edtm 2024
Electron Devices Technology and Manufacturing Conference

Program Book

IEEE EDTM 2024

IEEE Electron Devices Technology and Manufacturing (EDTM) Conference 2024

Strengthening the Globalization in Semiconductors

March 3rd - 6th, 2024
Bangalore, India

Organized by

IEEE Advancing Technology for Humanity

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Table of Contents

Intro 2
Committees 3
Conference Schedule 12
Tutorials 14
Short Courses 15
Planery Session 16
Session 1 16
Session 2 20
Session 3 24
Evening Panel Discussion 1 28
Poster Session 1 29
Planery Session 36
Session 4 36
Session 5 42
Session 6 46
Evening Panel Discussion 2 50
Poster Session 2 51
Planery Session 58
Session 7 58
Session 8 64
Advertisements 69

Introduction

IEEE Electron Devices Technology and Manufacturing (IEEE EDTM) Conference was established by the IEEE Electron Devices Society (EDS) to enable further performance/functionality enhancement of semiconductor devices and systems with manufacturing innovations to overcome scaling challenges. IEEE EDTM provides the forum where device, process, material, and tool communities gather and discuss their novel ideas for technological breakthrough. IEEE EDTM rotates among Asian countries where hot-hubs of semiconductor manufacturing are located. Launched in 2017 in Toyama, Japan, IEEE EDTM was subsequently held in Kobe, Japan (2018), in Singapore (2019), in Penang, Malaysia (2020), in Chengdu, China (2021), in Oita, Japan (2022), in Seoul, Korea (2023), and will take place for the first time in Bangalore, India this year. IEEE EDTM is a premier conference, providing a unique forum for discussions on a broadrange of device manufacturing-related topics.

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Conference Schedule

Day 0 (3rd March 2024, Sunday)		
Time	**Agenda**	**Rooms**
09:30 AM - 11:00 AM	Tutorials 1 - 4	Audi 4, Audi 5 Audi 8, Audi 9
11:00 AM - 11:30 AM	Tea, Coffee, Networking	Pre-function area
11:30 AM - 01:00 PM	Tutorials 1 - 4	Audi 4, Audi 5 Audi 8, Audi 9
01:00 PM - 02:30 PM	Lunch, Networking	Terrace
02:30 PM - 04:00 PM	Short Courses 1 - 3	Audi 4, Audi 8, Audi 9
04:00 PM - 04:30 PM	Tea, Coffee, Networking	Pre-function area
04:30 PM - 06:00 PM	Short Courses 1 - 3	Audi 4, Audi 8, Audi 9
07:30 PM - 10:00 PM	Dinner	Terrace

Day 1 (4th March 2024, Monday)		
Time	**Agenda**	**Rooms**
09:00 AM - 09:30 AM	Inauguration	Audi 1 + 2 + 3
09:30 AM -10:20 AM	Plenary - 1	
10:20 AM - 11:10 AM	Plenary - 2	
11:10 AM - 11:30 AM	Tea, Coffee, Networking	Pre-function area
11:30 AM - 01:00 PM	Parallel Sessions (1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7,Audi 8, Audi 9
01:00 PM - 02:00 PM	Tea, Coffee, Networking	Pre-function area
02:00 PM - 03:30 PM	Parallel Sessions (2A, 2B, 2C, 2D,2E, 2F, 2G, 2H, 2J)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7, Audi 8, Audi 9, Audi 10
03:30 PM - 03:45 PM	Tea, Coffee, Networking	Pre-function area
03:45 PM - 05:15 PM	Parallel Sessions (3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7, Audi 8, Audi 9
05:15 PM - 05:45 PM	Tea, Coffee, Networking	Pre-function area
06:00 PM - 07:30 PM	Poster Session 1	Audi 2 + 3
06:00 PM - 07:30 PM	IEEE Young Professionals Event	Audi 8 + 9
06:30 PM - 07:30 PM	Evening Panel Session 1	Audi 1
08:00 PM -10:30 PM	Dinner - General Chair's Reception	Terrace

Day 2 (5th March 2024, Tuesday)		
Time	**Agenda**	**Rooms**
09:00 AM - 09:50 AM	Plenary - 3	Audi 1 + 2 + 3
09:50 AM - 10:40 AM	Plenary - 4	
10:40 AM - 11:00 AM	Tea, Coffee, Networking	Pre-function area
11:00 AM - 01:00 PM	Parallel Sessions (4A, 4B 4C, 4D, 4E, 4F, 4G, 4H)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7,Audi 8, Audi 9
01:00 PM - 02:00 PM	Lunch, Networking	Terrace
02:00 PM - 02:30 PM	Parallel Sessions (5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7, Audi 8, Audi 9,
03:30 PM - 03:45 PM	Tea, Coffee, Networking	Pre-function area
03:45 PM - 05:15 PM	Parallel Sessions (6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7, Audi 8, Audi 9
05:15 PM - 05:45 PM	Tea, Coffee, Networking	Pre-function area
06:00 PM - 07:30 PM	Poster Session 2	Audi 2 + 3
06:00 PM - 07:30 PM	IEEE WiEDS Event	Audi 8 + 9
06:30 PM - 07:30 PM	Evening Panel Session 2	Audi 1
08:00 PM -10:30 PM	Dinner	Terrace

Day 3 (6th March 2024, Wednesday)		
Time	**Agenda**	**Rooms**
09:00 AM - 09:50 AM	Plenary – 5	Audi 1 + 2 + 3
09:50 AM - 10:40 AM	Plenary – 6	
10:40 AM - 11:00 AM	Tea, Coffee, Networking	Pre-function area
11:00 AM - 01:00 PM	Parallel Sessions (7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H)	Audi 1, Audi 2, Audi 3, Audi 4, Audi 5, Audi 6+7, Audi 8, Audi 9
01:00 PM - 02:00 PM	Lunch, Networking	Terrace
02:00 PM - 04:00 PM	Parallel Sessions (8A, 8B, 8C, 8D, 8E, 8F)	Audi 1, Audi 2 Audi 3, Audi 4, Audi 5, Audi 6+7
02:00 PM - 04:00 PM	Student Research Forum	Audi 8 + 9
04:00 PM - 05:00 PM	Tea, Coffee, Networking	Pre-function area
05:00 PM - 06:00 PM	Cultural Event/Entertainment	Audi 1 + 2 + 3
06:00 PM - 07:00 PM	Closing Ceremony, Awards	Audi 1 + 2 + 3
07:00 PM - 09:30 PM	Thanksgiving Dinner	Terrace

Tutorials

T1 : Wide Bandgap Devices for RF and Power Applications

Sunday, March 3, 09:30 AM – 01:00 PM
Session Room : Audi 4, Session Chair : Sushobhan Avasthi; Indian Institute of Science Bangalore, India

09:30 AM [T1-1] GaN Power Transistors : Technology and Applications
Ken Shono; Transphorm Japan

11:30 AM [T1-2] GaN Microwave/RF Transistors: From Fundamentals to Emerging Trends
Digbijoy Nath; Indian Institute of Science Bangalore, India

T2 : Reliability in Advanced Semiconductor Devices

Sunday, March 3, 09:30 AM – 01:00 PM
Session Room : Audi 5, Session Chair : Taiki Uemura; Samsung Electronics, South Korea

09:30 AM [T2-1] A Device to Circuit Framework for Aging (BTI, HCD) in Advanced Technology Nodes
Souvik Mahapatra; Indian Institute of Technology Bombay, India

11:30 AM [T2-2] Insulators for Devices based on 2D Materials
Tibor Grasser; Institute of Microelectronics, TU Wien, Austria

T3 : Artificial Neural Networks

Sunday, March 3, 09:30 AM – 01:00 PM
Session Room : Audi 8, Session Chair : Shubham Sahay; Indian Institute of Technology Kanpur, India

09:30 AM [T3-1] In-Memory Computing for Artificial Neural Networks
Abu Sebastian; IBM Research Zurich, Switzerland

11:30 AM [T3-2] Biologically Realistic Artificial Neural Networks
Veeresh Deshpande; Indian Institute of Technology Bombay, India

T4 : TCAD and Compact Modeling

Sunday, March 3, 09:30 AM – 01:00 PM
Session Room : Audi 9, Session Chair : Avinash Lahgere; Indian Institute of Technology Kanpur, India

09:30 AM [T4-1] Compact Modeling : General Introduction and Modeling of Statistical Variability
Gert-Jan Smit; NXP Semiconductors, The Netherlands

10:30 AM [T4-2] MOSFET Characterisation and Modeling for Cryogenic Applications
Thomas Bedecarrats; CEA-Leti, Grenoble, France

12:00 AM [T4-2] TCAD-based Compact Model Parameter Extraction of Si and SiC High Power Devices
D. Vinay Kumar; Synopsys India

Short Courses

SC1 : Advances in Logic Devices

Sunday, March 3, 02:30 PM – 06:00 PM
Session Room : Audi 4, Session Chair : Saurabh Lodha; Indian Institute of Technology Bombay, India

02:30 PM [SC1-1] Logic Technology Roadmap
Gaurav Thareja; Applied Materials, USA

04:30 PM [SC1-2] Nanosheet-based Transistor Architectures for Advanced CMOS Scaling
Hans Mertens; IMEC Leuven, Belgium

SC2 : Advances in Memory Technologies

Sunday, March 3, 02:30 PM – 06:00 PM
Session Room : Audi 8, Session Chair : Udayan Ganguly; Indian Institute of Technology Bombay, India

02:30 PM [SC2-1] DRAM and NAND Memories: Technology and Design Perspectives
CR Parthasarathy; Micron, USA

05:00 PM [SC2-2] DRAM Scaling: History and Innovation
Sungho Jang; Samsung Electronics, South Korea

SC3 : Semiconductor Packaging Technology

Sunday, March 3, 02:30 PM – 06:00 PM
Session Room : Audi 9, Session Chair : Shree Prakash Tiwari; Indian Institute of Technology Jodhpur, India

02:30 PM [SC3-1] Fan-out Semiconductor Packaging: Evolution, Current Status and Future Trends
Santosh Kumar; Reliance, India

04:30 PM [SC3-2] Recent Advancements in Interconnect Materials and Technologies in Semiconductor Packaging
Nilesh Badwe; Indian Institute of Technology Kanpur, India

Planning Your Monday

Plenary Talk

Monday, March 4, 09:30 AM – 11:10 PM
Session Room : Audi 1 + 2 + 3, Session Chair : Prof. Ramgopal Rao; BITS Pilani, India

09:30 AM Plenary 1
Semiconductor – the Next 75 Years?
Chenming Hu; University of California Berkeley, USA

10:20 AM Plenary 2
GaN Technology Enabling Power Electronics
Sameer Pendharkar; Texas Instruments, USA

Oral Sessions

Session 1A : CMOS Technology Scaling

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 1, Session Chair : Krishna Bhuwalka, Huawei, Belgium

09:00 AM Inaugration

11:30 AM [1A-1] [Keynote]
CMOS 2.0: The era of CMOS heterogeneous scaling
Julien Ryckaert; IMEC, Leuven, Belgium

12:00 PM [1A-2] [Keynote]
Semiconducting Oxide Transistors for Future Microelectronics
Suman Datta; Georgia Institute of Technology, Atlanta, USA

12:30 PM [1A-3] [Keynote]
Speeding device innovation with integrated materials solutions
Milind Weling; Merck KGaA, Darmstadt, Germany

Session 1B : RF, Millimetre and Terahertz Technologies, Circuits and Systems

Monday, March 4, 11:30 AM – 01:00 PM.
Session Room : Audi 9, Session Chair : Dipankar Saha, Indian Institute of Technology Bombay, India

11:30 AM [1B-1] [Invited]
The Next Generation RF and Power Devices: Heterogenous Integration with Diamond
Martin H H Kuball; University of Bristol, UK

11:55 AM [1B-2] [Invited]
Advances in Millimetre-Wave III-N Transistor Performance through Polarization-Graded Heterostructures
Patrick Fay; University of Notre Dame, Notre Dame, USA

12:20 PM [1B-3] [Invited]
Modeling of Charge and Current in N-polar GaN heterostructures and transistors
Arvind Ajoy; Indian Institute of Technology Palakkad, India

12:45 PM [1B-4]
Guidelines for Overcoming the Practical Limitations for the Fabrication of THz Sources with GaN Planar Gunn Diodes
Javier Mateos; University of Salamanca, Salamanca, Spain

Session 1C : TCAD and Manufacturing

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 2, Session Chair : Avirup Dasgupta, Indian Institute of Technology Roorkee, India

11:30 AM 1C-1] [Invited]
Semiconductor Roadmap Challenges and TEL Innovation
Noritaka Yokomori; Tokyo Electron Ltd.,/TEL Venture Capital/ Tokyo Electron Miyagi Ltd.,/TEL Technology Center America Inc.

12:00 AM [1C-2] [Invited]
Understanding the Influence of By-Products in Shaping Feature Profiles during Plasma Etching
Samit Barai; Applied Materials, India

12:30 AM [1C-3] [Invited]
ComputLitho – An Indigenous Optical Lithography Simulator with Novel Features
Pardeep Kumar; Applied Materials, India

Session 1D : Emerging Memory Technologies

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 8, Session Chair : Tomoya Sanuki; Kioxia

11:30 AM [1D-1] [Keynote]
Embedded STT-MRAM for automotive applications
Johannes Mueller; GlobalFoundries, Dresden, Germany

12:00 PM [1D-2] [Invited]
Status and perspectives of embedded Phase Change Memories
Andrea Redaelli; STMicroelectronics, Milan, Italy

12:30 AM [1D-3] [Invited]
3D Memory and Thermal Management: Challenges in System Level Design
Preeti Ranjan Panda; Indian Institute of Technology Delhi, India

Session 1E : Ferroelectric Materials and Devices I

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 6+7, Session Chair : Ambika Prasad Shah; Indian Institute of Technology, Jammu

11:30 AM [1E-1] [Invited]
Ferroelectric spin orbit devices for ultra-low power computing
Jean Philippe Attane; Spintec, Grenoble, France

11:55 AM [1E-2] [Invited]
Ferroelectrics and their Application in Non-Traditional Computing
Nikhil Shukla; University of Virginia, USA

12:20 PM [1E-3] [Invited]
Ferroelectric Capacitive Memory based on Metal-Ferroelectric-Semiconductor structure
Gong Xiao; National University of Singapore, Singapore

12:45 PM [1E-4]
Ferroelectric Gate Stack Engineering with Tunnel Dielectric Insert for Achieving High Memory Window in FEFETs for NAND Applications
Dipjyoti Das[1,3], Hyeonwoo Park[1], Zekai Wang[1],Chengyang Zhang[1], Prasanna Venkatesan Ravindran[1],Chinsung Park[1], Nashrah Afroze[1], Po-Kai Hsu[1], Mengkun Tian[1], Hang Chen[1], Winston Chern[1], Suhwan Lim[2], Kwangsoo Kim[2], Kijoon Kim[2], Wanki Kim[2], Daewon Ha[2], Shimeng Yu[1], Suman Datta[1], and Asif Khan[1]; [1]Georgia Tech, USA; [2]Samsung Electronics Co. Ltd, South Korea; [3]NIT Silchar, India

01:00 PM [1E-5]
A Novel Complementary Ferroelectric FET based Compressed Multibit Content Addressable Memory with High Area- and Energy-Efficiency
Weikai Xu[1], Jin Luo1, Boyi Fu[1], Zhiyuan Fu[1], Kaifeng Wang[1], Chang Su1, Qianqian Huang1,2,3, and Ru Huang[1,2,3];[1]School of Integrated Circuits, Peking University, China; [2]Beijing Advanced Innovation Centerfor Integrated Circuits, China; [3]Chinese Institute for Brain Research, China.

Session 1F : WBG Device Applications

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 3, Session Chair: Sayak Dutta Gupta; Indian Institute of Technology Madras, India

11:30 AM [1F-1] [Keynote]
Distributed polarization doping unleashes ultrawide bandgap electronics with Aluminum Nitride
Debdeep Jena; Cornell University, USA

12:00 PM [1F-2] [Invited]
High Voltage and High Frequency GaN HEMTs on the novel substrates
Tian Li Wu; National Yang Ming Chiao Tung University, Taiwan

12:30 PM [1F-3] [Invited]
Battery Charger Process Technologies
Mehul Shah; Renesas Electronics, USA

Session 1G : Packaging Materials

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 5, Session Chair: Nilesh Badwe;
Indian Institute of Technology Kanpur, India

11:30 AM [1G-1] [Invited]
Semiconductor Packaging Materials Enabling Next Generation of Power Electronics and High Performance Computing Applications
Ram K. Trichur; Henkel, California, USA

12:00 PM [1G-2] [Invited]
Advanced Materials for Power Electronics
Ravi Bhatkal; MacDermid Alpha Electronics Solutions, India

12:30 PM [1G-3]
Polymer Dielectrics for Electronic Packaging: Curing Dynamics of an Epoxy Resin Blend
Siddharth Saraswati, Deepak Arora; Indian Institute of Technology Jodhpur, India

Session 1H : 2D Sensors

Monday, March 4, 11:30 AM – 01:00 PM
Session Room : Audi 4, Session Chair : Shree Prakash Tiwari;
Indian Institute of Technology Jodhpur, India

11:30 AM [1H-1] [Keynote]
Water-based, defect-free and biocompatible 2D material inks for printed electronics
Cinzia Casiraghi; University of Manchester, UK

12:00 PM [1H-2] [Invited]
Graphene based sensors for light and THz radiation
Daniel Neumaier; University of Wuppertal, Germany

12:30 PM [1H-3]
Ultra-Sensitive Humidity Sensor based on 2D GeS Nanoflakes
Deepak Sharma[1] , Rahul Kumar[2] , Neha Sakhuja[3] , Ayan Pal[1] , and Navakanta Bhat[1]; [1]IISc Bangalore, India; [2]PDEU Gandhinagar, India; [3]Micron Technology Inc, Hyderabad, India

12:45 PM [1H-4]
Vertically Aligned 2-D MoS2 based High performance Humidity Sensor
Prajjwal Shukla[1], Rahul Gond[1], Prakhar Singh[2], Bhanu Prakash[2], Brajesh Rawat[1]; [1]Indian Institute of Technology Ropar, India; [2]INST Mohali, Punjab, India

Session 2A : Design Technology Co-Optimization I

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 1, Session Chair: Rahul Rao; IBM India

02:00 PM [2A-1] [Keynote]
DTCO Evolution From 2D to 3D
Dureseti Chidambarrao; IBM, USA

02:30 PM [2A-2] [Invited]
DTCO Role in Semiconductor Industry beyond the End of Pitch Scaling
Arup Ratan Saha; Synopsys, India

03:00 PM [2A-3]] [Invited]
Structural Optimization and Vt Offering of 2nd Generation MBCFET to Enhance Power-Performance Efficiency
Sang Hyeon Lee; Samsung, South Korea

Session 2B : Neuromorphic Computing I

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 9, Session Chair : Abu Sebastian; IBM Research, Zurich

02:00 PM [2B-1] [Keynote]
Neuromorphic computing with emerging memory and 2D semiconductors
Daniele Ielmini; Politecnico di Milano, Italy

02:30 PM [2B-2] [Invited]
Materials and devices for energy efficient spiking neuromorphic chips at the Edge
Adrian Ionescu; EPFL, Switzerland

03:00 PM [2B-3]
Revealing Unique Scaling Effects of Random Telegraph Noise and Electron Injection Stochasticity in Stochastic Resonance with Floating Gate based Neurons
Akira Goda, Chihiro Matsui, Ken Takeuchi; Tokyo University, Tokyo, Japan

03:15 PM [2B-4]
Noise Analysis of Readout Chain in FDSOI-based 1T-APS for In-Sensor Vector-Matrix-Multiplication
Yi Xiao[1], Zheng Zhou[1], Yijiao Wang[2], Jiaqi Li[1], Guihai Yu[1], Shiyang Li[1], Haozhang Yang[1], Lixia Han[1], Ruiqi Chen[1], Peng Huang[1], Xiaoyan Liu[1], Jinfeng Kang[1]; [1]Peking University, China; [2]Beihang University, China

Session 2C : TCAD Simulation

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 2, Session Chair: Pardeep Kumar; Applied Materials, India

02:00 PM [2C-1] [Keynote]
The evolving role of TCAD in pushing the boundaries of technology innovation
Aveek Sarkar; Synopsys, USA

02:30 PM [2C-2] [Invited]
A Device to Circuit Reliability Framework for BTI and HCD Aging
Souvik Mahapatra; Indian Institute of Technology Bombay, India

03:00 PM [2C-3] [Invited]
Layout and Process Dependent Modeling and Simulation of High-Voltage 4H-SiC Power Devices
D. Vinay Kumar; Synopsys, India

Session 2D : Ferroelectric Memories

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 8, Session Chair: Johannes Mueller; GlobalFoundries, Dresden, Germany

02:00 PM [2D-1] [Invited]
Recent advances in hafnia-based ferroelectric random access memories
Laurent Grenouillet; CEA-Leti, France

02:25 PM [2D-2] [Invited]
Ferro-electronics for next generation memory and NAND storage technology
Asif Khan; Georgia Institute of Technology, Atlanta, USA

02:50 PM [2D-3] [Invited]
Investigation of Endurance Degradation in Silicon-Doped Hafnium Oxide (HSO) and Zirconium-Doped Hafnium Oxide (HZO) based FeFET Memory
Pardeep Duhan; Indian Institute of Technology Ropar, India

03:15 PM [2D-4]
Experimental Investigation of EM Side Channel and FI Attacks on Commercial FRAM Chips
BhanPrakash Goswami, Manan Suri; Indian Institute of Technology Delhi, India

Session 2E : 2D Materials and Devices I

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 6+7, Session Chair: Alwin Daus; Freiberg University, Germany

02:00 PM [2E-1] [Keynote]
2D-materials based transistors for logic: process achievements and path forward
Inge Asselberghs; IMEC, Belgium, Germany

02:30 PM [2E-2] [Invited]
Industry integration of 2D FETs: possible paths and the main challenges
Yury Illarionov; Southern University of Science and Technology, China

02:55 PM [2E-3] [Invited]
Monolithic Integration of 2D-Material SRAM Cells
Vita Pi-Ho Hu; National Taiwan University, Taipei, Taiwan

03:20 PM [2E-4]
Enhancing doping efficiency to achieve high performance p-type 2D field effect transistors
Saptarshi Das; Pennsylvania State University, USA

Session 2F : High Power Device Reliability

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 3, Session Chair : Kalya Shubhakar, SUTD Singapore

02:00 PM [2F-1] [Invited]
Understanding the role of encapsulation layers under wet conditions on the reliability of power devices
Luigi Balestra; University of Bologna, Italy

02:25 PM [2F-2] [Invited]
From Planar to Vertical GaN-on-Si Power Devices: Reliability Challenges to Efficient Power Conversion
Nicolo Zagni; University of Modena et Reggio Emilia, Italy

02:50 PM [2F-3] [Invited]
Investigation of Radiation effect on Power Semiconductor Devices
Tan Cher Ming; Chang Gung University, Taiwan

03:15 PM [2F-4]
Gate Leakage Current analysis using Bayesian Deconvolution for Accurate Electron/Hole Trapping Characterizations in 4H-SiC MOSFETs
Shivendra Singh[1], Tian-Li Wu[1] and Yogesh Chauhan[2]; [1]International College of Semiconductor Technology, National Yang Ming Chiao Tung University, Taiwan; [2]Indian Institute of Technology Kanpur, India

Session 2G : Packaging – Mechanical Properties and Reliability

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 5, Session Chair: Deepak Arora; Indian Institute of Technology Jodhpur, India

02:00 PM [2G-1] [Invited]
Prepreg-based FCBGA for Advanced Packaging Substrate
Ken Lee; Simmtech Co., South Korea

02:25 PM [2G-2] [Invited]
Reliability of Heterogeneous Integration (HI) Systems: Reliability Roadmap to Respond to the needs of HI Roadmap Stakeholders
Abhijit Dasgupta; University of Maryland, USA

02:50 PM [2G-3]
High Temperature Mechanical Properties of Nano-twinned Copper
Gulnaz Parween[1], Bo-Yan Chen[2], Dinh-Phuc Tran[2], Chih Chen[2] and Nilesh Badwe[1]; [1]Indian Institute of Technology Kanpur, India; [2]National Yang Ming Chiao Tung University, Taiwan

03:05 PM [2G-4]
Effect of collet on the die stress during die pick-up
Siva Sai Kishore Palli[1], Venkata Rama Satya Pradeep Vempaty[1], Wen How Sim[2], Harjashan Veer Singh[3]; [1]Micron Technology Operations, India; [2]Micron Semiconductor Asia Operations, Singapore; [3]Micron Technology Inc., USA

Session 2H : Microfluidics and MEMS Sensors

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 4, Session Chair : Deleep R. Nair; Indian Institute of Technology Madras, India

02:00 PM [2H-1] [Invited]
DNA extraction and detection with paper-fluidic device for urinary tract infections
Siddharth Tallur, Indian Institute of Technology Bombay, India

02:25 PM [2H-2] [Invited]
Advances in Microvalve and Micro Pre-concentrator Technology for the Space Atmosphere Monitor Instrument: From Research to the International Space Station
Mina Rais Zadeh, California Institute of Technology, USA

02:50 PM [2H-3]
Dummy device-based feedthrough cancellation for PZT on Silicon microcantilever for viscosity sensing
Javed Nadindla[1], Akshay Kumar[1], Sudhanshu Tiwari[2], Rudra Pratap[1] and Gayathri Pillai[1], [1]Indian Institute of Science Bangalore, India, [2]Purdue University, USA

03:05 PM [2H-4]
Cost-Effective Processing of Flexible Tactile Sensors for e-skin Applications
Sachin Sharma, Sumit Choudhary, Ranbir Singh, Gopi Shrikanth Reddy and Satinder Kumar Sharma; Indian Institute of Technology Mandi, India

Session 2J : Technology For Future Chips

Monday, March 4, 02:00 PM – 03:30 PM
Session Room : Audi 9, Session Chair : David Fried; Lam Research, USA

02:00 PM [2J-1] [Invited]
Backside Interconnects for Power Delivery – Design, Manufacturability & Yield
Manjunath Shamanna; Intel, USA

02:30 PM [2J-2] [Invited]
Enabling Next Generation CMOS Scaling Through Materials Engineering and Process Technology Innovations
Mehul Naik; Applied Materials, USA

03:00 PM [2J-3]
Conjugated Polymer Single-Crystal Thin Films for Trap-Free SCLC Transport
Chunyan Zhao, Xilin Lai, Xinrui Guo, Ming He, Ru Huang; Peking University, China

03:15 PM [2J-4]
High quality PVD-MoS2 film on plasma-ALD-SiO2 underlaying material for CFET integration
Naoki Matsunaga, Shinya Imai, Takanori Shirokura, Kazuo Tsutsui, Kuniyuki Kakushima, Hitoshi Wakabayashi; Tokyo Institute of Technology, Japan

Session 3A : Semiconductor Device Characterization

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 1, Session Chair : Krishna Bhuwalka, Huawei, Belgium

03:45 PM [3A-1] [Invited]
Recent Advances in Functional Data Analysis for Electronic Devices
Shahed Reza; Sandia National Laboratories, USA

04:15 PM [3A-2]
Emerging Germanium Channel Devices on Si Platform for Next-Generation Semiconductor Technology
Sumit Choudhury, Satinder K. Sharma; Indian Institute of Technology Mandi, India

04:30 PM [3A-3]
Characterizing Analog Figure of Merits of 5nm Technology Node FinFETs from 10K to 400K
Shivendra Singh Parihar, Anirban Kar, Weike Wang, Kimihiko Imura, Yogesh Singh Chauhan; Indian Institute of Technology Kanpur, India

04:45 PM [3A-4]
Investigation of Self-Heating Effect on the Void Embedded SOI MOSFETs
Yizhan Liu, Xiaoyan Liu; Peking University, China

05:00 PM [3A-5]
New Steep Subthreshold Slope Device "Gate-Controlled Carrier Injection SOI-Transistor"
Haruki Yonezaki, Takayuki Mori, Jiro Ida; Kanazawa Institute of Technology, Japan

Session 3B : Neuromorphic Computing II

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 9, Session Chair: Sandip Lashkare; Indian Institute of Technology Gandhinagar, India

03:45 PM [3B-1] [Keynote]
Fully Integrated Memristor Chip for Edge Learning
Huaqiang Wu; Tsinghua University, China

04:15 PM [3B-2] [Invited]
Advancing Cognitive Systems: Leveraging Memristive Technologies in CMOS Circuit Design for Neuromorphic Edge Computing
Erika Covi; University of Groningen, The Netherlands

04:45 PM [3B-3] [Invited]
Resistive Memories based on Insulator-Semiconductor Structures Achieved via Controlled Oxidation of 2D Layered Materials
Antonio Lombardo; University College London, UK

05:15 PM [3B-3] [Invited]
Novel Low-power and High-speed Memristor based Digital Circuit Design on Neuromorphic Hardware
Manas Ranjan Tripathy; SRAM Technical University, AP, India

Session 3C : TCAD and Device Modeling

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 2, Session Chair : Avinash Lahgere; Indian Institute of Technology Kanpur, India

03:45 PM [3C-1] [Invited]
TCAD Simulations: Bridging the Gap between Theory and Experimentation
Arun Kumar Singh; Punjab Engineering College, Chandigarh, India

04:15 PM [3C-2]
Performance Projection of Negative Capacitance Complementary FET (NC-CFET): Device-Circuit Co-design
Abhishek Kumar, Anand Bulusu, Avirup Dasgupta; Indian Institute of Technology Roorkee, India

04:30 PM [3C-3]
Design Space Exploration of Negative Capacitance Effect in MFIM Structure: A 3D Phase Field Approach
Aayush[1], Girish Pahwa[2], Yogesh Singh Chauhan[1]; [1]Indian Institute of Technology Kanpur, India; [2]University of California Berkeley, USA

04:55 PM [3C-4]
Thermal Impedance Model For Multifinger SiGe HBTs
Shubham Pande[1], Nidhin K[2], Suresh Balanethiram[3], Shon Yadav[4], and Anjan Chakravorty[1]; [1]Indian Institute of Technology Madras, India; [2]Intel Bengaluru; [3]NIT Karaikal; [4]GlobalFoundries, Bengaluru, India

05:00 PM [3C-5]
Quantum Confinement Imposed Constraints in ULP Circuits with Junctionless FET
Sandeep Semwal[1], Nivedita Rai[1], Rohit Kumar Nirala[1], Manish Gupta[2] and Abhinav Kranti[1]; [1]Indian Institute of Technology Indore, India; [2]Birla Institute of Technology and Science-Pilani, Goa

Session 3D : Ferroelectric FETs

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 8, Session Chair : Pardeep Duhan; Indian Institute of Technology Ropar

03:45 PM [3D-1] [Invited]
Perspective Roadmap of Advanced HfO2-based Ferroelectric Field Effect Transistors
Sourav De; National Yang Ming Chiao Tung University, Taiwan

04:15 PM [3D-2]
Exploring Charge Trapping Dynamics in Si:HfO2-FeFETs by Temperature-Dependent Electrical Characterization
Mor Mordechai Dahan[1], Emanuel Ber[1], Or Levit[1], Halid Mulaosmanovic[2], Stefan Dünkel[2], Johannes Müller[2], Sven Beyer[2] and Eilam Yalon[1]; [1]Technion-Israel Institute of Technology, Israel; [2]GlobalFoundries Fab1 LLC & Co., Germany

04:30 PM [3D-3]
Dopant-Dependent Flicker Noise of Hafnium Oxide Ferroelectric Field Effect Transistor
Yannick Raffel, Sourav De and Daniel Hessler; Fraunhofer IPMS, CNT, Dresden, Germany

04:45 PM [3D-4]
Spike-Time Dependent Plasticity in HfO2-Based Ferroelectric FET Synapses
YMasud Rana SK[1] , Sourodeep Roy[1] , Maximilian Lederer[2] , Yannick Raffel[2] , Luca Pirro[3] , Talha Chohan[3] , Konrad Seidel[2] , Sourav De[2] , Bhaswar Chakrabarti[1]; [1]Indian Institute of Technology Madras, India; [2]Fraunhofer IPMS, CNT, Dresden, Germany; [3]GlobalFoundries, Dresden, Germany

05:00 PM [3D-5]
Design Space for Scaled Ferroelectric Mirror Bit Technology for High-Density NVM Storage
Paritosh Meihar[1], Rowtu Srinu[1], Halid Mulaosmanovic[2], Stefan Dunkel[2], Sven Beyer[2] and Udayan Ganguly[1]; Indian Institute of Technology Bombay, India; [2]GlobalFoundries, Dresden

Session 3E : Neuromorphic Devices

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 6+7, Session Chair: Daniele Ielmini; Politecnico di Milano, Italy

03:45 PM [3E-1] [Invited]
Large-scale Integrated Circuits with 2D MoS2 for Neuromorphic Computing
Andras Kis; EPFL, Switzerland

04:10 PM [3E-2] [Invited]
Compute-in-Memory Hardware using 2D Materials-based Memristive Crossbar Array for Convolution Neural Networks
Kah-Wee Ang; National University of Singapore, Singapore

04:35 PM [3E-3] [Invited]
Smart Multifunctional Memory Devices that can Sense, Store and Compute
Nazek Elatab; KAUST, Saudi Arabia

05:00 PM [3E-4] [Invited]
Spintronics-Based Neuromorphic and Ising Computing
Debanjan Bhowmik; Indian Institute of Technology Bombay, India

Session 3F : SiC based Power Devices

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 3, Session Chair : Sukhendu Deb Roy; ROHM Semiconductor India

03:45 PM [3F-1] [Keynote]
SiC Materials and Devices for Future Green Society
Shin-ichi Nishizawa; Kyushu University, Japan

04:15 PM [3F-2] [Invited]
Soitec SmartCutTM technology combined with SiC material: SmartSiCTM engineering substrate for high-voltage power applications
Walter Schwarzenbach; Soitec, France

04:45PM [3F-3] [Invited]
On the Design of the Drift Layer in Silicon Carbide Power Devices for Improved Breakdown Voltage and Short Circuit Performance
Shreepad Karmalkar, Indian Institute of Technology Bhubaneswar

Session 3G : Memory and Metallization Reliability

Monday, March 4, 03:45 PM – 05:15 PM
Session Room : Audi 5, Session Chair : Nilesh Goel; BITS Pilani Dubai Campus

03:45 PM [3G-1] [Invited]
Intermetallic compounds for future ULSI metallization
Junichi Koike; Tohoku University, Japan

04:15 PM [3G-2]
Study of Trap Generation in NAND Flash Tunnel Oxide using TCAD
Anuj Kumar, Ravi Tiwari, Mohit Bajaj, Denis Dolgos, Lee Smith, Souvik Mahapatra; Indian Institute of Technology Bombay, India

04:30 PM [3G-3]
On the Prevalence of Row Hammer Attacks in FeFET Based Memory Systems
Shubham Pande, Bhaswar Chakrabarti and Anjan Chakravorty; Indian Institute of Technology Madras, India

04:45 PM [3G-4]
Impact of Free Layer Thickness and Damping Factor Variation on the Performance of Spin Orbit Torque Neuron-based of Spiking Neural Networks
Shafin Bin Hamid and Md Zunaid Baten; Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

05:00 PM [3G-5]
Reliable resistive switching of two-dimensional material based flexible memristor
Conghui Zhang[1], Xin Liu[1], Tingting Han[2], Peisong Liu[3] and Fei Hui[1]; [1]Zhengzhou University, China; [2]Soochow University, China; [3]Henan University, China

Session 3H : Yield and Manufacturing

Monday, March 4, 03:45 PM – 05:15 PM
Session Room: Audi 10, Session Chair: Shinichi Yoshida; Sony, Japan

03:45 PM [3H-1] [Invited]
New paradigm of Yield analysis in Big Data and AI Era in Semiconductor Manufacturing
Jeffrey David; PDF Solutions, USA

04:10 PM [3H-2]
Expediting manufacturing safe launch with Big Data AI/ML analytic solutions on the cloud
Helen Yu; Renesas Electronics, USA

04:25 PM [3H-3] [Invited]
Manufacturing readiness to Zero DPPM
Tanya Nigam; SemTecPro, Sunnyvale, USA

04:50 PM [3H-4] [Invited]
Semiconductor Fabs & Sustainability
Neela Ayalasomayajula; Applied Materials, India

Evening Panel Discussion 1

Monday, March 4, 06:30 PM – 07:30 PM
Session Room : Audi 1
Moderator : Ramgopal Rao; *BITS Pilani, India*

Is there no scope for deep tech semiconductor start-ups in India?

Panelists : *Chandrasekhar Nair (Bigtec Private Ltd.), Suryaprakash Konnanuru (CTO, Ideaspring Capital), Shantanu Chaturvedi (VP, Transition VC), Dipanjan Gope (CEO, Simyog Technology Private Limited)*

Poster Session 1

Track – Advanced Memory Technologies (AMT)

Monday, March 4, 06:00 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-1] Impact of Doping CsPbBr3 with Organic Iodide Salts on Memory Performance
Bidisha Nath, Ashutosh Panchal, Praveen C Ramamurthy, Debiprosad Mahapatra and Gopalkrishna Hegde;

[P1-2] Trade-off Between Thermal Budget and Thickness Scaling: A Bottleneck on Quest for BEOL Compatible Ultra-Thin Ferroelectric Films Sub-5nm
Chui-Yi Chiu, Sourav De, Chen-Yi Cho and Tuo-Hung Hou

[P1-3] Conductance change property of the ReRAM with Au-doped HfOx switching layer under DC voltage pulses
Masakazu Tanaka, Shinji Okayasu, Tomohiro Shimizu, Takeshi Ito and Shoso Shingubara

[P1-4] Design Guidelines for Domain-Wall-Based-Synapse Devices – Thermal Stability and Depinning Current Requirements
Guntas Kaur and Tanmoy Pramanik

[P1-5] Enhanced Polarization, Endurance, and Long Retention in Low Temperature Processed W/Hf0.5Zr0.5O2/W Ferroelectric Capacitor for Back-End-of-Line Integration
Md Hanif Ali, Adityanarayan Pandey, Soham Shirodkar, Rowtu Srinu, Paritosh Meihar, Udayan Ganguly and Veeresh Deshpande

[P1-6] Improved Memory Density and Endurance by a Novel 1T3C FeFET for BEOL Multi-level Cell Memory
Runteng Zhu, Yuejia Zhou, Chuanlin Sun, Weiqin Huang, Junchen Dong, Ru Huang and Kechao Tang

[P1-7] Vortex Spin Torque Nano Oscillator-based PUF and TRNG Design for Lightweight Security Solutions
Kunal Kranti Das, Sandeep Soni, Farshad Moradi, Sonal Shreya and Brajesh Kumar Kaushik

[P1-8] Secure and Reliable Single-Ended 10T SRAM Cell
Ayan Sharma, Syed Farah Naz and Ambika Prasad Shah

[P1-9] ReCAM: Resistive RAM Digital Content Addressable Memory Using Novel 3T1R Bitcell
Radheshyam Sharma, Narendra Singh Dhakad, Govindu Sathvik Reddy, Dr. Vishal Sharma and Dr. Santosh Kumar Vishvakarma

[P1-10] On-Voltage Designability by Triangular Barrier Engineering in Bipolar Silicon NIPIN-Selector for Asymmetric Bipolar RRAM
Hemant Kumar, Jayatika Sakhuja, Sandip Lashkare and Udayan Ganguly

[P1-11] Investigation and optimization of plug height and bottom recess depth of 3D NAND Flash memory
Dibyadrasta Sahoo, Ankit Gaurav and Sanjeev Manhas

[P1-12] Resistive switching in Ag/GO/Ag based lateral device on flexible PET Substrate
Anita Khichar and Arnab Hazra

[P1-13] Bilayer MoS2 Based (2×2) Memristive Crossbar Array for Neuromorphic Applications
Saurabh Yadav, Chandrabhan Patel, Sumit Chaudhary, Kumari Jyoti, Shruti Ghodke and Shaibal Mukherjee

[P1-14] Analysis of 1T-1M HfOX-based Resistive Switching Device for Artificial Neural Network Hardware Implementation
Sukesh Gupta, Mani Shankar Yadav, Venkata Kalyan Tavva and Brajesh Rawat

Track – Disruptive Technologies (DT)

Monday, March 4, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-15] Design and simulation of micro-pillar cavity based single photon source
Manish Kumar Sahu, Naresh Babu Pendyala, Prashant Varma, Punam Pradeep Kumar and Apurba N Bhattacharya

[P1-16] Impact of co-integration on the performance of full CMOS based Hybrid SET-FET circuits for scalable quantum computing using FinFET technologies
Sujit Kumar Singh, Deepesh Sharma, Purushothaman Srinivasan and Abhisek Dixit

[P1-17] Fault Tolerance of Oscillatory Neural Network using PMO Oscillator
Sai Shubham, Siddharth Mohanty and Sandip Lashkare

[P1-18] In-memory Computing for Bit-wise Logical Operations using Capacitor-less Silicon-on-Insulator MOSFET
Prateek Sharma, Jaisingh Pal and Sandip Lashkare

[P1-19] Resistance Drift Reset State and Read Voltage Dependencies in Phase Change Memory
Rivka-Galya Nir-Harwood, Mayan Hochler, Einav Yunger and Eilam Yalon

[P1-20] Nonpolar Neuron for ANN-SNN Conversion Toward Ternary Spiking Neural Network
Jiawei Fu, Xinyu Wen, Qi Chen, Yuhui He and Xiangshui Miao

[P1-21] MCA-based Model for Automated Pneumonia Disease Detection using Machine Learning
Kumari Jyoti, Saurabh Yadav, Chandrabhan Patel, Mayank Dubey, Sumit Chaudhary, Ram Bilas Pachori and Shaibal Mukherjee

[P1-22] Temperature Resilient Single-Transistor FDSOI Neuron for Reliable Neuromorphic Computing
Rajakumari V, Aparna Krishna Kumar, Rameez Raja Shaik and K P Pradhan

Track – Emerging Materials and Devices (EMD)

Monday, March 4, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-23] Monolayer HfS3: A Potential Candidate for Low-Power and High-Performance Field-Effect Transistors
Ateeb Naseer, Somnath Bhowmick, Amit Agarwal and Yogesh Singh Chauhan

[P1-24] Impact of Electric Field on the Perpendicular Magnetic Anisotropy of CrMnS2I2 Monolayer- A DFT Perspective
Neha Mishra, Prabhat Ranjan, Avirup Dasgupta and Sourajeet Roy

[P1-25] NiO/Ni2O3 based top gated junctionless field effect device for selective Cr(VI) ion detection in water
Shreyansh Mishra, Sukanya Mahalik, Apabrita Sengupta, Abhijit Eshore, Prasanta K. Guha and Sayan Dey

[P1-26] Understanding Trap-Induced Barrier Height Fluctuations in Nickel-Silicon Contacts for Advanced Semiconductor Technology
Deepak Kumar Sharma, Arjun Datta, Jatinder Pal Singh, Kanishk K, Rohan Srivastava, Gourab Das, Jyoti Kedia, Sanjeev Kumar, Vivek Kumar and Arun Kumar Singh

[P1-27] Magnetic Soliton MTJ Devices for Neuromorphic Computing Applications
Aijaz Lone, Daniel N. Rahimi, Hossein Fariborzi and Gianluca Setti

[P1-28] Electronic and hole mobilities in wide band-gap monolayer tungsten carbide
Tushar Sharma, Rishabh Saraswat, Sitangshu Bhattacharya and Rekha Verma

[P1-29] Photoconduction Properties in Germanium Sulfide Nanosheets on Rigid and Flexible Substrates
Ambika Subramanian, Vasanthan Thirunavukkarasu, Rajesh Kumar Ulaganathan, Raman Sankar, Wen Siang Lew and Chang-Yu Lin

[P1-30] Understanding Hysteresis For Intrinsic Defects in TMD Transistors
Rupali Srivastava, Srest Somay, Amrita Singh and Krishna Balasubramanian

[P1-31] Investigation on Transportation Mechanisms of InSnO/ZnO Heterojunction Transistors
Chuanlin Sun, Jingye Xie, Shuhan Wang, Kai Zhao, Junchen Dong, Zheng Zhou, Dedong Han and Xing Zhang

[P1-32] Behavior of Circular Field-free Current-driven Easy-cone State Oscillator under the Presence of Thermal Noise
Al Maksud, Sheikh A.H. Fuad, Tasnim Tamanna and Orchi Hassan

[P1-33] Design of experimental test setup to study stochastic switching and stochastic resonance in nonlinear systems
Harivignesh S, Madhav Ramesh and Arvind Ajoy

[P1-34] Device Structure Optimization for Rb2SnI6-based Halide Perovskite Solar Cell using SCAPS
Shivam Aggarwal and Tanmoy Maiti

[P1-35] Solution-processed Forming-free ALPO - RRAM based Artificial Synaptic Device with 3 orders of Conductance – Modulation
Nitupon Dihingia and Sandip Mondal

[P1-36] Photocatalytic and Optical Properties of TiO2/MoSSe Monolayer for Enhanced IR absorption
Prabhat Ranjan, Neha Mishra, Sourajeet Roy, Amit Agarwal and Avirup Dasgupta

[P1-37] WKB model of ferroelectric tunnel junctions for memory applications: voltage-dependent screening and electrostriction effects
Deepali Jagga, Saurav De and Artur Useinov

[P1-38] Compact STT/SHE-MTJ Model with Monte-Carlo Independent Thermal Noise
Jagadish Rajpoot and Shivam Verma

[P1-39] A Novel Approach for Enhancing Mobile Audio Performance with Graphene-Infused Teracotta Acoustic Sound Amplifiers
Rajalekshmi Tr, Shilpa Pavithran, Rinku Rani Das and Alex James

[P1-40] Fabrication Of N-type Organic Thin-film Transistor With Polymeric Dielectric Processed With Different Solvents
Ashutosh Panchal, Ankit Malik and Praveen C Ramamurthy

[P1-41] Enhanced PPF index in zinc oxide based optoelectronic synapse
Roshni Oommen, Kiran Jose and Aswathi R Nair

[P1-42] Exploring Phase and Bandgap Variations in Gallium Oxide Using Mist-based Chemical Vapor Deposition System
Shiv Kumar, Arnab Mondal, Anand Pandey, Subhashis Das and Ankush Bag

[P1-43] Implementing Bidirectional Logic with Backhopping in Magnetic Tunnel Junctions
Shafin Bin Hamid, Ramit Dutta, Orchi Hassan and Md. Zunaid Baten

[P1-44] Planar Memristor Configuration using CuO thinfilms for Resistive Switching
Sarath Chandra Jampani, Sumanth Arige and Tejendra Dixit

[P1-45] Exploring Interfacial Influences: P3HT Film Formation on ODPA-Treated Aluminum Oxide Surface
Ankit Malik, Ashutosh Panchal, Utpreksh Patbhaje, Mayank Shrivastava and Praveen C. Ramamurthy

Track – Logic Devices (LD) and Design Technology Co-Optimization (DTCO)

Monday, March 4, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-46] Memory effects in 45-nm PDSOI MOSFETs at Cryogenic Temperatures for Quantum Computing Applications
Sumreti Gupta, Deepesh Sharma, Purushothaman Srinivasan and Abhisek Dixit

[P1-47] Ultra Low Leakage IoT Design in 22FDSOI
Navneet Jain, Arif Siddiqi, Deepti Pant, David Pritchard, Randy Wolf, Sunil Kumar, Juhan Kim, Ahmed Shibly and Nigel Chan

[P1-48] Exploring Dual threshold in a Double Gated TIG JLT for a logic Application
Tika Ram Pokhrel and Alak Majumder

[P1-49] Design of Low Power Ternary Inverter with Line Tunneling based Silicon Nanotube Tunnel FETs
Navneet Kaur Saini, Raghavendra Saxena, Mamidala Jagadesh Kumar Anuj Dhawan and Ankur Gupta

*[*P1-50] Benchmarking IWO-based Logic Circuits for Monolithic 3D Integration
Sufia Shahin, Shubham Kumar, Swetaki Chatterjee, Hussam Amrouch and Yogesh Singh Chauhan

[P1-51] Energy-Efficient Logic Switches Designed by Combining Band-to-Band Tunneling and Thermionic Injection in 2-D Semiconductors
Ateeb Naseer, Keshari Nandan, Somnath Bhowmick, Amit Agarwal and Yogesh Singh Chauhan

[P1-52] Performance Analysis of Forksheet FETs compared to Nanosheet FETs for sub-3 nm Technology Node
Yeasin Arafat Pritom, Hridita Biswas and Mainul Hossain

[P1-53] AC Performance Benchmarking of Forksheet FET using Ring Oscillator and 6T-SRAM Cell
Hafeez Raza and Avinash Lahgere

[P1-54] Reduction of subthreshold swing by tuning the thickness of the buffer layer in asymmetric source-drain electrode of a low operating voltage TFT
Utkarsh Pandey and Bhola Nath Pal

[P1-55] Area Efficient High Speed Absolute Difference Architecture for Multimedia Applications
Garima Gupta, Hardik Sarraf, Bharat Garg and Jawar Singh

[P1-56] Short Channel Effects Optimized 7nm SI-FinFET for DRAM Application
Ninad Kamble and Kankat Ghosh

Track – Power and Energy Devices (PED)

Monday, March 4, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-57] A Novel Low Loss Planar Gate LIGBT With P-type Buried Layer
A Novel Low Loss Planar Gate LIGBT With P-type Buried Layer

[P1-58] Fully/partially suspended gate SiC-based FET for power circuit applications
Suvendu Nayak, Saurabh Lodha and Swaroop Ganguly

[P1-59] Enhanced Optoelectronic Performance of Hexagonal InP Nanowire Solar Cell using Plasmonic Al Nanoparticles
Manisha Rautela and Jitendra Kumar

[P1-60] Silicon Carbide Dmosfet Design Adaptation For Low Interface Trap Density
Akul Kumar Singh, Suvendu Nayak, Hema Lata Rao Maddi, Susanna Yu, Swaroop Ganguly and Anant K. Agarwal

[P1-61] Analytical modeling for optimum energy harvesting using Triboelectric Nanogenerators under steady state operation
Rohin Gupta and Amit Verma

[P1-62] GaN HEMT for power electronics and biosensing applications
Nidhi Chaturvedi, Rajeev Taliyan, Ashok Chauhan, Anil Kumar Saini, Shivanshu Mishra, Pharyanshu Kachhawa, Rajiv Ranjan Thakur, Amber Kumar Jain, Kuldip Singh and Manish Kumar Hooda

[P1-63] Performance Comparison of Transparent and Opaque substrate P3HT:PCBM Organic Solar Cells
Anil Kumar Panda H. and S. Sundar Kumar Iyer

[P1-64] Modeling of heterojunction perovskite solar cells: A semi-analytical approach
Susomon Dutta, Chettypalayam R Selvakumar and Revathy Padmanabhan

[P1-65] Image Analysis of solar cells using absolute electroluminescence
Hemavathi R, Umavathi M, Sushmitha K V, Swathi S, Praveen C. Ramamurthy and Jeykishan Kumar K

[P1-66] Design and Performance testing of Photovoltaic arrays using low-cost Current-Voltage module device
Varun Adiga, Parthasarathy S Raghavan, Bhaskar Krishnaswamy and Praveen C Ramamurthy

[P1-67] A Study in the Change of Morphology and Optical Properties of Electric Field Assisted Methyl Ammonium Lead Tri-Iodide Perovskite Thin Films without Anti-Solvent Approach
Soumyapdipta Ray and Praveen C Ramamurthy

[P1-68] Experimental Investigation of Temperature Effect in Laterally Diffused Power MOSFET
Amit Kumar Singh, Yash Agrawal and Brajesh Rawat

[P1-69] Dielectric Engineering to Enhance Breakdown Voltage of β-Ga2O3 MOSFET
Akash Patnaik, Ayushi Maurya and Pankaj Sharma

[P1-70] Analysis of Performance Limits in Current-Matched Tandem Solar Cells
Anupam Yedida and Revathy Padmanabhan

Track – RF Devices and Circuits (RD)

Monday, March 4, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P1-71] Development of C-band and X-band MMIC SPDT switch using Indigenous GaN HEMT Technology
Rakhi Kumari, Umakant Goyal and Meena Mishra

[P1-72] X-band Monolithic GaN HEMT LNA based on Indigenous Process
Pritam Sinha, Umakant Goyal and Dr. Meena Mishra

[P1-73] X-band GaN LNA MMIC Using an Emprical Noise Model
Mohammad Zaid, Purnima Kumari, Mohammad Sajid Nazir, Umakant Goyal, Meena Mishra and Yogesh Singh Chauhan

[P1-74] A 1.2 dB NF 16.2 dB Gain +0.5 dBm OP1dB 18 GHz SATCOM LNA in 130 nm CMOS
Hari Kishore Kakara, Indrajit Das and Venkata Vanukuru

[P1-75] DC and RF Characteristics Study of III-Nitride/β-Ga2O3 Nano-HEMT with the variation of Relative Gate Positions
G. Purnachandra Rao, Trupti Ranjan Lenka, Samadrita Das and Hieu Pham Trung Nguyen

[P1-76] Innovative solution for ON-WAFER RF characterization of high GaN HEMT power devices
Ashish Jindal, Sunil Singh, Poonam Singh, S K Tomar and Meena Mishra

[P1-77] A 40W high power broadband amplifier MMIC design for C-BAND radar applications
Ashish Jindal and Meena Mishra

[P1-78] High Capacitive Ratio Molybdenum-based RF MEMS Capacitive shunt switch using reduced fabrication steps
Niharika Narang, Piyush Kumar, Ananjan Basu, Pushpapraj Singh and Pranav Kumar Shrivastava

[P1-79] Comparative Performance Analysis of Impedance Line Segmentation Algorithm
Neha Bajpai and Yogesh Singh Chauhan

[P1-80] Multi-functional Time-Modulated Metasurface as a Transmissive/ Reflective FSS and an On-Air Frequency Mixer
Anand Kumar, Saikiran Kongari, Yugesh Chandrakapure and Debdeep Sarkar

[P1-81] Investigation of Performance in RF GaN MIS-HEMTs with Leakage Current Analysis Using Emission Microscopy (EMMI)
Chin-Ya Su, Meng-Che Tsai, Anant Johari, Ankur Gupta, Rajendra Singh and Tian-Li Wu

[P1-82] Fabrication of Millimeter-Band Electromagnetic Structures by Laser Micromachining
Nikita Ryskin, Dmitrii Nozhkin, Andrei Starodubov, Roman Torgashov, Ilya Kozhevnikov, Viktor Galushka, Alexey Serdobintsev, Alexey Lebedev and Anton Kozyrev

[P1-83] High performance Ultra-Compact Co-planar Waveguides using Slow wave Inductive and capacitive loading
Niharika Narang, Piyush Kumar, Pranav Kumar Shrivastava, Ananjan Basu and Pushpapraj Singh

Planning Your Tuesday

Plenary Talk

Tuesday, March 5, 09:00 AM – 10:40 AM
Session Room : Audi 1 + 2 + 3, Session Chair : Prof. Navakanta Bhat; Indian Institute of Science Bangalore, India

09:00 AM Plenary 3
Semiconductor Systems Driving AI
Balajee Sowrirajan; Samsung Electronics, India

09:50 AM Plenary 4
From Ferroelectric Materials to Enhanced Semiconductor Devices
Thomas Mikolajick; NaMLab GmbH, Germany

Oral Sessions

Session 4A : Gate-All-Around (GAA) Devices

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room: Audi 1, Session Chair: Sujith Subramaniam; IMEC Belgium

11:00 AM [4A-1] [Invited]
Forksheet Field-Effect Transistors for Area Scaling and Gate-Drain Capacitance Reduction in Nanosheet-based CMOS Technologies
Hans Mertens; IMEC, Belgium

11:25 AM [4A-2] [Invited]
Stacked Complementary Field-Effect Transistors: Promises and Challenges
Mansun Chan; Hong Kong University of Science & Technology, Hong Kong

11:50 AM [4A-3] [Invited]
GAA Technology Innovations for 2nm Logic node and Beyond
El Mehidi BAzizi; Applied Materials, USA

12:15 PM [4A-4]
Towards Improved Nanosheet-Based Complementary Field Effect Transistor (CFET) Performance Down to 42nm Contacted Gate Pitch
Thomas Chiarella, Philippe Matagne, Hans Mertens, Maryam Hosseini, Xiuju Zhou, Pierre Eyben, Hiroaki Arimura, Anshul Gupta, Olivier Richard, Christel Drijbooms, Rudy Caluwaerts, Naoto Horiguchi, Jérôme Mitard; IMEC, Belgium

12:30 PM [4A-5]
Multi-VT Options at Scaled Vertical Pitch in Gate-All-Around Nanosheet Devices by Independent Inner-Outer Work-function Tuning
Gautam Gaddemane[1], Krishna Bhuwalka[2], Gerhard Rzepa[3], Pieter Schuddinck[1], Hiroaki Arimura[1], Philippe Matagne[1], Hao Wu[2], Naoto Horiguchi[1], Geert Hellings[1], Changze Liu[2]; [1]IMEC Belgium; [2]Huawei Technologies Belgium; [3]GTS Austria

12:45 PM [4A-6]
Dissecting Parasitic Capacitance in Nanosheet FETs: An Analytical Perspective
Aishwarya Singh, Om Maheshwari and Nihar Mohapatra; Indian Institute of Technology Gandhinagar, India

Session 4B : In-Memory Computing I

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 9, Session Chair : Manan Suri; Indian Institute of Technology Delhi

11:00 AM [4B-1] [Keynote]
Ferroelectric Non-volatile Capacitive Synapse for Charge Domain Compute-in-Memory
Shimeng Yu; Georgia Institute of Technology, Atlanta, USA

11:30 AM [4B-2] [Invited]
Computation-in-Memory (CiM) for AI Accelerators & Neuromorphic Computing
Ken Takeuchi; University of Tokyo, Japan

12:00 PM [4B-3] [Invited]
Can we Engineer Energy Efficient Switching Devices with High-k for In-Memory Applications?
Durga Misra; New Jersey Institute of Technology, USA

12:30 PM [4B-4]
RRAM IMC based efficient Analog Carry Propagation and Multi-bit MVM
Chithambara Moorthii J, M Vineeth Mourya, Harshit Bansal, Deepak Verma and Manan Suri; Indian Institute of Technology Delhi, India

12:45 PM [4B-5]
A New 1C1T1R nv-TCAM with Simultaneously Hybrid Ferroelectricity and Memristor Layers Feasible for Ultra-highly-dense and High-performance In-memory-searching
Y. L. Hsueh[1], R. Q. Lin[1], Y. X. Huang[1], Y. H. Lin[1], K. H. Chang[1], T. H. Shen[1], E R. Hsieh[1] and S Simon Wong[2]; [1]National Central University, Taoyuan city, Taiwan; [2]Stanford University, USA

Session 4C : Cryogenic CMOS Compact Modeling

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room: Audi 2, Session Chair: Arvind Ajoy;
Indian Institute of Technology Palakkad, India

11:00 AM [4C-1] [Invited]
Compact Modeling of Advanced MOSFETs for Cryogenic IC Design
Girish Pahwa; University of California Berkeley, USA

11:30 AM [4C-2] [Invited]
A Methodology for PDK Re-Centring Using TCAD and Experimental Data for Cryogenic Temperatures
Tapas Dutta; University of Glasgow, UK

12:00 AM [4C-3]
Analysis and Modeling of Negative Transconductance in Zero-Threshold Voltage MOSFETs at Cryogenic Temperatures
Wajid Manzoor, Aloke K. Dutta and Yogesh Singh Chauhan; Indian Institute of Technology Kanpur, India

12:15 PM [4C-4]
Cryogenic Compact Modeling for Sub-5nm Fin Width Bulk FinFETs for Quantum Computing Applications
Deepesh Sharma, Sumreti Gupta, Sujit Kumar Singh and Abhisek Dixit; Indian Institute of Technology Delhi, India

12:30 PM [4C-5]
A Physics-Oriented Model of Cryogenic MOSFETs including the Subthreshold Kink Effects
Xinyue Zhang, Fangxing Zhang, Zirui Wang, Runsheng Wang, Ru Huang and Lining Zhang; Peking University, China

12:45 PM [4C-6]
Extension of ASM-HEMT Framework for Cryogenic Temperatures
Mohammad Nazir, Raghvendra Dangi, Mohammad Zaid, Ahtisham Pampori and Yogesh Singh Chauhan; Indian Institute of Technology Kanpur, India

Session 4D : 2D Materials and Devices II

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 6+7, Session Chair : Yury Illarionov;
Southern University of Science and Technology, China

11:00 AM [4D-1] [Invited]
TMDC channel for low-power-density 3D-stacked FETs
Hitoshi Wakabayashi; Tokyo Institute of Technology, Japan

11:25 AM [4D-2] [Invited]
Ultra-clean interfaces between 2D MoS2, contact metals, and high K dielectrics
Manish Chhowala; University of Cambridge, UK

11:50 AM [4D-3] [Invited]
Guidelines of wafer scale growth for 2D integration FAB readiness
Salim El Kazzi; Aixtron, Germany

12:05 PM [4D-4]
Reduction of contact resistance to PVD-MoS2 film using aluminum–scandium alloy (AlSc) edge contact
Shinya Imai, Ryosuke Kajikawa, Takamasa Kawanago, Iriya Muneta, Kazuo Tsutsui, Tetsuya Tatsumi, Shigetaka Tomiya, Kuniyuki Kakushima and Hitoshi Wakabayashi; Tokyo Institute of Technology, Japan

12:20 PM [4D-5]
Robust Growth of Electronic Grade p-type Large Area 2D WSe2 and High-performance PMOS Transistor
Biswajeet Nayak[1], Rupali Verma[2], Purbasha Ray[1], Suman Kumar Chakraborty[1], Mayank Shrivastava[2], and Prasana Kumar Sahoo[1]; 1Indian Institute of Technology Kharagpur; [2]Indian Institute of Science Bangalore

12:45PM [4D-6]
Enhanced optoelectronic and electrical characteristics in nanopatterned 2D dielectric (hBN)/ semiconductor (WS2) field effect transistors
Poulomi Chakrabarty, Sera Sen, Srilagna Sahoo and Saurabh Lodha; Indian Institute of Technology Bombay, India

Session 4E : AI/ML in Process Control

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 8, Session Chair: Tomasz Brozek; PDF Solutions, USA

11:00 AM [4E-1] [Invited]
Chips Making Chips: How Virtualization, Digital Twins and Machine Learning are Accelerating the Spiral of Innovation
David Fried; Lam Research, USA

11:30 AM [4E-2] [Invited]
AI driven Process Diagnostic & Control: Device Manufacturing *Jae-Yong Park; Samsung, USA*

11:55 AM [4E-3]
Enabling process control though predictive design and virtual metrology for high product mix manufacturing
Hyung Joo Lee[1], Sanghyun Choi[1], Sudheesh Krishnankutty[2], Raghavendra Botta[2], Nathan Greeneltch[3] and Srividya Jayaram[3]; [1]Siemens EDA, South Korea; [2]Siemens EDA, India; [3]Siemens EDA, USA

12:10 PM [4E-4] [Invited]
Coupling Reactor-scale and Feature-Scale Simulations: ProcessTwin™ for Unit Processes
Rajesh Sathiyanarayanan; Applied Materials, India

12:35 PM [4E-5] [Invited]
Virtual Process Modeling and Virtual Fabrication in Semiconductor Manufacturing Training
Dinesh Munireddy; Lam Research, USA

Session 4F : Package Manufacturing

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 3, Session Chair : Nilesh Badwe;
Indian Institute of Technology, Kanpur, India

11:00 AM [4F-1] [Keynote]
Predictive Modeling and Design for Board Level Solder Joint Reliabilities under Temperature Cycling
Faxing che; Micron Technologies Singapore

11:30 AM [4F-2] [Invited]
Innovative Wafer Level Equipment Solutions for Heterogeneous Integration
Chee Ping Lee; Lam Research, USA

12:00 PM [4F-3] [Invited]
Heterogeneous Integration for Multi Chiplet Advanced Packaging
Surya Bhattacharya; Institute of Microelectronics, Singapore

12:25 PM [4F-4]
Evolution of Maskless Digital Lithography A game-changer for Advanced Semiconductor Packaging
Ashwini Aggarwal; Applied Materials, India

Session 4G : Logic and 2D Material Reliability

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 5, Session Chair : Souvik Mahapatra;
Indian Institute of Technology Bombay, India

11:00 AM [4G-1] [Invited]
Nanoscale Insights into the Degradation Mechanisms of 2D Dielectrics
Kalya Shubhakar, SUTD Singapore

11:30 AM [4G-2]
Impact of Gate Insulator Process on NBTI in FinFETs and Resulting Ring Oscillator Degradation Under Normal and Overclocking Usage Conditions
Arnav Shaurya Bisht, Payel Chatterjee and Souvik Mahapatra, Indian Institute of Technology Bombay, India

11:45 AM [4G-3]
Unveiling the Hidden Impact of Self-Heating on Ferroelectric FinFET and FDSOI based In-Memory Computing
Swetaki Chatterjee[1,2], Nistha Baruah[2,3], Swati Deshwal[1], Anirban Kar[1,4], Om Prakash[2], Shivendra Singh Parihar[1,2], Yogesh Singh Chauhan[1], and Hussam Amrouch[4]; [1]Indian Institute of Technology Kanpur, India; [2]University of Stuttgart, Germany; [3]National Institute of Technology Silchar, India; [4]Technical University of Munich (TUM), Germany

12:00 PM [4G-4]
A TCAD Framework for HCD in n-MOSFETs for PMIC Applications
Himanshu Diwakar, Souvik Mahapatra; Indian Institute of Technology Bombay, India

12:15 PM [4G-5]
Impact of Area-to-Perimeter Ratio Layout Effect on TDDB in 45-nm PDSOI N-channel FETs
Asifa Amin[1], Aarti Rathi[1], Purushothaman Srinivasan[2], Oscar Huerta Gonzalez[2] and Abhisek Dixit[1]; 1Indian Institute of Technology Delhi, India; [2]GlobalFoundries, Malta, NY, USA

12:30 PM [4G-6]
Ultra-Fast Oxide Traps in Sub-20-nm DRAM Technology: from Characterization to Physical origin identification
Da Wang[1], Yong Liu[1], Yongkang Xue[1], Pengpeng Ren[1], Zixuan Sun[2], Zirui Wang[2], Yueyang Liu[3], Zhijun Cheng[4], Haiyang Yang[4], Xiangli Liu[4], Blacksmith Wu[4], Kanyu Cao[4], Runsheng Wang[2], Zhigang Ji[1] and Ru Huang[2]; [1]Shanghai Jiao Tong University, China; [2]Peking University, China; 3Chinese Academy of Sciences, China; 4Changxin Memory Technologies, Inc., China

Session 4H : Si, SiGe, III-V Technologies for RF Applications

Tuesday, March 5, 11:00 AM – 01:00 PM
Session Room : Audi 4, Session Chair : Suresh Balanethiram; NIT, Puducherry

11:00 AM [4H-1] [Invited]
CMOS and SiGe Technologies for SATCOM Circuits and Systems
Venkata Vanukuru; GlobalFoundries, India

11:30 AM [4H-2] [Invited]
Next Generation SiGe HBTs for Energy Efficient Microwave Power Amplification
Soumya Ranjan Panda; University of Bordeaux, France

12:00 PM [4H-3] [Invited]
Class BJF-1: Pushing the boundaries of the performance of RF Power Amplifiers
Merlyne De Souza; University of Sheffield, UK

12:30 PM [4H-4]
InP/GaInP Composite-Collector for Improved Breakdown Voltage in the InP/GaAsSb DHBTs
Akshay Kumar Mahadev Arabhavi[1], Sara Hamzeloui[1], Wei Quan[2], Filippo Ciabattini[1], Olivier Ostinelli[1] and Colombo Bolognesi[1]; 1MWE Laboratory, ETH-Zurich, Switzerland; [2]Albis Optoelectronics AG, Switzerland

12:45 PM [4H-5]
Characterization and Experimental Validation of Self Heating in RF LDMOS Transistor using BSIM-BULK Model
Ayushi Sharma[1], Shivendra Singh Parihar[1], Yawar Hayat Zarkob[1], Weike Wang[2], Kimihiko Imura[2], Praveen Dwivedi[1] and Yogesh Singh Chauhan[1]; 1Indian Institute of Technology Kanpur, India; [2]MaxLinear Inc., Carlsbad, California, USA

Session 5A : Alternate Devices and Computing Options

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 1, Session Chair : Kaushik Nayak; Indian Institute of Technology Hyderabad

02:00 PM [5A-1] [Keynote]
Integrated Ferroelectric Devices for Energy Efficient Computing
Sayeef Salahuddin; University of California Berkeley, USA

02:30 PM [5A-2] [Invited]
Reliable Brain-inspired Computing using Ferroelectric Transistors: Hope or Hype?
Hussam Amrouch; Technical University Munich, Germany

03:00 PM [5A-3] [Invited]
Scalable Silicon Qubit Operation for Large-Scale Integrated Quantum Computer
Ryuta Tsuchiya; Hitachi Cambridge Laboratory, UK

Session 5B : Flash Memories

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 9, Session Chair : Tomoya Sanuki; Kioxia

02:00 PM [5B-1] [Invited]
3D NAND Scaling Paradigm in the AI Era
Akira Goda; Micron Technologies, USA

02:30 PM [5B-2] [Invited]
Unmasking Vulnerabilities: The Provocative Dance of Device Physics in Flash Storage Security
Biswajit Ray; Colorado State University, USA

03:00 PM [5B-3]
Cycling Condition Impacts on 3D QLC NAND Reliability
M. Dean Sciacca[1], Trinadhachari Kosuru[2] and Nikolaos Papandreou[3]; 1IBM, USA; [2]IBM, India; [1]IBM Research Europe, Switzeland

Session 5C : Ab-initio Simulation and Modeling

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 2, Session Chair : Rajat Vishnoi; Micron India

02:00 PM [5C-1] [Invited]
Ab initio Modeling of quantum transport in low-dimensional materials and devices
Sabyasachi Tiwari; The University of Texas at Austin, USA

02:30 PM [5C-2]
First principles Modeling perspective for 2D channel – 3D oxide interfaces
Fabian Ducry, Benoit Van Troeye, Cesar J. L. de la Rosa, Gouri S. Kar, Geoffrey Pourtois and Aryan Afzalian; IMEC, Belgium

02:45 PM [5C-3]
Ohmic Au-MoS2 Contacts Enabled by Re Adsorbed MoS2 Source/Drain Regions: An Ab-initio Quantum Transport Study
Saurabh Kharwar, Soham Sinha and Tarun Kumar Agarwal; Indian Institute of Technology Gandhinagar, India

03:00 PM [5C-4]
Understanding and Predicting the Activation Energy of Oxygen Migration in Pr0.5Ca0.5MnO3 : A DFT study
Shashank Inge, Aditya Narayan Pandey, Udayan Ganguly and Amrita Bhattacharya; Indian Institute of Technology Bombay, India

03:10 PM [5C-5]
Position-dependent Voltage-controlled Switching of Perpendicular Ferromagnet on a Topological Insulator: A micromagnetic simulation study
Vinod Naik Bhukya, Rik Dey and Yogesh Singh Chauhan; Indian Institute of Technology Kanpur, India

Session 5D : Thin Film Devices

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 6+7, Session Chair : Pavan Nukala; IISc

02:00 PM [5D-1] [Invited]
Materials and Device Technologies for Low-Temperature Integration
Alwin Daus; University of Freiburg, Germany

02:30 PM [5D-2] [Invited]
Formation techniques for upper active channels in monolithic 3D integration
Rino Choi; Inha University, South Korea

02:50 PM [5D-4]
Comparative Analysis of Switching Efficiency of GeTe and VO2 based RF Switches
Abhishek Mishra, Yogesh Singh Chauhan and Amit Verma; Indian Institute of Technology Kanpur, India

03:05 PM [5D-5]
Tailoring SWNT Thin-Film Transistor Performance: The Role of CuI Heterostructures
Dhananjay Mishra, Seung Gi Seo and Sung Hun Jin; Incheon National University, South Korea

Session 5E : Sensors and Biosensors I

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 8, Session Chair : Shweta Agarwala; Aarhus University, Denmark

02:00 PM [5E-1] [Invited]
Printed Electronic Cyrogels for in-vivo Plant Monitoring
Gregory Whiting; University of Colorado Boulder, USA

02:30 PM [5E-2]
Ultrasensitive Photo-Thermal Multimodal Sensory based on Self-Doping Modulation of Bi2O2Se Semiconductor
Liu Shuo, Xu Lei, Liu Junling, Huang Ru and He Ming; Peking University, China

02:45 PM [5E-3]
Physisorption Interaction of Nucleobases on ZrGeTe4 Using Density Functional Theory Study for Biomolecule Sensing
Mohd Mufeed, Ankit Sirohi and Jawar Singh; Indian Institute of Technology Patna, India

03:00 PM [5E-4]
Performance improvement of trap charge infused MoS2 based TFET photosensor by dielectric engineering
Jagritee Talukdar and Bhaskaran Muralidharan; Indian Institute of Technology Bombay, India

Session 5F : Integrated Photonics I

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 3, Session Chair : Gauri Karve; IMEC Belgium

02:00 PM [5F-1] [Invited]
Perspectives on active optical component integration for next generation integrated photonics
Sandeep Saseendran; IMEC, Belgium

02:25 PM [5F-2] [Invited]
Graphene on silicon carbide as a mid-IR metamaterial
Francesca Iacopi; University of Technology Sydney, Australia

02:50 PM [5F-3]
On-Chip THz Silicon Topological Photonics for 6G to XG Wireless
Ranjan Singh, Nanyang Technological University, Singapore

03:15 PM [5F-4]
Bistable Photon Pair Generation in Silicon Microring Resonator Integrated with Pump Rejection Filter
Arnab Goswami, Ram Mohan Rao Boyapati and Bijoy Krishna Das; Indian Institute of Technology Madras, India

Session 5G. Ga2O3 based Power Devices

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 5, Session Chair : Jaya Jha; Indian Institute of Technology Varanasi, India

02:00 PM [5G-1] [Invited]
Device Engineering for Ultra-Wide Bandgap Gallium Oxide and III-Nitride Electronics
Siddharth Rajan; Ohio State University, USA

02:25 PM [5G-2] [Invited]
Development of vertical Ga2O3 power devices and their processing technologies
Masataka Higashiwaki; Osaka Metropolitan University / National Institute of Information and Communication Technology, Japan

02:50 PM [5G-3]
High-k dielectric integration to improve breakdown characteristics of β-Ga2O3 Schottky diode
Pooja Sharma, Yeshwanth Parasubotu and Saurabh Lodha; Indian Institute of Technology Bombay, India

03:05 PM [5G-4]
Exploring Phase and Bandgap Variations in Gallium Oxide Using Mist-based Chemical Vapor Deposition System
Shiv Kumar[1], Arnab Mondal[2], Anand Pandey[1], Subhashis Das[2] and Ankush Bag[1]; [1]Indian Institute of Technology Guwahati, India; [2]Indian Institute of Technology Mandi, India

03:20 PM [5G-5]
LPCVD Grown n-Ga2O3 on p-GaN and Demonstration of p-n Heterojunction Behavior
Arnab Mondal[1], Arpit Nandi[2], Manoj Yadav[3] and Ankush Bag[4]; [1]Indian Institute of Technology Mandi, India; [2]University of Bristol, United Kingdom; [3]TU Wein, Austri; [4]Indian Institute of Technology Guwahati, India

Session 5H : SOI Devices for RF Applications

Tuesday, March 5, 02:00 PM – 03:30 PM
Session Room : Audi 4, Session Chair : Venkata Vanukuru; GlobalFoundries, India

02:00 PM [5H-1] [Keynote]
RF SOI Technology Advances for 5G Front End Modules
Alfred Chong; GlobalFoundries, Singapore

02:30 PM [5H-2]
Experimental Study on 22 nm FD-SOI CMOS Devices for MM-Wave Switch Applications
Kishore Bantupalli, Santosh Kumar Gedela and Venkata Vanukuru; GlobalFoundries, India

02:45 PM [5H-3]
Experimental Studies of Extended Drain MOSFET in 130-nm SOI Technology for Power Amplifier Design
Binoy Kumar Paul[1], Santosh Kumar Gedela[1], Rui Tze Toh[2] and Venkata Narayana Rao Vanukuru[1]; [1]GlobalFoundries, India; [2]GlobalFoundries, Singapore

03:00 PM [5H-4]
SSROI (super-steep retrograde on insulator) substrates for RF switch and LNA device performance enhancement
Hideki Takeuchi; Atomera Inc., USA

03:15 PM [5H-5]
Validation of Dynamically Depleted Symmetric BSIM-SOI Compact model for RF SOI T/R Switch Applications
Debashish Nandi[1], Chetan Kumar Dabhi[2], Dinesh Rajasekaran[2], Naveen Karumuri[3], Sreenidhi Turuvekere[3], Balaji Swaminathan[3], Srikanth Srihari[3], Anupam Dutta[3], Chenming Hu[2] and Yogesh Singh Chauhan[1]; [1]Indian Institute of Technology Kanpur, India; [2]Berkeley Device Modelling Center, University of California, Berkeley, CA, USA; [3]GlobalFoundries Inc., Bangalore, KA, India

Session 6A : Ferroelectric Materials and Devices II

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 1, Session Chair : Saptarshi Das; Pennsylvania State University, USA

03:45 PM [6A-1] [Invited]
Wake up free robust ferroelectricity in solution-processed La:HfO2 thick films
Pavan Nukala; Indian Institute of Science Bangalore, India

04:10 PM [6A-2]
Multi-Level, Low-Voltage Programming of Ferroelectric HfO2/ZrO2 Nanolaminates Integrated in the Back-End-Of-Line
Ruben Hamming-Green[1,2], Saketh Ram Mamidala[1], Donato Francesco Falcone[1], Beatriz Noheda[2], Bert Jan Offrein[1], Laura Bégon-Lours[1,3]; 1IBM Research Europe, Zurich, Switzerland; [2]University of Groningen, Netherlands; [3]ETH Zürich, Switzerland

04:25PM [6A-3]
Recorded Ferroelectric Polarization Switching of Hf0.5Zr0.5O2 Capacitors Achieved by Thermal Rewake-up Operations
Zichong Zhang, Yifan Yang, Rui Su, Tonghui Lin, Xiangshui Miao, Xingsheng Wang; Huazhong University of Science and Technology, China

04:40 PM [6A-4]
A Novel Hafnia-based Ferroelectric Capacitor with Antiferroelectric Zirconia Seed Layer for High Ferroelectricity and Endurance
Mengxuan Yang, Kaifeng Wang, Bocheng Yu, Zhiyuan Fu, Chang Su, Ru Huang and Qianqian Huang; Peking University, China

04:55 PM [6A-5]
A novel hybrid-FE-layer FeFET with enhanced linearity for on-chip training of CIM accelerator
Yuejia Zhou, Ru Huang, Kechao Tang; Peking University, China

Session 6B : Unconventional Computing I

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 9, Session Chair : Veeresh Deshpande; Indian Institute of Technology Bombay

03:45 PM [6B-1] [Keynote]
Atomic Lego for future computing
Feng Miao; Nanjing University, China

04:15 PM [6B-2] [Invited]
Scalable control and readout system for superconducting qubit devices
Vibhor Singh; Indian Institute of Science Bangalore, India

04:40 PM [6B-3]
Probabilistic Autonomous Data Acquisition Using Stochastic MTJ Based p-Bits
Saleh Bunaiyan, Feras Al-Dirini; KFUPM, Saudi Arabia

05:00 PM [6B-4]
Performance Comparison for Quantum Approximate Optimization Algorithm (QAOA) across Noiseless Simulation, Experimentally Benchmarked Noisy Simulation, and Experimental Hardware Platforms
Sanyam Singhal[1], Vandit Srivastava[2], Rohith P[2], Prateek Jain[3], Debanjan Bhowmik[1]; [1]Indian Institute of Technology Bombay, India; [2]Indian Institute of Technology Bombay, India; [3]Fractal Analytics, India

Session 6C : Design Technology Co-Optimization II

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 2, Session Chair : Soumya Pandit; Calcutta University, India

03:45 PM [6C-1] [Invited]
Disrupting Conventional Chip Design through the Open Source EDA Ecosystem
Mehdi Saligane; University of Michigan, USA

04:15 PM [6C-2] [Invited]
SPICE Modeling of distance-dependent mismatch for competitive ADC/DAC design
Gert-jan Smit; NXP Semiconductors, The Netherlands

04:45 PM [6C-3] [Invited]
Enhancing design robustness accounting for process variations of multi-transistor designs
Ajoy Mandal; Texas Instruments, India

Session 6D : Optoelectronic Devices

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room: Audi 6+7, Session Chair : Rino Choi; Inha University, South Korea

03:45 PM [6D-1] [Keynote]
Emerging Semiconductor Nanostructures for Low Power Photonic and Piezotronic Devices
Samit Kumar Ray; Indian Institute of Technology Kharagpur, India

04:15 PM [6D-2] [Invited]
Utilizing Geometry and Topology for Designing On-Chip Chiral Photonic Infrastructure
Ritesh Agarwal; University of Pennsylvania, USA

04:40 PM [6D-3]
Visible-SWIR Sensitive Artificial Retina for Vision Sensors
Manoj Kumar, Kritika Bhattacharya and Samaresh Das; Indian Institute of Technology Delhi, India

05:00 PM [6D-4]
Scattering and Absorption Efficiency Analysis of Gold Nanospheres for Optoelectronic Applications
Chandan Upadhyay, Kamalesh Tripathy and Mitradip Bhattacharjee; Indian Institute of Science Education and Research Bhopal, Bhopal, India

Session 6E : Sensors and Biosensors II

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 8, Session Chair : V V Raghavendra Sai; Indian Institute of Technology Madras, India

03:45 PM [6E-1] [Keynote]
Conformal sensors for wearables and nearables
Madhu Bhaskaran; RMIT University, Australia

04:15 PM [6E-2] [Keynote]
Micro Technologies for Healthcare
Ajay Agarwal; Indian Institute of Technology Jodhpur, India

04:45 PM [6E-3]
Dual-k Reconfigurable Silicon Nanowire Schottky Barrier Transistor for Biosensing Application
Anil Kumar, Sumit Kale; Delhi Technological University, New Delhi, India

05:00 PM [6E-4]
Leveraging Photo-patternable Nanocomposites for High Performance Tactile Neuromorphic Sensing
Nadeem Tariq Beigh, Faizan Tariq Beigh and Dhiman Mallick; Indian Institute of Technology Delhi, India

Session 6F : Integrated Photonics II

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 3, Session Chair : Samit Kumar Ray; Indian Institute of Technology Kharagpur, India

03:45 PM [6F-1]
Design and Demonstration of Ring Assisted Mach Zehnder Interferometer Modulator in Fully-Monolithic 45 nm SOI GF Fotonix™ Platform
Riddhi Nandi, Pratyasha Priyadarshini and Rupa Gopinath; GlobalFoundries, India

04:00 PM [6F-2]
Comparison of Electro-Optical Characteristics of Simulated and Fabricated InGaN/GaN MQWs Green Light Emitting Diodes on c-Plane Sapphire
Indrani Mazumder, Kashish Sapra, Harshita Aagiwal, Ashok Chauhan, Manish Mathew, Priyavarat Prajapati, Bhoopendra Kumar Kushwaha, Arvind Kumar Singh, Ramakant Sharma, Bhawani Shankar, Prateek Kothari and Kuldip Singh; AcCSIR, India, CSIR-CEERI, Pilani, India

04:15 PM [6F-3]
Study of Stress Compensation Layer for Enhancing Quantum Efficiency of InGaN/GaN-MQWs LEDs Within the Green-Gap Region
Chandra Prakash Singh and Kankat Ghosh; Indian of Technology Jammu, India

04:30 PM [6F-4]
Deep-UV Nanowire LED with Step-Graded n-Type Electron Blocking Layer and Al2O3 Nanoparticles for Enhanced Performance
Samadrita Das, Trupti Ranjan Lenka and Fazal Ahmed Talukdar; National Institute of Technology Silchar

04:45 PM [6F-5]
Design & Characterization of Front End Electronics for Silicon Photomultiplier for imaging of hard X-rays using NaI (Tl) Scintillator
Shiv Kumar Goyal1,2, Amisha P. Naik1, Abhay Kumar2 and Santosh Vadawale2; 1Nirma University, India; 2Physical Research Laboratory, Ahmedabad, India

Session 6G : Solar Cells

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 5, Session Chair : Arun Kumar Singh; Punjab Engineering College, Chandigarh, India

03:45 PM [6G-1] [Invited]
Opportunities to make solar cells "greener" with organic photovoltaic devices
S. Sundar Kumar Iyer, Indian Institute of Technology Kanpur, India

04:15 PM [6G-2]
Spatial Mapping of Inverted Metamorphic Triple Junction Solar Cells
Vaishnavi Thakur, Bernice Mae Yu Jeco Espaldon and Yoshitaka Okada, The University of Tokyo, Japan

04:30 PM [6G-3]
A comparative study of two-step and three-step annealing processes for PVDF added FASnI3 film quality and solar cell
Basavaraju U[1,2], Yash Bajpai[1], Naga Hanumaiah[2] and Praveen C Ramamurthy[1]; [1]Indian Institute of Science Bangalore, India; [2]Central Manufacturing Technology Institute, India

04:45 PM [6G-4]
Tin-Based Quasi-2D Halide Perovskite Solar Cells with Alternating Cation in the Interlayer Space
Kelvin Nosakhare Eguavoen and Praveen C Ramamurthy; Indian Institute of Science Bangalore, India

Session 6H : GaN HEMTs for RF Applications

Tuesday, March 5, 03:45 PM – 05:15 PM
Session Room : Audi 4, Session Chair : Patrick Fay; University of Notre Dame, Notre Dame, USA

03:45 PM [6H-1] [Keynote]
A Compact Model for Trigate GaN based FinHEMTs
Amitava DasGupta; Indian Institute of Technology Madras, India

04:15 PM [6H-2] [Invited]
Advancements in GaN Modeling for Power and RF Applications: Insights from the ASM Model and Beyond
Sheikh Aamir Ahsan; National Institute of Technology Srinagar, India

04:35 PM [6H-3]
Fermi-Level Pinning Effect in Gate Region: A Case Study of Multi-Metal Gated AlGaN/GaN HEMT for High RF Linearity
Toiyob Hossain[1], Bejoy Sikder[1], Md. Tasnim Azad[1], Qingyun Xie[2], Mengyang Yuan[2], Eiji Yagyu[3], Koon Hoo Teo[4], Tomás Palacios[4] and Nadim Chowdhury[1] ; [1]Bangladesh University of Engineering and Technology, Dhaka, Bangladesh; [2]Massachusetts Institute of Technology, United States; [3]Mitsubishi Electric Corporation, Japan; [4]Mitsubishi Electric Research Laboratories, United States

04:50 PM [6H-4]
Inspection of Trapping and Detrapping Dynamics in Fe- and C-doped GaN-based RF HEMTs by Filling Pulse-Dependent DCT Spectroscopy
P. Vigneshwara Raja[1], Vaidehi Vijay Painter[1], Raphael Sommet[2] and Jean-Christophe Nallatamby[2]; [1]Indian Institute of Technology Dharwad, India; [2]XLIM Laboratory CNRS UMR 7252, France

05:05 PM [6H-5]
A GaN Low Noise Amplifier Design Using Numerical Optimization
Neha Bajpai and Yogesh Singh Chauhan; Indian Institute of Technology Kanpur, India

Evening Panel Discussion 2

Tuesday, March 5, 06:00 PM – 07:00 PM
Session Room : Audi 1
Moderator : Saptarshi Das; *Pennsylvania State University, USA*

Is Quantum the new Nano?

Panelists : *Manish Chhowala (University of Cambridge, UK), Ritesh Agarwal (University of Pennsylvania, USA), Hitoshi Wakabayashi (Tokyo Institute of Technology, Japan), Samit Ray (Indian Institute of Technology Kharagpur, India)*

Poster Session (P2)

Track – Device and Circuit Reliability (DCR)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-1] Influence of Localized Hot Carrier Degradation in DSOI Device Operating in MOSFET and BJT Modes
Influence of Localized Hot Carrier Degradation in DSOI Device Operating in MOSFET and BJT Modes

[P2-2] Investigation of Robust Reliability Performance for 1.2kV 4H-SiC Trench MOSFET with deep P structure
Jake Choi, Kwangwon Lee and Howard Kim

[P2-3] A Novel approach to design secure and reliable SRAM from power analysis attack using power equalizer circuit
Priyanka Sharma, Aastha Gupta, Ashish Panchal and Vaibhav Neema

[P2-4] Probe and Photopotential-Induced Anomalous Degradation Routes in Perovskite Solar Cells
Apoorva Singh, Yash Bajpai and Praveen C Ramamurthy

[P2-5] Magnetic Stray Field Induced Variability of the Switching Characteristics of Spin-Transfer Torque Magnetic RAMs
Ramit Dutta, Shafin Bin Hamid and Md. Zunaid Baten

[P2-6] A Comprehensive SPICE Modeling Methodology for Hot-carrier Degradation
Udit Monga, Usha Gogineni, Ines Hetzel, Chong Jin and Alexander Steinmair

[P2-7] Aging Analysis of CMOS Based Synaptic Circuits
Krishna Negi, Jani Babu Shaik, Sonal Singhal, Nilesh Goel and Siona Menezes

[P2-8] NBTI Resilient Dual Mode Noise Immune Inverting Schmitt Trigger Circuit
Aryan Kannaujiya and Ambika Prasad Shah

[P2-9] Unveiling the Role of Interface and Dielectric Wall Traps with Self-heating Induced Aging Prediction of Forksheet FET
Sunil Rathore, Sandeep Kumar, Mohd. Shakir, Navjeet Bagga and Sudeb Dasgupta

[P2-10] Impact of Back End of Line (BEOL) and Ambient Temperature on Self-Heating in Twin Nanowire Gate-All-Around FETs: Junctionless Mode Versus Inversion Mode
Nitish Kumar, Karan Gupta, Ayush Gupta, Ankur Gupta and Pushpapraj Singh

[P2-11] Self Heating Induced Reliability Issues and Revealing Early Ageing in Thin PDSOI Transistor
Amit Kumar, Shashank Banchhor, Pradyum Pal, Narendra Pratap, Shubham Chaurasia, Ashutosh Yadav, Sudeb Dasgupta, Anand Bulusu and Nitanshu Chauhan

Track – MEMS/NEMS and Heterogeneously Integrated Devices (MEMS)

Tuesday, March 5, 06:00 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-12] Real time acoustic convolution of RF signals using organic semiconductor
Paromita Bhattacharjee, Parameswar Krishnan Iyer and Harshal Bhalchandra Nemade

[P2-13] Fabrication of Miniaturized Pressure Sensors for Invasive Pressure Measurements
Linet Thomas C, Nithin B, Bhat K N, Nayak M M and Navakanta Bhat

[P2-14] A 3D-printed Cantilever Beam Within a Semi-enclosed Cylinder Cavity For Differential Pressure Sensing
Xuecui Zou, Dhiya Belkadi, Min Sung Kim, Khaled Nabil Salama and Muhammad Hussain

[P2-15] Electrothermal analysis of a simple MEMS Pirani Gauge with a lower detection limit
Ashwini Kumari, Manu Garg, Piyush Kumar and Pushpapraj Singh

[P2-16] A Finite Element Study of SMR-based MEMS Magnetoelectric Antennas for On-chip RF Energy Harvesting
Sazid Ali, Mujeeb Yousuf and Pushpapraj Singh

[P2-17] Design and simulation of metal-based MEM relay for universal logic NAND gate operation
Khanjan Joshi, Manu Garg, Piyush Kumar and Pushpapraj Singh

Track – Modeling and Simulation (MS)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-18] DFT-NEGF transport in 2D channels with semimetal contacts: the influence of doping and bilayers
DFT-NEGF transport in 2D channels with semimetal contacts: the influence of doping and bilayers

[P2-19] Physics-Based Core Compact Model of 2D MoS2 FET Considering Fermi-Dirac Statistics
Swapna Sarker, Ankur Garg, Prabhat Ranjan, Abhishek Kumar and Avirup Dasgupta

[P2-20] A Compact Model-Based Threshold Voltage Distribution Simulation of 3D Gate-All-Around (GAA) NAND Flash Memories
Jinil Yoo and Hyungcheol Shin

[P2-21] Single Event Transient Effects in Raised Source/Drain Double-Gate1-T DRAM
Y. M. Aneesh, Bindu Boby and Asen Asenov

[P2-22] Comparison of crack resistance of two SiC MOSFETs gate geometries under short-circuit by FE simulations
Florent Loche-Moinet, Loïc Theolier and Eric Woirgard

[P2-23] WKB model of ferroelectric tunnel junctions for memory applications: voltage-dependent screening and electrostriction effects
Deepali Jagga, Saurav De and Artur Useinov

[P2-24] A Compact Model for Program Operation of Gate-All-Around Barrier-Engineered Charge-Trapping NAND Flash Memories
Haechan Choi and Hyungcheol Shin

[P2-25] An Interpretable Symbolic Regression Model for Prediction of GaN Vertical Power MOSFET Failsafe Boundaries
Smriti Singh, Aasim Ashai, Ankita Mukherjee, Tanmoy Pramanik and Biplab Sarkar

[P2-26] Improved Process Induced Threshold Voltage Variability in Negative Capacitance Junctionless Transistors
Ruma S R, Prof. Vita-Pi Ho Hu and Dr. Manish Gupta

[P2-27] A Neuromorphic FTJ Model-Driven Design of Charge-Domain Synaptic Circuits and Spiking Neural Networks
Xiaobao Zhu, Ning Feng, Hengyi Liu, Ning Ji, Lining Zhang, Runsheng Wang and Ru Huang

[P2-28] Effect of Highly Doped p-AlGaN Layer to Improve the Ultimate Performance Parameters of 275 nm AlGaN-based UV-C LED
Balkrishna Choubey and Kankat Ghosh

[P2-29] Compact Modeling and Experimental Validation of Reverse Mode Impact Ionization in LDMOS Transistors within the BSIM-BULK Framework
Yawar Hayat Zarkob, Ayushi Sharma, Girish Pahwa, Debashish Nandi, Chetan K. Dabhi, Volker Kubrak, Bob Peddenpohl, Mingchun Tang, Chenming Hu and Yogesh Singh Chauhan

[P2-30] Isothermal Characterization and Thermal Resistance Extraction in SiGe HBTs using Single Pulse Measurement
Sovan Barman, Suresh Balanethiram and Anjan Chakravorty

[P2-31] Scalable GaN-HEMT Model for X-band RF Applications
Praveen Pal, Raghvendra Dangi, Mohammad Sajid Nazir, Purnima Kumari, Umakant Goyal, Sudhir Kumar, Poonam Singh, Meena Mishra and Yogesh Singh Chauhan

[P2-32] Effects of Oxygen Vacancy on Ferroelectric Tunnel Junctions: An Ab initio Study
Ning Ji, Ning Feng, Jiajun Qiu, Puyang Cai, Lining Zhang, Runsheng Wang and Ru Huang

[P2-33] Physics-based Scalable Compact Model for Terminal Charge, Intrinsic Capaci-tance and Drain Current in Nanosheet FETs
Aishwarya Singh, Mohit Ganeriwala and Nihar Mohapatra

[P2-34] Electrochemical modeling of electrochromic devices: An equivalent circuit approach
Alankrith S J, Tanushree H Choudhury and Revathy Padmanabhan

[P2-35] Projection of Circuit Performance at Cryogenic Temperatures including Self-Heating: A Device-Circuit Co-design Perspective
Mohit Shukla, Sovan Kumar Dey, Saravana Kumar Manivannan and Avirup Dasgupta

[P2-36] FOSS CAD for the Compact Verilog-A Model Standardization in Open Access PDKs
Wladek Grabinski

*[*P2-38] Impact of Independent Gate Bias on the channel electrostatics of UTSOI Devices: An Atomistic Band structure approach
Yogesh Dhote, Nalin Vilochan Mishra, Pallavi Athe and Aditya Sankar Medury

[P2-39] Enhancing Reliability and RF Performance: The Impact of Fe doped Back Barrier Optimization in GaN HEMTs
S. Angen Franklin, Binola K Jebalin I.V, Subhash Chander and Nirmal D

[P2-40] Innovative ROM based approach to optimize reflow soldering process parameters
Subodh Deodhar, Tejas Jeurkar and Tomomichi Nozaki

[P2-41] Neural Network augmented Physics based Hybrid Compact Model for Computational Efficiency Improvement
Kumar Sheelvardhan, Srishti Parandiyal, M. Ehteshamuddin, Abhishek Kumar, Sourajeet Roy and Avirup Dasgupta

[P2-42] Extended Huckel model-based DFT Performance Analysis of GS-GNR FET
Anshul Narwal, Yash Pathak, Bhavya Kumar and Rishu Chaujar

[P2-43] A Generic Approach for Modeling and FPGA Emulation of RF Power Amplifier
Arpita Dey, Abuzar Shakeel, Rahul Bhattacharya and Roy Vincent

[P2-44] Selection of Suitable Hole Transport Layer for Lead-free FASnI3 Inverted Perovskite Solar Cells
Anand Pandey, Shiv Kumar and Ankush Bag

[P2-45] Unravelling the Impact of Random Dopant Fluctuations on Si-based 3nm NSFET: A NEGF Analysis
Ankit Dixit, Ali Rezaei, Tapas Datta, Nikolas Xeni, Naveen Kumar, Ismail Topaloglu, Preslav Aleksandrov, Vihar Georgiev and Asen Asenov

[P2-46] Machine Learning Augmented TCAD Assessment of Corner Radii in Nanosheet FET
Jyoti Patel, Bathula Satwik, Ishani Bais, Chirag Arora, Vivek Kumar, Navjeet Bagga and Sudeb Dasgupta

[P2-47] Deep Learning Assisted Approach for Analog Circuit Design Optimization
Anant Singhal, Priyanshi Goyal and Harshit Agarwal

[P2-48] Design and Performance Analysis of Inserted Oxide FinFET Using the Process Simulation
Aditya Kumar, Anjali Goel and Brajesh Rawat

Track – Packaging and Heterogeneous Integration (PHI)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-49] Significance of die shadow size and placement on solder joint reliability performance
Bhaskar Rao Korpati, Prasad N V Nune, Koustav Sinha, Christopher Glancey, Gokul Kumar, Yeow Chon Ong and Hong Wan Ng

[P2-50] Monolithic 3D Integration using BEOL FeFET: Reliability, Thermal Effects, and DNN Accuracy
Shubham Kumar, Yogesh Singh Chauhan and Hussam Amrouch

[P2-51] A Robust and Low-cost Fiber-optic Array Attachment Solution for Silicon Photonics Chips with Large Number of Input/output Channels
Ankan Gayen, Nagarajan Nallusamy, Goutham Ezhilarasu, Shamsul Hassan, Vinoth Subramanian, Kumar Piyush, Arnab Goswami and Bijoy Krishna Das

[P2-52] Transient Thermal Modeling of a Multi-core CPU under Constant Load using R- equivalent model
Amit Kumar, Sudipa Mandal, Aritra Hazra, Pallab Dasgupta and Anandaroop Bhattacharya

Track – Process, Technology, Yield and Manufacturing (PTYM)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-53] Optimization of Tungsten Plug Thin Film Process to Improve the Fill Seam and Contact Resistance in 180nm CMOS Technology
Ashish Kumar Chauhan, Vedula Surya Teja, Priya Chawla, Anuvesh Kumar Sharma, Rajat Attri, Monika Gupta, Manoj Kumar Singh and Manoj Kumar Wadhwa

[P2-54] Feedback-based Selective Attenuated Phase Shift Mask for Improved Resist Profile Generation in Optical Lithography
Tanmay Joshi, Subhradip Chakraborty, Sumit Ambuskar, Kamal Rudra and Abhishek Kumar Singh

[P2-55] Controlling defects by substituting ceramic gas distribution plate in process chamber of plasma etcher
Zaheer Ahmed Khan, Girish Dinkar Ingle, Anuvesh Kumar and Vijay Prakash Singh

Track – Photonics, Optoelectronics, Imaging and Display (POID)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-56] Absorption Coefficient, Mobility and Carrier Lifetime Calculations of P-I-P Quantum Dot Infrared Photodetectors
Dr. Suryansh Dongre, P. N. V. Anil Kumar, Shubham Patil, Rutuj Gharate and R. P. Singh

[P2-57] The Solar Quest: Navigating Lead-Tin Perovskite for Enhanced Solar Energy Absorption
Shubhangi Bhardwaj, Abhyuday Verma and Sushobhan Avasthi

[P2-58] All Dielectric Metasurface Display with Ultrahigh Color Saturation
Jeevan Rois, Aravind Yelashetty and Tapajyoti Das Gupta

[P2-59] Multilayer Graphene-Silicon Energy-efficient Photodetectors
Srikrishna Chanakya Bodepudi, Abid Anwar Muhammad, Malik Muhammad, Huan Hu and Yang Xu

[P2-60] Impact of Sb Variation and Electric Field on InAs/Ga(As)Sb Superlattice Structures
Megha Yadav, Akshat Barnwal, Naga Sheshu Reddy, Priyesh Kumar and Jhuma Saha

[P2-61] Smartphone Camera and Geometry Setting in Colorimetric Measurement for analyte detection
Sunita Bhatt, Vijay Prabhakar, Richa Gupta and Satish Kumar Dubey

[P2-62] Adaptive Design of Tensile Strained Ge-on-InGaAs QW Laser for MIR Applications
Rebecca Rainhart, Purv Bavishi, Ben Westcott, Zibing He, Rutwik Joshi and Mantu Hudait

[P2-63] Device Simulation of Hybrid Structure TiO2/CH3NH3SnI3/RGO based Solar Cell using SCAPS -1D
T Keerthi Priya, Prasenjit Deb and Anwesha Choudhury

[P2-64] Comparative Study on Pentacene & Cupc as HTLs for high-performance OLEDs
Yash Bajpai and Praveen C Ramamurthy

[P2-65] Design of 4x4 Thermo Optic Silicon Photonics Switch for communication applications in O-band on GF Fotonix™ Platform
Riddhi Nandi, Rupa Gopinath, Avijit Chatterjee, Pratyasha Priyadarshini, Abdelsalam Aboketaf, Crystal Hedges, Arunima Dasgupta and Michal Rakowski

[P2-66] Unveiling Optoelectronic Traits in Chalcogenide Thin-Film Photovoltaics
Mayank Dubey, Chandrabhan Patel, Kumari Jyoti, Saurabh Yadav, Sumit Chaudhary and Shaibal Mukherjee

Track – Sensors, Flexible and Bioelectronics (SFBE)

Tuesday, March 5, 05:45 PM – 07:30 PM
Session Room : Audi 2 + Audi 3

[P2-67] Electrochemical detection of lead using Silane modified MOF
Jinu Joji, Sunil Kumar Naik and Praveen C Ramamurthy

[P2-68] Cysteine functionalized naphthalene diimide unit for mercury ion sensing
Vishakha Chauhan, Aman Thakur, Praveen C Ramamurthy and Prosenjit Ghosh

[P2-69] Fluorescence-based sensor for detection of Al 3+ metal ions
Aman Thakur, Vishakha Chauhan and Praveen Ramamurthy

[P2-70] TCAD Investigation of HEMT Based Hydrogen Sensors for Extreme Environment Applications
Renuka Kumaran, Rahul J, Arathy Varghese and Lintu Rajan

[P2-71] Microcrystalline cellulose (MCC) reinforced epoxy composites for electronic application
Sachin Revgade, Jinu Joji, Jithunlal S, Chandana Gadadasu, Yash Bajpai, Digvijay Singh Choudhary, Varun Adiga and Praveen Ramamurthy

[P2-72] Mechanically Robust Cellulose Film for Electronics Applications
Jithunlal S, Jinu Joji, Swati Arendra and Praveen C Ramamurthy

[P2-73] Printed and chipless humidity sensor using NFC inspired technology
Sonia Gomez-Gijon, Victor Toral, Diego P. Morales and Almudena Rivadeneyra

[P2-74] Exploration of Organic Transistors for Circuit and Light Sensing Applications
Sachin Rahi, Gargi Konwar and Shree Prakash Tiwari

[P2-75] Surface-Engineered Methylammonium Lead Bromide Single Crystals: A Platform for Lifetime-Encoded/Photodetector Double Security Tags
Somnath Mahato

[P2-76] Non-enzymatic Glucose Detection using ZnO-MoS2 Nanocomposite Heterostructure
Poushali Nandi, Debasish Panda, Sarvar Singh and Ajay Agarwal

[P2-77] Ultra-Thin Finger like source Region Based TFET: Temperature Sensor
Prabhat Singh, Ashish Raman, Dharmendra Singh Yadav, Naveen Kumar, Ankit Dixit and Md Hasan Raza Ansari

[P2-78] Utilization of 2-Methylimidazole Cobalt salt for the electrochemical sensing of atrazine pesticide
Simranjeet Singh, Pavithra N, Radhika Varshney, Basavaraju Uppara and Praveen Ramamurthy

[P2-79] Aging Effect on APCVD-grown 2D MoS2 Monolayer in NO2 Gas Sensing
Chandrabhan Patel, Saurabh Yadav, Vikash Verma, Kumari Jyoti, Mayank Dubey, Ajit Yadav and Shaibal Mukherjee

[P2-80] Highly Sensitive Hydrogen Gas Sensor with Silicon Nanowire FETs
Afsana Anjum Akhi, Nazmul Hasan Naime and Mainul Hossain

[P2-81] Detection of explosives in trace quantities employing silver nanoparticles decorated silica sol gel as surface enhanced Raman spectroscopy (SERS)-active sensor
Sibashish Chakraborty, Richa Goel and Satish Dubey

[P2-82] Sensitivity and Reliability Assessment of a Strained Silicon Junctionless FinFET-based Hydrogen Gas Sensor
Navneet Gandhi, Sunil Rathore, Rajeewa Kumar Jaisawal, P N Kondekar, Naveen Kumar, Ankit Dixit, Vihar Georgiev and Navjeet Bagga

[P2-83] Influence of Nitrogen Inclusion on the Performance Parameters of Zinc Oxynitride Thin Film Transistors
Anjana J G, Kiran Jose, Priyanka K M, Aswathi R Nair and Venu Anand

Planning Your Wednesday

Plenary Talk

Wednesday, March 6, 09:30 AM – 10:20 AM
Session Room : Audi 1 + 2 + 3, Session Chair: Bin Zhao, IEEE EDS

09:00 AM Plenary 5
Transistor Scaling for the Future
Anand Murthy; Intel, USA

09:50 AM Plenary 6
Simulation and Analytics in the Angstrom Era
Srinivas Raghvendra; Synopsys, USA

Oral Sessions

Session 7A : Design Technology Co-Optimization III

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 1, Session Chair : Hussam Amrouch; Technical University Munich, Germany

11:00 AM [7A-1] [Keynote]
Efficient and Accurate DTCO Framework for Reliability and Variability-Aware Explorations of FinFETs, Nanosheets, and Beyond
Markus Karner; Global TCAD Solutions, Austria

11:30 AM [7A-2] [Invited]
Perspectives on Backside Power (PowerVia)
Manjunath Shamanna; Intel, USA

12:00 PM [7A-3]
DTCO of Nanosheet and Forksheet Architectures: Exploring Dielectric Walls, Contacting Schemes, and Active Regions for Optimized RO Performance
Gautam Gaddemane[1], Pieter Schuddinck[1], Krishna Bhuwalka[2], Gerhard Rzepa[3], Gioele Mirabelli[1], Philippe Matagne[1], Dmitry Yakimets[2], Hao Wu[2], Geert Hellings[1] and Changze Liu[1]; [1]IMEC, Belgium; [2]Huawei, Belgium; [3]GTS, Austria

12:15 PM [7A-4]
Scaling Options for GAA Nanosheet Based Devices: Role of Decoupling Inner- and Outer-Gate Lengths
Krishna Bhuwalka[1], Oskar Baumgartner[2], Hao Wu[1], Gerhard Rzepa[2], Dmitry Yakimets[1], Markus Karner[2] and Changze Liu[1]; 1Huawei, Belgium; [2]GTS, Austria

Session 7B : In-Memory Computing II

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 9, Session Chair : Nicole Saulnier; IBM Research, USA

11:00 AM [7B-1] [Keynote]
Frontiers in AI Hardware: Deploying In-Memory Computing for Next-Gen Edge-AI Solutions
Nithin Chawla; ST Microelectronics, USA

11:30 AM [7B-2] [Invited]
Enhance Chip Connectivity and Functionality through RRAM-based Monolithic 3D Integration for Energy-Efficient Computing-In-Memory
Jianshi Tang; Tsinghua University, China

12:00 PM [7B-3] [Invited]
In-memory Computing: Across Times and Scales
Arindam Basu; City University of Hong Kong, Hong Kong

12:30 PM [7B-4]
Compensation of Conductance Mismatch with Redundant Bit-lines for RRAM-based Voltage Sensing Mode Computing-in-Memory
Yi Gao, Zongwei Wang, Zhizhen Yu, Lin Bao, Yimao Cai and Ru Huang; Peking University, China

12:45 PM [7B-5]
Accelerated Bit Slicing Technique for In-Memory Computing Using Multi-Input Resistive Random Access Memory
Jayatika Sakhuja[1], Radhika Joglekar[2], Sandip Lashkare[2] and Udayan Ganguly[1]; [1]Indian Institute of Technology Bombay, India; [2]Indian Institute of Technology Gandhinagar, India

Session 7C : ML based Device Modeling

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 2, Session Chair : Oves Badami; Indian Institute of Technology Hyderabad, India

11:00 AM [7C-1] [Invited]
Parametric Modeling Paradigms of Emergent Graphene-based Nano interconnects using Knowledge Based Machine Learning
Sourajeet Roy; Indian Institute of Technology Roorkee, India

11:30 AM [7C-2]
Training Free Parameter Extraction for Compact Device Models using Sequential Bayesian Optimization
Om Maheshwari, Aishwarya Singh and Nihar Ranjan Mohapatra; Indian Institute of Technology Gandhinagar, India

11:45 AM [7C-3]
A Neural Network based Fast Parameter Extraction of Compact Hot Carrier Degradation Model in FinFETs
Cong Shen[1], Yu Li[1], Wu Dai[1], Xinyue Zhang[1], Zirui Wang[1], Zhigang Ji[2], Lining Zhang[1], Runsheng Wang[1] and Ru Huang[1]; 1Peking university, China; [2]Shanghai Jiao Tong University

12:00 PM [7C-4]
Neural Network Assisted Si-on-Nothing MOSFET Current-Voltage Modeling with Incremental Learning
Shuhan Wang, Zheng Zhou, Guihai Yu, Zili Tang, Jinghan Xu, Xiaoyan Liu and Xing Zhang; Peking university, China

12:15 PM [7C-5]
Accurate and fast electrostatic simulations of a double gate FETs using deep neural network
Avanish Kumar Singh[1], Aasim Ashai[2], Peram Sree Keerthan Reddy[1], Satya Aditi Dhaaipule[1], Biplab Sarkar[2] and Oves Badami[1]; 1Indian Institute of Technology Hyderabad, India; [2]Indian Institute of Technology Roorkee, India

12:30 PM [7C-6]
Physics Informed Neural Network Based Time-Independent Schrodinger Equation Solver
Anant Singhal and Harshit Agarwal; Indian Institute of Technology Jodhpur, India

12:45 PM [7C-7]
Enhanced ANN for Accurate Current Prediction and Circuit Simulation in Nanosheet FETs
Om Maheshwari and Nihar Mohapatra; Indian Institute of Technology Gandhinagar, India

Session 7D : RRAM and OTS Selected Crossbar Arrays

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 8, Session Chair : Sandip Lashkare; Indian Institute of Technology Gandhinagar, India

11:00 AM [7D-1] [Invited]
ReRAM: NVM for a New Generation
Amir Regev; Weebit Nano Ltd., Israel

11:30 AM [7D-2] [Invited]
Material Engineering for High Performance Memristive Devices
Vikas Rana; Forschungszentrum Juelich, Germany

12:00 PM [7D-3]
Cycles Dependent Resistive Switching of Au/ZnO/ITO-Coated PET Flexible Resistive Memory Devices
Sameen Azhar, Saikat Biswas, Argha Deep Paul and Rajat Mahapatra; National Institute of Technology Durgapur, India

12:15 PM [7D-4]
Ultra-High Endurance (>1012) and High Drive-Current Selector in Sub-30nmΦ Cell using Stable Oxide Doped with As-Se Free High Melting-Point Compound
Yosuke Matsushima, Takeshi Iwasaki, Tadaomi Daibou, Takayuki Sasaki, Yutaro Shimoda, Zhu Qi, Masakazu Goto, Yuya Sato, Makoto Onizaki, Makoto Nagamine, Minoru Amano, Hiroki Kawai, Hiroki Tokuhira, Kenta Chokawa, Rina Takashima, Takayuki Tsukagoshi, Masumi Saitoh, Keiji Ikeda and Katsuyoshi Komatsu; Institute of Memory Technology Research & Development, Kioxia Corporation Japan

12:30 PM [7D-5]
Probing Dit and Memory Window of Solution Processed Oxide
Atul Sachan and Sandip Mondal; Indian Institute of Technology Bombay, India

Session 7E : 2D Materials and Devices III

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 6+7, Session Chair : Kelvin Fong; NUS, Singapore

11:00 AM [7E-1] [Invited]
Vacancy-assisted contact resistance engineering in monolayer and bilayer graphene devices
Jeevesh Kumar; Indian Institute of Technology (ISM) Dhanbad, India

11:25 AM [7E-2] [Invited]
Designer 2D materials and machine-learning assisted characterization
Shengxi Huang; Rice University, USA

11:50 AM [7E-3] [Invited]
High-Speed Electrical Transient Thermometry of Monolayer MoS2
Emanuel Ber and Eilam Yalon; Technion – Israel Institute of Technology, Israel

12:05 PM [7E-4] [Invited]
Sliding van der Waals Polytypes
Moshe Ben Shalom; Tel Aviv University, Israel

12:30 PM [7E-5]
Improved Resistive Switching and Synaptic characteristics on 2-D Graphene/MoS2/Graphene Memristor using O2 Plasma Irradiation
Kanupriya Varshney[1], Prajjwal Shukla[1], Bhanu Prakash[2], Devarshi Mrinal Das[1] and Brajesh Rawat[1]; [1]Indian Institute of Technology Ropar, India;[2]INST,Mohali, India

12:45 PM [7E-6]
Probing the Origin of Photocurrent in 2D Bilayer MoSe2-WSe2 Lateral Heterostructure
Purbasha Ray[1], Rupali Verma[2], Biswajeet Nyak[1], Suman Kumar Chakraborty[1], Mayank Shrivastava[2], Prasana Kumar Sahoo[1]; [1]Indian Institute of Technology Kharagpur, India; [2]Indian Institute of Science, Bengaluru, India

Session 7F : Process and Metrology

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 4, Session Chair : Shawn Thomas; Applied Materials, USA

11:00 AM [7F-1] [Invited]
e-beam technology innovation for EUV, Gate all around logic and Advance Memory acceleration
Nitin Singh Malik; Applied Materials, USA

11:30 AM [7F-2]
Optical Probing of Charge Retention Time in Semiconductor/ Dielectric Structure
Binit Mallick, Dipankar Saha, Anindya Datta and Swaroop Ganguly; Indian Institute of Technology Bombay, India

11:45 AM [7F-3] [Invited]
Atomic Layer Deposition from a Chemistry View
Xinwei Wang; Peking University, China

12:10 PM [7F-4]
Influence of ALD pulse times and deposition temperature on electrical properties and reliability of MIM decoupling capacitors based on Al-doped ZrO2 high-k dielectric in BEoL conditions
Konstantinos Efstathios Falidas[1], Kati Kühnel[1], Maximilian Everding[1], Malte Czernohorsky[1] and Johannes Heitmann[2]; [1]Fraunhofer Institute for Photonic Microsystems (IPMS), Germany; [2]TU Bergakademie Freiberg, Germany

12:25 PM [7F-5]
Roughness as an Important Metric for Si and SiGe Epi Growth
Yogendra Yadav[1], Piyush Bhatt[1], Rajesh Sathiyanarayanan[1] and Phillip Stout[2]; [1]Applied Materials, India; [2]Applied Materials, United States

12:40 PM [7F-6]
Monitoring Product Chip Health with In-die Quality Monitors
Tomasz Brozek[1], Alberto Piadena[2], Michele Quarantelli[2], Larg Weiland[1], Christopher Hess[1], Sharad Saxena[1], Yuan Yu[1], Rakesh Vallishayee[1] and Andrzej Strojwas[1]; [1]PDF Solutions, USA; [2]PDF Solutions, Italy

Session 7G : Package Design

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 3, Session Chair : Deepak Arora; Indian Institute of Technology Jodhpur, India

11:00 AM [7G-1] [Keynote]
Semiconductor Market Trends and Packaging Implications
Glenn G. Daves, NXP Semiconductors, USA

11:30 AM [7G-2] [Invited]
Packaging Heterogeneous Integration (PHI): Maintaining the Scaling Golden Ratio
Arun Chandrasekhar, Intel, India

12:00 PM [7G-3]
Recurrent Neural Network (RNN) Based Signal Integrity Assessment for Coaxial-Through Glass Vias in Three-Dimensional Integration
Suyash Sachdeva, Madhu Kiran Kommukuri, Rajeevan Chandel and Rohit Dhiman; National Institute of Technology Hamirpur, India

12:15 PM [7G-4]
Leakage current based Thermal Design Approach for SSD Reliability
Ramesh Nallavelli[1], Prasad N V Nune[1], Suresh Reddy Yarragunta[1], Christopher Glancey[2], Gokul Kumar[2], Yeow Chon Ong[3] and Hong Wan Ng[3]; [1]Micron Technology, India; [2]Micron Technology, United States; [3]Micron Technology, Singapore

Session 7H : Printed Devices

Wednesday, March 6, 11:00 AM – 01:00 PM
Session Room : Audi 5, Session Chair : Chandan Yadav; Indian Institute of Technology, Jammu, India

11:00 AM [7H-1] [Keynote]
In-Vitro Recording of Cellular Activities using Printed Carbon-based Transistors
Adrica Kyndiah; Istituto Italiano di Tecnologia,Italy

11:30 AM [7H-2] [Invited]
Highly flexible and conformable electronic systems a new generation of wearable devices
Piero Coseddu; University of Cagliari, Canada

12:00 PM [7H-3] [Invited]
Microfabrication of Prototypes of Millimeter-Band Electromagnetic Components by Using DLP 3D Printing and Magnetron Sputtering
Nikita M. Ryskin[1,2], Ivan S. Ozhogin[1,2], Andrei V. Starodubov[1,2], Alexey A. Serdobintsev[2], Ilya O. Kozhevnikov[2], Igor Sh. Bahteev[3], Sergey Yu. Molchanov[1,3], Vishant[4], Anand Abhishek[4], and Niraj Kumar[4]; [1]Saratov Branch, Kotelnikov Institute of Radio Engineering and Electronics RAS, Russia; [2]Saratov State University, Russia; [3]Osipyan Institute of Solid State Physics RAS, Chernogolovka, Russia; [4]CSIR-Central Electronics Engineering Research Institute, India

12:15 PM [7H-4]
Investigation of resistive switching in ink-jet printed zinc doped indium oxide-based devices
Manvendra Singh, Mohammed Hadhi Pp and Subho Dasgupta; Indian Institute of Technology Bombay, India

12:30 PM [7H-5]
Exploration of Solution Processed OFETs with PVP/P3HT interface for Synaptic Behavior Emulation
Somnath Bhattacharjee, Sachin Rahi, Gargi Konwar and Shree Prakash Tiwari; Indian Institute of Technology Jodhpur, India

12:45 PM [7H-6]
A System Level Integration of Wearable and Flexible Magnetoelectric Nanogenerators for Efficient Energy Harvesting
Nandan Murali, Dibyajyoti Mukherjee, Shashank Bhushan Das, Dhiman Mallick and Soutik Betal; Indian Institute of Technology Delhi, India

Session 8A : GaN based Power Devices

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 1, Session Chair : Jaya Jha;
Indian Institute of Technology (BHU) Varanasi, India

02:00 PM [8A-1] [Invited]
Indigenous GaN on SiC MMIC Technology for Strategic Applications
Meena Mishra; Solid State Physics Laboratory, New Delhi, India

02:25 PM [8A-2] [Invited]
Modeling of the gate leakage and forward gate reliability in Schottky-gate p-GaN
Carlo De Santi; University of Milan, Italy

02:50 PM [8A-3] [Invited]
Efficient and Reliable Enhancement Mode AlGaN/GaN HEMTs using novel P-type Oxide Engineering
Sayak Dutta Gupta; Indian Institute of Technology Madras, India

03:15 PM [8A-4]
Investigation of DC Characteristics in GaN-on-Si power MIS-HEMTs over a Wide Temperature Range (4 K to 550 K) for Space and Quantum Computing Applications
Anant Johari[1], Meng-Che Tsai[1], Minh Thang Trinh Ngo[1], Yi Yang[1], Tian-Li Wu[1], Ankur Gupta[2] and Rajendra Singh[2]; [1]International College of Semiconductor Technology, National Yang Ming Chiao Tung University, Taiwan; [2]Indian Institute of Technology Delhi, India

03:30 PM [8A-5]
A Comprehensive analysis of Interlayer variabilities in double-channel AlGaN/GaN HEMT heterostructure
Priyesh Kumar and Jhuma Saha; Indian Institute of Technology Gandhinagar, India

03:45 PM [8A-6]
Improved thermal stability at high temperature of operation (473K) in all epitaxy Nd2O3/AlGaN/GaN MOSHEMT
Umang Singh[1], Hannah Genath[2], Ritam Sarkar[1], Jan Kruegener[2], H. Joerg Osten[2] and Apurba Laha[1]; Indian Institute of Technology Bombay, India; [2]Leibniz University, Germany

Session 8B : In-Memory Computing III

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 5, Session Chair : Arindam Basu;
City University of Hong Kong, Hong Kong

02:00 PM [8B-1] [Invited]
Reimagining non-volatile memories for the Internet of Intelligent Things
Xuanyao Fong; National University of Singapore, Singapore

02:25 PM [8B-2] [Invited]
Neuromorphic computing: Bridging the gap between software and hardware
Sounak Dey; Tata Consultancy Services, India

02:50 PM [8B-3] [Invited]
Uncertainty Quantification at the Edge: Know when your AI model doesn't know?
Priyesh Shukla; Samsung R&D Institute, India

03:15 PM [8B-4]
Indigenous back-end-of-line compatible SiO2-based One-Time Programmable Memory for Secured Spiking Neural Network Inference Accelerator
Shreyas Deshmukh, Anmol Biswas, Abhishek Kadam, Ajay Singh, Veeresh Deshpande and Udayan Ganguly; Indian Institute of Technology Bombay, India

03:30 PM [8B-5]
A Novel Small-Signal Ferroelectric Memcapacitor based Capacitive Computing-In-Memory for Area- and Energy-Efficient Quantized Neural Networks
Weikai Xu, Jin Luo, Boyi Fu, Zhiyuan Fu, Kaifeng Wang, Chang Su, Qianqian Huang and Ru Huang; Peking University, India

03:45 PM [8B-6]
CMOS-RRAM based In-Memory Hamming Distance Calculation Technique
Manoj Kumar[1], Ming-Hung Wu[2], Tuo-Hung Hou[2] and Manan Suri[1]; 1Indian Institute of Technology Delhi, India; [2]National Yang Ming Chiao Tung University, Taiwan

Session 8C : Ferroelectric/Memory Modeling

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 2, Session Chair : Avirup Dasgupta, Indian Institute of Technology Roorkee, India

02:00 PM [8C-1] [Invited]
Stochastic Nonlinear Dynamical Modeling of SRAM Bitcells in Retention Mode
Léopold Van Brandt; UCLouvain, Belgium

02:25 PM [8C-2]
Physical Modeling of Hafnia-based 3D Ferroelectric Polarization Switching with Cylindrical Structure
Chang Su, Minyue Deng, Liang Chen, Kaifeng Wang, Zhiyuan Fu, Shaodi Xu, Ru Huang and Qianqian Huang; Peking University, China

02:40 PM [8C-3]
Modeling of Ferroelectric Thin Film Transistors with Amorphous Oxide Semiconductor Channel
Wei Zhang, Jianze Wang, Chen Sun, Zhen Wu, Xiao Gong and Xuanyao Fong; National University of Singapore, Singapore

02:55 PM [8C-4]
A Physics-based Compact Model for ULTRARAM Memory Device
Abhishek Kumar, M. Ehteshamuddin, Anand Bulusu, Shruti Mehrotra and Avirup Dasgupta; Indian Institute of Technology Roorkee, India

03:10 PM [8C-5]
Erase Efficiency Improvement of Ferroelectric FET with IGZO Channel by P-Type SnOx Layer
Jiahao Huang[1], Chengji Jin[2], Xiao Yu[2], Hongrui Zhang[2] , Genquan Han[3] and Yan Liu[3]; 1Hangzhou Institute of Technology, Xidian University, China; [2]Zhejiang Lab, China; [3]School of Microelectronics, Xidian University, China

03:25 PM [8C-6]
Proposal for True Random Number Generation in ferroelectric capacitors using noise-induced switching
Madhav Ramesh[1], Amit K Verma[2] and Arvind Ajoy[3]; [1]Cornell University; [2]Indian Institute of Technology Kanpur, India; [3]Indian Institute of Technology Palakad, India

03:25 PM [8C-7]
Write Error Rates of Field-Assisted Spin-Orbit-Torque Switching of Perpendicular Magnetic Tunnel Junctions
Sonalie Ahirwar and Tanmoy Pramanik; Indian Institute of Technology Guwahati, India

Session 8D : Unconventional Computing II

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 3, Session Chair : Veeresh Deshpande; Indian Institute of Technology Bombay, India

02:00 PM [8D-1] [Invited]
Inventing what's next in AI hardware
Nicole Saulnier; IBM Research, USA

02:30 PM [8D-2] [Invited]
SONOS Non-volatile Memory Technology for Analog Neuromorphic Computing Applications
Ravi Kumar; Infineon Technologies, USA

03:00 PM [8D-3]
Exploiting Single Ferroelectric FET for Efficient Implementation of Majority Gate Function for Approximate Computing
Musaib Rafiq, Yogesh Singh Chauhan and Shubham Sahay; Indian Institute of Technology Kanpur, India

03:15 PM [8D-4]
Enhancement of Multi-Timescale Reservoir Computing Based on Homogeneous Hardware Platform with Controllable Ionic Dynamics
Zhen Yang, Teng Zhang, Keqin Liu and Yuchao Yang; Peking University, China

03:30 PM [8D-5]
On-Chip Write & Verify and Endurance Enhancer Circuits towards Multi-level RRAM Array
Quan Zhang, Longhao Yan, Yaoyu Tao, Ru Huang and Yuchao Yang; Peking University, China

03:45 PM [8D-6]
Efficient Implementation of Multiplexer and Full-Adder Functions Based on Memristor Arrays for In-memory Computing
Zhouchao Gan, Chenyu Zhang, Yinghao Ma, Dongdong Zhang, Xiangshui Miao and Xingsheng Wang; Huazhong University of Science and Technology, Wuhan, China

Session 8E : Magnetic, Straintronic and Quantum Computing Devices

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 6+7, Session Chair : Hitoshi Wakabayashi; Tokyo Institute of Technology, Japan

02:00 PM [8E-1] [Invited]
A Materials-Device Co-Design Framework for Realizing CMOS Charge Qubits Using Germanium Quantum Dots/ Si-based barriers
Pei Wen-Li; National Yang Ming Chiao Tung University, Taiwan

02:30 PM [8E-2] [Invited]
Straintronic Micro-Antennas
Supriyo Bandyopadhyay; Virginia Commonwealth University, USA

03:00PM [8E-3] [Invited]
Light-Induced Static and Dynamic Magnetization Modulation in Magnetoelectric Heterostructure for Beyond-CMOS Devices
Pankaj Pathak, Ajay Kumar and Dhiman Mallick; Indian Institute of Technology Delhi, India

03:15 PM [8E-4]
Detection of Defect Density of States in Solution-Processed Quantum Devices
Himanshu Marothya, Vishwas Acharya and Sandip Mondal; Indian Institute of Technology Bombay, India

Session 8F : MEMS Devices

Wednesday, March 6, 02:00 PM – 04:00 PM
Session Room : Audi 4, Session Chair : Satinder K. Sharma; Indian Institute of Technology Mandi, India

02:00 PM [8F-1] [Keynote]
MEMS flexible electronics based on Meta structures
Hongyu Yu; HKUST, Hong Kong

02:30 PM [8F-2] [Invited]
Design, Fabrication, Characterization and Modeling of a 1Hz RF MEMS Resonator for Oscillator Applications
Deleep R. Nair; Indian Institute of Technology Madras, India

02:55 PM [8F-3] [Invited]
Strain-Mediated Bi-layered Magnetoelectric Devices for Microsystems Applications
Dhiman Mallick, Indian Institute of Technology Delhi, India

03:20 PM [8F-4]
Asymmetrically Configured MEMS Spiral Resonator with Ultrathin Internal Electrostatic Transduction
Satish Verma, Manjeet Kumar, Pawan Kumar and Bhaskar Mitra; Indian Institute of Technology Delhi, India

03:35 PM [8F-5]
Reservoir Computing with a MEMS Nonlinear Resonator for In-Sensor Computing
Faizan Tariq Beigh[1], Yu Chi Chuang[2], Nadeem Tariq Beigh[1], Priyanka Singh[1], Shashank Narain[1], Shreya Singla[1], Yi Chiu[2] and Dhiman Mallick[1]; [1]Indian Institute of Technology Delhi, India; [2]National Yang Ming Chiao Tung University (NCTU), Taiwan

03:45 PM [8F-6]
Design of High Isolation Low Loss MEMS Ohmic Switch for Radio Frequency Applications
Piyush Kumar, Niharika Narang, Ashok Kumar Dhakar, Ashwini Kumari, Khanjan Joshi and Pushparaj Singh; Indian Institute of Technology Delhi, India

Student Research Forum

Wednesday, March 6, 02:00 PM – 04:00 PM
Audi 8+9

Cultural Event / Entertainment

Wednesday, March 6, 05:00 PM – 06:00 PM
Audi 1+2+3

Closing Ceremony and Awards

Wednesday, March 6, 06:00 PM
Audi 1+2+3

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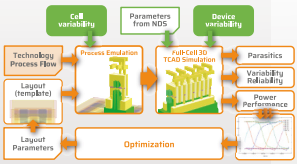

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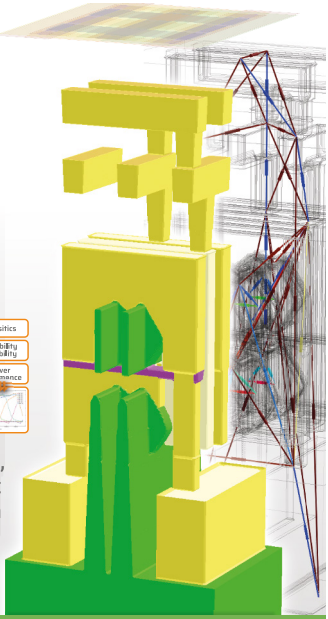

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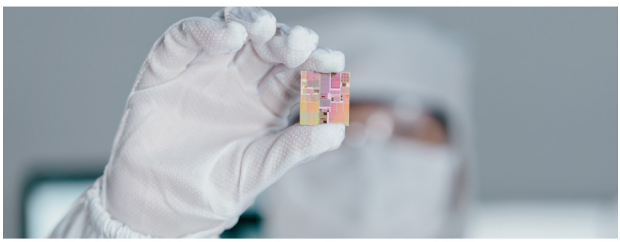

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