

Tentative Outline

Special Thematic Issue for the journal

Title of the Thematic Issue: Exploring Nanomaterials and Nanoelectronic devices for Future Semiconductor Applications

Guest Editor: Prof. Saurabh Chaudhury

Scope of the Thematic Issue:

Device scaling is fundamental to technological advancements, however, scaling down the MOS devices to deep nanometer leads to an exponential increase in leakage currents and excessive heat generation. Moreover, fabrication process variability causing a limitation to further scaling. Researchers believe that with a mix of chemistry, physics and engineering, nanoelectronics may provide a solution to increasing fabrication costs and may allow integrated circuits to be scaled beyond the limits of the modern transistors. As the silicon-based MOS technology has reached its scaling limits, tunnelling and other quantum mechanical effects are dominant at the deep nanometer level. So, the device physics is no longer continued to hold true. As such it is the emerging nanoelectronic devices, such as, Carbon nanotubes (CNTs) and nanowires (NWs), Tunnel FETs, Gate all around FETs that will lead the future semiconductor technologies.

Nanomaterials are fundamental to the development of newer devices from sensors to solar applications and other semiconductor devices. Both theoretical and experimental investigations are very much important before their intended applications. This issue aims to cover all these aspects to highlight some research thrusts in achieving the goals.

Keywords: nanomaterials, semiconductor devices, device scaling, CNTs, Nanowires, TFETs, modeling and simulation

Sub-topics:

The sub-topics to be covered within the issue should be provided:

- Exploring nano-electronic materials: simulations, studies and experimentations
- Modeling and Simulation of Emerging Devices: TFET, GAAFET, CNFET, Nanowire FETs *etc.*
- CNTFET based Circuits, devices and Systems
- Emerging Memory Devices

Tentative titles of the articles and list of contributors:

Tentative titles of the articles and list of contributors with their names, designations, addresses and email addresses should be provided.

1. Prof. Yogesh Kumar Sharma, Professor, Department of Physics, IIT Rookee
2. Prof. N.R.Das, Department of Electronics and Radio Physics, Calcutta University
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Schedule:

- ✧ Thematic issue submission deadline: 31ST October 2021

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