Faculty Development Program

Title : Recent Advancements in Nano Electronics and its Applications

Date : 04-Dec-2023 - 08-Dec-2023
Time : 10:00 - 17:30
Venue : TT-727

Discussion Points

- Trends and Opportunities of VLSI
- Recent developments in Nanoelectronics
- Ferroelectric Memories
- Physical Insights and modelling of emerging ferroelectric devices
- 2D nanomaterial based flexible electronic devices
- Fabrication and Characterization of Emerging Nano Devices
- Low Power design using power gating
- Low power VLSI
- Design requirements and challenges in brain machine interfaces for monitoring and treatment of neurological diseases
- Quiz and Discussion

	**Resource Person 1 - Details** **Name :** Dr Gopal Rawat **Designation :** Assistant Professor, School of Computing and Electrical Engineering (SCEE) **University/ Company :** IIT Mandi, Mandi **Address :** India, 175005.
	**Resource Person 2 - Details** **Name :** Dr Harshit Agarwal **Designation :** Associate Professor , Department of Electrical Engineering **University/ Company :** IIT Jodhpur, Jodhpur **Address :** India, 342030.
	**Resource Person 3 - Details** **Name :** Dr Girish Pahwa **Designation :** Executive Director, Berkeley Device Modeling Center **University/ Company :** University of California, Berkeley **Address :** US, 94701.
	**Resource Person 4 - Details** **Name :** Dr Tarun Chaudhary **Designation :** Assistant Professor , Department of Electronics & Communication Engineering **University/ Company :** Dr. BR Ambedkar NIT Jalandhar, Jalandhar **Address :** India, 144 011.
	**Resource Person 5 - Details** **Name :** Dr Navneet Gupta **Designation :** Professor , Department of Electrical and Electronics Engineering **University/ Company :** Birla Institute of Technology and Science, Pilani, Pilani **Address :** India, 333031.
	**Resource Person 6 - Details** **Name :** Dr Gopi Krishna Saramekala **Designation :** Assistant Professor, Department of Electronics & Communication Engineering **University/ Company :** NIT Calicut, Calicut **Address :** India, 673601.
	**Resource Person 7 - Details** **Name :** Sri Adibhatla Sridevi **Designation :** Professor Grade 1, School of Electronics Engineering **University/ Company :** VIT, Vellore **Address :** India, 632014.
	**Resource Person 8 - Details** **Name :** Sandeep Moparthi **Designation :** Assistant Professor Sr. Grade 1, School of Electronics Engineering **University/ Company :** VIT, Vellore **Address :** India, 632014.

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	**Resource Person 9 - Details** **Name :** Naushad Manzoor Laskar **Designation :** Assistant Professor Sr. Grade 1, School of Electronics Engineering **University/ Company :** VIT, Vellore **Address :** India, 632014.

Resource Person's Profile :

1. Profile of Dr Gopal Rawat

Dr. Gopal Rawat is currently working as an Assistant Professor in the School of Computing and Electrical Engineering (SCEE) at IIT Mandi.He received his M.Tech. and Ph.D. Degrees from the Department of Electronics Engineering, IIT (BHU), Varanasi with a specialization in Microelectronics Engineering. Dr. Rawat has a broad research interest in Semiconducting Materials, Device Design, and Development. Dr. Rawat is a BRICS Young Scientist, Senior Member of IEEE, USA and Lifetime Member of IEI

2. Profile of Dr Harshit Agarwal

Dr. Harshit Agarwal is currently working as an Associate Professor in the Department of Electrical Engineering, IIT-Jodhpur. Previously, he worked as Post-Doctoral researcher and Center manager, Berkeley Device Modeling Center (BDMC), University of California Berkeley, US. He completed his Ph.D from IIT Kanpur. He has a deep interest in energy efficient device technologies like Negative Capacitance FETs, including model development, device optimization and device-circuit co-design.

3. Profile of Dr Girish Pahwa

Dr. Girish Pahwa is working as an Executive Director in Berkeley Device Modeling Center at University of California, Berkeley, US. He worked as Post-Doctoral researcher and Center manager, Berkeley Device Modeling Center (BDMC), University of California Berkeley, US. He received his Ph.D. from IIT Kanpur. Currently, he received EDS Early Career award from IEEE Electron Device Society. His research interests include Negative Capacitance FET, Cryogenic CMOS, Ferroelectric Memories etc.

4. Profile of Dr Tarun Chaudhary

Dr. Tarun Chaudhary is currently working as an Assistant Professor at Dr. BR Ambedkar NIT Jalandhar. She has completed her M.Tech. and Ph.D. from NIT Hamirpur with a specialization in Low Power VLSI Design. Her research interest includes Nano scale device modelling, Analysis and design of low power VLSI Circuits, Characteristic study of 2D Materials based devices for analog and digital applications. She is also working on Performance analysis of VLSI circuits for Biomedical Applications.

5. Profile of Dr Navneet Gupta

Dr. Navneet Gupta is working as Professor and Head of Department of Electrical and Electronics Engineering, Birla Institute of Technology and Science, Pilani. He received his Ph.D. from H.N.B. Garhwal Central University, Srinagar in Theoretical Study of Electrical Behavior of Polycrystalline Silicon Thin-Film Transistors (TFTs). He is an Awarded Senior Member of IEEE, USA and Lifetime member of Indian Microelectronics Society (IMS), Semiconductor Society of India (SSI) and many more.

6. Profile of Dr Gopi Krishna Saramekala

Dr. Gopi Krishna Saramekala is working as Assistant Professor in the Department of Electronics & Communication Engineering at NIT Calicut. He received his Ph.D in Modeling and Simulation of Subthreshold Characteristics of Short-Channel Fully-Depleted Recessed-Source/Drain SOI from NIT Rourkela. He is a senior member of IEEE and member of IEEE Electronic Devices Society. His research interests include Semiconductor Devices, 2D Materials based Devices and Machine Learning for Semiconductor device

7. Profile of Sri Adibhatla Sridevi

Dr. Sri Adibhatla Sridevi is working as a Professor in the Department of micro and nanoelectronics under School of Electronics Engineering at VIT Vellore. She completed her Ph.D. in VLSI Design from Anna University in the year 2013. Her research interest includes Hardware accelerators for AI and ML, Hardware implementation of CNN and DNN, Low power SRAM and CAM design, Low power Arithmetic circuits, Hardware implementation of signal processing and image processing algorithms.

8. Profile of Sandeep Moparthi

Dr. Sandeep Moparthi is working as an Assistant Professor in the Department of Micro & Nanoelectronics, School of Electronics Engineering, Vellore Institute of Technology, Vellore. He received his Ph.D in Performance Analysis of Negative Capacitance Silicon Nanotube FETs for Low-power Logic from NIT Calicut. He is a Member of IEEE. His research interests include Semiconductor Devices, 2D Materials-based Devices, and Machine learning augmented Technology CAD simulation.

9. Profile of Naushad Manzoor Laskar

Dr. Naushad Manzoor Laskar is working as an Assistant Professor with the Department of Micro and Nanoelectronics, School of Electronics Engineering, VIT VELLORE. Prior to this he was working as a Temporary Lecturer under SMDP-C2SD at NIT SILCHAR. He has been part of the design of 3 ASIC of BIOMEDICAL AMPLIFIERS at NIT SILCHAR. He completed his PHD from NIT SILCHAR in 2021. His current research interest includes BIOMEDICAL VLSI DESIGN, AI/ML in VLSI, SOFT COMPUTING IN VLSI, WEARABLE SENSORS ETC

This is a 5 day hybrid mode Faculty Development Program organized by Teaching Learning Centre of Excellence (TLCE) in association with Department of Micro and Nanoelectronics, School of Electronics Engineering (SENSE), Vellore Institute of Technology. Nanotechnology is helping to considerably improve, even revolutionize, many technology and industry sectors such as information technology, homeland security, medicine, transportation, energy, food safety etc. Nanotechnology assures to be the base of the upcoming industrial revolution. Nanoelectronics, formed by combining nanotechnology and electronics, deals with the handling, characterization, engineering, and manufacturing of electronic devices at the nanoscale. The FDP will feature talks by the experts from different reputed academic organizations about recent advancements in nanoelectronics and its applications. The FDP will provide a detailed review of nanotechnology, its approach towards nanoelectronics, classification and types of nanomaterials used in nanoelectronics, application areas of nanoelectronics and characterization at nanoscale. This FDP will motivate faculty as well as research enthusiasts to venture towards the latest arenas in nanoelectronics such as NCFETs, 2D materials, nano sensors etc. The targeted audience are faculty members research scholars, postgraduate and undergraduate students working in nanoelectronics and nanotechnology.

Nil

Coordinator's: **Prof. SHELJA 19647 - Assistant Professor Sr. Grade 1 - SENSE**
Prof. PRACHI SHARMA 19689 - Associate Professor Grade 1 - SENSE