

CSW2019 Program

May 19 (Sun)

Special Lecture

Room C 15:00-17:30

15:00 - 16:00

The Fundamentals of Quantum Dots for Advanced Photonics I

Yasuhiko Arakawa

The University of Tokyo, Japan

Coffee Break

16:00 - 16:30

16:30 - 17:30

The Fundamentals of Quantum Dots for Advanced Photonics II

Yasuhiko Arakawa

The University of Tokyo, Japan

May 20 (Mon)

Opening Session Room A 08:30-08:40

MoPLN1 Plenary Session 1 Room A 08:40-10:00

MoPLN1-1 (Plenary) 08:40 - 09:20

GaN as a Key Material for Realizing Internet of Energy

Hiroshi Amano
Nagoya University, Japan

MoPLN1-2 (Plenary) 09:20 - 10:00

Large-Scale Integrated Photonics for Accelerated Communication and Computing

Ray Beausoleil
Hewlett Packard Enterprise, United States of America

Coffee Break	10:00 - 10:30
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MoPLN2 Plenary Session 2 Room A 10:30-11:50

MoPLN2-1 (Plenary) 10:30 - 11:10

Bottom-Up Grown Nanowire Quantum Devices

Erik Bakkers
Eindhoven University of Technology, Netherlands

MoPLN2-2 (Plenary) 11:10 - 11:50

Materials and Device Challenges for Next Generation LIDARS

James Harris
Stanford University, United States of America

ISCS/IPRM Award Ceremony & Photo Room A 11:50-12:30

Lunch Break	12:30 - 14:00
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MoA3 Advanced Lasers

Room A 14:00-16:00

Chair: Mike Larson and Mitsuru Takenaka

MoA3-1 (Invited)

14:00 - 14:30

Uncooled 53-Gbaud PAM4 Operation of EA/DFB and Directly Modulated DFB Laser for 400GbE Applications

Kazuhiko Naoe,* Takayuki Nakajima, Yoshihiro Nakai, Yoriyoshi Yamaguchi, Yasushi Sakuma, and Noriko Sasada
Datacom Business Unit, Lumentum, Japan

MoA3-3 (Oral)

14:30 - 14:45

Single-mode Operation of 1.3- μm Membrane Distributed Reflector Lasers on SiC Wafers

Suguru Yamaoka,* Ryo Nakao, Takuro Fujii, Koji Takeda, Tatsuuro Hiraki, Hidetaka Nishi, Takaaki Kakitsuka, Tai Tsuchizawa, and Shinji Matsuo
NTT Device Technology Labs, NTT Corporation, Japan

MoA3-4 (Oral)

14:45 - 15:00

Buried Tunnel Junction VCSEL with High Contrast Grating Top Reflector

Jonas Kapraun,* Jiaying Wang, Jipeng Qi, Kevin Cook, Emil Kolev, and Connie J. Chang-Hasnain
Department of Electrical Engineering and Computer Sciences and Tsinghua-Berkeley Shenzhen Institute, University of California Berkeley, United States of America

MoA3-5 (Oral)

15:00 - 15:15

InP-based devices integrating liquid crystals microcells for a tunable laser emission or a wavelength selective photodetection

Christophe LEVALLOIS,*¹ Benjamin BOISNARD,² Cyril PARANTHOEN,¹ Salvatore PES,¹ Thierry CAMPS,² Benattou SADANI,² Sophie BOUCHOULE,³ Laurent DUPONT,⁴ Mehdi ALOUINI,¹ and Veronique BARDINAL²
¹Univ Rennes, INSA Rennes, CNRS, Institut FOTON, France, ²Univ Toulouse, CNRS, LAAS, France, ³Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, France, ⁴IMT Atlantique, Optics Department, France

MoA3-6 (Oral)

15:15 - 15:30

Electrically injected 1.64 μm -emitting In_{0.65}Ga_{0.35}As 3-QW laser diodes grown on mismatched substrates by MOVPE

Honghyuk Kim,*¹ Bei Shi,² Qiang Li,² Ayushi Rajeev,¹ Kei May Lau,² Thomas F. Kuech,³ and Luke J. Mawst¹
¹Department of Electrical and Computer Engineering, University of Wisconsin-Madison, United States of America, ²Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong, ³Department of Chemical and Biological Engineering, University of Wisconsin-Madison, United States of America

MoA3-7 (Oral)

15:30 - 15:45

Low Loss InP Membrane Photonic Integrated Circuits Enabled by 193-nm Deep UV Lithography

Jorn van Engelen,* Sander Reniers, Jeroen Bolk, Kevin Williams, Jos van der Tol, and Yuqing Jiao
Institute for Photonic Integration, Eindhoven University of Technology, Netherlands

MoA3-8 (Oral)

15:45 - 16:00

Low Noise Monolithically Integrated Membrane DFB Laser on Silicon

Vadim Pogoretskiy,* Jos van der Tol, and Yuqing Jiao
Eindhoven University of Technology, Netherlands

MoB3 Growth of Nitrides

Room B 14:00-16:00

Chair: Takahiro Nagata and Yosuke Shimura

MoB3-1 (Invited)

14:00 - 14:30

III-Nitride Nanocrystals: From Low Threshold Ultraviolet Laser Diodes to High Efficiency Artificial Photosynthesis

Zetian Mi

Department of Electrical Engineering and Computer Science, University of Michigan, United States of America

MoB3-3 (Invited)

14:30 - 15:00

Molecular Beam Epitaxy of Transition Metal Nitrides for Superconducting Device ApplicationsD Scott Katzer,*¹ Neeraj Nepal,¹ Matthew T. Hardy,¹ Brian P. Downey,¹ David F. Storm,¹ Eric N. Jin,² David J. Meyer,¹ Rusen Yan,³ Guru Khalsa,³ John Wright,³ Huili (Grace) Xing,³ and Debdeep Jena³*¹US Naval Research Laboratory, United States of America, ²National Research Council (Residing at the US Naval Research Laboratory), United States of America, ³Cornell University, United States of America*

MoB3-5 (Oral)

15:00 - 15:15

Impact of the insertion of AlGa_N back barrier on crystal quality, N_S , and mobility of GaN-channel HEMTs with high-Al-content AlGa_N top barrier grown on high-resistivity Si substrate

Takuya Hoshi,* Hiroki Sugiyama, Fumito Nakajima, and Hideaki Matsuzaki

NTT Device Research Labs, NTT Corporation, Japan

MoB3-6 (Oral)

15:15 - 15:30

Effect of introducing optical blanking to GaN epitaxy by using pulsed laser deposition technology

Kazuki Kodama* and Daisuke Ueda

Green Innovation Lab, Kyoto Institute of Technology, Japan

MoB3-7 (Oral)

15:30 - 15:45

Fabrication of c-AlN/a-Sapphire Templates by Sputtering and High-Temperature AnnealingYusuke Hayashi,*¹ Kaito Fujikawa,² Kenjiro Uesugi,³ Kanako Shojiki,² and Hideto Miyake^{1,2}*¹Mie Univ., Grad. School of RIS, Japan, ²Mie Univ., Grad. School of Eng., Japan, ³Mie Univ., SPORR, Japan*

MoB3-8 (Oral)

15:45 - 16:00

Low resistivity ohmic contacts to n-ZnSe by utilizing a novel regrowth techniqueJohanna Janßen,*¹ Felix Hartz,² Till Huckemann,² Lars Reiner Schreiber,² Detlev Grützmacher,¹ and Alexander Pawlis¹*¹Peter Grünberg Institute 9, Forschungszentrum Jülich, Germany, ²JARA - Institute for Quantum Information, RWTH Aachen University, Germany***MoC3 Electrical and Optical Devices of 2D Materials**

Room C 14:00-16:00

Chair: Masaki Nakano and Seiji Akita

MoC3-1 (Invited)

14:00 - 14:30

Mid-infrared photoresponse and robotic fabrication of graphene/h-BN van der Waals heterostructures

Tomoki Machida

Institute of Industrial Science, University of Tokyo, Japan

MoC3-3 (Oral) 14:30 - 14:45

All solid-state 2D tunnel FET

Kosuke Nagashio

Department of Materials Engineering, The University of Tokyo, Japan

MoC3-4 (Oral) 14:45 - 15:00

Resonant Enhancement of Band-to-band Tunneling in In-plane MoS₂/WS₂ Heterojunction Tunnel Transistors

Tatsuya Kuroda, Futo Hashimoto, and Nobuya Mori*

Graduate School of Engineering, Osaka University, Japan

MoC3-5 (Oral) 15:00 - 15:15

Cyclotron resonance absorption in trilayer graphene

Momoko Onodera,^{*,1} Miho Arai,¹ Satoru Masubuchi,¹ Kei Kinoshita,¹ Rai Moriya,¹ Kenji Watanabe,² Takashi Taniguchi,² and Tomoki Machida^{1,3}

¹*Institute of Industrial Science, University of Tokyo, Japan,* ²*National Institute for Materials Science, Japan,* ³*CREST, JST, Japan*

MoC3-6 (Invited) 15:15 - 15:45

Atomically-Thin Photovoltaics: Progress, Promise and Interface Physics

Deep Manoj Jariwala

Department of Electrical and Systems Engineering, United States of America

MoC3-8 (Oral) 15:45 - 16:00

Exciton Diffusion in hBN-encapsulated Monolayer MoSe₂

Takato Hotta,^{*,1} Shohei Higuchi,¹ Uchiyama Yosuke,¹ Keiji Ueno,² Kenji Watanabe,³ Takashi Taniguchi,³ Hisanori Shinohara,¹ and Ryo Kitaura¹

¹*Department of Chemistry, Nagoya University, Japan,* ²*Department of Chemistry, Saitama University, Japan,* ³*National Institute for Materials Science, Japan*

MoD3 GaN and Related Technologies I

Room D 14:00-16:00

Chair: Tsuyoshi Tanaka and Tetsu Kachi

MoD3-1 (Oral) 14:00 - 14:15

Aluminum Phase Segregation Effect in Growing an AlGa_N Nanorod with the Self-catalytic Vapor-liquid-solid Mode

Chang-Gan Tu,¹ Xu Zhang,² Keng-Ping Chou,¹ Wai Fong Tse,¹ Yi-Chiao Hsu,¹ Yen-Po Chen,¹ Yean-Woei Kiang,¹ and Chih-Chung Yang^{*,1}

¹*National Taiwan University, Taiwan,* ²*Zhengzhou University, China*

MoD3-2 (Oral) 14:15 - 14:30

Current injection and light confinement for UVB light emitting devices with graded p-AlGa_N

Kosuke Sato,^{*,1,2} Shinji Yasue,² Yuya Ogino,² Motoaki Iwaya,² Tetsuya Takeuchi,² Satoshi Kamiyama,² and Isamu Akasaki^{2,3}

¹*Asahi-Kasei Corporation, Japan,* ²*Faculty of Science and Technology, Meijo University, Japan,* ³*Akasaki Research Center, Nagoya University, Japan*

MoD3-3 (Oral)

14:30 - 14:45

Green Semipolar (11 $\bar{2}$ 2) InGa \bar{N} Micro-Light-Emitting-Diodes on (11 $\bar{2}$ 2) Ga \bar{N} /Sapphire TemplateMatthew S. Wong,^{*,1} Michel Khoury,¹ Hongjian Li,¹ Bastien Bonafant,¹ Aidan A. Taylor,¹ Haojun Zhang,² Philippe De Mierry,³ Shuji Nakamura,^{1,2} and Steven P. DenBaars^{1,2}¹Materials Department, University of California Santa Barbara, United States of America, ²Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America, ³CNRS-CRHEA, Rue Bernard Grégory, France

MoD3-4 (Oral)

14:45 - 15:00

Relaxed InGa \bar{N} engineered substrates with lattice parameter of 3,205Å and beyond enabling direct emission at 630nmEric Guiot,^{*,1} David Sotta,¹ Olivier Ledoux,¹ Mélanie Lagrange,¹ Guillaume Lavaitte,¹ Amélie Dussaigne,² Sébastien Chenot,³ and Benjamin Damilano³¹SOITEC, France, ²Univ. Grenoble Alpes, France, ³Université Côte d'Azur, France

MoD3-5 (Oral)

15:00 - 15:15

Optical Properties of Room Temperature Single Photon Emitters in Ga \bar{N} Mehran Kianinia,^{*,1} Minh Nguyen,¹ Tongtong Zhu,² Carlo Bradac,¹ Milos Toth,¹ Rachel Oliver,² and Igor Aharonovich¹¹School of Mathematical and Physical Sciences, University of Technology Sydney, Australia, ²Department of Materials Science and Metallurgy, University of Cambridge, United Kingdom

MoD3-6 (Oral)

15:15 - 15:30

Probing alloy formation using different excitonic species: The particular case of InGa \bar{N} Gordon Callsen,^{*} Raphael Butté, and Nicolas Grandjean*Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

MoD3-7 (Oral)

15:30 - 15:45

Hybrid III-Nitride Tunnel Junctions for Low Excess Voltage Blue LEDs and UVC LEDsJianfeng Wang,^{*,1} Erin Young,¹ Burhan SaifAddin,¹ Chris Zollner,¹ Abdullah Almogbel,¹ Micha Fireman,¹ Michael Izza,¹ Shuji Nakamura,^{1,2} Steve Denbaars,^{1,2} and James Speck¹¹Materials Department, University of California, Santa Barbara, United States of America, ²Department of Electrical and Computer Engineering, University of California, Santa Barbara, United States of America

MoD3-8 (Oral)

15:45 - 16:00

Recent progress in AlGa \bar{N} UV-C LEDs grown on SiCAbdullah Almogbel,^{*,1,2} Burhan SaifAddin,^{1,2} Christian Zollner,¹ Michael Iza,¹ Hamad Albrithen,^{2,3} Ahmed Alyamani,² Abdulrahman Albadri,² Shuji Nakamura,¹ Steven DenBaars,¹ and James Speck¹¹University of California, Santa Barbara, United States of America, ²King Abdulaziz City for Science and Technology, Saudi Arabia, ³King Saud University, Saudi Arabia**MoE3 Oxides: Structures and Properties**

Room E 14:00-16:00

Chair: Elzbieta Guziewicz and Atsushi Tsukazaki

MoE3-1 (Invited)

14:00 - 14:30

Interface engineering of Sn-based oxide semiconductorsAtsushi Tsukazaki^{*} and Kohei Fujiwara*Institute for Materials Research, Tohoku University, Japan*

MoE3-3 (Invited)

14:30 - 15:00

Hydrogen in semiconducting oxides

Farida Selim

¹Department of Physics and Astronomy, Bowling Green State University, United States of America, ²Center for Photochemical sciences, Bowling Green State University, United States of America

MoE3-5 (Oral)

15:00 - 15:15

VUV Cathodoluminescence Spectra of Rocksalt-structured MgZnO/MgO Quantum Wells

Kanta Kudo,^{*1} Kyouhei Ishii,² Mizuki Ono,¹ Yuki Fujiwara,¹ Kentaro Kaneko,^{2,3} Tomohiro Yamaguchi,¹ Tohru Honda,¹ Shizuo Fujita,^{2,3} and Takeyoshi Onuma¹

¹Department of Applied Physics, School of Advanced Engineering, Graduate School of Engineering, Kogakuin University, Japan, ²Department of Electronic Science and Engineering, Kyoto University, Japan, ³Photonics and Electronics Science and Engineering Center, Kyoto University, Japan

MoE3-6 (Oral)

15:15 - 15:30

Effects of the Growth Environment on the Phase Stability of Sputter-deposited Cd_xZn_{1-x}O Alloys

Chun Yuen Ho,^{*1} Chao Ping Liu,^{1,2} Yi-Chun Chen,³ Zhi-Quan Huang,³ Feng-Chuan Chuang,³ and Kin Man Yu^{1,4}

¹Department of Physics, City University of Hong Kong, Hong Kong, ²Department of Physics, College of Science, Shantou University, China, ³Department of Physics, National Sun Yat-Sen University, Taiwan, ⁴Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

MoE3-7 (Oral)

15:30 - 15:45

Growth of Single Crystalline c-In₂O₃(111) Layers on Off-Axis c-Plane Sapphire Substrates by Halide Vapor Phase Epitaxy

Yuya Saimoto,^{*1} Kenta Nagai,¹ Hidetoshi Nakahata,¹ Keita Konishi,¹ and Yoshinao Kumagai^{1,2}

¹Department of Applied Chemistry, Tokyo University of Agriculture and Technology, Japan, ²Institute of Global Innovation Research, Tokyo University of Agriculture and Technology, Japan

MoE3-8 (Oral)

15:45 - 16:00

Properties of the In₂O₃(111) and the β-Ga₂O₃(100) non-polar surfaces

Celina Seraphin Schulze,^{*1} Jonathan Hofmann,¹ Christian Bruckmann,¹ Robert Zielinski,¹ Wjatscheslav Martyanov,¹ Hendrik Janssen,¹ Andrea Lenz,¹ Martin Franz,¹ Zbigniew Galazka,² and Holger Eisele¹

¹Institut für Festkörperphysik, Technische Universität Berlin, Germany, ²Leibniz-Institut für Kristallzüchtung, Germany

MoP Poster Session IReception Hall 16:00-18:00

MoP-A-1 (Poster)

Investigation of Morphology of InSb/InAs Quantum Nano-Stripe Grown by Molecular Beam Epitaxy

Karn Rongruengkul,^{*1} Panithan Srisinsuphya,¹ Supachok Thainoi,¹ Suwit Kiravittaya,² Noppadon Nuntawong,³ Suwat Sopitpan,³ Visittapong Yordsri,³ Chanchana Thanachayanont,³ Songphol Kanjanachuchai,¹ Somchai Ratanathamphan,¹ Aniwat Tandaechanurat,¹ and Somsak Panyakeow¹

¹Faculty of Engineering, Chulalongkorn University, Thailand, ²Faculty of Engineering, Naresuan University, Thailand, ³National Science and Technology Development Agency, Thailand

MoP-A-2 (Poster)

Improved Electron Transport Properties of Ga_{1-x}In_xSb Quantum Well Channel Using Strained-Al_{0.40}In_{0.60}Sb/Al_{1-y}In_ySb Stepped Buffer

Mizuho Hiraoka,* Yuki Endoh, Koki Osawa, Naoyuki Kishimoto, Takuya Hayashi, Ryuto Machida, Akira Endoh, and Hiroki Fujishiro

Tokyo University of Science, Japan

MoP-A-3 (Poster)

Crystal structures of GaAs/GaNAs core- multishell nanowire

Takaya Mita,* Ryo Fujiwara, Mitsuki Yukimune, and Fumitaro Isikawa

Graduate School of Science and Engineering, Ehime University, Japan

MoP-A-4 (Poster)

Selective Area Epitaxy of GaP Nanowire Array on Si (111) by MOCVD

Wonsik Choi, Shizhao Fan, Parsian Mohseni, Minjoo Larry Lee, and Xiuling Li*

Electrical and Computer Engineering Department, University of Illinois, United States of America

MoP-A-7 (Poster)

1.6 μm Emission from InAs QDs in Metamorphic InGaAs MatrixWenbo Zhan,*¹ Satomi Ishida,² Jinkwan Kwoen,¹ Satoshi Iwamoto,^{1,3} and Yasuhiko Arakawa¹¹Institute for Nano Quantum Information Electronics, the University of Tokyo, Japan, ²Research Center for Advanced Science and Technology, the University of Tokyo, Japan, ³Institute of Industrial Science, the University of Tokyo, Japan

MoP-A-8 (Poster)

Investigation of InAs Quantum Dot Deformation During Capping with an InGaAs Layer Using Time-resolved RHEED Measurements

Daigo Ikuno, Tao Wang, Naoki Okada, and Nobuhiko Ozaki*

Faculty of Systems Eng., Wakayama Univ., Japan

MoP-A-9 (Poster)

Suppression of Three-Dimensional Pit Formation of InAs on GaSb(001) by Two-Step MBEShigkezu Okumura,*^{1,2} Ryo Suzuki,¹ Koji Tsunoda,¹ Hironori Nishino,¹ and Masakazu Sugiyama²¹Fujitsu Laboratories Limited, Japan, ²Research Center for Advanced Science and Technology, The University of Tokyo, Japan

MoP-A-10 (Poster)

Molecular Beam Epitaxial Growth of InSb and AlSb Heterostructure on InSb SubstratesJirapat Ounpipat,*¹ Engrhyt Rattanawongnara,¹ Zon,¹ Supachok Thainoi,¹ Suwit Kiravittaya,² Aniwat Tандаechnurat,³ Nopadon Nuntawong,⁴ Suwat Sopitpan,⁵ Visittapong Yordsri,⁶ Chanchana Thanachayanont,⁶ Songphol Kanjanachuchai,¹ Somchai Ratanathamaphan,¹ and Somsak Panyakeow¹¹SDRL, Chulalongkorn University, Thailand, ²AOT Lab., Naresuan University, Thailand, ³ISE, Chulalongkorn University, Thailand, ⁴NECTEC, NSTDA, Thailand, ⁵TMEC, NSTDA, Thailand, ⁶MTEC, NSTDA, Thailand

MoP-A-11 (Poster)

Effect of Annealing on The Bottom Cell in GaInP/GaAs/GaInNAsSb Triple Junction Solar Cells by MBE/MOCVD Hybrid Growth

Naoya Miyashita,* Yilun He, Nazmul Ahsan, and Yoshitaka Okada

Research Center for Advanced Science and Technology (RCAST), The University of Tokyo, Japan

MoP-A-12 (Poster)

Effects of Channel Scaling on Electron Transport Properties of Sb-based HEMTs

Naoyuki Kishimoto,* Yuki Endoh, Takuya Hayashi, Mizuho Hiraoka, Ryuto Machida, Akira Endoh, and Hiroki I. Fujishiro

Department of Applied Electronics, Tokyo University of Science, Japan

MoP-A-13 (Poster) - Late News -

Below-bandgap photoluminescence from GaAs

Ronel Christian Roca,* Kosei Fukui, Hiroto Mizuno, Mikihiro Suzuki, and Itaru Kamiya
Toyota Technological Institute, Japan

MoP-B-1 (Poster)

A Sub-THz RTD-pair Oscillator with Enhanced RF Output Power Characteristics

Maengkyu Kim* and Kyounghoon Yang
School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Republic of Korea

MoP-B-2 (Poster)

The Output Power Characteristics of the Series-connected RTD Pair

Maengkyu Kim* and Kyounghoon Yang
School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Republic of Korea

MoP-B-3 (Poster)

1.2 THz maximum frequency of oscillation achieved by using 75 nm gate length and asymmetric gate recess for InGaAs/InAlAs PHEMT

mohammed SAMNOUNI,* Nicolas WICHMANN, Xavier Wallart, Christophe COINION, Sylvie LEPILLIET, and Sylvain Bollaert
IEMN, University of Lille, CNRS, France

MoP-B-4 (Poster)

Fabrication of 0.25 μm T-Gate AlInGaN/AlN/GaN HEMTs by I-Line Optical Lithography

Yi-Zhen Liu,*¹ Wei-Chih Ho,² Indraneel Sanyal,¹ and Jen-Inn Chyi^{1,3}
¹Department of Electrical Engineering, National Central University, Taiwan, ²Jelly Semiconductor Technology, Taiwan, ³Research Center for Applied Sciences, Academia Sinica, Taiwan

MoP-B-5 (Poster)

Angular Dependence of InP High Electron Mobility Transistors for Cryogenic Low Noise Amplifiers under a magnetic field

Isabel Hanna Harrysson Rodrigues,*¹ David Niepce,¹ Giuseppe Moschetti,² Arsalan Pourkabirian,² Joel Schleehe,² Thilo Bauch,¹ and Jan Grahn¹
¹Department of Microtechnology and Nanoscience, Chalmers University of Technology, Sweden, ²Low Noise Factory AB, Sweden

MoP-B-6 (Poster)

Quaternary In_{0.05}Al_{0.70}Ga_{0.25}N/GaN HEMTs With On-Resistance of 0.97 $\Omega\text{-mm}$

Ji Hyun Hwang,* Mi Jang, Juyeong Park, and Jae-Hyung Jang
Gwangju Institute of Science and Technology, Republic of Korea

MoP-B-7 (Poster) - Late News -

Characterization of the Effective Tunneling Time and Phase Relaxation Time in Triple-Barrier Resonant Tunneling Diodes

Kotaro Aikawa,*¹ Michihiko Suhara,¹ Kiyoto Asakawa,² Khaled Arzi,³ Nils Weimann,³ and Werner Prost³
¹Graduate School of System Design, Tokyo Metropolitan University, Japan, ²Tokyo Metropolitan College of Industrial Technology, Japan, ³Faculty of Engineering, University of Duisburg-Essen, Germany

MoP-B-8 (Poster) - Late News -

Experimental Observation of Rectification Around 280 GHz Wave in the GaAsSb/InGaAs Backward Diode Rectenna Monolithically Integrated with a Bow-Tie AntennaMichihiko Suhara,^{*}¹ Masataka Nakanishi,¹ Shintaro Kitakado,¹ Kiyoto Asakawa,² Masaru Sato,³ Tsuyoshi Takahashi,³ Kenichi Kawaguchi,³ and Naoya Okamoto³¹Tokyo Metropolitan University, Japan, ²Tokyo Metropolitan College of Industrial Technology, Japan, ³Fujitsu Laboratories Ltd., Japan

MoP-D-1 (Poster)

Electric-field control of optical-spin injection from an InGaAs quantum well to p-doped quantum dotsSoyoung Park,^{*} Hang Chen, Junichi Takayama, Satoshi Hiura, and Akihiro Murayama

GSIST, Hokkaido University, Japan

MoP-D-2 (Poster)

Chiral Cavity Mode in a GaAs-Based Three-Dimensional Photonic Crystal Fabricated by a Micro-Manipulation Method using an Optical MicroscopeYuzo Kinuta,^{*}¹ Shun Takahashi,¹ Kenichi Yamashita,¹ Jun Tatebayashi,² Satoshi Iwamoto,^{2,3} and Yasuhiko Arakawa²¹Kyoto Institute of Technology, Japan, ²INQIE, Univ. of Tokyo, Japan, ³IIS, Univ. of Tokyo, Japan

MoP-D-3 (Poster)

Transmission Characteristics of a Novel Waveguide Structure for Wavelength Division MultiplexingTakuya Yamaguchi,^{*} Takahiro Horiba, Masato Morifuji, and Masahiko Kondow

Division of Electrical, Electronic and Information Engineering, Osaka University, Japan

MoP-D-4 (Poster)

Regional band-gap tailoring of 1550nm-band InAs quantum dotShohei Isawa,^{*}¹ Yota Akashi,¹ Atsushi Matsumoto,² Kouichi Akahane,² Yuichi Matsushima,¹ Hiroshi Ishikawa,¹ and Katsuyuki Utaka¹¹University of Waseda, Japan, ²NICT, Japan

MoP-D-5 (Poster)

Numerical Investigation of Topological Edge States in a GaAs-Based Three-Dimensional Chiral Photonic CrystalShun Takahashi,^{*}¹ Shuhei Oono,² Yasuhiro Hatsugai,² Yasuhiko Arakawa,³ and Satoshi Iwamoto^{3,4}¹Kyoto Institute of Technology, Japan, ²Grad. Sch. Pure Appl. Sci., Univ. of Tsukuba, Japan, ³INQIE, Univ. of Tokyo, Japan, ⁴IIS, Univ. of Tokyo, Japan

MoP-D-6 (Poster)

Metamaterial perfect absorber based on heavily doped semiconductor for thermal emissionFranziska Barho, Laurent Cerutti,^{*} Fernando Gonzalez-Posada Flores, and Thierry Taliercio

IES, Univ. Montpellier, CNRS, 34000 Montpellier, France

MoP-D-8 (Poster)

Two-dimensional photonic crystal phosphors for efficient and polarization-insensitive excitationTae-Yun Lee,^{*}^{1,2} Jongho Lee,^{1,2} Yeonsang Park,³ Kyung-Sang Cho,³ Myeong-Eun Kim,^{1,2} Kyungtaek Min,⁴ and Heonsu Jeon^{1,2,5}¹Department of Physics and Astronomy, Seoul National University, Republic of Korea, ²Inter-university Semiconductor Research Center, Seoul National University, Republic of Korea, ³Samsung Advanced Institute of Technology, Republic of Korea, ⁴Department of Nano-Optical Engineering, Korea Polytechnic University, Republic of Korea, ⁵Institute of Applied Physics, Seoul National University, Republic of Korea

MoP-D-9 (Poster)

InAs/GaAs quantum Dot Intermixing by Dry Etching and Ion ImplantationYu Hiraishi,^{*}¹ Tomohiro Shirai,¹ Jinkwan Kwoen,² Yuichi Matsushima,¹ Hiroshi Ishikawa,¹ Yasuhiko Arakawa,² and Katsuyuki Utaoka¹¹Waseda University, Japan, ²NanoQuine, Univ. Of Tokyo, Japan

MoP-D-10 (Poster)

InGaAs Quantum Dot Dual-Band Photodetector of Bipolar PhotocurrentTsong-Sheng Lay,^{*} Z. H. Lin, and T. E. Tzeng

Department of Electrical Engineering, and Graduate Institute of Optoelectronic Engineering, National Chung Hsing University, Taiwan

MoP-D-11 (Poster)

Buried-ridge-waveguide Type GaInAsP/InP Membrane Distributed-Reflector Lasers for Reduction of Differential ResistanceNaoki Takahashi,^{*}¹ Nagisa Nakamura,¹ Takamasa Yoshida,¹ Weicheng Fang,¹ Tomohiro Amemiya,^{1,2} Nobuhiko Nishiyama,^{1,2} and Shigehisa Arai^{1,2}¹Dept. of Electrical and Electronic Engineering, Tokyo Inst. of Technology, Japan, ²IIR, Tokyo Inst. of Technology, Japan

MoP-D-12 (Poster)

Dilute Waveguide Reflective Semiconductor Optical Amplifier for 3D Hybrid Silicon Photonics IntegrationBowen Song,^{*} Youning Luo, Sergio Pinna, Yuan Liu, and Jonathan Klamkin

Department of Electrical and Computer Engineering University of California, Santa Barbara, United States of America

MoP-D-13 (Poster)

Thin Film Optical Characteristics of InP/Si Hybrid Wafers by Chip-on-Wafer Direct Transfer Bonding TechnologyNobuhiko Nishiyama,^{*}^{1,2} Kazuya Ohira,³ Liu Bai,¹ Yoichiro Kurita,³ Hideto Furuyama,³ Miki Inamura,⁴ Tomoyuki Abe,⁴ Takuya Mitarai,¹ Kenji Morita,¹ and Shigehisa Arai^{1,2}¹Dept. of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, ²Institute of Innovative Research (IIR), Tokyo Institute of Technology, Japan, ³Corporate Research & Development Center, Toshiba Corporation, Japan, ⁴Ayumi Industry, Co., Ltd., Japan

MoP-D-14 (Poster)

Investigation of InP/Si bonding condition for optimizing Photoluminescence property by Surface Activated Bonding based on Fast Atom BeamYuning Wang,^{*}¹ Takuya Mitarai,¹ Tomohiro Amemiya,^{1,2} Nobuhiko Nishiyama,^{1,2} and Shigehisa Arai^{1,2}¹Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, ²Laboratory for Future Interdisciplinary Research of Science and Technology, Tokyo Institute of Technology, Japan

MoP-E-1 (Poster)

Spin-valve magnetoresistance in ferromagnetic semiconductor (Ga,Fe)Sb heterostructures with high Curie temperatureKengo Takase,^{*}¹ Le Duc Anh,^{1,2} Kosuke Takiguchi,¹ Nguyen Thanh Tu,^{1,3} and Masaaki Tanaka^{1,4}¹Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan, ²Institute of Engineering Innovation, The University of Tokyo, Japan, ³Department of Physics, Ho Chi Minh City University of Pedagogy, Vietnam, Viet Nam, ⁴Center for Spintronics Research Network (CSRN), The University of Tokyo, Japan

MoP-E-2 (Poster)

Heavily Fe-doped n-type ferromagnetic semiconductor (In,Fe)Sb with high Curie temperature and large magnetic anisotropyThanh Tu Nguyen,^{*1,2} Nam Hai Pham,^{3,4} Duc Anh Le,^{1,5} and Masaaki Tanaka^{1,4}

¹Department of Electrical Engineering & Information Systems, The University of Tokyo, Japan, ²Department of Physics, Ho Chi Minh City University of Pedagogy, Japan, ³Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, ⁴Center for Spintronics Research Network (CSRN), The University of Tokyo, Japan, ⁵Institute of Engineering Innovation, The University of Tokyo, Japan

MoP-E-3 (Poster)

Spin dependent transport properties of spin bipolar transistors using a (Ga,Fe)Sb/(In,Fe)As p-n junctionKoki Chonan,^{*1} Yuto Arakawa,¹ Masaaki Tanaka,^{2,3} and Pham Nam Hai^{1,3}

¹Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, ²Department of Electrical Engineering and Information System, The University of Tokyo, Japan, ³Center for Spintronics Research Network, The University of Tokyo, Japan

MoP-E-4 (Poster)

Spin Detection in GaAs/AlGaAs Quantum Wells by Inverse Spin-Hall EffectYuji Sakai,^{*1} Tomoki Chatani,¹ Tomohiro Nakagawa,¹ Julian Ritzmann,² Arne Ludwig,² Andreas Wieck,² and Akira Oiwa¹

¹ISIR, Osaka University, Japan, ²Ruhr University Bochum, Germany

MoP-E-5 (Poster)

Real space imaging of the quantum-Hall incompressible states influenced by the strong disorderYihao Wang,^{*1} Katsushi Hashimoto,^{1,2} and Yoshiro Hirayama^{1,2,3}

¹Graduate school of Science, Tohoku University, Japan, ²Centre for Spintronics Research Network, Tohoku University, Japan, ³Center for Science and Innovation in Spintronics (Core Research Cluster), Tohoku University, Japan

MoP-E-6 (Poster)

Spin Blockade and Magnetoresistance in Double Quantum Well Diode with Inverted Electric FieldYoshiaki Hashimoto,^{*} Tong Ke, Taketomo Nakamura, and Shingo Katsumoto
Institute for Solid State Physics, University of Tokyo, Japan

MoP-E-7 (Poster)

Control of electron spin at spin-resolved quantum Hall edgesTakase Shimizu,^{*} Yoshiaki Hashimoto, Taketomo Nakamura, Akira Endo, and Shingo Katsumoto
Institute for Solid State Physics, The University of Tokyo, Japan

MoP-E-8 (Poster)

Spin-conserved electron transport to InGaAs quantum dots through GaAs/AlGaAs superlatticeSatoshi Hiura,^{*1} Junichi Takayama,¹ Takayuki Kiba,² and Akihiro Murayama¹

¹GSIST, Hokkaido University, Japan, ²Kitami Institute of Technology, Japan

MoP-E-9 (Poster)

Effects of p-doping on excited spin states and the dynamics in InGaAs quantum dotsShino Sato,^{*1} Motoya Murakami,¹ Yuto Nakamura,¹ Satoshi Hiura,² Junichi Takayama,² and Akihiro Murayama²

¹Faculty of Engineering, Hokkaido University, Japan, ²GSIST, Hokkaido University, Japan

MoP-E-10 (Poster)

Diffusive spin dynamics in 10 nm wide InGaAs/InAlAs quantum wellsHiroki Shida,^{*}1 Yasuhito Saito,¹ Kohei Kawaguchi,¹ Ichirota Takazawa,¹ Takahiro Kitada,³ Makoto Kohda,² Yoshihiro Ishitani,¹ and Ken Morita¹¹Graduate school of Electrical and Electronic Engineering, Chiba University, Japan, ²Department of Materials Science, Tohoku University, Japan, ³Graduate school of Technology, Industrial and Social Science, Tokushima University, Japan

MoP-E-11 (Poster)

Picosecond spin relaxation in GaSb/AlSb multiple quantum wells with a 1.55- μ m energy band gapYuichi Nakamura,^{*}1 Lianhe Li,² Takuya Kamezaki,¹ Kizuku Yamada,¹ Edmund Linfield,² and Atsushi Tackeuchi¹¹Waseda Univ., Japan, ²Univ. of Leeds, United Kingdom

MoP-E-12 (Poster) - Late News -

Simultaneous extraction of Rashba and Dresselhaus spin-orbit coefficients in GaAs/AlGaAs (110) two-dimensional electron gasDaisuke Iizasa,^{*}1 Shu Kitamura,¹ Dai Sato,¹ Satoshi Iba,² Yuzo Ohno,³ Shutaro Karube,^{1,4} Junsaku Nitta,^{1,4,5} and Makoto Kohda^{1,4,5}¹Department of Materials Science, Tohoku University, Japan, ²Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Japan, ³Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan, ⁴Center for Spintronics Research Network, Tohoku University, Japan, ⁵Center for Science and Innovation in Spintronics (Core Research Cluster), Tohoku University, Japan

MoP-E-13 (Poster) - Late News -

Topological semimetals in InAs/GaInSb superlattices at room temperatureMikhail Patrashin,^{*} Norihiko Sekine, Kouichi Akahane, Akifumi Kasamatsu, and Iwao Hosako

National Institute of Information and Communications Technology, Japan

MoP-F-1 (Poster)

One-dimensional electronic states in highly-stacked InAs/GaAs quantum dot superlatticesToshiyuki Kaizu^{*} and Takashi Kita

Department of Electrical and Electronic Engineering, Graduate School of Engineering, Kobe University, Japan

MoP-F-2 (Poster)

Lateral Photocurrent Spectroscopy of Stacked InAs QDs Layers in Embedded Strain-Relaxed InGaAs MatrixNaoto Kumagai,^{*}1,2 Xiangmeng Lu,³ Yasuo Minami,³ and Takahiro Kitada³¹AIST-NU GaN-OIL, AIST, Japan, ²ESPRIT, AIST, Japan, ³Graduate School of Technology, Tokushima Univ., Japan

MoP-F-3 (Poster)

GaSb/GaAs quantum nanostructures for intermediate band solar cell under high sunlight concentrationYusuke Oteki,^{*}1,2 Yasushi Shoji,³ Naoya Miyashita,¹ Yilun He,^{1,2} and Yoshitaka Okada^{1,2}¹RCAST, Univ. of Tokyo, Japan, ²School of Engineering, Univ. of Tokyo, Japan, ³AIST, Japan

MoP-F-4 (Poster)

AlGaAs/GaAs Heterostructure with Hybrid InSb/GaAs and GaSb/GaAs Quantum Dots and Its Optical CharacteristicsThanadul Korkerdsantisuk,^{*}1 Katanyu Tharawatcharasart,¹ Zon,¹ Supachok Thainoi,¹ Suwit Kiravittaya,² Aniwat Tandaechanurat,³ Noppadon Nuntawong,⁴ Suwat Sopitpan,⁵ Visittapong Yordsri,⁶ Chanchana Thanachayanont,⁶ Songphol Kanjanachuchai,¹ Somchai Ratanathamphan,¹ and Somsak Panyakeow¹¹SDRL, Chulalongkorn University, Thailand, ²AOT Lab., Naresuan University, Thailand, ³ISE, Chulalongkorn University, Thailand, ⁴NECTEC, NSTDA, Thailand, ⁵TMEC, NSTDA, Thailand, ⁶MTEC, NSTDA, Thailand

MoP-F-5 (Poster)

Photoluminescence Mapping Analysis of In-Plane Ultrahigh-Density InAs/GaAsSb Quantum Dot Layers

Sho Tatsugi,* Ryo Sugiyama, and Koichi Yamaguchi

Department of Engineering Science, University of Electro-Communications, Japan

MoP-F-6 (Poster)

Observation on Carrier Dynamics of Intermediate Band in Multi Stacked InGaAs Quantum Dots using Two Color ExcitationKeishiro Goshima,*¹ Norio Tsuda,¹ and Takeyoshi Sugaya²¹Aichi Institute of Technology, Japan, ²Advanced Industrial Science and Technology, Japan

MoP-F-7 (Poster)

Adsorption of Oxygen and Hydrogen Atoms on the GaAs(110) Surface

Dorothee Sophie Eckert,* Christian Bruckmann, Sam Baraz, and Holger Eisele

Institut für Festkörperphysik, Technische Universität Berlin, Germany

MoP-F-8 (Poster)

Mode Coupling Measurement in Dual-Frequency Quantum Well-based VECSELGaëlle Brévalle,*¹ Salvatore Pes,¹ Cyril Paranthoën,¹ Mathieu Perrin,¹ Christophe Levallois,¹ Cyril Hamel,¹ Alexandru Mereuta,² Andrei Caliman,² Eli Kapon,² Laurent Chusseau,³ Hervé Folliot,¹ and Mehdi Alouini¹¹Institut FOTON, France, ²Laboratory of Physics of Nanostructures, Ecole Polytechnique Fédérale de Lausanne, Switzerland, ³IES, Université de Montpellier, France

MoP-F-9 (Poster)

In situ synchrotron X-ray reciprocal space mapping during InGaN/GaN heterostructure nanowire growthUesugi Tomohiro,*^{1,2} Takuo Sasaki,¹ Kanya Sugitani,^{1,2} and Masamitsu Takahasi^{1,2}¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²University of Hyogo, Japan

MoP-F-10 (Poster)

In situ study of strain and composition of InGaN/GaN multi-quantum-well nanowiresKanya Sugitani,*^{1,2} Takuo Sasaki,¹ Uesugi Tomohiro,^{1,2} and Masamitsu Takahasi^{1,2}¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²University of Hyogo, Japan

MoP-F-11 (Poster)

Light-emitting InAs nanowires grown by MOVPE directly on flexible plastic substratesVladislav Khayrudinov,*¹ Tuomas Haggren,¹ Maxim Remenny,² Prokhor Alekseev,² Boris Matveev,² and Harri Lipsanen¹¹Department of Electronics and Nanoengineering, Aalto University, P.O. Box 13500, FI-00076, Finland, ²Ioffe Institute, 194021, St. Petersburg, Russia

MoP-F-12 (Poster)

InAs/GaSb Core-Shell Nanowires: Growth and CharacterizationMihail Ion Lepsa,*^{1,4} Gunjan Nagda,^{2,4} Pujitha Perla,^{2,4} Nataliya Demarina,^{3,4} and Detlev Grützmacher^{1,2,4}¹Peter Grünberg Institute (PGI-10), Forschungszentrum Jülich, Germany, ²Peter Grünberg Institute (PGI-9), Forschungszentrum Jülich, Germany, ³Peter Grünberg Institute (PGI-2), Forschungszentrum Jülich, Germany, ⁴Jülich Aachen Research Alliance (JARA-FIT), Germany

MoP-F-13 (Poster)

Dimension Engineering of Narrow Bandgap Semiconductor InAs Nanostructures in Wafer-Scale

Dong Pan* and Jianhua Zhao

Institute of Semiconductors, Chinese Academy of Sciences, China

MoP-F-14 (Poster)

Integration of AlGaSb/GaSb Heterostructure and InSb/GaSb Quantum Nano-StripesKiattisak Luangjarunrat,^{*1} Zon,¹ Supachok Thainoi,¹ Suwit Kiravittaya,² Aniwat Tандаecharurat,³ Noppadon Nuntawong,⁴ Suwat Sopitpan,⁵ Visittapong Yordsri,⁶ Chanchana Thanachayanont,⁶ Songphol Kanjanachuchai,¹ Somchai Ratanathamphan,¹ and Somsak Panyakeow¹¹SDRL, Chulalongkorn University, Thailand, ²AOT Lab., Naresuan University, Thailand, ³ISE, Chulalongkorn University, Thailand, ⁴NECTEC, NSTDA, Thailand, ⁵TMEC, NSTDA, Thailand, ⁶MTEC, NSTDA, Thailand

MoP-F-15 (Poster)

Epitaxial Lift-Off of Ultrathin Heterostructures for Hot-Carrier Solar Cell ApplicationsMaxime Giteau,^{*1,4} Kentaroh Watanabe,^{1,4} Hassanet Sodabanlu,^{1,4} Naoya Miyashita,^{1,4} Masakazu Sugiyama,^{1,4} Andrea Cattoni,^{2,4} Stéphane Collin,^{2,4} Jean-François Guillemoles,^{3,4} and Yoshitaka Okada^{1,4}¹RCAST, The University of Tokyo, Japan, ²C2N, CNRS, University Paris-Sud/Paris-Saclay, France, ³CNRS, IPVF, UMR 9006, France, ⁴NextPV, The University of Tokyo, Japan

MoP-F-16 (Poster)

Numerical Demonstration of Trade-off between Carrier Confinement Effect and Carrier Transport for Multiple-Quantum-Well Based High-efficiency InGaP Solar CellsHsiang-Hung Huang,^{*} Kasidit Toprasertpong, Amaury Delamarre, Kentaroh Watanabe, Masakazu Sugiyama, and Yoshiaki Nakano*Department of Electrical Engineering and Information Systems, University of Tokyo, Japan*

MoP-F-18 (Poster) - Late News -

Chalcogen passivation of GaAs(111)B surfacesTakayuki Suga,^{*1} Shunji Goto,¹ Akihiro Ohtake,² and Jun Nakamura¹¹Department of Engineering Science, The University of Electro-Communications (UEC-Tokyo), Japan, ²National Institute for Materials Science, Japan

MoP-G-1 (Poster)

Performance Projection of 500V - 5kV AlGaAs/GaAs Vertical Polarization and Doped Superjunction (PDSJ) Devices

Xiang Zhou* and T. Paul Chow

Rensselaer Polytechnic Institute, United States of America

MoP-G-2 (Poster)

Improved Electrical Degradation of AlInGaN/GaN HEMT by using Triethylgallium Grown GaN channel and CapIndraneel Sanyal,^{*1} Ting-Yu Hu,¹ Yen-Chang Lee,¹ En-Shuo Lin,¹ and Jen-Inn Chyi^{1,2}¹Department of Electrical Engineering, National Central University, Taiwan, ²Research Center for Applied Sciences, Academia Sinica, Taiwan

MoP-G-3 (Poster)

Current Collapse Suppression by Silicon Substrate Removal Technique in AlGaIn/GaN HEMTYUEH-TING CHEN^{*1} and JIAN-JANG HUANG^{1,2}¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, ²Department of Electrical Engineering, National Taiwan University, Taiwan

MoP-G-4 (Poster)

Impact of Lowering Threading Dislocation Density on Performances of Vertical GaN p-n Junction DiodesHiroshi Ohta,*¹ Naomi Asai,¹ Fumimasa Horikiri,² Yoshinobu Narita,² Takehiro Yoshida,² and Tomoyoshi Mishima¹¹Hosei University, Japan, ²SCIOCS Co. Ltd., Japan

MoP-G-5 (Poster)

Device characteristics and MIS interface evaluation of Al₂O₃/AlGaInN/AlGaN MIS HFET

Saki Saito,* Daiki Hosomi, Keita Furuoka, Heng Chen, Toshiharu Kubo, Takashi Egawa, and Makoto Miyoshi

Nagoya Institute of Technology, Japan

MoP-G-7 (Poster)

Development of Hall Effect Sensor on AlGaIn/GaN FinFET StructureLili Huo,*^{1,2} Yung C Liang,^{1,2} and Xiao Gong¹¹National University of Singapore, Singapore, ²National University of Singapore (Suzhou) Research Institute, China

MoP-G-8 (Poster)

N-polar GaN HEMT with Al₂O₃ gate insulatorAkihiro Hayasaka,*¹ Ryosuke Aonuma,¹ Koushi Hotta,¹ Isao Makabe,² Shigeki Yoshida,² and Yasuyuki Miyamoto¹¹Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, ²Transmission Devices Laboratory, Sumitomo Electric Industries, Ltd, Japan

MoP-G-9 (Poster)

Characterization of Silicon Nitride Capping Dielectrics on AlGaIn/GaN/Silicon Substrate HEMT Structures with a Mercury ProbeTimothy Boles,*¹ Wayne Strubble,¹ Gabriel Cueva,¹ Robert Joseph Hillard,² Win Ye,² John Byrnes,² and Jonny Hoglund²¹MACOM, United States of America, ²Semilabusa, United States of America

MoP-G-10 (Poster) - Late News -

GaN-based Inverter by Monolithic Integration of Threshold Controlled MOSFETs

Hiroto Sekiguchi, Kiyomasa Miwa, Keisuke Yamane, Akihiro Wakahara, and Hiroshi Okada*

Toyoashi University of Technology, Japan

MoP-I-1 (Poster)

Turbostratic stacking effect in multilayer graphene on the electrical transport propertiesRyota Negishi,*¹ Chaopeng Wei,¹ Yui Ogawa,² Masashi Akabori,³ Yoshikata Taniyasu,² and Yoshihiro Kobayashi¹¹Osaka university, Japan, ²NTT Basic Research Laboratories, Japan, ³JAIST, Japan

MoP-I-2 (Poster)

Carbon nanowalls/diamond heterojunctions as novel photo-switching memory devices

Yuuta Imai,* Kenji Ueda, Hideharu Itou, Yuki Mizuno, and Hidefumi Asano

Graduate School of Engineering, Nagoya University, Japan

MoP-I-3 (Poster)

The underlying signatures of the spin- and momentum-forbidden dark exciton states in the temperature-dependent photoluminescences from WSe₂ monolayersGuan-Hao Peng,*¹ Ping-Yuan Lo,¹ Wei-Hua Li,¹ Yan-Chen Huang,¹ Yan-Hong Chen,¹ Chi-Hsuan Lee,² Chih-Kai Yang,² and Shun-Jen Cheng¹¹Department of Electrophysics, National Chiao Tung University, Taiwan, ²Graduate Institute of Applied Physics, National Chengchi University, Taiwan

MoP-I-5 (Poster)

Fabrication of Transparent Solar Cell with Atomically Thin Layered Materials

Xing He,^{*}1 Yoshiki Yamaguchi,¹ Toshiro Kaneko,¹ and Toshiaki Kato^{1,2}

¹Department of Electronic Engineering, Tohoku University, Japan, ²JST-PRESTO, Japan

MoP-I-6 (Poster)

Improvement of External Quantum Efficiency of C₆₀/ZnPc Organic Photovoltaic Cells by Polymerization between C₆₀ molecules

Yuki Matoba,^{*}1 Masahiro Kato,¹ Shinta Watanabe,¹ Koichi Okamoto,² Masato Nakaya,¹ and Jun Onoe¹

¹Graduate School of Engineering, Nagoya University, Japan, ²Graduate School of Engineering, Osaka Prefecture University, Japan

MoP-I-7 (Poster)

Bio-sensing of small peptides by open sandwich immunoassay on graphene FETs

Yasusshi Kanai,^{*}1 Yuki Ohmuro-Matsuyama,² Masami Tanioku,¹ Shota Ushiba,³ Takao Ono,¹ Kouichi Inoue,¹ Masahiko Kimura,³ Hiroshi Ueda,² and Kazuhiko Matsumoto¹

¹ISIR Osaka University, Japan, ²Lab. Chem. Life Sci., Tokyo Institute of Technology, Japan, ³Murata Mfg., Japan

MoP-I-9 (Poster)

Chemical vapor deposition growth of boron incorporated graphitic carbon nitride film for carbon based semiconductor systems

Noriyuki Urakami,^{*}1,2 Maito Kosaka,¹ and Yoshio Hashimoto^{1,2}

¹Shinshu Univ., Japan, ²Inst. of Carbon and Tech., Japan

MoP-I-10 (Poster)

High stability of the epitaxial graphene film on SiC substrate

Takaya Kujime,^{*} Yoshiaki Taniguchi, Daiu Akiyama, Yusuke Kawamura, Yasuhide Ohno, and Masao Nagase

Graduate School of Advanced Technology and Science, Tokushima University, Japan

MoP-I-11 (Poster)

Physical vapor transport growth of trigonal selenium crystal

Yuichiro Suzuki,^{*}1 Noriyuki Urakami,^{1,2} and Yoshio Hashimoto^{1,2}

¹Shinshu University, Japan, ²Institute of Carbon Science and Technology, Japan

MoP-I-13 (Poster) - Late News -

High-Frequency Nanomechanical Resonator in a Ballistic Graphene p-n Junction

Minkyung Jung,^{*}1,2 Peter Rickhaus,^{2,3} Simon Zihlmann,² Alexander Eichler,³ Peter Makk,^{2,4} and Christian Schönenberger²

¹DGIST Research Institute, DGIST, Republic of Korea, ²Department of Physics, University of Basel, Switzerland, ³Institute for Solid State Physics, ETH, Switzerland, ⁴Department of Physics, Budapest University of Tech. and Econ., Hungary

May 21 (Tue)

TuA1 Nanomechanics, Thermal and Phonon Transport Room A 08:30-10:30

Chair: Minoru Kawamura and Hiroshi Yamaguchi

TuA1-1 (Oral) 08:30 - 08:45

Nonlinear Acoustic Dynamics in Nanoelectromechanical Waveguides

 Megumi Kurosu,^{*,1,2} Daiki Hatanaka,¹ and Hiroshi Yamaguchi^{1,2}
¹NTT Basic Research Laboratories, NTT Corporation, Japan, ²Department of Physics, Tohoku University, Japan

TuA1-2 (Oral) 08:45 - 09:00

An AlGaAs/GaAs Mechanical Mode-Locked Cavity

 Samer Houri,^{*} Daiki Hatanaka, Ryuichi Ohta, Motoki Asano, and Hiroshi Yamaguchi

NTT-Basic Research Laboratories, Japan

TuA1-3 (Oral) 09:00 - 09:15

Thermoelectric Transport in GaAs-AlGaAs Core-Shell Modulation-Doped Nanowires

 Sergej Fust,^{*} Jonathan Becker, Damon James Carrad, Dominik Irber, Jakob Seidl, Anton Faustmann, Bernhard Loitsch, Gerhard Abstreiter, Jonathan James Finley, and Gregor Koblmüller

Walter Schottky Institute and Physics Department, TU Munich, Germany

TuA1-4 (Oral) 09:15 - 09:30

Quasi-ballistic thermal phonon transport in nanostructured Si nanowires

 Masahiro Nomura^{*,1,2} and Roman Anufriev¹
¹University of Tokyo, Japan, ²PRESTO JST, Japan

TuA1-5 (Oral) 09:30 - 09:45

Semi-ballistic thermal phonon transport in Si_{1-x}Gex nanowires

 Noboru Okamoto,¹ Ryoto Yanagisawa,¹ Md. Mahfuz Alam,² Kentarou Sawano,² Masashi Kurosawa,^{3,4} and Masahiro Nomura^{*,1,4}
¹Univ. of Tokyo, Japan, ²Tokyo City Univ., Japan, ³Nagoya Univ., Japan, ⁴PRESTO, JST, Japan

TuA1-6 (Oral) 09:45 - 10:00

Control of absorption properties of MEMS terahertz bolometers using metamaterials

 Tianye Niu,^{*,1} Boqi Qiu,¹ Ya Zhang,² and Kazuhiko Hirakawa^{1,3}
¹Institute of Industrial Science, University of Tokyo, Japan, ²Tokyo University of Agriculture and Technology, Japan, ³Institute for Nano Quantum Information Electronics, University of Tokyo, Japan

TuA1-7 (Oral) 10:00 - 10:15

Magnetic anisotropy switching in heavily-Fe-doped high-Curie-temperature ferromagnetic semiconductor (Ga_{0.7}Fe_{0.3})Sb with a critical thickness

 Shobhit Goel,^{*,1} Le Duc Anh,^{1,2} Nguyen Thanh Tu,¹ Shinobu Ohya,^{1,2,3} and Masaaki Tanaka^{1,3}
¹Department of Electrical Engineering & Information Systems, The University of Tokyo, Japan, ²Institute of Engineering Innovation, The University of Tokyo, Japan, ³Center for Spintronics Research Network (CSRN), The University of Tokyo, Japan

TuA1-8 (Oral)

10:15 - 10:30

Multi-band valley-protected topological edge states in GaAs-based nanophononic crystals with complete phononic bandgapsIngi Kim,¹ Zhaoyin Sun,¹ Yasuhiko Arakawa,² and Satoshi Iwamoto^{*,1,2}¹Institute of Industrial Science, The University of Tokyo, Japan, ²Institute for Nano Quantum Information Electronics, The University of Tokyo, Japan**TuB1 GaN MOS Power FETs**

Room B 08:30-10:30

Chair: Tetsu Kachi and Toshikazu Suzuki

TuB1-1 (Invited)

08:30 - 09:00

Improvement of channel mobility and reliability in GaN-MOSFETsMasahiko Kuraguchi,^{*} Yosuke Kajiwar, Daimotsu Kato, Toshiki Hikosaka, Hiroshi Ono, Aya Shindome, Akira Mukai, and Shinya Nunoue*Corporate Research & Development Center, Toshiba Corporation, Japan*

TuB1-3 (Invited)

09:00 - 09:30

High-performance nanowire-based E-mode Power GaN MOSHEMTsLuca Nela,^{*} Minghua Zhu, Jun Ma, and Elison Matioli*POWERLAB, IEL, STI, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

TuB1-5 (Oral)

09:30 - 09:45

Switching and HTRB characteristics of Highly reliable GaN MOS-HFETShinichi Hoshi,^{*} Kensuke Hata, Youngshin Eum, and Kazuki Arakawa*Sensor & Semiconductor Process R&D Div., DENSO CORPORATION, Japan*

TuB1-6 (Oral)

09:45 - 10:00

Threshold voltages of AlGaIn/GaN metal-insulator-semiconductor devices with AlN or Al₂O₃ gate insulatorsHiroto Demura,^{*} Yuchen Deng, Duong Dai Nguyen, and Toshi-kazu Suzuki*Japan Advanced Institute of Science and Technology, Japan*

TuB1-7 (Oral)

10:00 - 10:15

Improved insulator/semiconductor interfaces in Al₂O₃/AlGaIn/GaN structures by AlGaIn layer regrowthShinsaku Kawabata,^{*} Joel Tacla Asubar, Hirokuni Tokuda, Akio Yamamoto, and Masaaki Kuzuhara*University of Fukui, Japan*

TuB1-8 (Oral) - Late News -

10:15 - 10:30

1.2 kV regrown GaN vertical p-n power diodes with ultra low leakage using advanced materials engineeringKai Fu,¹ Houqiang Fu,¹ Hanxiao Liu,² Shanthan Reddy Alugubelli,² Xuanqi Huang,¹ Hong Chen,¹ Tsung-Han Yang,¹ Jossue Montes,¹ Chen Yang,¹ Jingan Zhaou,¹ Fernando A. Ponce,² and Yuji Zhao^{*,1}¹School of Electrical, Computer and Energy Engineering, Arizona State University, United States of America, ²Department of Physics, Arizona State University, United States of America

TuC1 Growth and Sensor of 2D Materials Room C 08:30-10:30

Chair: Tomoki Machida and Deep Jariwala

TuC1-1 (Oral) 08:30 - 08:45

Elimination of photothermal effect on nano-mechanical resonator consisting of optically transparent h-BN sheet

Daiki Yoshikawa, Kuniharu Takei, Takayuki Arie, and Seiji Akita*

Department of Physics and Electronics, Osaka Prefecture University, Japan

TuC1-2 (Oral) 08:45 - 09:00

Persistent resonance frequency shift of MoS₂ mechanical resonator by laser irradiation

Taichi Inoue,*¹ Takahiko Endo,² Kuniharu Takei,¹ Takayuki Arie,¹ Yasumitsu Miyata,² and Seiji Akita¹

¹Osaka prefecture University, Japan, ²Tokyo Metropolitan University, Japan

TuC1-3 (Oral) 09:00 - 09:15

1-aminopyrene-modified epitaxial graphene device for pH sensors

Yasuhide Ohno,* Takanori Mitsuno, Yoshiaki Taniguchi, and Masao Nagase

Tokushima University, Japan

TuC1-4 (Oral) 09:15 - 09:30

Influence of DNA Sequences on Gas Responses Using DNA-modified Graphene Devices

Ryo Nozaki,* Takashi Ikuta, Kinuko Ueno, Kaori Tsukakoshi, Kazunori Ikebukuro, and Kenzo Maehashi

Institute of Engineering, Tokyo University of Agriculture and Technology, Japan

TuC1-5 (Invited) 09:30 - 10:00

Emergent transport phenomena in MBE-grown 2D materials and their heterostructures

Masaki Nakano*¹ and Yoshihiro Iwasa^{1,2}

¹QPEC and Department of Applied Physics, the University of Tokyo, Japan, ²RIKEN Center for Emergent Matter Science (CEMS), Japan

TuC1-7 (Oral) 10:00 - 10:15

Integrated synthesis of graphene nanoribbon-based field effect transistor with high on/off ratio

Noritada Ogura,*¹ Hiroo Suzuki,¹ Toshiro Kaneko,¹ and Toshiaki Kato^{1,2}

¹Department of Electronic Engineering, Tohoku University, Japan, ²JST-PRESTO, Japan

TuC1-8 (Oral) 10:15 - 10:30

Expansion of Solid-phase Interactions between Carbon and Metals: Layer Exchange for Multilayer Graphene on Insulator

Yoshiki Nakajima,* Hiromasa Murata, Takashi Suemasu, and Kaoru Toko

University of Tsukuba, Japan

TuD1 Ga₂O₃ Bulk and Epitaxial Growth Room D 08:30-10:30

Chair: Yoshinao Kumagai and Gregg Jessen

TuD1-1 (Invited) 08:30 - 09:00

Halide Vapor Phase Epitaxy of α -Ga₂O₃

Yuichi Oshima

National Institute for Materials Science, Japan

TuD1-3 (Oral) 09:00 - 09:15

Investigation of Fe incorporation in (010) β -Ga₂O₃ films grown by plasma-assisted molecular beam epitaxy

Akhil Mauze,* Yuwei Zhang, Tom Mates, and James Speck
Materials Department, University of California, Santa Barbara, United States of America

TuD1-4 (Oral) 09:15 - 09:30

(010) β -Ga₂O₃ Metal Oxide Catalyzed Epitaxy (MOCATAXY) growth and Sn doping in plasma-assisted molecular beam epitaxy

Akhil Mauze,* Yuwei Zhang, and James Speck
Materials Department, University of California, Santa Barbara, United States of America

TuD1-5 (Oral) 09:30 - 09:45

High Concentration N-Doping into Ga₂O₃ Films by Using Pulsed-Laser Deposition with NO Plasma

Jung-Soo Lee,¹ Ryo Wakabayashi,¹ Takumi Saito,¹ Kohei Yoshimatsu,¹ Motohisa Kado,² and Akira Ohtomo*^{1,3}
¹Department of Chemical Science and Engineering, Tokyo Institute of Technology, Japan, ²Toyota Motor Corporation, Japan, ³MCES, Tokyo Institute of Technology, Japan

TuD1-6 (Oral) 09:45 - 10:00

Impact of Substrate Miscut Angle on Surface Morphology and Electrical Properties of Homoepitaxial β -Ga₂O₃ Grown by MOVPE

Saud Bin Anooz,* Andreas Popp, Raimund Grüneberg, Andreas Fiedler, Klaus Irmscher, Robert Schewski, Martin Albrecht, Zbigniew Galazka, and Günter Wagner
Leibniz-Institut für Kristallzüchtung, Germany

TuD1-7 (Oral) 10:00 - 10:15

Growth of Ga₂O₃ Regular Column Structures by Halide Vapour Phase Epitaxy: α - and ϵ - phase Relation

Vladimir Nikolaev,*^{1,2} Aleksei Pechnikov,^{1,2} Vasilii Nikolaev,¹ Mihail Sheglov,² Andrey Chikiryaka,² and Sergey Stepanov^{1,2}
¹Perfect Crystals LLC, Russia, ²Ioffe Institute, Russia

TuD1-8 (Oral) 10:15 - 10:30

Synchrotron X-Ray Topography Observation and Classification of Dislocations in β -Ga₂O₃ single crystal substrates grown by EFG

Yongzhao YAO,*¹ Yoshihiro SUGAWARA,¹ Yukari ISHIKAWA,¹ Yumiko TAKAHASHI,² and Keiichi HIRANO³
¹Japan Fine Ceramics Center, Japan, ²Nihon University, Japan, ³High Energy Accelerator Research Organization, Japan

TuE1 hBN : Growth I

Room E 08:30-10:30

Chair: Guillaume Cassabois and Kenji Watanabe

TuE1-1 (Invited) 08:30 - 09:00

Atmospheric Pressure Solution Growth of Monoisotopic Hexagonal Boron Nitride

James Howard Edgar,*¹ Jiahn Li,¹ Song Liu,¹ Chao Yuan,² Martin Kuball,² Christine Elias,³ T.Q.P. Vuong,³ Guillaume Cassabois,³ and Bernard Gil³

¹Kansas State University, United States of America, ²University of Bristol, United Kingdom, ³Université de Montpellier, France

TuE1-3 (Oral)

09:00 - 09:15

Impurity and isotope control of cubic and hexagonal boron nitride crystals under solution growth process

Takashi Taniguchi

National Institute for Materials Science, Japan

TuE1-4 (Oral)

09:15 - 09:30

Wafer-scale single-crystal hexagonal boron nitride film via self-collimated grain formation

Soo Min Kim

Korea Institute of Science and Technology, Republic of Korea

TuE1-5 (Invited)

09:30 - 10:00

High-temperature Plasma-assisted Molecular Beam Epitaxy of hBN LayersT. S. Cheng,¹ A. Summerfield,¹ C. J. Mellor,¹ G. Cassabois,² B. Gil,² L. Eaves,¹ C. T. Foxon,¹ P. H. Beton,¹ and S. V. Novikov^{*1}¹*School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom*, ²*Laboratoire Charles Coulomb, CNRS-Université de Montpellier, Montpellier, France*

TuE1-7 (Oral)

10:00 - 10:15

Low temperature growth of h-BN on graphene via molecular beam epitaxyMartin Heilmann,^{*1} Alexander S. Prikhodko,² Michael Hanke,¹ Muhammad Y. Bashouti,³ Nikolai I. Borgardt,² Henning Riechert,¹ and Marcelo J. Lopes¹¹*Paul-Drude-Institut für Festkörperelektronik, Germany*, ²*National Research University of Electronic Technology, Russia*,³*Ben-Gurion University of the Negev, Israel*

TuE1-8 (Oral)

10:15 - 10:30

Ultra-high Temperature Growth of Layered Hexagonal Boron Nitride on Sapphire by Molecular Beam EpitaxyRyan Lowry Page,^{*1} Yongjin Cho,² Joseph Casamento,¹ Sergei Rouvimov,³ Huili Grace Xing,^{1,2,4} and Debdeep Jena^{1,2,4}¹*Department of Materials Science and Engineering, Cornell University, United States of America*, ²*School of Electrical and Computer Engineering, Cornell University, United States of America*, ³*Department of Electrical Engineering, University of Notre Dame, United States of America*, ⁴*Kavli Institute at Cornell for Nanoscale Science, United States of America*

Coffee Break

10:30 - 11:00

TuA2 Superconductor-Semiconductor Hybrid Structures Room A 11:00-12:30

Chair: Koji Ishibashi and Hongqi Xu

TuA2-1 (Invited)

11:00 - 11:30

Superconductor/Semiconductor Devices for Majorana Zero ModesAntonio Fornieri,¹ Alexander M. Whiticar,¹ F. Setiawan,² Elias Portoles Marin,¹ Asbjørn C. C. Drachmann,¹ Anna Keselman,³ Sergei Gronin,^{4,5} Candice Thomas,^{4,5} Tian Wang,^{4,5} Ray Kallaher,^{4,5} Geoffrey C. Gardner,^{4,5} Erez Berg,^{2,6} Michael J. Manfra,^{4,5,7,8} Ady Stern,⁶ Charles M. Marcus,¹ and Fabrizio Nichele^{*1}¹*University of Copenhagen and Microsoft Quantum Lab Copenhagen, Denmark*, ²*James Franck Institute, The University of Chicago, United States of America*, ³*Microsoft Research, United States of America*, ⁴*Department of Physics and Astronomy and Microsoft Quantum Lab Purdue, Purdue University, United States of America*, ⁵*Birck Nanotechnology Center, Purdue University, United States of America*, ⁶*Department of Condensed Matter Physics, Weizmann Institute of Science, Ireland*, ⁷*School of Materials Engineering, Purdue University, United States of America*, ⁸*School of Electrical and Computer Engineering, Purdue University, United States of America*

TuA2-3 (Oral)

11:30 - 11:45

Towards semiconductor-superconductor hybrid qubits based on InAs/Al core/shell nanowiresPatrick Zellekens,^{*,1,2} Russell Deacon,^{4,5} Steffen Schlör,³ Pujitha Perla,^{1,2} Patrick Liebisch,^{1,2} Benjamin Bennemann,^{1,2} Mihail Lepsa,^{1,2} Martin Weides,³ Koji Ishibashi,^{4,5} Detlev Grützmacher,^{1,2} and Thomas Schäpers^{1,2}¹Peter Grünberg Institute, Forschungszentrum Jülich, Germany, ²JARA-FIT, Fundamentals of Future Information Technology, Germany, ³Karlsruhe Institute of Technology, Germany, ⁴RIKEN Center for Emergent Matter Science, Japan, ⁵Advanced Device Laboratory, RIKEN, Japan

TuA2-4 (Oral)

11:45 - 12:00

The Josephson effect in InAs quantum wells with the spin Hall effectTaketomo Nakamura,^{*} Yoshiaki Hashimoto, and Shingo Katsumoto*Institute for Solid State Physics, The University of Tokyo, Japan*

TuA2-5 (Oral)

12:00 - 12:15

Observation of a.c. Josephson effect in gate tunable Josephson junction on topological insulator (Bi_{0.2}Sb_{0.8})₂Te₃ filmsYuusuke Takeshige,^{*,1} Sadashige Matsuo,^{1,2} Russell Stewart Deacon,^{3,4} Kento Ueda,¹ Yosuke Sato,¹ Yi-Fan Zhao,⁵ Ling Zhang,⁵ Cui-Zu Chang,⁵ Koji Ishibashi,^{3,4} and Seigo Tarucha^{1,4}¹Department of Applied Physics, University of Tokyo, Japan, ²PRESTO, Japan Science and Technology Agency (JST), Japan, ³Advanced Device Laboratory, RIKEN, Japan, ⁴Center for Emergent Matter Science, RIKEN, Japan, ⁵Department of Physics, The Pennsylvania State University, United States of America

TuA2-6 (Oral)

12:15 - 12:30

Superconductor connection to InAs two-dimensional electrons with accumulation edgesMakoto Onizaki,^{*} Yoshiaki Hashimoto, Taketomo Nakamura, and Shingo Katsumoto*Institute for Solid State Physics, University of Tokyo, Japan*

TuB2 Quantum Dot Lasers

Room B 11:00-12:30

Chair: Johann Peter Reithmaier and Masahiro Nada

TuB2-1 (Invited)

11:00 - 11:30

Multi-wavelength DFB laser array in InAs/GaAs quantum dot material epitaxially grown on SiliconSiyuan Yu,^{*,1} Huiyun Liu,³ Ying Yu,² and Yi Wang²¹University of Bristol, United Kingdom, ²Sun Yat-sen University, China, ³University College London, United Kingdom

TuB2-3 (Oral)

11:30 - 11:45

InAs/InP QD and InGaAsP/InP QW comb lasers for > 1 Tb/s transmissionMarlene Zander,^{*,1} Wolfgang Rehbein,¹ Martin Möhrle,¹ Steffen Breuer,¹ Dieter Franke,¹ and Dieter Bimberg^{2,3}¹Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institute, Germany, ²"Bimberg Chinese-German Center for Green Photonics", CAS at CIOMP, China, ³Center of Nanophotonics, Institute of Solid State Physics, TU Berlin, Germany

TuB2-4 (Oral)

11:45 - 12:00

1545 μm Quantum Dot Vertical Cavity Surface Emitting Laser with low thresholdCyril Paranthoen,^{*,1} Christophe Levallois,¹ Nicolas Chevalier,¹ Alain Le Corre,¹ Gaëlle Brevalle,¹ Mathieu Perrin,¹ Karine Tavernier,¹ Herve Folliot,¹ and Mehdi Alouini²¹Univ Rennes, INSA Rennes, CNRS, Institut FOTON, France, ²Univ Rennes, Université de Rennes 1, CNRS, Institut FOTON, France

TuB2-5 (Oral) 12:00 - 12:15

Relative intensity noise of silicon-based quantum dot lasers

Jianan Duan,*¹ Heming Huang,¹ Daehwan Jung,² Justin C. Norman,^{2,3} John E. Bowers,^{2,3,4} and Frédéric Grillot^{1,5}

¹LTCI, Télécom ParisTech, France, ²Institute for Energy Efficiency, University of California Santa Barbara, United States of America, ³Materials Department, University of California Santa Barbara, United States of America, ⁴Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America, ⁵Center for High Technology Materials, University of New-Mexico, United States of America

TuB2-6 (Oral) 12:15 - 12:30

Thermal dependence of the emission linewidth of 1.52- μm single mode InAs/InP quantum dot lasers

Jianan Duan,*¹ Bozhang Dong,¹ Heming Huang,¹ Zhenguo Lu,² Philip Poole,² and Frédéric Grillot^{1,3}

¹LTCI, Telecom ParisTech, France, ²Advanced Electronics and Photonics Research Centre, NRC Canada, Canada, ³Center for High Technology Materials, University of New-Mexico, United States of America

TuB2-7 (Oral) 12:30 - 12:45

Sub-50 kHz Linewidth 1.55 μm Quantum Dot Distributed Feedback Lasers

Annette Becker,¹ Tali Septon,² Sutapa Gosh,² Gal Shtendel,² Vitalii Sichkovskiy,¹ Florian Schnabel,¹ Anna Sengül,¹ Marko Bjelica,³ Bernd Witzigmann,³ Gadi Eisenstein,² and Johann Peter Reithmaier*¹

¹Technische Physik, Institute of Nanostructure Technologies and Analytics, CINSaT, University of Kassel, Germany, ²Electrical Engineering Department and Russell Barrie Nanotechnology Institute, Technion - Israel Institute of Technology, Israel, ³Computational Electronics and Photonics Group, CINSaT, University of Kassel, Germany

TuC2 RF and on-Si Technology Room C 11:00-12:30

Chair: Yuichi Oshima and Huili Grace Xing

TuC2-1 (Invited) 11:00 - 11:30

GaN HEMT Characterization for Base Stations

Hiroshi Yamamoto,* Ken Kikuchi, and Norihiko Ui

Sumitomo Electric Industries, Ltd., Japan

TuC2-3 (Oral) 11:30 - 11:45

InAlN-MIS-HEMTs with High Fmax on Si Substrates

Tomohiro Yoshida,*¹ Yoshimi Yamashita,² Isao Makabe,¹ Issei Watanabe,² Akifumi Kasamatsu,² Ken Nakata,¹ and Kazutaka Inoue¹

¹Sumitomo Electric Industries, Ltd., Japan, ²National Institute of Information and Communications Technology, Japan

TuC2-4 (Oral) 11:45 - 12:00

High Frequency Characteristics of AlInGaN HEMTs on Low Resistance Silicon for Millimeter-Wave Applications

Indraneel Sanyal,*¹ En-Shuo Lin,¹ Yu-Chen Wan,¹ and Jen-Inn Chyi^{1,2}

¹Department of Electrical Engineering, National Central University, Taiwan, ²Research Center for Applied Sciences, Academia Sinica, Taiwan

TuC2-5 (Oral) 12:00 - 12:15

Ka band LNA and PA based on 100 nm GaN/Si HEMT process

XIAODONG TONG,*^{1,2} SHIYONG ZHANG,^{1,2} PENGHUI ZHENG,^{1,2} JIANXING XU,^{1,2} and RONG WANG^{1,2}

¹Microsystem and Terahertz Research Center, China Academy of Engineering Physics, China, ²Institute of Electronic Engineering, China Academy of Engineering Physics, China

TuC2-6 (Oral)

12:15 - 12:30

Effects of thermal annealing on film quality of InAs-On-Insulator structures fabricated by Smart Cut method

Kei Sumita,* Jun Takeyasu, Kimihiko Kato, Mitsuru Takenaka, and Shinichi Takagi

*Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan*TuD2 Ga₂O₃ Process and Characterization

Room D 11:00-12:30

Chair: Julien Barjon and James Edgar

TuD2-1 (Oral)

11:00 - 11:15

On the Surface Properties of High Aspect Ratio β -Ga₂O₃ Fin Structures Formed by I-MacEtchHsien-Chih Huang,¹ Munho Kim,¹ Xun Zhan,² Kelson Chabak,³ Jeongdong Kim,¹ Jian-min Zuo,² and Xiuling Li*¹¹Electrical and Computer Engineering Department, University of Illinois, United States of America, ²Materials Science and Engineering Department, University of Illinois, United States of America, ³Air Force Research Laboratory, Sensors Directorate at WPAFB, United States of America

TuD2-2 (Oral)

11:15 - 11:30

Observation of Electroreflectance Spectra of β -Ga₂O₃ Single CrystalTakeyoshi Onuma,*^{1,2} Kouya Tanaka,¹ Kohei Sasaki,³ Tomohiro Yamaguchi,¹ Tohru Honda,¹ Akito Kuramata,³ Shigenobu Yamakoshi,⁴ and Masataka Higashiwaki²¹Department of Applied Physics, Kogakuin University, Japan, ²National Institute of Information and Communications Technology, Japan, ³Novel Crystal Technology Inc., Japan, ⁴Tamura Corporation, Japan

TuD2-3 (Oral)

11:30 - 11:45

Suppression of Parallel Conduction at the Interface in β -Ga₂O₃ Homoepitaxial Layer Using Semi-Insulating Intermediate LayerTakumi Saito,*¹ Ryo Wakabayashi,¹ Jung-Soo Lee,¹ Kaisei Kamei,¹ Kohei Yoshimatsu,¹ Motohisa Kado,² and Akira Ohtomo^{1,3}¹Department of Chemical Science and Engineering, Tokyo Institute of Technology, Japan, ²Toyota Motor Corporation, Japan, ³MCES, Tokyo Institute of Technology, Japan

TuD2-4 (Oral)

11:45 - 12:00

Influence of Charged Dislocation on Mobility in Degenerate Homoepitaxial Si-Doped Ga₂O₃ Films on $(\bar{2}01)$ β -Ga₂O₃ by Laser Molecular Beam Epitaxy

Xuanhu Chen,* Jiandong Ye, Shulin Gu, Rong Zhang, and Youdou Zheng

Nanjing University, China

TuD2-5 (Invited)

12:00 - 12:30

 β -Ga₂O₃ MOSFETs with Nitrogen-Ion-Implanted Back-Barrier: DC Performance and Trapping EffectsMan Hoi Wong,*¹ Ken Goto,² Hisashi Murakami,² Yoshinao Kumagai,² and Masataka Higashiwaki¹¹National Institute of Information and Communications Technology, Japan, ²Department of Applied Chemistry, Tokyo University of Agriculture and Technology, Japan

TuE2 hBN : Point Defects Room E 11:00-12:30

Chair: Di Liang and Hideki Yagi

TuE2-1 (Invited) 11:00 - 11:30

Spin-dependent quantum emission from defects in hexagonal boron nitride

Lee Bassett

Quantum Engineering Laboratory, Department of Electrical & Systems Engineering, University of Pennsylvania, United States of America

TuE2-3 (Oral) 11:30 - 11:45

Hexagonal Boron Nitride Nanophotonics

Hanh Duong

University of Technology Sydney, Australia

TuE2-5 (Oral) 12:00 - 12:15

Pressure characters of defects in hexagonal boron nitride flakes

baoquan sun,* Yongzhou xue, and xiuming dou

Institute of Semiconductors, Chinese Academy of Sciences, China

TuE2-6 (Oral) 12:15 - 12:30

Enhanced Super-Resolution Imaging of Quantum Emitters in Hexagonal Boron Nitride

Mehran Kianinia,*¹ Carlo Bradac,¹ Bernd Sontheimer,² Fan Wang,¹ Toan Trong Tran,¹ Minh Nguyen,¹ Sejeong Kim,¹ Zai-Quan Xu,¹ Dayong Jin,¹ Andreas W. Schell,³ Charlene Lobo,¹ Igor Aharanovich,¹ and Milos Toth¹

¹*School of Mathematical and Physical Sciences, University of Technology Sydney, Australia,* ²*Institut für Physik, Humboldt-Universität zu Berlin, Germany,* ³*Department of Electronic Science and Engineering, Kyoto University, Japan*

Lunch Break	12:30 - 14:00
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TuA3 Advanced Photonic Integration Room A 14:00-16:15

Chair: Di Liang and Hideki Yagi

TuA3-1 (Invited) 14:00 - 14:30

Ultra-low Noise Widely-Tunable Semiconductor Lasers Fully Integrated on Silicon

Minh A. Tran,*¹ Duanni Huang,¹ Joel Guo,¹ Jon Peters,¹ Tin Komljenovic,¹ Paul A. Morton,² Jacob B. Khurgin,² Christopher C. Morton,² and John E. Bowers¹

¹*Dept. of Electrical and Computer Engineering, University of California Santa Barbara, United States of America,* ²*Morton Photonics Inc., United States of America*

TuA3-3 (Oral) 14:30 - 14:45

Investigation of optical loss and bandwidth of InP-organic hybrid optical modulator

Naoki Sekine,* Shinichi Takagi, and Mitsuru Takenaka

The University of Tokyo, Japan

TuA3-4 (Oral) 14:45 - 15:00

Equivalent oxide thickness scaling for efficient III-V/Si hybrid MOS optical phase shifter

Qiang Li,*¹ Jae-Hoon Han,^{1,2} Tsung-En Lee,¹ Shinichi Takagi,¹ and Mitsuru Takenaka¹

¹*University of Tokyo, Japan,* ²*Korean Institute of Science and Technology, Republic of Korea*

TuA3-5 (Oral) 15:00 - 15:15

Numerical Analysis of III-V/Si Hybrid MOS Microdisk Modulator

Shuhei Ohno,* Shinichi Takagi, and Mitsuru Takenaka

Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan

TuA3-6 (Oral) 15:15 - 15:30

Taper Length Dependence of Double-Taper-Type Coupler for GaInAsP/SOI Hybrid Integrated Platform

Takayuki Miyazaki,*¹ Fumihito Tachibana,¹ Takehiko Kikuchi,^{1,3} Takuo Hiratani,³ Hideki Yagi,³ Moataz Eissa,¹ Takuya Mitarai,¹ Tomohiro Amemiya,^{1,2} Nobuhiko Nishiyama,^{1,2} and Shigehisa Arai^{1,2}

¹*Dept. of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan,* ²*Institute of Innovative Research (IIR), Tokyo Institute of Technology, Japan,* ³*Transmission Devices Laboratory, Sumitomo Electric Industries, Ltd, Japan*

TuA3-7 (Invited) 15:30 - 16:00

InP membrane lasers and active-passive integration

Yuqing Jiao,* Vadim Pogoretskii, Jorn van Engelen, Niall Kelly, and Jos van der Tol

Institute for Photonic Integration (IPI), Eindhoven University of Technology, Netherlands

TuA3-9 (Oral) - Late News - 16:00 - 16:15

Highly efficient and fabrication-tolerant InP polarization rotator-splitter

Shahram Keyvaninia,¹ Hendrik Boerma,¹ Markus Wössner,² Felix Ganzer,¹ Patrick Runge,*¹ and Martijn Schell¹

¹*Fraunhofer Heinrich-Hertz-Institut, Germany,* ²*Robert Bosch GmbH, Germany*

TuB3 Epitaxial Growth on Group IV Substrates Room B 14:00-16:00

Chair: Yosuke Shimura and D. Scott Katzer

TuB3-1 (Invited) 14:00 - 14:30

Epitaxial Growth of (Si)GeSn Source/Drain Layers for Advanced Ge Gate All Around Devices

Roger Loo,*¹ Anurag Vohra,^{1,2} Clement Porret,¹ Andriy Hikavyi,¹ Erik Rosseel,¹ Marc Schaeckers,¹ Elena Capogreco,¹ Yosuke Shimura,^{1,2,3} David Kohen,⁴ John Tolle,⁴ and Wilfried Vandervorst^{1,2}

¹*Imec, Belgium,* ²*KU Leuven, Department of Physics, Belgium,* ³*Graduate School of Integrated Science and Technology, Shizuoka University, Japan,* ⁴*ASM, United States of America*

TuB3-3 (Invited) 14:30 - 15:00

Formation and Characterization of Si Quantum Dots with Ge Core for Electroluminescent Devices

Katsunori Makihara,* Mitsuhsa Ikeda, Akio Ohta, and Seiichi Miyazaki

Nagoya University, Japan

TuB3-5 (Oral) 15:00 - 15:15

Structural and optical properties of GaAs film grown on a glass substrate using a large-grained Ge seed layer for solar cell applications

Takeshi Nishida,* Kenta Moto, Takashi Suemasu, and Kaoru Toko

Institute of Applied Physics, University of Tsukuba, Japan

TuB3-6 (Oral)

15:15 - 15:30

Crystalline and Electrical Properties of $\text{Ge}_{1-x}\text{Sn}_x/\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ Quantum Well StructuresGalih Ramadana Suwito,^{*}¹ Masahiro Fukuda,² Shigehisa Shibayama,² Mitsuo Sakashita,² Osamu Nakatsuka,^{2,3} and Shigeaki Zaima⁴¹Department of Physical Science and Engineering, School of Engineering, Nagoya University, Japan, ²Department of Materials Physics, Graduate School of Engineering, Nagoya University, Japan, ³Institute of Materials and Systems for Sustainability, Nagoya University, Japan, ⁴Institute of Innovation for Future Society, Nagoya University, Japan

TuB3-7 (Oral)

15:30 - 15:45

Dislocation free InP/InGaAs/InP islands on Si by micro-channel selective area MOVPEYufeng Fu,^{*}¹ Nobuyuki Otake,¹ and Masakazu Sugiyama²¹DENSO CORPORATION, Japan, ²The University of Tokyo, Japan

TuB3-8 (Oral)

15:45 - 16:00

Epitaxial growth of BaSi_2 light absorbers by molecular beam epitaxy and significant photoresponsivity enhancement by increased growth temperaturesYudai Yamashita,^{*} Kaoru Toko, and Takashi Suemasu

University of Tsukuba, Japan

TuC3 Characterization of Nanostructures

Room C 14:00-16:00

Chair: Shinjiro Hara and Ryo Tamaki

TuC3-1 (Invited)

14:00 - 14:30

Characterization of Nanowire Devices Using Nano-Focused X-Ray Beams

Jesper Wallentin

Synchrotron Radiation Research and NanoLund, Lund University, Sweden

TuC3-3 (Oral)

14:30 - 14:45

Observation of dominant non-local superconducting proximity effect due to electron-electron interaction in a ballistic double nanowireKento Ueda,^{*}¹ Sadashige Matsuo,¹ Hiroshi Kamata,² Yosuke Sato,¹ Yusuke Takeshige,¹ K. Li,³ Soren Jeppessen,⁴ Lars Samuelson,⁴ Hongqi Xu,^{3,4} and Seigo Tarucha^{1,2}¹Department of Applied physics, University of Tokyo, Japan, ²RIKEN, Japan, ³Peking University, China, ⁴Lund University, Sweden

TuC3-4 (Oral)

14:45 - 15:00

2DEG formation in doped polytype InP nanowires: an optical studyIrene Geijselaers,^{*}¹ Sebastian Lehmann,¹ Kimberly Dick-Thelander,^{1,2} and Mats-Erik Pistol¹¹Department of Solid State Physics and NanoLund, Lund University, Sweden, ²Centre for Analysis and Synthesis, Lund University, Sweden

TuC3-5 (Oral)

15:00 - 15:15

Irradiation Effects on Induced Electron Conductivity in an un-doped GaAs/AlGaAs Quantum Well Hall BarTakafumi Fujita,^{*}¹ Ryota Hayashi,¹ Makoto Kohda,² Julian Ritzmann,³ Arne Ludwid,³ Junsaku Nitta,² Andreas D. Wieck,³ and Akira Oiwa¹¹The Institute of Scientific and Industrial Research, Osaka University, Japan, ²Department of Materials Science, Tohoku University, Japan, ³Lehrstuhl für Angewandte Festkörperphysik, Ruhr-Universität Bochum, Germany

TuC3-6 (Oral)

15:15 - 15:30

Lateral electronic coupling among self-assembled semiconductor quantum dots promoted by adjoining tunnel-coupled quantum-well potentialsJunichi Takayama,¹ Satoshi Hiura,¹ Kazuki Takeishi,¹ Takayuki Kiba,² and Akihiro Murayama*¹¹GSIST, Hokkaido University, Japan, ²Kitami Institute of Technology, Japan

TuC3-7 (Oral)

15:30 - 15:45

Spectral Hole Burning Spectroscopy on Quantum Dashes and Quantum Dots for Dual-Frequency Laser Engineering

Gaëlle Brévalle,* Mathieu Perrin, Cyril Paranthoën, Yoan Léger, Christophe Levallois, Nicolas Chevalier, Hervé Folliot, and Mehdi Alouini

Institut FOTON, France

TuC3-8 (Oral)

15:45 - 16:00

Extension of excitation energy to generate terahertz wave to smaller than GaAs bandgap energy due to growth of InAs quantum dots and nitrogen doped layer

Osamu Kojima* and Takashi Kita

Department of Electrical and Electronic Engineering, Kobe University, Japan

TuD3 Ga₂O₃ Electrical Devices

Room D 14:00-16:00

Chair: Masataka Higashiwaki and Martin Kuball

TuD3-1 (Invited)

14:00 - 14:30

Pulsed RF Power Measurements of Laterally Scaled Ga₂O₃ FETsGregg Jessen,*¹ Kelson Chabak,¹ Andrew Green,¹ Neil Moser,¹ Kevin Leedy,¹ Dennis Walker, Jr.,¹ Antonio Crespo,¹ Miles Lindquist,² Peter Zwyth,³ and Ryan Gilbert⁴¹Sensors Directorate, Air Force Research Laboratory, United States of America, ²KBRwyle, United States of America, ³SelectTech Services Corp., United States of America, ⁴The Design Knowledge Company, United States of America

TuD3-3 (Oral)

14:30 - 14:45

Dynamic R_{ON} in β-Ga₂O₃ MOSFET Power DevicesTaylor Moule,*¹ Manikant Singh,¹ James Pomeroy,¹ Serge Karboyan,¹ Michael J. Uren,¹ Man Hoi Wong,² Kohei Sasaki,³ Akito Kuramata,³ Shigenobu Yamakoshi,³ Masataka Higashiwaki,² and Martin Kuball¹¹Centre for Device Thermography and Reliability, University of Bristol, United Kingdom, ²National Institute of Information and Communications Technology, Japan, ³Tamura Corporation, Japan

TuD3-4 (Oral)

14:45 - 15:00

Nitrogen-Doped Channel β-Ga₂O₃ MOSFET with Normally-Off Operation

Takafumi Kamimura,* Yoshiaki Nakata, Man Hoi Wong, Phuc Hong Than, and Masataka Higashiwaki

National Institute of Information and Communications Technology, Japan

TuD3-5 (Invited)

15:00 - 15:30

Ga₂O₃ Power Schottky Barrier Diodes and Transistors: Design Principles and Experimental Validation

Huili Grace Xing,* Wenshen Li, Zongyang Hu, Nicholas Tanen, Riena Jinno, Kazuki Nomoto, and Debdeep Jena

Cornell University, United States of America

TuD3-7 (Oral)

15:30 - 15:45

Vertical Schottky barrier diodes based on a bulk β -Ga₂O₃ substrate with high switching performanceXing Lu,^{*,1,2} Xu Zhang,² Huaxing Jiang,² Xinbo Zou,³ and Kei May Lau²¹School of Electronics and Information Technology, Sun Yat-sen University, China, ²ECE Department, Hong Kong University of Science and Technology, Hong Kong, ³School of Information Science and Technology, ShanghaiTech University, China

TuD3-8 (Oral)

15:45 - 16:00

Vertical Ga₂O₃ Schottky Barrier Diodes with Guard Ring Formed by Nitrogen-Ion ImplantationChia-Hung Lin,^{*,1} Yohei Yuda,² Man Hoi Wong,¹ Mayuko Sato,³ Nao Takekawa,³ Keita Konishi,³ Tatsuro Watahiki,² Mikio Yamamuka,² Hisashi Murakami,³ Yoshinao Kumagai,³ and Masataka Higashiwaki¹¹National Institute of Information and Communications Technology, Japan, ²Mitsubishi Electric Corporation, Japan, ³Department of Applied Chemistry, Tokyo University of Agriculture and Technology, Japan

TuE3 hBN : Spectroscopy and Growth II

Room E 14:00-16:00

Chair: Takashi Taniguchi and Sergei Novikov

TuE3-1 (Invited)

14:00 - 14:30

Luminescence efficiency of hexagonal boron nitrideJulien Barjon,^{*,1} Alexandre Plaud,^{1,2} Lorenzo Sponza,² Léonard Schué,^{1,2} Ingrid Stenger,¹ Frédéric Fossard,² Kenji Watanabe,³ Takashi Taniguchi,³ François Ducastelle,² and Annick Loiseau²¹Groupe d'Etude de la Matière Condensée, Université de Versailles St Quentin en Yvelines, CNRS, Université Paris Saclay, Versailles, France, ²Laboratoire d'Etude des Microstructures, ONERA, CNRS, Université Paris Saclay, Chatillon, France, ³National Institute for Material Sciences, Tsukuba, Japan

TuE3-3 (Oral)

14:30 - 14:45

Quantification of external quantum efficiency for near-band-edge emission of h-BN bulk crystals under photo-excitationKazunobu Kojima,^{*,1} Kenji Watanabe,² Takashi Taniguchi,² and Shigefusa F. Chichibu¹¹Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Japan, ²National Institute for Materials Science (NIMS), Japan

TuE3-4 (Oral)

14:45 - 15:00

Ultralow Loss Polaritons in Isotopically Pure Hexagonal Boron NitrideAlexander J. Giles,^{*,1} Swathi Iyer,¹ Sai S. Sunku,² Thomas G. Folland,³ Song Liu,⁴ Chase T. Ellis,¹ Joseph G. Tischler,¹ Jeff C. Owrutsky,¹ James H. Edgar,⁴ D. N. Basov,² and Joshua D. Caldwell³¹US Naval Research Laboratory, United States of America, ²Department of Physics, Columbia University, United States of America, ³Mechanical Engineering Department, Vanderbilt University, United States of America, ⁴Department of Chemical Engineering, Kansas State University, United States of America

TuE3-5 (Invited)

15:00 - 15:30

Observation of impurity incorporated domain in h-BN single crystalsKenji Watanabe^{*} and Takashi Taniguchi*National Institute for Materials Science, Japan*

TuE3-7 (Oral)

15:30 - 15:45

Kinetic limitations of h-BN MOVPE growthKrzysztof Pakula,^{*} Aleksandra Dabrowska, Mateusz Tokarczyk, Johannes Binder, Jolanta Borysiuk, Rafal Bozek, Grzegorz Kowalski, Andrzej Wyszomolek, and Roman Stepniowski*Faculty of Physics, University of Warsaw, Poland*

TuE3-8 (Oral)

15:45 - 16:00

Large area hexagonal boron nitride coatings for SERS applications with silver nanoparticlesDipankar Chugh,^{*}¹ Jennifer Wong-Leung,¹ Li Li,² Mykhaylo Lysevych,² Hark Hoe Tan,¹ and Chennupati Jagadish^{1,2}¹Department of Electronic Materials Engineering, Australian National University, Australia, ²Australian National Fabrication Facility, Australian National University, Australia

TuP Poster Session IIReception Hall 16:00-18:00

TuP-A-1 (Poster)

High-Temperature Annealing of Sputter-Deposited AlN on Diamond SubstrateTatsuya Shirato,^{*}¹ Yusuke Hayashi,² Kenjiro Uesugi,³ Kanako Shojiki,² and Hideto Miyake^{1,2}¹Mie Univ., Grad. School of Eng., Japan, ²Mie Univ., Grad. School of RIS, Japan, ³Mie Univ., SPORR, Japan

TuP-A-2 (Poster)

Enabling Low Temperature Aluminum Nitride ALD by Use of a Novel Hydrazine SourceDaniel Alvarez,^{*}¹ Jeffrey J. Spiegelman,¹ Keisuke Andachi,² Aswin Kondusamy,³ and Jiyoung Kim³¹RASIRC, United States of America, ²Taiyo Nippon Sanso Corporation, Japan, ³University of Texas, Dallas, United States of America

TuP-A-3 (Poster)

Growth and characterization of InN epi-films on nitrated Si₃N₄ layer by RF-MOMBESheng Chen,^{*}¹ Wei-Chun Chen,² and Chin-Pao Cheng¹¹Department of Mechatronic Engineering, National Taiwan Normal University, Taiwan, ²Instrument Technology Research Center, National Applied Research Laboratories, Taiwan

TuP-A-4 (Poster)

Effects of growth temperature of a capping layer on excited spin properties of In_{0.5}Ga_{0.5}As quantum dotsYuto Nakamura,^{*}¹ Satoshi Hiura,² Shino Sato,¹ Junichi Takayama,² and Akihiro Murayama²¹Faculty of Engineering, Hokkaido University, Japan, ²GSIST, Hokkaido University, Japan

TuP-A-5 (Poster)

High-quality epitaxial growth of half-metallic Co₂FeSi films on a Co-terminated GaN(0001) surfaceShinya Yamada,^{*}^{1,2} Yuki Goto,¹ Jun Tatebayashi,³ Shuhei Ichikawa,³ Yasufumi Fujiwara,³ and Kohei Hamaya^{1,2}¹Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Japan, ²Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Japan, ³Department of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan

TuP-A-6 (Poster)

Effects of post-growth annealing in vacuum and Zn vapor on the electrical and optical properties of magnetron sputtered GaMgZnO filmsChe-Sin Lee,¹ Vijay Balaso Patil,^{*}¹ Sang-Hun Jeong,² and Byung-Teak Lee¹¹Chonnam National University, Republic of Korea, ²Korea Basic Science Institute, Republic of Korea

TuP-A-7 (Poster)

Effects of Bi Irradiation for the MBE Growth of GaSb on Ge(111) Vicinal SubstratesYasutomo Kajikawa,^{*} Makoto Nishigaichi, Masahiro Inoue, and Mitsunori Kayano

Interdisciplinary Faculty of Science and Engineering, Shimane University, Japan

TuP-A-8 (Poster)

Growth Temperature and Sb Flow Dependence of Surface Morphology of Metamorphic InAs(Sb) on GaAs substrate Grown by MOVPEYuki Imamura,* Miki Shoiriki, Koji Maeda, and Masakazu Arai
University of Miyazaki, Japan

TuP-A-10 (Poster)

Using optical emission spectroscopy (OES) to monitor In-line very high-frequency plasma enhanced chemical vapor deposition (VHF-PECVD) technique optoelectrical propertiesJia-Yan Lin,*¹ Cheng-Yuan Hung,² Wei-Chen Tien,² Hung-Wei Wu,³ Yung-Der Juang,⁴ Jia-Hao Lin,⁵ and Shih-Kun Liu⁶
¹Department of Greenery, National University of Tainan, Tainan, Taiwan, ²Medical Devices and Opto-Electronics Equipment Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, ³Department of computer and communication, Kun Shan University, Tainan, Taiwan, ⁴Department of Materials Science, National University of Tainan, Tainan, Taiwan, ⁵Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan, ⁶Institute of Photonics and Communications, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan

TuP-A-11 (Poster)

Effects of chamber pressure on the hydrogenated amorphous silicon thin film by microwave annealingJia-Hao Lin,*¹ Hung-Wei Wu,² Wei-Chen Tien,³ Cheng-Yuan Hung,³ and Shih-Kun Liu⁴
¹Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan, ²Department of computer and communication, Kun Shan University, Tainan, Taiwan, ³Medical Devices and Opto-Electronics Equipment Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, ⁴Institute of Photonics and Communications, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan

TuP-A-12 (Poster) - Late News -

Characterization of Si(111) surface nitridation on the properties of Si₃N₄ films grown by RF-N₂ plasma exposureWei-Chun Chen,¹ Sheng Chen,*² James Su,¹ Hung-Pin Chen,¹ Yu-Wei Lin,¹ and Chin-Pao Cheng²
¹Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan, ²Department of Mechatronic Engineering, National Taiwan Normal University, Taiwan

TuP-A-13 (Poster) - Late News -

Demonstration of Germanium Doping to GaP-based Dilute NitridesKeisuke Yamane,* Shunsuke Tanaka, and Akihiro Wakahara
Department of Electrical and Electronic Information Engineering, Toyohashi University of Technology, Japan

TuP-C-1 (Poster)

Development of High-power High-thermal Conductivity GaN High Electron Mobility TransistorsDai-Jie Lin,*¹ Yu-Hsuan Lee,¹ and Jian-Jang Huang^{1,2}
¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, ²Department of Electrical Engineering, National Taiwan University, Taiwan

TuP-C-2 (Poster)

Analysis of threshold voltage in GaN MOSFETs on homoepitaxial p-type GaN layersDaigo Kikuta,*¹ Kenji Ito,¹ Tetsuo Narita,¹ and Tetsu Kachi²
¹Toyota Central R&D Labs, Japan, ²Nagoya University, Japan

TuP-C-3 (Poster)

Improved on-state breakdown characteristics in AlGaIn/GaN MOS-HEMTs with a gate field plateTakashi Nishitani,* Ryota Yamaguchi, Joel Tacla Asubar, Hirokuni Tokuda, and Masaaki Kuzuhara
University of Fukui, Japan

TuP-C-4 (Poster)

Relationship between High Frequency Power Characteristics and Current Collapse of AlGaIn/GaN HEMTs

Takashi Ozawa,*¹ Joel Tacla Asubar,¹ Hirokuni Tokuda,¹ Yohei Yagishita,² Yoichi Kawano,² and Masaaki Kuzuhara¹
¹University of Fukui, Japan, ²Fujitsu Laboratories Ltd, Japan

TuP-C-5 (Poster)

High Performance Normally-Off AlGaIn/GaN MIS-HEMT Using Charge Storage Technique

Ping-Cheng Han,¹ Chih-Yi Yang,*¹ Ming-Wen Lee,¹ Jui-Sheng Wu,² Chia-Hsun Wu,² and Edward Yi Chang^{1,2}
¹International college of Semiconductor Technology, National Chiao Tung University, Taiwan, ²Department of Materials Science & Engineering, National Chiao Tung University, Taiwan

TuP-C-6 (Poster)

Double-Channel High-Electron-Mobility Transistor for Linearity Enhancement in RF/Microwave Applications

Wenjie Song,*¹ Zheyang Zheng,¹ Jiacheng Lei,¹ Jin Wei,¹ Li Yuan,² and Kevin J. Chen¹
¹Hong Kong University of Science and Technology, Hong Kong, ²Genettice Co., Ltd., China

TuP-C-7 (Poster)

Low 0.3 V Turn-on of Gated-Anode GaN-Cap/AlGaIn/GaN HEMT Diode with Selective Dry-Etching Technique

Jumpei Sumino,¹ Momoe Shojima,*¹ Ryohei Yamaguchi,¹ Yamato Osada,² Kamimura Ryuichiro,² and Akio Wakejima¹
¹Nagoya Institute of Technology, Japan, ²ULVAC Inc., Japan

TuP-C-8 (Poster) - Late News -

Superpower Transistor Consisting of Only LED and Silicon Solar Cell -Its Application to Electric Vehicle Drive Control-

Kensho Okamoto,*¹ Itsuo Nakano,² Masami Hosokawa,³ and Fumio Matsushita³
¹Kagawa University, Japan, ²Okayama University, Japan, ³Optoelectronic semiconductor Application Laboratory, Japan

TuP-D-1 (Poster)

Study on epitaxial lift-off of stacked GaAs solar cells for low-cost photovoltaic application

Yasushi Shoji* and Takeyoshi Sugaya
Research Center for Photovoltaics, AIST, Japan

TuP-D-3 (Poster)

Enhancement of Infrared Photo-responses of the Schottky Gate Region of an n-AlGaAs/GaAs Heterojunction FET by a Second Light Illumination

Takuya Kawazu,* Takeshi Noda, and Yoshiki Sakuma
National Institute for Materials Science, Japan

TuP-D-5 (Poster)

High-speed uni-travelling carrier photodiode at 1064nm wavelength

Zhiyang Xie, Yaojiang Chen, and Baile Chen*
ShanghaiTech University, China

TuP-D-6 (Poster)

Thermoelectrically Cooled nBn T2SLs InAs/InAsSb/B-AlAsSb MWIR DetectorPiotr Martyniuk,^{*} Krystian Michalczewski,¹ Tsung Yin Tsai,² Chao-Hsin Wu,² and Yuh-Renn Wu²¹Applied Physics Institute, Military University of Technology, Poland, ²Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan

TuP-D-8 (Poster)

First-principles study of defect properties in radiation-detectable TlBrMasato Ishikawa^{*} and Takashi Nakayama

Department of Physics, Chiba University, Japan

TuP-D-9 (Poster)

Novel Composite Substrates for Thin Film AlGaInP-based High Power LEDsRay Hua Horng,^{*} ShreeKant Sinha,¹ Hsiang-An Feng,⁴ Cheng-Yu Chung,⁴ and Chia-Wei Tu⁴¹Institute of Electronics, National Chiao Tung University, Taiwan, ²Center for Emergent Functional Matter Science, National Chiao Tung University, Taiwan, ³Department of Photonics, National Chiao Tung University, Taiwan, ⁴Ingentec Corporation, Taiwan

TuP-D-10 (Poster)

Detection of Nonradiative Recombination Centers in GaPN (N:0.105%) by Below-Gap Excitation Light without Temperature EffectSanjida Ferdous,^{*} Chika Negishi, Norihiko Kamata, Shuhei Yagi, and Hiroyuki Yaguchi

Graduate School of Science and Engineering, Saitama University, Japan

TuP-D-11 (Poster)

Detection of Nonradiative Recombination Levels in UV-LEDs by Irradiating Below-Gap Excitation LightNorihiko Kamata,^{*} Ken Matsuda,¹ Sota Shirai,¹ Zentaro Honda,¹ and Hideki Hirayama²¹Department of Functional Materials Science, Saitama University, Japan, ²Quantum Optodevice Lab., RIKEN, Japan

TuP-D-12 (Poster)

Simulation Study of Front-illuminated GaN Avalanche Photodiodes with Hole-initiated MultiplicationYangqian Wang,¹ Yuliang Zhang,¹ Yang A. Yang,¹ Xing Lu,³ and Xinbo Zou^{*,1,2}¹School of Information Science and Technology, ShanghaiTech University, Shanghai, China, ²GaNology Semiconductor Co., Ltd, China, ³School of Electronics and Information Technology, Sun Yat-sen University, Guangzhou, China

TuP-D-14 (Poster) - Late News -

Growth of InGaAs solar cells on InP(001) miscut substrates using solid-source molecular beam epitaxyYuki Ishitsuka,^{*,1,2} Ryuji Oshima,¹ Takeyoshi Sugaya,¹ and Yoshinobu Okano²¹National Institute of Advanced Industrial Science and Technology, Japan, ²Tokyo City University, Japan

TuP-E-1 (Poster)

Heat transport in GaAs membranes studied by using a GaAs MEMS thermal sensorYa Zhang,^{*,1} Boqi Qiu,² Shaoqing Du,² Naomi Nagai,² and Kazuhiko Hirakawa^{2,3}¹Institute of Engineering, Tokyo University of Agriculture and Technology, Japan, ²Institute of Industrial Science, University of Tokyo, Japan, ³Institute for Nano Quantum Information Electronics, University of Tokyo, Japan

TuP-E-2 (Poster)

Suppressing beam deflections by introducing phosphorous in the GaAs-based terahertz MEMS bolometersBoqi Qiu,^{*}1 Ya Zhang,² Kouichi Akahane,³ Naomi Nagai,¹ and Kazuhiko Hirakawa^{1,4}¹Institute of Industrial Science, University of Tokyo, Japan, ²Tokyo University of Agriculture and Technology, Japan, ³National Institute of Information and Communications Technology, Japan, ⁴Institute for Nano Quantum Information Electronics, University of Tokyo, Japan

TuP-E-4 (Poster)

Novel Fabrication Technique of Suspended Nanowire Devices for Nanomechanical ApplicationsWataru Tomita,^{*}1,2 Satoshi Sasaki,¹ Kouta Tateno,¹ Hajime Okamoto,¹ and Hiroshi Yamaguchi^{1,2}¹NTT Basic Research Laboratories, NTT Corporation, Japan, ²Department of physics, Tohoku University, Japan

TuP-E-6 (Poster)

Threshold and Resistive Switching Behaviors in Epitaxially Regrown GaN P-N Diodes for High Temperature ApplicationsKai Fu, Houqiang Fu, Xuanqi Huang, Tsung-Han Yang, Hong Chen, Jossue Montes, Chen Yang, Jinan Zhou, and Yuji Zhao^{*}

School of Electrical, Computer, and Energy Engineering, Arizona State University, United States of America

TuP-E-7 (Poster)

Radiative and Nonradiative Tunneling in Nanowire Light-Emitting DiodesJunichi Motohisa,^{*}1,2 Hiroki Kameda,^{1,2} Masahiro Sasaki,^{1,2} and Katsuhiko Tomioka^{1,2}¹Graduate School of IST, Hokkaido University, Japan, ²RCIQE, Hokkaido University, Japan

TuP-E-8 (Poster)

Effects of Impurity Hubbard Bands on the Hall Effect in n-InP

Yasutomo Kajikawa

Interdisciplinary Faculty of Science and Engineering, Shimane University, Japan

TuP-G-1 (Poster)

Development of n-type GaN film by Si and Ti co-sputtering technique on a glass substrateWei-Sheng Liu,^{*} Chun-Yuan Tan, Yu-Lin Chang, and Cheng-Ting Tsai

Department of Electrical Engineering, Yuan Ze University, Taiwan

TuP-G-2 (Poster)

Evaluate Fixed Charge and Oxide Trapped Charge on SiO₂/GaN MOS Structure Before and After Post AnnealingMasaaki Furukawa,^{*} Mutsunori Uenuma, Yasuaki Ishikawa, and Yukiharu Uraoka

Nara Institute of Science and Technology, Japan

TuP-G-3 (Poster)

Investigation of Impact of Dosage on Electrical Properties of Mg-Ion-Implanted GaN before Activation Annealing Using MOS StructuresRyo Kamoshida,^{*} Kei Uetake, Shunta Murai, and Masamichi Akazawa

Research Center for Integrated Quantum Electronics, Hokkaido University, Japan

TuP-G-4 (Poster)

Multi-wavelength Reflectivity Monitoring on Growth of AlN on SiYasushi Iyechika,^{*} Masayuki Tsukui, Kiyotaka Miyano, and Hideshi Takahashi

NuFlare Technology, Inc., Japan

TuP-G-5 (Poster)

Analysis of emission characteristics of deep levels in GaN by direct photo excitationMoe Kikuchi,^{*,1} Daisuke Uehara,¹ Bei Ma,¹ Ken Morita,¹ Hideto Miyake,² and Yoshihiro Ishitani¹¹Graduate School of Electrical and Electronic Engineering, Chiba University, Japan, ²Graduate School of Regional Innovation Studies, Mie University, Japan

TuP-G-6 (Poster)

MOCVD growth and characterization of Si-doped thick-AlInN epitaxial filmsMizuki Yamanaka,^{*,1} Makoto Miyoshi,¹ Takashi Egawa,¹ and Tetsuya Takeuchi²¹Nagoya Institute of Technology, Japan, ²Meijo University, Japan

TuP-G-7 (Poster)

Local phonon analysis in InGaN film by mapping of Raman peak energyShungo Okamoto,^{*,1} Naomichi Saito,¹ Bei Ma,¹ Kensuke Oki,¹ Ken Morita,¹ Kazuhiro Ohkawa,² and Yoshihiro Ishitani¹¹Graduate School of Electrical and Electronic Engineering, Chiba University, Japan, ²Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology, Saudi Arabia

TuP-G-8 (Poster)

Enhanced Electrical Properties of AlInN/AlN/GaN Heterostructure using Al_xGa_{1-x}N/Al_yGa_{1-y}N superlatticeYu-Chih Chen,^{*,1} Indraneel Sanyal,¹ and Jen-Inn Chyi^{1,2}¹Department of Electrical Engineering, National Central University, Taiwan, ²Research Center for Applied Sciences, Academia Sinica, Taiwan

TuP-G-10 (Poster)

Enhanced excitonic emission efficiency in porous GaN and GaInN-GaN quantum wells grown along the polar directionThi Huong NGO,¹ Bernard Gil,^{*,2,3} Tatiana Shubina,³ Pierre Valvin,² Benjamin Damilano,¹ Stephane Vezeian,¹ and Jean Massies¹¹Centre de Recherche sur l'Hetero-Epitaxie et ses Applications, France, ²Laboratoire Charles Coulomb- University Montpellier 34095 Montpellier France, France, ³Ioffe Institute, 194021 St Petersburg, Russia, Russia

TuP-G-11 (Poster) - Late News -

Picosecond Time-Resolved Excitation Dynamics and Emission Manipulation of Eu³⁺ Ions Doped into GaNBrandon Mitchell,^{*,1,2,3} Ruoqiao Wei,² Dolf Timmerman,³ Tom Gregorkiewicz,^{3,4} Shuhei Ichikawa,³ Jun Tatebayashi,³ Volkmar Dierolf,² and Yasufumi Fujiwara³¹West Chester University, United States of America, ²Lehigh University, United States of America, ³Osaka University, Japan, ⁴University of Amsterdam, Netherlands

TuP-G-13 (Poster) - Late News -

High efficiency 100-nm-sized InGaN/GaN active region fabricated by neutral-beam-etching and GaN regrowth for directional micro-LEDKexiong Zhang,^{*,1} Tokio Takahashi,² Daisuke Ohori,³ Guangwei Cong,² Kazuhiko Endo,⁴ Naoto Kumagai,¹ Seiji Samukawa,^{3,4,5} Mitsuaki Shimizu,^{1,6} and Xuelun Wang^{1,6}¹GaN-OIL, AIST, Japan, ²ESPRIT, AIST, Japan, ³IFS, Tohoku University, Japan, ⁴NeRI, AIST, Japan, ⁵AIMR, Tohoku University, Japan, ⁶IMaSS, Nagoya University, Japan

TuP-H-2 (Poster)

Growth and Deep UV Luminescent Properties of Rocksalt-Structured Ultra-Wide Bandgap MgZnO on MgO SubstratesKentaro Kaneko,^{*1,2,3} Kyohei Ishii,² Mizuki Ono,⁴ Kanta Kudo,⁴ Takeyoshi Onuma,⁴ Tohru Honda,⁴ and Shizuo Fujita^{2,3}¹Engineering Education Research Center, Kyoto University, Japan, ²Department of Electronic Science and Engineering, Kyoto University, Japan, ³Photonics and Electronics Science and Engineering Center, Kyoto University, Japan, ⁴Department of Applied Physics, School of Advanced Engineering, Graduate School of Engineering, Kogakuin University, Japan

TuP-H-3 (Poster)

Synthesis and characterization of AlTiO films by mist-CVDZenji Yatabe,^{*1} Koshi Nishiyama,¹ Takaaki Tsuda,¹ Kazuki Nishimura,¹ and Yusui Nakamura^{1,2}¹Kumamoto University, Japan, ²Kumamoto Phoenix, Japan

TuP-H-4 (Poster)

Sol-gel synthesis of highly transparent and conducting Cadmium OxideCheuk Kai Gary Kwok,^{*1} Chao Ping Liu,² and Kin Man Yu^{1,3}¹Department of Physics, City University of Hong Kong, Hong Kong, ²Department of Physics, College of Science, Shantou University, China, ³Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

TuP-H-5 (Poster)

Effect of Buffer Layer on Improvement of SnO₂ Thin Film on Sapphire Substrate Formed by Mist Chemical Vapor DepositionThant Zin Win,^{*1} Takumi Furukawa,¹ Yudai Tanaka,¹ Koshi Okita,¹ Koji Sue,² Zenji Yatabe,^{1,3} and Yusui Nakamura^{1,4,5}¹GSST, Kumamoto University, Japan, ²Faculty of Engineering, Kumamoto University, Japan, ³POIE, Kumamoto University, Japan, ⁴FAST, Kumamoto University, Japan, ⁵Kumamoto Phoenix, Japan

TuP-H-6 (Poster)

Characterization of amorphous aluminium oxide thin films synthesized by mist-CVDZenji Yatabe,^{*1} Koshi Nishiyama,¹ Takaaki Tsuda,¹ Kazuki Nishimura,¹ and Yusui Nakamura^{1,2}¹Kumamoto University, Japan, ²Kumamoto Phoenix, Japan

TuP-H-7 (Poster)

Rectified Schottky diodes that use low-cost carbon paste/InGaZnO junctionsChia-Ling Wu, Fu-Fan Hsu, and Chun-Ying Huang^{*}

Department of Applied Materials and Optoelectronics Engineering, National Chi Nan University, Taiwan

TuP-J-1 (Poster)

Influence of contact resistances on high-mobility top-gate organic transistors based on didodecylbenzothienobenzothiopheneShion Tazuhara,^{*1} Tomoya Aiba,¹ Takashi Nagase,^{1,2} Takashi Kobayashi,^{1,2} Yuichi Sadamitsu,³ and Hiroyoshi Naito^{1,2}¹Department of Physics and Electronics, Osaka Prefecture University, Japan, ²The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan, ³R&D Planning Division, Nippon Kayaku Co., Ltd., Japan

TuP-J-2 (Poster)

Thin-Film Transistors Based on Copper Phthalocyanine Deposited on a Gate Dielectric Rubbed with Poly(tetrafluoroethylene)Shotaro Watanabe, Yoshinari Kimura, Yoshiaki Hattori, and Masatoshi Kitamura^{*}

Department of Electrical and Electronic Engineering, Kobe University, Japan

TuP-J-3 (Poster)

Device characteristics of solution-processed molecular floating-gate transistor memories based on ambipolar polymer semiconductorsMiho Higashinakaya,^{*} Hayato Abe,¹ Takashi Nagase,^{1,2} Takashi Kobayashi,^{1,2} and Hiroyoshi Naito^{1,2}¹Department of Physics and Electronics, Osaka Prefecture University, Japan, ²The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan

TuP-J-4 (Poster)

Voltage and Frequency Dependence of Capacitance Characteristics in Organic MOS CapacitorsYoshinari Kimura,^{*} Yoshiaki Hattori, and Masatoshi Kitamura

Department of Electrical and Electronic Engineering, Graduate School of Engineering, Kobe University, Japan

TuP-J-5 (Poster)

Organic Light-Emitting Diode Composed of an Oligomer Crystal Emission LayerTakeshi Yamao,^{*} Koki Nishimura, Yuhi Inada, and Shu Hotta

Faculty of Materials Science and Engineering, Kyoto Institute of Technology, Japan

TuP-J-6 (Poster)

Optical Characterization of Co-doped Single Crystal Organic Semiconductor with Emisive and Assist DopantsKosuke Watanabe,^{*} Keita Takeuchi,¹ Ryogo Abe,¹ Asuka Suzuki,¹ and Akihiko Kikuchi^{1,2}¹Department of Engineering and Applied Sciences, Sophia University, Japan, ²Sophia Nanotechnology Center, Japan

TuP-J-7 (Poster)

Strong Light-Matter Coupling and Photoluminescence Properties of 2D and quasi-2D Perovskite MicrocavitiesShuai Zhang,¹ Limeng Ni,² Akshay Rao,² and Kenichi Yamashita^{*}¹Faculty of Electrical Engineering and Electronics, Kyoto Institute of Technology, Japan, ²Cavendish Laboratory, University of Cambridge, United Kingdom

TuP-J-8 (Poster)

Fabrication of CH₃NH₃PbBr₃ Based Perovskite Single Crystal Arrays by Spin-coating Method Using Hydrophobic Patterned SubstrateRyogo Abe,^{*} Keita Takeuchi,¹ Asuka Suzuki,¹ Kosuke Watanabe,¹ and Akihiko Kikuchi^{1,2}¹Department of Engineering and Applied Sciences, Sophia University, Japan, ²Sophia Nanotechnology Center, Japan

TuP-J-9 (Poster) - Late News -

Temperature dependence of the intersystem crossing rate in thermally activated delayed fluorescence emittersTakashi Kobayashi,^{*} Daisuke Kawase,¹ Akitsugu Niwa,¹ Atsumi Kayamyō,¹ Takashi Nagase,^{1,2} Kenichi Goushi,^{3,4} Chihaya Adachi,^{3,4} and Hiroyoshi Naito^{1,2}¹Department of Physics and Electronics, Osaka Prefecture University, Japan, ²The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan, ³Center for Organic Photonics and Electronics Research, Kyushu University, Japan, ⁴Japan Science and Technology Agency, ERATO, Adachi Molecular Exciton Engineering Project, Japan

TuP-SS1-1 (Poster)

First Principles Study on Electronic Structures of α -Ga₂O₃ and α -Ir₂O₂Kazuyuki Uno,^{*} Taichi Nakamura, and Ichiro Tanaka

Department of Systems Engineering, Wakayama University, Japan

TuP-SS1-2 (Poster)

Effect of growth variables on properties of gallium oxide thin films grown by sputteringVijay Balaso Patil,*¹ Byung-Teak Lee,¹ and Sang-Hun Jong²¹Photonic and electronic thin film laboratory, Chonnam national university, Gwangju, Republic of Korea, ²Gwangju Center, Korea Basic Science Institute, Gwangju, Republic of Korea

TuP-SS1-4 (Poster)

Highly rectifying contacts on (In,Ga)₂O₃ thin films grown by PLD

Daniel Splith,* Anna Hassa, Peter Schlupp, Holger von Wenckstern, and Marius Grundmann

Felix Bloch Institute for Solid State Physics, Universität Leipzig, Germany

TuP-SS1-5 (Poster)

Influence of post-annealing on properties of α -Ga₂O₃ epilayer grown by halide vapor phase epitaxy

Hoki Son, Ye-Ji Choi, Yong-Ho Ra, Young-Jin Lee, Jin-Ho Kim, Sun Woog Kim, Tae-Young Lim, Jonghee Hwang, and Dae-Woo Jeon*

Korea Institute of Ceramic Engineering & Technology, Republic of Korea

TuP-SS1-6 (Poster)

Deep-Level Defect Investigation of Si-Doped β -Ga₂O₃ Homoepitaxial Films Grown by Halide Vapor Phase Epitaxy

Yoshitaka Nakano* and Akira Toyotome

Department of Electrical & Electronic Engineering, Chubu University, Japan

TuP-SS1-7 (Poster)

Growth of Ga₂(O,S)₃ Alloy Films on YSZ Substrates by Mist Chemical Vapor DepositionKazuaki Akaiwa,*¹ Tsubasa Hiroe,¹ Moe Nagano,¹ Tomoki Abe,¹ Motohisa Kado,² and Kunio Ichino¹¹Department of Information and Electronics, Tottori University, Japan, ²Toyota Motor Corporation, Japan

TuP-SS1-8 (Poster)

Electrical and structural properties of Sn-doped α -Ga₂O₃ thin films grown by mist chemical vapor deposition

Shuhei Mochizuki,* Tomohiro Yamaguchi, Kenichiro Rikitake, Takeyoshi Onuma, and Tohru Honda

Department of Applied Physics, Kogakuin University, Japan

TuP-SS1-9 (Poster)

Synthesis of α -Ga₂O₃ thin films on Au nanoparticles dispersed on sapphire substrates for epitaxial lateral overgrowthKentaro Kaneko,*^{1,2,3} Yasuhisa Masuda,² and Shizuo Fujita^{2,3}¹Engineering Education Research Center, Kyoto University, Japan, ²Department of Electronic Science and Engineering, Kyoto University, Japan, ³Photonics and Electronics Science and Engineering Center, Kyoto University, Japan

TuP-SS1-10 (Poster)

The Thermal Stability of ϵ -Ga₂O₃ Thin Films Grown on (111) 3C-SiC Template Substrates

Masatoshi Koyama,* Toyokazu Kaneko, Sodai Fujiwara, Toshihiko Maemoto, and Shigehiko Sasa

Nanomaterials and Microdevices Research Center, Osaka Institute of Technology, Japan

TuP-SS1-12 (Poster)

Sputtering Ambient Effects on Functionality of Al-doped Gallium Oxide Films for Deep-Ultraviolet Detectors

Po-Wei Chen, Shiau-Yuan Huang, Chao-Chun Wang, Po-Wen Hsiao, Shuo-Huang Yuan, and Dong-Sing Wu*

Department of Materials Science and Engineering, National Chung Hsing University, Taiwan

TuP-SS2-1 (Poster)

The growth of boron nitride on poly-crystalline Ni by plasma-assisted molecular beam epitaxy

Wei-Cyuan Huang,¹ Chia-Wei Huang,¹ Sheng-Chung Chen,^{*1} Ing-Sung Yu,¹ Hui Li,² and Hung-Hsiang Cheng²

¹Department of Material Science and Engineering, National Dong Hwa University, Taiwan, ²Center for Condensed Matter Sciences, National Taiwan University, Taiwan

TuP-SS2-2 (Poster)

Reflectivity of hexagonal Boron-Nitride in deep UV

Christine ELIAS

Laboratoire Charles Coulomb, France

TuP-SS2-3 (Poster)

CVD Growth of BN Thin Films using B₂H₆

Hisashi Yamada,^{*1} Sho Inotsume,^{1,2} Naoto Kumagai,¹ Toshikazu Yamada,¹ and Mituaki Shimizu^{1,2}

¹GaN-OIL, National Institute of Advanced Industrial Science and Technology, Japan, ²Nagoya University, Japan

TuP-SS2-4 (Poster)

Micro-photoluminescence imaging of hexagonal boron nitride crystal in the UV range

Thomas Pelini,^{*1} Anais Dreau,¹ Christine Elias,¹ Pierre Valvin,¹ Guillaume Cassabois,¹ Bernard Gil,¹ Vincent Jacques,¹ Jiahan Li,² and James H. Edgar²

¹Laboratoire Charles Coulomb UMR 5221 CNRS-UM, France, ²Tim Taylor Department of Chemical Engineering, Kansas State University, United States of America

May 22 (Wed)

WeA1 GaN and Related Technologies II Room A 08:30-10:00

Chair: Daigo Kikuta and Masamichi Akazawa

WeA1-1 (Invited) 08:30 - 09:00

MOS interface control for GaN power transistors

Tamotsu Hashizume

RCIQE, Hokkaido University and IMASS, Nagoya University, Japan

WeA1-3 (Invited) 09:00 - 09:30

Vacancy-type defects in GaN-based power device structure - defect characterization in ion implanted GaN and Al₂O₃/GaN -

Akira Uedono,^{*1} Werner Egger,² Christoph Hugenschmidt,³ and Shoji Ishibashi⁴

¹*Division of Applied Physics, Faculty of Pure and Applied Science, University of Tsukuba, Japan,* ²*Universität der Bundeswehr München, Institut für Angewandte Physik und Messtechnik, Germany,* ³*Physics Department E21 and Heinz Maier-Leibnitz Zentrum, Technische Universität München, Germany,* ⁴*CD-FMat, AIST, Japan*

WeA1-5 (Oral) 09:30 - 09:45

Electronic structure analysis of core structures of threading dislocations in GaN

Takashi Nakano,^{*1} Kenta Chokawa,¹ Masaaki Araidai,^{1,2} Kenji Shiraishi,^{1,2} Atsushi Oshiyama,² Akira Kusaba,³ Yoshihiro Kangawa,^{2,4} Atsushi Tanaka,² Yoshio Honda,^{1,2} and Hiroshi Amano^{1,2}

¹*Graduate School of Engineering, Nagoya University, Japan,* ²*Institute of Materials and Systems for Sustainability, Nagoya University, Japan,* ³*Graduate School of Engineering, Kyushu University, Japan,* ⁴*Research Institute for Applied Mechanics Kyushu University, Japan*

WeA1-6 (Oral) 09:45 - 10:00

Effects of Ga-OH Bond at Initial GaN Surface on Electrical Characteristics of SiO₂/GaN Interface

Mutsunori Uenuma,^{*} Ryota Ando, Masaaki Furukawa, Yasuaki Ishikawa, and Yukiharu Uraoka

Nara Institute of Science and Technology, Japan

WeB1 Photovoltaic and LED Room B 08:30-10:00

Chair: Takeyoshi Sugaya and Hideki Yagi

WeB1-1 (Invited) 08:30 - 09:00

Smart Stack Technology for III-V/Si Multi-Junction Solar Cells

Hidenori Mizuno

Fukushima Renewable Energy Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan

WeB1-3 (Oral) 09:00 - 09:15

Electron selective contact for high efficiency core-shell nanowire solar cell

Vidur Raj,^{*1} Kaushal Vora,² Lily Li,² Lan Fu,¹ Hark Hoe Tan,¹ and Chennupati Jagadish¹

¹*Electronic Materials Engineering, ANU, Australia,* ²*Australian National Fabrication Facility, ANU, Australia*

WeB1-4 (Oral)

09:15 - 09:30

Effects of MOVPE growth parameters on high speed grown InGaP PVHassanet Sodaabnlu,^{*}¹ Akinori Ubukata,² Kentaroh Watanabe,¹ Takeyoshi Sugaya,³ Yoshiaki Nakano,⁴ and Masakazu Sugiyama^{1,4}¹Research Center for Advanced Science and Technology, The University of Tokyo, Japan, ²Tsukuba Laboratories, Taiyo Nippon Sanso, Japan, ³National Institute of Advanced Industrial Science and Technology (AIST), Japan, ⁴Department of Electrical Engineering & Information System, School of Engineering, The University of Tokyo, Japan

WeB1-5 (Oral)

09:30 - 09:45

High Responsivity and Low Dark Current Ultraviolet Photodetectors Using p-GaN/AlGaIn/GaN HeterostructureQifeng Lyu,^{*} Huaxing Jiang, Xing Lu, and Kei May LAU

Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong

WeB1-6 (Oral)

09:45 - 10:00

2Gps OFDM Visible Light Communication using Light-emitting Diodes with Photonic CrystalsSzu-Yu Pan,^{*}¹ Zi-Xuan You,¹ Tung-Ching Lin,¹ and Jian-Jang Huang^{1,2}¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, ²Department of Electrical Engineering, National Taiwan University, Taiwan

WeC1 Nanowire Devices

Room C 08:30-10:00

Chair: Jesper Wallentin and Kenichi Kawaguchi

WeC1-1 (Oral) - Late News -

08:30 - 08:45

Gate tunable energy gap and negative magnetoresistance of InAs/GaSb core/shell nanowiresZhencun Pan,^{*}¹ Shaoyun Huang,¹ Yifeng Zhou,¹ Dong Pan,² Jianhua Zhao,² and Hongqi Xu¹¹Beijing Key Laboratory of Quantum Devices, Key laboratory for the Physics and Chemistry of Nanodevices, and Department of Electronics, Peking University, China, ²State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, China

WeC1-2 (Invited)

08:45 - 09:15

Low-Threshold Vertical Lasing from InP Nanowire Embedded in Cat's Eye AntennaFangfang Ren,^{*}¹ Weizong Xu,¹ Jiandong Ye,¹ Hark Hoe Tan,² and Chennupati Jagadish²¹School of Electronic Science and Engineering, Nanjing University, China, ²EME, RSPE, The Australian National University, Australia

WeC1-4 (Oral)

09:15 - 09:30

Telecom-band lasing nanowires at room temperatureGuoqiang Zhang,^{*}^{1,2} Masato Takiguchi,^{1,2} Kouta Tateno,^{1,2} Takehiko Tawara,^{1,2} Masaya Notomi,^{1,2} and Hideki Gotoh¹¹NTT Basic Research Laboratories, NTT Corporation, Japan, ²NTT Nanophotonics Center, NTT Corporation, Japan

WeC1-5 (Oral)

09:30 - 09:45

n-doped InGaP Nanowire Shells in Core-Shell pn-junctionsLisa Liborius,^{*}¹ Jan Bieniek,¹ Andreas Nägelein,² Franz-Josef Tegude,¹ Artur Poloczek,¹ and Nils Weimann¹¹Department of Components for High Frequency Electronics, University of Duisburg-Essen, Germany, ²Fundamentals of Energy Materials, Technical University Ilmenau, Germany

WeC1-6 (Oral)

09:45 - 10:00

Growth of GaAs/GaNAs/GaAs Core-Multishell Nanowires Lasing at 1 μ mMitsuki Yukimune,^{*,1} Ryo Fujiwara,¹ Fumitaro Ishikawa,¹ Shula Chen,² Weimin M. Chen,² and Irina A. Buyanova²¹Graduate School of Science and Engineering, Ehime University, Japan, ²Department of Physics, Chemistry and Biology, Linköping University, Sweden**WeD1 Quantum Dots and Coherent Dynamics**

Room D 08:30-10:00

Chair: Akira Oiwa and Makoto Kohda

WeD1-1 (Invited)

08:30 - 09:00

Coherent control of a GaAs quantum dot spin qubit operated in a feedback loop

Takashi Nakajima

RIKEN CEMS, Japan

WeD1-3 (Oral)

09:00 - 09:15

Towards quantum teleportation with quantum-dot spin qubitsYohei Kojima,^{*,1,2} Takashi Nakajima,¹ Akito Noiri,¹ Jun Yoneda,¹ Tomohiro Otsuka,^{1,3} Kenta Takeda,¹ Sen Li,¹ Stephen D. Bartlett,⁴ Arne Ludwig,⁵ Andreas Dirk Wieck,⁵ and Seigo Tarucha^{1,2}¹CEMS, RIKEN, Japan, ²Department of Applied Physics, University of Tokyo, Japan, ³RIEC, University of Tohoku, Japan, ⁴Centre for Engineered Quantum system, University of Sydney, Australia, ⁵Lehrstuhl für Angewandte Festkörperphysik, Ruhr-Univ. Bochum, Germany

WeD1-4 (Oral)

09:15 - 09:30

Breakdown of Pauli spin blockade by phonon irradiation in a GaAs double quantum dotSadashige Matsuo,^{*,1,2} Kazuyuki Kuroyama,¹ Jo Muramoto,¹ Sascha R. Valentin,³ Arne Ludwig,³ Andreas D. Wieck,³ Yasuhiro Tokura,⁴ and Seigo Tarucha^{1,5}¹University of Tokyo, Japan, ²JST PRESTO, Japan, ³Ruhr University, Germany, ⁴University of Tsukuba, Japan, ⁵Riken, Japan

WeD1-5 (Oral)

09:30 - 09:45

Evaluation of Rabi frequency and coherence time in the hyperfine structure of ¹⁶⁷Er³⁺ in Y₂SiO₅ through coherent transientsMasaya Hiraishi,^{*,1,2} Mark IJspeert,¹ Takehiko Tawara,^{1,2,3} Satoru Adachi,⁴ Hiroo Omi,^{1,3} and Hideki Gotoh¹¹NTT Basic Research Laboratories, Japan, ²Tokyo University of Science, Japan, ³NTT Nanophotonics Center, Japan, ⁴Hokkaido University, Japan

WeD1-6 (Oral)

09:45 - 10:00

Parametric photons from confined polariton condensates driven by acoustic fieldsAlexander Sergeevich Kuznetsov,^{*} Klaus Biermann, and Paulo Ventura Santos*Paul-Drude-Institut für Festkörperelektronik, Germany***WeE1 Organic Devices**

Room E 08:30-10:00

Chair: Yoshiaki Hattori and Masakazu Nakamura

WeE1-1 (Invited)

08:30 - 09:00

Ultraflexible Biosignal Amplifier Based on Organic Thin-Film TransistorsTakafumi Uemura^{*,1,2} and Tsuyoshi Sekitani^{1,2}¹The Institute of Scientific and Industrial Research, Osaka University, Japan, ²PhotoBIO-OIL, AIST, Japan

WeE1-3 (Oral)

09:00 - 09:15

Organic Sensor Array Distributed in Flexible and Curved SurfaceMasatoshi Sakai,^{*}¹ Yuichi Miyai,¹ Yugo Okada,² Yuichi Sadamitsu,³ Yuta Hashimoto,³ Nozomi Onodera,³ and Kazuhiro Kudo¹¹Department of Electrical and Electronic Engineering, Chiba University, Japan, ²Center for Frontier Science, Chiba University, Japan, ³Center for Innovative Research and Development Group Nippon Kayaku Co., Ltd., Japan

WeE1-4 (Oral)

09:15 - 09:30

Long-term stability of organic physically unclonable function for IoE securityKazunori Kuribara,^{*} Taiki Nobeshima, Atsushi Takei, Takehito Kozasa, Sei Uemura, and Manabu Yoshida

Flexible Electronics Research Center, AIST, Japan

WeE1-5 (Oral)

09:30 - 09:45

Enhanced performance of solution-processable organic floating-gate transistor memories using binary small molecules dispersed polymer storage layersHayato Abe,¹ Takashi Nagase,^{*,1,2} Miho Higashinakaya,¹ Takashi Kobayashi,^{1,2} and Hiroyoshi Naito^{1,2}¹Department of Physics and Electronics, Osaka Prefecture University, Japan, ²The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan

WeE1-6 (Oral)

09:45 - 10:00

Top-gated organic light emitting transistors based on the device fabrication without intermixing of poly(methyl methacrylate) gate dielectricHirotake Kajii,^{*} Takayuki Mashimo, and Masahiko Kondow

Graduate School of Engineering, Osaka University, Japan

Coffee Break

10:00 - 10:30

WeA2 GaN and Related Technologies III

Room A 10:30-12:00

Chair: Martin Kuball and Edward Chang

WeA2-1 (Invited)

10:30 - 11:00

Processing of GaN vertical devices: Static Induction TransistorsSrabanti Chowdhury^{*} and Jaeyi Chun

Department of Electrical Engineering, Stanford University, United States of America

WeA2-3 (Oral)

11:00 - 11:15

The Effect of Tetramethylammonium Hydroxide Treatment on Photoelectrochemical Etched Gallium Nitride Trench StructuresFumimasa Horikiri,^{*,1} Hiroshi Ohta,² Naomi Asai,² Yoshinobu Narita,¹ and Takehiro Yoshida¹¹SCIOCS, Japan, ²Hosei University, Japan

WeA2-4 (Oral)

11:15 - 11:30

Performance Limits of 2H-GaN Vertical Superjunction Schottky rectifiers, MOSFETs and HEMTsXiang Zhou^{*} and T. Paul Chow

Rensselaer Polytechnic Institute, United States of America

WeA2-5 (Oral) 11:30 - 11:45

Demonstration of a Fully-Vertical GaN MOSFET on Si

Debaleen Biswas,* Naoki Torii, Keiji Yamamoto, and Takashi Egawa

Research Center for Nano Devices and Advanced Materials, Nagoya Institute of Technology, Japan

WeA2-6 (Oral) 11:45 - 12:00

High performance Fully-vertical GaN-on-Si power MOSFETs

Riyaz Mohammed Abdul Khadar,* Chao Liu, Reza Soleimanzadeh, and Elison Matioli

Power and Wide-band-gap Electronics Research Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland

WeB2 Mid Infrared Photonics Room B 10:30-12:00

Chair: Takahiko Shindo and Mitsuru Takenaka

WeB2-1 (Oral) 10:30 - 10:45

Toward MIR VCSELs operating in CW at RT

Daniel Andres DIAZ THOMAS,*¹ Oleksandr STEPANENKO,² Thomas BATTE,³ Michael BAHRIZ,¹ Stéphane CALVEZ,² Cyril PARANTHOEN,³ Eric TOURNIE,¹ Guilhem ALMUNEAU,² Christophe LEVALLOIS,³ Alexei BARANOV,¹ and Laurent CERUTTI¹

¹IES, University of Montpellier, CNRS, 34000 Montpellier, France, ²CNRS, LAAS, 31400 Toulouse, France, ³University of Rennes, INSA, CNRS, Institut FOTON, 35000 Rennes, France

WeB2-2 (Oral) 10:45 - 11:00

Resonant-Cavity Infrared Detector (RCID) with Very Thin Absorber

Chadwick L. Canedy,*¹ William W. Bewley,¹ Charles D. Merritt,¹ Chul Soo Kim,¹ Mijin Kim,² Stephanie Tomasulo,¹ Michael V. Warren,³ Eric M. Jackson,¹ Jill A. Nolde,¹ Chaffra A. Affouda,¹ Edward H. Aifer,¹ Igor Vurgaftman,¹ and Jerry R. Meyer¹

¹Naval Research Laboratory, United States of America, ²KeyW Corporation, United States of America, ³ASEE Postdoctoral Associate Residing at NRL, United States of America

WeB2-3 (Oral) 11:00 - 11:15

High detectivity AlInSb mid-infrared photodiode sensors with dislocation filter layers for gas sensing application

Hiromi Fujita,* Osamu Morohara, Hirotaka Geka, Yoshiki Sakurai, Daiki Yasuda, Mitsuhiro Nakayama, Koichiro Ueno, Yoshihiko Shibata, and Naohiro Kuze

Compound Semiconductor Development Dept., R&D Center, Asahi Kasei Microdevices Corporation, Japan

WeB2-4 (Oral) 11:15 - 11:30

Investigation of type-II superlattices InAs/InAsSb photoconductor system by 8×8 k·p model and application of localization landscape theory for transport

Yuh-Renn Wu,^{1,2} Tsung-Yin Tsai,*¹ Chaohsin Wu,¹ Krystian Michalczewski,³ and Piotr Martyniuk³

¹Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taiwan, ²Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan, ³Institute of Applied Physics, Military University of Technology, Poland

WeB2-5 (Oral) 11:30 - 11:45

Short/mid-wave two-band type II InAs/GaSb superlattice infrared heterojunction photo-transistor

Wenjun Huang,¹ Jianliang Huang,^{1,2} Yanhua Zhang,^{1,2} Chengcheng Zhao,¹ Biying Nie,¹ Yulian Cao,^{1,2} and Wenquan Ma*^{1,2}

¹Institute of Semiconductors, Chinese Academy of Sciences, China, ²The Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, China

WeC2 Fabrication of Nanostructures

Room C 10:30-12:00

Chair: Fangfang Ren and Takuo Sasaki

WeC2-1 (Invited)

10:30 - 11:00

Nanoscale Transfer Printing for the Heterogeneous Integration of Semiconductor Nanowire LasersAntonio Hurtado,*¹ Dimitars Jevtics,¹ Benoit Guilhabert,¹ Joshua Robertson,¹ John McPhillimy,¹ Michael Strain,¹ Hoe Tan,² Chennupati Jagadish,² and Martin Dawson¹¹University of Strathclyde, United Kingdom, ²Australian National University, Australia

WeC2-3 (Oral)

11:00 - 11:15

Enhanced optical properties of InP nanowires by conformal polymer coatingTuomas Haggren,* Maria Kim, Nicklas Anttu, Vladislav Khayrudinov, Henrik Mantynen, Camilla Tossi, and Harri Lipsanen
Department of Electronics and Nanoengineering, Aalto University, Finland

WeC2-4 (Oral)

11:15 - 11:30

Vapor-Solid Selective Area Molecular Beam Epitaxy and N-Type Doping of Catalyst-Free GaAs:Si Nanowires on SiliconDaniel Ruhstorfer,* Simon Mejia, Hubert Riedl, Jonathan James Finley, and Gregor Koblmüller
Walter Schottky Institute & Physics Dept., TU Munich, Germany

WeC2-5 (Oral)

11:30 - 11:45

Control of the energy transfer between Tm³⁺ and Yb³⁺ ions in ZnO nanowires for photovoltaic applicationsJun Tatebayashi,* Tokuhito Nakajima, Masao Mishina, Dolf Timmerman, Shuhei Ichikawa, and Yasufumi Fujiwara
Osaka University, Japan

WeC2-6 (Oral)

11:45 - 12:00

Room temperature single photon emission from planar GaN/AlN quantum dot samples grown by MBEGordon Callsen,* Sebastian Tamariz, and Nicolas Grandjean
Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

WeD2 Spin Transport and Dynamics

Room D 10:30-12:00

Chair: Shingo Katsumoto and Shinobu Ohya

WeD2-1 (Invited)

10:30 - 11:00

Universal nuclear focusing of confined electron spinsSergej Markmann,¹ Christian Reichl,² Werner Wegscheider,² and Gian Salis*¹
¹IBM Research-Zurich, Switzerland, ²ETH Zurich, Switzerland

WeD2-3 (Oral)

11:00 - 11:15

Modulation of Nuclear Quadrupole Effect by a Longitudinal Magnetic Field in Transverse Nuclear Field FormationSota Yamamoto,*¹ Takuya Arakawa,² Ryosuke Matsusaki,¹ Reina Kaji,¹ and Satoru Adachi¹
¹Division of Applied Physics, Graduate School of Engineering, Hokkaido University, Japan, ²Department of Applied Physics, School of Engineering, Hokkaido University, Japan

WeD2-4 (Oral) 11:15 - 11:30

Resistively detected-NMR in triple-gate quantum point contact: magnetic field dependenceAnnisa Noorhidayati,^{*}¹ Mohammad Hamzah Fauzi,² Shunta Maeda,¹ Ken Sato,¹ Katsumi Nagase,¹ and Yoshiro Hirayama^{1,2,3}
¹Department of Physics, Graduate School of Science, Tohoku University, Japan, ²CSRN Tohoku University, Japan, ³CSIS (Core Research Cluster) Tohoku University, Japan

WeD2-5 (Oral) 11:30 - 11:45

Ballistic spin locking in a two-dimensional Rashba systemMakoto Kohda,^{*}^{1,2,3} Takanori Okayasu,¹ and Junsaku Nitta^{1,2,3}
¹Department of Materials Science, Tohoku University, Japan, ²Center for Spintronics Research Network, Tohoku University, Japan, ³Center for Science and Innovation in Spintronics (Core Research Cluster), Tohoku University, Japan

WeD2-6 (Oral) 11:45 - 12:00

Gate-controlled proximity magnetoresistance in an InAs / (Ga,Fe)Sb quantum well heterostructureKosuke Takiguchi,^{*}¹ Le Duc Anh,^{1,2} Takahiro Chiba,³ Tomohiro Koyama,⁴ Daichi Chiba,⁴ and Masaaki Tanaka^{1,5}
¹Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan, ²Institute of Engineering Innovation, The University of Tokyo, Japan, ³National Institute of Technology, Fukushima College, Japan, ⁴Department of Applied Physics, The University of Tokyo, Japan, ⁵Center for Spintronics Research Network, The University of Tokyo, Japan

WeE2 THz Devices

Room E 10:30-12:00

Chair: Martin Dvorak and Issei Watanabe

WeE2-1 (Invited) 10:30 - 11:00

THz Frequency HEMTs: Future Trends and ApplicationsArnulf Leuther,^{*}¹ Thomas Merkle,¹ Rainer Weber,¹ Rainer Sommer,² and Axel Tessmann¹
¹Fraunhofer IAF, Germany, ²Fraunhofer FHR, Germany

WeE2-3 (Oral) 11:00 - 11:15

Fabrication of Resonant-Tunneling-Diode Terahertz Oscillators Using Rectangular Cavity Resonators and Bow-Tie Antennas for High Output PowersHiroki Tanaka,^{*}¹ Kazunori Kobayashi,² Ryunosuke Izumi,² Safumi Suzuki,² and Masahiro Asada¹
¹Institute of Innovative Research, Tokyo Institute of Technology, Japan, ²Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan

WeE2-4 (Oral) 11:15 - 11:30

Optical-to-Millimeter-Wave Carrier Frequency Down-Conversion by UTC-PD-Integrated HEMTYuya Omori,^{1,2} Tomotaka Hosotani,^{1,2} Taiichi Otsuji,^{1,2} Katsumi Iwatsuki,² and Akira Satou^{*,1,2}
¹Research Institute of Electrical Communication, Tohoku University, Japan, ²Research Organization of Electrical Communication, Tohoku University, Japan

WeE2-5 (Invited) 11:30 - 12:00

High-Performance In_{0.53}Ga_{0.47}As FinFETs for logic and RF ApplicationsEdward Yi Chang,^{*} Ho Quang Luc, and Chin Yueh Lin
National Chiao Tung University, Taiwan

Excursion

12:30 - 18:45

Banquet	19:00 - 21:00
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May 23 (Thu)

ThA1 Growth of Nanostructures and Quantum-Effect Devices Room A
08:30-10:30

Chair: Fumitaro Ishikawa and Philipp Staudinger

ThA1-1 (Invited) 08:30 - 09:00

Graphene Stabilized Two-Dimensional Crystals

Zakaria Al Balushi

Materials Science and Engineering, University of California, Berkeley, United States of America

ThA1-3 (Oral) 09:00 - 09:15

Heteroepitaxial growth of InGaAs/InP/InAlAs/InP core-multishell nanowires on Si for a complementary tunnel FETs

Katsuhiko Tomioka,* Akinobu Yoshida, and Hironori Gamo

Graduate School of Information Science and Technology and Research Center for Integrated Quantum Electronics (RCIQE), Hokkaido Univ., Japan

ThA1-4 (Oral) 09:15 - 09:30

Demonstration of InAs nanowire vertical transistors

Hironori Gamo,* Junichi Motohisa, and Katsuhiko Tomioka

Graduate School of IST and RCIQE, Hokkaido University, Japan

ThA1-5 (Oral) 09:30 - 09:45

Room-Temperature Electrically Pumped InP-based 1.3 μ m Quantum Dot Laser on on-axis (001) Silicon

Wei LUO,*¹ Ying XUE,¹ Bei SHI,² Si ZHU,¹ and KeiMay LAU¹

¹*Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong,*

²*Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America*

ThA1-6 (Oral) 09:45 - 10:00

Blue (In,Ga)N Light-Emitting Diodes with Buried n^+ - p^+ Tunnel Junctions by Plasma-Assisted Molecular Beam Epitaxy

YongJin Cho,*¹ Shyam Bharadwaj,¹ Zongyang Hu,¹ Kazuki Nomoto,¹ Uwe Jahn,² Huili Grace Xing,^{1,3} and Debdeep Jena^{1,3}

¹*School of Electrical and Computer Engineering, Cornell University, United States of America,* ²*Paul-Drude-Institut für Festkörperelektronik, Germany,* ³*Department of Materials Science and Engineering and Kavli Institute for Nanoscale Science, Cornell University, United States of America*

ThA1-8 (Oral) 10:15 - 10:30

Quantum entangled photon emitting diodes based on GaAs quantum dots on (111)A: Robustness against increasing temperature

Neul Ha,* Takaaki Mano, Takashi Kuroda, and Kazuaki Sakoda

National Institute for Materials Science (NIMS), Japan

ThB1 Novel Photonics Room B 08:30-10:30

Chair: Takashi Asano and Mitsuru Takenaka

ThB1-1 (Invited) 08:30 - 09:00

Transfer printing of III-V devices for silicon photonics

Brian Corbett,* Ruggero Loi, Lei Liu, Brendan Roycroft, and James O'Callaghan
 Tyndall National Institute, University College Cork, Ireland

ThB1-3 (Oral) 09:00 - 09:15

Photonic-crystal Lasers with Extremely Short Embedded Active-regions

Takuma Tsurugaya,*¹ Koji Takeda,^{1,3} Takuro Fujii,^{1,3} Eiichi Kuramochi,^{2,3} Akihiko Shinya,^{2,3} Masaya Notomi,^{2,3} Takaaki Kakitsuka,^{1,3} Hiroshi Fukuda,^{1,3} and Shinji Matsuo^{1,3}
¹NTT Device Technology Labs., NTT Corporation, Japan, ²NTT Basic Research Labs., NTT Corporation, Japan, ³NTT Nanophotonics Center, NTT Corporation, Japan

ThB1-4 (Oral) 09:15 - 09:30

Tuning Lasing Emission towards Long Wavelengths in GaAs-(In,Al)GaAs Core-Multishell Nanowires on Silicon

Thomas Stettner,¹ Paul Schmiedeke,¹ Andreas Thurn,¹ Markus Doeblinger,² Jochen Bissinger,¹ Daniel Ruhstorfer,¹ Jonathan J. Finley,¹ and Gregor Koblmüller*¹
¹Walter Schottky Institute and Physics Department, Technical University of Munich, Germany, ²Department of Chemistry, Ludwig Maximilians University Munich, Germany

ThB1-5 (Oral) 09:30 - 09:45

Investigation of second harmonic generation efficiency in ultrahigh-Q SiC photonic crystal nanocavities

Heungjoon Kim,*^{1,2} Takashi Asano,¹ Bong-Shik Song,^{1,2} and Susumu Noda¹
¹Department of Electronic Science and Engineering, Kyoto University, Japan, ²Department of Electrical and Computer Engineering, Sungkyunkwan University, Republic of Korea

ThB1-6 (Oral) 09:45 - 10:00

Buried tunnel junction current injection for InP-based nanomembrane photonic crystal surface emitting lasers on Silicon

Carl Reuterskiöld Hedlund,*¹ Shi-Chia Liu,² Deyin Zhao,² Weidong Zhou,² and Mattias Hammar¹
¹Department of Electronics, Royal Institute of Technology, Electrum 229, 164 40 Kista, Sweden, Sweden, ²Department of Electrical Engineering, University of Texas at Arlington, TX 76019, USA, United States of America

ThB1-7 (Oral) 10:00 - 10:15

Horn-Shaped Metal-Clad Modulator Coupled to InP Waveguide

Yuguang Wang,* Mitsuhiro Watanabe, Yi Xiao, Takuo Tanemura, and Yoshiaki Nakano
 Department of Electrical Engineering and Information Systems, School of Engineering, The University of Tokyo, Japan

ThB1-8 (Oral) 10:15 - 10:30

Topological edge state laser using a photonic crystal nanocavity array

Changhyun Han,*^{1,2} Myungjae Lee,^{1,2} Minsu Kang,^{1,2} and Heonsu Jeon^{1,2,3}
¹Department of Physics and Astronomy, Seoul National University, Republic of Korea, ²Inter-University Semiconductor Research Centre, Seoul National University, Republic of Korea, ³Institute of Applied Physics, Seoul National University, Republic of Korea

ThC1 Oxides: Doping Room C 08:30-10:30

Chair: Farida Selim and Chih-Chung Yang

ThC1-1 (Invited) 08:30 - 09:00

Zinc Oxide Grown by ALD - from Heavily n-type to p-type Material

Elzbieta Guziewicz,* Ewa Przewdzicka, and Tomasz A Krajewski
Institute of Physics, Polish Academy of Sciences, Poland

ThC1-3 (Oral) 09:00 - 09:15

Development of Carrier Concentration and Its Effects on the Electrical Stability of Al-doped ZnO Transparent Electrode in Harsh Environment

Fahmi Machda,* Takaya Ogawa, Hideyuki Okumura, and Keiichi N. Ishihara
Graduate School of Energy Science, Kyoto University, Japan

ThC1-4 (Oral) 09:15 - 09:30

Transparent $\text{Ni}_x\text{Cd}_{1-x}\text{O}_{1+\delta}$ alloy thin films with bipolar conductivity

Chao Ping LIU,*^{1,2} Kingsley O. Ebgo,² Chun Yuen Ho,² Wladek Walukiewicz,³ and Kin Man Yu^{2,4}

¹Department of Physics, Shantou University, China, ²Department of Physics, City University of Hong Kong, Hong Kong, ³Materials Sciences Division, Lawrence Berkeley National Laboratory, United States of America, ⁴Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

ThC1-5 (Oral) 09:30 - 09:45

Demonstration of Low-Resistive P-Type Cu_4O_3 Thin Films by Radio Frequency Sputtering for Low-Cost Thin Film Solar Cells

Md Abdul Majed Patwary,*¹ Katsuhiko Saito,¹ Qixin Guo,¹ Tooru Tanaka,¹ Kin Man Yu,^{2,3} and Wladek Walukiewicz^{3,4}

¹Saga University, Saga, Japan, ²City University of Hong Kong, Kowloon, Hong Kong, ³Lawrence Berkeley National Laboratory, Berkeley, CA, United States of America, ⁴University of California, Berkeley, CA, United States of America

ThC1-6 (Oral) 09:45 - 10:00

Crystal Structures and Surface Plasmon Properties of GaZnO Nanostructures

Yu-Feng Yao,¹ Keng-Ping Chou,¹ Chi-Chung Chen,¹ Charng-Gan Tu,¹ Tsai-Pei Li,² Yung-Chen Cheng,² Wen-Yen Chang,¹ Yao-Tseng Wang,¹ Wai Fong Tse,¹ Yean-Woei Kiang,¹ and Chih-Chung (C. C.) Yang*¹

¹National Taiwan University, Taiwan, ²National University of Tainan, Taiwan

ThC1-7 (Oral) 10:00 - 10:15

IGZO Thin Film Transistors for Monitoring Biotin-Protein Biochemical Interactions

Chun-Ho Chou,*¹ Nian-Ting Wu,¹ Bo-Shun Jiang,¹ and Jian-Jang Huang^{1,2}

¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, ²Department of Electrical Engineering, National Taiwan University, Taiwan

ThC1-8 (Oral) 10:15 - 10:30

Suppressing Interdiffusion of Si in Er-doped $\text{CeO}_2/\text{Si}(111)$ and Its Impact on the Optical Property

Tomohiro Inaba,*¹ Xuejun Xu,¹ Takehiko Tawara,^{1,2} Hiroo Omi,^{1,2} Hideki Yamamoto,¹ and Hedeki Gotoh¹

¹NTT Basic Research Laboratories, Japan, ²NTT Nanophotonics Center, Japan

ThD1 GaN and Related Technologies IV

Room D 08:30-10:30

Chair: Michał Boćkowski and Fumimasa Horikiri

ThD1-1 (Invited) 08:30 - 09:00

GaN Substrates of the Highest Structural Quality

Tomasz Sochacki

Institute of High Pressure Physics Polish Academy of Sciences, Poland

ThD1-3 (Oral) 09:00 - 09:15

Growth of high-quality >10 μm -thick GaN-on-Si with low-dislocation density in the order of $10^7/\text{cm}^2$

Toshiki Hikosaka,* Jumpei Tajima, Hajime Nago, Toshiyuki Oka, and Shinya Nunoue

Corporate Research and Development Center, Toshiba Corporation, Japan

ThD1-4 (Oral) 09:15 - 09:30

Low resistive and low dislocation GaN wafer produced by OVPE methodJunichi Takino,*^{1,2} Tomoaki Sumi,¹ Yoshio Okayama,^{1,2} Masaki Nobuoka,¹ Akira Kitamoto,² Masayuki Imanishi,² Masashi Yoshimura,² and Yusuke Mori²¹Panasonic Corporation, Japan, ²Graduate school of engineering, Osaka University, Japan

ThD1-5 (Oral) 09:30 - 09:45

Hydride vapor phase epitaxy reactor for bulk GaN growthVladislav Voronenkov,*^{1,2} Natalia Bochkareva,² Ruslan Gorbunov,^{1,2} Andrey Zubrilov,^{1,2} Viktor Kogotkov,¹ Philippe Latyshev,¹ Yuri Lelikov,^{1,2} Andrey Leonidov,¹ and Yuri Shreter^{1,2}¹TRINITRI-Technology LLC, Russia, ²Ioffe Institute, Russia

ThD1-6 (Oral) 09:45 - 10:00

In_xGa_{1-x}N Alloys Grown by Plasma-Assisted Molecular Beam Epitaxy (PAMBE) with Growth Rates Up to 1.3 $\mu\text{m}/\text{hr}$

Kelsey F. Jorgensen* and James S. Speck

Materials Department, University of California, Santa Barbara, United States of America

ThD1-7 (Oral) 10:00 - 10:15

Growth of high-quality GaN single crystals using the Flux-Film-Coated Na flux LPE (FFC-LPE) method.

Fumio Kawamura* and Takashi Taniguchi

National Institute for Materials Science, Japan

ThD1-8 (Oral) 10:15 - 10:30

Growth and characterization of quaternary AlGaInN epitaxial films with alloy compositions around lattice-matched to GaNHiroki Harada,*¹ Makoto Miyoshi,¹ Takashi Egawa,¹ and Tetsuya Takeuchi²¹Nagoya Institute of Technology, Japan, ²Meijo university, Japan

ThE1 Organic and Perovskite materials Room E 08:30-10:30

Chair: Takafumi Uemura and Takashi Nagase

ThE1-3 (Invited) 09:00 - 09:30

Liquid Crystals as Polycrystalline Materials for Organic Thin Film Transistors

Hiroaki Iino

Imaging Science and Engineering Research Center, Tokyo Institute of Technology, Japan

ThE1-5 (Oral) 09:30 - 09:45

Nucleation and shape of 2D islands of DPh-DNTT thin-films prepared by vacuum evaporation

Yoshiaki Hattori,* Yoshinari Kimura, and Masatoshi Kitamura

Kobe University, Japan

ThE1-6 (Oral) 09:45 - 10:00

Investigation of 1,8-Diiodooctane (DIO) Additive Effect on Carrier Transport in Bulk Heterojunction Organic Solar Cell by EFISHG

Ibrahim Alrougy*,^{1,2} Dai Taguchi,¹ and Takaaki Manaka¹

¹Tokyo Institute of Technology, Japan, ²King Abdulaziz City for Science and Technology (KACST), Saudi Arabia

ThE1-7 (Oral) 10:00 - 10:15

Visualization of Carrier Transport in Organic-Inorganic Perovskite Field-Effect Transistor by Electric- Field-Induced Optical Second-Harmonic Generation (EFISHG)

Lei Lei Yin Win,* Dai Taguchi, and Takaaki Manaka

Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan

ThE1-8 (Oral) 10:15 - 10:30

Composition tunable inorganic Lead Halide Perovskites microstructures synthesized by single and two-step chemical vapor deposition methods

Mohammad Kamal Hossain*,^{1,2} Pengfei Guo,³ Johnny C. Ho,⁴ and Kin Man Yu^{1,4}

¹Department of Physics, City University of Hong Kong, Hong Kong, ²Department of Physics, Comilla University, Bangladesh,

³Key Laboratory of Microelectronic and Energy of Henan Province School of Physics and Electronic Engineering, Xinyang Normal University, China, ⁴Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

Coffee Break	10:30 - 11:00
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ThA2 Advanced Epitaxial Growth Techniques of III-V Materials Room A

11:00-12:30

Chair: Takashi Suemasu and Zakaria Y. Al Balushi

ThA2-1 (Oral) 11:00 - 11:15

Crystal Phase Tuning in Planar Films of III-V Semiconductors

Philipp Staudinger*,¹ Nicolas Tappy,² Svenja Mauthe,¹ Kirsten Moselund,¹ Anna Fontcuberta i Morral,^{2,3} and Heinz Schmid¹

¹IBM Research Zurich, Switzerland, ²Laboratoire des Matériaux Semiconducteurs, Institute of Materials, School of Engineering, EPFL, Switzerland, ³Institute of Physics, School of Basic Sciences, EPFL, Switzerland

ThA2-2 (Oral)

11:15 - 11:30

Selective-area MOVPE growth of multi- λ InGaAlAs-based MQWs on patterned InP-on-insulator substrateTakuro Fujii,* Tomonari Sato, Koji Takeda, Takaaki Kakitsuka, and Shinji Matsuo
NTT Device Technology labs, Japan

ThA2-3 (Oral)

11:30 - 11:45

Direct Heteroepitaxy of Orientation-Patterned GaP on GaAs by Hydride Vapour Phase Epitaxy for Quasi-Phase-Matching ApplicationsAxel Strömberg,*¹ Giriprasanth Omanakuttan,¹ Pooja Vardhini Natesan,¹ Tajkia Syeed Tofa,¹ Arnaud Grisard,² Bruno Gerard,³ Hoon Jang,¹ Valdas Pasiskevicius,¹ Fredrik Laurell,¹ Sebastian Lourduoss,¹ and Yan-Ting Sun¹
¹Department of Applied Physics, Royal Institute of Technology-KTH, Sweden, ²Thales Research & Technology (TRT), France, ³III-V Lab, France

ThA2-4 (Oral)

11:45 - 12:00

Strained layer superlattices for dislocation reduction in III-V on V-groove patterned (001) siliconBei Shi,*¹ Lei Wang,¹ Aidan Taylor,² Simone Suran Brunelli,¹ and Jonathan Klamkin¹¹Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America, ²Materials Department, University of California Santa Barbara, United States of America

ThA2-5 (Oral)

12:00 - 12:15

High-quality Epitaxial Growth of AlGaInAs-based Active Structures on a Directly-Bonded InPoSi SubstrateClaire Besancon,*^{1,3} Jean Decobert,¹ Jean-Pierre Le Goec,¹ Nicolas Vaissiere,¹ Cecilia Dupre,² Viviane Muffato,² Frank Fournel,² Christophe Jany,² Franck Bassani,³ Sylvain David,³ and Thierry Baron³¹III-V Lab, a joint lab of 'Nokia Bell Labs', 'Thales Research and Technology' and CEA LETI, France, ²Univ. Grenoble Alpes, CEA, LETI, France, ³Univ. Grenoble Alpes; CNRS, CEA/Leti Minatec, LTM, France

ThA2-6 (Oral)

12:15 - 12:30

Template-assisted selective epitaxy for III-V vertical nanowires on Si tandem solar cellsNoelia Vico Trivino,*¹ Philipp Staudinger,¹ Nicolas Bologna,^{1,2} Heike Riel,¹ Kirsten Moselund,¹ and Heinz Schmid¹¹IBM Research-Zurich, Switzerland, ²Electron Microscopy Center, Empa, Switzerland

ThB2 Photodetectors

Room B 11:00-12:30

Chair: Patrick Runge and Yasumasa Kawakita

ThB2-1 (Invited)

11:00 - 11:30

High-speed Avalanche Photodiodes based on III-V Compounds for Optical CommunicationsMasahiro Nada,*¹ Fumito Nakajima,² Toshihide Yoshimatsu,¹ Hideaki Matsuzaki,² and Kimikazu Sano¹¹NTT Device Innovation Center, Japan, ²NTT Device Technology Labs., Japan

ThB2-3 (Oral)

11:30 - 11:45

Polarization Diverse Photodetector Chip Based on Waveguide Integrated MQW and Bulk PhotodiodesTobias Beckerwerth, Shahram Keyvaninia, Marko Gruner, Patrick Runge,* and Martin Schell
Fraunhofer Heinrich-Hertz-Institute, Germany

ThB2-4 (Oral)

11:45 - 12:00

Transition Metal Doped InGaAs Photoconductors for THz DetectorsSteffen Breuer,*¹ Robert B. Kohlhaas,¹ Simon Nellen,¹ Lars Liebermeister,¹ Björn Globisch,¹ Martin Schell,¹ Mykhaylo P. Semtsiv,² and W. Ted Masselink²¹Fraunhofer HHI, Berlin, Germany, ²Humboldt University Berlin, Department of Physics, Germany

ThB2-6 (Oral)

12:15 - 12:30

Limitations to Power Conversion Efficiency of InP Based Uni-traveling-carrier Photodiodes Due to Space Charge ResistanceBrandon J. Isaac,*¹ Yuan Liu,² Sergio Pinna,² and Jonathan Klamkin²¹Materials Department, University of California Santa Barbara, United States of America, ²Electrical and Computer Engineering Department, University of California Santa Barbara, United States of America

ThC2 GaN Power Devices and Characterization

Room C 11:00-12:30

Chair: Masaaki Kuzuhara and Akio Wakejima

ThC2-1 (Invited)

11:00 - 11:30

The Commercialization of GaN Power Devices: Value Proposition, Manufacturing, and ReliabilityThomas Detzel,*¹ Alain Charles,² Gerald Deboy,¹ Oliver Haerberlen,¹ and Timothy McDonald²¹Infineon Technologies Austria AG, Austria, ²Infineon Technologies Americas Corp, United States of America

ThC2-3 (Oral)

11:30 - 11:45

Novel Slanted Field Plate Technology for GaN HEMTs by Grayscale Lithography on Flowable Oxide

Taifang Wang,* Luca Nela, Jun Ma, and Elison Matioli

Ecole polytechnique federale de Lausanne (EPFL), Switzerland

ThC2-4 (Oral)

11:45 - 12:00

Experimental Verification of Substrate Bias Effect on the Gate Charge for GaN HEMTs

Wen Yang and Jiann-Shiun Yuan*

Department of Electrical and Computer Engineering, University of Central Florida, United States of America

ThC2-5 (Oral)

12:00 - 12:15

Experimental Determination of Hole Impact Ionization Coefficient and Saturation Velocity in GaNDong Ji,*¹ Burcu Ercan,¹ and Srabanti Chowdhury^{1,2}¹Department of Electrical and Computer Engineering, University of California, Davis, United States of America, ²Department of Electrical Engineering, Stanford University, United States of America

ThC2-6 (Oral)

12:15 - 12:30

Experimental Demonstration of Avalanche Noise in GaN PN Junctions Grown on Native GaN Substrates

Lina Cao,* Jingshan Wang, Hansheng Ye, and Patrick Fay

Department of Electrical Engineering, University of Notre Dame, United States of America

Closing and Student Award CeremonyRoom A 12:30-13:30
