



**GaN**  
marathon  
2026



**UNIVERSITÀ DI PADOVA**  
Dipartimento  
di Ingegneria  
dell'Informazione

# **GaN Marathon 2026**

**JUNE 7TH – 10TH 2026, FLORENCE, ITALY**

## **Committees**

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<b>Honorary Chair</b>	Enrico Zanoni
<b>Conference Managers</b>	Fabiana Rampazzo, Francesco Piva
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<b>Andreas Waag</b>	TU Braunschweig
<b>Tim Wernicke</b>	TU Berlin
<b>Hao Yu</b>	IMEC
<b>Enrico Zanoni</b>	Università di Padova

# Conference Program

**Sunday 7th June 2026**

**14:00–18:00**

Registration Opening

## **Short Courses – Only for Registered Attendees**

**14:35–14:45**

Short Courses Opening

**14:45–15:45**

Patrick Fay (University of Notre Dame)

*Impact Ionization in Nitrides Semiconductors*

**15:45–16:45**

Stefano Leone (Fraunhofer IAF, Epitaly)

*Expanding the Boundaries of Nitride Epitaxy: From Carbon-Free Growth to Functional Doping and Novel Alloys*

**17:00–18:00**

Debdeep Jena (Cornell University)

*Polarization Doping in Nitrides: Advantages and Perspectives*

**Monday 8th June 2026**

**09:00–09:30**

Matteo Meneghini (University of Padova, General Chair)

*Conference opening*

## **Innovation on III-N device fabrication and characterization**

**09:30–10:00**

KN01 – Hiroshi Amano (Nagoya University)

*Emerging Functionalities in Nitride Semiconductors Enabled by Ferroelectric Materials (Keynote)*

**10:00–10:30**

KN02 – Umesh Mishra (UCSB)

*The many faces of GaN (Keynote)*

**10:30–10:50**

IN19 – Nicolas Grandjean (EPFL)

*Non-radiative recombination in InGaN/GaN quantum wells: dislocations versus point defects (Invited Talk)*

**10:50–11:00**

CR28 – Jonas Lähnemann (Paul-Drude-Institut für Festkörperelektronik)

*The UV-C challenge: Insights from spatio- and time-resolved cathodoluminescence spectroscopy*

**11:00–11:10**

OP03 – Rintaro Kobayashi (Meijo University)

*Growth-Temperature Dependence and Physical Origin of Optical Gain in AlGaIn-Based UV-B Laser Diodes*

## Advanced research in III-Nitrides (including ASPIRE session)

**11:30–11:40**

CR37 – Manuel Fregolent (Università degli Studi di Padova)  
*Development and characterization of p-channel FETs on low-doped p-GaN with advanced Ohmic contacts (ASPIRE Talk)*

**11:40–12:00**

IN15 – Tomas Palacios (MIT)  
*GaN Technologies to Enable Back-Side Power Delivery (ASPIRE Invited Talk)*

**12:00–12:20**

IN21 – Martin Kuball (Bristol University)  
*Pathways for > 3 kV power devices: Opportunities in AlGaIn and Gallium Oxide (ASPIRE Invited Talk)*

**12:20–12:40**

IN09 – Matteo Meneghini (Università degli Studi di Padova)  
*Impact Ionization in GaN HEMTs: Experimental Analysis and Reliability Implications (ASPIRE Invited Talk)*

**12:40–13:00**

IN20 – Srabanti Chowdhury (Stanford University)  
*GaN power electronics for new applications (ASPIRE Invited Talk)*

**13:00–13:20**

IS01 – Kolja Haberland (LayTec AG)  
*Connected metrology - in-situ and ex-situ metrology during front-end fabrication of GaN based vertical and lateral transistor structures (Invited Talk)*

## Novel/optimized material properties and device structures

**14:20–14:30**

GF03 – Enrico Brusaterra (Ferdinand Braun Institut)  
*Vertical GaN Trench MOSFETs Under Dynamic Switching Stress*

**14:30–14:50**

IN04 – Stefano Leone (Fraunhofer IAF; Epitaly)  
*Beyond Conventional MOCVD: precursor chemistry unlocks next-generation nitrides HEMTs (Invited Talk)*

**14:50–15:10**

IN12 – Simon Fichtner (University Kiel)  
*Spontaneous Polarization and Ferroelectricity in III-N Semiconductors (Invited Talk)*

**15:10–15:20**

GF23 – Shumeng Yan (Nagoya University)  
*High-Gain AlGaIn/InGaIn DHBTs Enabled by Mg/GaN Annealing-induced Suppression of Surface Recombination*

**15:20–15:40**

IN13 – Åsa Haglund (Chalmers University)  
*Are photonic crystal surface emitting lasers perfect lasers or lasers for perfectionists? (Invited Talk)*

**15:40–16:00**

IN07 – Motoaki Iwaya (Meijo University)  
*AlGaIn UV-B Laser Diodes for Industrial Applications (Invited Talk)*

**16:00–16:20**

IN14 – Mitsuru Funato (Kyoto University)  
*Blue to red micro-LEDs (Invited Talk)*

## Industrial perspective and advanced characterization

**16:40–17:00**

IN09 – Shigefusa Chichibu (Tohoku University)

*Causes and countermeasures for the operation-induced power degradation issues (Invited Talk)*

**17:00–17:20**

IN03 – Ulrich Schwarz (TU Chemnitz)

*Far-field and mode prediction in photonic crystal surface emitting lasers (Invited Talk)*

**17:20–17:30**

OP12 – Sven Gerhard (ams OSRAM)

*Next-Gen high-power blue and green GaN lasers*

**17:30–17:50**

IS06 – Ferdinando Iucolano (STMicroelectronics)

*Impact of a C-related Buffer traps on 650V GaN HEMTs (Invited Talk)*

**17:50–18:10**

IS05 – Nicola Modolo (Infineon Technologies Austria AG)

*From Regression Analysis in GaN HEMTs towards Voltage Proliferation (Invited Talk)*

**18:10–18:30**

IS03 – Raoul Joly (Beneq)

*Impact of Atomic Layer Deposition Surface Passivation (Invited Talk)*

## Tuesday 9th June 2026

### Exploiting III-N properties for improved performance and reliability 1

**08:30–08:40**

OP13 – Francesco Piva (Università degli Studi di Padova)

*Origin of the positive ageing in 265 nm UV-C LEDs and its TCAD modeling*

**08:40–09:00**

IN18 – Tim Wernicke (TU Berlin)

*TBD (Invited Talk)*

**09:00–09:20**

IN17 – Maki Kushimoto (Nagoya University)

*Operational Characteristics of AlGaIn Deep-Ultraviolet Laser Diodes on Bulk AlN Substrates (Invited Talk)*

**09:20–09:40**

IS07 – Thomas Filz (ams OSRAM)

*μLED-applications in automotive, visualization and communication (Invited Talk)*

**09:40–10:00**

IN23 – Debdeep Jena (Cornell University)

*TBD (ASPIRE Invited Talk)*

**10:00–10:10**

GF16 – Yidi Yin (University of Bristol)

*Temperature dependent electrical characteristics of ultrawide bandgap high Al-content AlGaIn electronics (ASPIRE Talk)*

**10:10–10:20**

CR40 – Ambra Maria Vianello (Università degli Studi di Padova)

*Characterization and Modeling of Vertical Diodes with AlGaIn-Based p-type Distributed Polarization Doping (ASPIRE Talk)*

**10:20–10:30**

GF26 – Yingying Lin (Nagoya University)

*Study of Beryllium Acceptor States in Aluminum Nitride Through Cathodoluminescence Analysis (ASPIRE Talk)*

**10:30–10:40**

GF20 – Yu-Hsin Cindy Chen (Cornell University)  
*Enhancement-mode AlN/GaN/AlN HEMTs (ASPIRE Talk)*

### **High efficiency/high frequency devices and modeling**

**11:00–11:10**

MS13 – Pierpaolo Palestri (University of Modena and Reggio Emilia)  
*Modeling AlGaN/GaN HEMTs degradation due to hot carrier injection in the passivation layer*

**11:10–11:30**

IN16 – Elison Matioli (EPFL)  
*Leading edge roadmap for GaN devices (Invited Talk)*

**11:30–11:50**

IN06 – Nadine Collaert (Imec)  
*RF GaN Today: Maturity, Momentum, and What Comes Next (Invited Talk)*

**11:50–12:00**

CR09 – Nicolò Zagni (University of Modena and Reggio Emilia)  
*Dispersion Effects in 0.25 $\mu$ m GaN RF HEMTs Integrating Ultra-Thin InGaN Back-Barrier*

**12:00–12:20**

IN08 – Chris Van de Walle (UCSB)  
*Role of defects and impurities in efficiency and degradation of nitride devices (Invited Talk)*

### **Innovation on Wide and Ultra Wide Bandgap Devices**

**13:20–13:30**

MS14 – Jia Wang (Nagoya University)  
*Thickness-Dependent Thermal Annealing of Magnesium on Gallium Nitride: Mechanisms on Barrier Modulation and Carrier Transport (ASPIRE Talk)*

**13:30–13:50**

IN22 – Huili Grace Xing (Cornell University)  
*AlN XHEMTS-a new kid on the block (ASPIRE Invited Talk)*

**13:50–14:10**

IN11 – Siddharth Rajan (Ohio State University)  
*High-Performance Ultra-Wide Bandgap AlGaN Transistors (Invited Talk)*

**14:10–14:20**

CR13 – Luca Mazzone (EPFL)  
*A 3.9 kV GaN-on-Si Polarization Superjunction SBD with Low Specific On-Resistance and Repeatable OFF-State up to 150 °C*

**14:20–14:30**

CR39 – Agnieszka Corley-Wiciak (European Synchrotron Radiation Facility)  
*Operando and multimodal X-ray microscopy of strain and electromechanical coupling in GaN-on-Si HEMTs*

**14:30–14:40**

RF03 – Hakan Cankat Gur (EPFL)  
*Displacement-Field-Enhanced GaN HEMTs with IT/IMAX 220/420 GHz for Efficient Amplification at W-Band and Beyond*

## Wednesday 10th June 2026

### Exploiting III-N properties for improved performance and reliability 2 (including ASPIRE session)

**09:00–09:10**

CR02 – Minyeong Kim (University of Bristol)

*Post-Etch H<sub>3</sub>PO<sub>4</sub> Surface Treatment for Reliability Enhancement in  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Trench Schottky Barrier Diodes (ASPIRE Talk)*

**09:10–09:20**

GF36 – Jimy Encomendero (Cornell University)

*Resonant Tunneling Transport in GaN/AlN Multiple Barrier Heterostructures (ASPIRE Talk)*

**09:20–09:30**

GF14 – Aias Asteris (Cornell University)

*High Mobility Multiple-Channel AlScN/GaN Heterostructures (ASPIRE Talk)*

**09:30–09:50**

IN02 – Samuel Graham (University of Maryland)

*Thermal Management of AIGAN UWBG Devices for Next-Generation RF Applications (ASPIRE Invited Talk)*

**09:50–10:10**

IN01 – Tetsuo Narita (Toyota Central R&D Labs., Inc.)

*Control of Positive and Negative Bias Instability in GaN MOSFETs Using Crystalline AlN Interfacial Layer Technology (Invited Talk)*

**10:10–10:30**

IN05 – Patrick Fay (University of Notre Dame)

*Impact Ionization in Ultra-Wide Band Gap III-Ns: Measurement and Device Implications (Invited Talk)*

### Optimizing and exploiting material properties for advanced reliability

**10:50–11:00**

OP05 – Pierce Lonergan (Cornell University)

*AlSCN as an Electron Blocking Layer in Blue Light-Emitting Diodes: A First Look (ASPIRE Talk)*

**11:00–11:20**

IS04 – Kazutada Ikenaga (Taiyo Nippon Sanso)

*Enhancing Nitride Epitaxy Through Integrated MOCVD Technology (Invited Talk)*

**11:20–11:40**

IS02 – Thorsten Zweipfennig (Aixtron SE)

*Enabling GaN HEMT manufacturing on 300 mm Si substrates (Invited Talk)*

**11:40–12:00**

IN10 – Enrico Zanoni (Università degli Studi di Padova)

*Novel results in RF GaN Reliability (Invited Talk)*

**12:00–12:20**

IS08 – Tania Hemakumara (Oxford Instruments)

*Innovative Plasma Processing Solutions for High Volume Manufacturing of GaN devices (Invited Talk)*

**12:20–12:30**

GF34 – Yuji Zhao (Rice University)

*Selective Area Diamond Growth on GaN for Thermal Management of High Power Devices*

**12:30–13:00**

Matteo Meneghini (Università degli Studi di Padova, General Chair)

*Conference closure*