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 AlGaN/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)

10:35-1115

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**

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 Hf0.5Zr0.5O2

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 AlGaN/GaN 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 Luminscence 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*

Gwénaël 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 Gucmann, 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*

Boguslawa 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 AIN-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 F*abrication and Characterization of ZrO2/AlGaN/GaN MIS-HEMTs with regrown AlGaN 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 GaN-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	(Ricoh)