

IMFEDK 2021 Program

11/18 (Thu).....

Opening

9:00-9:05 Opening Remarks by Mutsumi Kimura (Ryukoku University)

Keynote Speech-I

Chair: Hirobumi Watanabe

9:05-9:45

IN02 *Radiation Effects and Low-Frequency Noise in AlGaIn/GaN HEMTs*

Daniel M. Fleetwood, Ronald D. Schrimpf, EnXia Zhang, Sokrates T. Pantelides
(Vanderbilt University)

9:45-9:55 Short Break

General Session –Emerging 1- Chair: Mutsunori Uenuma

9:55-10:35

IN06 *<Invited> 3D Integrated CMOS-NEM Systems: Enabling Next-Generation Computing Technology*

Urmita Sikder, Tsu-Jae King Liu
(University of California Berkeley)

10:35-11:15

R01 *Thin-Film-Transistor-Based Active Pixel Sensor Circuits with an Organic Photoconductive Film*

Koki Imamura, Toshikatsu Sakai, Tomomi Takagi, Keitada Mineo,
Toshihisa Watabe, Hiroto Sato and Satoshi Aihara

(NHK Science & Technology Research Laboratories)

R05 *Wigner Monte Carlo Simulation of Quantum Superposition States*

Yuya Kunimoto and Nobuya Mori

(Osaka University)

11:15-11:25 Short Break

Poster Oral Short Presentation

Chair: Yuichi Ando

11:25-12:05

- P01 Investigation of the light sensitivity of LTPS TFTs for optical sensors
Masataka Mori, Kohei Toyoda, Ryota Ichikawa, Yuise Sadamura, and Mutsumi Kimura
(Ryukoku University)
- P02 Dependence of properties on Ga-Sn-O thin film thermoelectric conversion element for hydrochloric acid and diluting gas using mist CVD method
Ryo Ito, Yuhei Yamamoto, Naoki Shibata, and Mutsumi Kimura
(Ryukoku University)
- P03 Characterization of Ga-Sn-O thin film synapses using Spike-Timing-Dependent-Plasticity learning rules
Kenta Yatida, Tetuya Katagiri, Kazuki Morigaki, Norito Komai, Naoki Sahara, and Mutsumi Kimura
(Ryukoku University)
- P05 Memcapacitive characteristics of ferroelectric capacitance for neuromorphic systems and application of Y-doped Hf_{0.5}Zr_{0.5}O₂
Daiki Matsukawa, Yuma Ishisaki, Hiroki Umemura, Mutsumi Kimura, Mohit and Eisuke Tokumitsu
(Ryukoku University)
- P06 Characteristics of 3-layer Ga-Sn-O thin film synapses for neuromorphic devices using Spike-timing-dependent plasticity
Kazuki Morigaki, Tetsuya Katagiri, Kenta Yachida, Norito Komai, Naoki Sahara and Mutsumi Kimura
(Ryukoku University)
- P07 Evaluation of electrical properties of ferroelectric HfO₂ thin films for neuromorphic Systems
Hiroki Umemura, Yuma Ishisaki, Daiki Matsukawa, Mutsumi Kimura and Hiroyuki Nishinaka
(Ryukoku University)
- P08 Investigation of multi-level characteristics in Ga-Sn-O three-layered ReRAM
Daisuke Makioka, Kaito Hashimoto, Ryo Sumida, Shu Shiomi and Mutsumi Kimura
(Ryukoku University)

- P09 Solution-processed Barium Titanate/Polysiloxane Polymer Thin Film for Memory Application
Aimi Syairah Safaruddin, Juan Paolo S. Bermundo, Mutsunori Uenuma, Atsuko Yamamoto*, and Yukiharu Uraoka (NAIST)
- P10 Bayesian optimization of PECVD process for SiO₂/GaN interface
Shintaro Harada, Mutsunori Uenuma, Tomoyuki Miyao, and Yukiharu Uraoka (NAIST)
- P11 Evaluation of pin-type LTPS-TFPT for Optical Sensor Applications
Ryota Ichikawa, Kohei Toyoda, Masataka Mori, Yuise Sadamura, and Mutsumi Kimura (Ryukoku University)
- P12 Enhanced gain characteristics of AlGa_N/Ga_N MOS-HEMTs with Al₂O₃ gate dielectric
Kazuki Shibata, Kai Herbert, Ali Baratov, Joel T. Asubar, Akio Wakejima, and Masaaki Kuzuhara (Kwansei Gakuin University)
- P13 Growth of corundum structured oxides and their alloy for lattice matched applications.
Kazuki Shimazoe, Hiroyuki Nishinaka, and Masahiro Yoshimoto (Kyoto Institute of Technology)
- P14 Identification of Electro Luminescence locations of GaN HEMTs through SiC substrates
S. Urano, Q. Ma, Y. Ando, A. Tanaka, and A. Wakejima (Nagoya Institute of Technology)
- P15 A highly sensitive and specific detection of biomarker of Parkinson's disease by liposome-immobilized cantilever sensor
Kotaro Kamitani, Masanori Sawamura, Hodaka Yamakado, Masayuki sohgawa, Minoru Noda (Kyoto Institute of Technology)
- P16 Investigation of Electrode Materials for Developing Process Scheme of Transparent ReRAM Cell Fabrication
Masahiro Suzuki, Yoshiaki Ishii, Masahiro Moniwa. (Tokyo University of Technology)

P17 Implementation of gate-type quantum computing algorithm to solve Poisson equation for semiconductor nanowire p-n junction

Shingo Matsuo and Satofumi Souma
(Kobe University)

P18 Development of device and circuit simulation framework based on phosphorene tunnel field-effect transistors

Kosuke Yamaguchi and Satofumi Souma
(Kobe University)

12:05-13:05 Lunch

Poster Presentation 1 @Break out Room

13:05-14:05

General Session –Emerging 2- Chair: Shingo Sato

14:05 -14:45

IN03 *<Invited> Prototypes of molecular machines: motors, gears and vehicles*

Gwénaél Rapenne
(NAIST, University Paul Sabatier)

14:45-15:45

R02 *Developing Ultralow Trun-on Voltage Diode by Steep Slope “PN-Body Tied SOI-FET”*

Masayuki Ono, Jiro Ida, Takayuki Mori, Koichiro Ishibashi
(Kanazawa Institute of Technology)

R06 *Impact of Anharmonic Phonon-Phonon Scattering on Phonon Transport in One-Dimensional System*

Atsuya Komada and Nobuya Mori
(Osaka University)

R10 RF Evaluation of Steep Subthreshold Slope “PN-Body Tied SOI-FET”

Mitsuhiro Yuizono, Jiro Ida, Takayuki Mori, Koichiro Ishibashi
(Kanazawa Insutitute of Technorogy)

15:45-15:55 Short Break

General Session –Compound 1- Chair: Joel T. Asubar

15:55-17:15

IN01 *<Invited> Polarization engineering in GaN-based normally-off transistors*

Dagmar Gregušová, Ondrej Pohorelec, Milan Ťapajna, Michal Blaho, Filip Guemann, Roman Stoklas, Stanislav Hasenöhrl, Agáta Laurenčíková, Peter Šichman, Štefan Haščík and Ján Kuzmík
(Slovak Academy of Science)

IN08 *<Invited> Review of vertical GaN based FETs*

E. Bahat Treidel*, O. Hilt and J. Würfl
(Ferdinand-Braun-Institut)

17:15-17:25 Short Break

General Session –Compound 2- Chair: Ken Nakahara

17:25-18:05

IN07 *<Invited> Characterization of interface states at oxide/GaN(AlGaN) interfaces using illumination*

Bogusława Adamowicz
(Silesian University of Technology)

18:05-18:45

R03 *Mist chemical vapor deposited-Al₂O₃/AlGaN interfacial characterization for GaN MIS-HEMTs*

Tomohiro Motoyama, Zenji Yatabe, Yusui Nakamura, Ali Baratov, Rui Shan Low, Shun Urano, Joel T. Asubar, Masaaki Kuzuhara
(Kumamoto University)

R09 *Electrical properties of GaN-based MIS-HEMTs with Al₂O₃ gate insulator deposited by ALD and mist-CVD techniques*

S. Urano, R. S. Low, M. Faris, M. Ishiguro, I. Nagase, A. Baratov, J. T. Asubar, T. Motoyama, Y. Nakamura, Z. Yatabe and M. Kuzuhara
(University of Fukui)

Closing

11/19 (Fri.)

Keynote Speech-

Chair: Mutsumi Kimura

9:00-9:40

IN09 *Current status of high-power GaN HEMTs and future prospects on AlN-based devices*

Junji Kotani, Shiro Ozaki, Junya Yaita, Atsushi Yamada, and Toshihiro Ohki (Fujitsu)

9:40-9:50 Short Break

General Session –Industrial 1-

Chair: Yasuhiro Murase

9:50-11:50

IN13 *<Invited> Heterogenous 3D Integration with Hybrid Bonding*

Abul Nuruzzaman
(Xperi Holding Corporation)

IN10 *<Invited> Antenna-integrated Module design toward 6G*

Saneaki Ariumi
(Murata Manufacturing)

IN11 *<Invited> Smart Silicon Manufacturing Technology, Breakthrough for 150 years of life*

Shuji Ikeda
(tei Solutions)

11:50-13:00 Lunch

Poster Presentation 2 @Break out Room

13:00-14:00

General Session –Compound 3-Chair: Masayuki Furuhashi

14:00-14:40

IN04 <Invited> *Negative Bias Temperature Instability in 4H-SiC MOSFETs Investigated by On-the-fly Methods*

Dai Okamoto, Mitsuru Sometani, Hirohisa Hirai, Mitsuo Okamoto, and Tetsuo Hatakeyama
(Toyama Prefectural University)

14:40-15:20

R04 *Fabrication and Characterization of ZrO₂/AlGa_N/Ga_N MIS-HEMTs with regrown AlGa_N Layer*

S. Maeda, I. Nagase, A. Baratov, S. Urano, J. T. Asubar, A. Yamamoto, M. Kuzuhara
(University of Fukui)

R08 *Analysis of Electronic States at SiC MOS Interface Based on Empirical Pseudopotential Method*

Sachika Nagamizo, Hajime Tanaka, and Nobuya Mori
(Osaka University)

15:20-15:35 Short Break

General Session –Compound 4- Chair: Hidetoshi Ishida

15:35-16:15

IN05 <Invited> *Monte Carlo Simulation of Electron Mobility in SiC MOSFETs*

Hajime Tanaka and Nobuya Mori
(Osaka University)

16:15-16:35

R07 *Recessed gate Ga_N-based MIS-HEMTs with Al₂O₃ gate dielectric deposited by mist-CVD method*

M. Ishiguro, S. Urano, R. S. Low, M. Faris, I. Nagase, A. Baratov, J. T. Asubar, T. Motoyama, Y. Nakamura, Z. Yatabe, M. Kuzuhara

(University of Fukui)

16:35-16:45 Short Break

General Session –Industrial 2- Chair: Minoru Noda

16:45-18:05

IN12 <Invited> *Silicon Photonics for device interconnect*

Makoto Ueda
(Global Foundries)

IN14 <Invited> *Immersive Media for Connecting with Remote Family and Friends - Development of Space-Sharing Content Viewing System –*

Takuya Handa, Kazuma Yoshino, Hiroyuki Kawakita, Kensuke Hisatomi
(NHK)

Awards & Closing Remark

18:05-18:25 Award Presentation N.Ueda (Ricoh Electronic Device)

18:25-18:30 Closing Remark H.Watanabe (W.T.C.)