

# Program

*October 15th, Monday*

*Opening Session (10:30 - 10:45)*

## *Plenary Session I*

Plenary I-1 10:45~11:30

**Prospects for VLSI Photonics**

John Bowers

*UCSB*

Plenary I-2 11:30~12:15

**Electrical Control of Electronic Spin and Nuclear Spin in Quantum Dots**

S.Tarucha

*The University of Tokyo*

## *GaN Electron Devices*

MoA I-1 14:00~14:15

**High Temperature Operation (300°C) of npn-type GaN/InGaN Double Heterojunction Bipolar Transistors**

Atsushi Nishikawa, Kazuhide Kumakura, and Toshiki Makimoto

*NTT Basic Research Laboratories*

MoA I-2 14:15~14:30

**AlGaAs/GaAs/GaN Heterojunction Bipolar Transistors Formed by Wafer Fusion**

Chuanxin Lian, and Huili (Grace) Xing

*University of Notre Dame*

MoA I-3 14:30~14:45

**Impact of GaN Cap Thickness on Dispersion and Gate Leakage of GaN/AlGaN/GaN Deeply Recessed HEMTs**

Rongming Chu, Likun Shen, Nicholas Fichtenbaum, Zhen Chen, Stacia Keller, and Umesh Mishra

*ECE Department, University of California, Santa Barbara*

MoA I-4 14:45~15:00

**Ultrashallow All-binary AlN/GaN Heterostructures for Ultrafast HEMTs**

Debdeep Jena, Yu Cao, David Deen, Tom Zimmerman, and Huili Xing

*Department of Electrical Engineering, University of Notre Dame*

MoA I-5 15:00~15:15

**Ultrahigh Device Performance of GaN-based MOS-HEMT Structures**

Amir M. Dabiran, Andrei Osinsky, Andrew M. Wowchak, Junqing Xie, Brian Hertog, and Peter P. Chow

*SVT Associates, Inc.*

MoA I-6 15:15~15:30

**Highly Thermal Stability of Drain Current in Multi-Mesa-Gate AlGaN/GaN HEMTs**

Takahiro Tamura, Junji Kotani, Seiya Kasai, and Tamotsu Hashizume

*Reserch Center for Integrated Quantum Electronics, Hokkaido University*

MoA I-7 15:30~15:45

**Capacitively-Coupled Contacts (C<sup>3</sup>) HFET as Alternative to RF MEMS**

Grigory Simin(\*1), Michal Shur(\*2), and Remis Gaska(\*2)

*Univ. of South Carolina, Sensor Electronic Technology*

MoA I-8 15:45~16:00

**Low Resistance Ohmic Contact Formation to Dry-Etched p-GaN**

Cheng-yu Hu(\*1), J.-P. Ao(\*1), M. Okada(\*1), M. Sugimoto(\*2), T. Uesugi(\*3), T. Kachi(\*2), and Y. Ohno(\*1)

*The University of Tokushima(\*1), Toyota Motor Corp.(\*2), Toyota Central R&D Labs., Inc.(\*3)*

## *Growth and Characterization of Quantum Dots*

MoA II-1(invited) 16:30~17:00

**Controlled Crystal Structure in Patterned InAs Quantum Dot Formation By Selective Area MOCVD**

D.L. Huffaker

*UCLA*

MoA II-2 17:00~17:15

**Effect of Antimony on the Growth of InAs/GaAs Quantum Dots and its Applications for Photonic Devices at 1.3 and 1.55 $\mu$ m**

D. Guimard(\*1), M. Ishida(\*2), M. Nishioka(\*2), Y. Nakata(\*2), H. Sudo(\*3), T. Yamamoto(\*3), M. Sugawara(\*3,\*4), and Y. Arakawa(\*1)

*NanoQuine(\*1), NCRC(\*2), Fujitsu Laboratories Ltd. (\*3), QD Laser Inc.(\*4)*

MoA II-3 17:15~17:30

**Improving Long Wavelength InAs Quantum Dots by an InGaAsSb Overgrown Layer**

Meng-Jie Shiau(\*1), Pei-Chin Chiu(\*1), Tung-Po Hsieh(\*1), Mao-Nan Chang(\*2), and Jen-Inn Chyi(\*1, \*3)

*National Central University, Taiwan*

MoA II-4 17:30~17:45

**Selective Excitation Photoluminescence Spectroscopy of InAs Quantum Dots: the Study of Energy Dependent Carrier Relaxation and the Energy Level Position Determination**

Hong-Shi Ling and Chien-Ping Lee

*National Chiao Tung University*

## *Physics in Low-dimensional Electronic System*

MoB I-1(invited) 14:00~14:30

**Coherent Electron Spin Manipulation in Self-assembled Quantum Dots**

Alex Greilich(\*1), D. R. Yakovlev(\*1), A. Shabaev(\*2), Al. L. Efros(\*2), I. A. Yugova(\*1), R. Oulton(\*1), D. Reuter(\*3), A. Wieck(\*3), and M. Bayer(\*1)

*(\*1) Dortmund University, Germany(\*1), Naval Research Laboratory, Washington, USA(\*2), Bochum Ruhr-University, Germany(\*3)*

MoB I-2 14:30~14:45

**Magnetotransport through a Two-Dimensional Hole Antidot Lattice: Signatures of Berry Phase**

Ning Kang, Eisuke Abe, Yoshiaki Hashimoto, Yasuhiro Iye, and Shingo Katsumoto

*Institute for Solid State Physics, University of Tokyo*

MoB I-3 14:45~15:00

**Observation of the Pseudospin Soliton Lattice in the  $\nu=1$  Bilayer Quantum Hall State**

Akira Fukuda(\*), Daiju Terasawa(\*2), Masayuki Morino(\*2), Kazuki Iwata(\*3), Shinsuke Kozumi(\*2), Michiro Suzuki(\*2), Norio Kumada(\*4), Yoshiro Hirayama(\*2), Zyun F. Ezawa(\*2), and Anju Sawada(\*1)

*Research Center for Low Temperature and Materials Sciences, Kyoto University(\*1), Graduate School of Science,*

Tohoku University(\*2), Graduate School of Science, Kyoto University(\*3), NTT Basic Research Laboratories, NTT Corporation(\*4)

MoB I-4 15:00~15:15

**Coulomb Drag By Forward Momentum Transfer between One-dimensional Electron Systems**

M. Muhammad(\*1), S. T. Herbert(\*2), R. S. Newrock(\*1), and P. Debray(\*1)

Department of Physics, University of Cincinnati, USA (\*1), Department of Physics, Xavier University, USA (\*2)

MoB I-5 15:15~15:30

**Ballistic Transport and Quantum Hall Effect in a Curved Two-dimensional Electron Gas**

K.-J. Friedland, R. Hey, H. Kostial, A. Riedel, and D. Maude

Paul-Drude-Institute for Solid State Electronics

MoB I-6(invited) 15:30~16:00

**Electrically Controlled Quantum Coherences of Nuclear Spins in GaAs Point Contacts**

Go Yusa(\*1,\*2,\*3), Koji Muraki(\*2), and Yoshiro Hirayama(\*1,\*4)

Department of Physics Tohoku University(\*1), NTT Basics Research Laboratory(\*2), PRESTO(\*3), SORST(\*4)

## Characterization, Nanoprobe, and Nanomechanics I

MoB II-1(invited) 16:30~17:00

**Interactions between Coherent Optical Phonons and Excitonic Quantum Beats in GaAs/AlAs Multiple Quantum Wells: Strategy for Enhancement of Terahertz Radiation from Coherent Optical Phonons**

M. Nakayama(\*1) and K. Mizoguchi(\*2)

Osaka City Univ.(\*1), Osaka Prefecture Univ.(\*2)

MoB II-2 17:00~17:15

**Quantum Well and Cavity Structures Grown on GaAs(110) by MBE**

Rudolf Hey, Uwe Jahn, Qian Wan, and Achim Trampert

Paul-Drude-Institute for Solid State Electronics

MoB II-3 17:15~17:30

**Thermoelastic Damping in GaAs Micromechanical Resonators**

Hajime Okamoto(\*1), Daisuke Ito(\*1,\*2), Koji Onomitsu(\*1), and Hiroshi Yamaguchi(\*1,\*2)

NTT Basic Research Laboratories(\*1), Tohoku Univ. (\*2)

MoB II-4 17:30~17:45

**Incorporation of N in High N-content GaAsN Films Investigated by Raman Scattering**

Sakuntam Sanorpim(\*1), Panada Panpech(\*1), Sathon Vijarnwannaluk(\*1), Fumihiro Nakajima(\*2), Shigeyuki

Kuboya(\*2), Ryuji Katayama(\*2), and Kentaro Onabe(\*2)

Chulalongkorn University (\*1), The University of Tokyo (\*2)

## Oxide Semiconductors -Field effect and doping-

MoC I-1(invited) 14:00~14:30

**Oxide-based Transparent and Printed Electronics**

Gregory S. Herman

Hewlett-Packard Company

MoC I-2 14:30~14:45

**Relationship of Carrier Transport Properties, Local Atomic Configuration and Tails States in Ionic Amorphous Semiconductor, In-Ga-Zn-O**

Kenji Nomura(\*1), Toshio Kamiya(\*1,\*2), Hiromichi Ohta(\*1), Tomoya Uruga(\*3), Masahiro Hirano(\*1), and Hideo

Hosono(\*1,\*2,\*4)

ERATO-SORST(\*1), Tokyo Tech. (\*1,\*4), SPring-8 (\*3)

MoC I-3 14:45~15:00

**Metallic Conduction of an Accumulation Layer in Insulating SrTiO<sub>3</sub> Single Crystal with an Electric Double Layer Transistor Configuration**

K. Ueno(\*1), A. Ohtomo(\*1), H. Shimotani(\*1), S. Nakamura(\*2), T. Nojima(\*2), N. Kimura(\*2), H. Aoki(\*2), Y. Iwasa(\*1,\*3), and M. Kawasaki(\*1,\*3)

IMR Tohoku Univ. (\*1), CLTS Tohoku Univ. (\*2), CREST JST (\*3)

MoC I-4 15:00~15:15

**Molecular Beam Epitaxy of the Semiconducting Oxide SnO<sub>2</sub>**

M. E. White, M. Y. Tsai, and J. S. Speck

Materials Department, University of California Santa Barbara

MoC I-5 15:15~15:30

**Effect of Working Pressure on Structural, Electrical, and Optical Properties of Phosphorus-doped p-type ZnO Thin Films Grown by RF-magnetron Sputtering**

Dae-Kue Hwang, Min-Suk Oh, Yong-Seok Choi, and Seong-Ju Park

Gwangju Institute of Science and Technology (GIST)

*Poster Session, Oct.15th, Monday (17:45-19:15)*

MoC P1

**Reduction of Self-heating in AlGa<sub>N</sub>/Ga<sub>N</sub> HFETs Using Thick AlN Surface Passivation Films**

N. Tanaka(\*1), Y. Sumida(\*2), and T. Suzuki(\*1)

Japan Advanced Institute of Science and Technology(\*1), POWDEC K. K. (\*2)

MoC P2

**Reduction of Buffer-related Current Collapse in Ga<sub>N</sub> FETs under Favor of a Field Plate**

Keiichi Itagaki, Atsushi Nakajima, and Kazushige Horio

Shibaura Institute of Technology

MoC P3

**Current Collapse Characteristic of AlGa<sub>N</sub>/Ga<sub>N</sub> MIS-HEMT with Multilayered Insulator Structure**

Shuichi Yagi(\*1), Mitsuaki Shimizu(\*1), Toshihide Ide(\*1), Hajime Okumura(\*1), Hiromichi Ohashi(\*1), Kazuo Arai(\*1), Yoshiki Yano(\*2), Akinori Ubukata(\*2), and Nakao Akutsu(\*2)

National Institute of Advanced Industrial Science and Technology(\*1), Taiyo Nippon Sanso Corporation(\*2)

MoC P4

**Transport Properties of AlGa<sub>N</sub>/Ga<sub>N</sub> Heterostructures and MOSHFETs: An Enhancement of the Effective Carrier Velocity**

P. Kordos, R. Stoklas, D. Gregusova, and J. Novak

Inst. Electr. Engn., Slovak Academy of Sciences

MoC P5

**Hydrogen Sensors Based on Pt-AlGa<sub>N</sub>/Ga<sub>N</sub> Back-to-back Schottky Diode**

Xinhua Wang, Xiaoliang Wang, Chun Feng, Baozhu Wang, Cuibai Yang, Junxi Wang, Hongling Xiao, Cuimei Wang, Junxue Ran, Guoxin Hu, Yiping Zeng, and Jinmin Li

Institute of Semiconductors, Chinese Academy of Sciences

MoC P6

**AlGa<sub>N</sub>/Ga<sub>N</sub>/InGa<sub>N</sub>/Ga<sub>N</sub> DH-HEMTs Structure with an AlN Interlayer Grown by MOCVD**

Tang Jian, Xiaoliang Wang, and Hongling Xiao

Institute of Semiconductors, Chinese Academy of Sciences

MoC P7

**High Performance of GaN Metal-Semiconductor-Metal Photodetectors with Chlorine Surface Treatment**

Hsin-Ying Lee, Po-Sung Chen, and Ching-Ting Lee

*National Cheng Kung University, Tainan, Taiwan, Republic of China*

MoC P8

**Investigation of AlGaIn/GaN MOS-HEMTs with Gate Insulator Grown by Photoelectrochemical Oxidation Method**

Li-Hsien Huang, Shu-Hao Yeh, and Ching-Ting Lee

*Institute of Microelectronics, Department of Electrical Engineering, National Cheng-Kung University*

MoC P9

**Effects of Surface States on Hydrogen Sensing Performance of Pt-GaN Schottky Diodes**

Yoshihiro Irokawa, Yoshiki Sakuma, and Takashi Sekiguchi

*National Institute for Materials Science*

MoC P10

**AlN/AlGaIn/GaN MIS-HEMTs with Recessed Source/Drain Ohmic Contact**

S. Lawrence Selvaraj, Tsuneo Ito, Yutaka Terada, and Takashi Egawa

*Research Center for Nano-Device and System, Nagoya Institute of Technology*

MoC P11

**DC Characteristics of AlGaIn/GaN High Electron Mobility Transistors**

Masaki Inada(\*1), Mitsuaki Shimizu(\*1), Guaxi Piao(\*1), Akinori Ubukata(\*2), Yoshiki Yano(\*2), and Nakao Akutsu(\*2)

*AIST(\*1), Taiyo Nippon Sanso Co.(\*2)*

MoC P12

**Ammonia Molecular Beam Epitaxy of AlGaIn/GaN HEMTs on 6H-SiC**

Andrea L. Corrión, Christiane Poblentz, Likun Shen, Felix Recht, Rongming Chu, Chang Soo Suh, Umesh K. Mishra, and James S. Speck

*University of California, Santa Barbara*

MoC P13

**Effect of a Trace of Water Vapor on Ohmic Contact Formation for AlGaIn/GaN High Electron Mobility Transistors**

W.S. Lau, Joy B.H. Tan, and W.T. Wong

*Nanyang Technological University, School of Electrical and Electronics Engineering*

MoC P14

**Fianite - Multifunctional Dielectric Material for III-V Electronics**

A.N.Buzynin(\*1), V.V.Osiko(\*1), Yu.N.Buzynin(\*2), E.E.Lomonova(\*1), O.I.Khrykin(\*2), Yu.N.Drozhdov(\*2), and A.E.Parafin(\*2)

*A.M.Prokhorov General Physics Institute, Russian Academy of Sciences(\*1), Institute for Physics of Microstructure, Russian Academy of Sciences(\*2)*

MoC P15

**AlGaIn/GaN HEMTs Grown by Ammonia-MBE on SiC with and Output Power Density of >11W/mm**

Christiane Poblentz(\*1), Andrea Corrión(\*1), Felix Recht(\*2), Chang Soo Suh(\*2), Rongming Chu(\*2), Likun Shen(\*2), James Speck(\*1), and Umesh Mishra(\*2)

*Materials Department, University of California, Santa Barbara(\*1), Electrical and Computer Engineering Department, University of California, Santa Barbara(\*2)*

MoC P16

**Properties of HfO<sub>2</sub> Deposited on AlGaIn/GaN Structures Using e-beam Technique**

V. Tokranov(\*1), S. Oktyabrsky(\*1), S.L. Rumyantsev(\*2), M.S. Shur(\*2), N. Pala(\*3), R. Jain(\*3), J. Yang(\*3), and R.

Gaska(\*3)

*Coll. of Nanoscale Sci. & Eng., Univ. at Albany(\*1), Rensselaer Polytechnic Institute(\*2), Sensor Electronic Technology, Inc. (\*3)*

MoC P17

**MOCVD growth of N-polar AlGa<sub>N</sub>/Ga<sub>N</sub> Heterostructures for FET Applications**

Stacia Keller, Rongmin Chu, Chang Soo Suh, Zhen Chen, Nicholas Fichtenbaum, Motoko Furukawa, Steven P. DenBaars, and Umesh K. Mishra

*University of California Santa Barbara*

MoC P18

**Lattice-matched AlInN Films Grown by Metal Organic Vapor Phase Epitaxy**

J. Z. Shang, M. H. Mao, Z. L. Fang, B. L. Liu, B. P. Zhang, J. Z. Yu, and Q. M. Wang

*Xiamen University*

MoC P19

**Temperature-dependent High-Frequency Performance of Deep Submicron Ion-Implanted AlGa<sub>N</sub>/Ga<sub>N</sub> HEMTs**

Y. Pei(\*1), R. Cuervo(\*1,\*2), F. Recht(\*1), N. Fichtenbaum(\*1), S. Keller(\*1), S. P. Denbaars(\*1), F. Calle(\*2), and U. K. Mishra(\*1)

*University of California, Santa Barbara (\*1), Universidad Politecnica de Madrid(\*2)*

MoC P20

**Trap States in n-GaN Grown on AlN/Sapphire Template by MOVPE**

Tsuneo Ito(\*1,\*2), Masao Yoshikawa(\*1), Arata Watanabe(\*1), and Takashi Egawa(\*1)

*Nagoya Institute of Technology(\*1), DOWA electronics Materials Co.,LTD.(\*2)*

MoC P21

**Fabrication and Analysis of GaN Nanorods on the Patterned SOI Substrate by MBE**

Jonguk Seo, Shigehiko Hasegawa, and Hajime Asahi

*The Institute of Scientific and Industrial Research, Osaka University*

MoC P22

**Growth Control of GaN Nanowires Grown by Catalyst-assisted Metal Organic Vapor Deposition**

Akinori Tajima(\*1), Yoku Inoue(\*1), Akihiro Ishida(\*1), and Hidenori Mimura(\*2)

*Department of Electrical and Electronic Engineer, Shizuoka University(\*1), The Research Institute of Electronics, Shizuoka University(\*2)*

MoC P23

**Growth and Density Control of GaN Nanopillars for Phosphor Applications**

Satoshi Takeda(\*1), Yoku Inoue(\*2), Akihiro Ishida(\*2), and Hidenori Mimura(\*3)

*The Graduate School of Electronic Science and Technology, Shizuoka University(\*1), Faculty of Engineering, Shizuoka University(\*2), The Research Institute of Electronics, Shizuoka University(\*3)*

MoC P24

**Growth of AlN/GaN Coaxial Nanowire**

T.Murakami(\*1), Y.Inoue(\*1), A.Ishida(\*1), and H.Mimura(\*2)

*Department of Electrical and Electronic Engineer, Shizuoka University(\*1), The Research Institute of Electronics, Shizuoka University(\*2)*

MoC P25

**Single Polar Stranski-Krastanov GaN/AlN Quantum Dots Grown by Molecular Beam Epitaxy**

D. Simeonov, A. Dussaigne, R. Butte, and N. Grandjean

*Ecole Polytechnique Federale de Lausanne (EPFL)*

MoC P26

**Influence of Si Doping on Size of GaN Quantum Dots Grown by Molecular Beam Epitaxy under Ga-rich Conditions**

Nobuto Managaki and Norio Iizuka

*Corporate Research & Development Center, Toshiba Corp*

MoC P27

**Structural and Optical Properties InN/GaN Nanodots Grown by Metalorganic Chemical Vapor Deposition**

Wen-Hao Chang, Lin Lee, Ching-Yu Chen, Wen-Che Tsai, Hsuan Lin, Wu-Ching Chou, Wei-Kuo Chen, and Ming-Chih Lee

*Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan*

MoC P28

**Improved Growth Conditions for GaN by the Acidic Ammonothermal Route**

Dirk Ehrentraut(\*1), Yuji Kagamitani(\*1), Naruhiko Hoshino(\*1), Chiaki Yokoyama(\*1), Tsuguo Fukuda(\*1), and Hirohisa Itoh(\*2)

*Tohoku University(\*1), Mitsubishi Chemical Corporation(\*2)*

MoC P29

**Characterization of GaN Films Grown by the Acidic Ammonothermal Technique**

Naruhiko Hoshino(\*1), Yuji Kagamitani(\*1), Dirk Ehrentraut(\*1), Tsuguo Fukuda(\*1), Koji Hatanaka(\*2), Hiroshi Fukumura(\*3), Hirohisa Itoh(\*4), Katsuji Fujii(\*5), and Takafumi Yao(\*5)

*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University(\*1), Research Institute for Electronic Science, Hokkaido University(\*2), Department of Chemistry, Graduate school of Science, Tohoku University(\*3), Mitsubishi Chemical Corporation(\*4), Center for Interdisciplinary Research, Tohoku University(\*5)*

MoC P30

**Multi-wafer Atmospheric Pressure MOVPE Reactor for Nitride Semiconductors and ex-situ Dry Cleaning of Reactor Components by Chlorine Gas for Stable Operation**

Hiroki Tokunaga, Yasushi Fukuda, Akinori Ubukata, Kazutada Ikenaga, Yoshiaki Inaishi, Takashi Orita, Satoshi Hasaka, Yuichiro Kitamura, Akira Yamaguchi, Shuichi Koseki, Kunimasa Uematsu, Nobuyasu Tomita, Nakao Akutsu, and Koh Matsumoto

*TAIYO NIPPON SAN SO*

MoC P31

**Effects of Growth Conditions on the Properties of High Al Composition  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  Films Grown by MOCVD**

Xiaoyan Wang, Xiaoliang Wang, Guoxin Hu, Hongling Xiao, Cuimei Wang, Junxue Ran, Jianping Li, Yiping Zeng, and Jinmin Li

*Institute of Semiconductors, Chinese Academy of Sciences, China*

MoC P32

**Study of Composition Control and Capping of MOVPE Grown InGaN/ $\text{In}_x\text{Al}_y\text{Ga}_{1-x-y}\text{N}$  MQW Structures**

M.Ali, S. Suihkonen, O. Svensk, P.T. Torma, M. Sapanen, H. Lipsanen, M.A. Odnoblyudov, and V.E. Bougrov

*Micro and Nanosciences Laboratory, Helsinki University of Technology*

MoC P33

**Impurity Incorporation in Heteroepitaxial N-face and Ga-face GaN Grown by MOCVD**

N. A. Fichtenbaum, T. E. Mates, S. Keller, S. P. DenBaars, and U. K. Mishra

*University of California, Santa Barbara (UCSB)*

MoC P34

**Epitaxial Growth of InN Layer on Sapphire Substrate by MOCVD and the Influence of Two-step Growth on Structural Properties**

Keon-Hun Lee(\*1), Hee Jin Kim(\*1), Hyunseok Na(\*2), Dong Hyuk Kim(\*1), Seung Soo Oh(\*1), Sung Hyun Park(\*1), Tae-Yeon Seong(\*2), and Euijoon Yoon(\*1)

*Seoul National University (\*1), Korea University (\*2)*

MoC P35

**InGaN Growth on ZnO (0001) Substrate by Metalorganic Vapor Phase Epitaxy**

Yohjiro Kawai, Shinya Ohsuka, Motoaki Iwaya, Satoshi Kamiyama, Hiroshi Amano, and Isamu Akasaki  
*Meijo university*

MoC P36

**Electronic Structures of Oxygen Defect and Hydrogen in Amorphous Oxide Semiconductor, a-In-Ga-Zn-O**

Toshio Kamiya(\*1), Kenji Nomura(\*2), Masahiro Hirano(\*2,\*3), and Hideo Hosono(\*1,\*2,\*3)  
*Materials and Structures Laboratory, Tokyo Institute of Technology(\*1), ERATO-SORST, Japan Science and Technology Agency(\*2), Frontier Collaborative Research Center, Tokyo Institute of Technology(\*3)*

MoC P37

**Carrier Transport Properties of Widegap p-type Layered Oxychalcogenides, LaCuOCh (Ch = chalcogen)**

Hidenori Hiramatsu(\*1), Maiko Kikuchi(\*2), Hiroshi Yanagi(\*2), Toshio Kamiya(\*2), Kazushige Ueda(\*3), Hiromichi Ohta(\*4), Masahiro Hirano(\*1), and Hideo Hosono(\*2)  
*ERATO-SORST, Japan Science and Technology Agency(\*1), Tokyo Institute of Technology(\*2), Kyushu Institute of Technology(\*3), Nagoya University(\*4)*

MoC P38

**Helicon-wave-excited Plasma Sputtering Deposition of CuAlO<sub>2</sub> Thin Films**

Satoru Takahata(\*1), Takashi Imao(\*1), Hisayuki Nakanishi(\*1), Mutsumi Sugiyama(\*1), and Shigefusa F.Chichibu(\*2)  
*Tokyo University of Science(\*1), Tohoku University(\*2)*

MoC P39

**Ferromagnetic Rutile Co<sub>x</sub>Ti<sub>1-x</sub>O<sub>2-δ</sub> Heteroepitaxy on Wurtzite GaN and ZnO**

Yasushi Hirose(\*1), Taro Hitosugi(\*1,\*2), Junpei Kasai(\*1), Yutaka Furubayashi(\*1), Kiyomi Nakajima(\*3), Toyohiro Chikyow(\*3), Seiji Konuma(\*1), Toshihiro Shimada(\*1,\*2), and Tetsuya Hasegawa(\*1,\*2)  
*Kanagawa Academy of Science and Technology(\*1), Univ. of Tokyo(\*2), National Institute for Material Science(\*3)*

MoC P40

**Photoemission Spectroscopy and X-ray Absorption Spectroscopy of Transition Metal-doped TiO<sub>2</sub> Films Epitaxially Grown on Atomically flat Nb-doped TiO<sub>2</sub>(110)**

Masao Katayama(\*1,\*2), Takatoshi Abe(\*1), Takeo Ohsawa(\*1), Hideomi Koinuma(\*2,\*3), Isao Ohkubo(\*4), Hiroshi Kumigashira(\*4), Masaharu Oshima(\*4), and Yuji Matsumoto(\*1,\*2)  
*Tokyo Institute of Technology(\*1), CREST-JST(\*2), Graduate School of Frontier Science, The Univ. of Tokyo(\*3), Department of Applied Chemistry, The Univ. of Tokyo(\*4)*

MoC P41

**Magnetic and Magneto-transport Properties of ZnMnO/ZnO Heterostructure**

Keiichiro Masuko, Atsushi Ashida, Takeshi Yoshimura, and Norifumi Fujimura  
*Osaka Prefecture University*

MoC P42

**Electro-Optic Properties of ZnO:Mn Epitaxial Thin Films**

Takeshi Oshio, Keiichiro Masuko, Atsushi Ashida, Takeshi Yoshimura, and Norifumi Fujimura  
*Osaka Prefecture University*

MoC P43

**Study of Structure and Optical Properties of Ni-doped ZnO Thin Films**

G.Srinivasan(\*1,\*2), and J.Kumar1(\*1)  
*Crystal Growth Centre, Anna University(\*1), RMD Engineering College (\*2)*

MoC P44



**Properties of Wide Bandgap  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Semiconductors Grown by Molecular Beam Epitaxy**

Takayoshi Oshima(\*1), Norihito Suzuki(\*2), Naoki Arai(\*2), Shigeo Ohira(\*2), and Shizuo Fujita(\*3)

*Dept. Elec. Sci. & Eng., Kyoto Univ. (\*1), Nippon Light Metal Company, Ltd. (\*2), Int. Innovation Center, Kyoto Univ. (\*3)*

MoC P45

**Wet Chemical Etching Behavior of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Single Crystal**

Shigeo Ohira and Naoki Arai

*Nippon Light Metal Company*

MoC P46

**Synthesis and Characterization of Nano- In<sub>2</sub>O<sub>3</sub>**

Huang Shizhen, Huang Zhaoxin, and Lin Wei

*Fuzhou University*

MoC P47

**Photoelectron Spectroscopic Study of C12A7:e<sup>-</sup> Cathode/Alq<sub>3</sub> and LaCuOSe Anode/NPB Interfaces: Formation of Low Carrier Injection Barriers for OLEDs**

Hiroshi Yanagi(\*1), Ki-Beom Kim(\*1), Maiko Kikuchi(\*1), Masashi Miyakawa(\*2), Hidenori Hiramatsu(\*3), Kenji Nomura(\*3), Toshio Kamiya(\*1,\*3), Masahiro Hirano(\*2,\*3), and Hideo Hosono(\*1,\*2,\*3)

*MSL, Tokyo Tech. (\*1), FCRC, Tokyo Tech. (\*2), ERATO-SORST, JST (\*3)*

MoC P48

**Flux-mediated Epitaxy of ScAlMgO<sub>4</sub>(0001) Thin Films**

Yuji Matsumoto(\*1), Takuma Obata(\*1), Takashi Ishii(\*1,\*2), Ryota Takahashi(\*1), Isao Ohkubo(\*3), Msaharu Oshima(\*3), Kiyomi Nakajima(\*4), Toyohito Chikyow(\*4), and Hideomi Koinuma(\*5)

*Materials and Structures Laboratory Tokyo Tech (\*1), Shinkosha Co. (\*2), Department of Applied Chemistry, The University of Tokyo (\*3), National Institute for Materials Science (\*4), Graduate School of Frontier Science, The University of Tokyo (\*5)*

MoC P49

**Optimization of Injection Quantity and Mixing Fraction of High Vapor Pressure Organic Solvent to Form SiO<sub>2</sub> Film on Flashing Spray CVD**

Motohiro Oshima(\*1), Daiichiro Kimura(\*1), Tomoya Tsuchida(\*1), Masanori Terasaka(\*2), Koji Tominaga(\*2), Yutaka Yamagishi(\*2), Motoi Nakao(\*3), Jiro Senda(\*1), and Kozo Ishida(\*2)

*Department of Engineering, Doshisha Univ. (\*1), HORIBA, Ltd. (\*2), Department of Engineering, Kyushu Institute of Technology Univ. (\*3)*

MoD P1

**Spectral Width Dependence of Residual Carrier Effect on Nonlinear Optical Response of Weakly Confined Excitons**

O. Kojima, T. Isu, J. Ishi-Hayase, A. Kanno, R. Katouf, M. Sasaki, and M. Tsuchiya

*NiCT, Kobe Univ., The Univ. of Tokushima, CREST-JST*

MoD P2

**Photoluminescence Studies on Individual Nitrogen Impurity Centers in GaP**

Michio Ikezawa(\*1), Yoshiki Sakuma(\*2), and Yasuaki Masumoto(\*1)

*Tsukuba Univ. (\*1), NIMS (\*2)*

MoD P3

**Ultrafast Photoexcited Carrier Dynamics in GaAs:Er,O by Pump and Probe Transmission Spectroscopy**

K. Shimada(\*1), S. Takemoto(\*1), K. Hidaka(\*1), Y. Terai(\*1), M. Tonouchi(\*2), and Y. Fujiwara(\*1)

*Division of Materials and Manufacturing Engineering, Graduate School of Engineering, Osaka University (\*1), Institute of Laser Engineering, Osaka University (\*2)*

MoD P4

**Nonradiative Processes at Low Temperature in Er,O-codoped GaAs Grown by Organometallic Vapor Phase Epitaxy**

A.Fujita(\*1), T. Tokuno(\*1), K. Hidaka(\*1), K. Fujii(\*1), K. Tachibana(\*1), H. Ichida(\*2), Y. Terai(\*1), Y. Kanematsu(\*2), and Y. Fujiwara(\*1)

*Division of Materials and Manufacturing Science, Graduate School of Engineering(\*1), Venture Business Laboratory, Center for Advanced Science and Innovation(\*2)*

MoD P5

**Temperature Dependences of Charged Excitons in Low-density InAs Quantum Dot Systems**

Masato Ohmori(\*1,\*2), Kousuke Torii(\*2), and Hiroyuki Sakaki(\*1,\*2)

*Toyota Technological Institute(\*1), Institute of Industrial Science, University of Tokyo(\*2)*

MoD P6

**Electron Tunneling through Single Self-assembled InAs Quantum Dots Coupled to Nanogap Electrodes**

K. Shibata, M. Jung, C. Buizert, A. Oiwa, K. Hirakawa, T. Machida, and S. Tarucha

*Institute of Industrial Science and CINQIE, University of Tokyo*

MoD P7

**Control of Shell Filling with Coulomb Interaction in Quantum Dots Side-Coupled to Quantum Wires**

Tomohiro Otsuka, Eisuke Abe, Yasuhiro Iye, and Shingo Katsumoto

*Institute for Solid State Physics, University of Tokyo*

MoD P8

**Band Warping Effect Appeared in Commensurability Oscillations in Antidot Lattices of a Two-dimensional Hole Gas**

Ning Kang, Eisuke Abe, Kazuya Suzuki, Yasuhiro Iye, and Shingo Katsumoto

*Institute for Solid State Physics, University of Tokyo*

MoD P9

**Magneto-capacitance Study of an n-AlGaAs/GaAs Heterojunction Supporting a Sizable DC Current**

Takuya Kawazu(\*1,\*2) and Hiroyuki Sakaki(\*1,\*2,\*3)

*National Institute for Materials Science (\*1), Univ. of Tokyo (\*2), Toyota Technological Institute (\*3)*

MoD P10

**Tunneling Mechanism of GaAs Ultrashallow Sidewall Tunnel Junction**

Takeo Ohno(\*1), Yutaka Oyama(\*1), Shota Sato(\*1), and Jun-ichi Nishizawa(\*2)

*Tohoku University(\*1), Semiconductor Research Institute(\*2)*

MoD P11

**Bistability Operation of Photocurrent due to Wave-function Coupling of Wannier-Stark Localization States in a GaAs/AlAs Superlattice**

Takayuki Hasegawa and Masaaki Nakayama

*Osaka City University*

MoD P12

**Properties of TlBr Related to Ionic Transport and Presence of Defects**

Vaidotas Kazukauskas, Andrius Jurgilaitis, Juozas-Vidmantis Vaitkus, Vladimir Gostilo, and Michail Shorohov

*Vilnius University*

MoE P1

**Nitrogen Delta-doping in GaP and Single-Photon Emission from Individual Nitrogen Pair**

Yoshiki Sakuma(\*1), Michio Ikezawa(\*2), and Yasuaki Masumoto(\*2)

*National Institute for Materials Science(\*1), University of Tsukuba(\*2)*

MoE P2

**Exciton Fine Structure of Isoelectronic Centers in Nitrogen Doped GaAs**

Takashi Kita, Yukihiro Harada, Takumi Inoue, and Osamu Wada  
*Kobe University*

MoE P3

**Experimental Investigation of Anisotropic Optical Transition Matrix Elements in [110]-Oriented InGaAs/InAlAs Quantum Well**

Kenichi Yamashita(\*1), Hiromitsu Asai(\*2), and Kunishige Oe(\*1)  
*Kyoto Inst. Tech. (\*1), NTT Photon. Lab. (\*2)*

MoE P4

**Laser-Induced Formation of Nonradiative Centers Observed by Two-Wavelength Excited Photoluminescence**

Hirohisa Ogawa(\*1), Naotake Uchiyama(\*1), Norihiko Kamata(\*1), and Yasuhiko Arakawa(\*2)  
*Saitama Univ. (\*1), RCAST, Univ. of Tokyo (\*2)*

MoE P5

**Refractive Index of TIGaAs**

Kazuyoshi Ohnishi, Masaki Shiba, Musa Yamakage, and Yasutomo Kajikawa  
*Shimane University*

MoE P6

**Process-free Estimation of Threshold Current Density of InAs Quantum Dot Laser**

N. Kumagai, K. Watanabe, M. Ishida, Y. Nakata, N. Hatori, H. Sudo, T. Yamamoto, M. Sugawara, and Y. Arakawa  
*INQIE, IIS, RCAST, The Univ. of Tokyo, Fujitsu Laboratories Ltd., Fujitsu Ltd., OITDA, and QD Laser Inc.*

MoE P7

**Effects in Nanostructure**

Gagik Shmavonyan  
*State Engineering University of Armenia*

MoE P8

**Polarized Raman Spectroscopy of Vertically Aligned Single-walled Carbon Nanotubes**

Zhengyi Zhang, Yuhei Miyauchi, Erik Einarsson, and Shigeo Maruyama  
*The University of Tokyo*

MoE P9

**Resonant Tunneling of Electrons through Single Self-assembled InAs Quantum Dot at Room Temperature Studied with Conductive AFM Tip**

Ichiro Tanaka(\*1), Yoshinobu Tada(\*1), Shigeki Nakatani(\*1), Kazuyuki Uno(\*1), Masakazu Azuma(\*1), Kazuyoshi Umemura(\*1), Itaru Kamiya(\*2), and Hiroyuki Sakaki(\*2)  
*Wakayama Univ. (\*1), Toyota Technological Institute (\*2)*

MoE P10

**Quantitative Imaging of Residual Strain Profile in Large Diameter GaAs Substrates**

Masayuki Fukuzawa and Masayoshi Yamada  
*Kyoto Institute of Technology*

MoE P11

**Electronic Structure of a Stacking Fault in a Commercial GaAs:Si Wafer**

Y. Ohno(\*1), T. Taishi(\*1), I. Yonenaga(\*1), and S. Takeda(\*2)  
*IMR, Tohoku Univ. (\*1), Osaka Univ. (\*2)*

MoE P12

**Characterizations of Proton-irradiated AlGaIn/GaN Nanowire Devices**

H.Y. Kim(\*1), J.H. Ahn(\*1), M.A. Mastro(\*2), R. Holm(\*2), R.L. Henry(\*2), and C.R. Eddy Jr. (\*2), and J. Kim(\*1)

*Korea Univ>(\*1), US Naval Reserch Laboratory(\*2)*

MoE P13

**SEM Investigations of the Surface and Cross-Section Features of ZnO NWs Under FIB Treatment**

G.Sh. Shmavonyan(\*1), D. Krueger(\*2), T. Schmidt(\*2), and J. Falta(\*2)

*State Engineering University of Armenia(\*1), University of Bremen(\*2)*

MoE P14

**Surface Phase Transition Triggered by MnAs Deposition on GaAs(001) c(4x4)**

Jun Okabayashi, Toshiaki Arai, Yuriko Ueno, and Junji Yoshino

*Department of Physics, Tokyo Institute of Technology*

MoE P15

**Morphology and Local Electronic Properties in Nanoscaled MnAs Dots on Sulfur-passivated GaAs (001)**

Jun Okabayashi, Yuriko Ueno, and Junji Yoshino

*Department of Physics, Tokyo Institute of Technology*

MoE P16

**Magneto-optical properties of GaP Single Crystal**

M S Omar and T A Abbas

*University of Salahaddin, Iraq*

*October 16th, Tuesday*

*Spintronics*

TuA I-1(invited) 9:15~9:45

**Spin-Related Phenomena of TiO<sub>2</sub>:Co**

T. Fukumura(\*1), H. Toyosaki(\*1), K. Ueno(\*1), M. Nakano(\*1), and M. Kawasaki(\*1,\*2)

*Tohoku University(\*1), Japan Science and Technology Agency(\*2)*

TuA I-2 9:45~10:00

**Optical Spin Injection in GaAs-Co<sub>2</sub>MnAl Heterostructures**

Samih Isber, Young Ju Park, Jagadeesh S. Moodera, and Don Heiman

*Northeastern University*

TuA I-3 10:00~10:15

**Magneto-elastic Coupling in GaMnAs Studied by a Micromechanical Cantilever**

Koji Onomitsu, Imran Mahboob, Hajime Okamoto, and Hiroshi Yamaguchi

*NTT Basic Research Laboratories*

TuA I-4 10:15~10:30

**Ultrafast Spin Dynamics in Ferromagnetic Semiconductor GaMnAs**

Y. Hashimoto, S. Kobayashi, and H. Munekata

*Tokyo Institute of Technology*

TuA I-5 10:30~10:45

**High-Sensitivity Kerr Rotation Microscope for Probing Spin Transport in Semiconductors**

Shunichiro Matsuzaka(\*1), Yuzo Ohno(\*1), and Hideo Ohno(\*1,\*2)

*Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University(\*1), Semiconductor Spintronics Project, Exploratory Research for Advanced Technology, Japan Science and Technology Agency(\*2)*

TuA I-6(invited) 10:45~11:15

## **Multi-spin Entanglement in Magnetic-semiconductor Nanostructures**

R. Merlin

*University of Michigan*

## *Novel Structures and Materials for Light Emitters*

TuA II-1(invited) 11:45~12:15

### **Telecom Single-Photon Source with Horn Structure**

Kazuya Takemoto(\*1), Shinichi Hirose(\*1), Motomu Takatsu(\*1), Naoki Yokoyama(\*1), Yoshiki Sakuma(\*2), Tatsuya Usuki(\*3), Toshiyuki Miyazawa(\*3), and Yasuhiko Arakawa(\*3,\*4,\*5)

*Fujitsu Laboratories Ltd. (\*1), National Institute for Materials Science (\*2), Collaborative Institute for Nano Quantum Information Electronics (\*3), Research Center for Advanced Science and Technology (\*4), and Institute of Industrial Science, The University of Tokyo (\*5)*

TuA II-2 12:15~12:30

### **Site-controlled InGaAs Quantum Dots Grown on a GaAs Multi-faceted Microstructure for Single Photon Emissions**

H.-S. Chang, C.-M. Hsu, T.-P. Hsieh, J.-I. Chyi, and T. M. Hsu

*Department of Physics, National Central University*

TuA II-3 12:30~12:45

### **GaAs Emission from GaInP/Er,O-Codoped GaAs/GaInP Laser Diodes Grown by Organometallic Vapor Phase Epitaxy**

Kei Fujii, Keiji Hidaka, Dai Yamamoto, Yoshikazu Terai, and Yasufumi Fujiwara

*Osaka University*

TuA II-4 12:45~13:00

### **Growth of GaAsBi/GaAs Multi-Quantum Wells by Molecular Beam Epitaxy**

Yoriko Tominaga, Yusuke Kinoshita, Gan Feng, Kunishige Oe, and Masahiro Yoshimoto

*Kyoto Institute of Technology*

## *GaN Growth I*

TuA III-1(invited) 14:30~15:00

### **Depolarization of Internal Fields in GaN-based Quantum Wells**

Seoung-Hwan Park(\*1), Doyeol Ahn(\*2), and Yong-Tak Lee(\*3)

*Catholic University of Daegu (\*1), University of Seoul (\*2), Gwangju Institute of Science and Technology (\*3)*

TuA III-2 15:00~15:15

### **Polarization Properties of Strained III-Nitride Quantum Wells with Various Substrate Orientations**

A. Atsushi Yamaguchi

*Kanazawa Institute of Technology*

TuA III-3 15:15~15:30

### **M-plane InGaN / GaN Light Emitting Diodes Fabricated by MOCVD Regrowth on c-plane Patterned Templates**

Christopher A. Schaake, Nicholas A. Fichtenbaum, Carl J. Neufeld, Stacia Keller, Steven P. DenBaars, James S. Speck, and Umesh K. Mishra

*University of California, Santa Barbara, CA*

TuA III-4 15:30~15:45

### **GaN Growth on a- and m-plane by the Ammonothermal Method with Acidic Mineralizer**

Yuji Kagamitani(\*1), Dirk Ehrentauf(\*1), Naruhiro Hoshino(\*1), Tsuguo Fukuda(\*1), Katsuji Fujii(\*2), Takafumi Yao(\*2), Hirohisa Ito(\*3), and Shinichiro Kawabata(\*3)

*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University(\*1), Center for Interdisciplinary Research, Tohoku University(\*2), Mitsubishi Chemical Corporation(\*3)*

TuA III-5 15:45~16:00

**Growth of Semi-polar (11-22)GaN on a (113)Si Substrate by Selective MOVPE**

Tomoyuki Tanikawa, Toshiki Hikosaka, Yoshio Honda, Masahito Yamaguchi, and Nobuhiko Sawaki  
*Nagoya University*

TuA III-6 16:00~16:15

**Cumulative Growth and Microstructure Studies of Nonpolar m-plane SLEO GaN**

Asako Hirai, Makoto Saito, Kwang-Choong Kim, Mathew C. Schmidt, Feng Wu, Melvin B. McLaurin, Erin C. Young, Shuji Nakamura, Steven P. DenBaars, and James S. Speck  
*Materials Department, University of California, Santa Barbara(\*1), NICP, ERATO, Japan Science and Technology Agency, Japan(\*2)*

TuA III-7 16:15~16:30

**High Quality N-rich GaN Growth by PAMBE for Electronic Devices**

G. Koblmüller, R. M. Chu, F. Wu, C. Poblenz, A. Corrion, U. K. Mishra, and J. S. Speck  
*Materials Department and Electrical and Computer Engineering Department, University of California at Santa Barbara, USA*

TuA III-8 16:30~16:45

**GaN Epitaxy on Off-axis Ge(111) Substrates by Molecular Beam Epitaxy**

R.R. Lieten(\*1,\*2), Y. Zhang(\*3), S. Degroote(\*1), M. Kuijk(\*2), C. J. Humphreys(\*3), and G. Borghs(\*1)  
*IMEC Belgium (\*1), VUB University Brussels, Belgium (\*2), University of Cambridge, UK (\*3)*

## *SiGe and Related Semiconductors*

TuB I-1(invited) 9:15~9:45

**Interfacing Control of Dielectric Films and Metals on Germanium for CMOS Application**

Akira Toriumi, Koji Kita, Tomonori Nishimura, and Toshitake Takahashi  
*The University of Tokyo*

TuB I-2 9:45~10:00

**Sub-100 nm Gate-Length SiGe/Si MIS-HFET Using Cat-CVD SiN**

Norio Onojima(\*1), Akihumi Kasamatsu(\*1), Nobumitsu Hirose(\*1), Takashi Mimura(\*1,\*2), and Toshiaki Matsui(\*1)  
*National Institute of Information and Communications Technology(\*1), Fujitsu Laboratories Ltd.(\*2)*

TuB I-3 10:00~10:15

**Drive Current of Ultrathin Ge-on-Insulator n-Channel MOSFETs**

Yōsuke Azuma, Takashi Mori, and Hideaki Tsuchiya  
*Kobe University*

TuB I-4 10:15~10:30

**Effects of Atomic Hydrogen Annealing on Reduction of Leakage Current in Ultrathin Si/Ge/Si-On-Insulator Metal Source/Drain p-Channel MOSFETs**

Shinichi Takagi(\*1), Takashi Uehara(\*1), Satoshi Tanabe(\*1), Hiroshi Matsubara(\*1), Ryosho Nakane(\*1), Mitsuru Take-naka(\*1), and Satoshi Sugahara(\*2)  
*The University of Tokyo(\*1), Tokyo Institute of Technology(\*2)*

TuB I-5 10:30~10:45

**SnGe: A Group IV-IV Highly Mismatched Alloy**

K. Alberi(\*1,2), J. Blacksberg(\*3), K.M. Yu(\*1), O.D. Dubon(\*1,2), and W. Walukiewicz(\*1)  
*Lawrence Berkeley National Lab (\*1), University of California, Berkeley (\*2), Jet Propulsion Laboratory (\*3)*

TuB I-6(invited) 10:45~11:15

### **High speed Ge Detectors**

Erich Kasper  
*University Stuttgart*

## ***Characterization, Nanoprobe, and Nanomechanics II***

TuB II-1(invited) 11:45~12:15

### **Intermixing, Decomposition and Segregation During Formation of III/V Nanostructures Analyzed by Cross-sectional STM**

P. M. Koenraad  
*COBRA Inter-University Research Institute, Physics Department, Eindhoven University of Technology*

TuB II-2 12:15~12:30

### **Investigation of the Composition and Strain Gradients within InGaAs Nanostructures**

Alexandru Riposan, Codrin Cionca, Joanna Mirecki Millunchick, and Roy Clarke  
*University of Michigan, Ann Arbor*

TuB II-3 12:30~12:45

### **Three-dimensional Structure of a Single InAs/GaAs Self-assembled Quantum Dot Observed by Electron Tomography**

Tomoya Inoue(\*1), Takashi Kita(\*1), Osamu Wada(\*1), Mitsuru Konno(\*2), Toshie Yaguchi(\*2), and Takeo Kamino(\*2)  
*Kobe University(\*1), Hitachi High-Technologies Corporation(\*2)*

TuB II-4 12:45~13:00

### **Electrical Study of InAs/GaAs Quantum Dots with Two Different Environments**

Maria Kaniewska(\*1), Olof Engstrom(\*2), Mariusz Kaczmarczyk(\*1) Barbara Surma(\*3), and Wojciech Jung(\*1)  
*Institute of Electron Technology(\*1), Chalmers University of Technology(\*2), Institute of Electronic Materials Technology(\*3)*

## ***High Speed Field Effect Transistors and Its Applications***

TuB III-1(invited) 14:30~15:00

### **High Speed InSb FETs**

Tim Ashley(\*1), Louise Buckle(\*1), Suman Datta(\*2), Martin T. Emeny(\*1), Michael Fearn(\*1), David G. Hayes(\*1), Keith P. Hilton(\*1), Richard Jefferies(\*1), Trevor Martin(\*1), Jeff Powell(\*1), Aaron Tang(\*1), Michael J. Uren(\*1), David J. Wallis(\*1), Peter J. Wilding(\*1), and R.Chau(\*2)  
*QinetiQ(\*1), Intel(\*2)*

TuB III-2(invited) 15:00~15:30

### **High Speed Electronics: from InGaAs to InAs**

Edward Yi Chang, Chia-Yuan Chang, and Heng-Tung Hsu  
*National Chiao-Tung University*

TuB III-3 15:30~15:45

### **450-GHz Cutoff Frequency Stable InP-Based HEMTs with Fully SiN Passivated Gate-Recess Regions**

Naoki Hara(\*1), Tsuyoshi Takahashi(\*1), Toshihiro Ohki(\*2), and Kozo Makiyama(\*1)  
*Fujitsu Limited(\*1), Fujitsu Laboratories Limited(\*2)*

TuB III-4 15:45~16:00

### **InAs Nanowire Field Effect Transistors**

Guoqiang Zhang, Kouta Tateno, Satoru Suzuki, Tetsuomi Sogawa, and Hidetoshi Nakano  
*NTT Basic Research Laboratories, NTT Corporation*

TuB III-5 16:00~16:15

### **High Electron Mobility in Epitaxial Lifted-off InGaAs/InAlAs Metamorphic Heterostructures Bonded on AlN Ceramic Substrates**

Y. Jeong, M. Shindo, M. Akabori, and T. Suzuki

*Japan Advanced Institute of Science and Technology*

TuB III-6(invited) 16:15~16:45

### **Terahertz Emission from Two-dimensional Plasmons in HEMTs Stimulated by Optical Signals**

Taiichi Otsuji(\*1), Yahya Moubarak Meziani(\*1), Tetsuya Suemitsu(\*1), Mitsuhiro Hanabe(\*1), and Eiichi Sano(\*2)

*Tohoku Univ. (\*1), Hokkaido Univ. (\*2)*

## *Organic Semiconductors*

TuC I-1(invited) 9:15~9:45

### **Low-Voltage Organic Transistors and Circuits with Ultra-Thin Gate Dielectric**

Hagen Klauk

*Max Planck Institute for Solid State Research*

TuC I-2 9:45~10:00

### **Device Characteristics of Back Channel-Modified Organic Thin-Film Transistors**

S. Hoshino, K. Suemori, M. Yoshida, S. Uemura, T. Kodzasa, N. Takada, and T. Kamata

*National Institute of Advanced Industrial Science and Technology (AIST)*

TuC I-3 10:00~10:15

### **Charge Transport in Conjugated Polymers and Oligomers in Organic Field-effect Transistors**

Takeshi Yasuda, Tomoyuki Ashimine, Hiroshi Kayashima, and Tetsuo Tsutsui

*Kyushu University*

TuC I-4 10:15~10:30

### **Ambipolar Light-Emitting Transistors of Organic Single Crystals**

Taishi Takenobu(\*1,\*2), Tetsuo Takahashi(\*1), Satria Zulkamaen Bisri(\*1), and Yoshihiro Iwasa(\*1,\*2)

*IMR, Tohoku Univ. (\*1), CREST-JST (\*2)*

TuC I-5 10:30~10:45

### **Quantitative Analysis on Frequency Response of Pentacene Thin Film Transistors**

Tetsuhiko Miyadera(\*1,\*2), Takeo Minari(\*1,\*2), Hiromi Ito(\*1), Kazuhito Tsukagoshi(\*1,\*2), and Yoshinobu Aoyagi(\*1,\*2,\*3)

*RIKEN (\*1), JST-CREST (\*2), Tokyo Inst. Tec. (\*3)*

TuC I-6(invited) 10:45~11:15

### **Printed Organic Transistors and Plastic MEMS for Power Transmission Sheets**

T. Someya, T. Sekitani, M. Takamiya, Y. Noguchi, S. Nakano, and T. Sakurai

*The University of Tokyo*

## *Carbon Nanotube Devices & Physics*

TuC II-1(invited) 11:45~12:15

### **Logic Devices and Circuits from Semiconducting Carbon Nanotubes**

Joerg Appenzeller

*work has been performed at the IBM T.J. Watson Research Center, Yorktown Heights, NY 10598; current affiliation is with the Electrical and Computer Engineering Department and Birck Nanotechnology, Purdue University*

TuC II-2 12:15~12:30

### **Mechanism of Surface Gating to Carbon Nanotube Quantum Dots Fabricated on a GaAs/AlGaAs 2-dimensional Electron Gas Wafer**



Mitsutoshi Makihata(\*1,\*2), Satoshi Moriyama(\*1), Takahiro Mori(\*1), Tomohiro Yamaguchi(\*1), Yoshinobu Aoyagi(\*2), and Koji Ishibashi(\*1,\*3)  
*RIKEN (\*1), Tokyo Institute of Technology (\*2), CREST JST (\*3)*

TuC II-3 12:30~12:45

**Carbon Nanotubes from Epitaxially Grown Semiconductor Nanoparticles**

Daisuke Takagi(\*1,\*3), Hiroki Hibino(\*2), Satoru Suzuki(\*2,\*3), Yoshihiro Kobayashi(\*2,\*3), and Yoshikazu Homma(\*1,\*3)

*Tokyo Univ. of Science(\*1), NTT Basic Research Lab. NTT Corporation(\*2), CREST/JST(\*3)*

TuC II-4 12:45~13:00

**Defect Detection in Carbon Nanotubes by Electrostatic Force Microscopy**

Yuki Okigawa, Takeo Umesaka, Yutaka Ohno, Shigeru Kishimoto, and Takashi Mizutani

*Nagoya University*

## *Diamond Devices & Physics*

TuC III-1(invited) 14:30~15:00

**Diamond RF FETs and Other Applications in Electronics**

Makoto Kasu, Kenji Ueda, Hiroyuki Kageshima, and Yoshitaka Taniyasu

*NTT Basic Research Laboratories*

TuC III-2 15:00~15:15

**Diamond Schottky Barrier Diode for High-power Device Applications**

Hitoshi Umezawa(\*1), Kazuhiro Ikeda(\*1), Tatsumi Natsuo(\*2), Ramanujam Kumaresan(\*1), and Shin-ichi Shikata(\*1)

*AIST(\*1), Sumitomo Electric Ind.(\*2)*

TuC III-3 15:15~15:30

**Detection of Single Nucleotides Polymorphisms (SNPs) on Partially Functionalized Diamond Surface**

Jung-Hoon Yang, Shouma Kuga, and Hiroshi Kawarada

*Waseda Univ.*

TuC III-4 15:30~15:45

**Electrical Properties of n-type Diamond and Diamond Schottky Diodes**

Mariko Suzuki(\*1), Satoshi Koizumi(\*2), Masayuki Katagiri(\*1), Tomio Ono(\*1), Naoshi Sakuma(\*1), and Tadashi Sakai(\*1)

*Corporate R&D Center, Toshiba Corp. (\*1), National Institute for Materials Science (\*2)*

## *Late News A*

TuA LN-1 17:00~17:15

**Ku-band AlGaIn/GaN HEMT over 65W**

Keiichi Matsushita(\*1), Kazutoshi Masuda(\*1), Shigenori Takagi(\*1), Yasushi Kashiwabara(\*1), Ken Onodera(\*1), Kazutaka Takagi(\*1), Hisao Kawasaki(\*1), Yoshiharu Takada(\*2), and Kunio Tsuda(\*2)

*Microwave Solid-state Engineering Dept., Komukai Operations, Toshiba Corporation(\*1), Advanced Electron Devices Laboratory, Corporate R&D Center, Toshiba Corporation(\*2)*

TuA LN-2 17:15~17:30

**Self-Pulsation in Blue-violet Laser Diodes with Buried AlGaIn Current Blocking Layer**

S. Tamura, M. Kawaguchi, H. Ohno, N. Ikedo, T. Ueda, and M. Yuri

*Semiconductor Device Research Center, Semiconductor Company, Matsushita Electric Industrial Co., Ltd.*

TuA LN-3 17:30~17:45

**Recombination Dynamics of Free and Bound Excitons in Bulk GaN**

Bo Monemar(\*1), Plamen Paskov(\*1), Peder Bergman(\*1), Galia Pozina(\*1), Alex Toropov(\*2), Tania Shubina(\*2), and Akira Usui(\*3)  
*Linköping University(\*1), Ioffe Physicotechnical Institute(\*2), Furukawa Co Ltd (\*3)*

## Late News B

TuB LN-1 17:00~17:15

### Assignment of Influence of Phonons and Nuclei on Resonant Tunneling in Vertical Double Quantum Dots

T. Kodera(\*1), K. Ono(\*2), S. Amaha(\*3), Y. Tokura(\*3,\*4), Y. Arakawa(\*1,\*5,\*6), S. Tarucha(\*1,\*3,\*7)  
*Institute for Nano Quantum Information Electronics, the Univ. of Tokyo(\*1), RIKEN(\*2), ICORP-JST(\*3), NTT-BRL(\*4), IIS, the Univ. of Tokyo(\*5), RCAST, the Univ. of Tokyo(\*6), Department of Applied Physics, the Univ. of Tokyo(\*7)*

TuB LN-2 17:15~17:30

### Nuclear Spin Resonance Induced by Radio Frequency Electric Field

Norio Kumada(\*1), Takehito Kamada(\*1,\*2), Yoshiro Hirayama(\*2,\*3), Sen Miyashita(\*4), and Toshimasa Fujisawa(\*1)  
*NTT Basic Research Laboratories, NTT Corporation (\*1), Tohoku University(\*2), SORST-JST(\*3), NTT-AT(\*4)*

TuB LN-3 17:30~17:45

### Control of Lateral and Vertical Selective Area Growth of InGaAs on (111) Si Substrates Using MOVPE for III-V FET Applications

T. Hoshii(\*1), M. Deura(\*1), M. Sugiyama(\*1), R. Nakane(\*1), S. Sugahara(\*2), M. Takenaka(\*1), Y. Nakano(\*1), and S. Takagi(\*1)  
*The Univ. of Tokyo(\*1), Tokyo Inst. of Tech.(\*2)*

TuB LN-4 17:45~18:00

### Passivation of the Impact of Aluminum for the Growth of High Optical Quality GaInNAs by Molecular Beam Epitaxy

Shudong Wu, Masakazu Kato, Masayuki Uchiyama, Kotaro Higashi, Fumitaro Ishikawa, and Masahiko Kondow  
*Osaka University*

## Poster Session, Oct.16th, Tuesday (17:45-19:15)

TuC P1

### Study on Nanosized Zircon Powder Based Dual Sensitive Material

Chen Wei, Huang Shizhen, Huang Zhaoxin, and Lin Wei  
*Fuzhou University*

TuC P2

### Growth and Magnetic Properties of InMnAs Quantum Wires

Feng Xu, Po-Wei Huang, and Jin-Hua Huang  
*National Tsing Hua University*

TuC P3

### MBE Growth of GaAs Nanowires on a (111)Si Substrate

J.H. Paek, T. Nishiwaki, M. Yamaguchi, and N. Sawaki  
*Nagoya University*

TuC P4

### Spectroscopy and Imaging of GaAs/InGaAs/GaAs Heterostructured Nanowires Grown by Selective-Area Metalorganic Vapor Phase Epitaxy

Masayasu Fukui, Yasunori Kobayashi, Junichi Motohisa, and Takashi Fukui  
*Graduate School of Information Science and Technology and Research Center for Integrated Quantum Electronics, Hokkaido University*

TuC P5

**Thermal Precipitation of Self-organized PbTe Quantum Dots in a CdTe Host Matrix**

Kazuto Koike(\*1), Tomoyuki Itakura(\*1), Takanori Hotei(\*1), Mitsuaki Yano(\*1), Wolfgang Heiss(\*2), Heiko Groiss(\*2), Erich Kaufmann(\*2), Gunter Hesser(\*2), and Friedrich Schaffler(\*2)  
*Osaka Institute of Technology(\*1), Univ. of Linz(\*2)*

TuC P6

**Synthesis and Characterization of CdSe/ZnS Quantum Dots**

Soon Il Jung(\*1), Ilgu Yun(\*1), Sung M. Cho(\*2), Il Ki Han(\*3), and Joo In Lee(\*4)  
*Yonsei Univ.(\*1), Sungkyunkwan Univ.(\*2), KIST(\*3), KRISS(\*4)*

TuC P7

**Self-Formation Control of Low-Density InAs Quantum-Dots**

Ponlachat Patchakapat and Koichi Yamaguchi  
*The University of Electro-communications*

TuC P8

**Surface Morphologies and Optical Characteristics of InAs/GaAs Quantum Dots Grown on Thin Buffer Layer and (InGa)As/GaAs Quantum Dots with different Coverage**

Chi-Che Tseng(\*1), Yi-Hao Chen(\*1), Jheng-Nan Chen(\*1), Meng-Chyi Wu(\*1), Shu-Ting Chou(\*2), and Shih-Yen Lin(\*2)  
*Department of Electrical Engineering, National Tsing Hua University (\*1), Research Center for Applied Sciences, Academia Sinica (\*2)*

TuC P9

**High Sheet-Density InAs/InGaAs Quantum Dots for 1.3 $\mu$ m Quantum-Dot Lasers**

Bo Xu, Zhan-guo Wang, Xiao-ling Ye, Peng Jin, Chi-yun Wang, Ping Liang, Ying Hu, Hong Sun, and Feng-qi Liu  
*Key Laboratory of Semiconductor Materials Science, Institute of Semiconductors, CAS, Beijing, P. R. China*

TuC P10

**Effects of Carrier Blocking Layer on the Optical Properties of 1.5  $\mu$ m InAs Quantum Dots**

Cheng-You Chen, Tung-Po Hsieh, Pei-Chin Chiu, Chun-Jung Wang, Chia-Hao Chang, and Jen-Inn Chyi  
*National Central University*

TuC P11

**Atomic Structure of Epitaxially Grown Sb Irradiated GaAs(001) Surface Using the First Principles Calculation**

Akira Ishii, Hitoshi Ohno, and Yasutake Oda  
*Tottori University*

TuC P12

**Large Anomalous Hall Effect of Be/Si Pair Delta-doped GaAs Structures**

Jung-pil Noh, Dae-won Jung, A. Z.M. Touhidul Islam, and Nobuo Otsuka  
*Japan Advanced Institute of Science and Technology*

TuC P13

**Anisotropic Zeeman Effect in CdTe/CdMnTe Quantum Wires**

Yukihiro Harada(\*1), Takashi Kita(\*1), Osamu Wada(\*1), Hiroaki Ando(\*2), and Henri Mariette(\*3)  
*Kobe University(\*1), Konan University(\*2), and CNRS(\*3)*

TuC P14

**Magnetic Anisotropy of Ferromagnetic Semiconductor [(In<sub>y</sub>Ga<sub>1-y</sub>)<sub>1-x</sub>Mn<sub>x</sub>]As Thin Films**

Masafumi Yokoyama(\*1), Shinobu Ohya(\*1,\*2), and Masaaki Tanaka(\*1)  
*The University of Tokyo (\*1), Japan Science and Technology Agency (\*2)*

TuC P15

**Size Effect on the Magnetization Switching Behavior in GaMnAs Hall Device**

T. H. Yoo(\*1), D. Y. Shin(\*1), J. T. Kim(\*1), H. C. Kim(\*1), Sanghoon Lee(\*1), X. Liu(\*2), and J. K. Furdyna(\*2)  
*korea University(\*1), University of Notre Dame(\*2)*

TuC P16

**Magnetic Anisotropy of GaMnAs Ferromagnetic Semiconductor Studied by Hall Effects**

Hyunji Son(\*1), Sun-Jae Chung(\*1), Sun-young Yea(\*1), H. C. Kim(\*1), Sanghoon Lee(\*1), X. Liu(\*2), and J. K. Furdyna(\*2)  
*korea University(\*1), University of Notre Dame(\*2)*

TuC P17

**Fabrication of Ferromagnetic MnAs Nanostructures by Selective-Area Metal-Organic Vapor Phase Epitaxy on GaAs(111)B Substrate**

Daichi Kawamura, Shinjiro Hara, Junichi Motohisa, and Takashi Fukui  
*Graduate School of Information Science and Technology, and Research Center for Integrated Quantum Electronics, Hokkaido University*

TuC P18

**Spin Selective Excitation in Charge Tunable GaAs Quantum Dots**

Haruki Sanada, Tetsuomi Sogawa, Hideki Gotoh, Hidehiko Kamada, Hiroshi Yamaguchi, and Hidetoshi Nakano  
*NTT Basic Research Laboratories*

TuC P19

**Acoustically Induced Charge and Spin Transport in GaAs Quantum Wires**

F. Alsinaa(\*1,\*2), J.A.H. Stotz(\*1,\*3), R. Hey(\*1), U. Jahn(\*1), and P.V. Santos(\*1)  
*Paul-Drude-Institut, Berlin, Germany(\*1), Department of Physics, Univ. Autonoma de Barcelona, Barcelona, Spain(\*2), Department of Physics, Queens Univ., Kingston, Ontario, Canada(\*3)*

TuC P20

**Spontaneous Spin Polarization in InAs Quantum Point Contacts Induced by Spin-Orbit Coupling due to Lateral Confinement**

S. M. Rahman(\*1), S. T. Herbert(\*2), R. S. Newrock(\*1), and P. Debray(\*1)  
*Department of Physics, University of Cincinnati, USA (\*1), Department of Physics, Xavier University, USA (\*2),*

TuC P21

**Magnetic Properties of InMnAs Nanodots: the Dependence on Morphology**

Feng Xu, Po-Wei Huang, and Jin-Hua Huang  
*National Tsing Hua University*

TuC P22

**Preparation and Characterization of MnSb Thin Films for Spin-photonics Devices**

Yusuke Ogawa(\*1), Tomohiro Amemiya(\*2), Hiromasa Shimizu(\*3), Yoshiaki Nakano(\*2), and Hiro Munekata(\*1)  
*Tokyo Inst. of Tech.(\*1), RCAST, Univ. of Tokyo(\*2), Tokyo Univ. of Agri. & Tech.(\*3)*

TuC P23

**Fabrication of AlN Films at Low Temperature by CS-MBE Technique**

K. Watanabe, K. Sugimoto, M. Arai, K. Takeda, and T. Honda  
*Kogakuin University*

TuC P24

**Growth of GaN on Patterned N<sup>+</sup>-implanted (111) Silicon Substrate**

Bumjoon Kim(\*1), Junggeun Jhin(\*2), Seungjae Lee(\*2), Samseok Jang(\*1), Dohan Lee(\*1), Jong Hyeob Baek(\*2), and Dongjin Byun(\*1)  
*Korea University(\*1), Korea Photonics Technology Institute(\*2)*

TuC P25

**III-N Epitaxial Films on Si and GaAs Substrates with Buffer Layers on the Basis of Porous Material**

Yury Buzynin(\*1), Yury Drozdov(\*1), Vyacheslav Daniltsev(\*1), Andrey Lukyanov(\*1), Oleg Khrykin(\*1), and Alexander Buzynin(\*2)

*Institute for Physics of Microstructure, Russian Academy of Sciences, Nizhny Novgorod, Russia(\*1), General Physics Institute, Russian Academy of Sciences, Moscow, Russia(\*2)*

TuC P26

**Structural and Optical Characterization of Zinc-blende InN Thin Films Grown by Molecular Beam Epitaxy**

Ting-Wei Liu(\*1,\*2,\*3), Ching-Lien Hsiao(\*1), Hsu-Cheng Hsu(\*1), Wen-Yu Hsiao(\*4), Chih Chung Yang(\*4), Chia-Chun Chen(\*2), Kuei-Hsien Chen(\*3), and Li-Chyong Chen(\*1)

*Center for condensed Matter Sciences, National Taiwan University(\*1), Department of Chemistry, National Taiwan Normal University(\*2), Institute of Atomic and Molecular Sciences, Academic Sinica(\*3), Graduate Institute of Electro-Optical Engineering, National Taiwan University(\*4)*

TuC P27

**Effects of the High-Energy Proton Irradiation on the Properties of GaN Ionizing Radiation Detectors**

Vaidotas Kazukauskas, Vidmantas Kalendra, Rimantas Jasiulionis, and Juozas-Vidmantis Vaitkus

*Vilnius University*

TuC P28

**Evaluation of Deep Levels in GaN Grown by RF-MBE on GaN Template by Capacitance DLTS**

T. Mitsunaga, Y. Yagishita, M. Kurouchi, S. Kishimoto, J. Osaka, and T. Mizutani

*Nagoya University*

TuC P29

**Analytical and Topological Formulation of Edge-dislocations for Continuum Mechanics**

Amina Belkadi, Toby D. Young, and Pawel Dluzewski

*Institute of Fundamental Technological Research, Polish Academy of Sciences*

TuC P30

**Transmission Electron Microscopy Studies of Threading Dislocation Propagation in AlN/GaN Multiple Superlattices**

M. Veis(\*1), K. Hagihara(\*1), S. Nakagawa(\*1), K. Okumura(\*1), M. Fujimoto(\*2), Y. Inoue(\*3), and A. Ishida(\*3)

*Graduate School of Electronic Science and Technology, Shizuoka University, Japan (\*1), Innovation Joint Research Center, Shizuoka University, Japan (\*2), Department of Electrical and Electronic Engineering, Shizuoka University, Japan (\*3)*

TuC P31

**The Electronic Structure of Ga-vacancy in Mn-doped GaN**

Joongoo Kang and K. J. Chang

*Korea Advanced Institute of Science and Technology*

TuC P32

**Theoretical Investigation on Anisotropic Optical Properties in Semipolar and Nonpolar InGaN Quantum Wells**

Kazunobu Kojima, Hiroaki Kamon, Mitsuru Funato, and Yoichi Kawakami

*Kyoto University*

TuC P33

**Theoretical Study of AlN Decomposition Processes in Hydrogen Atmosphere**

Uliana Panyukova, Hikari Suzuki, Rie Togashi, Hisashi Murakami, Yoshinao Kumagai, and Akinori Koukitu

*Tokyo University of Agriculture and Technology*

TuC P34

**Growth of Thick GaInN on Patterned m-plane 6H-SiC Substrates**

Ryota Senda, Takeshi Kawashima, Daisuke Iida, Aya Miura, Tetsuya Nagai, Motoaki Iwaya, Satoshi Kamiyama, Hiroshi Amano, and Isamu Akasaki  
*Meijo University*

TuC P35

**Effect of Sapphire Mis-orientation on the Growth of AlN by High Temperature MOVPE**

Kentaro Nagamatsu(\*1), Narihito Okada(\*1), Naofumi Kato(\*1), Takafumi Sumii(\*1), Akira Bando(\*2), Motoaki Iwaya(\*1), Satoshi Kamiyama(\*1), Hiroshi Amano(\*1), and Isamu Akasaki(\*1)  
*Meijo University(\*1), Showa Denko(\*2)*

TuC P36

**Optical Properties of Semipolar 11-22, 1-101 and Polar (0001) InGaN/GaN Multiple Quantum Wells**

Chu-Young Cho, Min-Ki Kwon, Il-Kyu Park, Ja-Yeon Kim, and Seong-Ju Park  
*GIST(Gwangju Institute of Science and Technology)*

TuC P37

**Molecular Nanowires for Multi-channel Transistor**

Yutaka Wakayama, Seiichi Takami, Ryoma Hayakawa, Toyohiro Chikyow, and Kenji Kobayashi  
*National Institute for Materials Science*

TuC P38

**Low-voltage-operating Fullerene C<sub>60</sub> Thin-film Transistors with Various Surface Treatments**

Masatoshi Kitamura(\*1), Yasutaka Kuzumoto(\*2), Masakazu Kamura(\*2), Shigeru Aomori(\*2), Jong Ho Na(\*1), and Yasuhiko Arakawa(\*1)  
*Univ. Tokyo(\*1), Sharp Co. (\*2)*

TuC P39

**Inverter Circuits based on Pentacene and Zinc Oxide Materials**

Hiroyuki Iechi(\*1,\*3), Yasuyuki Watanabe(\*2), Hiroshi Yamauchi(\*3), and Kazuhiro Kudo(\*3)  
*Advanced Technology R&D Center, Ricoh Co., Ltd., Yokohama, Japan*

TuC P40

**Drain Current Enhancement of C<sub>60</sub> Fullerene Blended Polyphenylenevinylene-based Thin-film Field-effect Transistors by Xe-lamp Irradiation**

Yasuhiko Hayashi(\*1), I. Alexandrou(\*2), G. A. J. Amratunga(\*3), and M. Tanemura(\*1)  
*Nagoya Institute of Technology(\*1), University of Liverpool(\*2), University of Cambridge(\*3)*

TuC P41

**Characteristics and Light Illumination Effects of Field Effect Transistors in Poly(3-hexylthiophene) and Fullerene Derivative (PCBM) Composite Films**

Takeomi Morita, Masayuki Tanaka, Wataru Takashima, and Keiichi Kaneto  
*Kyushu Institute of Technology*

TuC P42

**Characteristic of Polymer Light-Emitting Diodes Using Poly(9,9-dioctylfluorene) Gel by Thermal Printing Method**

Daisuke Kasama, Hirotake Kajii, and Yutaka Ohmori  
*Center for Advanced Science and Innovation, Osaka University*

TuC P43

**Studies on Dynamics of Charge Carrier in Organic Electroluminescent Devices**

Noriyuki Takada and Toshihide Kamata  
*National Institute of Advanced Industrial Science and Technology*

TuC P44

**Polycrystallization Phenomena of Organic Alloy and Multilayer Structures on NPD-Based Hole Transport Layer for Organic Light-Emitting Diodes**

Tatsuo Mori and Yoshihisa Iida

*Nagoya University*

TuC P45

**Improved EL Characteristics of Polyfluorene/PBD-Mixed Layer by Wet Process**

Hironobu Yamaguchi, Mitsuo Komoriya, and Norihiko Kamata

*Graduate School of Science and Engineering, Saitama University*

TuC P46

**Polarized Laser Oscillation from Polygon Crystals of Thiophene/Phenylene Co-Oligomers Grown by Liquid-Phase Growth**

Takeshi Yamao, Kazunori Yamamoto, Tomoharu Miki, Hiroshi Akagami, Yoshihiro Nishimoto, and Shu Hotta

*Kyoto Institute of Technology*

TuC P47

**Long-Term Aging Behavior of ZnPc/C<sub>60</sub> Solar Cells**

Rudolf Lessmann, Ziruo Hong, Bert Maennig, and Karl Leo

*Technische Universität Dresden - Institut für Angewandte Photophysik*

TuC P48

**Electromodulated Optical Properties of the Silver/Pentacene/ITO Structures**

Ren-Chiu Shih, Hui-Kai Hsu, Chien-Rong Lu, Wei-Yang Chou, and Yu-Shen Mai

*National Taiwan Normal Univ., National Cheng Kung University*

TuD P1

**Analysis of Minority Carrier Lifetime for InAlAs/InGaAs High Electron Mobility Transistors by Using 1.55- $\mu$ m Femto-second Pulse Laser**

Hirohisa Taguchi, Chihiro Sano, Hiroaki Murakami, Masashi Oura, Tsutomu Iida, and Yoshifumi Takanashi

*Tokyo University of Science*

TuD P2

**DC Characteristics of Heterojunction Bipolar Transistor with Buried SiO<sub>2</sub> Wires in Collector**

Shinnosuke Takahashi(\*1), Tukasa Miura(\*1), Hiroaki Yamashita(\*1), Yasuyuki Miyamoto(\*1,\*2), and Kazuhito Furuya(\*1,\*2)

*Tokyo Tech(\*1), JST-CREST(\*2)*

TuD P3

**Quantum Corrected Monte Carlo Analysis of Scaling Behavior of Nano-Scale InGaAs High Electron Mobility Transistors**

Hiroki I. Fujishiro(\*1,\*2), Takahiro Kawabata(\*1), and Jesus A. del Alamo(\*2)

*Tokyo University of Science(\*1), Massachusetts Institute of Technology(\*2)*

TuD P4

**GaAs Area-Selective Regrowth with Molecular Layer Epitaxy for Integration of Low Noise and Power Transistors, and Schottky Diodes**

Jun-ichi Nishizawa(\*1), Piotr Plotka(\*1), and Toru Kurabayashi(\*2)

*Semiconductor Research Institute, Sendai(\*1), Iwate Prefectural Univ.(\*2)*

TuD P5

**706-GHz GaAs CW Fundamental-Mode TUNNETT Diodes Fabricated with Molecular Layer Epitaxy**

Jun-ichi Nishizawa(\*1), Piotr Plotka(\*1), Toru Kurabayashi(\*2), and Hiroki Makabe(\*1)

*Semiconductor Research Institute, Sendai(\*1), Iwate Prefectural Univ., Morioka(\*2)*

TuD P6

**Room-Temperature Resonant Tunneling Diode Oscillators at About 600GHz Using Offset-Fed Planar Slot Antennas**

Safumi Suzuki(\*1), Naomichi Kishimoto(\*1), Masahiro Asada(\*1,\*2), Norihiko Sekine(\*3), and Iwao Hosako(\*3)

*Tokyo Inst. Tech. (\*1), JST-CREST (\*2), NICT (\*3)*

TuD P7

**n-Channel GaAs MESFETs for Cryogenic Application**

Yigang Chen, Taro Itatani, and Masataka Ohkubo

*National Institute of Advanced Industrial Science and Technology (AIST), Research Institute of Instrumentation Frontier*

TuD P8

**Transmission Electron Microscopy Analysis of  $\text{CaF}_2/\text{CdF}_2/\text{CaF}_2$  Resonant Tunneling Diode Structures Grown on Si(100) Substrate**

Masahiro Watanabe(\*1), Tohru Kanazawa(\*1), and Masahiro Asada(\*1,\*2)

*Department of Electronics and Applied Physics, Tokyo Institute of Technology (\*1), CREST-JST (\*2)*

TuD P9

**Evidence for Empty-valley Excitons in Pseudomorphic  $\text{Si}_{1-x}\text{Ge}_x/\text{Si}$  Quantum Wells - Settling the Long-standing Dispute over the Conduction Band Discontinuity**

N.Yasuhara, and S.Fukatsu

*The University of Tokyo at Komaba*

TuD P10

**Density Functional Theory Calculations of Electronic Structure in Silicon Double Quantum Dots**

Philip Howard(\*1), Aleksey Andreev(\*1,\*2), and David A Williams(\*2)

*ATI, University of Surrey (\*1), Hitachi Cambridge Laboratory (\*2)*

TuD P11

**Improved Initial Epitaxial Growth of Al-doped  $\beta\text{-FeSi}_2$  on Si(111) Substrate by Molecular Beam Epitaxy**

Syoutaro Hashimoto, Yoshikazu Terai, Atsushi Kakiuchi, and Yasufumi Fujiwara

*Osaka University*

TuD P12

**Novel Approach on the Occurrence of Growth-induced Polytype Domains during Large-size SiC Single Crystals Growth**

Sun Heo, Soo-Hyung Seo, Jae-Chan Lee, Chang-Wook Seol, Joon-Suk Song, and Myung-Hwan Oh

*RnD Center, NeosemiTech Corporation*

TuD P13

**Development of Effective Polishing Process of SiC Wafers for Optoelectronic Device Applications**

Woo-Sang Kwon, Soo-Hyung Seo, Joon-Suk Song, and Myung-Hwan Oh

*RnD Center, NeosemiTech Corporation*

TuD P14

**A 5.15 - 5.35 GHz Band 10 W Power Amplifier Using SiC MESFETs**

Kyunghwan Kim, Jaekwon Kim, and Jinwook Burm

*Department of Electronic Science and Engineering, Sogang University*

TuD P15

**Flat-band Voltage Adjustment Using III-V Gate Electrodes**

C.-Y. Peng, C.-F. Huang, P.-S. Kuo, G. N. Tsai, and H. H. Lin, and C. W. Liu

*National Taiwan University, Taipei, Taiwan, R.O.C.*

TuE P1



**Determination Method of Energy Band Gap of Carbon Nanotube**

Masatoshi Maeda(\*1,\*4), Takafumi Kamimura(\*2,\*4), Shin Iwasaki(\*2,\*4), and Kazuhiko Matsumoto(\*2,\*3,\*4)  
*Univ. of Tsukuba(\*1), Osaka Univ.(\*2), AIST(\*3), CREST/JST(\*4)*

TuE P2

**Growth Characteristics of Single-walled Carbon Nanotubes in the Low-pressure Region from 10 Pa to 0.05 Pa.**

Takao Shiokawa(\*1,\*2), Hiroshi Yoshida(\*1,\*3), Masahiro Asakura(\*1,\*3), Shu Watanabe(\*1), and Koji Ishibashi(\*1,\*2)  
*RIKEN(\*1), CREST JST(\*2), Tokyo University of Science(\*3)*

TuE P3

**Dependence on Top Gate Structure for Sensitivity of Biosensors with Carbon Nanotube Field Effect Transistors**

Masuhiko Abe(\*1, \*2), Katsuyuki Murata(\*1, \*2, \*3), Tatsuaki Ataka(\*1, \*2), and Kazuhiko Matsumoto(\*2, \*3, \*4, \*5)  
*Olympus Corp.(\*1), NEDO(\*2), CREST/JST(\*3), AIST(\*4), Osaka Univ.(\*5)*

TuE P4

**Study for Adsorption of Metal Adatoms on CNT Using the DFT Calculation**

M. Yamamoto, H. Asano, and A. Ishii  
*Tottori University*

TuE P5

**Size Control of Fe Nanoparticles for Carbon Nanotube Growth Using Carbonyl Iron Vapor**

Kenji Ohara, Yoichiro Neo, Hidenori Mimura, Yoku Inoue, and Akihiro Ishida  
*Shizuoka University*

TuE P6

**Effect of Aluminum-Oxide on Carbon Nanotube Growth Catalysts**

Hiroshi Ohno, Kazuhiro Igari, Daisuke Takagi, Shohei Chiashi, and Yoshikazu Homma  
*Tokyo University of Science*

TuE P7

**Improvement of Hysteresis Characteristics in Carbon Nanotube Field-Effect Transistors**

Kohei Nishiguchi, Yasuhide Ohno, Kenzo Maehashi, Koichi Inoue, and Kazuhiko Matsumoto  
*The Institute of Scientific and Industrial Research, Osaka University*

TuE P8

**Laser-Irradiated Chemical Vapor Deposition for Growth of Single-Walled Carbon Nanotubes**

Yoshihiro Asai, Yasuyuki Fujiwara, Kenzo Maehashi, Yasuhide Ohno, Koichi Inoue, and Kazuhiko Matsumoto  
*The Institute of Scientific and Industrial Research, Osaka University*

TuE P9

**In situ X-ray Photoelectron Spectroscopy Study on Carbon Nanotube Growth Using Metallic and Oxidized Catalysts by Ethanol-CVD**

Fumihiko Maeda(\*1), Satoru Suzuki(\*1), Yoshihiro Kobayashi(\*1), Daisuke Takagi(\*2), and Yoshikazu Homma(\*2)  
*NTT Basic Research Laboratories, NTT Corporation(\*1), Department of Physics, Tokyo University of Science(\*2)*

TuE P10

**Detection of Fluctuating Single Charge Near Channel of Single-Walled Carbon Nanotube Single-Hole Transistor**

T. Kamimura(\*1,\*2), Y. Ohno(\*1,\*2), and K. Matsumoto(\*1,\*2,\*3)  
*Osaka Univ. (\*1), CREST/JST(\*2), National Institute of Advanced Industrial Science and Technology(\*3)*

TuE P11

**Electrical Conductivity of Carbon Nanotubes and Polystyrene Composites**

Vaidotas Kazukauskas, Vidmantas Kalendra, Christopher Bumby, and Alan B. Kaiser  
*Vilnius University*

TuE P12

**Investigation of SWNT Growth Kinetics and Co/Mo Catalyst Activity in ACCVD via In Situ Laser Absorption**

Rong Xiang, Jun Ookawa, Erik Einarsson, and Shigeo Maruyama

*Department of Mechanical Engineering, The University of Tokyo*

TuE P13

**Ultra Long Growth of Multi-walled Carbon Nanotube and Carbon Nanotube Coating**

Kazuyuki Kakihata, Yusaku Hirono, Toshinori Horie, Yoku Inoue, Akihiro Ishida, and Hidenori Mimura

*Shizuoka University*

TuE P14

**High-sensitive Carbon Nanotube Protein Sensors**

Kenzo Maehashi(\*1), Jun Okuno(\*1), Taiji Katsura(\*1), Kazuhiko Matsumoto(\*1), Kagan Kerman(\*2), Yuzuru Takamura(\*2), and Eiichi Tamiya(\*2)

*Osaka University(\*1) and JAIST(\*2)*

TuE P15

**Diamond MISFETs Fabricated on Polycrystalline CVD Diamond**

K. Hirama(\*1), Y. Jingu(\*1), H. Takayanagi(\*1), H. Umezawa(\*2), and H. Kwarada(\*1)

*Waseda Univ.(\*1), AIST(\*2)*

TuE P16

**Be-doped Diamond and its Cathodoluminescence Properties**

Kenji Ueda, Makoto Kasu, and Toshiki Makimoto

*NTT Basic Research Laboratories, NTT Corporation*

TuE P17

**First-principles Study on Vacancy-Hydrogen Complexes in Diamond**

Hiroyuki Kageshima and Makoto Kasu

*NTT Basic Research Laboratories*

TuE P18

**High-pressure and High-temperature Annealing Effect of B-implanted Diamond and its FET Applications**

Kenji Ueda, Makoto Kasu, Yoshiharu Yamauchi, and Toshiki Makimoto

*NTT Basic Research Laboratories, NTT Corporation*

*October 17th, Wednesday*

*Plenary Session II*

Plenary II-1 9:30~10:15

**Trends in Gallium Nitride-based Electronics**

Umesh K. Mishra

*UCSB, USA*

Plenary II-2 10:15~11:00

**Transparent Oxide Semiconductors: Material Design Concept and Device Application**

Hideo Hosono

*Tokyo Institute of Technology, JAPAN*

*GaN Growth II*

WeA I-1(invited) 11:30~12:00

**Commercial GaInNAs VCSELs Grown by MBE**

Jack Jewell

*JDSU*

WeA I-2 12:00~12:15

**Hybrid AlInN/AlGaIn Microcavities with GaN/AlGaIn Multiple Quantum Wells in the Strong Exciton Photon Coupling Regime**

Gabriel Christmann, Raphael Butte, Eric Feltin, Jean-Francois Carlin, Marc Ilegems, and Nicolas Grandjean

*Ecole Polytechnique Federale de Lausanne (EPFL), Institute of Quantum Electronics and Photonics*

WeA I-3 12:15~12:30

**Correlation between the Violet Luminescence Intensity and Defect Eensity in AlN Epilayers Grown by NH<sub>3</sub> Source Molecular Beam Epitaxy**

Shigefusa F. Chichibu(\*1,\*2), Takahiro Koyama(\*1,\*2), Mariko Sugawara(\*3), Takuya Hoshi(\*1), John F. Kaeding(\*4), Rajat Sharma(\*4), Shuji Nakamura(\*2,\*4), and Akira Uedono(\*3)

*Tohoku Univ. (\*1), NICTP-ERATO JST (\*2), Univ. Tsukuba (\*3), UC Santa Barbara (\*4)*

WeA I-4 12:30~12:45

**Time-resolved Photoluminescence Spectroscopy of Single InGaIn/GaN Nanocolumn**

Yoichi Kawakami(\*1, \*3), Akinobu Kanai(\*1), Akio Kaneta(\*1, \*3), Mitsuru Funato(\*1, \*3), Akihiko Kikuchi(\*2, \*3), and Katsumi Kishino(\*2, \*3)

*Kyoto Univ. (\*1), Sophia Univ. (\*2), CREST JST (\*3)*

WeA I-5 12:45~13:00

**Single-domain Hexagonal AlN / Cubic Diamond Heteroepitaxial Growth**

Yoshitaka Taniyasu, Makoto Kasu, and Toshiki Makimoto

*NTT Basic Research Laboratories*

## *Exotic Material Photonic Devices*

WeB I-1(invited) 11:30~12:00

**Single Dot Based Light Matter Interaction Effects in Micropillar Cavities**

Stephan Reitzenstein, Carolin Hofmann, Micha Strauss, Sven Höfling, Lukas Worschech, Karl Brunner, and Alfred Forchel

*Physikalisches Institut, Universität Würzburg*

WeB I-2 12:00~12:15

**Group III-Antimonide Based High-Power VCSELs Emitting at 2300 nm**

J. Wagner, N. Schulz, M. Rattunde, B. Roesener, C. Ritzenthaler, C. Manz, and K. Koehler

*Fraunhofer IAF*

WeB I-3 12:15~12:30

**Luminescence Observed from a Junction Field-Effect Transistor with Nb/n-InGaAs/Nb Josephson Junction**

Yujiro Hayashi(\*1), Kazunori Tanaka(\*2,\*3), Tatsushi Akazaki(\*3,\*4), Hidekazu Kumano(\*1,\*2), and Ikuo Suenune(\*1,\*2)

*Research Institute for Electronic Science, Hokkaido Univ. (\*1), Central Laboratory, Hamamatsu Photonics (\*2), Japan Science and Technology Corporation (\*3), NTT Basic Research Laboratories (\*4)*

WeB I-4 12:30~12:45

**Advanced InAs/GaSb Type-II Short-period Superlattices for High-resolution Bi-spectral Thermal Imaging Systems**

Martin Walther(\*1), Robert Rehm(\*1), Joachim Fleissner(\*1), Johannes Schmitz(\*1), Susanne Kopta(\*1), and Johann Ziegler(\*2)

*Fraunhofer Institute for Applied Solid State Physics (\*1), AIM Infrarot-Module GmbH (\*2)*

WeB I-5 12:45~13:00

**Miniaturized InSb Mid-IR Photovoltaic Sensor for Room Temperature Operation**

Koichiro Ueno, Edson Gomes Camargo, Tomohiro Morishita, Masayuki Sato, Aya Yokoyama, Hidetoshi Endo, Yoshinori Yanagita, Hiromasa Goto, and Naohiro Kuze

*Compound Semiconductor Development Department, R&D Center, Asahi Kasei EMD Corporation*

**Oxide Semiconductors -LED and related technology-**

WeC I-1(invited) 11:30~12:00

**Current Status of ZnO Light-emitting Diodes**

Seong-Ju Park

*Gwangju Institute of Science and Technology*

WeC I-2 12:00~12:15

**Investigations of Nitrogen Doping of ZnO Thin Films Grown by Pulsed Laser Deposition**

D. J.Rogers(\*1,\*2), F.Hosseini Teherani(\*1), L.Divay(\*2), D.Look(\*3), K.Minder(\*4), M.Razeghi(\*4), A.Largeteau(\*5), G. Demazeau(\*5), J.Morrod(\*6), and K.A.Prior(\*6)

*Nanovation SARL,France(\*1), University of Technology of Troyes, France(\*2), Wright State University, USA(\*3), Northwestern University, USA(\*4), Bordeaux 1 University, France(\*5), Heriot Watt University, Scotland(\*6)*

WeC I-3 12:15~12:30

**Junction Properties of Nitrogen-doped ZnO Thin Films**

J. G. Lu and S. Fujita

*Kyoto University*

WeC I-4 12:30~12:45

**Metalorganic Chemical Vapor Deposition of ZnO Thin Films on GaN(0001) Templates and ZnO(0001) Substrates**

Tommy Ive(\*1), Tammy Ben-Yaacov(\*1), Hirokuni Asamizu(\*2), Umesh Mishra(\*1), Steven DenBaars(\*1), and James Speck(\*1)

*University of California Santa Barbara(\*1), Rohm Co.(\*2)*

WeC I-5 12:45~13:00

**Growth and Luminescence Characteristics of Undoped and Doped ZnO**

Dirk Ehretraut(\*1), Hideto Sato(\*2), Martin Nikl(\*3), Hiroshi Fukumura(\*4), and Tsuguo Fukuda(\*1)

*IMRAM Tohoku University (\*1), Murata Mfg. (\*2), Academy of Sciences CR (\*3), Department of Chemistry Tohoku University (\*4)*

**October 18th, Thursday**

**Growth, Fabrication and Characterization of Nanostructures**

ThA I-1(invited) 9:15~9:45

**Fabrication of Novel Radial Crystals and Superlattices**

Ch. Deneke

*Institute for Integrative Nanosciences, IFW Dresden*

ThA I-2 9:45~10:00

**Growth of GaAs Whiskers on Si Nanowires**

Aaron Maxwell Andrews(\*1,\*3), Alois Lugstein(\*2), Matthias Schramböck(\*1), Mathias Steinmair(\*2), Youn-Joo Hyun(\*2), Emmerich Bertagnolli(\*2), Thomas Müller(\*3), Christoph Zauner(\*3), Karl Unterrainer(\*3), and Gottfried Strasser(\*1)

*Center for Micro- and Nanostructures, Technical University of Vienna (\*1), Institute for Solid State Electronics, Technical University of Vienna (\*2), Institute for Photonics, Technical University of Vienna (\*3)*

ThA I-3 10:00~10:15

**Formation and Characterization of Fabry-Perot Cavities in Single GaAs Nanowires**

B. Hua, J. Motohisa, S. Hara, and T. Fukui

*Hokkaido University*

ThA I-4 10:15~10:30

**In situ X-ray Crystal Truncation Rod Scattering Measurements of Sb Irradiated GaAs (001) Surface**

Toshiyuki Kaizu(\*1), Masamitsu Takahashi(\*2), Koichi Yamaguchi(\*3), and Junichiro Mizuki(\*2)

*National Institute for Materials Science(\*1), Japan Atomic Energy Agency(\*2), University of Electro-Communications(\*3)*

ThA I-5 10:30~10:45

**Computational Study for Growth of GaN and ZnO on Non-polar Surfaces of GaN and ZnO**

Akira Ishii(\*1), Yasutake Oda(\*1), Katsutoshi Fujiwara(\*1), Atsushi Kobayashi(\*2), and Hiroshi Fujioka(\*2)

*Tottori Univ.(\*1), Tokyo Univ.(\*2)*

ThA I-6 10:45~11:00

**Ga Droplet Mediated Surface Ordering of GaP(111)B - Structure and Dynamics**

E. Hilner, A. Zakharov, L. Klanner, E. Lundgren, J. Andersen, and A. Mikkelsen

*Lund University*

ThA I-7 11:00~11:15

**GaAs High-k Dielectric MOS Structure Having Silicon Interface Control Layer**

Masamichi Akazawa and Hideki Hasegawa

*Research Center for Integrated Quantum Electronics, Hokkaido University*

## *GaN Optical Devices*

ThA II-1(invited) 14:15~14:45

**Present Status of LEDs and LDs Based on m-plane Gallium Nitride**

Kuniyoshi Okamoto(\*1), Taketoshi Tanaka(\*1), Masashi Kubota(\*1), Shigefusa F. Chichibu(\*2), and Hiroaki Ohta(\*1)

*ROHM Co., Ltd.(\*1), Tohoku Univ.(\*2)*

ThA II-2 14:45~15:00

**AlGa<sub>N</sub>-Cladding-Free Nonpolar InGa<sub>N</sub>/Ga<sub>N</sub> Laser Diodes**

Mathew C. Schmidt(\*1), Robert M. Farrell(\*1), Daniel F. Feezell(\*1), Makoto Saito(\*1), Kenji Fujito(\*2), Daniel A. Cohen(\*1), Shuji Nakamura(\*1), James S. Speck(\*1), and Steven P. DenBaars(\*1)

*University of California Santa Barbara(\*1), Mitsubishi Chemical Corporation(\*2)*

ThA II-3 15:00~15:15

**Continuous-Wave Operation of AlGa<sub>N</sub>-Cladding-Free Nonpolar m-plane InGa<sub>N</sub>/Ga<sub>N</sub> Laser Diodes**

Robert M. Farrell(\*1,\*3), Daniel A. Cohen(\*1,\*2), Mathew C. Schmidt(\*1,\*2), Daniel F. Feezell(\*1,\*2), Makoto Saito(\*1,\*2), Kenji Fujito(\*4), James S. Speck(\*1,\*2), Steven P. DenBaars(\*1,\*2,\*3), and Shuji Nakamura(\*1,\*2,\*3)

*Solid State Lighting and Display Center, University of California, Santa Barbara (\*1), Materials Department, University of California, Santa Barbara (\*2), Department of Electrical and Computer Engineering, University of California, Santa Barbara (\*3), Optoelectronics Laboratory, Mitsubishi Chemical Corporation(\*4)*

ThA II-4 15:15~15:30

**High-Current-Density Electroluminescence Spectra of Nonpolar and Semipolar InGa<sub>N</sub>/Ga<sub>N</sub> Blue and Green Light Emitting Diodes**

Daniel F. Feezell(\*1), Mathew C. Schmidt(\*1), Anurag Tyagi(\*1), Hisashi Masui(\*1), Robert M. Farrell(\*1), Daniel A. Cohen(\*1), Makoto Saito(\*2), Kenji Fujito(\*2), James S. Speck(\*1), Steven P. DenBaars(\*1), and Shuji Nakamura(\*1)

*Materials Department, University of California Santa Barbara(\*1), Optoelectronics Laboratory, Mitsubishi Chemical Corporation(\*2)*

ThA II-5 15:30~15:45

**Highly Efficient Deep-Ultraviolet Light Emitting Diodes and Removal of SiC Substrate**

Kenneth John Vampola, Craig G. Moe, Steven P. DenBaars, Shuji Nakamura, and James S. Speck

*University of California, Santa Barbara*

ThA II-6 15:45~16:00

**231-261nm AlGaIn Quantum Well Deep Ultraviolet Light-Emitting Diodes Fabricated on High-quality AlN Buffer on Sapphire**

Hideki Hirayama(\*1), Tohru Yatabe(\*1,\*2), Norimichi Noguchi(\*1,\*2), Tomoaki Ohashi(\*1,\*2), and Norihiko Kamata(\*2)  
*RIKEN(\*1), Saitama Univ.(\*2)*

ThA II-7 16:00~16:15

**230 nm-340 nm AlInGaIn Based Deep Ultraviolet Light-Emitting Diodes**

J. P. Zhang, Y. Bilenko, X. Hu, A. Lunev, A. Sattu, J. Deng, M. Shatalov, and R. Gaska

*Sensor Electronic Technology, Inc*

## *Photonic Nanostructure Devices*

ThB I-1 9:15~9:30

**Three-Dimensional Photonic Crystal Nanocavity with the Highest Q-Factor**

Kanna Aoki, Denis Guimard, Masao Nishioka, Masahiro Nomura, Satoshi Iwamoto, and Yasuhiko Arakawa

*Nanoelectronics Collaborative Research Center, The University of Tokyo*

ThB I-2 9:30~9:45

**Photonic Crystal Nanolaser Integrated with Passive Waveguide**

Kengo Nozaki, Hideki Watanabe, and Toshihiko Baba

*Yokohama National University*

ThB I-3(invited) 9:45~10:15

**Photonic Crystal Chips for Classical and Quantum Information Processing**

Jelena Vuckovic, Ilya Fushman, Andrei Faraon, Dirk Englund, Bryan Ellis, Yiyang Gong, and Maria Makarova

*Stanford University*

ThB I-4 10:15~10:30

**A Few-emitter Discrete Quantum Dot Microdisk Laser**

G. S. Solomon(\*1,\*2), W. Fanga(\*3), S. Gotzinger(\*2), X. Xie(\*2), and H. Cao(\*3)

*The Joint Quantum Institute (\*1), Stanford University (\*2), Northwestern University (\*3)*

ThB I-5 10:30~10:45

**Photonic-Crystal Lasers with Radially Polarized Doughnut Beams**

Kyosuke Sakai(\*1), Kyoko Kitamura(\*1), Yoshitaka Kurosaka(\*1), Wataru Kunishi(\*1,\*2), Dai Ohnishi(\*1,\*2), and Susumu Noda(\*1)

*Kyoto University(\*1), ROHM Co., Ltd.(\*2)*

ThB I-6 10:45~11:00

**Highly Integrated Widely Tunable Single Mode Laser with on-chip Power Control**

Mirjam Müller, Thomas Lehnhardt, Adam Bauer, Karl Rößner, Michael Hümmer, and Alfred Forchel

*Technische Physik, Universitaet Wuerzburg, Germany*

ThB I-7 11:00~11:15

**Surface Plasmon Enhanced Light Emission from Semiconductor Materials**

Koichi Okamoto(\*1,\*3), Axel Scherer(\*2), and Yoichi Kawakami(\*3)

*PRESTO, JST(\*1), Caltech(\*2), Kyoto Univ.(\*3)*

## **Oxide Semiconductors -Nanostructure-**

ThB II-1(invited) 14:15~14:45

### **Zinc Oxide Nanowire: Chemical and Physical Challenges and Limitations**

Magnus Willander

*ITN Linköping University Campus Norrköping Sweden*

ThB II-2(invited) 14:45~15:15

### **Oxide Semiconductor Quantum Electronics**

Akira Ohtomo

*Tohoku University*

ThB II-3 15:15~15:30

### **(Zn,Cd)O/ZnO Quantum Well Structures for Light-Emitting Applications**

S. Sadofev, S. Blumstengel, S. Kalusniak, J. Puls, P. Schafer, and F. Henneberger

*Department of Physics, Humboldt University of Berlin*

ThB II-4 15:30~15:45

### **Studies of Optical Emission in the High Intensity Pumping Regime for Self-Forming and Top Down ZnO Nanostructures Grown on c-Sapphire Substrates by Pulsed Laser Deposition**

L. Divay(\*1), D. J. Rogers(\*1, \*2), G. Lerondel(\*1), S. Kostcheev(\*1), S. Mc Murtry(\*1), and F. Hosseini Teherani(\*2)

*Universite de Technologie de Troyes(\*1), Nanovation SARL(\*2)*

ThB II-5 15:45~16:00

### **Observation of Anisotropic Quantum Phenomena in m-plane ZnO with Atomic-scale Defined Surface Nanowires**

Hiroaki Matsui(\*1) and Hitoshi Tabata(\*2)

*Center for the Promotion of Research on Nanoscience and Nanotechnology, Osaka University (\*1), Department of bioengineering, The University of Tokyo(\*2)*

ThB II-6 16:00~16:15

### **Grain Boundary Issues in ZnO Ceramics and Thin Films**

Naoki OHASHI, Isao Sakaguchi, Yutaka Adachi, Takeshi Ohgaki, Shunichi Hishita, and Hajime Haneda

*National Institute for Materials Science*

## **Poster Session, Oct.18th, Thursday (11:15-12:45)**

ThC P1

### **Light Propagation Characteristics of Waveguide-bound Triple Quantum Disks**

M. Yamaguchi, M. Yokoi, and N. Sawaki

*Nagoya University*

ThC P2

### **InGaAs/GaAs Quantum-Dot Infrared Photodetectors for Multi-Color Detection**

Jheng-Nan Chen(\*1), Chi-Che Tseng(\*1), Yi-Hao Chen(\*1), Meng-Chyi Wu(\*1), Shu-Ting Chou(\*2), and Shih-Yen Lin(\*2)

*Department of Electrical Engineering, National Tsing Hua University (\*1), Research Center for Applied Sciences, Academia Sinica (\*2)*

ThC P3

### **Study of Structural, Optical, and Photocurrent Behavior of Thick Multilayered Self-Assembled Quantum Dot InAs/InGaAs Structures as a Function of Doping.**

Tetsuya Asano(\*1), Krishnamurthy Mahalingam(\*2), Yi Zhang(\*1), and Anupam Madhukar(\*1)

*Univ. of Southern California(\*1), Air Force Research Laboratory(\*2)*

ThC P4

**Theoretical Analysis of Light Emission from a Coupled System of Photonic Nanocavities and Quantum Dots**

Makoto Yamaguchi, Takashi Asano, Masayuki Fujita, and Susumu Noda

*Department of Electronic Science and Engineering, Kyoto University*

ThC P5

**Prerequisites of Nanocavities for Single Artificial Atom Laser**

Masahiro Nomura(\*1,\*3), Satoshi Iwamoto(\*1,\*2,\*3), and Yasuhiko Arakawa(\*1,\*2,\*3)

*Institute of Industrial Science The University of Tokyo(\*1), Research Center for Advanced Science and Technology The University of Tokyo(\*2), Institute for Nano Quantum Information Electronics The University of Tokyo(\*3)*

ThC P6

**Dot-Count Effect on Emission Efficiency of Randomized Quantum Dots in Photonic Nanocavity System**

Masayuki Fujita, Wolfgang Stumpf, Makoto Yamaguchi, Takashi Asano, and Susumu Noda

*Kyoto University*

ThC P7

**InGaAs/GaAs Quantum-Dot Microdisk Lasers**

M.-H. Mao, H. C. Chien, C.-A. Chen, and D.-C. Wu

*Department of Electrical Engineering, National Taiwan University*

ThC P8

**Room Temperature CW Lasing in Photonic Crystal Nanolaser by Resonant Photopumping**

Kengo Nozaki, Shota Kita, and Toshihiko Baba

*Yokohama National University*

ThC P9

**Observation of RIE Induced Damage on Lasing Properties of GaInAsP/InP MQW Lasers Fabricated by 2-step Growths**

Dhanorm Plumwongrot(\*1), Munetaka Kurokawa(\*1), Tadashi Okumura(\*1), Yoshifumi Nishimoto(\*1), Takeo Maruyama(\*1,\*3), Nobuhiko Nishiyama(\*2), and Shigehisa Arai(\*1,\*3)

*Quantum Nanoelectronics Research Center, Tokyo Institute of Technology(\*1), Department of Electrical and Electronic Engineering, Tokyo Institute of Technology (\*2), CREST, Japan Science and Technology Agency (\*3)*

ThC P10

**Very Wide Wavelength Chirping in Photonic Crystal Nanolaser**

Hideki Watanabe, Kengo Nozaki, and Toshihiko Baba

*Yokohama National University*

ThC P11

**Improvement of Light Output and External Efficiency of Microlaser in Active/Passive-Integrated Photonic Crystal Slab**

Hideki Watanabe and Toshihiko Baba

*Yokohama National University*

ThC P12

**Fabrication of Blue-shifted Fabry-Perot Laser Diodes for Integration with Optical Passive Waveguides**

Young Tae Byun, Suhyun Kim, Sun Ho Kim, and Youngchul Chung

*Korea Institute of Science and Technology*

ThC P13

**Theoretical Design of Carrier Injection Rate and Recombination Rate in Tunnel Injection Quantum Well Lasers**

Yasutaka Higa, Tomoyuki Miyamoto, Hiroshi Nakajima, Kosuke Fujimoto, and Fumio Koyama

*Microsystem Reserch Center, P&I Lab., Tokyo Institute of Technology*



ThC P14

**Refractive Index Sensing Utilizing Photonic Crystal Nanolaser Array**

Shota Kita, Kengo Nozaki, and Toshihiko Baba

*Yokohama National University, Dept. Electrical and Computer Eng.*

ThC P15

**Anisotropic Behavior of the InGaN Light-Emitting Diodes Grown on Wet-Etched Patterned Sapphire Substrates with Stripes along the <11-20> and <1-100> Directions**

Chang-Chi Pan, Chi-Hsun Hsieh, Gung-Yen Lee, and Jen-Inn Chyi

*Department of Electrical Engineering, National Central University*

ThC P16

**Enhanced Modulation Bandwidth in 1.3- $\mu$ m Quantum-dot Lasers Utilizing Antimony-mediated High-density InAs Dots**

Mitsuru Ishida(\*1), Katsuyuki Watanabe(\*1), Naoto Kumagai(\*1), Yoshiaki Nakata(\*1), Nobuaki Hatori(\*1), Hisao Sudo(\*4,\*5,\*6), Tsuyoshi Yamamoto(\*4,\*5,\*6), Mitsuru Sugawara(\*4,\*5,\*6,\*7), and Yasuhiko Arakawa(\*1,\*2,\*3)

*Institute of Nano Quantum Information Electronics, The University of Tokyo(\*1), Research Center for Advanced Science and Technology, The University of Tokyo(\*2), Institute of Industrial Science, The University of Tokyo(\*3), Fujitsu Laboratories Limited (\*4), Optoelectronic Industry and Technology Development Association(\*5), and QD Laser Inc.(\*6)*

ThC P17

**Carrier-Density-Dependent Increase and Suppression of Optical Gain in T-Shaped Quantum-Wire Lasers**

Masahiro Yoshita(\*1), Makoto Okano(\*1), Toshiyuki Ihara(\*1), Hidefumi Akiyama(\*1), Ping Huai(\*2), Tetsuo Ogawa(\*2), Loren N. Pfeiffer(\*3), and Ken W. West(\*3)

*ISSP, Univ. of Tokyo and CREST, JST (\*1), Osaka Univ. and CREST, JST (\*2), Bell Labs., Alcatel-Lucent (\*3)*

ThC P18

**The Influence of Fermi Level Position on The Performances of Single-Period InAs/GaAs Quantum-Dot Infrared Photodetectors**

Shu-Ting Chou(\*1), Shih-Yen Lin(\*1), Jheng-Nan Chen(\*2), Chi-Che Tseng(\*2), Yi-Hao Chen(\*2), and Meng-Chyi Wu(\*2)

*Research Center for Applied Sciences, Academia Sinica (\*1), Department of Electrical Engineering, National Tsing Hua University (\*2)*

ThC P19

**Current-controlled Wavelength Tunability of a Quantum Cascade Laser**

Gyungock Kim, Ki Seok Jang, In Gyoo Kim, and Ki Joong Lee

*Electronic & Telecommunication Research Institute*

ThC P20

**THz radiation from n- and p-type InAs illuminated with femtosecond optical pulses under strong magnetic field**

Takeshi Nagashima, Hisashi Sumikura, Masahiko Tani, and Masanori Hangyo

*Osaka University*

ThC P21

**Polarization Detection of THz radiation with Three-Contacts Photoconductive Antenna**

Hiroyuki Makabe, Masahiko Tani, and Masanori Hangyo

*Institute of Laser Engineering, Osaka University*

ThC P22

**Optical Properties of GaP Photonic Crystals in Terahertz Region**

Kyosuke Saito(\*1), Tadao Tanabe(\*1), Yutaka Oyama(\*1), Ken Suto(\*2), Tomoyuki Kimura(\*2), and Jun-ichi Nishizawa(\*2)

*Tohoku Univ.(\*1), Semiconductor Research Inst.(\*2)*

ThC P23

**Largely Variable Electroluminescence Efficiency with Current and Temperature in Blue InGaN Multiple-Quantum-Well Diodes**

Yuichi Yamane(\*1), Kenzo Fujiwara(\*1), and Jinn-Kong Sheu(\*2)  
*Kyushu Institute of Technology(\*1), National Cheng-Kung University(\*2)*

ThC P24

**Screening Dynamics of Intrinsic Electric Fields in Deep AlGaIn Quantum Wells**

Saulius Marcinkevičius(\*1), Andrea Pinos(\*1), Kai Liu(\*2), Michael S. Shur(\*2), Jianping Zhang(\*3), and Remis Gaska(\*3)  
*Royal Inst. of Technology(\*1), Rensselaer Polytechnic Inst.(\*2), Sensor Electronic Technology(\*3)*

ThC P25

**Enhanced Quantum Efficiency of InGaIn Green Light-Emitting Diodes Prepared by Trimethylindium Treatment**

Hung-Cheng Lin, Ruo-Syuan Lin, and Jen-Inn Chyi  
*National Central University*

ThC P26

**Raman Scattering Study of B<sub>0.2</sub>GaN Growth on AlN Template Substrate**

S. Ould Saad Hamady(\*1), T. Baghdadli(\*2), S. Gautier(\*2), M. Bouchaour(\*2), J. Martin(\*2), and A. Ougazzaden(\*3)  
*LMOPS, Univ. Metz, CNRS UMR 7132 and SUPELEC, UMI 2958 GT-CNRS(\*1), LMOPS, Univ. Metz, CNRS UMR 7132 and SUPELEC(\*2), Georgia Institute of Technology(\*3)*

ThC P27

**Electro-modulation Enhancement in the InGaInAs/GaAs Quantum Well Structures**

Jia-Ren Lee, Chien-Rong Lu, Shing Lin Liu, Hao-Hsiung Lin, and Li-Wen Sun  
*National Chiayi Univ., National Taiwan Normal Univ., National Taiwan Univ.*

ThC P28

**The Effects of Current Blocking Layer in Vertical-structured GaN-based Light Emitting Diodes**

Jin-Bcok LEE, Sang-Ho Yoon, Seok-Beom Choi, Tae-Sung Jang, Doo-Go Baik, Jong-Gun Woo, and Su-Yeol LEE  
*Samsung electro-mechanics*

ThC P29

**Structural and Optical Properties of Er Doped GaN with Various Er Concentrations**

Shaoqiang Chen, Jongwon Seo, Junji Sawahata, and Katsuhiko Akimoto  
*Institute of Applied Physics, University of Tsukuba, Japan*

ThC P30

**Fabrication of GaN-based Light Emitting Diodes Using Direct Heteroepitaxial Lateral Overgrowth on Patterned Sapphire Substrates with Thick SiO<sub>2</sub> Masks**

Katsuyuki Hoshino, Toru Murata, Masahiro Araki, and Kazuyuki Tadatomo  
*Yamaguchi University*

ThC P31

**1.5- $\mu$ m Emission of Slightly Oxidized InN Crystals Grown by MOVPE**

M. Nakao(\*1, \*4), T. Shimada(\*1), M. Wakaba(\*1), N. Motegi(\*1), A. Gomyo(\*2), S. Mizuno(\*3), and T. Matsuoka(\*1, \*4)  
*Tohoku University(\*1), NEC Corporation(\*2), NTT-AT(\*3), CREST(\*4)*

ThC P32

**GaN- and AlGaIn-based UV-LEDs on Sapphire by Metalorganic Chemical Vapor Deposition**

T. Okimoto, M. Tsukihara, K. Kataoka, A. Kato, K. Nishino, Y. Naoi, and S. Sakai  
*The University of Tokushima*

ThC P33

**340nm-band High-power (>7 mW) InAlGa<sub>N</sub> Quantum Well UV-LED Using p-type InAlGa<sub>N</sub> Layers**

Sachie Fujikawa(\*1), Takayoshi Takano(\*1,\*2), Yukihiro Kondo(\*1,\*2), and Hideki Hirayama(\*1)

*RIKEN(\*1), Matsushita Electric Works, Ltd.(\*2)*

ThC P34

**Photoluminescence Investigation of GaN/ In<sub>x</sub>Ga<sub>1-x</sub>N Alloys Grown by MOCVD**

Yuan Jinshea and Chen Guangde

*Department of physics, Chongqing Normal University, China*

ThC P35

**Internal Electric Field Effect Free Ultra Thin In-rich InGa<sub>N</sub>/Ga<sub>N</sub> Multiple Quantum Well Light Emitting Diodes**

Sung Hyun Park(\*1), Hee Jin Kim(\*1), Soon-Yong Kwon(\*1), Pilkyung Moon(\*1), Suk Choi(\*1), Seung-Hwan Park(\*2), Taehoon Chung(\*3), Jong Hyeob Beak(\*3), Yoon Soo Park(\*4), and Euijoon Yoon(\*1)

*Seoul National Univ.(\*1), Catholic Univ. of Daegu(\*2), Korea Photonics Technology Institute(\*3), Rensselaer Polytechnic Institute(\*4)*

ThC P36

**Be-doping Effect for InGa<sub>N</sub>/Ga<sub>N</sub> Nanocolumn LEDs Grown by RF-assisted Molecular Beam Epitaxy**

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ThC P37

**All MOVPE Grown Nitride-based Blue LED Having sub mm Thick Ga<sub>N</sub> Underlayer**

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ThC P38

**Development of High-Efficiency InGa<sub>N</sub> Light-Emitting Diodes on Si Substrate with Optimum Reflection Mirror by Epilayer-Transfer Technology**

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ThD P1

**Growth Simulation of Ga<sub>N</sub>(0001) Homoepitaxy Based on the First Principles Calculation**

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ThD P2

**Defect-mediated Surface Morphology of Nonpolar m-plane Ga<sub>N</sub>**

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ThD P3

**Characteristics of GaAs<sub>N</sub>/GaAs Quantum Wells Grown by Metalorganic Vapor Phase Epitaxy on GaAs (001) Substrates**

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ThD P4

**Structural Studies of the Ga<sub>N</sub>As/Ga(Al)As MBE Grown Hetero Interfaces Using Modulated N Radical Beam Se-**

**quence**

Tsuneaki Kumamoto, Kensuke Fujii, Daisuke Nakase, Yuichi Iwata, Ayami Nishioka, Hayato Miyagawa, Yasuhiro Tanaka, Rintaro Ueji, and Shyun Koshiba  
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ThD P5

**Isotropic Interface Roughness of Pseudomorphic  $\text{In}_{0.74}\text{Ga}_{0.26}\text{As}/\text{In}_{0.52}\text{Al}_{0.48}\text{As}$  Quantum Wells Grown on (411)A InP Substrates by Molecular Beam Epitaxy**

T. Kitada(\*1), S. Kusunoki(\*2), M. Kinouchi(\*1), K. Morita(\*1), T. Isu(\*1), and S. Shimomura(\*3)  
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ThD P6

**Optical Anisotropy of Strained Quantum Wells on High Index Substrates**

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ThD P7

**Effects of V/III Ratio on the Photoluminescence Properties of  $\text{In}_{0.52}\text{AlAs}/\text{In}_{0.53}\text{GaAs}$  Metamorphic HEMT Grown by MBE**

Hongling Gao, Yiping Zeng, Baoqiang Wang, and Zhanping Zhu  
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ThD P8

**Interplay of Impurity Segregation and Lattice Mismatch in Molecular Beam Epitaxy of III'-III''-V Compounds Plus Dopant: Application to the InGaAs:Sn Nanoheterolayer Growth**

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ThD P9

**Effects on Surface Modulation by Periodic  $\text{AsH}_3$  Interruption (PAI)**

Changjae Yang, Jungsub Kim, Uk Sim, Youngsoo Lee, and Euijoon Yoon  
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ThD P10

**The Substrate Orientation Dependence of Be Doping in Molecular Layer Epitaxy of GaAs**

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ThD P11

**GaAs,  $\text{In}_x\text{Ga}_{1-x}\text{As}$  Epitaxial Films and  $\text{In}_x\text{Ga}_{1-x}\text{As}$  Quantum Wells on Porous GaAs**

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ThD P12

**Selective Growth of InP on Localized Areas of Silicon (100) Substrate by Molecular Beam Epitaxy**

Keisuke Araki, Shigehiko Hasegawa, and Hajime Asahi  
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ThD P13

**Growth and Characterization of GaSb Heteroepitaxial Layers on Si (111) Substrates**

Hideyuki Toyota(\*1), Takeshi Yasuda(\*1), Tetsuro Endoh(\*2), Yoshio Jinbo(\*1), and Naotaka Uchitomi(\*1)  
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ThD P14

**Heteroepitaxial InSb Films Grown via Si(111)- $\sqrt{7}\times\sqrt{3}$ -In Surface Reconstruction**

M.Mori, M.Saito, K.Nagashima, K.Ueda, Y.Yamashita, C.Tatsuyama, T.Tambo, and K.Maezawa

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ThD P15

**Effect of Structural Defects on Electron Mobility in InSb Quantum Wells Grown on GaAs (001) Substrates**

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ThD P16

**Heteroepitaxial Growth of InSb Films on a Si(111) Substrate by Inserting AlSb Buffer Layer**

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ThD P17

**Excess As in low-temperature Grown InAs**

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ThE P1

**Fabrication and Characterization of Ga-doped ZnO Thin Film for  $\alpha$ -particle Scintillator**

Yong-Seok Choi(\*1), Dae-Kue Hwang(\*1), Min-Suk Oh(\*1), Jae-Hong Lim(\*1), Kwang-Pyo Hong(\*2), Vyacheslav T. Em(\*2), Han-Woo Choi(\*3), and Seong-Ju Park(\*1)

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ThE P2

**Zinc Oxide Thin Films with  $Zn_xMg_{1-x}O$  Buffer on a Glass Substrate Produced by Pulsed Laser Ablation**

Toshihiko Maemoto, Hiroaki Ishii, Shigehiko Sasa, and Masataka Inoue

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ThE P3

**Photoresponse of a  $Pt/Mg_xZn_{1-x}O$  Schottky Photodiode on a ZnO Single Crystal**

Haruyuki Endo(\*1,\*2), Mayo Sugibuchi(\*3), Kohsuke Takahashi(\*3), Shunsuke Goto(\*4), Kazuhiro Hane(\*2), and Yasube Kashiwaba(\*5)

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ThE P4

**Two-dimensional Transport of Photoinduced Electrons in  $ZnO/Mg_{0.15}Mg_{0.85}O$  Heterostructures**

Atsushi Tsukazaki(\*1), Masaki Nakano(\*1), Akira Ohtomo(\*1), and Masashi Kawasaki(\*1,\*2)

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ThE P5

**Characterization of Mid-gap Defect Level in ZnO by High Resolution X-ray Photoelectron Spectroscopy Using Synchrotron Orbital Radiation**

Yutaka Adachi, Takeo Ohsawa, Naoki OHASHI, Isao Sakaguchi, Hideki Yoshikawa, Shigenori Ueda, Keisuke Kobayashi, and Hajime Haneda

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ThE P6

**Shallow Li-acceptor Levels in ZnO Films Codoped with Li and F Atoms**

Kenkichi Kobayashi(\*1), Yasumasa Tomita(\*1), Yasuhisa Maeda(\*1), and Hajime Haneda(\*2)

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ThE P7

**Effect of Phosphorus Doping through Ion-implantation on the Work Function of ZnO Thin Films**

G. S. Heo(\*1), S. J. Hong(\*1), J. H. Lee(\*1), and D. C. Shin(\*2)

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ThE P8

**Effects of RF Power on Impurity-doped Zinc Oxide Films by Plasma-enhanced Chemical Vapor Deposition**

Keisuke Yamaoka, Yoshikazu Terai, and Yasufumi Fujiwara

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ThE P9

**Influences of pH Effect on Growth Mechanism and Properties of ZnO Films by Sol-Gel Method**

Keng-yu Chou(\*1), Po-ming Chen(\*2), and Keh-moh Lin(\*1,\*2)

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ThE P10

**Growth of Thick ZnO films by Metal-Source Vapor Phase Epitaxy**

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ThE P11

**Influence of Chemical Synthesis and Properties of ZnO Nanocrystals**

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ThE P12

**Growth of Non-polar ZnO Films on LaAlO<sub>3</sub> Substrates**

Yen-Teng Ho(\*1), Mei-Hui Lianga(\*2), Jr-Sheng Tian(\*1), Chun-Yen Peng(\*1), Wei-Lin Wang(\*1), and Li Chang(\*1)

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ThE P13

**Preparation of ZnO:Ga Thin Films by Helicon-wave-excited Plasma Sputtering Method**

Shingo Masaki(\*1), Hisayuki Nakanishi(\*1), Mutsumi Sugiyama(\*1), Shigefusa F. Chichibu(\*2)

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ThE P14

**An Approach for Singlecrystalline Zinc Oxide Thin Film with Fine Channel Mist CVD Method**

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ThE P15

**The Electrical Conductivity of ZnO Nanowires**

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ThE P16

**Vertically Well-Aligned ZnO Nanorods by Ultrasonic Spray Chemical Vapor Deposition Using Au Catalyst and ZnO Buffer Layer**

Hiroyuki Nishinaka and Shizuo Fujita

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ThE P17

**High Performance GaN-based Blue Light Emitting Diodes Using Low temperature Sputtered Al and Ga Codoped ZnO Thin Films**

Tae Hoon Kim(\*1), Su Young Cha(\*1), Yong Chan Cho(\*1), Chae Ryong Cho(\*1), Se-Young Jeong(\*1), Seung Hyun Park(\*2), Sang Hern Lee(\*2), and Young Moon Yu(\*2)

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ThE P18

**Fabrication and Characterization of RF Magnetron Sputtered n-ZnO/p-GaN Heterojunction Light-emitting Diodes**

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ThE P19

**Investigation of Electric Double Layer and Crystal Shapes of Electrochemically Grown Zinc Oxide**

Kazuyuki Uno(\*1), Naoyuki Kanda(\*1), Masashi Aisu(\*1), Takayuki Asaoka(\*1), Tsutomu Ina(\*1), Ichiro Tanaka(\*1), and Munenori Yamashita(\*2)

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