

**Online Faculty Development Program  
(FDP) on “Next-Generation  
Nanoelectronics Devices Trends  
(NGND): Materials to Applications”**  
Under the banner of  
**Electronics and ICT academy, NIT Patna**

**31<sup>st</sup> Jan-04<sup>th</sup> Feb 2022 (5 days)**



**Patrons**

**Prof. P.K. Jain**  
Director, NIT, Patna

**Coordinator (NIT Patna)**

Dr. Sangeeta Singh

**Co-Coordinator (NIT Patna)**

Dr. Pankaj Kumar

**Sponsored by**

Meity and Govt. of India

**Organized by**

Department of Electronics and Communication

Engineering,

National Institute of Technology, Patna-800005

**About NIT Patna**

National Institute of Technology Patna is the 18<sup>th</sup> National Institute of Technology created by the Ministry of H.R.D. Government of India after rechristening the erstwhile Bihar College of Engineering Patna on 28.01.2004. NIT Patna marked its humble beginning in 1886 with the establishment of pleaders survey training school which was subsequently promoted to Bihar College of Engineering Patna in 1924. This made this institute the 6<sup>th</sup> oldest Engineering Institute of India. The Institute is situated on the south bank of holy river Ganges behind Gandhi Ghat (where the ash of father of the Nation, Mahatma Gandhi was offered in the river Ganges). The campus has a picturesque river view with historic building presenting a spectacle of architecture delight and natural beauty. The Institute imparts high level education training, research and development in science, engineering technology and humanities along with high quality education and values at UG, PG and Ph.D. level.

**Electronics and ICT Academy**

Ministry of Electronics and Information Technology, Government of India has instituted seven Electronics and Information & Communications Technology (ICT) Academies of which, the academy of NIT Patna is one. The Academy at NIT Patna aims to design and organize basic as well as specialized training programs in niche areas of electronics and ICT for the development of required knowledge base, skills and tools to equip the teaching community with better knowledge and understanding.

**Overview**

Modern education needs to address the rapidly evolving facets of nanoscience and nanotechnology. This Faculty Development Programme is planned to gather national leading researchers/faculties and creative young scholars from academia and industry to exchange ideas and foster a collaborative framework for fundamental and applied research in the areas of semiconductor device fabrication and characterization methods, nanoelectronics devices, materials and their applications focusing on a sustainable future.

This faculty development program (FDP) will cover topics in nanotechnology for next-generation applications in electronics, photonics, memory technologies, biochemical sensors, solar cells, energy storage and converters for the advancement of knowledge. This FDP is designed to give an exposure to design of experiments, material growth,

characterizations and device/system fabrication and system packaging and integration. This course is aimed to bring together engineers, technologists, scientists and researchers through academic training and learning activities to augment and expand on acquired knowledge and encourage in-depth discussions through tutorials to prepare for research-led activities. Semiconductor devices such as Solar Cells, LEDs, Photodetectors, Sensors, Non-volatile memories & others are used for various energy, optical, chemical, biological, computing & other applications.

To cater to the needs of rapidly growing modern technologies, these semiconductor devices have been progressively evolving as well. This program gives an insight into various semiconductor devices from basic level to advanced level. Further, next-generation innovations in devices and various challenges involved will be discussed to elaborate on current research and enhancements in the respective fields.

**Objective and Scope**

- ✦ Main objective of this program is to provide an exposure of current status and next generation innovations of various semiconductor devices.
- ✦ Primary objective of this program is to provide an exposure of recent trends in next generation devices and their circuit applications.
- ✦ This program can serve as an excellent platform to get the concepts of both basics and recent advances in VLSI beyond CMOS devices.

**Course Content**

- ✦ Nanomaterials & Nanoscale fabrication.
- ✦ Characterization of Nanoelectronics devices.
- ✦ Nano-optoelectronics Devices.
- ✦ Semiconductor device fabrication, beyond CMOS.
- ✦ Sensors.
- ✦ Micro/Nano electromechanical systems.
- ✦ Nanoscale circuits & sub-systems.
- ✦ Silicon Photonics.
- ✦ Nanofabrication of advanced semiconductor devices for Atmanirbhar Bharat.

**Outcomes**

- ✦ By the end of the program, the participants should be able to understand the basic as well as recent research opportunities in

fundamentals and advances in nanotechnology in the domain of Solar Cells, LEDs, Photo-detectors, Sensors, Non-volatile memories etc.

- They will be able to simulate the some basic devices, using both virtual fabrication process flow as well as the device and circuit designing aspect.

### Who Can Participate

Industry personals, Faculty members of UGC/AICTE recognized Universities and Engineering colleges all over India, Research scholars, M. Tech. students, however there are very limited number of seats for Ph.D. /PG/UG students; priority will be given to the faculty members and Ph.D. students.

### Resource Persons

- Dr. Bernhard C. Bayer, Institute of Materials Chemistry, Technische Universität Wien (TU Wien) Austria
- Dr. Brajesh Kumar Kaushik, Indian Institute of Technology Roorkee
- Dr. Alok Shukla, Professor, Indian Institute of Technology Bombay
- Dr. Nandita Dasgupta, Indian Institute of Technology Madras
- Dr. Ashutosh Tiwari, Director, Institute of Advanced Materials, IAAM (Sweden).
- Dr. Jawar Singh, Indian Institute of Technology Patna
- Dr. Gaurav Trivedi, Indian Institute of Technology Guwahati
- Dr. Suneel Pandey, Intel Corp.
- Dr. Neeraj K. Jaiswal, PDPM-Indian Institute of Information Technology Design and Manufacturing, Jabalpur
- Dr. Saurabh Kumar Pandey, Indian Institute of Technology Patna
- Dr. Shashikant Sharma, IIIT Ranchi
- Mr. Vivek Sharma, Qualcomm
- Mr. Amit Saini, Cadre Design
- Mr. Rohit Kumar, Synopsys
- Mr. Piyush Mishra, ST Microelectronics, Noida
- Dr. Sangeeta Singh, National Institute of Technology Patna
- Dr. Pankaj Kumar, National Institute of Technology Patna

### Registration Fee

- Faculty Member: Rs 500/-
- Ph.D/PG Students : Rs 500/-
- Industry Personnel: Rs 1000/-

Certificate will be given by Electronics & ICT Academy NIT Patna.

### Registration Process

- Scanned copy of the filled application form duly endorsed by the forwarding authority and the demand draft are to be mailed at ([sangeeta.singh@nitp.ac.in](mailto:sangeeta.singh@nitp.ac.in)). No travelling Allowance will be paid by the Academy. The demand draft as applicable, should be drawn in favour of “Director, NIT Patna” payable at Patna.
- Registration fee can also be paid by the online mode, the account details for this purpose is  
Account Name: NIT Patna  
Account No.: 50380476798  
IFSC Code: IDIB000B810
- Selection will be made purely on First-Come-First-Serve basis (Subject to fulfilling the eligibility criteria).
- Maximum eighty (80) participants will be accommodated in the STC.
- The brochure and the registration form may be downloaded from the Institute website [www.nitp.ac.in](http://www.nitp.ac.in).

The registration fee can also be deposited in cash.

Last date of submission of application: 20<sup>th</sup> January, 2022.

### Address for Correspondence

Enquiry should be addressed to:

Dr. Sangeeta Singh, Assistant Professor  
Dept. of ECE Engineering, NIT Patna  
Mob. No.: 09479646111  
Email: [sangeeta.singh@nitp.ac.in](mailto:sangeeta.singh@nitp.ac.in)

### Venue/Registration Link

All you need is just an INTERNET connection

<https://forms.gle/evAnZPdnrQazAko46>

### Advisory Committee

Prof. P.K. Jain, Director, NIT, Patna  
Dr. Bharat Gupta, NIT Patna.

Online Faculty Development Program (FDP) on “Next-Generation Nanoelectronics Devices Trends (NGND): Materials to Applications”

31<sup>st</sup> Jan -04<sup>th</sup> Feb, 2022 (5 days)

### REGISTRATION FORM

1. Name (block letter): .....

(a) Gender  Male  Female

(b) Category  Gen  OBC  SC  ST

2. Designation .....

3. Organization: .....

4. Highest Academic Qualification: .....

5. Experience (in years):

(a) Teaching: ..... (b) Industrial: .....

6. Address for communication: .....

.....

Pin code: ..... Ph. No.: .....

Fax No.: .....

E-mail: .....

7. Mode of Payment Through DD

Through NEFT  CASH

8. DD No./NEFT Trn Ref no. : .....

Date: ..... Bank Name: ..... Amount: ...

9. Endorsement from the forwarding authority:

Name: .....

Designation: .....

Seal:

### DECLARATION

I do hereby agree to abide by the rules and regulations of the FDP.

Place: ..... Date: .....

.....  
Signature of the applicant