaviors in Na flux GaN bulk crystals
Shotaro Takeuchi1, Yuki Mizuta1, Masayuki Imanishi2, Mamoru Imade2, Yusuke Mori2, Yasuhiko Imai3, Shigeru Kimura3, Akira Sakai1
1Graduate School of Engineering Science, Osaka University, 2Graduate School of Engineering, Osaka University, 3Research & Utilization Division, Japan Synchrotron Radiation Research Institute (JASRI)

18:00 Composition control of AlGaN nanowires using N2 flow and growth temperature
Mun-Do Park [1], Jung-Wook Min [2], Ci Hyun Kim [3], Jun Youb Lee [1], Hoe-Min Kwak [1], Sang-Min Kim [1], Kyung-Pil Kim [1], Dong-Seon Lee [1]
[1] School of Electrical Engineering and Computer Science, Gwangju Institute of Science and Technology (GIST), Gwangju, South Korea, [2] Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia, [3] School of Materials Science and Engineering, Gwangju Institute of Science and Technology (GIST), Gwangju, South Korea

18:00 Blocking of Dislocation Propagation by Bunched Steps in GaN crystals Grown by the Na-flux Method
Department of Electrical, Electronic and Information Engineering, Osaka University

18:00 Raman Spectroscopy of zincblende GaN grown on 3C-SiC on (001)Si
18:00 Effect of AlN Capping on Thermal Stability of GaN Nanowires Grown by PAMBE Technique
S.Bhunia1, K.Ghosh2, R. Sarkar2, S. Chouksey2, S. Mahapatra1, D. Saha2, and Apurba Laha2.
1Department of Physics, Indian Institute of Technology Bombay, Mumbai, India. 2Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India.

18:00 Spatially Resolved Doping Properties Along Single Mg-Doped p-Type GaN Micro-Rods
Sunghan Choi1, Hyun-Gyu Song1, Wonho Kim2, Eunhyung Lee2, Sungwon David Roh2, Yong-Hoon Cho1
1Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea, 2Advanced Materials & Components Lab, R&D Center, LG Innotek, Seoul, Republic of Korea

18:00 Controlled Coalescence of AlGaN Nanowire Arrays: An Architecture for Nearly Dislocation-Free Planar Ultraviolet Photonic Device
B. H. Le1 2, S. Zhao1, X. Liu1 2, S. Y. Woo3, G. A. Botton3 and Z. Mi1 2* * Author for correspondence: zetian.mi@mcgill.ca
1Department of Electrical and Computer Engineering, McGill University, Montreal, QC H3A0E9, Canada, 2Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI 48109-2099, USA, 3Department of Materials Science and Engineering, Canadian Centre for Electron Microscopy, McMaster University, 1280 Main Street West, Hamilton, ON L8S 4M1, Canada.

18:00 Growth of GaN on AlN Single Crystal: Strain Relaxation Mechanism and Surface Kinetics
P. Sohi1, D. Martin1, P. Vennéguès2, N. Grandjean1
1Institute of Physics, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland, 2Université Côte d’Azur, CRHEA-CNRS, rue B. Grégory, F-06560 Valbonne, France

18:00 Electrical Properties of Si-Ion Implanted AlN
Hironori Okumura, Sami Suihkonen, and Tomas Palacios
Faculty of Pure and Applied Sciences Tsukuba University, Department of Electronics- and Nanoengineering Aalto University, Department of Electrical Engineering and Computer Science MIT

18:00 Impact of Surface Polish on the Structural and Optical Properties of bulk GaN crystals prepared by HVPE
M. Himmerlich1, S. Shokhovets1, J. Pezoldt1, L. Kirste2, V. M. Polyakov2, J. H. Leach3, S. Krischok1
1Institut für Mikro- und Nanotechnologien MacroNano, Technische Universität Ilmenau, PF 100565, 98684 Ilmenau, Germany, 2Fraunhofer-Institut für Angewandte Festkörperphysik, Tullastr. 72, 79108 Freiburg, Germany, 3Kyma Technologies Inc., 8829 Midway West Road, Raleigh, North Carolina 27617, USA

18:00 Structural properties of high-reflectivity crack-free AlN/AlGaN Bragg mirrors grown on patterned Si substrates
M. Nemoz1, F. Semond1, S. Rennesson1, J. Zuniga-Perez1, D. Lefebvre1, A. Courville1, S. Chenot1, X. Lafosse2, S. Bouchoule2, G. Patriarche2
1Université Côte d’Azur, CNRS, CRHEA, France, 2Laboratoire Photonique et de Nanostructures, CNRS, Marcoussis

18:00 Electronic properties of GaN & InN surfaces – Influence of crystal orientation, surface states and adsorbates
A. Himmerlich, R. Rataj, P. Lorenz, V. Irkha, S. Krischok, M. Himmerlich
Institut für Physik and Institut für Mikro- und Nanotechnologien MacroNano, Technische Universität Ilmenau, PF 100565, 98684 Ilmenau, Germany
18:00 Controlling morphological properties of three-fold symmetric GaN nanostructure grown by metalorganic chemical vapor deposition
Hwan-Seop Yeo, Young-Chul Sim, Seung-Hyuk Lim, Yong-Hoon Cho
Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea.

18:00 Study of Zn(Sn,Ge)N2 for optoelectronic applications
Nicole Fèvre1 2, Nathaniel Feldberg1, Patrice Miska1, Elhadj Dogheche3, Christophe Licitra2, Bérangère Hyot2, Anne Roule2
1IJL, Parc de Saurupt, 54011 Nancy Cedex.2CEA Grenoble, 17 rue des Martyrs, 38054 Grenoble Cedex 9, 3EMN, Cité Scientifique, Avenue Poincaré, 59652 Villeneuve d’Ascq Cedex

18:00 Growth of β-Ga2O3 and GaN films and heterostructures by HVPE
V.I.Nikolaev, A.I.Pechnikov, S.I.Stepanov
Perfect crystals LLC

18:00 The Impact of Barrier Width on Photoluminescence Wavelength in In(Ga)N/InGaN Short Period Superlattices Grown by Plasma Assisted
T. Ernst1 , M. Siekacz1,2, G. Staschczak2, T. Suski2, E. Grzanka1,2, I. Gorczyca2, H. Turski2, M. Anikeeva3, T. Schulz3, M. Albrecht3, C. Skierbiszewski1,2
1 TopGaN Ltd, Sokolowska 29/37, 01-142 Warsaw, Poland, 2 Institute of High Pressure Physics, PAS, Sokolowska 29/37, 01-142 Warsaw, Poland, 3 Leibniz-Institute for Crystal Growth, Max-Born-Str. 2 12489 Berlin, Germany,

18:00 Thermodynamic and dynamic processes in the self-separation of thick GaN layer from sapphire substrate
Yutian Cheng1, Duanjun Cai2, Jiejun Wu1*, Xiangshun Liu1, Xiaohui Feng1, Guoyi Zhang1, Tongjun Yu1*
1 Research Center for Wide-gap Semiconductors, State Key Laboratory for Artificial Microstructures and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, P. R. China. 2 Fujian Key Laboratory of Semiconductors and Materials Applications and Department of Physics, Xiamen University, Xiamen 361005, China

18:00 Surface Structure of Cleaved ScAlMgO4(0001) Substrate for Ill-nitrides Analyzed by X-ray Crystal Truncation Rod Scattering
Takashi Hanada 1, Hiroya Tajiri 2, Osami Sakata 3, Tsuguo Fukuda 4, and Takashi Matsuoka 1
1 Institute for Materials Research, Tohoku University, 2 Japan Synchrotron Radiation Research Institute, 3 National Institute for Materials Science, 4 Fukuda Crystal Laboratory

18:00 Applying the Alloyed Contact Model to Ni/Au contacts on p-GaN
Biplab Sarkar, Andrew Klump, Seiji Mita, Pramod Reddy, Erhard Kohn, Ronny Kirste, Ramon Collazo, and Zlatko Sitar
Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC 27695, USA, Adroit Materials, Cary, NC 27518, USA

18:00 Relaxation Mechanisms in High Al-content AlGaN on AlN Single Crystal Substrates
Milena B. Graziano(1), Randy P. Tompkins(1), Baxter Moody (2), James Tweedie(3), Ramon Collazo(4), Zlatko Sitar(4), and Kenneth A. Jones(1)
18:00  Optical characterization of polarity domains in GaN micro-wires on silicon substrates  
François Médard, Elissa Roche, Geoffrey Avit, François Réveret, Dominique Castelluci, Yamina André, Aghnès Trassoudaine, Joël Leymarie  
Université Clermont Auvergne, CNRS, Institut Pascal, F-63000 CLERMONT-FERRAND, FRANCE

18:00  GaN quantum dots on AlN single crystal  
Sebastian Tamariz, Denis Martin, Nicolas Grandjean  
Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland

18:00  Progress towards thick InGaN for optoelectronic templates  
1) Evan A. Clinton, Ehsan Vadiee, Chloe A.M. Fabien, Joseph J. Merola, W. A. Doolittle*  
2) Alec M. Fischer, Yong O. Wei, Hongen Xie, Fernando A. Ponce  
1) School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA  
2) Department of Physics, Arizona State University, Tempe, AZ 85281, USA

18:00  Characterization of µm thin GaN layers grown by High Temperature Vapour Phase Epitaxy  
Franziska C. Beyer1, Friederike Zimmermann1, Christian Röder2, Mykhailo Barchuk3, Gleb Lukin4, Tom Schneider4, Olf Pätzold4, Johannes Hellmann1  
1Institute of Applied Physics, TU Bergakademie Freiberg, Leipziger Str. 23, D-09599 Freiberg, Germany, 2Institute of Theoretical Physics, TU Bergakademie Freiberg, Leipziger Str. 23, D-09599 Freiberg, Germany, 3Institute of Materials Science, TU Bergakademie Freiberg, Gustav-Zeuner-Straße 5, D-09599 Freiberg, Germany, 4Institute for Nonferrous Metallurgy and Purest Materials, TU Bergakademie Freiberg, Leipziger Str. 34, D-09599 Freiberg, Germany

18:00  AllN layers deposited at low temperature on sapphire, Si(111) and glass by RF-sputtering  
R. Blasco1, A. Núñez-Cascajer1, E. Monroy2,3, M. González-Herráez1, F. B. Naranjo1, and S. Valdueza-Felip1  
1 University of Alcalá (GRIFO), Madrid-Barcelona Road, km 33.6, 28871 Alcalá de Henares, Spain  
2 CEA-Grenoble, INAC/PHELIQS, 17 rue des Martyrs, 38054 Grenoble, France  
3 University Grenoble Alpes, 38000 Grenoble, France

18:00  Peculiarities in Mg doping of Ga(Al)N layers grown by plasma-assisted MBE  
Henryk Turski1, Grzegorz Muzio1, 2, Marcin Siekacz1, Pawel Wolny1, Anna Feduniewicz-Zmuda1, and Czeslaw Skierbiszewski1  
1Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, 2Department of Electrical and Computer Engineering, Cornell University, Ithaca, NY 14853 USA, 3Top GaN Ltd Sokolowska 29/37, 01-142 Warsaw, Poland

18:00  N-polar and Ga-polar p-type GaN grown via Metal Modulated Epitaxy  
1) Evan A. Clinton, Ehsan Vadiee, Brendan P. Gunning, Chloe A.M. Fabien, Joseph J. Merola, W. A. Doolittle*  
2) Alec M. Fischer, Shuo Wang, Fernando A. Ponce  
1) School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA  
2) Department of Physics, Arizona State University, Tempe, AZ 85281, USA

18:00  GaN Epitaxy Inspection for Power Device  
Varun Gupta, Mukundkrishna Raghunathan, Anoop Somanchi, Thomas Pierson  
Candela, KLA-Tencor Corporation, Milpitas, California, U.S.A.
18:00 GaN Epitaxy on Glass Using a (111) Silicon Seed Layer Formed by Aluminum-induced Crystallization

Mel F. Hainey, Jr.1, Zakaria Y. Al Balushi1, Ke Wang2, Nathan C. Martin1, Dr. Joan M. Redwing1

1. Department of Materials Science and Engineering, Materials Research Institute, Penn State University, University Park, PA 16802
2. Materials Characterization Laboratory, Materials Research Institute, Penn State University, University Park, PA 16802

18:00 Current Status in Single Crystal AlN Substrates Grown by Physical Vapor Transport

H.S. Craft, R.F. Dalmau, J. Britt, R. Schlesser

HexaTech, Inc.

18:00 Deep photoenhanced wet etching of bulk GaN materials

Chris Youtsey, Robert McCarthy

MicroLink Devices, Inc.

18:00 Temperature-modulation epitaxial growth of thick AlInN layer for fabrication of GaN-based nano-scale photonic devices

Tomohiro Inaba, Takanori Kojima, Yasufumi Fujiwara

Graduate School of Engineering, Osaka University, Japan

18:00 Study of curvature during thermal annealing of AlN on sapphire

Shunsuke Okada, Hideto Miyake, Kazumasa Hiramatsu

Department of Electrical and Electronic Engineering, Mie University, Tsu, Japan, Graduate School of Regional Innovation Studies, Mie University, Tsu, Japan

18:00 AIN homoepitaxy on high-temperature annealed AIN template by HVPE

Yikang Liu1, Hiroshi Miyake1,2, Kazumasa Hiramatsu1, Motoaki Iwaya3, Isamu Akasaki3

1. Department of Electrical and Electronic Engineering, Mie University, Japan
2. Graduate School of Regional Innovation Studies, Mie University, Japan
3. Faculty of Science and Technology, Meijo University, Japan

18:00 Selective Area Growth of N-Polar GaN Nanowires by Molecular Beam Epitaxy

Alexander Chaney, Huili (Grace) Xing, Debdeep Jena

Cornell University Ithaca NY 14850

18:00 Effect of Formation Temperature for Ohmic Contacts to n-GaN on Electrically Active Defects

Ievgen Boturchuk (1), Leopold Schefller (2), Raghavendra Rao Juluri (1), Bjarke Rolighed Jeppesen (1), and Brian Julsgaard (1,2).

1: Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Gustav Wieds Vej 14, 8000 Aarhus C, Denmark. 2: Department of Physics and Astronomy, Aarhus University, Ny Munkegade 120, 8000 Aarhus C, Denmark.

18:00 3D AlGaN microstructures for efficient UV emission from nonpolar crystal facets

Christoph Margenfeld1, Jana Hartmann1, Hao Zhou1, Sönke Fündling1, Hendrik Spende1, Hengo-Heinrich Wehmann1, Hans-Jürgen Lugauer2, Martin Straßburg2, Marc Patrick Hoffmann2, Adrian Avramescu2, Andreas Waag1

1. Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, Technische Universität Braunschweig, 38092 Braunschweig, Germany, epitaxy competence center ec2, Hans-Sommer-Straße 66, 38106 Braunschweig, Germany. 2. Ossram Opto Semiconductors GmbH, Leibnizstraße 4, 93055 Regensburg, Germany
18:00 Crossover of polarized excitonic transitions with Al composition in strained a-plane (Al,Ga)N and (Al,In)N alloys  
Nirupam Hatui, A. Azizur Rahman, Carina B Maliakkal, Ashish Arora, Arnab Bhattacharya  
DCMP&MS, Tata Institute of Fundamental Research, Mumbai

18:00 HVPE and ammonothermal GaN crystal growth on seeds of each other  
Guoqiang Ren, Jiangfeng Wang, Xujun Su, Yumin Zhang, Tengkui Li, Ke Xu  
Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou Nanowin Science and Technology Co., Ltd.

18:00 Free-standing GaN grown on magnetron sputtered AlN/GaAs template by HVPE  
Yutian Cheng1, Jiejun Wu1*, Boyu Dong2, Bingliang Guo2, Xiaohui Feng1, Guoyi Zhang1, Tongjun Yu1*  
1. Research Center for Wide-gap Semiconductors, State Key Laboratory for Artificial Microstructures and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, P. R. China  
2. North Microelectronics Corporation, Beijing 100176, P. R. China

18:00 The role of v-pits in the performance of InGaN solar cells  
Matthew B. Jordan1, Muhammad Arif2, Suresh Youssef El Gmili1, Suresh Sundaram1, Xin Li1, Gilles Patriarche3, Paul L. Voss4, Jean Paul Salvestrini5, Abdallah Ougazzaden4  
1CNRS, UMI 2958 Georgia Tech - CNRS, 57070 Metz, France, 2Université de Lorraine, Centrale Supélec, LMOPS, EA4423, 57070 Metz, France, 3CNRS, UPR LPN, Route de Nozay, 91460 Marcoussis, France, 4Georgia Institute of Technology, UMI 2958 Georgia Tech - CNRS, 57070 Metz, France, 5Université de Lorraine, Centrale Supélec, LMOPS, EA4423, 57070 Metz, France

18:00 Threading dislocation reduction in GaN on Si(111) by using three dimensional island growth  
Shane Chang, Tung Loung, Li Chang  
National Chiao-Tung University

18:00 GaN growth on Patterned Silicon Substrates: Evolution and Prevention of Meltback Etching  
Michel Khoury1,2, Olivier Tottereau1, Guy Feuillet2, Philippe Vennéguès1 and Jesus Zúñiga-Pérez1  
1Université Côte d’Azur, CRHEA - CNRS, Rue Bernard Grégory, 06560 Valbonne, France  
2Université Grenoble Alpes, CEA - LETI, 17 Rue Des Martyrs, 38054 Grenoble Cedex 9, France

10:00 Coffee break

B poster : Juergen Christen

18:00 Optical characterisation of coreshell InGaN/GaN microtubes emitting in the green spectral range  
G. Kusch1, P. R. Edwards1, E. Le Boulbar2, P.-M. Coulon2, P. A. Shields2, R. W. Martin1  
1Department of Physics, SUPA, University of Strathclyde, 107 Rottenrow East, Glasgow G4 0NG, United Kingdom, 2Department of Electronic and Electrical Engineering, University of Bath, Bath BA2 7AY, United Kingdom

18:00 Design, growth and characterization of AlGaN-based UV distributed Bragg reflectors with enhanced refractive index contrast  
Karan Mehta1, Theeradetch Detchprohm1, Yuh-Shian Liu1, Shuo Wang2, Oliver Moreno1, Young Jae Park1, Shyh-Chiang Shen1, Fernando A. Ponce2, Russell D. Dupuis1, Paul D. Yoder1  
3Georgia Institute of Technology, 2Arizona State University,
18:00 AlGaN Nanowire Tunnel Junction LEDs in the UV-C Band
S. Zhao1, S. Sadaf1, and Z. Mi1,2
1 Department of Electrical and Computer Engineering, McGill University, 3480 University Street, Montreal, QC H3A 0E9, Canada
2 Department of Electrical Engineering and Computer Science, Center for Photonics and Multiscale Nanomaterials, University of Michigan, Ann Arbor, Michigan 48109, United States

18:00 Carrier and Photon Dynamics in InGaN/GaN Lateral Nanowires
Shonal Chouksey, Pratim Saha, Swaroop Ganguly and Dipankar Saha
Applied Quantum Mechanics Laboratory, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India

18:00 Improving the lifetime of InGaN/GaN near-ultraviolet laser diodes
Dario Schiavon, Szymon Grzanka, Ewa Grzanka, Julita Smalc-Koziorowska, Piotr Perlin
Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, Warsaw, Poland, TopGaN Lasers, Sokolowska 29/37, Warsaw, Poland

18:00 Comprehensive optical and structural Study of Highly Efficient Deep UV AlGaInAlGaN MQWs Grown on AlN
Idris A. Ajia1, Zhiqiang Liu2, Iman Roqan1
1Physical Sciences and Engineering division, KAUST, Thuwal, Saudi Arabia, 2R&D Center for Semiconductor Lighting, Chinese Academy of Science, Beijing, China

18:00 Enhanced deep ultraviolet luminescence from AlGaN MQWs grown by using AlN template on cylindrical patterned sapphire substrate
Seung-Jae Lee1, Seong-Ran Jeon1, Jung-Young Jung2, Ju-Hyeong Ha2, Hae-Gon Oh2, Young-Jun Choi2, Hae-Yong Lee2, Yoon Seok Kim3, and Dong-Wook Lee4
1Korea Photonics Technology Institute, Gwangju 61007, Korea, 2LumiGNtech Co., Ltd., Gyeonggi 14322, Korea, 3Korea Polytechnic University, Gyeonggi 15037, Korea, 4LGs Co., Ltd., Jeonbuk 54853, Korea

18:00 Manipulable and hybridized, ultralow-threshold lasing in a plasmonic laser using elliptical InGaN/GaN nanorods
Bin Liu, Tao Tao, Ting Zhi, Jiangping Dai, Zhe Zhuang, Zili Xie, Peng Chen, Fangfang Ren, Dunjun Chen, Youdou Zheng, Rong Zhang, Yaonan Hou, Modestos Athanasiou, Tao Wang
(1) Jiangsu Provincial Key Laboratory of Advanced Photonic and Electronic Materials, School of Electronic Science and Engineering, Nanjing University, Nanjing 210093, China (2) Department of Electronic and Electrical Engineering, The University of Sheffield, Mappin Street S1 3JD, Sheffield, United Kingdom

18:00 Anomalous photocurrent reversal in AlGaN deep-ultraviolet light emitting diodes
Seung-Young Lim, Tea-Soo Kim, Hyun-Woo Kim, Youngbo Moon, Jung-Hoon Song
Department of Physics, Kongju National University, Gongju, Chungnam 32588, South Korea, UJL Co., Ltd., 87, Gunjacheon-ro 21beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea
**Pressure-dependent studies of Be-doped GaN: identification of yellow luminescence centers**

Henryk Teisseyre,1,2, John L. Lyons3, Agata Kaminska1,4, Dawid Jankowski1, Dawid Jarosz1, Michal Bockowski2, Andrzej Suchocki1 and Chris G. Van de Walle5

1 Institute of Physics, Polish Academy of Sciences, Aleja Lotnikow 32/46, PL-02668 Warsaw, Poland  
2 Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland  
3 Center for Computational Materials Science, Naval Research Laboratory, Washington, DC 20375, USA  
4 Cardinal Stefan Wyszynski University, College of Science, Department of Mathematics and Natural Sciences, Dewajtis 5, 01-815 Warsaw, Poland  
5 Materials Department, University of California, Santa Barbara, CA 93106-5050 USA

**High-power AlGaN-based 385 nm ultraviolet light-emitting diodes grown on Si(111) substrates**

Zengcheng Li,1,2 Legong Liu,2,3 Qian Sun,1,2 Meixin Feng,1 Yu Zhou,1 Hanmin Zhao,2,3 and Hui Yang1

1 Key Laboratory of Nanodevices and Applications, Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou 215123, China  
2 Lattice Power (Changzhou) Corporation, Changzhou, 213164, China  
3 Lattice Power (Jiangxi) Corporation, Nanchang, 330029, China

**AlN/h-BN Nanowire Heterostructures for Deep Ultraviolet Photonics**

D.A. Laleyan1, S. Zhao2, S.Y. Woo3, H.N. Tran2, H.B. Le2, T. Szkopek2, H. Guo2, G.A. Botton3, Z. Mi1

1 University of Michigan, 2McGill University, 3McMaster University

**Photovoltaic properties of AlInN on Silicon heterojunctions deposited by sputtering: effect of AlN interfacial layer**

S. Valdueza-Felip1, A. Núñez-Cascaja1, R. Blasco1, D. Montero2, L. Grenet3, L. Rodríguez4, J. A. Méndez4, J. Olea2, M. González-Herráez1, E. Monroy5,6, and F. B. Narango1

1 GRIFO, University of Alcalá, 28871 Alcalá de Henares, Spain  
2 Applied Physics Dept. III, University Complutense of Madrid, 28040 Madrid, Spain  
3 CEA-Grenoble, LITEN, 38054 Grenoble, France  
4 GOLD, Instituto de Óptica-CSIC, 28006 Madrid, Spain  
5 CEA-Grenoble, INAC/PHELIQS, 38054 Grenoble, France  
6 University Grenoble Alpes, 38000 Grenoble, France

**Emission of linearly polarized single photons from quantum dots contained in nonpolar, semipolar and polar sections of pencil-lit**

Ž. Gačević1, M. Holmes2, E. Chernysheva3, M. Müller4, A. Torres-Pardo5, P. Veit4, F. Bertram4, J. Christen4, J. M. González-Calbet5,6, Y. Arakawa2,7, E. Calleja1, and S. Lazić3

1 ISOM-ETSIT, Universidad Politécnica de Madrid, Avda. Complutense s/n, 28040 Madrid, Spain  
2 Institute for Nano Quantum Information Electronics, The University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan  
3 Instituto Nicolás Cabrera and Instituto de Física de Materia Condensada (IFIMAC), Universidad Autónoma de Madrid - Francisco Tomás y Valiente 7, 28049 Madrid, Spain  
4 Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, 39106 Magdeburg, Germany  
5 Departamento de Química Inorgánica, Facultad de Químicas, Universidad Complutense CEI Moncloa, 28040 Madrid, Spain  
6 ICTS Centro Nacional de Microscopía Electrónica, 28040 Madrid, Spain  
7 Institute of Industrial Science, The University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan

**Enhancing Carrier Injection by Increasing Mg Doping in the AlGaN Electron Blocking Layer of an LED Based on a Pre-flow Technique**

Chia-Ying Su, Chang-Gan Tu, Wei-Heng Liu, Chun-Han Lin, Hao-Taung Chen, Yu-Feng Yao, Yean-Woei Kiang, C. C. Yang

Institute of Photonics and Optoelectronics, National Taiwan University
**18:00** Electrically pumped GaN-based microcavity lasers directly grown on Si
Meixin Feng, Junlei He, Yu Zhou, Yaozong Zhong, Shujun Dai, Hongwei Gao, Qian Sun, Jianping Liu, Shuming Zhang, and Hui Yang.
1. Key Laboratory of Nano-devices and Applications, Chinese Academy of Sciences (CAS), Suzhou 215123, China 2. Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou 215123, China

**18:00** Enhanced light output power of GaN-based LEDs by a nanoimprinting-lithography-patterned SiO2 current blocking layer
Jae-Seong Park1, Daesung Kang2, Sun-Kyung Kim3, Tae-Yeon Seong1
1Dept. of Materials Science and Engineering, Korea University, Seoul, 02841 Korea 2LED Division, LG Innotek Co., Ltd., Paju, Gyeonggi 10842, Korea 3Dept. of Applied Physics, Kyung Hee University, Yongin, Gyeonggi, 17104, Korea.

**18:00** Optical and thermal improvement of flip-chip ultraviolet light-emitting diodes through graphene oxide silicone embedding
Renli Liang, Jun Zhang, Jiangnan Dai, and Changqing Chen
Renli Liang: liangrenli@mail.hust.edu.cn, Jun Zhang: narutozj@live.com, Jiangnan Dai: daijiangnan@mail.hust.edu.cn, Changqing Chen: cqchen@mail.hust.edu.cn

**18:00** Fabrication of smooth GaN nanomembranes for device integration by electrochemical etching
Michael A. Bergmann1, Ehsan Hashemi1, Björn Wickman2, Åsa Haglund1
1Photonics Laboratory, Department of Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg 41296, Sweden, 2Chemical Physics, Department of Physics, Chalmers University of Technology, Gothenburg 41296, Sweden
18:00  **Thin-film InGaN multiple quantum well light-emitting diodes transferred from Si (111) substrate onto a thin epoxy resin carrier**

Qiang Liao, Yibin Yang, Weijie Chen, Xiaobiao Han, Jie Chen, Wenjie Zang, Hui Luo, Jiali Lin, Yunling Qiu, Yinsong Chen, Zhisheng Wu, Yang Liu, and Baijun Zhang

School of Electronics and Information Technology, State Key Laboratory of Optoelectronic Materials and Technologies, Sun Yat-sen University, Guangzhou 510275, China

18:00  **Long-term Lifetime of Nitride-based LEDs with Graphene Oxide and Metal Nanoparticles platform**

Beo Deul Ryu, Min Han, Kang Bok ko, Yongsu Lim, Do Trong Thanh, Chang Hee Jo, Kwan Seon Joo, Tran Viet Cuong, Chang-Hee Hong

School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju, Jeollabuk-do 54896, Korea

18:00  **2D Transport Modeling and Optimization of p-type and n-type AlGaN Supper Lattice for Deep UV Light Emitting Diodes with Localize**

Hung-Hsiang Chen (1), Shuan Wang (1), Yi-Keng Fu(2), and Yuh-Renn Wu (1,2)

1. Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taipei 10617, Taiwan 2. Electronics and Opto-Electronics Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan 31040, R.O.C.

18:00  **Strain-inducing nanostructure for spectral red-shift**

Wai Yuen Fu, Ho Wai Choi

Department of Electrical and Electronic Engineering, the University of Hong Kong
Probing the electronic and optical properties of InGaN/GaN microrod LEDs by nanocathodoluminescence and µ-Raman spectroscopy

Marcus Müller1, Sebastian Metzner1, Peter Veit1, Frank Bertram1, Christian Nenstiel2, Gordon Callisen2, Matin Mohajerani3, Jana Hartmann3, Hao Zhou3, Hergo-H. Wehmann3, Axel Hoffmann2, Andreas Waag3, and Jürgen Christen1

1 Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Germany 2 Institut für Festkörperphysik, Technische Universität Berlin, Germany 3 Institut für Halbleitertechnik, Technische Universität Braunschweig, Germany

Lasing effect under optical pumping in single p-i-n core-shell GaN nanowires grown by metalorganic chemical vapor deposition

M. Dechaux (1,2,3), B. Alloing (1), J. Zuniga-Pérez (1), M. Leroux (1), M. Richard (4), F. Réveret (2,3), J. Leymarie (2,3)

(1) UCA, CRHEA-CNRS, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France, (2) Clermont Université, Institut Pascal, BP 10448, F-63000 Clermont-Ferrand, France, (3) CNRS, UMR 6602, Institut Pascal, F-63171 Aubière, France, (4) Institut Néel, CNRS-CEA, BP 166, F-38042 Grenoble, France

Polarized Photoluminescence of C-plane GaN Grown on Stripe-Shaped Cavity-Embedded Al2O3 Membrane on C-plane Sapphire Substrate

Jongmyeong Kim, Jeonghwan Jang, Donghyun Lee, Yongjo Park, Euijon Yoon

Department of Materials Science and Engineering, Seoul National University, Korea. Department of Materials Science and Engineering, Seoul National University, Korea. Department of Materials Science and Engineering, Seoul National University, Korea. Energy Semiconductor Research Center, Advanced Institutes of Convergence Technology (AICT), Seoul National University, Korea. Department of Materials Science and Engineering, Seoul National University, Korea.
18:00 **The Role of InGaN interlayer on InGaN/GaN Quantum Well Efficiency**


Institute of Physics, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

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18:00 **Position-controlled GaN nanostructures embedded in AlN films grown on Si substrate**

Kanako Shojiki, Sebastian P. T. Kaufmann, Jean-François Carlin, Gordon Callsen, Ian M. Rousseau, Joachim Ciers, Gwénot Jacopin, Raphael Butté, and Nicolas Grandjean

Institute of Physics, Ecole Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland

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18:00 **GaN-based nano-optoelectronic platform for in situ diagnostics of electrochemically active biofilms**

Heidi Boht 1/2, Gregor Scholz 1/2, Hilke Wichmann 3, Tony Granz 1/2, Muhammad Fahlesa Fatahiah 1/2, Jana Hartmann 1/2, Hao Zhou 1/2, Sönke Fündling 1/2, Joan Daniel Prades 4, Uwe Schröder 3, Huto Suryo Wasisto 1/2, Andreas Waag 1/2

1 Institut für Halbleitertechnik (IHT), Technische Universität Braunschweig, Hans-Sommer-Str. 66, D-38106 Braunschweig, Germany, 2 Laboratory for Emerging Nanometrology (LENA), Technische Universität Braunschweig, Langer Kamp 6a, D-38106 Braunschweig, Germany, 3 Institut für Ökologische und Nachhaltige Chemie (IÖNC), Technische Universität Braunschweig, Hagenring 30, D-38106 Braunschweig, Germany, 4 MIND-IN²UB, Department of Engineering: Electronics, University of Barcelona, C/Martí i Franquès 1, E-08028 Barcelona, Spain

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18:00 **Step-flow growth of green InGaN quantum well**

Aiqin Tian, Jianping Liu, Lingrong Jiang, Liqun Zhang, Masao Ikeda, Shuming Zhang, Deyao Li, Pengyan Wen, Yang Cheng, Xiaowang Fan, and Hui Yang

Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences

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18:00 **Optical characterization of green-emitting In-rich InGaN/GaN NW heterostructures**


(1) - Center of Nanoscience and Nanotechnologies (C2N), CNRS, Univ. Paris-Sud, Univ. Paris-Saclay, Orsay & Marcoussis sites, France (2) - Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

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18:00 **Radiative and Nonradiative Recombination Processes via Intermediate Band in GaPN by Two-Wavelength Excited Photoluminescence**

Chika Negishi, Norihiko Kamata, Md Dulal Haque, Takeshi Fukuda, and Hiroyuki Yaguchi

Graduate School of Science and Engineering, Saitama University

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18:00 **High Efficiency InGaN-Based Vertical Light-Emitting Diodes on β-Ga2O3 Substrate for Reliable Applications**

Mufasila Mumtaz Muhammed, Norah Alwadai, Takekazu Masui, Akito Kuramata, Iman S Roqan

King Abdullah University of Science and Technology, Jeddah, SaudiArabia. Novel Crystal Technology, Inc. Saitama, Japan

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18:00 **Direct Observation of Localized Surface Plasmon Field Enhancement of Ag nanoparticles on GaN by Kelvin Probe Force Microscopy**

Yuping Jia, Dabing Li*, Xiaojuan Sun, Hang Song, Hong Jiang, Zhiming Li

State Key Laboratory of Luminescence and Applications, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, Changchun 130033, P. R. China
18:00 Phosphor-Free White Light-Emitting Diode Using GaN Based Three-Dimensional Structures
Seung-Hyuk Lim, Young Chul Sim, Kie Young Woo, and Yong-Hoon Cho
Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

18:00 Molecular Beam Epitaxial Growth and Characterization of AlN Nanowall Deep UV Light Emitting Diodes
X. Liu1 2, S. Zhao1, B. H. Le1 2, Ishiang Shih1, and Z. Mi1 2*
*Author for correspondence: zetian.mi@mcgill.ca, 1Department of Electrical and Computer Engineering, McGill University, Montreal, QC H3A0E9, Canada, 2Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI 48109-2099, USA.

18:00 Highly efficient phosphor-free warm white light emission based on InGaN/GaN dodecagonal ring structures
Youngchul Sim, Seung-Hyuk Lim, Yang-Seok Yoo, Min-Ho Jang, and Yong-Hoon Cho*
Department of Physics and KI for the NanoCentury, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea.

18:00 Optical and structural properties of semipolar GaN on patterned Si substrates
J. Bruckbauer 1, G. Naresh-Kumar 1, X. Yu 2, J. Pugh 3, M. J. Cryan 3, T. Wang 2, C. Trager-Cowan 1, and R. W. Martin 1
1 Department of Physics, SUPA, University of Strathclyde, Glasgow G4 0NG, United Kingdom 2 Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S1 3JD, United Kingdom 3 Department of Electrical and Electronic Engineering, University of Bristol, Bristol BS8 1UB, United Kingdom

18:00 Design of electrically injected mid-UV laser diodes
Ronny Kirste, Pramod Reddy, Biplab Sakar, Qiang Guo, Ramon Collazo, Zlatko Sitar
Adroit Materials, Cary, NC 27518, USA, Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC 27695, USA
18:00 Optical polarization switching in In0.03Ga0.97N/Al0.12Ga0.88N MQWs on partially relaxed (20-21) AlGaN

Roy B. Chung, Gregory A. Garrett, Ryan W. Enck, Anand V. Sampath, Michael Wraback, and Meredith L. Reed

U.S. Army Research Laboratory

18:00 Nanoscopic luminescence properties of an InGaN single quantum well intersected by individual dislocations

Gordon Schmidt, Peter Veit, Sebastian Metzner, Christoph Berger, Frank Bertram, Armin Dadgar, André Strittmatter, and Jürgen Christen

Institut für Experimentelle Physik, Otto-von-Guericke-Universität Magdeburg, Germany

18:00 Experimental Measurements and Modeling of Carrier Dynamics in UVC Emitting AlGaN Quantum Wells

Gregory A. Garrett, Chelsea Haughn, Gregory Rupper, Sergey Rudin, and Michael Wraback (1) Thomas Wunderer, Zhihong Yang, and Noble M. Johnson (2)

(1) U.S. Army Research Laboratory, 2800 Powder Mill Road, Adelphi, MD 20783 USA, (2) Palo Alto Research Center, 3333 Coyote Hill Road, Palo Alto, CA 94304 USA

18:00 Study on Modulation Bandwidth for GaN-Based Plasmonic LED with Cathodoluminescence Spectroscopy

Yulong Feng, Zhizhong Chen*, Shuang Jiang, Shengxiang Jiang, Qianqian Jiao, Tongjun Yu, Guoyi Zhang

State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, China

18:00 Improvement of crystalline quality and light emission for cyan LEDs grown on nanoscale patterned sapphire substrates by MOCVD

Yifan Chen1, Zhizhong Chen1*, Qianqian Jiao1, Junze Li1, Shengxiang Jiang1, Yulong Feng1, Jinglin Zhan1, Tongjun Yu1, Xin Kang1, Bo Shen1, Guoyi Zhang1,2

1 State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China, 2 Sino Nitride Semiconductor Co., Ltd, Dongguan 523500, Guangdong, China

18:00 Theoretical study of the feasibility of ZnGeN2-based LEDs

Rolles Mélanie1 2, Hyot Bérangère1, Ferron Alexandre1, Miska Patrice2

1 CEA LETI, 17 avenue des Martyrs F38054 Grenoble France, 2Université de Lorraine, Institut Jean Lamour F54000 Nancy France

18:00 Kelvin Probe Force Microscopy for Strain relaxation Distribution Measurement of GaN-based μLEDs

Jinglin Zhan, Zhizhong Chen, Qianqian Jiao, Junze Li, Shengxiang Jiang, Yulong Feng, Yifan Chen, Tongjun Yu, Bo Shen, Guoyi Zhang

State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China, Sino Nitride Semiconductor Co., Ltd, Dongguan 523500, Guangdong, China

18:00 Study on Recombination Behavior for GaN-Based Plasmonic LED by Cathodoluminescence Spectra

Yulong Feng, Zhizhong Chen*, Shuang Jiang, Shengxiang Jiang, Fei Jiao, Xiangning Kang, Shunfeng Li, Tongjun Yu, Guoyi Zhang, Bo Shen

State Key Laboratory for Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, China
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<th>Time</th>
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<th>Authors</th>
<th>Location/Institution</th>
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<tr>
<td>18:00</td>
<td>Temperature-dependent photoluminescence in InGaN/GaN blue laser diodes</td>
<td>Pengyan Wen*, Ying Huang, Jianping Liu, Shuming Zhang, Deyao Li, Liqun Zhang, Aiqin Tian, Feng Zhang and Hui Yang</td>
<td>Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou 215123, China</td>
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<td>18:00</td>
<td>GaN-based tunnel homojunction for LED applications</td>
<td>V. Fan Arcara1, 2*, B. Damilano1, G. Feuillet2, J. Brau1, S. Chenot1, A. Courville1, J-Y. Duboz1</td>
<td>1: Université Côte d’Azur, CNRS, CRHEA, Rue B. Gregory, 06560 Valbonne, France  2: Université Grenoble Alpes, CEA, LETI, 17 Avenue des Martyrs, 38000 Grenoble, France * Corresponding author: <a href="mailto:vfa@crhea.cnrs.fr">vfa@crhea.cnrs.fr</a></td>
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<tr>
<td>18:00</td>
<td>Enhancement-Mode HEMTs with a p-GaN Gate through a Highly Uniform Self-terminated Etching Process</td>
<td>Yu Zhou1,2, Yaozong Zhong1,2,3, Shujun Dai1,2, Hongwei Gao1,2, Meixin Feng1,2, Qian Sun1,2*, Hui Yang1,2</td>
<td>1. Key Laboratory of Nano-devices and Applications, Chinese Academy of Sciences (CAS), Suzhou 215123, China  2. Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou 215123, China.  3. Shanghai University, School of Material Science and Engineering, Shanghai 200444, China.  (*Email: <a href="mailto:qsun2011@sinano.ac.cn">qsun2011@sinano.ac.cn</a>).</td>
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<td>18:00</td>
<td>14 MeV neutron irradiation impact on AlGaN/GaN HEMT drain current transients</td>
<td>Peter Butler (1,2), Michael J Uren (1), Benoit Lambert (3), Martin Kuball (1)</td>
<td>(1) H.H. Wills Physics Laboratory, University of Bristol, Tyndall Avenue, United Kingdom,  (2) AWE Plc., Aldermaston, Reading, United Kingdom,  (3) UMS Semiconductors, Villebon-sur –Yvette, France</td>
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<td>18:00</td>
<td>Improved Characteristics for Thermally Grown TiO2 and Al2O3 Based MOS-HEMTs</td>
<td>Akanksha Rawat, Vivek K. Surana, Yogendra K. Yadav, Bhanu B. Upadhyay, Swaroop Ganguly, Dipankar Saha</td>
<td>Applied Quantum Mechanics Laboratory, Centre of Excellence in Nanoelectronics, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India</td>
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<td>18:00</td>
<td>Positive and negative Vth instabilities in Vertical GaN-on-GaN FinFET</td>
<td>Maria Ruzzarin1, Matteo Meneghini1, Davide Bisi2, Carlo De Sant1, Min Sun3, Tomas Palacios3, Gaudenzio Meneghesso1, Enrico Zanoni1</td>
<td>1Department of Information Engineering, University of Padua, Padua 35131, Italy, 2Department of Information Engineering, University of Padua, Padua 35131, Italy, now with the University of California, Santa Barbara, CA 93106, USA, 3Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, MA 02139, USA</td>
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<td>18:00</td>
<td>SiC/AlGaN vertical MOSFET based on SiC and AlN/GaN short period super lattice structure</td>
<td>Eiji Kojima,Kenta Chokawa,Hiroki Shirakawa,Masaaki Araidai,Kenji Shiraiishi</td>
<td>Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Japan  Institute of Materials and System for Sustainability, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Japan</td>
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18:00 Modification of donor-like states on (0001) AlN surface at silicon nitride layer formation in ammonia MBE
V.G.Mansurov_1, T.V.Malin_1, Yu.G.Galitsyn_1, K.S.Zhuravlev_1, O.E.Tereshenko_1, V.E.Zemlyakov_3, V.I.Egorkin_3, Ya.M.Parnes_4, I.P.Prosvinin_5
1 A.V.Rzhanov Institute of Semiconductor Physics Siberian Branch of RAS, 13, Lavrentiev avenue, Novosibirsk, 630090, Russia 2 Novosibirsk State University, 2, Pirogova str., 630090 Novosibirsk, Russia 3 National Research University of Electronic Technology «MIET», Blvd. 1, Shokin Square, Zelenograd, Moscow, 124498, Russia 4 CJSC "Svetlana-Electronpribor", 27, Engels avenue, Saint Petersburg, 194156, Russia 5 Boreskov Institute of Catalysis Siberian Branch of Russian Academy of Sciences, 5, Lavrentiev avenue, Novosibirsk, 630090, Russia

18:00 3D GaN fin arrays for vertical field-effect transistors
Klaas Strempel 1/2, Jana Hartmann 1/2, Feng Yu 1/2, Hendrik Spende 1/2, Muhammad Fahisah Fatahiah 1/2, Friedhard Römer 3, Kristian Frank 3, Bernd Witzigmann 3, Sönke Fündling 1/2, Hutomo Suroyo Wasisto 1/2, Andreas Waag 1/2
1 Institut für Halbleitertechnik (IHT), Technische Universität Braunschweig, Hans-Sommer-Str. 66, D-38106 Braunschweig, Germany 2 Laboratory for Emerging Nanometrology (LENA), Technische Universität Braunschweig, Langer Kamp 6a, D-38106 Braunschweig, Germany, 3 Computational Electronics and Photonics (CEP), University of Kassel, Wilhelmshöher Allee 71, D-34121 Kassel, Germany

18:00 Temperature dependent capacitance-voltage spectroscopy of AlGaN/GaN HEMT-on-Si with a C-doped buffer
Sandeep Kumar1, Priti Gupta2, Ivor Guiney2, S. Raghavan1, C. J. Humphreys2, R. Muralidharan1, Digbijoy N. Nath1
1 Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science, Bangalore, Karnataka, India, 2 Cambridge Centre for Gallium Nitride, Department of materials science and metallurgy, University of Cambridge, Cambridge, United Kingdom

18:00 Investigation of Al2O3/InGaN/GaN-on-Si HEMT by Capacitance Dispersion Technique
Sandeep Kumar1, Nayana Remesh1, S. B. Dolamanan2, S. Tripathy2, S. Raghavan1, R. Muralidharan1, Digbijoy N. Nath1
1Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Bengaluru, India, 2Institute of Materials Research and Engineering (IMRE), Agency for Science, Technology, and Research (A*STAR), Singapore

18:00 Enhanced Performance of Pre-Gate N2- Plasma Processed AlGaN/GaN HEMTs and Schottky Diodes
Bhanu B. Upadhyay, Kuldeep Takhar, Yogendra K. Yadav and Dipankar Saha
Centre of Excellence in Nano-Electronics, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai – 400076, India

18:00 Hot electron assisted vertical leakage/breakdown in AlGaN/GaN heterostructures on Si substrates
Anqi Hu, Xuelin Yang, Bo Shen
State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China

18:00 Mapping of n-GaN Schottky contacts with wavy surface morphology using scanning internal photoemission microscopy
K. Shiojima, T. Hashizume, F. Horikiri, T. Tanaka, and T. Mishma
University of Fukui, SCI OCS, Hosei University
18:00 GaN nanocolumn based Schottky diode  C 02.13

V. Z. Zubialevich 1, P. Pampili 1,2, M. White 1, D. O’Connell 1, A. Hydes 1, A.-M. Kelleher 1, M. McLaren 3, M. Arredondo-Arechava 3, G. Sabui 4, Z. J. Shen 4 and P. J. Parbrook 1,2

1 Tyndall National Institute, University College Cork, T12 R5CP, Cork, Ireland, 2 School of Engineering, University College Cork, Cork, Ireland, 3 School of Mathematics and Physics, Queen’s University Belfast, BT7 1NN Belfast, Northern Ireland, 4 Electrical and Computer Engineering Department, Illinois Institute of Technology, IL-60616 Chicago, USA

18:00 Lateral transport mechanism outside the device isolated area in GaN:C doped HEMTs  C 02.14

Serge Karboyan1, Michael J. Uren1, Indranil Chatterjee1, Peter Moens2, Abishek Banerjee2, Martin Kuball1

1H.H. Wills Physics Laboratory, University of Bristol, Bristol, U.K., 2ON Semiconductor, Oudenaarde, Belgium.

18:00 Reliability Study on Gate Recessed Normally-On and Normally-Off AlGaN/GaN MOS-HEMTs  C 02.15

Ahmed Chakroun1, Meriem Bouchilaoun1, Ali Soltani1, Gilles Patriarche2, Abdelatif Jaouad1, François Boone1 and Hassan Maher1

1- Institut Interdisciplinaire d’Innovation Technologique (3IT), Laboratoire Nanotechnologies Nanosystèmes (LN2) - CNRS UMI-3463, Université de Sherbrooke, 3000 Boulevard Université, Sherbrooke, J1K OA5, Québec, Canada, 2- Laboratoire de Photонique et de Nanostructures (LPN), C2N, UMR-CNRS 9001, Université Paris-Saclay, Route de Nozay, 91460 Marcoussis, France

18:00 New gate process for the fabrication of highly reliable AlGaN/GaN HEMT  C 02.16

Meriem Bouchilaoun, Ahmed Chakroun, Ali Soltani, Maxime Darnon, Abdelatif Jaouad, François Boone and Hassan Maher

Laboratoire Nanotechnologies Nanosystèmes (LN2) - CNRS UMI-3463, Institut Interdisciplinaire d’Innovation Technologique (3IT), Université de Sherbrooke, 3000 Boulevard Université, Sherbrooke J1K OA5, Québec, Canada

18:00 Reduction of impurities and realization of high breakdown voltage Schottky barrier diodes using homoepitaxial m-plane GaN grown  C 02.17

K. Nagamatsu1, Z. Ye2, O. Barry2, A. Tanaka1, M. Deki1, S. Nitta1, Y. Honda1, and H. Amano1,3,4

1 Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya 464-8603, Japan 2 Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya 464-8603, Japan 3 Akasaka Research Center, Nagoya University, Nagoya 464-8603, Japan 4 Venture Business Laboratory, Nagoya University, Nagoya 464-8603, Japan

18:00 4x reduction in GaN MOSCAP flatband voltage hysteresis with an in-situ deposited SiN cap and device processing in a cluster tool  C 02.18

Dilini Tania Hemakumara (1), Xu Li (1), Konstantinos Floros (1), Sung-Jin Cho (1), Ivor Guiney (2), David Moran (1), Colin Humphreys (2), Aileen O’Mahony (3), Harm Knoops (3) and Iain G Thayne (1)

(1) School of Engineering, University of Glasgow, Rankine Building, Oakfield Avenue, Glasgow, G12 8LT, Scotland, UK, (2) Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge, CB3 0FS, UK, (3) Oxford Instruments Plasma Technology, Yatton, Bristol, BS49 4AF, United Kingdom

18:00 PECVD SiON Gate Insulator for Normally-off AlGaN/GaN-on-Si recessed MIS-HFET  C 02.19

Hyun-Seop Kim1, Sang-Woo Han1, Won-Ho Jang1, Hyungtak Kim1, Chun-Hyung Cho1, Kwang-Seok Seo2, Ho-Young Cha1

1Hongik University, 2Seoul National University

18:00 Characterization and modeling of transient self-heating in GaN HEMTs  C 02.20

Adrien Cutivet, Meriem Bouchilaoun, Ahmed Chakroun, Ali Soltani, Abdelatif Jaouad, François Boone, and Hassan Maher

Université de Sherbrooke, Sherbrooke, QC J1K2R1, Canada
18:00 1 MHz DC-DC convertor implemented with clamped AlGaN/GaN MOS-HFET
Sang-Woo Han, Min-Gi Jo, Hyun-Seop Kim, Hyun-tak Kim, and Ho-Young Cha
School of Electronic and Electrical Engineering, Hongik University, Korea

18:00 Effects of passivation layers on carrier transport in AlGaN/GaN HFETs
Sejoon Oh, Taehoon Jang, Jaehee Cho
School of Semiconductor and Chemical Engineering, Chonbuk National University, Jeonju 54896, Republic of Korea

18:00 GaN planar Schottky barrier diode with cut-off frequency of 627 GHz
Ning An, Qian Li, Jianping Zeng*, Jun Jiang, Bin Lu, Li Li, Haitao Liu, Wei Tan* Corresponding author: zengjp@semi.ac.cn
Microsystem & Terahertz Research Center, China Academy of Engineering Physics, Chengdu, 610200, China

18:00 Investigation of hole traps in n-type homoepitaxial GaN by ODLTS focusing on sub-bandgap-light optical excitation process
Kazutaka Kanegae, Tsunenobu Kimoto, Masahiro Horita, Jun Suda
Kyoto University, Kazutaka Kanegae, Tsunenobu Kimoto, Masahiro Horita, Jun Suda Nagoya University IMaSS, Jun Suda

18:00 Nearly Ideal Vertical-type GaN Schottky Barrier Diodes with Ultra-Low Turn-on Voltage and On-Resistance
Liwen Sang*, Bing Ren, Meiyong Liao, Masatomo Sumiya, Yasuo Koide
National Institute for Materials Science

18:00 Research of GaN Schottky Barrier Diode (SBD) based on AlGaN/GaN heterojunction with Metal-2DEG Schottky contact
Qian Li, Ning An, Jianping Zeng*, Li Li, Bin Lu, Jun Jiang, Haitao Liu, Wei Tan
Terahertz Physics Laboratory, Microsystem and Terahertz Research Center, China Academy of Engineering Physics

18:00 Effects of 2D-Graphene on SiN passivated AlGaN/GaN based-MISHEMTs
M. F. Romero, A. Boscá, J. Martinez, J. Pedrós, T. Palacios and F. Calle
M. F. Romero, A. Boscá, J. Martinez, J. Pedrós, and F. Calle are with the ISOM and Dpto. Ingeniería Electrónica, ETSI de Telecomunicación, Universidad Politécnica de Madrid (UPM), Madrid, Spain, T. Palacios is with the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA

18:00 Mg-compensation effect in GaN buffer layer for AlGaN/GaN high-electron-mobility transistors grown on 4H-SiC substrate
Kyeongjae Lee, Kwangse Ko, Ulho Choi, Jae-yeon Han and Okhyun Nam*
Korea Polytechnic University

18:00 Post dielectric under gate N2-plasma for improved performance of wet grown Al2O3/AlGaN/GaN MISHEMTs
Kuldeep Takhar, Bhanu B. Upadhyay, Swaroop Ganguly and Dipankar Saha
Centre of Excellence in Nano-Electronics, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai – 400076, India
Investigation of photoluminescence, stimulated emission, photoreflectance and 2DEG properties of AlGaN/GaN HEMT heterostructures

E. V. Lutsenko1, M. V. Rzheutski1, A. G. Vainilovich1, I. E. Svitsiankou1, G. P. Yblionskii1, A. Alyamani2, S. I. Petrov3, V. V. Marnaev3, A. N. Alexeev3

1 Stepanov Institute of physics of NAS of Belarus. Nezalezhnosti ave. 68, 220072, Minsk, Belarus, 2 National Nanotechnology Centre, King Abdulaziz City for Science and Technology, PO Box No. 6086, 11442 Riyadh, Saudi Arabia, 3 SemiTEq JSC. Engels avenue 27, Saint-Petersburg, Russia.

ZrO2 as a High-k Gate Dielectric for Enhancement-mode AlGaN/GaN MOS HEMTs

C. Eddy, Jr.(a), V. Wheeler(a), D. Shahin(b), T. Anderson(a), M. Tadjer(a), A. Koehler(a), K. Hobart(a), A. Christou(b) and F. Kub(a)

(a) U.S. Naval Research Laboratory, 4555 Overlook Ave., SW, Washington, DC 20375 (b) University of Maryland, Materials Science & Eng. Dept., College Park, MD 20742

Electrical and optical characterization of GaN-based LEDs with ZnO:Al transparent contacts by EBIC and electroluminescence


1Institute of Electronics and Photonics, Slovak University of Technology in Bratislava, Ilkovi?ova 3, 812 19 Bratislava, Slovakia 2Department of Electronic and Electrical Engineering, University of Bath, Claverton Down, BA2 7AY, Bath, UK 3Plasma Quest Ltd, Unit 1B Rose Estate, Osborn Way, Hook, Hampshire, RG27 9UT, UK 4Department of Applied Physics, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, The Netherlands

Structural and electrical characterization of graphene heterostructures with Nitrides for high frequency vertical transistors


(1) CNR-IMM, Strada VII, 5, Zona Industriale, 95121 Catania, Italy, (2) STMicroelectronics, Stradale Primosole 50, 95121 Catania, Italy, (3) TopGaN, Prymasa Tysiąclecia 98 01-424 Warsaw, Poland, (4) CRHEA-CNRS, Rue Bernard Gregory, 06560 Valbonne, France.

Electron transport in GaN-based nanoribbons: effect of UV excitation

Andrey Naumov 1,2, Ihor Zadorozhnyi 1, Hilde Hardtdegen 1, Vyacheslav Kochelap 2, Alexander Belyaev 2, and Svetlana Vitusevich 1

1 Peter Grünberg Institute (PGI-8,PGI-9), Forschungszentrum Jülich GmbH, Jülich 52425, Germany, 2 Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kiev 03028, Ukraine

Correlation of lattice damage related traps and threshold voltage hysteresis in recessed gate Al2O3/GaN MOSFETs on Si substrate

Liang He1, Luan Li1, Fan Yang1, Wenjing Wang1, Jialin Zhang1, Zijun Chen1, Zhen Shen1, Yue Zheng1, Xiaorong Zhang1, Lei He1,2, Zhisheng Wu1,3, Baijun Zhang1,3, Yang Liu1,2,3

1-School of Electronics and Information Technology, Sun Yat-Sen University, 2-Institute of Power Electronics and Control Technology, Sun Yat-Sen University, 3-State Key Laboratory of Optoelectronic Materials and Technologies, Sun Yat-Sen University
Gate Recessed E-mode AlGaN/GaN MIS-HEMT With Dual Gate Insulator Employing PEALD SiON and HfION

Il-Hwan Hwang1, Gwang-Ho Choi1, Su-keun Eom1, Myung-Jin kang1, Ho-Young Cha2 and Kwang-Seok Seo1

1Department of Electrical and Computer Engineering and Inter-University Semiconductor Research Center, Seoul National University, Seoul 151-744, Republic of Korea 2School of Electronic and Electrical Engineering, Hongik University, Seoul 121-791, Republic of Korea

Comparison of semi-insulating iron and carbon doped GaN layers grown on Si (111) for high-power applications.

Jonas Hennig, Andreas Lesnik, Seshagiri Rao Challa, Jürgen Blässing, Marc Hoffmann, Armin Dadgar, and André Strittmatter

GaN vertical nanowire transistor with the channel of 300 nm

Dong-Hyeok Son1, Young-Woo Jo1, Chan Heo1, Ryun-Hwi Kim1, Dai quan1, Jae Hwa Seo1, Hwan Soo Jang2, Ki-Sik Im1, Yong Soo Lee1, Yong-Tae Kim3. In man Kang1 and Jung-Hee Lee1

1School of electronics engineering, Kyungpook National University, Daegu 41566, Korea 2Center for Core Research Facilities, Daegu Gyeongbuk Institute of Science & Technology, Daegu 42988, Korea 3Semiconductor Materials and Devices Laboratory, Korea Institute of Science and Technology, Seoul 02792, Republic of Korea

The effect of surface states on thermal stability in InAlGaN/GaN heterostructures

Jie Zhang, Xuelin Yang, Jianpeng Cheng, Anqi Hu, Bo Shen

State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China

High breakdown voltage on GaN HEMT thanks to a 3C SiC interlayer on silicon substrate

A. Soltani1, A. Chakroun1, Y. Cordier2, H. Maher1

1 L2N CNRS - Université de Sherbrooke, 3000 Bld de l’Université, Sherbrooke, QC Canada 2. CNRS CRHEA, Sophia antipolis, Valbonne, France

Fabrication of AlGaN-channel High Electron Mobility Transistor and Their Application in High Voltage Electronic Devices

Junshuai Xue, Jincheng Zhang, and Yue Hao

Key Laboratory of Wide Bandgap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, 710071 China

Engineering of electric field distribution in GaN(cap)/AlGaN/GaN heterostructures

Ł. Janicki 1, M. Gladysiewicz 1, J. Misiewicz 1, M. Sobanska 2, K. Klosek 2, Z.R. Zytkiewicz 2, and R. Kudrawiec 1

1 Faculty of Fundamental Problems of Technology, Wroclaw University of Technology, Wybrzeże Wyspianskiego 27, 50-370 Wroclaw, Poland 2 Institute of Physics, Polish Academy of Science, al. Lotników 32/46, 02-668 Warsaw, Poland

Field Emission Characteristics of GaN Nanowall Network Structures grown by Laser Molecular Beam Epitaxy Technique

M. Senthil Kumar, Prashant Tyagi, Ramesh Ch. and Sunil Singh Kushwaha

Division of Advanced Materials and Devices CSIR-National Physical Laboratory, New Delhi 110012, INDIA

Transient Electroluminescence Characterization of GaN-on-Si HEMTs

Georges Pavlidis, Luke Yates, Samuel Graham

Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, Georgia, USA
18:00 *Field Plate Design in All-GaN Integrated Cascode Configuration*

S. Jiang1, K. B. Lee1, I. Guiney2, Z. H. Zaidi1, J. S. Cheong1, P. Li1, H. Qian1, D. J. Wallis2, C. J. Humphreys2, A. J. Forsyth3, M. J. Uren4, M. Kuball4 and P. A. Houston1

1Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S1 3JD, UK, 2Department of Materials Science and Metallurgy, University of Cambridge, Cambridge CB3 0FS, UK, 3School of Electrical and Electronic Engineering, University of Manchester, Manchester M13 9PL, UK, 4School of Physics, University of Bristol, Bristol BS8 1TL, UK

18:00 *Current transport enhancement in GaN/AlN based double barrier heterostructures using AlN as barrier layer*


Advanced Materials & devices, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Road New Delhi-110012, India, Department of Electronic Engineering, Graduate School of Engineering, Research Center for Advanced Science and Technology, University of Tokyo, 4-6-1 Komba, Maguro-Ku, Tokyo, 153-8904, Japan, Quantum Phenomena and Applications, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Road, New Delhi-110012, India, Sophisticated and Analytical Instrumentation, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Road, New Delhi-110012, India, Academy of Science & Innovative Research (AcSIR), CSIR-NPL Campus, Dr. K.S. Krishnan Road, New Delhi-110012, India.

18:00 *GaN pn-junction fabricated by selective area epitaxy*

Simon Kotzea, Arne Debald, Holger Kalisch, Andrei Vescan

GaN Device Technology, RWTH Aachen University, Sommerfeldstr. 24, 52074 Aachen, Germany

18:00 *Multiuse High Al-content AlxGa1-xN pn-junctions*

Fatima Asif, Sakib Muhtadi, Seong Mo. Hwang, Antwon. Coleman, Alexander Lunev, V.S.N. Chava, MVS Chandrashekhar, and Asif Khan

EE Department, University of South Carolina, Columbia SC29208

18:00 *First Experimental Demonstration of High-Voltage, Quasi-Vertical Al0.8Ga0.2N Schottky Diodes on AlN Substrates*

Collin Hitchcock1, Gyanesh Pandey1, T.P. Chow1, Baxter Moody2, Seiji Mita2, Joe Smart2, Rafael Dalmau2

1Rensselaer Polytechnic Institute, 2HexaTech, Inc.

18:00 *Investigation of the Impact of Interfacial Layers on the Degradation of GaN-on Si HEMTS subjected to Electrical Stress Testing*

Luke Yates1, Georgios Pavlidis1, Chien-Fong Lo2, Tingyu Bai3, Mark S. Goorsky3, Wayne Johnson2, Samuel Graham1

1George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, 30332, 210E, 200 John Hancock Rd., Taunton, MA, 02780, 3Department of Materials Science and Engineering, University of California, Los Angeles, California, 90095

18:00 *Proton irradiation characteristics of AlGaN/GaN-on-Si HEMTs with Ni, W, TiN, and TaN schottky gates*

Hee Hyung Cho, Dongmin Keum, Geunho Cho, Guhyeok Chung, Ho-young Cha, Hyungtak Kim

School of Electronic and Electrical Engineering Hongik University Seoul, Korea
18:00 **Recessed Gate GaN HEMTs on Si using Low-Temperature Atomic Layer Deposited-ZrO2**

Young-Chul Byun, Xin Meng, Jae-Gil Lee, Antonio T. Lucero, Joy S. Lee, Si Joon Kim, Chadwin D. Young, Moon J. Kim and Jiyoung Kim*

Department of Materials Science and Engineering, The University of Texas at Dallas, Richardson, Texas 75080, USA

18:00 **High Vth stability of AlGaN/GaN MIS-HEMTs using hollow cathode plasma-enhanced ALD SiNx as a gate dielectric**

Xin Meng 1, Young-Chul Byun2, Jae-Gil Lee2, Harrison S. Kim2, Joy S. Lee2, Antonio T. Lucero2, Si Joon Kim2, Lanxia Cheng2, Jiyoung Kim1, 2

1Department of Electrical Engineering, University of Texas at Dallas, 800 West Campbell Rd., Richardson, Texas, 75080, USA
2Department of Materials Science and Engineering, University of Texas at Dallas, 800 West Campbell Rd., Richardson, Texas, 75080, USA

18:00 **Homogeneous InGaN Light-Emitting Diode Tube**

Y. Park, K.H. Li, Y.F. Cheung, H.W. Choi

The University of Hong Kong

18:00 **The Optimization of Drain Delay in Short-Chanel GaN HEMT**

Xidong Tong, Shiyong Zhang, Wei Tan

Microsystem & Terahertz Research Center, Chengdu, China

18:00 **Lateral 1-D Transistors on AlGaN/GaN Heterostructure with Non-Contacting Side Gate**

Akhil S. Kumar, Dolar Khachariya, Mudassar Meer, Swaroop Ganguly, Dipankar Saha

Applied Quantum Mechanics Laboratory, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India

D poster : Juergen Christen

18:00 **Avalanche multiplication in AlGaN-based pin diodes for the ultraviolet spectral range**

L. Hahn, R. Rehm, F. Fuchs, L. Kirste, R. Driad, K. Köhler, T. Passow, O. Ambacher

Fraunhofer-Institute for Applied Solid State Physics IAF, Tullastrasse 72, D-79108 Freiburg

18:00 **Top-down III-N single nanowire p-i-n photodetector**

Xu Zhang1, Xinbo Zou1 2, Chak Wah Tang1, Kei May Lau1 2

1Department of Electronic and Computer Engineering, HKUST, Hong Kong, 2Jockey Club Institute for Advanced Study (IAS), HKUST, Hong Kong

18:00 **Carrier generation and recombination dynamics and reliability of InGaN-based photodetectors for high power densities**

C. De Santi, M. Meneghini, A. Caria, E. Dogmus, M. Zegaoui, F. Medjdoub, G. Meneghesso, E. Zanoni

Department of Information Engineering, University of Padova, via Gradenigo 6/B, Padova, 35131, Italy, IEMN-CNRS, Avenue Poincaré CS 60069, 59652, Villeneuve d’Ascq, France

18:00 **Optically switched gate-less normally-off III-nitride HEMT**

Sandeep Kumar1, Anamika Singh Pratyiush1, S. B. Dolmanan2, S. Tripathy2, S. Raghavan1, R. Muralidharan1, Digbijoy N. Nath1

1Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Bengaluru, India, 2Institute of Materials Research and Engineering (IMRE), Agency for Science, Technology, and Research (A*STAR), Singapore
18:00 Nitride Heterostructure Optimization for Photodetectors and Solar Cells
S. Didenko, O. Rabinovich, S. Legotin, M. Orlova
National University of Science and Technology "MISiS"

18:00 GaN Simulation for Photodetector
S. Didenko, O. Rabinovich, S. Legotin, M. Orlova
National University of Science and Technology "MISiS"

18:00 Simulation and Verification of InGaN Heterostructure Based Gas and Bio Sensor Design
J. Shahbaz1, M. Schneidereit1, D. Heinz1, B. Hörbrand2, F. Huber2, S. Bauer2, K. Thonke2 and F. Scholz1
1 Institute of Optoelectronics, Ulm University, 89081 Ulm, Germany
2 Inst. of Quantum Matter / SemiCond. Physics Group, Ulm University, 89081 Ulm, Germany

18:00 Monolithic Integration of GaN SB-MOSFET-Based Logic Circuitry with LED Arrays
J.X. Yu, W.Y. Fu, K.H. Li and H.W. Choi
Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong

18:00 Bias-Controlled Spectral Response in GaN/AIn Nanowire Photodetectors
Maria Spies (1), Jonas Lähnemann (1), Pascal Hille (2,3), Jörg Schörmann (2), Jakub Polaczynski (1), Martin I. Den Hertog (1), Bruno Gayral (1), Martin Eickhoff (2,3), Eva Monroy (1)
(1) Université Grenoble-Alpes, CEA-INAC-PHELIQS and CNRS-Institut Néel, 38000 Grenoble, France
(2) I. Physikalisches Institut, Justus Liebig Universität Giessen, 35390 Giessen, Germany
(3) Institut für Festkörperphysik, Universität Bremen, 28359 Bremen, Germany

18:00 Enhanced Detectivity from a Low Dimensional GaN Based Self-Driven UV Photodetector
Neha Aggarwal1 3, Shibin Krishna1 3, Alka Sharma2 3, Lalit Goswami1, Dinesh Kumar2, Sudhir Husale2, Govind Gupta1
1 Advanced Material & Devices Division, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K. S. Krishnan Road, New Delhi-110012, India
2 Quantum Phenomena and Applications, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Road, New Delhi-110012, India
3 Academy of Science & Innovative Research (AcSIR), CSIR-NPL Campus, Dr. K.S. Krishnan Road, New Delhi-110012, India.

18:00 Backside Illuminated AlGaN Based Solar-Blind Ultraviolet Metal-Semiconductor-Metal Photodetectors on High Quality AlN Template
Joocheol Jeong, Junghwan Son, Ji won Jeong, Joo Jin
Department of UV-Sensor Lab, Genicom, 237, Baeul 1-ro, Yusung-gu, daejeon,34036 Korea

18:00 Graphene/GaN Based Dual-Band Photodetectors
Neha Aggarwal1 2, Shibin Krishna1 2, Munu Borah1, Alka Sharma3 2, Lalit Goswami1, Sudhir Husale3 and Govind Gupta1
1 Advanced Materials & Devices Division, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K. S. Krishnan Road, New Delhi-110012, India
2 Academy of Science & Innovative Research (AcSIR), CSIR-NPL Campus, Dr. K.S. Krishnan Road, New Delhi-110012, India
3 Quantum Phenomena and Applications, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Road, New Delhi-110012, India

18:00 GaN Epitaxially Grown on Graphene, a New Model System for UV Photodetection
T. Journot 1,2, V. Bouchiat 1,3, B. Gayral 1,4, J. Dijon 1,5, B. Hyot 1,2
1 Univ. Grenoble Alpes, 38000 Grenoble, France
2 CEA, LETI, MINATEC campus, 38000 Grenoble, France
3 CNRS-Grenoble, Institut Néel, 38000 Grenoble, France
4 CEA, INAC-PHELIQS, 38000 Grenoble, France
5 CEA, LITEN, 38000 Grenoble, France.
18:00 **Realization of ultraviolet/infrared dual photodetectors by integration of Graphene to GaN**
Xiaojuan Sun, Dabing Li*, Yuping Jia, Xiaotong Liu, You Wu, Hong Jiang, Hang Song, Zhiming Li

State Key Laboratory of Luminescence and Applications, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, Changchun 130033, P. R. China

18:00 **Design and fabrication of Gallium Nitride grating couplers using Displacement Talbot Lithography**
E. D. Le Boulbar1, S. Jia2, J.R. Pugh2, D.W.E. Allsopp1, M.J. Cryan2, and P.A. Shields1

1 Department of Electrical and Electronic Engineering, University of Bath, BA2 7AY, U.K., 2 Department of Electrical and Electronic Engineering, University of Bristol, BS8 1UB, U.K.

18:00 **Persistent Photoconductivity, Nanoscale Topography and Chemical Functionalization Collective Influence on the Behavior of PC12 C**
Patrick J. Snyder, Ronny Kirste, Ramon Collazo, Albena Ivanisevic

Department of Materials Science and Engineering, North Carolina State University, 911 Partners Way, Raleigh, North Carolina 27606, USA, Adroit Materials, 2054 Kildaire Farm Rd., Suite 205, Cary, North Carolina 27518, USA

18:00 **Carrier transport in reverse-biased AlGaN p-i-n deep-UV photodetectors**
Anisha Kalra, Shashwat Rathkanthiwar, Rangarajan Muralidharan, Srinivasan Raghavan, Digbijoy Nath

Center for Nanoscience and Engineering, Indian Institute of Science, Bangalore, India, 560012

18:00 **High responsivity and fast detection non-polar GaN based UV Photodetector**
Abhiram Gundimeda, Shibin Krishna T.C., Neha Aggarwal, Alka Sharma, Nita Dilawar Sharma, K. K. Maurya, Sudhir Husale and Govind Gupta

1. Advanced Materials and Devices, 2. Quantum Phenomena and Applications, 3. Apex Level Standards & Industrial Metrology, 4. Sophisticated and Analytical Instrumentation, CSIR-National Physical Laboratory (CSIR-NPL), Dr. K.S. Krishnan Marg, New Delhi-110012, India. † Academy of Scientific and Innovative Research, CSIR-NPL Campus, Dr. K. S. Krishnan Road, New Delhi-110012, India.

18:00 **Ultrafast Indium Nitride based VIS-NIR photo-detector**
Shibin Krishna, Alka Sharma, Neha Aggarwal, Sudhir Husale and Govind Gupta

Physics of Energy Harvesting, CSIR-National Physical Laboratory (CSIR-NPL), New Delhi, India, Quantum Phenomena and Applications, CSIR-NPL, New Delhi, India, Academy of Science & Innovative Research (AcSIR), CSIR-NPL Campus, New Delhi - 110012, India

**E poster : Juergen Christen**

18:00 **Theoretical calculations of miscibility of III nitride quaternary alloys**
R. Mohamad1, A. Béré2, H. Ben Ammar1, A. Mirj1, P. Gamarra3, C. Lacam3, J. Chen1 and P. Ruterana1

1 CIMAP, UMR 6252, UNICAEN, CNRS, ENSICAEN, CEA, 6 Boulevard Maréchal Juin, 14050 Caen and Pôle Universitaire d’Alençon, Campus de Damigny, 61250 Damigny 2 Laboratoire de Physique et de Chimie de l’Environnement, Université de Ouagadougou, 03 BP: 7021 Ouagadougou 03, Burkina Faso 3 I III-VLab, 1 Avenue Augustin Fresnel, Campus Polytechnique, 91767 Palaiseau, France
18:00 Calculated band bowing and band alignment of dilute Sb alloy GaN1-xSbx
Qing Shi1, Ying-Chih Chen1, Fagrul A. Chowdhury2, Zetian Mi2, Vincent Michaud-Rioux1, Hong Guo1
1Department of Physics, McGill University, Montréal, QC, H3A 2T8, Canada 2Department of Electrical and Computer Engineering, Montréal, QC, H3A 0E9, Canada

18:00 Simulation of transient carrier-exciton-phonon energy transport in GaN
Bei Ma, and Yoshihiro Ishitani
Chiba University

18:00 Estimation of strain relaxation in InGaN/GaN nanowires through excitonic binding energy
Sandeep Sankaranarayanan, Swaroop Ganguly, Dipankar Saha
Research scholar at department of electrical engineering IIT Bombay

18:00 First-principles Investigation of artificial photosynthesis on Ga(In)N surface
Xianghua Kong, Wei Ji, Zetian Mi, Hong Guo
Department of Physics, McGill University, Montreal, QC H3A2T8, Canada, Department of Physics and Beijing Key Laboratory of Optoelectronic Functional Materials and Micro-Nano Devices, Renmin University of China, Beijing 100872, P. R. China, Department of Electrical & Computer Engineering, McGill University, Montreal, QCCH3A0E9, Canada, Department of Physics, McGill University, Montreal, QC H3A2T8, Canada,

18:00 Exploring the Mechanism of Reducing the LED Efficiency Droop Effect through Surface Plasmon Coupling
Chien-Chih Chen, Wen-Yen Chang, Yang Kuo, Yean-Woei Kiang, C. C. Yang
Institute of Photonics and Optoelectronics, National Taiwan University

18:00 Modeling of localization effects in disordered GaN-based materials measured by STL
J.-M. Lentali,1 M. Filoche,1 W. Hahn,1 J. S. Speck,2 A. Alhassan,2 L. Martineili,1 C. Weisbuch,1 Y. Lassailly,1 and J. Peretti1
1 Laboratoire de Physique de la Matière Condensée, CNRS-Ecole Polytechnique, Université Paris-Saclay, 91128 Palaiseau, France 2 Department of Materials, University of California, Santa Barbara, California 93106, USA

18:00 Towards 3D GaN characterization: Influence of spot size, beam current and temperature on the cathodoluminescence spectrum of InG
Hendrik Spende 1,2,*, Johannes Ledig 1,2,3, Klas Strempel 1,2, Sönke Fündling 1,2, Andreas Waag 1,2
1 Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, Braunschweig University of Technology, 38092 Braunschweig, Germany 2 epitaxy competence center ec2, Hans-Sommer-Straße 66, 38106 Braunschweig, Germany 3 Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany

18:00 Structure of dislocation core in pyramidal plane of n- and p- doped wurtzite GaN
I.G. Batyrev, N.S. Weingarten, K. A. Jones
US Army Research Laboratory, 2800 Powder Mill Road Adelphi, MD 20783-1138

18:00 Influence of tunneling interaction with defects on the recombination dynamics in GaN/AlN quantum dots
Ivan A. Aleksandrov, Konstantin S. Zhuravlev, Vladimir G. Mansurov, Timur V. Malin
A.V. Rzhanov Institute of Semiconductor Physics, Lavrentiev 13, Novosibirsk 630090, Russia
18:00 **Thermodynamic analysis of InGaN MOVPE: influence of lattice constraint**

Yuya Inatomi1, Yoshihiro Kangawa1,2,3, Tomonori Ito4, Tadeusz Suski5, Koichi Kakimoto2, and Akinori Koukitu6

1 Department of Aeronautics and Astronautics, 2 Research Institute for Applied Mechanics (RIAM), Kyushu University, 3 Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, 4 Department of Physics Engineering, Mie University, 5 Institute of High Pressure Physics PAS, 6 Department of Applied Chemistry, Tokyo University of Agriculture and Technology

18:00 **Theoretical calculation of rate coefficients, densities, and decay time of excitons and free carriers in GaN**

Kensuke Oki, Kentaro Nomachi, Bei Ma, Ken Morita, Yoshihiro Ishitani

Chiba University

18:00 **A Methodology for Multiphysics Simulation of GaN MOVPE Using Thermodynamic Analysis of Driving Force of GaN Crystal Growth**

K. Kawakami, Y. Yamamoto, K. Yoshimatsu, N. Okamoto, Y. Kangawa, K. Kakimoto and K. Shiraishi

Nagoya Univ., Graduate School of Engineering, Nagoya Univ., IMaSS, Nagoya Univ., RIAM, Kyushu Univ.

18:00 **Multiphysics Flow Simulation with Suitable Conditions Predicted by Thermodynamic Analysis of Driving Force of GaN Crystal Growth**

Y. Yamamoto, K. Kawakami, K. Yoshimatsu, N. Okamoto, Y. Kangawa, K. Kakimoto and K. Shiraishi

Graduate School of Engineering, Nagoya University, Institute of Materials and Systems for Sustainability, Nagoya University, Research Institute for Applied Mechanics, Kyushu University

18:00 **On the nature of light emission in polar GaN/(AlGa)N quantum wells**

C. Brimont1, T. Guillet1, D. Scalbert1, B. Jouault1, P. Valvin1, T. Bretagnon1, P. Lefebvre1, L. Labourcade2, N. Grandjean2, B. Damilano3, M. Vladimirova1

1 Laboratoire Charles Coulomb, CNRS/Université de Montpellier, Montpellier, France, 2 Institute of Physics, EPFL, Lausanne, Switzerland, 3 Centre de Recherche sur l’Hétéro-Epitaxie et ses Applications, CNRS, Valbonne Sophia Antipolis, France

18:00 **Role of oxygen atoms on polarity inversion of N-polar AlN buffer layers: a first-principles study**

1 Motoshi Uchino, 1 Toru Akiyama, 1 Kohji Nakamura, 1 Tomonori Ito, 2 Hideko Miyake, 3 Kazumasa Hiramatsu

1 Department of Physics Engineering, Mie University, 2 Graduate school of Regional Innovation Studies, Mie University, 3 Department of Electrical and Electronic Engineering, Mie University

18:00 **Density Functional Theory study of adsorption of molecular oxygen and water at GaN(0001) surface**

Paweł Strak 1), Yoshihiro Kangawa 2,3), Stanislaw Krukowski 1), Paweł Kempisty 1,3), Michal Bockowski 1)

1) Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland 2) Research Institute for Applied Mechanics, Kyushu University, Kasuga, Fukuoka 816-8580, Japan 3) Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya 464-8603, Japan

18:00 **Calculation of material gain in polar AlGaN quantum wells grown on virtual AlGaN substrates**

Marta Gladysiewicz Robert Kudrawiec

Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology, Wybrzeże Wyspiańskiego 27, 50-370 Wrocław, Poland
18:00 **Density functional theory study of the polar AlN(0001) surface reactivity**

B. Eydoux1,2, B. Baris1, S. Gauthier1, X. Bouju1, D. Martrou1

1-Centre d’élaboration de matériaux et d’études structurales CEMES-CNRS UPR 8011, Nanosciences Group. 29 rue Jeanne Marvig, F-31055, Toulouse, France 2-Université Toulouse III, UPS, 118 route de Narbonne, F-31062 Toulouse, France,

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18:00 **Roll of Hydrogen during Metalorganic Vapor Phase Epitaxy of N-polar III-nitrides**

Takashi Hanada, Takashi Matsuoka

Institute for Materials Research, Tohoku University

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18:00 **Systematic theoretical investigations for crystal structure deformation in group-III nitrides : a first-principles study**

Yuma Tsuboi, Toru Akiyama, Kohji Nakamura, Tomonori Ito

Department of Physics Engineering, Mie University, Tsu 514-8507, Japan.
Thursday Program

A - Materials
B - Optical devices
C - Electronic devices
G - Late news
parallel sessions 8:30 - 10:00

Nanophotonics : Rachel Oliver

08:30  
GaN-on-silicon integrated photonics for IR to visible light frequency conversion

P. Boucaud 1, I. Roland 1, Y. Zeng 1, F. Tabataba-Vakili 1, M. El Kurdi 1, S. Sauvage 1, X. Checoury 1, M. Gromovyi 2, S. Rennesson 2, F. Semond 2, J.-Y. Duboz 2, M. de Micheli 3, J. Selles 4, C. Brimont 4, T. Guillet 4, B. Gayral 5,6

1 Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Bâtiment 220, Rue André Ampère, F-91405 Orsay, France , 2 Centre de Recherche pour l’Hétéro-Epitaxie et ses Applications (CRHEA-CNRS), Université Côte d’Azur, Rue Bernard Grégory, F-06560 Valbonne, France, 3 Institut de Physique de Nice, Université de Nice-Sophia-Antipolis, 06108 Nice, France, 4 Laboratoire Charles Coulomb (L2C), UMR 5221, CNRS-Université de Montpellier, F-34095 Montpellier, France, 5 CEA, INAC-PHELIQS, Nanophysique et semiconducteurs group, F-38000 Grenoble, France, 6 Univ. Grenoble Alpes, F-38000 Grenoble, France

09:00  
Comparison of Low-Threshold lasing in InGaN/GaN Quantum Dot and Quantum Well Micro-Ring Cavities

Danqing Wang, Tongtong Zhu, Rachel A. Oliver, Evelyn L. Hu

John A. Paulson School of Engineering and Applied Sciences, Harvard University, USA. Department of Materials Science and Metallurgy, University of Cambridge, UK

09:15  
Interface phonon polariton propagation and LO phonon-resonant absorption of infrared light in AlN/metal-composites

Hironori Sakamoto, Bei Ma, Ken Morita, Yoshihiro Ishitani

Chiba University

09:30  
Recollection dynamics in 3D InGaN/GaN microrod and fin heterostructures

Angelina Vogt (1), Jana Hartmann (1,2), Hao Zhou (1), Felix Blumenröther (1), Sönke Fündling (1,2), Hergo-Heinrich Wehmann (1,2), Andreas Waag (1,2), Tobias Voss (1)

1 Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology, TU Braunschweig, 38092 Braunschweig, Germany, 2 Epitaxy Competence Center, ec2, 38092 Braunschweig, Germany

09:45  
Coffee break

Electronics and future : Tomas Palacios

08:30  
To be announced

U. Mishra

UCSB, USA

09:00  
Pursuing the Promise of Ultra-Wide-Bandgap Ga2O3 Power Device Technology

Masataka Higashiwaki1, Man Hoi Wong1, Keita Konishi1,2, Kohei Sasaki3, Ken Goto3,2, Hisashi Murakami2, Yoshihisa Kumaigai2, Akito Kuramata3, Shigenobu Yamakoshi3

1) National Institute of Information and Communications Technology, Koganei, Tokyo 184-8795, Japan, 2) Department of Applied Chemistry, Tokyo University of Agriculture and Technology, Koganei, Tokyo 184-8588, Japan, 3) Tamura Corporation, Sayama, Saitama 350-1328, Japan

09:30  
Monolithic Integration of E/D-Mode HEMTs for Logic Circuits on the p-GaN Gate Technology Platform

Gaofei Tang, Hanxing Wang, Jiacheng Lei, Kevin J. Chen

Dept. of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong
09:45 The high temperature performances of AlGaN-based high electron mobility transistors
Weihang Zhang, Jincheng Zhang, Li Zhang, Tao Zhang, Yue Hao
Key Laboratory of Wide Band-Gap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, Xi&#8217,an 710071, People&#8217,s Republic of China

10:00 Coffee break

LATE NEWS : Bruno Gayral

08:30 Pure single photon emission and its temperature dependence from interface-fluctuation GaN quantum dots
F. Le Roux, K. Gao, M. Holmes, S. Kako, M. Arita, Y. Arakawa
Institute for Nano Quantum Information Electronics, The University of Tokyo, Japan, Institute of Industrial Science, The University of Tokyo, Japan.

08:45 Degradation process of nitride laser diodes: MOVPE versus MBE - who is the winner?
Agata Bojarska1, Przemyslaw Wiśniewski2, Irina Makarowa2, Grzegorz Muzioł1, Robert Czernecki1,2, Czesław Skierbiszewski1, Tadek Suski1 and Piotr Perlin1,2
1 Institute of High Pressure Physics, „Unipress” Sokolowska 29/37 01-142 Warsaw, Poland, 2 TopGaN Limited, Sokolowska 29/37 01-142 Warsaw, Poland

09:00 High-voltage AlGaN/GaN MOSHEMTs on silicon with slanted tri-gate structures
Jun Ma, Elison Matioli
Power and Wide-band-gap Electronics Research Laboratory (POWERlab), École polytechnique fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland

09:15 Quantum modeling of GaN/InGaN/GaN tunnel junctions
Nicolas Cavassilas, Yann Claveau, Marc Bescond, Fabienne Michelini
Aix Marseille Université, CNRS, Université de Toulon, IM2NP UMR 7334, 13397, Marseille, France

09:30 Achievement of extremely high WPE (9.6%) of AlGaN deep-UV LED by using transparent contact layer, reflective electrode and lens
Hideki Hirayama1*, Tomohiko Shibata2, Yukio Kashima1,3*, Eniko Matsuura1,3, D. Hideki Takagi4, Noritoshi Maeda1, Masafumi Jo1, Takeshi Iwa5, Toshiro Morita5, Mitaniou Kokubo6, Takaharu Tashiro6, Ryuichiro Kamimura7, Yamato Osada7,
1-RIKEN, 2-1 Hirosawa Wako, Saitama, 351-0198 Japan, 2 DOWA Electronics Co. Ltd. 1 Sata, Iijima, Akita, 011-0911 Japan, 3 Marubun Corporation, 8-1 Odemna-cho, Nihonbashi, Chuow Ward, Tokyo, 109-8577 Japan, 4-AIST, Tsukuba-East, 1-2-1 Namiko, Tsukuba, Ibaraki, 305-8564 Japan 5-Tokyo Ohka Kogyo Co., Ltd. 150 Nakamaruko, Nakahara, Kawasaki, Kanagawa, 211-0012 Japan, 6-Toshiba Machine Co., Ltd. 2068-3, Ohoka, Namadu, Shizuoka, 410-8510 Japan, 7-ULVAC, Inc. 2500, Hagizono, Chigasaki, Kanagawa, 253-8543 Japan

09:45 Light Emitting Diodes on Semipolar (11-22) and (20-21) GaN on Patterned Sapphire Templates
Michel Khoury (1), Hongjian Li (1), Leah Kuritzky (1), Asad Mughal (1), Philippe De Mierry (2), James. S. Speck (1) and Steven P. DenBaars (1)
(1) Materials Department, University of California Santa Barbara, California 93106, USA. (2) CNRS - CRHEA, Rue Bernard Gregory, 06560 Valbonne, France
parallel sessions
10:30 - 12:15

Characterization : Carol Trager-Cowan

10:30  
**Carrier dynamics studies of III-nitride materials using photo-acoustic and photoluminescence measurements**
Kanazawa Institute of Technology, Sony Corporation

11:00  
**Interband Carrier Dynamics of Gamma3 and Gamma1 Energy Bands of InN using Ultrafast Spectroscopic Techniques**
Blair C. Connelly, Chad S. Gallinat, Michael Wraback
U.S. Army Research Laboratory, Sensors and Electron Devices Directorate, Adelphi, MD USA 20873

11:15  
**Studies of free charge carrier properties in AlGaN and InGaN based structures by infrared and terahertz optical Hall effect**
Nerijus Armakavicius, Jr-Tai Chen, Tino Hofmann, Sean Knight, Philipp Kühne, Mengyao Xie, Enrique Calleja, Ming-Shien Hu, Daniel Nilsson, Urban Forsberg, Erik Janzén, Mathias Schubert, Vanya Darakchieva
1) Terahertz Materials Analysis Center, Department of Physics, Chemistry and Biology IFM, Linköping University, Sweden 2) Semiconductor Materials, Department of Physics, Chemistry and Biology IFM, Linköping University, Sweden 3) Department of Electrical and Computer Engineering, University of Nebraska-Lincoln, USA 4) Institute of Optoelectronic and Microtechnological Systems, Universidad Politécnica de Madrid, Madrid, Spain

11:30  
**Nitrogen displacement related deep level traps in homoepitaxial n-type GaN**
Masahiro Horita1, Tetsuo Narita2, Tetsu Kachi3, Tsutomu Uesugi2, Jun Suda1 3
1Kyoto University, 2Toyota Central R&D Labs., 3Nagoya University

11:45  
**Bistability of the Fermi level position at the air/GaN(0001) interface**
Ł. Janicki 1, M. Gladysiewicz 1, J. Misiewicz 1, K. Klosek 2, M. Sobanska 2, P. Kempisty 3, Z. R. Ztykiewicz 2, and R. Kudrawiec 1
1 Faculty of Fundamental Problems of Technology, Wrocław University of Technology, Wybórzez Wyspiańskiego 27, 50-370 Wrocław, Poland 2 Institute of Physics, Polish Academy of Science, al. Lotników 32/46, 02-668 Warsaw, Poland 3 Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland

12:00  
**Lifetime killers in as-grown and irradiated n-GaN films and crystals**
A.Y. Polyakov1, E.B. Yakimov 1and 2, N.B. Smirnov1, I.V. Shchemerov1, S.I. Didenko1, In-Hwan Lee3, S.J. Pearton4
1National University of Science and Technology MISiS, Leninskiy pr. 4, Moscow 119049, Russia 2Institute of Microelectronics Technology and High Purity Materials, Russian Academy of Science, 6, Academician Ossipyan str., Chernogolovka, Moscow Region 142432, Russia 3 School of Materials Science and Engineering, Korea University, Seoul 02841, Korea 4 University of Florida, Gainesville, Florida 32611, USA

12:15 Lunch

Tunnel junctions : Nicolas Grandjean

10:30  
**Tunnel junction contacts for high efficiency InGaN edge emitting lasers and VCSELS**
Erin C. Young, Benjamin P. Yonkee, Changmin Lee, John T. Leonard, Daniel A. Cohen, Steven P. DenBaars, Shuji Nakamura, James S. Speck
University of California, Santa Barbara, USA
11:00 Deep Ultraviolet Tunnel Junction Nanowire LEDs and Electrically Pumped Lasers
Zetian Mi, Songrui Zhao, Sharif Sadaf, Xianhe Liu, Binh Le, Nhung Tran
Department of Electrical Engineering and Computer Science, Center for Photonics and Multiscale Nanomaterials, University of Michigan, Ann Arbor, Michigan 48109, United States  Department of Electrical and Computer Engineering, McGill University, 3480 University Street, Montreal, QC H3A 0E9, Canada

11:30 High efficiency tunnel-injected deep UV LEDs
Yuewei Zhang1,a), Sriram Krishnamoorthy1, Fatih Akyol1, Zane Jamal-Eddine1, Sanyam Bajaj1, Andrew Allerman2, Michael W. Moseley2, Andrew Armstrong2, and Siddharth Rajan1,a)
1 Department of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio, 43210, USA  2 Sandia National Laboratories, Albuquerque, New Mexico 87185, USA Email: (a) zhang.3789@osu.edu (b) rajan@ece.osu.edu.

11:45 Dipolar excitons in InGaN/GaN Light Emitting Diode Structures with tunnel junction.
T. Suski(1)*, G. Staszczak(1), K. P. Korona(2), P. A. Drózd(1,2), G. Muzio(1), C. Skierbiszewski(1), M. Kulczykowski(3), M. Matuszewski(3), E. Grzanka(1,4), A. Khachapuridze(1), J. Smalc-Koziorowska(1), P. Perlin(1,4) * presenting author
(1) Institute of High Pressure Physics, UNIPRESS, PAS, 01-142 Warsaw, Poland , (2) Faculty of Physics, University of Warsaw, Pasteura 5, 02-093 Warsaw, Poland, (3) Institute of Physics, Polish Academy of Sciences, 02-668 Warsaw, Poland, (4) TopGaN, 01-142 Warsaw, Poland,

12:00 Tunnel junction nitride laser diodes grown by plasma assisted molecular beam epitaxy
Institute of High Pressure Physics, Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland, Top-GaN Ltd., Sokolowska 29/37, 01-142 Warsaw, Poland

12:15 Lunch

Nanotechnology for electronics:
Kevin Chen

11:00 Nanoscale technologies for high-voltage GaN power devices
Elison Matioli
Ecole Polytechnique Fédérale de Lausanne (EPFL)

11:30 Self-aligned source-first process for vertical conduction GaN fin MOSFETs
Maher Tahhan, Anchal Agarwal, Brian Romanczyk, Silvia Chan, Chirag Gupta, Stacia Keller, Umesh Mishra
University of California, Santa Barbara, Department of Electrical and Computer Engineering,University of California, Santa Barbara, Department of Material Science

11:45 80 nm-gate Fin-like Nanowire-Channel Al2O3/InAlN/GaN MISHEMTs on Si with Improved Linearity
Weichuan Xing1, 2, Zhihong Liu1, Hao dong G iu2, Geok Ing Ng1, 2, and Tomás Palacios3
1 Singapore-MIT Alliance for Research and Technology, 117543, Singapore  2 School of EEE, Nanyang Technological University, 639798, Singapore 3 Microsystem Technology Lab, Massachusetts Institute of Technology, 02139-4307, USA

12:00 Current Collapse-free AlGaN/GaN Nanowire Gate-All-Around FETs
Chul-Ho Won, Ki-Sik Im, Jeong-Gil Kim, Seung-Hyeon Kang*, Jung-Hyeok Lee, Young Soo Lee, Jung-Hee Lee
School of Electronics Engineering, Kyungpook National University

12:15 Lunch
parallel sessions
13:45 - 15:45

**AIN/AlGaN : Julien Brault**

13:45
Investigation of the mechanisms behind the AlN on Si (111) microstructure

- N. Mante1, S. Rennesson2, E. Frayssinet2, L. Largeau3, F. Semond2, G. Feuillet, P. Vennéguès2
  1 Université Grenoble Alpes, CEA, LETI, MINATEC Campus, F-38054 Grenoble, France
  2 Université Côte d’Azur, CRHEA-CNRS, rue B. Grégory, F-06560 Valbonne, France
  3 C2N-CNRS, Route de Nozay, F-91460 Marcoussis, France

14:00
Dislocation reduction and strain relaxation of AlN film with new interface formation by high temperature annealing under N2

- Mingxing Wang, Fujun Xu, Zhixin Qin, Lisheng Zhang, Yuanhao Sun, Na Xie, Zhaoying Chen, Bo Shen
  State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China

14:15
Influence of AlyGa1-yN quantum dots design on the optical properties for ultraviolet emission

- S. Matta1,2*, J. Brault1, T.-H. Ngo2, B. Damilano1, M. Korytov1, P. Vennéguès1, M. Nemoz1, J. Massies1, M. Leroux2 and B. Gil2
  1 CNRS-CRHEA, Rue B. Gregory, 06560 Valbonne, France
  2 L2C, UMR 5221, Case courrier 074-34095 Montpellier Cedex 5, France

14:30
Controlling UV Absorption in Two-inch AlN Single Crystal Growth

- Robert Bondokov, Jianfeng (Jeff) Chen, Murugesu Yoganathan, Takashi Suzuki, Shailaja P. Rao, Toru Kimura, Keisuke Yamaoka, and Leo J. Schowalter
  Crystal IS, Inc., 70 Cohoes Av, Green Island, USA, and Asahi Kasei Corp, 2-1 Samejima, Fuji-shi, Shizuoka, 416-8501, Japan

14:45
-p-n junction visualization and quantitative characterization on single AlxGa1-xN nanowires

- A.M. Siladie [1,2], M. Belloeil [1,2], Z. Fang [3], L. Tizei [4], M. Kociak [4], A. Cros [5], N. Garro [5], B. Gayral [1,2], J. Pernet [1,3] and B. Daudin [1,2]
  [1] Univ. Grenoble Alpes, 38000 Grenoble, France
  [2] CEA, INAC-PHELIQS «Nanophysics and semiconductors» group, F-38000 Grenoble, France
  [3] CNRS, Inst. NEEL, F-38042 Grenoble, France
  [4] Laboratoire de Physique des Solides, Université Paris-Sud, 91405, Orsay, France
  [5] Materials Science Institute (ICMUV), University of Valencia, P.O. Box 22085, E46071, Valencia, Spain

15:00
Improvement of AlN crystalline quality and AlGaN-based 281-nm MQWs IQE through Small-Coalescence-Area Lateral Growth on NPSS

- Lisheng Zhang, Fujun Xu*, Mingxing Wang, Yuanhao Sun, Nan Xie, Zhixin Qin, and Bo Shen*
  State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, Beijing 100871, China

15:15
Characterization of Nonradiative Recombination Processes in AlGaN-Based Multi-Quantum-Well Structures for Deep Ultraviolet LEDs

- M. Tollabi Mazraehno1,2, M. P. Hoffmann2, C. Reich1, S. Englisch2, C. Brandl2, M. Binder2, B. Galler2, T. Wernicke1, M. Kneissl1, and H.-J. Lugauer2
  Institute of Solid State Physics, Technische Universität Berlin, Hardenbergstr. 36, 10623 Berlin, Germany
  OSRAM Opto Semiconductors GmbH, Leibnizstr. 4, 93055 Regensburg, Germany
15:30 MOVPE growth of AlN on thermally roughened sapphire
Sylvia Hagedorn, Arne Knauer, Ute Zeimer, and Markus Weyers
Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik,
Gustav-Kirchhoff-Str. 4, D-12489 Berlin, Germany

Optics and physics : Yoichi Kawakami

13:45 Ultrafast spectroscopy of III nitride heterostructures under high injection: from fundamental properties to device
Gwénoté Jacopin
Institute of Physics, École Polytechnique Fédérale de Lausanne,
1015 Lausanne, Switzerland

14:15 Suppression of the quantum confined Stark effect in polar III-nitride heterostructures for efficient UV emitters
M. R. Wagner1, S. Schlichting1, J. Mösener2+3, P. Hille2+3, J. Teubert2, J. Schörmann2, M. Eickhoff2+3, A. Hoffmann1, G. Callsen1+4, G. M. O. Hönig5
1Institute of solid state physics, Technical University Berlin,
Hardenbergstr. 36, 10623 Berlin, Germany, 2I. Physikalisches Institut, Justus-Liebig-Universität Giessen, Heinrich-Buff-Ring 16, 35392 Giessen, Germany, 3Institute of Solid State Physics, University of Bremen, Otto-Hahn-Allee 1, 28359 Bremen, Germany, 4Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland, 5Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, 12205 Berlin, Germany

14:30 Luminescence and conductivity studies of chevrons in semi-polar (11-22) InGaN/GaN multiple quantum well structures
C. Brasser (1), J. Bruckbauer (1), Z. Li (2), L. Jiu (2), J. Bai (2), P. R. Edwards (1), T. Wang (2) and R. W. Martin (1)
(1) Department of Physics, SUPA, University of Strathclyde, Glasgow, United Kingdom (2) Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom

14:45 Absence of quantum-confined Stark effect in GaN/(Al,Ga)N nanowires grown by molecular beam epitaxy
Chiara Sinito, Pierre Corfdir, Timur Flissikowski, Carsten Pfüller, Javier Bartolomé Vlîchez, Uwe Jahn, Thomas Auzelle, Johannes K. Zettler, Sergio Fernández-Garrido, Holger T. Grahn, and Oliver Brandt
Paul-Drude-Institut für Festkörperphysik, Leibniz-Institut im Forschungsverbund Berlin e.V., Hausvogteiplatz 5–7, 10117 Berlin, Germany

15:00 Influence of electric field variation on optical properties of semipolar InGaN/GaN light emitting diodes
Stefan Freytag1*, Michael Winkler1, Tim Wernicke2, Luca Sulmoni1, Ingrid Koslow2, Duc V. Dinh3, Brian Corbett3, Peter J. Parbrook3, Martin Feneberg1, Michael Kneissl1, and Rüdiger Goldhahn1
*Corresponding author: stefan.freytag@ovgu.de
1Institut für Experimentelle Physik, Otto-von-Guericke-Universität, Magdeburg, Germany, 2Technische Universität Berlin, Institute of Solid State Physics, Berlin, Germany, 3Tyndall National Institute, University College Cork, Cork, Ireland

15:15 Estimation of the anisotropic deformation potential D5 for GaN and InN by control of anisotropic strain in m-plane GaInN/GaN QWs
Fedor Alexej Ketzer, Philipp Horenburg, Heiko Bremer, Uwe Rossov, and Andreas Hangleiter
Institute of Applied Physics, Braunschweig University of Technology, Germany

15:30 Is the built-in electric field fully screened at the threshold of nitride lasers?
A. Kafar (1), S. Stanczyk (1,2), K. Pieniak (1), T. Suski (1), P. Perlin (1,2)
(1) Institute of High Pressure Physics PAS, Sokolowska 29/37, 01-142 Warsaw, Poland, (2) TopGaN Ltd., Sokolowska 29/37, 01-142 Warsaw, Poland
Two terminal devices : Yvon Cordier

13:45  Resonant Tunneling Diodes (RTDs): an elusive III-Nitride device
       Jimmy Encomendero1, S.M. Islam1, Vladimir Protasenko, Debdeep Jena1,2 and Huili Grace Xing1,2,*

School of Electrical and Computer Engineering, Cornell University, Ithaca, NY 14853 Department of Materials Science and Engineering, Cornell University, Ithaca, NY 14853

14:15  Record High Peak Current Density of Over 180 kA/cm^2 in GaN/AlN Resonant Tunneling Diodes
       Jimmy Encomendero1, SM Islam1, Sergei Rouvimov2, Patrick Fay2, Debdeep Jena1,3, and Huili Grace Xing1,3.

1-School of Electrical and Computer Engineering, Cornell University, 2-Department of Electrical Engineering, University of Notre Dame, 3-Department of Materials Science and Engineering, Cornell University

14:30  High-Quality N-polar GaN p-n Diodes on Bulk N-Polar GaN Substrates by MBE
       Yong Jin Cho, Zongyang Hu, Kazuki Nomoto, Huili (Grace) Xing, Debdeep Jena

School of Electrical and Computer Engineering, Cornell University, Ithaca, New York 14853, USA

14:45  Defect-free Ni Schottky diodes on GaN with high temperature stability
       Ramon Collazo [1], Pramod Reddy [1], Biplab Sardar [1], Felix Kaess [1], Erhard Kohn [1], and Zlatko Sitar [1]

[1] Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC 27695-7919, USA.

15:00  Development of vertical GaN JBS Diode fabricated by selective area p-GaN regrowth
       Ryo Tanaka, Stacia Keller, Umesh Mishra

Fuji Electric Co., Ltd., Department of Electrical and Computer Engineering, University of California, Santa Barbara, Department of Electrical and Computer Engineering, University of California, Santa Barbara

15:15  Temperature dependence of Schottky barrier height of Ni/n-GaN consistently obtained by C-V and forward I-V measurements
       Takuya Maeda, Masaya Okada, Masaki Ueno, Yoshiyuki Yamamoto, Tsunenobu Kimoto, Masahiro Horita, and Jun Suda

Kyoto University, Takuya Maeda, Tsunenobu Kimoto, Masahiro Horita, and Jun Suda, Sumitomo Electric Industries, Ltd., Masaya Okada, Masaki Ueno, and Yoshiyuki Yamamoto, Nagoya University, Jun Suda

15:30  Single Crystal AlN Films with Improved Elastic and Piezoelectric Properties for Bulk Acoustic Wave Filters
       Shawn R. Gibb, Ramakrishna Vetury, Michael D. Hodge, Pinal Patel, Alexander Yu. Feldman, and Jeffrey B. Shealy

Akoustis, Inc. 9805-H Northcross Center Ct. Huntersville, NC 28078, USA

Conference dinner

A conference dinner is being arranged on Thursday evening, starting at 19:00. All conference attendees are invited to this reception as a chance to meet and renew relationships with colleagues. The price is 50 EUR per attendee. Preregistration is mandatory.
Friday Program
Plenary 2

Friday - July 28

Session chair: B. Daudin

09:00 - 09:45: Plenary talk 4
A path toward electrically injected AlGaN-based deep UV laser diodes
North Carolina State University, Materials Science and Engineering, Raleigh, NC 27695, USA; Adroit Materials, Inc., 2054 Kildaire Farm Rd, Cary, NC 27518, USA

Despite the rapid progress in III-nitride-based laser diodes, sub-300 nm UV semiconductors lasers have not been realized. UV optoelectronic devices have a variety of applications such as sterilization, water purification, spectroscopy, and biological sensing. AlGaN-based technology developed on single crystalline AlN substrates and impurity control in the active region offers a pathway to address all these challenges. In addition to low dislocation density, reduction in non-radiative centers and compensating point defects in the active region are required to achieve high IQE. In order to understand the influence of point defects on radiative lifetime and ultimately achieve high IQE, we have carried out an extensive study of vacancy and carbon control via Fermi level and supersaturation management for various MQW structures grown on bulk AlN substrates. The use of bulk AlN substrates enabled us to undoubtedly distinguish the effect of growth parameters on optical quality from the influence of dislocations and achieve record high IQE of >95% at 260 nm. Using this technology, we achieved lasing at room temperature in optically pumped AlGaN-based MQW structures with a threshold as low as 6 kW/cm² and lasing wavelengths from 237 to 281 nm, and for the first time demonstrated population inversion in electrically injected lasers.

09:45 - 10:00: Break

10:00 - 10:45: Plenary talk 5
Laser light source for projection devices
Guillaume Arthuis
BBright, France

Laser Light sources, the future of video projection. Even if high brightness laser projection is still in its early stages, the latest improvements in GaN laser should trigger an acceleration of laser projection market adoption in digital cinema and other large venue projection applications. Laser baser projection provides multiple advantages: scalable light power, native primary colors, longer life cycles. BBright develops high power laser light sources and packaging technologies for red, green, and blue color. This presentation will cover the following items: - General review on video projection devices; how it works, and what are the main markets - Laser light sources in video projection, pro and cons - Other applications of laser light sources (medical, illumination)

10:45 - 11:15: Coffee break

11:15 - 12:00: Plenary talk 6
GaN Power Devices: Development, Manufacturing, and Application
Thomas Detzel
Infineon Technologies Austria AG

Compact devices with unique switching performance, this has been the promise of GaN power devices since several years. And now we are experiencing the exciting time when this is becoming reality. Advanced GaN technologies will be a decisive step towards energy efficiency and size & weight reduction in a variety of applications which today are still dominated by silicon devices. This plenary talk will provide a technology performance comparison between GaN and Si power devices and will try to answer the question where GaN will succeed. The development and implementation of benchmark GaN-on-Si enhancement mode power technology in a high-volume Si manufacturing line leading to Europe’s most comprehensive power device fab will be presented. A key success factor is an outstanding R&D eco-system which will be highlighted by sharing our contribution to the European funding project PowerBase in which 39 partners throughout the entire value chain, ranging from base-material to final application, teamed up to pioneer the path for a wide adoption of GaN power technology in a broad application spectrum. First successful uses of 600V enhancement mode GaN products in high performance applications will be shown. Examples will include highest efficiency high power switched mode power supplies for server and telecom applications as well as high frequency DCDC stages resulting in unique increase of power density and reduction of form factor.

12:00 - 12:15: Closing ceremony - J.Y. Duboz - B. Gil
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