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

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

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, Tatsurou 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,* Jiaxing 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 BARDINAL[2]
[1]Univ Rennes, INSA Rennes, CNRS, Institut FOTON, France, [2]Univ Toulouse, CNRS, LAAS, France, [3]Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, France, [4]IMT 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. Mawst[1]
[1]Department of Electrical and Computer Engineering, University of Wisconsin-Madison, United States of America, [2]Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong, [3]Department 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 Applications

D 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 Jena[3]

[1]US Naval Research Laboratory, United States of America, [2]National Research Council (Residing at the US Naval Research Laboratory), United States of America, [3]Cornell University, United States of America

MoB3-5 (Oral) 15:00 - 15:15

Impact of the insertion of AlGaN back barrier on crystal quality, N_S, and mobility of GaN-channel HEMTs with high-Al-content AlGaN 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 Annealing

Yusuke Hayashi,[*,1] Kaito Fujikawa,[2] Kenjiro Uesugi,[3] Kanako Shojiki,[2] and Hideto Miyake[1,2]

[1]Mie Univ., Grad. School of RIS, Japan, [2]Mie Univ., Grad. School of Eng., Japan, [3]Mie Univ., SPORR, Japan

MoB3-8 (Oral) 15:45 - 16:00

Low resistivity ohmic contacts to n-ZnSe by utilizing a novel regrowth technique

Johanna Janßen,[*,1] Felix Hartz,[2] Till Huckemann,[2] Lars Reiner Schreiber,[2] Detlev Grützmacher,[1] and Alexander Pawlis[1]

[1]Peter Grünberg Institute 9, Forschungszentrum Jülich, Germany, [2]JARA - 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 MoS_2/WS_2 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 $MoSe_2$

Takato Hotta,*,[1] Shohei Higuchi,[1] Uchiyama Yosuke,[1] Keiji Ueno,[2] Kenji Watanabe,[3] Takashi Taniguchi,[3] Hisanori Shinohara,[1] and Ryo Kitaura[1]
[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 AlGaN Nanorod with the Self-catalytic Vapor-liquid-solid Mode

Charng-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-AlGaN

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}$2) InGaN Micro-Light-Emitting-Diodes on (11$\bar{2}$2) GaN/Sapphire Template

Matthew S. Wong,[*,1] Michel Khoury,[1] Hongjian Li,[1] Bastien Bonef,[1] Aidan A. Taylor,[1] Haojun Zhang,[2] Philippe De Mierry,[3] Shuji Nakamura,[1,2] and Steven P. DenBaars[1,2]

[1]Materials Department, University of California Santa Barbara, United States of America, [2]Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America, [3]CNRS−CRHEA, Rue Bernard Grégory, France

MoD3-4 (Oral) 14:45 - 15:00

Relaxed InGaN engineered substrates with lattice parameter of 3,205Å and beyond enabling direct emission at 630nm

Eric Guiot,[*,1] David Sotta,[1] Olivier Ledoux,[1] Mélanie Lagrange,[1] Guillaume Lavaitte,[1] Amélie Dussaigne,[2] Sébastien Chenot,[3] and Benjamin Damilano[3]

[1]SOITEC, France, [2]Univ. Grenoble Alpes, France, [3]Université Côte d'Azur, France

MoD3-5 (Oral) 15:00 - 15:15

Optical Properties of Room Temperature Single Photon Emitters in GaN

Mehran Kianinia,[*,1] Minh Nguyen,[1] Tongtong Zhu,[2] Carlo Bradac,[1] Milos Toth,[1] Rachel Oliver,[2] and Igor Aharonovich[1]

[1]School of Mathematical and Physical Sciences, University of Technology Sydney, Australia, [2]Department 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 InGaN

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 LEDs

Jianfeng 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 Speck[1]

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

MoD3-8 (Oral) 15:45 - 16:00

Recent progress in AlGaN UV-C LEDs grown on SiC

Abdullah 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 Speck[1]

[1]University of California, Santa Barbara, United States of America, [2]King Abdulaziz City for Science and Technology, Saudi Arabia, [3]King 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 semiconductors

Atsushi Tsukazaki[*] and Kohei Fujiwara

Institute for Materials Research, Tohoku University, Japan

MoE3-3 (Invited) 14:30 - 15:00

Hydrogen in semiconducting oxides

Farida Selim

[1]*Department of Physics and Astronomy, Bowling Green State University, United States of America,* [2]*Center 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 Onuma[1]

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

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

MoE3-7 (Oral) 15:30 - 15:45

Growth of Single Crystalline c-In_2O_3(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]

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

MoE3-8 (Oral) 15:45 - 16:00

Properties of the In_2O_3(111) and the β-Ga_2O_3(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 Eisele[1]

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

MoP Poster Session I Reception Hall 16:00-18:00

MoP-A-1 (Poster)

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

Karn Rongrueangkul,[*,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 Ratanathammaphan,[1] Aniwat Tandaechanurat,[1] and Somsak Panyakeow[1]

[1]*Faculty of Engineering, Chulalongkorn University, Thailand,* [2]*Faculty of Engineering, Naresuan University, Thailand,* [3]*National 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 Matrix

Wenbo Zhan,*,[1] Satomi Ishida,[2] Jinkwan Kwoen,[1] Satoshi Iwamoto,[1,3] and Yasuhiko Arakawa[1]
[1]Institute for Nano Quantum Information Electronics, the University of Tokyo, Japan, [2]Research Center for Advanced Science and Technology, the University of Tokyo, Japan, [3]Institute 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 MBE

Shigkezu Okumura,*,[1,2] Ryo Suzuki,[1] Koji Tsunoda,[1] Hironori Nishino,[1] and Masakazu Sugiyama[2]
[1]Fujitsu Laboratories Limited, Japan, [2]Research 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 Substrates

Jirapat Ounpipat,*,[1] Engrhyt Rattanawongnara,[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 Ratanathammaphan,[1] and Somsak Panyakeow[1]
[1]SDRL, Chulalongkorn University, Thailand, [2]AOT Lab., Naresuan University, Thailand, [3]ISE, Chulalongkorn University, Thailand, [4]NECTEC, NSTDA, Thailand, [5]TMEC, NSTDA, Thailand, [6]MTEC, 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, Mikihito 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 um 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]
[1]Department of Electrical Engineering, National Central University, Taiwan, [2]Jelly Semiconductor Technology, Taiwan, [3]Research 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 Schleeh,[2] Thilo Bauch,[1] and Jan Grahn[1]
[1]Department of Microtechnology and Nanoscience, Chalmers University of Technology, Sweden, [2]Low 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 Ω-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 Prost[3]
[1]Graduate School of System Design, Tokyo Metropolitan University, Japan, [2]Tokyo Metropolitan College of Industrial Technology, Japan, [3]Faculty 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 Antenna

Michihiko Suhara,[*,1] Masataka Nakanishi,[1] Shintaro Kitakado,[1] Kiyoto Asakawa,[2] Masaru Sato,[3] Tsuyoshi Takahashi,[3] Kenichi Kawaguchi,[3] and Naoya Okamoto[3]

[1]Tokyo Metropolitan University, Japan, [2]Tokyo Metropolitan College of Industrial Technology, Japan, [3]Fujitsu Laboratories Ltd., Japan

MoP-D-1 (Poster)

Electric-field control of optical-spin injection from an InGaAs quantum well to p-doped quantum dots

Soyoung 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 Microscope

Yuzo Kinuta,[*,1] Shun Takahashi,[1] Kenichi Yamashita,[1] Jun Tatebayashi,[2] Satoshi Iwamoto,[2,3] and Yasuhiko Arakawa[2]

[1]Kyoto Institute of Technology, Japan, [2]INQIE, Univ. of Tokyo, Japan, [3]IIS, Univ. of Tokyo, Japan

MoP-D-3 (Poster)

Transmission Characteristics of a Novel Waveguide Structure for Wavelength Division Multiplexing

Takuya 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 dot

Shohei Isawa,[*,1] Yota Akashi,[1] Atsushi Matsumoto,[2] Kouichi Akahane,[2] Yuichi Matsushima,[1] Hiroshi Ishikawa,[1] and Katsuyuki Utaka[1]

[1]University of Waseda, Japan, [2]NICT, Japan

MoP-D-5 (Poster)

Numerical Investigation of Topological Edge States in a GaAs-Based Three-Dimensional Chiral Photonic Crystal

Shun Takahashi,[*,1] Shuhei Oono,[2] Yasuhiro Hatsugai,[2] Yasuhiko Arakawa,[3] and Satoshi Iwamoto[3,4]

[1]Kyoto Institute of Technology, Japan, [2]Grad. Sch. Pure Appl. Sci., Univ. of Tsukuba, Japan, [3]INQIE, Univ. of Tokyo, Japan, [4]IIS, Univ. of Tokyo, Japan

MoP-D-6 (Poster)

Metamaterial perfect absorber based on heavily doped semiconductor for thermal emission

Franziska 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 excitation

Tae-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]

[1]Department of Physics and Astronomy, Seoul National University, Republic of Korea, [2]Inter-university Semiconductor Research Center, Seoul National University, Republic of Korea, [3]Samsung Advanced Institute of Technology, Republic of Korea, [4]Department of Nano-Optical Engineering, Korea Polytechnic University, Republic of Korea, [5]Institute of Applied Physics, Seoul National University, Republic of Korea

MoP-D-9 (Poster)

InAs/GaAs quantum Dot Intermixing by Dry Etching and Ion Implantation

Yu Hiraishi,[*,1] Tomohiro Shirai,[1] Jinkwan Kwoen,[2] Yuichi Matsushima,[1] Hiroshi Ishikawa,[1] Yasuhiko Arakawa,[2] and Katsuyuki Utaka[1]

[1]Waseda University, Japan, [2]NanoQuine, Univ. Of Tokyo, Japan

MoP-D-10 (Poster)

InGaAs Quantum Dot Dual-Band Photodetector of Bipolar Photocurrent

Tsong-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 Resistance

Naoki Takahashi,[*,1] Nagisa Nakamura,[1] Takamasa Yoshida,[1] Weicheng Fang,[1] Tomohiro Amemiya,[1,2] Nobuhiko Nishiyama,[1,2] and Shigehisa Arai[1,2]

[1]Dept. of Electrical and Electronic Engineering, Tokyo Inst. of Technology, Japan, [2]IIR, Tokyo Inst. of Technology, Japan

MoP-D-12 (Poster)

Dilute Waveguide Reflective Semiconductor Optical Amplifier for 3D Hybrid Silicon Photonics Integration

Bowen 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 Technology

Nobuhiko 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]

[1]Dept. of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, [2]Institute of Innovative Research (IIR), Tokyo Institute of Technology, Japan, [3]Corporate Research & Development Center, Toshiba Corporation, Japan, [4]Ayumi 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 Beam

Yuning Wang,[*,1] Takuya Mitarai,[1] Tomohiro Amemiya,[1,2] Nobuhiko Nishiyama,[1,2] and Shigehisa Arai[1,2]

[1]Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, [2]Laboratory 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 temperature

Kengo Takase,[*,1] Le Duc Anh,[1,2] Kosuke Takiguchi,[1] Nguyen Thanh Tu,[1,3] and Masaaki Tanaka[1,4]

[1]Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan, [2]Institute of Engineering Innovation, The University of Tokyo, Japan, [3]Department of Physics, Ho Chi Minh City University of Pedagogy, Vietnam, Viet Nam, [4]Center 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 anisotropy

Thanh Tu Nguyen,[*,1,2] Nam Hai Pham,[3,4] Duc Anh Le,[1,5] and Masaaki Tanaka[1,4]

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

Koki Chonan,[*,1] Yuto Arakawa,[1] Masaaki Tanaka,[2,3] and Pham Nam Hai[1,3]

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

MoP-E-4 (Poster)

Spin Detection in GaAs/AlGaAs Quantum Wells by Inverse Spin-Hall Effect

Yuji Sakai,[*,1] Tomoki Chatani,[1] Tomohiro Nakagawa,[1] Julian Ritzmann,[2] Arne Ludwig,[2] Andreas Wieck,[2] and Akira Oiwa[1]

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

MoP-E-5 (Poster)

Real space imaging of the quantum-Hall incompressible states influenced by the strong disorder

Yihao Wang,[*,1] Katsushi Hashimoto,[1,2] and Yoshiro Hirayama[1,2,3]

[1]Graduate school of Science, Tohoku University, Japan, [2]Centre for Spintronics Research Network, Tohoku University, Japan, [3]Center 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 Field

Yoshiaki 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 edges

Takase 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 superlattice

Satoshi Hiura,[*,1] Junichi Takayama,[1] Takayuki Kiba,[2] and Akihiro Murayama[1]

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

MoP-E-9 (Poster)

Effects of p-doping on excited spin states and the dynamics in InGaAs quantum dots

Shino Sato,[*,1] Motoya Murakami,[1] Yuto Nakamura,[1] Satoshi Hiura,[2] Junichi Takayama,[2] and Akihiro Murayama[2]

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

MoP-E-10 (Poster)

Diffusive spin dynamics in 10 nm wide InGaAs/InAlAs quantum wells

Hiroki Shida,[*,1] Yasuhito Saito,[1] Kohei Kawaguchi,[1] Ichirota Takazawa,[1] Takahiro Kitada,[3] Makoto Kohda,[2] Yoshihiro Ishitani,[1] and Ken Morita[1]

[1]Graduate school of Electrical and Electronic Engineering, Chiba University, Japan, [2]Department of Materials Science, Tohoku University, Japan, [3]Graduate 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-μm energy band gap

Yuichi Nakamura,[*,1] Lianhe Li,[2] Takuya Kamezaki,[1] Kizuku Yamada,[1] Edmund Linfield,[2] and Atsushi Tackeuchi[1]

[1]Waseda Univ., Japan, [2]Univ. 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 gas

Daisuke 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]

[1]Department of Materials Science, Tohoku University, Japan, [2]Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Japan, [3]Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan, [4]Center for Spintronics Research Network, Tohoku University, Japan, [5]Center 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 temperature

Mikhail 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 superlattices

Toshiyuki 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 Matrix

Naoto Kumagai,[*,1,2] Xiangmeng Lu,[3] Yasuo Minami,[3] and Takahiro Kitada[3]

[1]AIST-NU GaN-OIL, AIST, Japan, [2]ESPRIT, AIST, Japan, [3]Graduate School of Technology, Tokushima Univ., Japan

MoP-F-3 (Poster)

GaSb/GaAs quantum nanostructures for intermediate band solar cell under high sunlight concentration

Yusuke Oteki,[*,1,2] Yasushi Shoji,[3] Naoya Miyashita,[1] Yilun He,[1,2] and Yoshitaka Okada[1,2]

[1]RCAST, Univ. of Tokyo, Japan, [2]School of Engineering, Univ. of Tokyo, Japan, [3]AIST, Japan

MoP-F-4 (Poster)

AlGaAs/GaAs Heterostructure with Hybrid InSb/GaAs and GaSb/GaAs Quantum Dots and Its Optical Characteristics

Thanadul 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 Ratanathammaphan,[1] and Somsak Panyakeow[1]

[1]SDRL, Chulalongkorn University, Thailand, [2]AOT Lab., Naresuan University, Thailand, [3]ISE, Chulalongkorn University, Thailand, [4]NECTEC, NSTDA, Thailand, [5]TMEC, NSTDA, Thailand, [6]MTEC, 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 Excitation

Keishiro Goshima,*,[1] Norio Tsuda ,[1] and Takeyoshi Sugaya[2]
[1]Aichi Institute of Technology , Japan, [2]Advanced Industrial Science and Technology, Japan

MoP-F-7 (Poster)

Adsorbtion 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 VECSEL

Gaëlle 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 Alouini[1]
[1]Institut FOTON, France, [2]Laboratory of Physics of Nanostructures, Ecole Polytechnique Fédérale de Lausanne, Switzerland, [3]IES, Université de Montpellier, France

MoP-F-9 (Poster)

In situ synchrotron X-ray reciprocal space mapping during InGaN/GaN heterostructure nanowire growth

Uesugi Tomohiro,*,[1,2] Takuo Sasaki,[1] Kanya Sugitani,[1,2] and Masamitu Takahasi[1,2]
[1]National Institutes for Quantum and Radiological Science and Technology, Japan, [2]University of Hyogo, Japan

MoP-F-10 (Poster)

In situ study of strain and composition of InGaN/GaN multi-quantum-well nanowires

Kanya Sugitani,*,[1,2] Takuo Sasaki,[1] Uesugi Tomohiro,[1,2] and Masamitu Takahasi[1,2]
[1]National Institutes for Quantum and Radiological Science and Technology, Japan, [2]University of Hyogo, Japan

MoP-F-11 (Poster)

Light-emitting InAs nanowires grown by MOVPE directly on flexible plastic substrates

Vladislav Khayrudinov,*,[1] Tuomas Haggren,[1] Maxim Remennyy,[2] Prokhor Alekseev,[2] Boris Matveev,[2] and Harri Lipsanen[1]
[1]Department of Electronics and Nanoengineering, Aalto University, P.O. Box 13500, FI-00076, Finland, [2]Ioffe Institute, 194021, St. Petersburg, Russia

MoP-F-12 (Poster)

InAs/GaSb Core-Shell Nanowires: Growth and Characterization

Mihail Ion Lepsa,*,[1,4] Gunjan Nagda,[2,4] Pujitha Perla,[2,4] Nataliya Demarina,[3,4] and Detlev Grützmacher[1,2,4]
[1]Peter Grünberg Institute (PGI-10), Forschungszentrum Jülich, Germany, [2]Peter Grünberg Institute (PGI-9), Forschungszentrum Jülich, Germany, [3]Peter Grünberg Institute (PGI-2), Forschungszentrum Jülich, Germany, [4]Jülich 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-Stripes

Kiattisak Luangjarunrat,*,[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 Ratanathammaphan,[1] and Somsak Panyakeow[1]
[1]SDRL, Chulalongkorn University, Thailand, [2]AOT Lab., Naresuan University, Thailand, [3]ISE, Chulalongkorn University, Thailand, [4]NECTEC, NSTDA, Thailand, [5]TMEC, NSTDA, Thailand, [6]MTEC, NSTDA, Thailand

MoP-F-15 (Poster)

Epitaxial Lift-Off of Ultrathin Heterostructures for Hot-Carrier Solar Cell Applications

Maxime 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]
[1]RCAST, The University of Tokyo, Japan, [2]C2N, CNRS, University Paris-Sud/Paris-Saclay, France, [3]CNRS, IPVF, UMR 9006, France, [4]NextPV, 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 Cells

Hsiang-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 surfaces

Takayuki Suga,*,[1] Shunji Goto,[1] Akihiro Ohtake,[2] and Jun Nakamura[1]
[1]Department of Engineering Science, The University of Electro-Communications (UEC-Tokyo), Japan, [2]National 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 Cap

Indraneel Sanyal,*,[1] Ting-Yu Hu,[1] Yen-Chang Lee,[1] En-Shuo Lin,[1] and Jen-Inn Chyi[1,2]
[1]Department of Electrical Engineering, National Central University, Taiwan, [2]Research Center for Applied Sciences, Academia Sinica, Taiwan

MoP-G-3 (Poster)

Current Collapse Suppression by Silicon Substrate Removal Technique in AlGaN/GaN HEMT

YUEH-TING CHEN*,[1] and JIAN-JANG HUANG[1,2]
[1]Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, [2]Department 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 Diodes

Hiroshi Ohta,[*,1] Naomi Asai,[1] Fumimasa Horikiri,[2] Yoshinobu Narita,[2] Takehiro Yoshida,[2] and Tomoyoshi Mishima[1]
[1]Hosei University, Japan, [2]SCIOCS Co. Ltd., Japan

MoP-G-5 (Poster)

Device characteristics and MIS interface evaluation of Al_2O_3/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 AlGaN/GaN FinFET Structure

Lili Huo,[*,1,2] Yung C Liang,[1,2] and Xiao Gong[1]
[1]National University of Singapore, Singapore, [2]National University of Singapore (Suzhou) Research Institute, China

MoP-G-8 (Poster)

N-polar GaN HEMT with Al_2O_3 gate insulator

Akihiro Hayasaka,[*,1] Ryosuke Aonuma,[1] Koushi Hotta,[1] Isao Makabe,[2] Shigeki Yoshida,[2] and Yasuyuki Miyamoto[1]
[1]Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Japan, [2]Transmission Devices Laboratory, Sumitomo Electric Industries, Ltd, Japan

MoP-G-9 (Poster)

Characterization of Silicon Nitride Capping Dielectrics on AlGaN/GaN/Silicon Substrate HEMT Structures with a Mercury Probe

Timothy Boles,[*,1] Wayne Strubble,[1] Gabriel Cueva,[1] Robert Joseph Hillard,[2] Win Ye,[2] John Byrnes,[2] and Jonny Hoglund[2]
[1]MACOM, United States of America, [2]Semilabusa, 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[*]
Toyohashi University of Technology, Japan

MoP-I-1 (Poster)

Turbostratic stacking effect in multilayer graphene on the electrical transport properties

Ryota Negishi,[*,1] Chaopeng Wei,[1] Yui Ogawa,[2] Masashi Akabori,[3] Yoshikata Taniyasu,[2] and Yoshihiro Kobayashi[1]
[1]Osaka university, Japan, [2]NTT Basic Research Laboratories, Japan, [3]JAIST, 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 WSe_2 monolayers

Guan-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 Cheng[1]
[1]Department of Electrophysics, National Chiao Tung University, Taiwan, [2]Graduate 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]
[1]Department of Electronic Engineering, Tohoku University, Japan, [2]JST-PRESTO, Japan

MoP-I-6 (Poster)

Improvement of External Quantum Efficiency of C_{60}/ZnPc Organic Photovoltaic Cells by Polymerization between C_{60} molecules

Yuki Matoba,[*,1] Masahiro Kato,[1] Shinta Watanabe,[1] Koichi Okamoto,[2] Masato Nakaya,[1] and Jun Onoe[1]
[1]Graduate School of Engineering, Nagoya University, Japan, [2]Graduate 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 Matsumoto[1]
[1] ISIR Osaka University, Japan, [2]Lab. Chem. Life Sci., Tokyo Institute of Technology, Japan, [3]Murata 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]
[1]Shinshu Univ., Japan, [2] Inst. 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]
[1]Shinshu University, Japan, [2]Institute of Carbon Science and Technoligy, 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 Schönenberger[2]
[1]DGIST Research Institute, DGIST, Republic of Korea, [2]Department of Physics, University of Basel, Switzerland, [3]Institute for Solid State Physics, ETH, Switzerland, [4]Department 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]
[1]NTT Basic Research Laboratories, NTT Corporation, Japan, [2]Department 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 Koblmueller
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 Anufriev[1]
[1]University of Tokyo, Japan, [2]PRESTO JST, Japan

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

Semi-ballistic thermal phonon transport in Si1-xGex nanowires

Noboru Okamoto,[1] Ryoto Yanagisawa,[1] Md. Mahfuz Alam,[2] Kentarou Sawano,[2] Masashi Kurosawa,[3,4] and Masahiro Nomura[*,1,4]
[1]Univ. of Tokyo, Japan, [2]Tokyo City Univ., Japan, [3]Nagoya Univ., Japan, [4]PRESTO, 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]
[1]Institute of Industrial Science, University of Tokyo, Japan, [2]Tokyo University of Agriculture and Technology, Japan, [3]Institute 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]
[1]Department of Electrical Engineering & Information Systems, The University of Tokyo, Japan, [2]Institute of Engineering Innovation, The University of Tokyo, Japan, [3]Center 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 bandgaps

Ingi Kim,[1] Zhaoyin Sun,[1] Yasuhiko Arakawa,[2] and Satoshi Iwamoto*,[1,2]
[1]*Institute of Industrial Science, The University of Tokyo, Japan,* [2]*Institute 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-MOSFETs

Masahiko Kuraguchi,* Yosuke kajiwara, 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 MOSHEMTs

Luca Nela,* Minghua Zhu, Jun Ma, and Elison Matioli
POWERLAB, IEL, STI, École Polytechnique Fédéral de Lausanne (EPFL) , Switzerland

TuB1-5 (Oral) 09:30 - 09:45

Switching and HTRB characteristics of Highly reliable GaN MOS-HFET

Shinichi 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 AlGaN/GaN metal-insulator-semiconductor devices with AlN or Al_2O_3 gate insulators

Hirotomo 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 Al_2O_3/AlGaN/GaN structures by AlGaN layer regrowth

Shinsaku 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 engineering

Kai 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]
[1]*School of Electrical, Computer and Energy Engineering, Arizona State University, United States of America,* [2]*Department 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 MoS_2 mechanical resonator by laser irradiation

Taichi Inoue,*,[1] Takahiko Endo,[2] Kuniharu Takei,[1] Takayuki Arie,[1] Yasumitsu Miyata,[2] and Seiji Akita[1]
[1]Osaka prefecture University, Japan, [2]Tokyo 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]
[1]QPEC and Department of Applied Physics, the University of Tokyo, Japan, [2]RIKEN 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]
[1]Department of Electronic Engineering,Tohoku University, Japan, [2]JST-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 Ga_2O_3 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-Ga_2O_3

Yuichi Oshima
National Institute for Materials Science, Japan

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

Investigation of Fe incorporation in (010) β-Ga_2O_3 films grown by plasma-assisted molecular beam epitaxy

Akhil Mauze,* Yuewei 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-Ga_2O_3 Metal Oxide Catalyzed Epitaxy (MOCATAXY) growth and Sn doping in plasma-assisted molecular beam epitaxy

Akhil Mauze,* Yuewei 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 Ga_2O_3 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]
[1]Department of Chemical Science and Engineering, Tokyo Institute of Technology , Japan, [2]Toyota Motor Corporation, Japan, [3]MCES, 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-Ga_2O_3 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 Ga_2O_3 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]
[1]Perfect Crystals LLC, Russia, [2]Ioffe Institute, Russia

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

Synchrotron X-Ray Topography Observation and Classification of Dislocations in β-Ga_2O_3 single crystal substrates grown by EFG

Yongzhao YAO,*[,1] Yoshihiro SUGAWARA,[1] Yukari ISHIKAWA,[1] Yumiko TAKAHASHI,[2] and Keiichi HIRANO[3]
[1]Japan Fine Ceramics Center, Japan, [2]Nihon University, Japan, [3]High 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] Jiahan Li,[1] Song Liu,[1] Chao Yuan,[2] Martin Kuball,[2] Christine Elias,[3] T.Q.P. Vuong,[3] Guillaume Cassabois,[3] and Bernard Gil[3]
[1]Kansas State University, United States of America, [2]University of Bristol, United Kingdom, [3]Université 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 Layers

T. 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 epitaxy

Martin Heilmann,*[,1] Alexander S. Prikhodko,[2] Michael Hanke,[1] Muhammad Y. Bashouti,[3] Nikolai I. Borgardt,[2] Henning Riechert,[1] and Marcelo J. Lopes[1]
[1]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 Epitaxy

Ryan 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 Modes

Antonio 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 nanowires

Patrick 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]

[1] Peter Grünberg Institute, Forschungszentrum Jülich, Germany, [2] JARA-FIT, Fundamentals of Future Information Technology, Germany, [3] Karlsruhe Institute of Technology, Germany, [4]RIKEN Center for Emergent Matter Science, Japan, [5]Advanced Device Laboratory, RIKEN, Japan

TuA2-4 (Oral) 11:45 - 12:00

The Josephson effect in InAs quantum wells with the spin Hall effect

Taketomo 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 $(Bi_{0.2}Sb_{0.8})_2Te_3$ films

Yuusuke 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]

[1]Department of Applied Physics, University of Tokyo, Japan, [2]PRESTO, Japan Science and Technology Agency (JST), Japan, [3]Advanced Device Laboratory, RIKEN, Japan, [4]Center for Emergent Matter Science, RIKEN, Japan, [5]Department 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 edges

Makoto 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 Silicon

Siyuan Yu,[*,1] Huiyun Liu,[3] Ying Yu,[2] and Yi Wang[2]

[1]University of Bristol, United Kingdom, [2]Sun Yat-sen University, China, [3]University College London, United Kingdom

TuB2-3 (Oral) 11:30 - 11:45

InAs/InP QD and InGaAsP/InP QW comb lasers for > 1 Tb/s transmission

Marlene Zander,[*,1] Wolfgang Rehbein,[1] Martin Möhrle,[1] Steffen Breuer,[1] Dieter Franke,[1] and Dieter Bimberg[2,3]

[1]Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institute, Germany, [2]"Bimberg Chinese-German Center for Green Photonics", CAS at CIOMP, China, [3]Center 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 threshold

Cyril Paranthoen,[*,1] Christophe Levallois,[1] Nicolas Chevalier,[1] Alain Le Corre,[1] Gaelle Brevalle,[1] Mathieu Perrin,[1] Karine Tavernier,[1] Herve Folliot,[1] and Mehdi Alouini[2]

[1]Univ Rennes, INSA Rennes, CNRS, Institut FOTON, France, [2]Univ 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]

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

[1]LTCI, Telecom ParisTech, France, [2]Advanced Electronics and Photonics Research Centre, NRC Canada, Canada, [3]Center 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 Sichkovskyi,[1] Florian Schnabel,[1] Anna Sengül,[1] Marko Bjelica,[3] Bernd Witzigmann,[3] Gadi Eisenstein,[2] and Johann Peter Reithmaier[*,1]

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

[1]Sumitomo Electric Industries, Ltd., Japan, [2]National 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]

[1]Department of Electrical Engineering, National Central University, Taiwan, [2]Research 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]

[1]Microsystem and Terahertz Research Center, China Academy of Engineering Physics, China, [2]Institute 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 Ga_2O_3 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-Ga_2O_3 Fin Structures Formed by I-MacEtch

Hsien-Chih Huang,[1] Munho Kim,[1] Xun Zhan,[2] Kelson Chabak,[3] Jeongdong Kim,[1] Jian-min Zuo,[2] and Xiuling Li*,[1]
[1]Electrical and Computer Engineering Department, University of Illinois, United States of America, [2]Materials Science and Engineering Department, University of Ilinois, United States of America, [3]Air Force Research Laboratory, Sensors Directorate at WPAFB, United States of America

TuD2-2 (Oral) 11:15 - 11:30

Observation of Electroreflectance Spectra of β-Ga_2O_3 Single Crystal

Takeyoshi Onuma,*,[1,2] Kouya Tanaka,[1] Kohei Sasaki,[3] Tomohiro Yamaguchi,[1] Tohru Honda,[1] Akito Kuramata,[3] Shigenobu Yamakoshi,[4] and Masataka Higashiwaki[2]
[1]Department of Applied Physics, Kogakuin University, Japan, [2]National Institute of Information and Communications Technology, Japan, [3]Novel Crystal Technology Inc., Japan, [4]Tamura Corporation, Japan

TuD2-3 (Oral) 11:30 - 11:45

Suppression of Parallel Conduction at the Interface in β-Ga_2O_3 Homoepitaxial Layer Using Semi-Insulating Intermediate Layer

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

TuD2-4 (Oral) 11:45 - 12:00

Influence of Charged Dislocation on Mobility in Degenerate Homoepitaxial Si-Doped Ga_2O_3 Films on $(\bar{2}01)$ β-Ga_2O_3 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-Ga_2O_3 MOSFETs with Nitrogen-Ion-Implanted Back-Barrier: DC Performance and Trapping Effects

Man Hoi Wong,*,[1] Ken Goto,[2] Hisashi Murakami,[2] Yoshinao Kumagai,[2] and Masataka Higashiwaki[1]
[1]National Institute of Information and Communications Technology, Japan, [2]Department 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 Toth[1]

[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

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. Bowers[1]

[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 Takenaka[1]

[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 Schell[1]
[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 Hikavyy,[1] Erik Rosseel,[1] Marc Schaekers,[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,* Mitsuhisa 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 $Ge_{1-x}Sn_x/Ge_{1-x-y}Si_xSn_y$ Quantum Well Structures

Galih Ramadana Suwito,[*,1] Masahiro Fukuda,[2] Shigehisa Shibayama,[2] Mitsuo Sakashita,[2] Osamu Nakatsuka,[2,3] and Shigeaki Zaima[4]

[1]Department of Physical Science and Engineering, School of Engineering, Nagoya University, Japan, [2]Department of Materials Physics, Graduate School of Engineering, Nagoya University, Japan, [3]Institute of Materials and Systems for Sustainability, Nagoya University, Japan, [4]Institute 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 MOVPE

Yufeng Fu,[*,1] Nobuyuki Otake,[1] and Masakazu Sugiyama[2]

[1]DENSO CORPORATION, Japan, [2]The 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 temperatures

Yudai 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 nanowire

Kento 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]

[1]Department of Applied physics, University of Tokyo, Japan, [2]RIKEN, Japan, [3]Peking University, China, [4]Lund University, Sweden

TuC3-4 (Oral) 14:45 - 15:00

2DEG formation in doped polytype InP nanowires: an optical study

Irene Geijselaers,[*,1] Sebastian Lehmann,[1] Kimberly Dick-Thelander,[1,2] and Mats-Erik Pistol[1]

[1]Department of Solid State Physics and NanoLund, Lund University, Sweden, [2]Centre 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 Bar

Takafumi Fujita,[*,1] Ryota Hayashi,[1] Makoto Kohda,[2] Julian Ritzmann,[3] Arne Ludwid,[3] Junsaku Nitta,[2] Andreas D. Wieck,[3] and Akira Oiwa[1]

[1]The Institute of Scientific and Industrial Research, Osaka University, Japan, [2]Department of Materials Science, Tohoku University, Japan, [3]Lehrstuhl 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 potentials

Junichi Takayama,[1] Satoshi Hiura,[1] Kazuki Takeishi,[1] Takayuki Kiba,[2] and Akihiro Murayama*,[1]
[1]GSIST, Hokkaido University, Japan, [2]Kitami 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 Ga_2O_3 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 Ga_2O_3 FETs

Gregg 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 Gilbert[4]
[1]Sensors Directorate, Air Force Research Laboratory, United States of America, [2]KBRwyle, United States of America, [3]SelectTech Services Corp., United States of America, [4]The Design Knowledge Company, United States of America

TuD3-3 (Oral) 14:30 - 14:45

Dynamic R_{ON} in β-Ga_2O_3 MOSFET Power Devices

Taylor 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 Kuball [1]
[1]Centre for Device Thermography and Reliability, University of Bristol, United Kingdom, [2]National Institute of Information and Communications Technology, Japan, [3]Tamura Corporation, Japan

TuD3-4 (Oral) 14:45 - 15:00

Nitrogen-Doped Channel β-Ga_2O_3 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

Ga_2O_3 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-Ga_2O_3 substrate with high switching performance

Xing Lu,[*,1,2] Xu Zhang,[2] Huaxing Jiang,[2] Xinbo Zou,[3] and Kei May Lau[2]

[1]School of Electronics and Information Technology, Sun Yat-sen University, China, [2]ECE Department, Hong Kong University of Science and Technology, Hong Kong, [3]School of Information Science and Technology, ShanghaiTech University, China

TuD3-8 (Oral) 15:45 - 16:00

Vertical Ga_2O_3 Schottky Barrier Diodes with Guard Ring Formed by Nitrogen-Ion Implantation

Chia-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 Higashiwaki[1]

[1]National Institute of Information and Communications Technology, Japan, [2]Mitsubishi Electric Corporation, Japan, [3]Department 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 nitride

Julien 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 Loiseau[2]

[1]Groupe d'Etude de la Matière Condensée, Université de Versailles St Quentin en Yvelines, CNRS, Université Paris Saclay, Versailles, France, [2]Laboratoire d'Etude des Microstructures, ONERA, CNRS, Université Paris Saclay, Chatillon, France, [3]National 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-excitation

Kazunobu Kojima,[*,1] Kenji Watanabe,[2] Takashi Taniguchi,[2] and Shigefusa F. Chichibu[1]

[1]Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Japan, [2]National Institute for Materials Science (NIMS), Japan

TuE3-4 (Oral) 14:45 - 15:00

Ultralow Loss Polaritons in Isotopically Pure Hexagonal Boron Nitride

Alexander 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. Caldwell[3]

[1]US Naval Research Laboratory, United States of America, [2]Department of Physics, Columbia University, United States of America, [3]Mechanical Engineering Department, Vanderbilt University, United States of America, [4]Department 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 crystals

Kenji Watanabe[*] and Takashi Taniguchi

National institute for Materials Science, Japan

TuE3-7 (Oral) 15:30 - 15:45

Kinetical limitations of h-BN MOVPE growth

Krzysztof Pakula,[*] Aleksandra Dabrowska, Mateusz Tokarczyk, Johannes Binder, Jolanta Borysiuk, Rafal Bozek, Grzegorz Kowalski, Andrzej Wysmolek, and Roman Stepniewski

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 nanoparticles

Dipankar Chugh,*,[1] Jennifer Wong-Leung,[1] Li Li,[2] Mykhaylo Lysevych,[2] Hark Hoe Tan,[1] and Chennupati Jagadish[1,2]
[1]Department of Electronic Materials Engineering, Australian National University, Australia, [2]Australian National Fabrication Facility, Australian National University, Australia

TuP Poster Session II

Reception Hall 16:00-18:00

TuP-A-1 (Poster)

High-Temperature Annealing of Sputter-Deposited AlN on Diamond Substrate

Tatsuya Shirato,*,[1] Yusuke Hayashi,[2] Kenjiro Uesugi,[3] Kanako Shojiki,[2] and Hideto Miyake[1,2]
[1]Mie Univ., Grad. School of Eng., Japan, [2]Mie Univ., Grad. School of RIS, Japan, [3]Mie Univ., SPORR, Japan

TuP-A-2 (Poster)

Enabling Low Temperature Aluminum Nitride ALD by Use of a Novel Hydrazine Source

Daniel Alvarez,*,[1] Jeffrey J. Spiegelman,[1] Keisuke Andachi,[2] Aswin Kondusamy,[3] and Jiyoung Kim[3]
[1]RASIRC, United States of America, [2]Taiyo Nippon Sanso Corporation, Japan, [3]University of Texas, Dallas, United States of America

TuP-A-3 (Poster)

Growth and characterization of InN epi-films on nitrided Si_3N_4 layer by RF-MOMBE

Sheng Chen,*,[1] Wei-Chun Chen,[2] and Chin-Pao Cheng[1]
[1]Department of Mechatronic Engineering, National Taiwan Normal University, Taiwan, [2]Instrument 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 dots

Yuto Nakamura,*,[1] Satoshi Hiura,[2] Shino Sato,[1] Junichi Takayama,[2] and Akihiro Murayama[2]
[1]Faculty of Engineering, Hokkaido University, Japan, [2]GSIST, Hokkaido University, Japan

TuP-A-5 (Poster)

High-quality epitaxial growth of half-metallic Co_2FeSi films on a Co-terminated GaN(0001) surface

Shinya Yamada,*,[1,2] Yuki Goto,[1] Jun Tatebayashi,[3] Shuhei Ichikawa,[3] Yasufumi Fujiwara,[3] and Kohei Hamaya[1,2]
[1]Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Japan, [2]Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Japan, [3]Department 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 films

Che-Sin Lee,[1] Vijay Balaso Patil,*,[1] Sang-Hun Jeong,[2] and Byung-Teak Lee[1]
[1]Chonnam National University, Republic of Korea, [2]Korea Basic Science Institute, Republic of Korea

TuP-A-7 (Poster)

Effects of Bi Irradiation for the MBE Growth of GaSb on Ge(111) Vicinal Substrates

Yasutomo 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 MOVPE

Yuki 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 properties

Jia-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 Liu[6]
[1]Department of Greenergy, National University of Tainan, Tainan, Taiwan, [2]Medical Devices and Opto-Electronics Equipment Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, [3]Department of computer and communication, Kun Shan University, Tainan, Taiwan, [4]Department of Materials Science, National University of Tainan, Tainan, Taiwan, [5]Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan, [6]Institute 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 annealing

Jia-Hao Lin,*,[1] Hung-We Wu,[2] Wei-Chen Tien,[3] Cheng-Yuan Hung,[3] and Shih-Kun Liu[4]
[1]Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan, [2]Department of computer and communication, Kun Shan University, Tainan, Taiwan, [3]Medical Devices and Opto-Electronics Equipment Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, [4]Institute 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 Si_3N_4 films grown by RF-N_2 plasma exposure

Wei-Chun Chen,[1] Sheng Chen,*,[2] James Su,[1] Hung-Pin Chen,[1] Yu-Wei Lin,[1] and Chin-Pao Cheng[2]
[1]Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan, [2]Department of Mechatronic Engineering, National Taiwan Normal University, Taiwan

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

Demonstration of Germanium Doping to GaP-based Dilute Nitrides

Keisuke 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 Transistors

Dai-Jie Lin,*,[1] Yu-Hsuan Lee,[1] and Jian-Jang Huang[1,2]
[1]Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, [2]Department of Electrical Engineering, National Taiwan University, Taiwan

TuP-C-2 (Poster)

Analysis of threshold voltage in GaN MOSFETs on homoepitaxial p-type GaN layers

Daigo Kikuta,*,[1] Kenji Ito,[1] Tetsuo Narita,[1] and Tetsu Kachi[2]
[1]Toyota Central R&D Labs, Japan, [2]Nagoya University, Japan

TuP-C-3 (Poster)

Improved on-state breakdown characteristics in AlGaN/GaN MOS-HEMTs with a gate field plate

Takashi 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 AlGaN/GaN HEMTs

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

TuP-C-5 (Poster)

High Performance Normally-Off AlGaN/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]
[1]International college of Semiconductor Technology, National Chiao Tung University, Taiwan, [2]Department 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. Chen[1]
[1]Hong Kong University of Science and Technology, Hong Kong, [2]Genettice Co., Ltd., China

TuP-C-7 (Poster)

Low 0.3 V Turn-on of Gated-Anode GaN-Cap/AlGaN/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 Wakejima[1]
[1]Nagoya Institute of Technology, Japan, [2]ULVAC 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 Matsushita[3]
[1]Kagawa University, Japan, [2]Okayama University, Japan, [3]Optoelectronic 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 Detector

Piotr Martyniuk,*[,1] Krystian Michalczewski,[1] Tsung Yin Tsai,[2] Chao-Hsin Wu,[2] and Yuh-Renn Wu[2]
[1]Applied Physics Institute, Military University of Technology, Poland, [2]Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan

TuP-D-8 (Poster)

First-principles study of defect properties in radiation-detectable TlBr

Masato Ishikawa* and Takashi Nakayama
Department of Physics, Chiba University , Japan

TuP-D-9 (Poster)

Novel Composite Substrates for Thin Film AlGaInP-based High Power LEDs

Ray Hua Horng,*[,1,2,3] ShreeKant Sinha,[1] Hsiang-An Feng,[4] Cheng-Yu Chung,[4] and Chia-Wei Tu[4]
[1]Institute of Electronics, National Chiao Tung University, Taiwan, [2]Center for Emergent Functional Matter Science, National Chiao Tung University, Taiwan, [3]Department of Photonics, National Chiao Tung University, Taiwan, [4]Ingentec Corporation, Taiwan

TuP-D-10 (Poster)

Detection of Nonradiative Recombination Centers in GaPN (N:0.105%) by Below-Gap Excitation Light without Temperature Effect

Sanjida 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 Light

Norihiko Kamata,*[,1] Ken Matsuda,[1] Sota Shirai,[1] Zentaro Honda,[1] and Hideki Hirayama[2]
[1]Department of Functional Materials Science, Saitama University, Japan, [2]Quantum Optodevice Lab., RIKEN, Japan

TuP-D-12 (Poster)

Simulation Study of Front-illuminated GaN Avalanche Photodiodes with Hole-initiated Multiplication

Yangqian Wang,[1] Yuliang Zhang,[1] Yang A. Yang,[1] Xing Lu,[3] and Xinbo Zou*[,1,2]
[1]School of Information Science and Technology, ShanghaiTech University, Shanghai, China, [2]GaNology Semiconductor Co., Ltd, China, [3]School 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 epitaxy

Yuki Ishitsuka,*[,1,2] Ryuji Oshima,[1] Takeyoshi Sugaya,[1] and Yoshinobu Okano[2]
[1]National Institute of Advanced Industrial Science and Technology, Japan, [2]Tokyo City University, Japan

TuP-E-1 (Poster)

Heat transport in GaAs membranes studied by using a GaAs MEMS thermal sensor

Ya Zhang,*[,1] Boqi Qiu,[2] Shaoqing Du,[2] Naomi Nagai,[2] and Kazuhiko Hirakawa[2,3]
[1]Institute of Engineering, Tokyo University of Agriculture and Technology, Japan, [2]Institute of Industrial Science, University of Tokyo, Japan, [3]Institute 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 bolometers

Boqi Qiu,[*,1] Ya Zhang,[2] Kouichi Akahane,[3] Naomi Nagai,[1] and Kazuhiko Hirakawa[1,4]
[1]Institute of Industrial Science, University of Tokyo, Japan, [2]Tokyo University of Agriculture and Technology, Japan, [3]National Institute of Information and Communications Technology, Japan, [4]Institute for Nano Quantum Information Electronics, University of Tokyo, Japan

TuP-E-4 (Poster)

Novel Fabrication Technique of Suspended Nanowire Devices for Nanomechanical Applications

Wataru Tomita,[*,1,2] Satoshi Sasaki,[1] Kouta Tateno,[1] Hajime Okamoto,[1] and Hiroshi Yamaguchi[1,2]
[1]NTT Basic Research Laboratories, NTT Corporation, Japan, [2]Department of physics, Tohoku University, Japan

TuP-E-6 (Poster)

Threshold and Resistive Switching Behaviors in Epitaxially Regrown GaN P-N Diodes for High Temperature Applications

Kai 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 Diodes

Junichi Motohisa,[*,1,2] Hiroki Kameda,[1,2] Masahiro Sasaki,[1,2] and Katsuhiro Tomioka[1,2]
[1]Graduate School of IST, Hokkaido University, Japan, [2]RCIQE, 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 substrate

Wei-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 SiO_2/GaN MOS Structure Before and After Post Annealing

Masaaki 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 Structures

Ryo 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 Si

Yasushi 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 excitation

Moe Kikuchi,[*,1] Daisuke Uehara,[1] Bei Ma,[1] Ken Morita,[1] Hideto Miyake,[2] and Yoshihiro Ishitani[1]

[1]Graduate School of Electrical and Electronic Engineering, Chiba University, Japan, [2]Graduate School of Regional Innovation Studies, Mie University, Japan

TuP-G-6 (Poster)

MOCVD growth and characterization of Si-doped thick-AlInN epitaxial films

Mizuki Yamanaka,[*,1] Makoto Miyoshi,[1] Takashi Egawa,[1] and Tetsuya Takeuchi[2]

[1]Nagoya Institute of Technology, Japan, [2]Meijo University, Japan

TuP-G-7 (Poster)

Local phonon analysis in InGaN film by mapping of Raman peak energy

Shungo Okamoto,[*,1] Naomichi Saito,[1] Bei Ma,[1] Kensuke Oki,[1] Ken Morita,[1] Kazuhiro Ohkawa,[2] and Yoshihiro Ishitani[1]

[1]Graduate School of Electrical and Electronic Engineering, Chiba University, Japan, [2]Computer, 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 $Al_xGa_{1-x}N/Al_yGa_{1-y}N$ superlattice

Yu-Chih Chen,[*,1] Indraneel Sanyal,[1] and Jen-Inn Chyi[1,2]

[1]Department of Electrical Engineering, National Central University, Taiwan, [2]Research 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 direction

Thi Huong NGO,[1] Bernard Gil,[*,2,3] Tatiana Shubina,[3] Pierre Valvin,[2] Benjamin Damilano,[1] Stephane Vezian,[1] and Jean Massies[1]

[1]Centre de Recherche sur l'Hetero-Epitaxie et ses Applications, France, [2] Laboratoire Charles Coulomb- University Montpellier 34095 Montpellier France, France, [3]Ioffe Institute, 194021 St Petersburg, Russia, Russia

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

Picosecond Time-Resolved Excitation Dynamics and Emission Manipulation of Eu^{3+} Ions Doped into GaN

Brandon 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 Fujiwara[3]

[1]West Chester University, United States of America, [2]Lehigh University, United States of America, [3]Osaka University, Japan, [4]University 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-LED

Kexiong 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]

[1]GaN-OIL, AIST, Japan, [2]ESPRIT, AIST, Japan, [3]IFS, Tohoku University, Japan, [4]NeRI, AIST, Japan, [5]AIMR, Tohoku University, Japan, [6]IMaSS, Nagoya University, Japan

TuP-H-2 (Poster)

Growth and Deep UV Luminescent Properties of Rocksalt-Structured Ultra-Wide Bandgap MgZnO on MgO Substrates

Kentaro Kaneko,[*,1,2,3] Kyohei Ishii,[2] Mizuki Ono,[4] Kanta Kudo,[4] Takeyoshi Onuma,[4] Tohru Honda,[4] and Shizuo Fujita[2,3]
[1]Engineering Education Research Center, Kyoto University, Japan, [2]Department of Electronic Science and Engineering, Kyoto University, Japan, [3]Photonics and Electronics Science and Engineering Center, Kyoto University, Japan, [4]Department 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-CVD

Zenji Yatabe,[*,1] Koshi Nishiyama,[1] Takaaki Tsuda,[1] Kazuki Nishimura,[1] and Yusui Nakamura[1,2]
[1]Kumamoto University, Japan, [2]Kumamoto Phoenics, Japan

TuP-H-4 (Poster)

Sol-gel synthesis of highly transparent and conducting Cadmium Oxide

Cheuk Kai Gary Kwok,[*,1] Chao Ping Liu,[2] and Kin Man Yu[1,3]
[1]Department of Physics, City University of Hong Kong, Hong Kong, [2]Department of Physics, College of Science, Shantou University, China, [3]Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

TuP-H-5 (Poster)

Effect of Buffer Layer on Improvement of SnO_2 Thin Film on Sapphire Substrate Formed by Mist Chemical Vapor Deposition

Thant 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]
[1]GSST, Kumamoto University, Japan, [2]Faculty of Engineering, Kumamoto University, Japan, [3]POIE, Kumamoto University, Japan, [4]FAST, Kumamoto University, Japan, [5]Kumamoto Phoenics, Japan

TuP-H-6 (Poster)

Characterization of amorphous aluminium oxide thin films synthesized by mist-CVD

Zenji Yatabe,[*,1] Koshi Nishiyama,[1] Takaaki Tsuda,[1] Kazuki Nishimura,[1] and Yusui Nakamura[1,2]
[1]Kumamoto University, Japan, [2]Kumamoto Phoenics, Japan

TuP-H-7 (Poster)

Rectified Schottky diodes that use low-cost carbon paste/InGaZnO junctions

Chia-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 didodecylbenzothienobenzothiophene

Shion Tazuhara,[*,1] Tomoya Aiba,[1] Takashi Nagase,[1,2] Takashi Kobayashi,[1,2] Yuichi Sadamitsu,[3] and Hiroyoshi Naito[1,2]
[1]Department of Physics and Electronics, Osaka Prefecture University, Japan, [2]The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan, [3]R&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 semiconductors

Miho Higashinakaya,[*,1] Hayato Abe,[1] Takashi Nagase,[1,2] Takashi Kobayashi,[1,2] and Hiroyoshi Naito[1,2]
[1]Department of Physics and Electronics, Osaka Prefecture University, Japan, [2]The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan

TuP-J-4 (Poster)

Voltage and Frequency Dependence of Capacitance Characteristics in Organic MOS Capacitors

Yoshinari 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 Layer

Takeshi 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 Emissive and Assist Dopants

Kosuke Watanabe,[*,1] Keita Takeuchi,[1] Ryogo Abe,[1] Asuka Suzuki,[1] and Akihiko Kikuchi[1,2]
[1]Department of Engineering and Applied Sciences, Sophia University, Japan, [2]Sophia Nanotechnology Center, Japan

TuP-J-7 (Poster)

Strong Light-Matter Coupling and Photoluminescence Properties of 2D and quasi-2D Perovskite Microcavities

Shuai Zhang,[1] Limeng Ni,[2] Akshay Rao,[2] and Kenichi Yamashita[*,1]
[1]Faculty of Electrical Engineering and Electronics, Kyoto Institute of Technology, Japan, [2]Cavendish Laboratory, University of Cambridge, United Kingdom

TuP-J-8 (Poster)

Fabrication of $CH_3NH_3PbBr_3$ Based Perovskite Single Crystal Arrays by Spin-coating Method Using Hydrophobic Patterned Substrate

Ryogo Abe,[*,1] Keita Takeuchi,[1] Asuka Suzuki,[1] Kosuke Watanabe,[1] and Akihiko Kikuchi[1,2]
[1]Depatrmant of Engineering and Applied Sciences, Sophia University, Japan, [2]Sophia Nanotechnology Center, Japan

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

Temperature dependence of the intersystem crossing rate in thermally activated delayed fluorescence emitters

Takashi Kobayashi,[*,1,2] Daisuke Kawase,[1] Akitsugu Niwa,[1] Atsumi Kayamyo,[1] Takashi Nagase,[1,2] Kenichi Goushi,[3,4] Chihaya Adachi,[3,4] and Hiroyoshi Naito[1,2]
[1]Department of Physics and Electronics, Osaka Prefecture University, Japan, [2]The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Japan, [3]Center for Organic Photonics and Electronics Research, Kyushu University, Japan, [4]Japan Science and Technology Agency, ERATO, Adachi Molecular Exciton Engineering Project, Japan

TuP-SS1-1 (Poster)

First Principles Study on Electronic Structures of α-Ga_2O_3 and α-Ir_2O_2

Kazuyuki 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 sputtering

Vijay Balaso Patil,*[,1] Byung-Teak Lee,[1] and Sang-Hun Jong[2]
[1]Photonic and electronic thin film laboratory, Chonnam national university,Gwangju, Republic of Korea, [2]Gwangju Center, Korea Basic Science Institute, Gwangju, Republic of Korea

TuP-SS1-4 (Poster)

Highly rectifying contacts on $(In,Ga)_2O_3$ 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-Ga_2O_3 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-Ga_2O_3 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 $Ga_2(O,S)_3$ Alloy Films on YSZ Substrates by Mist Chemical Vapor Deposition

Kazuaki Akaiwa,*[,1] Tsubasa Hiroe,[1] Moe Nagano,[1] Tomoki Abe,[1] Motohisa Kado,[2] and Kunio Ichino[1]
[1]Department of Information and Electronics, Tottori University, Japan, [2]Toyota Motor Corporation, Japan

TuP-SS1-8 (Poster)

Electrical and structural properties of Sn-doped α-Ga_2O_3 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-Ga_2O_3 thin films on Au nanoparticles dispersed on sapphire substrates for epitaxial lateral overgrowth

Kentaro Kaneko,*[,1,2,3] Yasuhisa Masuda,[2] and Shizuo Fujita[2,3]
[1]Engineering Education Research Center, Kyoto University, Japan, [2]Department of Electronic Science and Engineering, Kyoto University, Japan, [3]Photonics and Electronics Science and Engineering Center, Kyoto University, Japan

TuP-SS1-10 (Poster)

The Thermal Stability of ϵ-Ga_2O_3 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 Wuu*
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 Cheng[2]
[1]Department of Material Science and Engineering, National Dong Hwa University, Taiwan, [2]Center 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 B_2H_6

Hisashi Yamada,[*,1] Sho Inotsume,[1,2] Naoto Kumagai,[1] Toshikazu Yamada,[1] and Mituaki Shimizu[1,2]
[1]GaN-OIL, National Institute of Advanced Industrial Science and Technology, Japan, [2]Nagoya 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. Edgar[2]
[1]Laboratoire Charles Coulomb UMR 5221 CNRS-UM, France, [2]Tim 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 Al_2O_3/GaN -

Akira Uedono,[*,1] Werner Egger,[2] Christoph Hugenschmidt,[3] and Shoji Ishibashi[4]
[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 SiO_2/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
Fukusima 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 Jagadish[1]
[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 PV

Hassanet Sodaabnlu,[*,1] Akinori Ubukata,[2] Kentaroh Watanabe,[1] Takeyoshi Sugaya,[3] Yoshiaki Nakano,[4] and Masakazu Sugiyama[1,4]

[1]Research Center for Advanced Science and Technology, The University of Tokyo, Japan, [2]Tsukuba Laboratories, Taiyo Nippon Sanso, Japan, [3]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [4]Department 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/AlGaN/GaN Heterostructure

Qifeng 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 Crystals

Szu-Yu Pan,[*,1] Zi-Xuan You,[1] Tung-Ching Lin,[1] and Jian-Jang Huang[1,2]

[1]Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, [2]Department 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 nanowires

Zhencun Pan,[*,1] Shaoyun Huang,[1] Yifeng Zhou,[1] Dong Pan,[2] Jianhua Zhao,[2] and Hongqi Xu[1]

[1]Beijing Key Laboratory of Quantum Devices, Key laboratory for the Physics and Chemistry of Nanodevices, and Department of Electronics, Peking University, China, [2]State 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 Antenna

Fangfang Ren,[*,1] Weizong Xu,[1] Jiandong Ye,[1] Hark Hoe Tan,[2] and Chennupati Jagadish[2]

[1]School of Electronic Science and Engineering, Nanjing University, China, [2]EME, RSPE, The Australian National University, Australia

WeC1-4 (Oral) 09:15 - 09:30

Telecom-band lasing nanowires at room temperature

Guoqiang Zhang,[*,1,2] Masato Takiguchi,[1,2] Kouta Tateno,[1,2] Takehiko Tawara,[1,2] Masaya Notomi,[1,2] and Hideki Gotoh[1]

[1]NTT Basic Research Laboratories, NTT Corporation, Japan, [2]NTT Nanophotonics Center, NTT Corporation, Japan

WeC1-5 (Oral) 09:30 - 09:45

n-doped InGaP Nanowire Shells in Core-Shell pn-junctions

Lisa Liborius,[*,1] Jan Bieniek,[1] Andreas Nägelein,[2] Franz-Josef Tegude,[1] Artur Poloczek,[1] and Nils Weimann[1]

[1]Department of Components for High Frequency Electronics, University of Duisburg-Essen, Germany, [2]Fundamentals of Energy Materials, Technical University Ilmenau, Germany

WeC1-6 (Oral) 09:45 - 10:00

Growth of GaAs/GaNAs/GaAs Core-Multishell Nanowires Lasing at 1μm

Mitsuki Yukimune,[*,1] Ryo Fujiwara,[1] Fumitaro Ishikawa,[1] Shula Chen,[2] Weimin M. Chen,[2] and Irina A. Buyanova[2]

[1]Graduate School of Science and Engineering, Ehime University, Japan, [2]Department 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 qubits

Yohei 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]

[1]CEMS, RIKEN, Japan, [2]Department of Applied Physics, University of Tokyo, Japan, [3]RIEC, University of Tohoku, Japan, [4]Centre for Engineered Quantum system, University of Sydney, Australia, [5]Lehrstuhl 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 dot

Sadashige 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]

[1]University of Tokyo, Japan, [2]JST PRESTO, Japan, [3]Ruhr University, Germany, [4]University of Tsukuba, Japan, [5]Riken, Japan

WeD1-5 (Oral) 09:30 - 09:45

Evaluation of Rabi frequency and coherence time in the hyperfine structure of $^{167}Er^{3+}$ in Y_2SiO_5 through coherent transients

Masaya Hiraishi,[*,1,2] Mark IJspeert,[1] Takehiko Tawara,[1,2,3] Satoru Adachi,[4] Hiroo Omi,[1,3] and Hideki Gotoh[1]

[1]NTT Basic Research Laboratories, Japan, [2]Tokyo University of Science, Japan, [3]NTT Nanophotonics Center, Japan, [4]Hokkaido University, Japan

WeD1-6 (Oral) 09:45 - 10:00

Parametric photons from confined polariton condensates driven by acoustic fields

Alexander 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 Transistors

Takafumi Uemura[*,1,2] and Tsuyoshi Sekitani[1,2]

[1]The Institute of Scientific and Industrial Research, Osaka University, Japan, [2]PhotoBIO-OIL, AIST, Japan

WeE1-3 (Oral) 09:00 - 09:15

Organic Sensor Array Distributed in Flexible and Curved Surface

Masatoshi Sakai,[*,1] Yuichi Miyai,[1] Yugo Okada,[2] Yuichi Sadamitsu,[3] Yuta Hashimoto,[3] Nozomi Onodera,[3] and Kazuhiro Kudo[1]
[1]Department of Electrical and Electronic Engineering, Chiba University, Japan, [2]Center for Frontier Science, Chiba University, Japan, [3]Center 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 security

Kazunori 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 layers

Hayato Abe,[1] Takashi Nagase,[*,1,2] Miho Higashinakaya,[1] Takashi Kobayashi,[1,2] and Hiroyoshi Naito[1,2]
[1]Department of Physics and Electronics, Osaka Prefecture University, Japan, [2]The 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 dielectric

Hirotake 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 Transistors

Srabanti 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 Structures

Fumimasa Horikiri,[*,1] Hiroshi Ohta,[2] Naomi Asai,[2] Yoshinobu Narita,[1] and Takehiro Yoshida[1]
[1]SCIOCS, Japan, [2]Hosei University, Japan

WeA2-4 (Oral) 11:15 - 11:30

Performance Limits of 2H-GaN Vertical Superjunction Schottky rectifiers, MOSFETs and HEMTs

Xiang 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 CERUTTI[1]
[1]IES, University of Montpellier, CNRS, 34000 Montpellier, France, [2]CNRS, LAAS, 31400 Toulouse, France, [3]University 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. Meyer[1]
[1]Naval Research Laboratory, United States of America, [2]KeyW Corporation, United States of America, [3]ASEE 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 Martyniuk[3]
[1]Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taiwan, [2]Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan, [3]Institute 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 phototransistor

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]
[1]Institute of Semiconductors, Chinese Academy of Sciences, China, [2]The 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 Lasers

Antonio 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 Dawson[1]
[1]University of Strathclyde, United Kingdom, [2]Australian National University, Australia

WeC2-3 (Oral) 11:00 - 11:15

Enhanced optical properties of InP nanowires by conformal polymer coating

Tuomas 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 Silicon

Daniel 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 Tm^{3+} and Yb^{3+} ions in ZnO nanowires for photovoltaic applications

Jun 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 MBE

Gordon 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 spins

Sergej Markmann,[1] Christian Reichl,[2] Werner Wegscheider,[2] and Gian Salis[*,1]
[1]IBM Research-Zurich, Switzerland, [2]ETH Zurich, Switzerland

WeD2-3 (Oral) 11:00 - 11:15

Modulation of Nuclear Quadrupole Effect by a Longitudinal Magnetic Field in Transverse Nuclear Field Formation

Sota Yamamoto,[*,1] Takuya Arakawa,[2] Ryosuke Matsusaki,[1] Reina Kaji,[1] and Satoru Adachi[1]
[1]Division of Applied Physics, Graduate School of Engineering, Hokkaido University, Japan, [2]Department 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 dependence

Annisa Noorhidayati,[*,1] Mohammad Hamzah Fauzi,[2] Shunta Maeda,[1] Ken Sato,[1] Katsumi Nagase,[1] and Yoshiro Hirayama[1,2,3]
[1]Department of Physics, Graduate School of Science, Tohoku University, Japan, [2]CSRN Tohoku University, Japan, [3]CSIS (Core Research Cluster) Tohoku University, Japan

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

Ballistic spin locking in a two-dimensional Rashba system

Makoto Kohda,[*,1,2,3] Takanori Okayasu,[1] and Junsaku Nitta[1,2,3]
[1]Department of Materials Science, Tohoku University, Japan, [2]Center for Spintronics Research Network, Tohoku University, Japan, [3]Center 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 heterostructure

Kosuke Takiguchi,[*,1] Le Duc Anh,[1,2] Takahiro Chiba,[3] Tomohiro Koyama,[4] Daichi Chiba,[4] and Masaaki Tanaka[1,5]
[1]Department of Electrical Engineering and Information Systems, The University of Tokyo, Japan, [2]Institute of Engineering Innovation, The University of Tokyo, Japan, [3]National Institute of Technology, Fukushima College, Japan, [4]Department of Applied Physics, The University of Tokyo, Japan, [5]Center 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 Applications

Arnulf Leuther,[*,1] Thomas Merkle,[1] Rainer Weber,[1] Rainer Sommer,[2] and Axel Tessmann[1]
[1]Fraunhofer IAF, Germany, [2]Fraunhofer 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 Powers

Hiroki Tanaka,[*,1] Kazunori Kobayashi,[2] Ryunosuke Izumi,[2] Safumi Suzuki,[2] and Masahiro Asada[1]
[1]Institute of Innovative Research, Tokyo Institute of Technology, Japan, [2]Department 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 HEMT

Yuya Omori,[1,2] Tomotaka Hosotani,[1,2] Taiichi Otsuji,[1,2] Katsumi Iwatsuki,[2] and Akira Satou[*,1,2]
[1]Research Institute of Electrical Communication, Tohoku University, Japan, [2]Research Organization of Electrical Communication, Tohoku University, Japan

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

High-Performance In0.53Ga0.47As FinFETs for logic and RF Applications

Edward Yi Chang,[*] Ho Quang Luc, and Chin Yueh Lin
National Chiao Tung University, Taiwan

Excursion 12:30 - 18:45

Banquet	19:00 - 21:00

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

Katsuhiro 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 Katsuhiro Tomioka
Graduate School of IST and RCIQE, Hokkaido University, Japan

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

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

Wei LUO,*,[1] Ying XUE,[1] Bei SHI,[2] Si ZHU,[1] and KeiMay LAU[1]
[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]
[1]NTT Device Technology Labs., NTT Corporation, Japan, [2]NTT Basic Research Labs., NTT Corporation, Japan, [3]NTT 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 Koblmueller*,[1]
[1]Walter Schottky Institute and Physics Department, Technical University of Munich, Germany, [2]Department 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 Noda[1]
[1]Department of Electronic Science and Engineering, Kyoto University, Japan, [2]Department 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 Hammar[1]
[1]Department of Electronics, Royal Institute of Technology, Electrum 229, 164 40 Kista, Sweden, Sweden, [2]Department 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]
[1]Department of Physics and Astronomy, Seoul National University, Republic of Korea, [2]Inter-University Semiconductor Research Centre, Seoul National University, Republic of Korea, [3]Institute 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 Przezdziecka, 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 $Ni_xCd_{1-x}O_{1+\delta}$ 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]
[1]Department of Physics, Shantou University, China, [2]Department of Physics, City University of Hong Kong, Hong Kong, [3]Materials Sciences Division, Lawrence Berkeley National Laboratory, United States of America, [4]Department 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]
[1]Saga University, Saga, Japan, [2]City University of Hong Kong, Kowloon, Hong Kong, [3]Lawrence Berkeley National Laboratory, Berkeley, CA, United States of America, [4]University 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]
[1]National Taiwan University, Taiwan, [2]National 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]
[1]Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, [2]Department of Electrical Engineering, National Taiwan University, Taiwan

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

Suppressing Interdiffusion of Si in Er-doped CeO_2 / 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 Gotoh[1]
[1]NTT Basic Research Laboratories, Japan, [2]NTT 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 /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 method

Junichi Takino,*[1,2] Tomoaki Sumi,[1] Yoshio Okayama,[1,2] Masaki Nobuoka,[1] Akira Kitamoto,[2] Masayuki Imanishi,[2] Masashi Yoshimura,[2] and Yusuke Mori[2]
[1]Panasonic Corporation, Japan, [2]Graduate school of engineering, Osaka University, Japan

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

Hydride vapor phase epitaxy reactor for bulk GaN growth

Vladislav 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]
[1]TRINITRI-Technology LLC, Russia, [2]Ioffe 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 μm/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 GaN

Hiroki Harada,*[,1] Makoto Miyoshi,[1] Takashi Egawa,[1] and Tetsuya Takeuchi[2]
[1]Nagoya Institute of Technology, Japan, [2]Meijo 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 Manaka[1]
[1]Tokyo Institute of Technology, Japan, [2]King 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]
[1]Department of Physics, City University of Hong Kong, Hong Kong, [2]Department of Physics, Comilla University, Bangladesh, [3]Key Laboratory of Microelectronic and Energy of Henan Province School of Physics and Electronic Engineering, Xinyang Normal University, China, [4]Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong

Coffee Break 10:30 - 11:00

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 Schmid[1]
[1]IBM Research Zurich, Switzerland, [2]Laboratoire des Matériaux Semiconducteurs, Institute of Materials, School of Engineering, EPFL, Switzerland, [3]Institute 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 substrate

Takuro 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 Applications

Axel 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 Lourdudoss,[1] and Yan-Ting Sun[1]
[1]Department of Applied Physics, Royal Institute of Technology-KTH, Sweden, [2]Thales Research & Technology (TRT), France, [3]III-V Lab, France

ThA2-4 (Oral) 11:45 - 12:00

Strained layer superlattices for dislocation reduction in III-V on V-groove patterned (001) silicon

Bei Shi,*[,1] Lei Wang,[1] Aidan Taylor,[2] Simone Suran Brunelli,[1] and Jonathan Klamkin[1]
[1]Department of Electrical and Computer Engineering, University of California Santa Barbara, United States of America, [2]Materials Department, University of California Santa Barbara, United States of America

ThA2-5 (Oral) 12:00 - 12:15

High-quality Epitaxial Growth of AlGaInAs-based Active Structures on a Directly-Bonded InPoSi Substrate

Claire 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 Baron[3]
[1]III-V Lab, a joint lab of 'Nokia Bell Labs', 'Thales Research and Technology' and CEA LETI, France, [2]Univ. Grenoble Alpes, CEA, LETI, France, [3]Univ. 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 cells

Noelia Vico Trivino,*[,1] Philipp Staudinger,[1] Nicolas Bologna,[1,2] Heike Riel,[1] Kirsten Moselund,[1] and Heinz Schmid[1]
[1]IBM Research-Zurich, Switzerland, [2]Electron 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 Communications

Masahiro Nada,*[,1] Fumito Nakajima,[2] Toshihide Yoshimatsu,[1] Hideaki Matsuzaki,[2] and Kimikazu Sano[1]
[1]NTT Device Innovation Center, Japan, [2]NTT Device Technology Labs., Japan

ThB2-3 (Oral) 11:30 - 11:45

Polarization Diverse Photodetector Chip Based on Waveguide Integrated MQW and Bulk Photodiodes

Tobias 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 Detectors

Steffen 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 Masselink[2]
[1]Fraunhofer HHI, Berlin, Germany, [2]Humboldt University Berlin, Departement 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 Resistance

Brandon J. Isaac,*[,1] Yuan Liu,[2] Sergio Pinna,[2] and Jonathan Klamkin[2]
[1]Materials Department, University of California Santa Barbara, United States of America, [2]Electrical 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 Reliability

Thomas Detzel,*[,1] Alain Charles,[2] Gerald Deboy,[1] Oliver Haeberlen,[1] and Timothy McDonald[2]
[1]Infineon Technologies Austria AG, Austria, [2]Infineon 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 GaN

Dong Ji,*[,1] Burcu Ercan,[1] and Srabanti Chowdhury[1,2]
[1]Department of Electrical and Computer Engineering, University of California, Davis, United States of America, [2]Department 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 Ceremony Room A 12:30-13:30