ISDCS 2019 Program Overview

Workshop		Symposium			
March 6 (Wednesday)		March 7 (Thursday)		March 8 (Friday)	
Time	Content	Time	Content	Time	Content
10:00 – 10:10	**Workshop Opening**	8:50 – 8:55	**Symposium Opening**		
10:10 – 11:50	**Session I**	8:55 – 9:35	**Plenary Lecture I**	8:55 – 9:35	**Plenary Lecture V**
		9:35 – 10:15	**Plenary Lecture II**	9:35 – 10:15	**Plenary Lecture VI**
		10:15 – 10:30	**Coffee Break**	10:15 – 10:30	**Coffee Break**
		10:30 – 11:10	**Plenary Lecture III**	10:30 – 11:10	**Plenary Lecture VII**
		11:10 – 12:30	**Session IV** **Circuits and Hybrid Systems**	11:10 – 12:30	**Session VIII** **Device Modeling I**
11:50 – 13:00	**Lunch Break**	12:30 – 13:30	**Lunch Break**	12:30 – 13:30	**Lunch Break**
13:00 – 15:05	**Session II**	13:30 – 14:10	**Plenary Lecture IV**	13:30 – 14:10	**Plenary Lecture VIII**
		14:10 – 15:10	**Session V** **Device Technology**	14:10 – 15:30	**Session IX** **Circuits and Systems II**
15:05 – 15:25	**Coffee Break**	15:10 – 15:30	**Coffee Break**	15:30 – 15:40	**Coffee Break**
15:25 – 17:05	**Session III**	15:30 – 16:50	**Session VI** **Advanced Technology**	15:40 – 16:40	**Session X** **Device Modeling II**
		16:50 – 17:00	**Coffee Break**	16:40 – 17:00	**Open Discussion and Closing Remarks**
		17:00 – 18:00	**Session VII** **Circuits and Systems I**		
17:05 – 17:10	**Closing Remarks**	18:30 – 20:30	**Dinner**		

ISDCS 2019 Workshop Program

March 6, 2019

Workshop Opening
Chair: *T. Tabei, RNBS, Hiroshima University, Japan*
10:00 – 10:10 **Opening Remarks:**
S. Yokoyama, RNBS, Hiroshima University, Japan

Session I
Chair: *S. Yokoyama, RNBS, Hiroshima University, Japan*
10:10 – 11:00 Semiconductor Photodetectors (Invited)
P. Chakrabarti, Indian Institute of Engineering Science and Technology, Shibpur
11:00 – 11:50 Coherent Ising Machine - Optical Neural Network operating at the Quantum Limit (Invited)
Y. Yamamoto, Japan Science and Technology Agency

11:50 – 13:00 **Lunch Break**

Session II
Chair: *Y. Amemiya, RNBS, Hiroshima University, Japan*
13:00 – 13:50 A 300-mm-wafer silicon photonics technology for advanced information systems (Invited)
K. Yamada, AIST, Japan
13:50-14:15 Response Characteristics of Optical Waveguides Containing Diarylethene
K. Tanimoto, Y. Amemiya, and S. Yokoyama (Hiroshima University, Japan)
14:15 – 14:40 Effect of Anti-Reflective Coating for Si Optical Resonator Biosensors
J. Maeda, S. Yokoyama, R. Funamoto, and Y. Amemiya (Hiroshima University, Japan)
14:40 – 15:05 Accurate Prediction of Photocurrent Response for High Performance Optoelectric Circuit Simulation
Y. Shintaku, S. Kusu, T. Miyoshi, G. Suzuki, K. Konno, and M. Miura-Mattausch (Hiroshima University, Japan)

15:05-15:25 **Coffee Break**

Session III
Chair: *T. Tabei, RNBS, Hiroshima University, Japan*
15:25 – 16:15 Development of silicon photonics integrated circuits for next generation optical access networks (Invited)
H. Sasaki, Oki Electric, Japan
16:15 – 16:40 Hybrid Integration of Photonic Devices and CMOS Amplifiers
T. Uruma, T. Tabei, S. Yokoyama, Y. Amemiya, T. Sato, S. Yamada, and K. Okada (Hiroshima University, Japan)
16:40 – 17:05 Heterogeneous Integration of GaN Device Layer by Epitaxial Film Bonding
M. Ogihara (Filnex Corporation, Japan), S. Yokoyama and Y. Amemiya (Hiroshima University, Japan)

17:05 – 17:10 **Closing Remarks**
S. Yokoyama, RNBS, Hiroshima University, Japan

ISDCS 2019 Symposium Program (Tentative)

March 7, 2019

Symposium Opening
Chair: *H. J. Mattausch, Hiroshima University, Japan*
8:50 – 8:55 **Opening Remarks**
Y. Yamamoto, Hiroshima University, Japan

Plenary Lecture I
Chair: *H. J. Mattausch, Hiroshima University, Japan*
8:55 – 9:35 Organic Semiconductor Devices and Applications
P. Chakrabarti, IIEST, Shibpur, India
Plenary Lecture II
Chair: *H. Rahaman, IIEST, Shibpur, India*
9:35 – 10:15 Business Strategy, PPM (Product Portfolio Management), Differentiation in Technology and World Business Deployment
T. Bizen, Murata Mfg. Co., Ltd, Japan

10:15 – 10:30 **Coffee Break**

Plenary Lecture III
Chair: *T. Koide, Hiroshima University, Japan*
10:30 – 11:10 Technical commentary for Shogi Daisashi Robot “Denoute series"
H. Sawada, DENSO Corporation, Japan

Session IV Circuits and Hybrid Systems
Chair: *K. Johguchi, Shinshu University, Japan*
11:10 – 11:30 Low Cost and Robust Field-Deployable Environmental Sensor for Smart Agriculture
T. Kasama (University of Tokyo, Japan), T. Koide (Hiroshima University, Japan), W. P. Bula (University of Tokyo, Japan), Y. Yaji (Akita Prefectural University, Japan), Y. Endo (University of Tokyo, Japan), and R. Miyake (University of Tokyo, Japan)
11:30 – 11:50 A hybrid active vision system for real time application running object recognition
D. P. Nguyen (RMIT University Vietnam)
11:50 – 12:10 Analysis of Humanoid Robot Push Reaction with Gyro Sensor
S. Dutta, T. K. Maiti, Y. Ochi, M. Miura-Mattausch, S. Bhattacharya, N. Yorino and H. J. Mattausch (Hiroshima University, Japan)
12:10 – 12:30 Power Consumption Estimation of Biped Robot During Walking
T. K. Maiti, S. Dutta, Y. Ochi, M. Miura-Mattausch, S. Bhattacharya, and H. J. Mattausch (Hiroshima University, Japan)

12:30 – 13:30 **Lunch Break**

Plenary Lecture IV
Chair: *S. Dasgupta, IIT-Roorkee, India*
13:30 – 14:10 4H-SiC MOSFET Electronics for Harsh Environment Applications
S. Kuroki, Hiroshima University, Japan

Session V Device Technology
Chair: *P. Bhattacharya, IIEST, Shibpur, India*
14:10 – 14:30 Analysis of Embedded-Diode Performance in MOSFET under Switching Condition
T. Yamamoto (Denso, Japan), M. Miura-Mattausch, D. Navarro, and H. J. Mattausch (Hiroshima University, Japan)
14:30 – 14:50 Analysis of IGBT Charging/Discharging Mechanism for Accurate Compact Modeling
Y. Miyaoku, A. Tone, Matsuura, H. Kikuchihara, *M. Miura-Mattausch, H. J. Mattausch, and D. Ikoma (Hiroshima University, Japan)*
14:50 – 15:10 A Novel Step-shaped Gate Tunnel FET with Low Ambipolar Current
M. Liu and Q. Xie (University of Electronic Science and Technology of China)

15:10 – 15:30 **Coffee Break**

Session VI Advanced Technology
Chair: *S. Yokoyama, RNBS, Hiroshima University, Japan*
15:30– 15:50 Structuring Element-counting Approach for Morphological Pattern Spectrum-based Image Manipulation Detection
K. Kageyama (Ritsumeikan University, Japan), T. Koide (Hiroshima University, Japan), T. Kumaki (Ritsumeikan University, Japan)
15:50 – 16:10 Development of In-situ Monitoring System for Crop Growth Observation
H. Murakami, Y. Tanaka, J.-I. Yamashita, R. Takeshita (National Institute of Technology, Kurume College, Japan); T. Okamoto, Y. Sakane, and T. Koide (Hiroshima University, Japan)
16:10 – 16:30 An IoT-gateway with the information-centric communication
K. Inoue, N. Kobori, A. Hirota (National Institute of Technology, Akashi College, Japan), T. Koide and T. Okamoto (Hiroshima University, Japan)
16:30 – 16:50 Hardware Efficient Convolution Processing Unit for Deep Neural Networks
A. Hazarika, S. Poddar (Indian Institute of Information Technology, Guwahati), and H. Rahaman (Indian Institute of Engineering Science and Technology, Shibpur)

16:50 – 17:00 **Coffee Break**

Session VII Circuits and Systems I
Chair: *D. Navarro, Hiroshima University, Japan*
17:00 – 17:20 Feature Extraction of Colorectal Endoscopic Images for Computer-Aided Diagnosis with CNN
T. Okamoto, T. Koide, T. Tamaki, B. Raytchev, K. Kaneda (Hiroshima University, Japan), S. Yoshida, H. Mieno (Medical Corporation JR Hiroshima Hospital, Japan), and S. Tanaka (Hiroshima University Hospital, Japan)
17:20 – 17:40 Comparative Stability Analysis of Pristine and AsF_5 Intercalation Doped Top Contact Graphene Nano Ribbon Interconnects
S. Das, S. Bhattacharyya (IIEST, Shibpur, India); D. Das (Assam University, India); H. Rahaman (IIEST, Shibpur, India)
17:40 – 18:00 Single Phase AC-DC Cascaded Boost-SEPIC (CBS) Converter for Improved Power Quality at High Duty Cycle
M. D. Rahman, M. S. Kabir, M. N. Rabbi, M. A. H. Sarkar, G. Sarowar (IUT, Bangladesh)

March 8, 2019

Plenary Lecture V
Chair: *H. J. Mattausch, Hiroshima University, Japan*
8:55 – 9:35 Design of Reconfigurable Logic using beyond CMOS Technologies
S. Dasgupta, IIT-Roorkee, India

Plenary Lecture VI
Chair: *T. Mizoguchi, Toshiba Device & Storage Co., Ltd., Japan*
9:35 – 10:15 CNT/Graphene Based Interconnects
H. Rahaman, IIEST, Shibpur, India

10:15 – 10:30 **Coffee Break**

Plenary Lecture VII
Chair: *T. Iizuka, Hiroshima University, Japan*
10:30 – 11:10 Effect of ReSURF Implant on the Performance, Variability and HCI Reliability of 15V nLDMOS Transistors
N. R. Mohapatra, IIT Gandhinagar, India

Session VIII Device Modeling I
Chair: *N. R. Mohapatra, IIT Gandhinagar, India*
11:10 – 11:30 Potentiallity of Surface Modified TiO_2 Nanoflowers for Alcohol Sensing Application
I. Maity and P. Bhattacharyya (Indian Institute of Engineering Science and Technology, Shibpur)
11:30 – 11:50 An Integrated CO_2 Sensor Using TiO_2NT/RGO Hybrid Sensing Layer with embedded Micro hot Plate
S. Ghosal, I. Maity, and P. Bhattacharyya (Indian Institute of Engineering Science and Technology, Shibpur)
11:50 – 12:10 Source/Drain (S/D) Spacer Based Reconfigurable Devices-Advantages in High Temperature Applications and Digital Logic
A. Bhattacharjee (Tripura Insititue of Technology, India) and S. Dasgupta (Indian Institute of Technology Roorkee, India)
12:10 – 12:30 Validation on Duality in Impact-ionization Carrier Generation at the Onset of Snapback in Power MOSFETs
T. Iizuka (Hiroshima University, Japan), H. Hashigami (RICOH Electronic Devices Co., Ltd., Japan), M. Miura-Mattausch (Hiroshima University, Japan), and H. J. Mattausch (Hiroshima University, Japan)

12:30 – 13:30 **Lunch Break**

Plenary Lecture VIII
Chair: *T. Yamamoto, DENSO Corporation, Japan*
13:30 – 14:10 Maneuvering the Nanostructures of ZnO and TiO_2 using Reduced Graphene Oxide for Efficient Binary Hybrid Gas Sensor Device Development
P. Bhattacharya, IIEST, Shibpur, India

Session IX Circuits and Systems II
Chair: *H. Murakami, National Institute of Technology, Kurume College, Japan*
14:10 – 14:30 HD 180 FPS FPGA Processor to Generate Depth Image with Clear Object Boundary
M. Miyama (Kanazawa University, Japan)
14:30 – 14:50 A CMOS Integrated Sweat Monitoring System for Medical Applications
T. Sakata and K. Johguchi (Shinshu University, Japan)
14:50 – 15:10 A Low-Power Approximate Multiply-Add Unit
T. Yang, T. Sato, and T. Ukezono (Fukuoka University, Japan)
15:10 – 15:30 A low power driver amplifier for Fully Differential ADC
S. Bhar, A. Mondal, S. Srimani (IIEST, Shibpur, India), I. Hatai (National University of Singapore); S. Das, K. Ghosh, and H. Rahaman (IIEST, Shibpur, India)

15:30 – 15:40 **Coffee Break**

Session X Device Modeling II
Chair: *T. Saito, RENESAS, Japan*
15:40 – 16:00 Capacitance and Surface Potential model for III-V Double-Gate FET
S. Chandran, M. D. Ganeriwala, and N. R. Mohapatra (IIT Gandhinagar, India)
16:00 – 16:20 Estimation of non-linear effects for Capacitive DAC in SAR ADC : An Analytical Model
A. Chowdhary, S. Srimani, S. Das, K. Ghosh, and H. Rahaman (IIEST, Shibpur, India)
16:20 – 16:40 Optimization of DC-DC Power Converter Design with Second Generation HiSIM_HV Model
S. Ghosh, V. Roshan, A. Dutta, S. Das (IIEST, Shibpur, India), T. K. Maiti, M. Miura-Mattausch (Hiroshima University), and H. Rahaman (IIEST, Shibpur, India)

16:40 – 17:00 **Open Discussion and Closing Remarks**