

Dr. Sanatan Chattopadhyay

Sanatan Chattopadhyay, MSc, PhD, PGCAP(UK)

Associate Professor

Department of Electronic Science

University of Calcutta

92, APC Road

Kolkata 700009

India



Educational Qualifications:

PGCAP (2004): University of Newcastle upon Tyne, UK.

Ph. D. (1999): Major: Microelectronics; Jadavpur University, Calcutta and I.I.T. Kharagpur.

Thesis: *Studies on Optoelectronic Applications of SiGe Alloys.*

M. Sc.: (1994): Electronic Science; University of Calcutta, Calcutta.

B. Sc. (1992): Physics Hons. (with Maths. and Chemistry); University of Calcutta, Calcutta.

Work Experience:

Lecturer (Oct 2003 - Mar 2007): School of Electrical, Electronics and Computer Engineering, University of Newcastle upon Tyne, United Kingdom.

Research Associate (Feb 2001 – Oct 2003): School of Electrical, Electronics and Computer Engineering, University of Newcastle upon Tyne, United Kingdom.

Post-Doc Fellow (March 1999 - Feb 2001): Singapore (NUS) - MIT (USA) Alliance (SMA).

Academic Activities:

1. Project Funds Attracted :

- *Design and implementation of digital microfluidic based chips for Bio-medical Applications*, (Phase I: **Rs. 1.0 Crore**; Completed). Funded by: WBDITE. (Co-PI).
- *Design and implementation of digital microfluidic based chips for Bio-medical Applications*, (Phase II: **Rs. 1.46 Crores**, Ongoing) Funded by: WBDITE. (PI).
- Development of **Center of Excellence (COE)** entitled *Systems Biology and Biomedical Engineering* (Phase I: **Rs. 5.0 Crores**, Completed). Funded by: World Bank, TEQIP Phase-II. (CO-PI).
- Development of **Center of Excellence (COE)** entitled *Systems Biology and Biomedical Engineering* (Phase II: **Rs. 4.0 Crores**, Ongoing); Funded by: World Bank, TEQIP Phase - III). (CO-PI).
- *Point-of-care Electronic Diagnosis of Anemic Diseases by Employing Impedimetric Techniques*; (**Rs. 69 Lakhs**, Ongoing); Funded by: DST SERB (CO-PI).
- *Technology-aware modelling and implementation of single, two and multi qubit*

quantum operations for Quantum nanostructures including Quantum Dots (QDs) and Nanowires (NWs); (Rs. 2.0 Crores; Sanctioned). (PI).

- *Growth and characterization of Si/Ge nanowire; (Rs. 2.0 Lakhs + 3 years fellowship; Completed); Funded by: CRNN, C. U. (UGC)*
- *Modeling and characterization of process induced strain in nanoscale CMOS; (Rs. 2.0 Lakhs + 3 years fellowship; Completed); Funded by: CRNN, C. U. (UGC).*
- *EDA tools for strained Si CMOS cell libraries with variability models, £160,000.00; Funded by: EPSRC (UK). (PI).*
- *Strained Si/SiGe: Materials, Technology and Design, (£440,000.00; Completed); Founded by: EPSRC (UK). (Co-PI).*
- *Strained Si/SiGe VS Heterojunction Bipolar Transistor (HBT), (£400,000.00; Completed); Founded by: EPSRC (UK). (Co-PI)*
- *SiGe for MOS Technologies 2; (£400,000.00; Completed); Funded by: EPSRC (UK). (Principal Researcher).*

2. Ph.D. and Project Supervision:

- Ph. D. Supervised: Awarded: 13 (3 UK); Continuing: 6.
- M. Phil.: 1 (UK).
- M. Tech. Project: 5.
- M. Sc. Project: 60 (8 UK).
- B. Eng.: 10 (UK).

3. Publication Highlights

3.1 Books:

- C. K. Maiti, S. Chattopadhyay and L K Bera: *Strained-Si Heterostructure Field Effect Devices*; Taylor & Francis, ISBN: ISBN 9780750309936 (2007).
- H. Rahman, S. Chattopadhyay and S. Chattopadhyay: *Progress in VLSI Design and Test (Edited Book), Proceedings of 16th International Symposium on VLSI Design and Test, VDAT 2012*, Springer, ISBN: 9783642314933 3642314937.

3.2 Book Chapters:

1. J. Sultana, S. Paul, A. Karmakar, and S. Chattopadhyay: *Investigating the growth-time dependent comparative performance of vapour-liquid-solid (VLS) grown p-CuO/n-Si thin film hetero-junction solar cells, Advances in Optical Science and Engineering (2017)*; ISBN: 978-981-10-3907-2; pp. 157-164.
DOI:10.1007/978-981-10-3908-9_18
2. S. Sikdar, B. Nag Chowdhury, and S. Chattopadhyay: *Designing InP-nanowire based vertical metal-oxide-semiconductor capacitors for wavelength selective visible light sensing, The Physics of Semiconductor Devices*, ISBN: 978-3-319-97603-7pp. vo. 215, pp 957-962 (2017).
DOI: 10.1007/978-3-319-97604-4_145

3. S. Sikdar, B. Nag Chowdhury, and **S. Chattopadhyay**: *Analytical modeling of vertically oriented standalone Si-Nanowire metal – oxide - semiconductor capacitors for wavelength selective near-infrared sensing applications*, **Advances in Optical Science and Engineering**, ISBN: 978- 981-10-3907-2; pp. 173-179 (2017).
DOI:10.1007/978-981-10-3908-9_20.
4. R. Saha, A. Das, A. Karmakar, N.R. Saha, and **S. Chattopadhyay**: *Investigation of oxygen vacancy induced resistive switching memory behavior in low-temperature grown n-ZnO/p-Si heterojunction diode*, **Computational Science and Engineering, Taylor & Francis Group**, ISBN 978-1-138-02983-5, pp. 225-229 (2017).
5. J. Sultana, S. Paul, A. Karmakar, and **S. Chattopadhyay**: *Studying the comparative performance of p-CuO/n-Si thin film hetero-junction solar cells grown by Chemical Bath Deposition and Vapor Liquid Solid processes*, **Computational Science and Engineering, Chapter: Heterojunction devices and circuits; Taylor and Francis, (2016)**; ISBN: 978-1-138-02983-5.
6. J. Sultana, S. Paul, A. Karmakar, and **S. Chattopadhyay**: *Investigating the growth-time dependent comparative performance of Vapor Liquid Solid (VLS) grown p- CuO/n-Si thin film hetero-junction solar cells*, **Advances in Optical Science and Engineering (2016): Chapter: Green Photonics: Applied Photovoltaics, Application of Solar Energy, Organic Photovoltaics; Springer Singapore., ISBN: 978-981-10-3908-9**.
DOI:10.1007/978-981-10-3908-9.
7. S. Paul, J. Sultana, A. Karmakar, **S. Chattopadhyay**, P. Singha, and A. Banerjee: *Electrical characterization of n-ZnO/p-CuO thin film hetero-junction solar cell grown by chemical bath deposition and vapor liquid solid technique with varying reaction time*. (2016).
DOI:10.1007/978-981-10-3908-9_19.
8. **S. Chattopadhyay**, S. Chakraborty, C. Das, and R. Saha: *Recent progresses on micro- and nano-scale electronic biosensors: A review*, **Nanospectrum: A Current Scenario (2015)**: Chapter 5: *pp. 19-40*; **Allied Publishers Pvt. Ltd., ISBN: 978-93-85926-06-8**.
9. K. Mukherjee, S. Upreti, A. Bag, S. Mallik, M. Palit, and **S. Chattopadhyay**, C. K. Maiti: *Resistive switching in MIM capacitors using porous anodic alumina (2013)*: Chapter 8: *pp. 29-32*; **Springer International Publishing., ISBN: 9783319030012**.
DOI:10.1007/978-3-319-03002-9_8.
10. S. Upreti, K. Mukherjee, M. Palit, A. Bag, S. Mallik, **S. Chattopadhyay**, and C. K. Maiti: *Porous anodic alumina template formation: deposition technique dependence*; (2013): Chapter 187: pp. 725-728; Springer International Publishing.
ISBN: 9783319030012.

DOI:10.1007/978-3-319-03002-9_187.

3.3 Publications in peer review Journals:

1. B. Chakraborty, R. Saha, **S. Chattopadhyay**, D. De, R. D. Das, M. K. Mukhopadhyay, M. Palit, and C. RoyChaudhuri: *Impact of surface defects in electron beam evaporated ZnO thin films on FET biosensing characteristics towards reliable PSA detection*, **Applied Surface Science** **537**, p. 147895 (2021).
DOI: 10.1016/j.apsusc.2020.147895.
2. S. Paul, J. Sultana, N. R. Saha, G. Dalapati, A. Karmakar, and **S. Chattopadhyay**: *Impact of seed layer annealing on the optoelectronic properties of double-step CBD grown n-ZnO nanowires/p-Si heterojunctions*, **Optik** **228**, p. 166141 (2020).
DOI: 10.1016/j.ijleo.2020.166141.
3. M. Palit, B. Nag Chowdhury, S. Sikdar, K. Sarkar, P. Banerji, and **S. Chattopadhyay**: *Band splitting induced by momentum-quantization in semiconductor nanostructures: observation of emission lines in Indium Phosphide (InP) nanotubes*, **Physics Letters A** **388C**, p. 127056 (2020).
DOI: 10.1016/j.physleta.2020.127056
4. C. Das, B. Nag Chowdhury, S. Chakraborty, S. Sikdar, R. Saha, A. Mukherjee, A. Karmakar, and **S. Chattopadhyay**: *A diagrammatic approach of impedimetric phase angle-modulus sensing for identification and quantification of various polar and non-polar/ionic adulterants in milk*, **LWT- Food Science and Technology** **136**, p. 110347 (2020).
DOI: 10.1016/j.lwt.2020.110347.
5. S. Chakraborty, S. Das, C. Das, S. Chandra, K. Das Sharma, A. Karmakar, and **S. Chattopadhyay**: *On-chip estimation of hematocrit level for diagnosing anemic conditions by impedimetric techniques*, **Biomedical Microdevices** **22**, p. 38 (2020)
DOI: 10.1007/s10544-020-00493-5.
6. R. Saha, A. Karmakar, and **S. Chattopadhyay**: *Enhanced self-powered ultraviolet photoresponse of ZnO nanowires/p-Si heterojunction by selective in-situ Ga doping*, **Optical Materials**, **105**, pp. 109928 (2020).
DOI.org/10.1016/j.optmat.2020.109928.
7. S. Kanungo, B. Majumdar, S. Mukhopadhyay, D. Som, **S. Chattopadhyay**, and H. Rahaman: *Investigation on the Effects of Substrate, Back-Gate Bias and Front-Gate Engineering on the Performance of DMTFET based Biosensors*, **IEEE Sensors Journal** **20**, pp. 10405 - 10414 (2020).
DOI: 10.1109/JSEN.2020.2994295

8. R. Bose, R. Saha, **S. Chattopadhyay**, and R. Pal: *Utilization of nanoporous biosilica of diatoms as a potential source material for fabrication of nanoelectronic device and their characterization*, **Journal of Applied Phycology** **32**, pp. 3041–3049 (2020).
DOI:10.1007/s10811-020-02134-z.
9. J. Sultana, S. Paul, R. Saha, S. Sikdar, A. Karmakar, and **S. Chattopadhyay**: *Optical and electronic properties of chemical bath deposited p-CuO and n-ZnO nanowires on silicon substrates: p-CuO/n-ZnO nanowires solar cells with high open-circuit voltage and short-circuit current*, **Thin Solid Films**, **699**, p. 137861 (2020).
DOI: 10.1016/j.tsf.2020.137861
10. A. Bhattacharya, J. Sultana, S. Sikdar, R. Saha, and **S. Chattopadhyay**: *Investigating the impact of thermal annealing on the photovoltaic performance of chemical bath deposited SnO₂/p-Si heterojunction solar cells*, **Microsystem Technologies** **26**, pp. 1351-1358 (2020).
DOI: 10.1007/s00542-019-04667-x.
11. A. Adhikari, S. De, D. Rana, J. Nath, D. Ghosh, K. Dutta, S. Chakraborty, **S. Chattopadhyay**, M. Chakraborty, and D. Chattopadhyay: *Selective sensing of dopamine by sodium cholate tailored polypyrrole-silver nanocomposite*, **Synthetic Metals** **260**, pp. 116296 (2020).
DOI: 10.1016/j.synthmet.2020.116296
12. C. Das, S. Chakraborty, N. K. Bera, D. Chattopadhyay, A. Karmakar, and **S. Chattopadhyay**: *Quantitative estimation of soda ash as an adulterant in aqueous sucrose solution by employing electrical impedance and capacitance spectroscopy*, **Measurement** **148**, pp. 106937 (8 pages), (2019).
DOI: 10.1016/j.measurement.2019.106937
13. R. Saha, S. Sikdar, B. N. Chowdhury, A. Karmakar, and **S. Chattopadhyay**: *Catalyst-modified vapor-liquid-solid (VLS) growth of single crystalline β -Gallium Oxide (Ga₂O₃) thin film on Si-substrate*, **Superlattices and Microstructures**, **136**, p. 106316 (2019).
DOI:10.1016/j.spmi.2019.106316.
14. J. Sultana, A. Bhattacharya, A. Karmakar, G. K. Dalapati, and **S. Chattopadhyay**: *Graphene - nanoparticle incorporated responsivity tuning of p-CuO/n-Si-based heterojunction photodetectors*, **Bulletin of Materials Science** **42**, p. 194 (2019).
DOI:10.1007/s12034-019-1881-6
15. S. Sikdar, B. N. Chowdhury, **S. Chattopadhyay**: *Understanding the electrostatics of top-electrode vertical quantized Si nanowire metal–insulator–semiconductor (MIS) structures for future nanoelectronic applications*, **Journal of Computational Electronics** **18**, pp. 465-472 (2019).

DOI: 10.1007/s10825-019-01321-7

16. S. Chakraborty, C. Das, K. Ghoshal, M. Bhattacharyya, A. Karmakar, and **S. Chattopadhyay**: *Low frequency Impedimetric cell counting: analytical modeling and measurements*, **IRBM 41**, pp. 23-30 (2019).
DOI: 10.1016/j.irbm.2019.07.003
17. S. Roy Barman, S. Chakraborty, A. Mukhopadhyay, and **S. Chattopadhyay**: *Optical analysis authenticated electrical impedance based quantification of aqueous naphthalene*, **Brazilian Journal of Analytical Chemistry 5**, pp. 30-39 (2019).
DOI: 10.30744/brjac.2179-3425.2018.5.20.30-39
18. S. Sadhukhan, T. K. Ghosh, I. Roy, D. Rana, A. Bhattacharyya, R. Saha, **S. Chattopadhyay**, S. Khatua, K. Acharya, and D. Chattopadhyay: *Green synthesis of cadmium oxide decorated reduced graphene oxide nanocomposites and its electrical and antibacterial properties*, **Materials Science and Engineering: C 99**, pp. 696-709 (2019).
DOI:10.1016/j.msec.2019.01.128
19. R. Saha, N. R. Saha, A. Karmakar, G. K. Dalapati, and **S Chattopadhyay**: *Generation of oxygen interstitials with excess in situ Ga doping in chemical bath deposition process for the growth of p-type ZnO nanowires*, **Journal of Materials Science: Materials in Electronics 30**, pp. 8796-8804 (2019).
DOI:10.1007/s10854-019-01204-4.
20. C. Das, S. Chakraborty, N. K. Bera, K. Acharya, D. Chattopadhyay, A. Karmakar, and **S. Chattopadhyay**: *Impedimetric approach for estimating the presence of metanil yellow in turmeric powder from tunable capacitance measurement*, **Food Analytical Methods 12**, pp. 1017-1027 (2019).
DOI:10.1007/s12161-018-01423-1.
21. S. Chatterjee, S. Sikdar, B. Nag Chowdhury, and **S. Chattopadhyay**: *Investigation of the performance of strain-engineered silicon nanowire field effect transistors (ϵ -Si-NWFET) on IOS substrates*, **Journal of Applied Physics 125**, pp. 082506 (2019).
DOI:10.1063/1.5051310.
22. A. Das, B. Nag Chowdhury, R. Saha, S. Sikdar, J. Sultana, G. K. Dalapati, and **S. Chattopadhyay**: *Formation of high-pressure phase of Titanium Dioxide (TiO₂-II) thin films by vapor-liquid-solid growth process on GaAs substrate*, **Physica Status Solidi 216**, pp. 1800640 (2018).
DOI:10.1002/pssa.201800640.
23. A. Adhikari, S. De, A. Halder, S. Pattanayak, K. Dutta, D. Mondal, D. Rana, R. Ghosh, N. K. Bera, **S. Chattopadhyay**, M. Chakraborty, D. Ghoshal, and D. Chattopadhyay:

Biosurfactant tailored synthesis of porous polypyrrole nanostructures: A facile approach towards CO₂ adsorption and dopamine sensing, **Synthetic Metals** **245**, pp. 209-222 (2018).

DOI:10.1016/j.synthmet.2018.09.005.

24. G. K. Dalapati, S. Guhathakurata, A. Das, C. Mahata, S. Chakraborty, S. Bhunia, H. L. Seng, **S. Chattopadhyay**, L. K. Bera, and S. Tripathy: *Suppression of Ge-based defects and auto-doping of p-type epitaxial GaAs by employing Al_{0.3}Ga_{0.7}As bi-layer buffer*, **Journal of Alloys and Compounds** **765**, pp. 994-1002 (2018).

DOI:10.1016/j.jallcom.2018.06.297

25. A. Mondal, S. Pal, A. Sarkar, T. S. Bhattacharya, A. Das, N. Gogurla, S. K. Ray, P. Kumar, D. Kanjilal, K. D. Devi, A. Singha, **S. Chattopadhyay**, and D. Jana: *Raman spectroscopic analysis on Li, N and (Li,N) implanted ZnO*, **Materials Science in Semiconductor Processing** **80**, pp. 111-117 (2018).

DOI:10.1016/j.mssp.2018.02.026.

26. J. Sultana, S. Paul, A. Karmakar, G. K. Dalapati, and **S. Chattopadhyay**: *Optimizing the thermal annealing temperature: Technological route for tuning the photo-detecting property of p-CuO thin films grown by chemical bath deposition method*, **Journal of Materials Science: Materials in Electronics** **29**, pp. 12878–12887 (2018).

DOI:10.1007/s10854-018-9407-3.

27. A. Das, B. Nag Chowdhury, R. Saha, S. Sikdar, S. Bhunia, and **S. Chattopadhyay**: *Ultrathin Vapor–Liquid–Solid grown Titanium Dioxide-II film on bulk GaAs substrates for advanced metal–oxide–semiconductor device applications*, **IEEE Transactions on Electron Devices**; **65**, pp. 1466-1472 (2018).

DOI:10.1109/TED.2018.2802490.

28. S. Paul, J. Sultana, A. Bhattacharyya, A. Karmakar, and **S. Chattopadhyay**: *Investigation of the comparative photovoltaic performance of n-ZnO nanowire/p-Si and n-ZnO nanowire/p-CuO heterojunctions grown by chemical bath deposition method*, **Optik - International Journal for Light and Electron Optics**; **164**, pp. 745-752, (2018). DOI:10.1016/j.ijleo.2018.03.076.

29. S. Ray, S. Sen, A. Das, A. Bose, A. Bhattacharyya, A. Das, **S. Chattopadhyay**, S. S. Singha, A. Singha, H. K. Patra, and A. K. Dasgupta: *Bioelectronics at graphene–biofilm interface: Schottky junction formation and capacitive transitions*, **Medical Devices & Sensors I**, pp. e10013 (2018).

DOI: 10.1002/mds3.10013.

30. A. Das, R. Saha, S. Guhathakurata, S. Pal, N. R. Saha, H. S. Dutta, A. Karmakar, and **S. Chattopadhyay**: *Tuning of transport properties of the double-step chemical bath*

- deposition grown zinc oxide (ZnO) nanowires by controlled annealing: An approach to generate p-type ZnO nanowires*, **Thin Solid Films** **649**, pp. 129-135 (2018).
DOI:10.1016/j.tsf.2018.01.036.
31. R. Saha, A. Das, A. Karmakar, and **S. Chattopadhyay**: *Self-rectifying threshold resistive switching based non-volatile memory of CBD/CBD grown vertical n-ZnO nanowire/p-Si heterojunction diodes*, **Advanced Materials Proceedings** **3**, pp. 298-303 (2018).
32. S. Pal, N Gogurla, A. Das, S. S. Singha, P. Kumar, D. K. Kanjilal, A. Singha, **S. Chattopadhyay**, D. Jana, and A. Sarkar: *Clustered vacancies in ZnO: Chemical aspects and consequences on physical properties*, **Journal of Physics D Applied Physics** **51**, pp. 105107 (2018).
DOI:10.1088/1361-6463/aaa992.
33. S. Chatterjee and **S. Chattopadhyay**: *Fraction of insertion of the channel Fin as performance booster in Strain-Engineered p-FinFET devices with Insulator-on-Silicon substrate*, **IEEE Transactions on Electron Devices** **99**, pp 1-8 (2017).
DOI:10.1109/TED.2017.2781264.
34. J. Sultana, S. Paul, A. Karmakar, and **S. Chattopadhyay**: *Efficiency enhancement of p-CuO/n-Si heterojunction solar cells: impact of annealing on the photovoltaic properties of Vapour-Liquid-Solid (VLS) grown ultra-thin CuO film*, **Materials today proceedings** **4**, pp. 12694-12697 (2017).
DOI:10.1016/j.matpr.2017.10.085.
35. S. Paul, J. Sultana, A. Karmakar and **S. Chattopadhyay**: *Effect of prolonged growth on the chemical bath deposited ZnO nanowires and consequent photovoltaic performance of n-ZnO NWs/p-CuO heterojunction solar cells*, **Materials today proceedings** **4**, pp. 12496-12499 (2017).
DOI:10.1016/j.matpr.2017.10.050.
36. A. Ghosh, J. Sinha, and **S. Chattopadhyay**: *A comparative study on the performance of RESET based electro-thermal process in ring shaped confined Ge₂Sb₂Te₅ and Ge₁Cu₂Te₃ chalcogenide memory structures*, **Materials Today Communications** **13**, pp. 325-331 (2017). DOI:10.1016/j.mtcomm.2017.10.017.
37. K. Ghoshal, S. Chakraborty, C. Das, **S. Chattopadhyay**, S. Chowdhury, and M. Bhattacharyya: *Dielectric properties of plasma membrane: A signature for dyslipidemia in diabetes mellitus*, **Archives of Biochemistry and Biophysics** **635**, pp. 27-36 (2017).
DOI:10.1016/j.abb.2017.10.002.
38. S. Kanungo, S. A. Mondal, **S. Chattopadhyay**, H. Rahaman: *Design and investigation*

- on Bio-Inverter and Bio-Ring-oscillator for dielectrically modulated biosensing applications, IEEE Transactions on Nanotechnology* **16**, pp.974-981 (2017).
DOI:10.1109/TNANO.2017.2736161.
39. T. K. Ghosh, S. Sadhukhan, D. Rana, G. Sarkar, C. Das, **S. Chattopadhyay**, D. Chattopadhyay, and M. Chakraborty: *Treatment of recycled cigarette butts (man-made pollutants) to prepare electrically conducting material, Journal of Indian Chemical Society* **94**, pp. 863-870 (2017).94(8):863-870.
40. K. Sarkar, M. Palit, S. Guhathakurata, **S. Chattopadhyay**, and P. Banerji: *Single In_xGa_{1-x}As nanowire/p-Si heterojunction based nano-rectifier diode, Nanotechnology* **28**, p. 385202 (2017).
DOI:10.1088/1361-6528/aa7f19.
41. K. Sinha, **S. Chattopadhyay**, P. S. Gupta, H. Rahaman: *A technique to incorporate both tensile and compressive channel stress in Ge FinFET architecture, Journal of Computational Electronics* **16**, pp. 620-630 (2017).
DOI: 10.1007/s10825-017-1003-x.
42. C. Das, S. Chakraborty, K. Acharya, N. K. Bera, D. Chattopadhyay, A. Karmakar, and **S. Chattopadhyay**: *FT-MIR supported Electrical Impedance Spectroscopy based study of sugar adulterated honeys from different floral origin, Talanta* **171**, pp. 327-334 (2017).
DOI:10.1016/j.talanta.2017.05.016.
43. M. Palit, B. Nag Chowdhury, A. Das, S. Das, and **S. Chattopadhyay**: *Selective strain incorporation and retention into Si-substrate through VLS growth of TiO₂ nano-islands, Materials Research Express* **4**, p.025005 (2017).
DOI:10.1088/2053-1591/aa5864.
44. S. Chakraborty, C. Das, N. K. Bera, D. Chattopadhyay, A. Karmakar, and **S. Chattopadhyay**: *Analytical modelling of electrical impedance based adulterant sensor for aqueous sucrose solutions, Journal of Electroanalytical Chemistry* **784**, pp. 133-139 (2017).
DOI:10.1016/j.jelechem.2016.11.055.
45. S. Chatterjee and **S. Chattopadhyay**: *Analytical modeling of the lattice and thermo-elastic coefficient mismatch-induced stress into silicon nanowires horizontally embedded on insulator-on-silicon substrates, Superlattices and Microstructures* **101**, pp. 384-396 (2017).
DOI:10.1016/j.spmi.2016.12.001.
46. A. Ghosh, A. Mondal, A. Das, **S. Chattopadhyay**, K. K. Chattopadhyay: *Removal of oxygen related defects from chemically synthesized In₂O₃ thin film doped with Er by*

spin-on technique, Journal of Alloys and Compounds **695**, pp. 1260-1265 (2016).
DOI:10.1016/j.jallcom.2016.10.254

47. J. Sultana, S. Paul, A. Karmakar, R. Yi, G. K. Dalapati, and **S. Chattopadhyay**: *Chemical bath deposited (CBD) CuO thin films on n-silicon substrate for electronic and optical applications: Impact of growth time, Applied surface science* **418**, pp. 380-387 (2016).
DOI: 10.1016/j.apsusc.2016.12.139.
48. S. Kanungo, **S. Chattopadhyay**, K. Sinha, P. S. Gupta, and H. Rahaman: *A device simulation-based investigation on dielectrically modulated fringing field-effect transistor for biosensing applications, IEEE Sensors Journal* **17**, pp. 1399-1406 (2016). DOI:10.1109/JSEN.2016.2633621.
49. S. Sikdar, B. Nag Chowdhury, A. Ghosh, and **S. Chattopadhyay**: *Analytical modeling to design the vertically aligned Si-nanowire metal-oxide-semiconductor photosensors for direct color sensing with high spectral resolution, Physica E Low-dimensional Systems and Nanostructures* **87**, pp. 44-50 (2016).
DOI:10.1016/j.physe.2016.10.039.
50. S. Chatterjee and **S. Chattopadhyay**: *Modeling and estimation of process-induced stress in the nanowire field-effect-transistors (NW-FETs) on Insulator-on-Silicon substrates with high-k gate-dielectrics, Superlattices and Microstructures* **98**, pp. 194-202, (2016).
DOI:10.1016/j.spmi.2016.08.022.
51. K. Sarkar, M. Palit, **S. Chattopadhyay**, P. Banerji: *An analysis of the growth of silver catalyzed In_xGa_{1-x}As nanowires on Si (100) by metal organic chemical vapor deposition, Journal of Applied Physics* **120**, p. 084309 (2016).
DOI:10.1063/1.4961733.
52. P. S. Gupta, H. Rahaman, K. Sinha, and **S. Chattopadhyay**: *An optoelectronic band-to-band tunnel transistor for near-infrared sensing applications: Device physics, modeling, and simulation, Journal of Applied Physics* **120**, p. 084510 (2016).
DOI:10.1063/1.4961426.
53. K. Sinha, P. S. Gupta, **S. Chattopadhyay**, and H. Rahaman: *Investigating the performance of SiGe embedded dual source p-FinFET architecture, Superlattices and Microstructures*, **98**, pp. 37-45(2016).
DOI:10.1016/j.spmi.2016.08.004.
54. B. Nag Chowdhury and **S. Chattopadhyay**: *Unusual impact of electron-phonon scattering in Si nanowire field-effect-transistors: A possible route for energy harvesting, Superlattices and Microstructures* **97**, pp. 548-555 (2016).

DOI:10.1016/j.spmi.2016.07.031

55. S. Paul, A. Das, M. Palit, S. Bhunia, A. Karmakar, and **S. Chattopadhyay**: *Investigation of the properties of single-step and double-step grown ZnO nanowires using Chemical Bath Deposition technique*, **Advanced Materials Letters**, 7, pp. 610-615 (2016). DOI:10.5185/amlett.2016.6298.
56. A. Das, A. Kushwaha, N. R. Bansal, V. Suresh, S. Dinda, **S. Chattopadhyay**, and G. K. Dalapati: *Copper oxide nano-particles film on glass by using sputter and Chemical Bath Deposition technique*, **Advanced Materials Letters** 7, pp. 600-603 (2016). DOI:10.5185/amlett.2016.6433.
57. J. Sultana, A. Das, A. Das, N. R. Saha, A. Karmakar, and **S. Chattopadhyay**: *Characterization of nano-powder grown ultra-thin film p-CuO/n-Si hetero-junctions by employing vapour-liquid-solid method for photovoltaic applications*, **Thin Solid Films** **612**, pp. 331-336 (2016). DOI:10.1016/j.tsf.2016.06.022.
58. S. Kanungo, **S. Chattopadhyay**, P. S. Gupta, K. Sinha, H. Rahaman: *Study and analysis of the effects of SiGe source and pocket-doped channel on sensing performance of dielectrically modulated tunnel FET-Based biosensors*, **IEEE Transactions on Electron Devices** **63**, pp. 1-8 (2016). DOI:10.1109/TED.2016.2556081.
59. A. Das, A. Kushwaha, R. K. Sivasayan, S. Chakraborty, H. S. Dutta, A. Karmakar, and **S. Chattopadhyay**, D. Chi, and G. K. Dalapati: *Temperature-dependent electrical characteristics of CBD/CBD grown n-ZnO nanowire/p-Si heterojunction diodes*, **Journal of Physics D Applied Physics**, 49, p. 145105 (2016). DOI:10.1088/0022-3727/49/14/145105.
60. T. K. Ghosh, S. Gope, D. Rana, I. Roy, G. Sarkar, S. Sadhukhan, A. Bhattacharya, K. Pramanik, **S. Chattopadhyay**, M. Chakraborty, Dipankar Chattopadhyay: *Physical and electrical characterization of reduced graphene oxide synthesized adopting green route*, **Bulletin of Materials Science** **39**, pp. 543-550 (2016). DOI:10.1007/s12034-016-1156-4.
61. A. Das, **S. Chattopadhyay**, and G. K. Dalapati: *Impact of oxygen diffusion on the performance of HfO₂/GaAs metal-oxide-semiconductor field-effect-transistors*, **Advanced Materials Letters** 7, pp. 123-129 (2016). DOI:10.5185/amlett.2016.6277.
62. I. Roy, G. Sarkar, S. Mondal, D. Rana, A. Bhattacharyya, N. R. Saha, A. Adhikari, D. Khastgir, **S. Chattopadhyay**, D. Chattopadhyay: *Synthesis and characterization of*

- graphene from waste dry cell battery for electronic applications*, **RSC Advances** **6**, pp. 10557-10564 (2016).
DOI:10.1039/C5RA21112C.
63. S. Chakraborty, A. Karmakar, and **S. Chattopadhyay**: *Recent advances in Lab-On-a-Chip [LOC] impedimetric biosensors integrated with digital microfluidic system*, **B. N. Seal Journal of Science VIII**, pp. 1-11 (2016).
64. S. Chakraborty, C. Das, R. Saha, A. Das, N. K. Bera, D. Chattopadhyay, A. Karmakar, D. Chattopadhyay, and **S. Chattopadhyay**: *Investigating the quasi-oscillatory behavior of electrical parameters with the concentration of D-glucose in aqueous solution*, **Journal of Electrical Bioimpedance** **6**, pp. 10-17, (2015).
DOI:10.5617/jeb.2363.
65. K. Sarkar, M. Palit, P. Banerji, **S. Chattopadhyay**, N. N. Halder, P. Biswas, B. Nagabhusan, S. Chowdhury: *Silver catalyzed growth of $In_xGa_{1-x}As$ nanowires on Si(001) by metal-organic chemical vapor deposition*, **CrystEngComm** **17**, pp. 8519–8528 (2015).
DOI: 10.1039/C5CE01565K.
66. P. S. Gupta, **S. Chattopadhyay**, P. Dasgupta, H. Rahaman: *A novel photosensitive tunneling transistor for near-infrared sensing applications: design, modeling and simulation*, **IEEE Transactions on Electron Devices** **62**, pp. 1516-1523 (2015).
DOI:10.1109/TED.2015.2414172.
67. I. Roy, D. Rana, G. Sarkar, A. Bhattacharyya, N. R. Saha, S. Mondal, S. Pattanayak, **S. Chattopadhyay**, D. Chattopadhyay: *Physical and electrochemical characterization of reduced graphene oxide/silver nanocomposites synthesized by adopting green approach*, **RSC Advances** **5**, pp. 25357 - 25364 (2015).
DOI: 10.1039/C4RA16197A.
68. S. Kanungo, **S. Chattopadhyay**, P. S. Gupta, H. Rahaman: *Comparative performance analysis of the dielectrically modulated full-gate and short-gate tunnel FET-based biosensors*, **IEEE Transactions on Electron Devices** **62**, pp. 994 - 1001 (2015).
DOI:10.1109/TED.2015.2390774.
69. A. Das, M. Palit, S. Paul, B. Nag Chowdhury, H. S. Dutta, A. Karmakar, and **S. Chattopadhyay**: *Investigation of the electrical switching and rectification characteristics of a single standalone n-type ZnO-nanowire/p-Si junction diode*, **Applied Physics Letters** **105**, pp. 083106 - 083106 (2014).
DOI:10.1063/1.4893944.
70. B. Bhowmick, Md. M. R. Mollick, D. Mondal, D. Maity, M. K. Bain, N. K. Bera, D. Rana, **S. Chattopadhyay**, M. Chakraborty, D. Chattopadhyay: *Poloxamer and gelatin*

gel guided polyaniline nanofibers: Synthesis and characterization, **Polymer International** **63**, pp. 1505 - 1512 (2014).

DOI:10.1002/pi.4657.

71. B. Nag Chowdhury and **S. Chattopadhyay**: *Investigating the impact of source/drain doping dependent effective masses on the transport characteristics of ballistic Si-nanowire field-effect-transistors*, **Journal of Applied Physics** **115**, pp. 124502-124502-6 (2014).
DOI:10.1063/1.4869495.
72. B. Patra, A. Chakrabarti, and **S. Chattopadhyay**: *Post optimization of a Clock Tree for dynamic clock tree power reduction in 45 nm and below technology nodes*, **Journal of Low Power Electronics** **10**, pp. 32-37 (2014).
DOI:10.1166/jolpe.2014.1309.
73. Md. M. R. Mollick, B. Bhowmick, D. Maity, D. Mondal, I. Roy, J. Sarkar, D. Rana, K. Acharya, **S. Chattopadhyay**, D. Chattopadhyay: *Green synthesis of silver nanoparticles-based nanofluids and investigation of their antimicrobial activities*, **Microfluidics and Nanofluidics** **16**, pp. 541–551, (2014).
DOI:10.1007/s10404-013-1252-3.
74. N. N. Halder, P. Biswas, T. D. Das, S. K. Das, **S. Chattopadhyay**, D. Biswas, and P. Banerji: *Effect of band alignment on photoluminescence and carrier escape from InP surface quantum dots grown by metalorganic chemical vapor deposition on Si*, **Journal of Applied Physics** **115**, pp. 043101-043101-8 (2014).
DOI:10.1063/1.4862439.
75. S. Chatterjee, B. Nag Chowdhury, A. Das, and **S. Chattopadhyay**: *Estimation of step-by-step induced stress in a sequential process integration of nano-scale SOS MOSFETs with high-k gate dielectrics* *Estimation of step-by-step induced stress in a sequential process integration of nano-scale SOS MOSFETs with high-k gate dielectrics*, **Semiconductor Science and Technology** **28**, pp. 125011-125017 (2013).
DOI:10.1088/0268-1242/28/12/125011.
76. D. Maity, Md M. R. Mollick, D. Mondal, B. Bhowmick, S. K. Neogi, A. Banerjee, **S. Chattopadhyay**, S. Bandyopadhyay, and D. Chattopadhyay: *Synthesis of HPMC stabilized nickel nanoparticles and investigation of their magnetic and catalytic properties*, **Carbohydrate Polymers** **98**, pp. 80-87 (2013).
DOI:10.1016/j.carbpol.2013.05.020.
77. B. Nag Chowdhury and **S. Chattopadhyay**: *Investigation of the role of aspect ratio for the design of Si-nanowire field-effect-transistors in ballistic regime*, **Nanoscience and Nanotechnology Letters** **5**, pp. 1087-1090 (2013).

DOI:10.1166/nml.2013.1680.

78. B. Bhowmick, D. Mondal, D. Maity, Md. M. R. Mollick, M. K. Bain, N. K. Bera, D. Rana, **S. Chattopadhyay**, and D. Chattopadhyay: *In situ fabrication of polyaniline-silver nanocomposites using soft template of sodium alginate*, **Journal of Applied Polymer Science** **129**, pp. 3551-3557 (2013).
DOI:10.1002/app.39124.
79. G. K. Dalapati, C. K. Chia, C. C. Tan, H. R. Tan, S. Y. Chiam, J. R. Dong, A. Das, **S. Chattopadhyay**, C. Mahata, C. K. Maiti, and D. Z. Chi: *Surface passivation and interface properties of bulk GaAs and epitaxial-GaAs/Ge using Atomic Layer Deposited TiAlO alloy dielectric*, **ACS Applied Materials & Interfaces** **5**, pp. 949-957 (2013).
DOI:10.1021/am302537b.
80. G. K. Dalapati, T. K. S. Wong, Y. Li, C. K. Chia, A. Das, C. Mahata, H. Gao, **S. Chattopadhyay**, M. K. Kumar, H. L. Seng, C. K. Maiti, and D. Z. Chi: *Characterization of epitaxial GaAs MOS capacitors using atomic layer-deposited TiO₂/Al₂O₃ gate stack: Study of Ge auto-doping and p-type Zn doping*, **Nanoscale Research Letters** **7**, pp. 99 (8 pages) (2012).
DOI:10.1186/1556-276X-7-99.
81. M. Dey and **S. Chattopadhyay**: *Extraction of exact layer thickness of ultra-thin gate dielectrics in nanoscaled CMOS under strong inversion*, **Journal of Semiconductor Technology and Science**, **10**, pp. 100-106 (2010).
DOI:10.5573/JSTS.2010.10.2.100.
82. M. Sengupta, **S. Chattopadhyay**, C. K. Maiti: *Effects of rapid thermal annealing temperature on performances of nanoscale FinFETs*, **Journal of Semiconductor Technology and Science**, **9**, pp. 266-271 (2009).
DOI:10.5573/JSTS.2009.9.4.266.
83. S. Shedabale, H. Ramakrishnan, G. Russell, A. Yakovlev, and **S. Chattopadhyay**: *Statistical modelling of the variation in advanced process technologies using a multi-level partitioned response*, **IET Circuits Devices & Systems** **2**, pp. 451 – 464 (2008).
DOI:10.1049/iet-cds:20080031
84. Y. L. Tsang, **S. Chattopadhyay**, S. Uppal, E. Escobedo-Cousin, H. K. Ramakrishnan, S. H. Olsen, A. G. O'Neill: *Modeling of the threshold voltage in strained Si/Si_{1-x}Ge_x/Si_{1-y}Ge_y (x ≥ y) CMOS architectures*, **IEEE Transactions on Electron Devices** **54**, pp. 3040 – 3048 (2007).
DOI:10.1109/TED.2007.907190
85. M. De Michielis, D. Esseni, Y. L. Tsang, P. Palestri, L. Selmi, A. G. O'Neill, and **S.**

- Chattopadhyay:** *A semi-analytical description of the hole band structure in inversion layers for the physically based modeling of p-MOS transistors*, **IEEE Transactions on Electron Devices** **54**, pp. 2164 – 2173 (2007).
DOI:10.1109/TED.2007.902873.
86. R. Mahapatra, A. K. Chakraborty, A. B. Horsfall, **S. Chattopadhyay**, N. G. Wright, K. S. Coleman: *Effects of interface engineering for HfO₂ gate dielectric stack on 4H-SiC*, **Journal of Applied Physics** **102**, pp. 024105 (5 pages). (2007).
DOI:10.1063/1.2756521.
87. R. Mahapatra, A. K. Chakraborty, N. Poolamai, A. Horsfall, **S. Chattopadhyay**, N. G. Wright, K. S. Coleman, P. G. Coleman, C. P. Burrows: *Leakage current and charge trapping behavior in TiO₂/SiO₂ high- κ gate dielectric stack on 4H-SiC substrate*, **Journal of vacuum science & technology B** **25** pp. 217 - 223 (2007).
DOI:10.1116/1.2433976.
88. J. B. Varzgar, M. Kanoun, S. Uppal, **S. Chattopadhyay**, Y. L. Tsang, E. Escobedo-Cousins, S. H. Olsen, A. O'Neill, P. E. Hellström, J. Edholm, M. Östling, K. Lyutovich, M. Oehme, E. Kasper: *Reliability study of ultra-thin gate oxides on strained-Si/SiGe MOS structures*, **Materials Science and Engineering B** **135**, pp. 203-206 (2006).
DOI:10.1016/j.mseb.2006.08.005.
89. M. H. Weng, R. Mahapatra, P. Tappin, B. Miao, **S. Chattopadhyay**, A. B. Horsfall, N. G. Wright: *High temperature characterization of high- κ dielectrics on SiC*, **Materials Science in Semiconductor Processing** **9**, pp.1133-1136 (2006).
DOI:10.1016/j.mssp.2006.10.032
90. S. Uppal, M. Kanoun, J. B. Varzgar, **S. Chattopadhyay**, S. H. Olsen, A. G. O'Neill: *Impact of Ge content on the gate oxide reliability of strained-Si/SiGe MOS devices*, **Materials Science and Engineering B** **135**, pp.207-209 (2006).
DOI:10.1016/j.mseb.2006.08.006.
91. C. K. Maiti, S. K. Samanta, M. K. Bera, and **S. Chattopadhyay**: *Surface roughness and interface engineering for gate dielectrics on strained layers*, **Journal of Materials Science: Materials in Electronics** **17**, pp. 711-722 (2006).
DOI:10.1007/s10854-006-0023-2.
92. S. H. Olsen, E. Escobedo-Cousin, J. B. Varzgar, R. Agaiby, J. Seger, P. Dobrosz, **S. Chattopadhyay**, S. J. Bull, A. G. O'Neill, P. E. Hellstrom, J. Edholm, M. Ostling, K. L. Lyutovich, M. Oehme, E. Kasper: *Control of self-heating in thin virtual substrate strained-Si MOSFETs*, **IEEE Transactions on Electron Devices** **53**, pp. 2296-2305 (2006).

DOI:10.1109/TED.2006.881049.

93. A. R. Saha, **S. Chattopadhyay**, R. Das, C. Bose, C. K. Maiti: *Determination of the interface properties of Ni-silicided strained-Si/SiGe heterostructure Schottky diodes using capacitance–voltage technique*, *Solid-State Electronics* **50**, pp. 1269-1275 (2006). DOI:10.1016/j.sse.2006.06.001.
94. A. R. Saha, C. B. Dimitriu, A. B. Horsfall, **S. Chattopadhyay**, N. G. Wright, A. G. O'Neill, C. Bose, C. K. Maiti: *Quantum-mechanical modeling of current-voltage characteristics of Ti-silicided Schottky diodes*, *Journal of Applied Physics* **99**, pp. 113707 (6 papers) (2006). DOI:10.1063/1.2200450
95. S. H. Olsen, M. Temple, A. G. O'Neill, D. J. Paul, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll: *Doubling speed using strained Si/SiGe CMOS technology*, *Thin Solid Films* **508**, pp. 338-341 (2006). DOI:10.1016/j.tsf.2005.07.347
96. G. K. Dalapati, **S. Chattopadhyay**, K. S. K. Kwa, S. H. Olsen, Y. L. Tsang, R. Agaiby, A. G. O'Neill, P. Dobrosz, S. J. Bull: *Impact of strained-Si thickness and Ge out-diffusion on gate oxide quality for strained-Si surface channel n-MOSFETs*, *IEEE Transactions on Electron Devices* **53**, pp. 1142-1152 (2006). DOI:10.1109/TED.2006.872086
97. A. R. Saha, **S. Chattopadhyay**, C. Bose, C.K. Maiti: *Effect of silicidation on the electrical characteristics of polycrystalline-SiGe Schottky diode*, *Thin Solid Films* **504**, pp. 86-90 (2006). DOI:10.1016/j.tsf.2005.09.047.
98. A. R. Saha, C. B. Dimitriu, A. B. Horsfall, **S. Chattopadhyay**, N. G. Wright, A. G. O'Neill, C. K. Maiti: *Prediction of barrier inhomogeneities and carrier transport in Ni-silicided Schottky diode*, *Applied Surface Science* **252**, pp. 3933-3937 (2006). DOI:10.1016/j.apsusc.2005.09.026.
99. R. Mahapatra, N. Poolamai, **S. Chattopadhyay**, N. G. Wright, A. K. Chakraborty, K. S. Coleman, P. G. Coleman, C. P. Burrows: *Characterization of thermally oxidized Ti/SiO₂ gate dielectric stacks on 4H-SiC substrate*, *Applied Physics Letters* **88**, pp. 072910-072910-3 (2006). DOI:10.1063/1.2173713.
100. G. K. Dalapati, **S. Chattopadhyay**, L. S. Driscoll, A. G. O'Neill, K. S. K. Kwa, S. H. Olsen: *Extraction of strained-Si metal-oxide-semiconductor field-effect transistor parameters using small signal channel conductance method*, *Journal of Applied Physics* **99**, 034501-034501-8 (2006).

DOI:10.1063/1.2161800.

101. M. K. Bera, S. Chakraborty, R. Das, G. K. Dalapati, **S. Chattopadhyay**, S. K. Samanta, W. J. Yoo, A. K. Chakraborty, Y. Butenko, L. Siller, M. R. C. Hunt, S. Saha, C. K. Maiti: *Rapid thermal oxidation of Ge-rich $Si_{1-x}Ge_x$ heterolayers*, **Journal of Vacuum Science & Technology A** **24**, pp. 84 – 90 (2005).
DOI:10.1116/1.2137329.
102. A. R. Saha, **S. Chattopadhyay**, C. Bose, and C. K. Maiti: *Technology CAD of silicided Schottky barrier MOSFET for elevated source–drain engineering*, **Materials Science and Engineering B** **124**, pp. 424-430 (2005).
DOI:10.1016/j.mseb.2005.08.098.
103. A. R. Saha, **S. Chattopadhyay**, G. K. Dalapati, S. K. Nandi, and C. K. Maiti: *An investigation of electrical and structural properties of Ni-germanosilicided Schottky diode*, **Microelectronics Reliability** **45**, pp. 1154-1160 (2005).
DOI:10.1016/j.microrel.2004.08.012.
104. S. H. Olsen, A. G. O'Neill, P. Dobrosz, S. J. Bull, L. S. Driscoll, **S. Chattopadhyay**, K. S. K. Kwa: *Study of strain relaxation in Si/SiGe metal-oxide-semiconductor field-effect transistors*, **Journal of Applied Physics** **97**, p. 114504 (2005).
DOI:10.1063/1.1922582
105. A. R. Saha, **S. Chattopadhyay**, G. K. Dalapati, C. Bose, C. K. Maiti: *Effect of annealing on interface state density of Ni-silicided/ $Si_{1-x}Ge_x$ Schottky diode*, **Materials Science in Semiconductor Processing** **8**, pp. 249–253 (2005).
DOI:10.1016/j.mssp.2004.09.042.
106. A. R. Saha, **S. Chattopadhyay**, and C. K. Maiti: *Electrical characterization of $TiSi/Si_{1-x}Ge_xC_y$ Schottky diodes*, **Materials Science and Engineering B** **114**, pp. 218-222 (2004).
DOI:10.1016/j.mseb.2004.07.016.
107. S. H. Olsen, K. S. K. Kwa, L. S. Driscoll, **S. Chattopadhyay**, A. G. O'Neill: *Design, fabrication and characterization of strained-Si/SiGe MOS transistors*, **IEE Proceedings - Circuits Devices and Systems** **151**, pp. 431 - 437 (2004).
DOI:10.1049/ip-cds:20040995.
108. S. H. Olsen, A. G. O'Neill, **S. Chattopadhyay**, L. S. Driscoll, K. S. K. Kwa, D. J. Norris, A. G. Cullis, D. J. Paul: *Study of single- and dual-channel designs for high-performance strained-Si-SiGe n-MOSFETs*, **IEEE Transactions on Electron Devices** **51**, pp. 1245 - 1253 (2004).
DOI:10.1109/TED.2004.830652.
109. A. R. Saha, **S. Chattopadhyay**, and C. K. Maiti: *Contact metallization on strained-Si*,

- Solid-State Electronics* **48**, pp. 1391-1399 (2004).
DOI:10.1016/j.sse.2004.02.015.
110. **S. Chattopadhyay**, L. D. Driscoll, K. S. K. Kwa, S. H. Olsen, A. G. O'Neill: *Strained Si MOSFETs on relaxed SiGe platforms: Performance and challenges*, *Solid-State Electronics* **48**, pp. 1407-1416 (2004).
DOI:10.1016/j.sse.2004.01.018.
111. S. H. Olsen, A. G. O'Neill, L. S. Driscoll, S. Chattopadhyay, K. S. K. Kwa, A. M. Waite, Y. T. Tang, A. G. R. Evans, J. Zhang: *Optimization of alloy composition for high-performance strained-Si-SiGe n-channel MOSFETs*, *IEEE Transactions on Electron Devices* **51**, pp. 1156 – 1163 (2004).
DOI:10.1109/TED.2004.830656.
112. S. H. Olsen, A. G. O'Neill, D. J. Norris, A. G. Cullis, S. J. Bull, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, A. M. Waite, Y. T. Tang, A. G. R. Evans: *Thermal oxidation of strained Si/SiGe: Impact of surface morphology and effect on MOS devices*, *Materials Science and Engineering B* **109**, pp.78-84, (2004).
DOI:10.1016/j.mseb.2003.10.051.
113. S. H. Olsen, A. G. O'Neill, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, D. J. Norris, A. G. Cullis, D. J. Robbins, J. Zhang: *Evaluation of strained Si/SiGe material for high performance CMOS*, *Semiconductor Science and Technology* **19**, p. 707 (2004). DOI:10.1088/0268-1242/19/6/008.
114. K. L. Pey, **S. Chattopadhyay**, W. K. Choi, Y. Miron, E. A. Fitzgerald, D. A. Antoniadis, T. Osipowicz: *Stability and composition of Ni-germanosilicided Si_{1-x}Ge_x films*, *Journal of Vacuum Science & Technology B* **22**, pp. 852-858 (2004).
DOI:10.1116/1.1688350.
115. S. H. Olsen, A. G. O'Neill, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, J. Zhang, D. J. Robbins, V. Higgs: *Impact of virtual substrate growth on high performance strained Si/SiGe double quantum well metal – oxide - semiconductor field - effect transistors*, *Journal of Applied Physics* **94**, pp. 6855-6863 (2003).
DOI:10.1063/1.1619197.
116. S. H. Olsen, A. G. O'Neill, L. S. Driscoll, K. S. K. Kwa, **S. Chattopadhyay**, A. M. Waite, Y. T. Tang, A. G. R. Evans, D. J. Norris, A. G. Cullis, D. J. Paul, D. J. Robbins: *High-performance n-MOSFETs using a novel strained Si/SiGe CMOS architecture*, *IEEE Transactions on Electron Devices* **50**, pp. 1961-1969 (2003).
DOI:10.1109/TED.2003.815603.
117. **S. Chattopadhyay**, K. S. K. Kwa, S. H. Olsen, L. S. Driscoll, A. G. O'Neill: *C–V characterization of strained Si/SiGe multiple heterojunction capacitors as a tool for heterojunction MOSFET channel design*, *Semiconductor Science and Technology* **18**,

p. 738 (2003).

DOI:10.1088/0268-1242/18/8/304

118. K. S. K. Kwa, **S. Chattopadhyay**, N. D. Jankovic, S. H. Olsen, L. S. Driscoll, A. G. O'Neill: *A model for capacitance reconstruction from measured lossy MOS capacitance–voltage characteristics*, **Semiconductor Science and Technology** **18**, p. 82 (2002). DOI:10.1088/0268-1242/18/2/303.
119. K. L. Pey, W. K. Choi, **S. Chattopadhyay**, H. B. Zhao, E. A. Fitzgerald, D. A. Antoniadis, P. S. Lee: *Thermal reaction of nickel and $Si_{0.75}Ge_{0.25}$ alloy*, **Journal of Vacuum Science & Technology A** **20**, pp. 1903 - 1910 (2002). DOI:10.1116/1.1507339.
120. H. B. Zhao, K. L. Pey, W. K. Choi, **S. Chattopadhyay**, E. A. Fitzgerald, D. A. Antoniadis, P. S. Lee: *Interfacial reactions of Ni on $Si_{1-x}Ge_x$ ($x = 0.2, 0.3$) at low temperature by rapid thermal annealing*, **Journal of Applied Physics** **92**, pp. 214-217 (2002). DOI:10.1063/1.1482423.
121. **S. Chattopadhyay**, P. K. Bose, C. K. Maiti: *Photoresponse of $Si_{1-x}Ge_x$ heteroepitaxial p–i–n photodiodes*, **Solid State Electronics** **43**, pp. 1741–1745 (1999). DOI:10.1016/S0038-1101(99)00134-3.
122. D. Dentel, L. Kubler, J. L. Bischoff, **S. Chattopadhyay**, L. K. Bera, S. K. Ray, C. K. Maiti: *Molecular beam epitaxial growth of strained $Si_{1-x}Ge_x$ layers on graded $Si_{1-y}Ge_y$ for Pt slicide Schottky diodes*, **Semiconductor Science and Technology** **13**, p. 214 (1999). DOI:10.1088/0268-1242/13/2/010.
123. C. K. Maiti, L. K. Bera, and **S. Chattopadhyay**: *Strained-Si heterostructure field effect transistors*, **Semiconductor Science and Technology** **13**, p. 1225 (1999). DOI:10.1088/0268-1242/13/11/002.
124. **S. Chattopadhyay**, L. K. Bera, C. K. Maiti, S. K. Ray, P. K. Bose, D. Dentel, L. Kubler, J. L. Bischoff: *Determination of interface state density of PtSi/strained- $Si_{1-x}Ge_x$ /Si Schottky diodes*, **Journal of Materials Science: Materials in Electronics** **9**, pp. 403–407 (1998). DOI:10.1023/A:1008948500597.
125. **S. Chattopadhyay**, L. K. Bera, S. K. Ray, P. K. Bose, C. K. Maiti: *Extraction of interface state density of Pt/p-strained-Si Schottky diode*, **Thin Solid Films** **335**, pp. 142-145 (1998). DOI:10.1016/S0040-6090(98)00892-X.
126. **S. Chattopadhyay**, L. K. Bera, K. Maharatna, S. Chakrabarti, S. Dhar, S. K. Ray, C.

K. Maiti: *Schottky diode characteristics of Ti on strained-Si*, *Solid-State Electronics* **41**, pp. 1891–1893 (1997).
DOI:10.1016/S0038-1101(97)00143-3.

127. S. Chattopadhyay, L. K. Bera, S. K. Ray, C. K. Maiti: *Pt/p-strained-Si Schottky diode characteristics at low temperature*, *Applied Physics Letters* **71**, pp. 942-944 (1997). DOI:10.1063/1.119696.

3.4 Full Papers in Peer Review Proceedings:

1. S. Paul, A. Das, A. Chakraborty, B. Chakraborty, M. Palit, D. Chattopadhyay, and S. Chattopadhyay: *Growth and characterization of high quality ZnO nanowires by novel CBD/CBD technique*, *1st International Science & Technology Congress*; Kolkata, India, pp. 467 – 471 (2014); ISBN: 9789351072485.
DOI: 10.13140/RG.2.1.4069.6408.
2. S. Chatterjee, S. Chattopadhyay, and A. Bhattacharyya: *Process-induced strain engineering in the silicon-on-sapphire (SOS) fin field effect transistor (FinFET) channels*, *IEEE Proceeding of 6th International Conference on Computers and Devices for Communication*, (2015), ISBN:978-1-4673-9514-4.
DOI: 10.1109/CODEC.2015.7893204
3. S. Kanungo, H. Rahaman, and S. Chattopadhyay: *Investigating the performance of short gate insulator less dielectrically modulated tunnel field effect transistor based bio-sensors*, *Proceeding of IEEE: CODEC (2015)*, ISBN:978-1-4673-9514-4.
DOI: 10.1109/CODEC.2015.7893189
4. S. Paul, A. Das, J. Sultana, A. Karmakar, S. Chattopadhyay, and A. Bhattacharyya, *Performance investigation of n-ZnO nanowire/p-CuO thin film heterojunction solar cell grown by chemical bath deposition and vapour liquid solid technique*, *Proceeding of IEEE: CODEC 2015*, ISBN:978-1-4673-9514-4
DOI: 10.1109/CODEC.2015.7893200.
5. A. Das, R. Saha, A. Karmakar, and S. Chattopadhyay, M. Palit, and H. S. Dutta: *Self-powered rapid binary UV photoswitching with n-ZnO NW/p-Si photodiode*, *Proceeding of IEEE: International Conference on Microelectronics, Computing and Communications (MicroCom 2016)*, (978-1-4673-6622-9).
DOI: 10.1109/MicroCom.2016.7522427
6. S. Chakraborty, C. Das, A. Karmakar, and S. Chattopadhyay: *Analyzing the quasi-oscillatory nature of electrical parameters with the concentration of sucrose in aqueous solution at room temperature*, *Advanced Material Proceedings 1*, pp. 25-31 (2016). ISSN: 2002-4428
DOI:10.5185/amp.2016/106.

7. A. Das, G. Dalapati, and **S. Chattopadhyay**: *The study of interface quality of high-k/epi-GaAs capacitor structures grown on Ge substrates for the application of next generation MOSFETs*, *In the proceedings of 1st International Science & Technology Congress 2014*, pp. 462-466; (ISBN 9789351072485).
8. S. Chatterjee, **S. Chattopadhyay**, and A. Bhattacharyya: *Process-induced strain engineering in a double gate (DG) metal oxide semiconductor field effect transistor (MOSFET) using high-k gate dielectrics and various channel materials*, pp: 447-452, *1st International Science and technology Congress, IEM Congress-2014*, ISBN: 978-93-5107-248-5.
9. B. Patra, **S. Chattopadhyay**, and A. Chakrabarti: *A novel approach to voltage-drop aware placement in large SoCs in advanced technology nodes*, *Progress in VLSI Design and Test*, pp 360-363 (2012).
DOI:10.1007/978-3-642-31494-0_44.
10. M. Dey and **S. Chattopadhyay**: *A comparative study of surface quantization effects in Si and strained- Si MOS structures with ultrathin gate oxides*, *IEEE Xplore*, pp. 58 – 61 (2010).
DOI:10.1109/ELECTRO.2009.5441175.
11. R. Mahapatra, A. K. Chakraborty, P. Tappin, B. Miao, A. B. Horsfall, **S. Chattopadhyay**, N. G. Wright, K. S. Coleman: *Impact of interfacial nitridation of HfO₂ high-k gate dielectric stack on 4H-SiC*, *MRS Online Proceeding Library Archive* p. 996 (2007).
DOI:10.1557/PROC- 0996-H07-08.
12. E. Kasper, K. Lyutovich, M. Ostling, P. E Hellstorm, S. Bull, P. Dobrosz, **S. Chattopadhyay**, R. Agaiby, J. B. Varzgar, E. Escobedo-Cousin, S. H. Olsen, A. G. O'Neill: *Strained silicon technology*, *8th International Conference on Solid-State and Integrated Circuit Technology Proceedings* (2006).
DOI:10.1109/ICSICT.2006.306089.

3.5 Publications in Peer Reviewed International Conferences /Symposia /Workshops:

1. A. Basak, S. Chakraborty, C. Das, A. Mukherjee, R. Saha, A. Karmakar, and **S. Chattopadhyay**: *Electrically isolated buried electrode biosensor for detecting folic acid concentration*, *3rd International Symposium on Devices, Circuits and Systems, ISDCS 2020*, IEST Shibpur, (2020).
DOI: 10.1109/ISDCS49393.2020.9263023.
2. S. Mandal, S. Sikdar, R. Saha, A. Karmakar¹, and **S. Chattopadhyay**: *Investigating the impact of growth time on the electrical performance of vapour-liquid-solid (VLS) grown*

Ge/n-Si hetero-junction, 3rd *International Symposium on Devices, Circuits and Systems, ISDCS 2020*, pp. 1-4, IEST Shibpur, (2020).
DOI: 10.1109/ISDCS49393.2020.9262999.

3. C. Das, S. Chakraborty, A. Karmakar, and S. Chattopadhyay: *Comparative study for the impedimetric detection and quantification of adulterants in different bio-consumables*, 3rd *International Symposium on Devices, Circuits and Systems, ISDCS 2020*, pp. 1-6, IEST Shibpur, (2020).
DOI: 10.1109/ISDCS49393.2020.9263004.
4. S. Bhattacharya, R. Saha, S. Sikdar, S. Mandal, C. Das, and S. Chattopadhyay: *Investigation of density and alignment of ZnO nanowires grown by double-step chemical bath deposition (CBD/CBD) technique on metallic, insulating and semiconducting substrates*, 3rd *International Symposium on Devices, Circuits and Systems, ISDCS 2020*, pp. 1-4, IEST Shibpur.
DOI: 10.1109/ISDCS49393.2020.9262979.
5. A. Bhattacharya, S. Dutta, S. Paul, S. Sikdar, and S. Chattopadhyay: *Growth of ZnSnO₃ nano-crystalloids on Si substrate by employing chemical bath deposition (CBD) technique for self-powered UV-light sensing applications*, 3rd *International Symposium on Devices, Circuits and Systems, ISDCS 2020*, IEST Shibpur.
DOI: 10.1109/ISDCS49393.2020.9262987.
6. S. Sikdar, B. Nag Chowdhury, A. Karmakar, and S. Chattopadhyay: *Modeling of Si-nanowire based vertical metal-oxide-semiconductor device for solar cell applications by employing NEGF formalism*, *International Seminar Cum Research Colloquium on MEMS based Sensors and Smart Nanostructured Devices*, Jadavpur University, (2019).
7. A. Mukherjee, S. Chakraborty, C. Das, R. Saha, S. Mandal, and S. Chattopadhyay: *Fabrication and characterization of hydrophobic bi-layer high-k dielectric films for digital microfluidic applications*, XXth *International Workshop on Physics of Semiconductor Devices (IWPSD 2019)*.
8. S. Sikdar, B. Nag Chowdhury, and S. Chattopadhyay: *Investigating the performance of Si-nanowire based metal-oxide-semiconductor (NW-MOS) devices for solar energy harvesting applications*, XXth *International Workshop on Physics of Semiconductor Devices (IWPSD 2019)*.
9. S. Chakraborty, C. Das, R. Saha, A. Karmakar, S. Chattopadhyay, A. Chatterjee, and M. Das: *Dielectric study of kidney stones by fabricating an MIS structure: Material analysis and challenges*, *International Seminar Cum Research Colloquium on MEMS based Sensors and Smart Nanostructured Devices (MSSND 2019)*, Kolkata.
10. S. Chakraborty, C. Das, R. Saha, A. Mukherjee, A. Karmakar, and S. Chattopadhyay: *Fabrication and characterization of zinc oxide nanowire based flexible devices for glucose*

sensing, International Workshop on the Physics of Semiconductor Devices (IWPSD 2019).

11. A. Bhattacharya, J. Sultana, S. Sikdar, R. Saha, and **S. Chattopadhyay**: *Investigating the chemical bath deposited n-SnO₂/p-Si heterojunction devices for optoelectronic applications, 5th International Conference on Opto-Electronics & Applied Optics (OPTRONIX – 2019)*, University of Engineering & Management (UEM), Kolkata, India.
DOI: 10.1109/OPTRONIX.2019.8862381.
12. S. Mandal, S. Dey, S. Sikdar, B. Nag Chowdhury, R. Saha, A. Karmakar, and **S. Chattopadhyay**: *Parameter optimization in electron beam lithography for fabricating patterned nanostructures, XXth International Workshop on Physics of Semiconductor Devices (IWPSD 2019).*
13. A. Mukherjee, S. Chakraborty, C. Das, A. Karmakar, and **S. Chattopadhyay**: *Study of optical and electrical characteristics of chemically extracted Lotus and Taro Bio-Wax for hydrophobic surface Engineering, 2019 International Conference on Opto-Electronics and Applied Optics (Optronix).*
DOI: 10.1109/OPTRONIX.2019.8862409.
14. K. Sinha, P. S. Gupta, **S. Chattopadhyay**, and H. Rahaman: *Incorporation of tensile and compressive channel stress by modulating SiGe stressor length in embedded Source/ Drain Si-FinFET architecture, 2018 IEEE Electron Devices Kolkata Conference (EDKCON).*
DOI: 10.1109/EDKCON.2018.8770404.
15. S. Paul, J. Sultana, A. Sarkar, A. Karmakar, **S. Chattopadhyay**: *Chemical bath deposited n-ZnO nanostructures on p-Si substrate for photo-detecting applications: impact of annealing temperature, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).* IEST, 2018.
DOI: 10.1109/ISDCS.2018.8379662.
16. J. Sultana, S. Paul, S. Chowdhury, A. Karmakar, and **S. Chattopadhyay**: *Film thickness dependent photovoltaic performance investigation of p-CuO/n-Si heterojunctions grown by chemical bath deposition process, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379668
17. S. Sikdar, B. Nag Chowdhury, and **S. Chattopadhyay**: *Energy band-structure estimation of semiconductor nanotubes with consideration of momentum space quantization, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379630.
18. C. Das, S. Chakraborty, A. Karmakar, and **S. Chattopadhyay**: *On-chip detection and quantification of soap as an adulterant in milk employing electrical impedance*

- spectroscopy, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379634.
19. S. Chakraborty, C. Das, R. Saha, S. Das, R. Mishra, R. Mishra, A. Karmakar, and **S. Chattopadhyay**: *Bio-dielectric variation as a signature of shape alteration and lysis of human erythrocytes: an on-chip analysis, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379645.
20. S. Guhathakurata, **S. Chattopadhyay**, and M. Palit: *Optimization of electron beam dose for reliable nanoscale growth template formation in electron beam lithography system, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379635.
21. K. Sinha, **S. Chattopadhyay**, and H. Rahaman: *Investigation of process induced stress in the channel of a SiGe embedded source/drain Ge-FinFET architecture, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379632.
22. R. Saha, A. Karmakar, and **S. Chattopadhyay**: *Comparative investigation of Ga- and Sn-doped ZnO nanowires/p-Si heterojunctions for UV-photo sensing, IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018).*
DOI: 10.1109/ISDCS.2018.8379683.
23. S. Paul, J. Sultana, A. Chakraborty, A. Karmakar and **S. Chattopadhyay**: *Thermal annealing of CBD-grown p-CuO/n-ZnO seeds and its impact on the performance of p-CuO/n-ZnO nanowire based heterojunction photodetectors, 2017 IEEE Calcutta Conference (CALCON).*
DOI: 10.1109/CALCON.2017.8280695.
24. J. Sultana, S. Paul, A. Bhattacharya, A. Karmakar and **S. Chattopadhyay**: *Tuning the optical properties of p-CuO films by Graphene incorporation for superior p-CuO/n-Si heterojunction photo-detector performance, 2017 IEEE Calcutta Conference (CALCON).*
DOI: 10.1109/CALCON.2017.8280694.
25. S. Ray, S. Sen, A. Bose, A. Das, A. Dasgupta, **S. Chattopadhyay**, and A. Bhattacharyya: *Green immobilization of graphene using biofilms, Advanced Materials World Congress, 2017.*
26. K. Ghoshal, S. Chakraborty, C. Das, **S. Chattopadhyay**, S. Chowdhury, and M. Bhattacharyya: *Unveiling the structure-function aspects of PBMCs explores new insights in diabetes and dyslipidemia, Miami Winter Symposium, 2017.*

27. A. Das, A. Mondal, H. S. Dutta, A. Karmakar, and **S. Chattopadhyay**: *Enhancing the capability of Lock-In Amplifier to measure current-voltage characteristics of semiconductor devices*, **Second International Conference on Material Science (ICMS 2017)**.
DOI: 10.13140/RG.2.2.24187.11048
28. S. Sikdar, B. Nag Chowdhury, and **S. Chattopadhyay**: *Analytical modeling of vertically oriented standalone Si- nanowire metal-oxide-semiconductor capacitors for wavelength selective near-Infrared sensing applications*, **3rd International Conference On Opto-electronics and Applied Optics**, Kolkata, India (2016).
29. S. Chakraborty, C. Das, A. Karmakar, and S. Chattopadhyay: *Analyzing the quasi-oscillatory nature of electrical parameters with the concentration of sucrose in aqueous solution at room temperature*, **International Conference on Materials Science & Technology 2016, Delhi**.
30. K. Sinha, **S. Chattopadhyay**, and H. Rahaman: *Investigation of the impact of embedded SiGe aource/drain induced uniaxial stress on the performance of Si p-channel 3D FinFETs*, **6th International Conference on Computers and Devices for Communication**, Kolkata (2015).
DOI: 10.13140/RG.2.1.3217.6729
31. S. Paul, A. Das, J. Sultana, A. Karmakar, A. Bhattacharyya, and **S. Chattopadhyay**: *Performance investigation of n-ZnO NW's/ p-CuO thin film heterojunction solar cell grown by chemical bath deposition (CBD) and vapour liquid solid (VLS) technique*, **CODEC 2015**.
32. A. Das, C. Das, R. Saha, A. Karmakar, **S. Chattopadhyay**, M. Plait, and H. S. Dutta: *Electrical characterization of n-ZnO nanowire/p-Si hetero-junction diode in presence of traps*, **6th International Conference on Computers and Devices for Communication** (2015) Kolkata, India.
DOI: 10.13140/RG.2.1.3558.1528.
33. M. Palit, A. Das, B. Nag Chowdhury, A. Das, S. Das, S. Bhunia, D. Chattopadhyay, and **S. Chattopadhyay**: *Process-strain induced in Si by VLS-growth of rutile TiO₂ discrete nano-islands*, **4th International Conference on Current Developments in Atomic, Molecular, Optical and Nano Physics with Applications**; Delhi (2014).
34. M. Palit, B. Nag Chowdhury, A. Roy, S. K. Das, A. Sarkar, G. K. Dalapati, and A. Karmakar, and **S. Chattopadhyay**: *Growth and characterization of sub-30 nm diameter ZnO nanowires using VLS technique*, **3rd International Conference on Advanced Nanomaterials and Nanotechnology**, I. I. T. Guwahati (2013).
35. S. Sen, **S. Chattopadhyay**, and B. Mukhopadhyay: *Study of substrate induced strained-Si/SiGe channel for optimizing CMOS digital circuit characteristics*, **5th International Conference on Computers and Devices for Communication (CODEC 2012)**, Kolkata.

36. B. Nag Chowdhury and **S. Chattopadhyay**: *Modeling of transport behavior of the ballistic Silicon nanowire gate-all around field-effect-transistors (Si-NWFETs) with Si/SiO₂ interface roughness*, **5th International Conference on Computers and Devices for Communication (CODEC 2012)**, Kolkata.
37. A. Das, **S. Chattopadhyay**, and G. K. Dalapati: *Performance improvement of La₂O₃/p-GaAs MOS capacitor by using Si passivation layer*, **5th International Conference on Computers and Devices for Communication (CODEC 2012)**, Kolkata.
38. A. Das, **S. Chattopadhyay**, G. Dalapati, D. Z. Chi, and M. K. Kumar: *Optical and Electrical Characterization of Atomic Layer Deposited (ALD) HfO₂/p-GaAs MOS capacitors*, **Proceedings of SPIE - The International Society for Optical Engineering (2012)**. (**16th International Workshop on Physics of Semiconductor Devices**).
DOI: 10.1117/12.924341.
39. K. Sinha, H. Rahaman, and **S. Chattopadhyay**: *A study on the performance of stress induced p-channel MOSFETs with embeded Si_{1-x}Ge_x Source/Drain*, **5th International Conference on Computers and Devices for Communication (CODEC 2012)**, Kolkata.
40. B. Nag Chowdhury, P. Singh, and **S. Chattopadhyay**: *Optimization of cross-sectional aspect-ratio of ballistic Si nanobar MOSFETs for superior current-voltage characteristics*, **In proceedings of XVI International Workshop on the Physics of Semiconductor Devices, (IWPSD 2011)**, IIT Kanpur.
41. B. Nag Chowdhury and **S. Chattopadhyay**: *Impact of source-channel-drain coupling on ballistic Silicon nanowire field-effect-transistors (Si NWFET)*, **2nd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2011)**, IIT Gwahati, India. (2011).
42. A. Das and **S. Chattopadhyay**: *Investigation of post deposition annealing (PDA) effect on interface quality of the atomic layer deposited (ALD) HfO₂/p-GaAs MOS structures*, **In proceedings of XVI International Workshop on the Physics of Semiconductor Devices, December 19-22, 2011, (IWPSD 2011)**, IIT Kanpur.
43. M. Dey and **S. Chattopadhyay**: *Impact of high-k stacks on charge centroid in strained Si/SiGe MOS capacitors*, **International Conference on Communication, Computers & Devices, (ICCCD-2010)**, (2010).
44. B. Nag Chowdhury, **S. Chattopadhyay**, and S. Sen: *Analysis of process induced stress in the channel of nano-scale CMOS devices with TiN liner*, **International Conference on Communication, Computers & Devices, (ICCCD-2010)**, (2010).
45. P. S. Gupta, A. Nandy, A. Bhattacharya, S. Sen, and **S. Chattopadhyay**: *Artificial neural network based prediction of contact angle saturation of an EWOD system*, **International Conference on Communication, Computers & Devices, (ICCCD-2010)**, (2010).

46. M. Dutta and S. Chattopadhyay: *Analytical modeling for carrier transport in nano-scale double gate n-MOSFET (DG n-MOSFET) using non-equilibrium Green's Function (NEGF)*, *International Conference on Fundamental & Applications of Nanoscience & Technology (ICFANT 10)*; 2010, Jadavpur University, Kolkata.
47. M. Dey and S. Chattopadhyay: *A comparative study of surface quantization effects in Si and strained-Si MOS structures with ultrathin gate oxides*, *International Conference on Emerging Trends in Electronic and Photonic Devices & Systems, (ELECTRO '09)*, (2009).
48. M. Sengupta, S. Chattopadhyay, and C. K. Maiti: *Effect of channel implantation on the design of high frequency nanoscale n-FinFETs*, *International Conference on Emerging Trends in Electronic and Photonic Devices & Systems, (ELECTRO '09)*, (2009).
49. M. Sengupta, S. Chattopadhyay, and C. K. Maiti: *Effects of rapid thermal annealing on the performance enhancements in FinFETs*, *15th International Workshop on the Physics of Semiconductor Devices (IWPSD 2009)*, December 15-19, Delhi (2009).
50. M. Dey and S. Chattopadhyay: *Effect of strain on charge centroid location in SiO₂/s-Si/SiGe and ZrO₂/s-Si/SiGe MOS capacitors*, *4th International Conference on Computers and Devices for Communication, 2009 (CODEC 2009)*.
51. M. Sengupta, S. Chattopadhyay, and C. K. Maiti: *RF performance of process-induced strain-engineered n-FinFET*, *4th International Conference on Computers and Devices for Communication, 2009. (CODEC 2009)*.
52. H. Ramakrishnan, S. Chattopadhyay, K. Maharatna, S. Shedable, and A. Yakovlev, *Exploration of potential of strained-Si CMOS for ultra low-power circuit design*, *8th International Conference on Ultimate Integration on Silicon, Lueven. (2007)*.
53. H. Ramakrishnan, K. Maharatna, S. Chattopadhyay, and A. Yakovlev: *Impact of strain on the design of low-power high-speed circuits*, *The IEEE International Symposium on Circuits and Systems (ISCAS 2007)*, New Orleans, Louisiana, USA., (2007).
54. J. B. Varzgar, S. Chattopadhyay, S. Uppal, P. Chandra, S. H. Olsen, and A. G. O'Neill: *Gate oxide reliability of strained-Si n-MOS devices employing a thin buffer layer*, *European Mat. Res. Soc., EMRS 2006, Warsaw, September 4-8, (2006)*.
55. S. Uppal, M. Kanoun, S. Chattopadhyay, J. B. Varzgar, S. Olsen, and A. O'Neil: *Gate oxide reliability on strained Si/SiGe MOS: effect of Ge content variation*, *European Mat. Res. Soc., EMRS 2006, Warsaw, September 4-8 (2006)*.
56. S. Uppal, M. Kanoun, S. Chattopadhyay, S. H. Olsen, A. G. O'Neil, and S. J. Bull: *Ge out-diffusion and its effect on the electrical performance in s-Si/SiGe devices*, *Material Research Symposium, MRS 2006, USA (2006)*.

57. A. R. Saha, S. S. Mahato, **S. Chattopadhyay**, and C. K. Maiti: *Hot-electron reliability in process-induced strain-engineered MOSFETs*, **International Conference on Electronic and Photonic Materials, Devices and Systems (EPMDS-2006)**, Kolkata, India, (2006).
58. M. H. Weng, R. Mahapatra, P. Tappin, B. Miao, **S. Chattopadhyay**, A. B. Horsfall, and N.G. Wright: *High- κ dielectrics on SiC for extreme gas sensing*, **European Mat. Res. Soc. EMRS 2006**, Warsaw, September 4-8 (2006).
59. **S. Chattopadyay**, J. B. Varzgar, J. Seger, Y. L. Tsang, K. S. K. Kwa, S. H. Olsen, and A. G. O'Neill: *Capacitance-voltage (C-V) technique for the characterisation of strained Si/Si_{1-x}Ge_x heterostructure MOS devices*, **Int. Conf. on Electronic and Photonic Materials, Devices and Systems (EPMDS-2006)**, Kolkata, India, (2006).
60. A. R. Saha, S. S. Mahato, **S. Chattopadhyay**, and C. K. Maiti: *Technology CAD for Si/SiGe double-quantum-well channel MOSFETs*, **Intl. Conf. on Electronic and Photonic Materials, Devices and Systems (EPMDS-2006)**, Kolkata, India, (2006).
61. G. K. Dalapati, **S. Chattopadhyay**, K. S. K. Kwa, , S. H. Olsen, A. G. O'Neill, Y. L. Tsang, and R. Agaiby: *Impact of strained-Si thickness and Ge out diffusion on strained-Si/SiO₂ interface quality in surface channel strained Si n-MOSFET devices*, **Intl. Conf. on Electronic and Photonic Materials, Devices and Systems (EPMDS-2006)**, Kolkata, India, (2006).
62. Y. L. Tsang, **S. Chattopadyay**, K. S. K. Kwa, G. K. Dalapati, R. Agaiby, A. G. O'Neill, and S. H. Olsen: *Analytical model for threshold voltage of p-MOSFET in stained Si/SiGe dual channel architecture*, **Intl. Conf. on Electronic and Photonic Materials, Devices and Systems (EPMDS-2006)**, Kolkata, India, (2006).
63. **S. Chattopadhyay**, A. R. Saha, and C. K. Maiti: *Poly-SiGe Schottky diodes*, **3rd Intl. Conf. on Materials for Advanced Technologies (ICMAT 2005)**, Singapore, (2005).
64. A. R. Saha, A. B. Horsfall, **S. Chattopadhyay**, and C. K. Maiti: *Barrier in-homogeneities and carrier transport in silicided Schottky diodes*, **3rd Intl. Conf. on Materials for Advanced Technologies (ICMAT 2005)**, Singapore, (2005).
65. A. R. Saha, **S. Chattopadhyay**, C. Bose, and C. K. Maiti: *Characterization of metal-semiconductor hetero-interface using capacitance-voltage technique*, **4th Intl. Conf. on Silicon Epitaxy and Heterostructures (ICSI-4)**, Awaji Island, Hyogo, Japan, (2005).
66. R. Das, A. R. Saha, **S. Chattopadhyay**, S. Saha, C. Bose, and C. K. Maiti: *Electrical characterization of Ni-SiGe and Ni(Pt)-SiGe Schottky diodes*, **28th General Assembly of International Union of Radio Science (URSI - 2005)**, New Delhi, India, (2005).
67. H. K. Ramakrishnan, **S. Chattopadhyay**, A. Yakovelev, S. Dlay, A. G. O'Neill: *Design of strained silicon inverters for future VLSI applications*, **3rd Intl. Conf. on Materials for Advanced Technologies (ICMAT 2005)**, Singapore, (2005).

68. K. S. K. Kwa, S. Olsen, A. G. O'Neill, **S. Chattopadhyay**, G. K. Dalapati, L. Driscoll: *Fowler-Nordheim tunnelling in strained Si/SiGe MOS devices: impact of cross-hatching and nanoscale roughness*, **European Material Conference (EMC 2005)**, Santa Barbara, USA (2005).
69. S. Olsen, M. Temple, **S. Chattopadhyay**, A. O'Neill, D. J. Paul, K. S. K. Kwa, L. Driscoll, A. Waite, Y. Tang, A. Evans, and J. Zhang: *Strained Si/SiGe CMOS: high performance without re-tooling*, **4th Intl. Conf. on Silicon Epitaxy and Heterostructures (ICSI-4)**, Awaji Island, Hyogo, Japan, (2005)..
70. R. S. Dhar, G. K. Dalapati, **S. Chattopadhyay**, K. S. K. Kwa, S. H. Olsen, and A. G. O'Neill: *Modelling of self-heating in strained Si n-channel MOSFETs on SiGe virtual substrates*, **Material Research Society (MRS 2005)**, (Fall), (2005).
71. A. R. Saha, **S. Chattopadhyay**, and C. K. Maiti: *Technology CAD of silicided Schottky barrier MOSFETs for elevated source/drain engineering*, **21th European Materials Research Society (Spring Meeting)**, Strasbourg, France, (2004).
72. G. K. Dalapati, **S. Chattopadhyay**, S. K. Samanta, and C. K. Maiti: *Electrical properties of stacked SiO₂/ZrO₂ gate dielectrics on Si_{1-y}C_y*, **13th Workshop on Dielectrics in Microelectronics (WODIM 2004)**, (2004).
73. A. R. Saha, **S. Chattopadhyay**, G. K. Dalapati, S. K. Nandi, and C. K. Maiti: *Electrical characterization of Ni_y(Si_{1-x}Ge_x)_{1-y}/Si_{0.75}Ge_{0.25} and NiSi/Si Schottky diodes*, in **Proc. of Int'l Conference on Microelectronics (MIEL 2004)**, (2004).
74. A. R. Saha, **S. Chattopadhyay**, and C. K. Maiti: *Electrical characterization of TiSi/Si_{1-x-y}Ge_xC_y Schottky diodes*, in **Proc. of Int'l Conf. on European Materials Research Symposium (EMRS 2004)**, Strasbourg, France, (2004).
75. A. R. Saha, **S. Chattopadhyay**, and C. K. Maiti: *Effect of annealing on interface state density of Ni-silicided Si_{1-x}Ge_x Schottky diodes*, in **Proc. of the International SiGe Technology and Device Meeting (ISTDM)**, Frankfurt, Germany, ISTDM 2004, (2004).
76. L. S. Driscoll, S. Olsen, **S. Chattopadhyay**, A. G. O'Neill, and K. S. K. Kwa: *Impact of Ge diffusion and wafer cross hatching on strained Si MOSFET electrical parameters*, in **the Proc. of Int'l Conference on Materials Research Symposium (MRS)**, San Francisco, USA, (2004).
77. **S. Chattopadhyay**, A. R. Saha, G. K. Dalapati, S. K. Nandi, and C. K. Maiti: *Electrical properties of NiSi/strained-Si Schottky diodes*, in **the Proc. of Int'l Conf. on Computers and Devices for Communication (CODEC 2004)**, Calcutta, (2004).
78. S. H. Olsen, L. S. Driscoll, K. S. K. Kwa, **S. Chattopadhyay**, A. G. O'Neill: *High performance strained-Si/SiGe N-channel MOSFETs: impact of alloy composition and layer architecture*, **Solid State Devices and Materials (2003), SSDM**, Japan (2003).

79. K. S. K. Kwa, **S. Chattopadhyay**, S. Olsen, L. Driscoll, and A. G. O'Neill: *Optimization of channel thickness in strained-Si/SiGe MOSFETs*, **European Solid-State Device Research Conference (ESSDERC 2003)**, Estoril, Portugal, (2003).
80. S. Olsen, L. Driscoll, K. S. K. Kwa, **S. Chattopadhyay**, A. O'Neill, A. Waite, Y. Tang, A. Evans, D. Norris, A. Cullis, D. Paul, and D. Robbins: *High performance strained-Si/SiGe n-MOSFETs using a novel CMOS architecture*, **Proceedings of 3rd Intl. Conf. on Silicon Epitaxy and Heterostructures (ICSI 3)**, Santa Fe, USA, pp. 132-134, (2003).
81. S. H. Olsen, A. G. O'Neill, D. J. Norris, A. G. Cullis, S. J. Bull, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, A. M. Waite, Y. T. Tang, and A. G. R. Evans: *Thermal oxidation of strained Si/SiGe: impact of surface morphology and effect on MOS devices*, **Euro. Mat. Soc. Spring Meeting (E-MRS 2003)**, Strasbourg, France, (2003).
82. S. H. Olsen, A. G. O'Neill, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, S. J. Bull, A. M. Waite, Y. T. Tang, A. G. R. Evans, D. J. Norris, A. G. Cullis, and J. Zhang: *Impact of virtual substrate Ge composition on strained Si MOSFET performance*, **Electronic Materials Conference**, USA (2003).
83. S. H. Olsen, **S. Chattopadhyay**, K. S. K. Kwa, L. S. Driscoll, A. G. O'Neill: *Impact of material quality on high performance strained Si/SiGe heterostructure MOSFETs*, **2003 Silicon Nanoelectronics Workshop**, Kyoto, Japan, pp. 34-35, (2003).
84. L. S. Driscoll, A. G. O'Neill, S. H. Olsen, **S. Chattopadhyay**, K. S. K. Kwa: *Dual quantum well strained silicon/silicon-germanium n-channel heterojunction metal oxide field effect transistors for CMOS logic*, **PREP Conference, PREP 2003**, Exeter, UK, (2003).
85. K. L. Tong, K. L. Pey, W. K. Choi, **S. Chattopadhyay**, E. A. Fitzgerald, and D. Antoniadis: *Schottky barrier heights of Ti on n-type Si_{0.75}Ge_{0.25}, in the proceeding of International Workshop on Advances in Materials Science and Technology*, IMRE, Singapore (2000).
86. **S. Chattopadhyay**, K. L. Pey, W. K. Choi, D. Z. Chi, D. A. Antoniadis, and E. A. Fitzgerald: *Identification of deep level traps in a compositionally graded n-Si_{0.75}Ge_{0.25} alloy using Ti schottky diode, in the proceeding of International Conference on Communications, Computers & Devices (ICCCD-2000)*, I. I. T. Kharagpur (2000).
87. **S. Chattopadhyay**, L. K. Bera, S. K. Ray, P. K. Bose, and C. K. Maiti: *Schottky barrier height of Pt/p-strained-SiGe diodes, in the Proc. of Int'l Conference on Computers and Devices for Communication (CODEC 1998)*, Calcutta, (1998).
88. **S. Chattopadhyay**, L. K. Bera, S. K. Ray, P. K. Bose, and C. K. Maiti: *Low temperature characteristics of Pt/p-strained-Si schottky diodes, in the Proc. of 9th Int'l Workshop on Physics of Semiconductor Devices (IWPSD-98)*, Delhi (1998).
89. **S. Chattopadhyay**, P. K. Bose, and C. K. Maiti: *Spectral response of relaxed Si_{1-x}Ge_x heteroepitaxial p-i-n photodiodes, in the Proc. of Int'l Conference on Fibre Optics and Photonics (PHOTONICS-98)*, IIT Delhi, (1998).

3.6 Publications in Peer Reviewed National Conferences:

1. K. Sinha, **S. Chattopadhyay**, and H. Rahaman: *Strained Silicon – a gateway to a aster world*, National Conference on Advancement in Frontier Physics: From 20th Century to the Present (2016).
2. H. K. Ramakrishnan, **S. Chattopadhyay**, and A. Yakovlev: *Study of impact of variability in CMOS using Monte Carlo simulation*, PGC 2006, (2006).
3. Y. L. Tsang, **S. Chattopadhyay**, and A. G. O'Neill: *Modelling threshold voltage in strained Si n-MOSFET*, PGC 2006 (2006).
4. J. Varzgar, **S. Chattopadhyay**, and A. G. O'Neill: *Characterisation and analysis of deep submicron strained Si mos devices*, PGC 2006 (2006).
5. S. S. Shedable, **S. Chattopadhyay**, and A. Yakovlev: *Study of variability sources and its impact in ic technology*, PGC 2006 (2006).
6. M. O. Alatis, S. H. Olsen, **S. Chattopadhyay**, and A. G. O'Neill: *Capacitance-voltage simulation and characterisation of strained Si/SiGe MOS devices*, PGC 2006 (2006).
7. K. S. Kwa, **S. Chattopadhyay**, A. G. O'Neill, and S. H. Olsen: *Electrical characterisation of strained Si MOS capacitors*, PGC 2005 (2005), p. 25 (2005).
8. H. K. Ramakrishnan, A. Yakovlev, and **S. Chattopadhyay**: *Analysis and comparison of strained Si CMOS inverters against Si*, PGC 2005, p. 26 (2005).
9. J. Varzger, **S. Chattopadhyay**, A. G. O'Neill, K. S. Kwa, and S. H. Olsen: *Analysis and characterisation of strained Si deep submicron MOS devices*, PGC 2005, p. 54 (2005).
10. Y. L. Tsang, **S. Chattopadhyay**, and A. G. O'Neill: *Next generation high-performance MOSFETs on strained Si/SiGe platform*, PGC 2005, p. 53 (2005).
11. R. S. Dhar, **S. Chattopadhyay**, and A. G. O'Neill: *AC conductance technique to eliminate the effect of self-heating in strained-Si/SiGe MOSFET*, PGC 2005, p. 56 (2005).
12. **S. Chattopadhyay**, K. S. K. Kwa, S. H. Olsen, L. S. Driscoll and A. G. O'Neill: *Strained-Si/SiGe C-V characteristics for heterojunction MOSFET channel design*, PGC 2003, (2003).
13. K. S. K. Kwa, **S. Chattopadhyay**, S. H. Olsen, L. S. Driscoll, and A. G. O'Neill: *Model for reconstruction of the C-V characteristics from measured lossy metal-oxide-semiconductor capacitance-voltage characteristics*, PGC 2003, U.K. (2003).
14. S. H. Olsen, L. S. Driscoll, K. S. K. Kwa, **S. Chattopadhyay**, A. G. O'Neill, A. M. Waite, Y. T. Tang, A. G. R. Evans, D. J. Norris, A. G. Cullis, D. J. Paul, and D. J. Robbins: *High performance strained Si/SiGe nMOSFETs using a novel CMOS architecture*, PGC 2003, U.K., (2003).

15. **S. Chattopadhyay** and A. G. O'Neill: *Thermal reaction during Ni-silicidation with Si_{0.75}Ge_{0.25} alloy*, PGC (2002).
16. **S. Chattopadhyay**, K. L. Pey, W. K. Choi, H. Zhao, E. A. Fitzgerald, and D. A. Antoniadis: *Characterization of the rapid thermal annealed Ni-silicided films on UHVCVD grown relaxed n-Si_{0.75}Ge_{0.25} epitaxial layer*, 1st Annual Symposium of Singapore-MIT Alliance (SMA Symposium) (2001).
17. H. Zhao, K. L. Pey, **S. Chattopadhyay**, W. K. Choi, P. S. Lee, E. A. Fitzgerald, and D. A. Antoniadis, J. A. van Kan, T. Ospowicz, and Z. X. Shen: *Interfacial reaction of Ni on Si_{0.7}Ge_{0.3} at low temperature by rapid thermal annealing*, 1st Annual Symposium of Singapore-MIT Alliance (SMA Symposium) (2001).
18. E. A. Fitzgerald, M. T. Currie, C. W. Leitz, M. Armstrong, G. Taraschi, Z. Y. Cheng, D. A. Antoniadis, C. S. Tan, **S. Chattopadhyay**, H. Zhao, P. S. Lee, L. Miao, S. J. Chua, K. L. Pey, and W. K. Choi: *The relaxed SiGe materials platform: strained Si MOS*, 1st Annual Symposium of Singapore-MIT Alliance.

4. **Some Relevant Information Related to Research:**

- News item:
<https://www.innovations-report.com/html/reports/information-technology/report-15857.html>.
- News item:
<https://www.sciencedaily.com/releases/2003/01/030120100124.htm>
- News item:
(CURRENT SCIENCE Vol. 113, No. 4, p. 540-541, 25th August, 2017).

5. **Invited Lectures /Session Chairs /Resource Persons:**

1. Resource Person: *Science, Technology and Innovation: with an emphasis on its gradual evolution*, 1st Faculty Induction Programme (FIP-01) (Webinar), North Bengal University (2020).
2. *Semiconductor devices: the past, present and future*, International Webinar on Electronic Devices: Past, Present and future, organized by APC College (2020).
3. *MOSFET: the key of modern technology*, Webinar on Applications of Electronics, organized by Vivekananda College, Kolkata (2020).
4. *Utilization of process induced strain for developing high pressure TiO₂-II phase*, International Symposium on Devices, Circuits and Systems (ISDCS) (2020).
5. *Strain engineering for mobility enhanced Metal-Oxide-Semiconductor Field Effect Transistors (ϵ -Si MOSFETs)*, One Day Seminar, Batanagar College (2019).
6. *Channel strain engineering: an effective route for sustaining MOSFET performance*, International Conference, UEM (2019).

7. *High dielectric constant materials (high-k dielectrics) for electronic applications*, International Conference on Innovation in Material Science & Technology (IMST 2018), Organize by Indian Rubber Industry, Kolkata Branch and Amity University.
8. *Metal-Oxide-Semiconductor Field Effect Transistors (MOSFETs) with Quantum-Scale channel lengths*, IEEE Student Brach, Organized by APC College (2018).
9. *Stress incorporation in nano-scale metal-oxide-semiconductor field effect transistor channels for controlled performance enhancement*, International Symposium on Devices, Circuits and Systems (ISDCS) (2018).
10. *High dielectric constant materials (high-k dielectrics) for electronic applications*, One Day Symposium, UEM (2018).
11. *The challenges and advances of metal-oxide-semiconductor field effect transistors (MOSFETs): a journey of 60 years*, IEEE EDS Society; Organized by Heritage Institute (2017).
12. *Inclusive progress requires holistic approach for the practice of science and technology*, One day Seminar, Mallabhum Institute of Technology (2017).
13. *Nano-dimensions: an additional parameter for designing electronic systems*, Amity University, Kolkata (2017).
14. *Semiconductor devices: the wonder element to direct the path of civilization and social life*, IEEE EDS Society Organized by Heritage Institute (2017).
15. *Challenges in Metal-Oxide-Semiconductor Field Effect Transistors for Developing Low Power Circuits*, Faculty Development Program, JIS College (2017).
16. *Induced elastic stress/strain: the tunable material parameter for performance enhancement in nano-scale electronic devices*, International Conference, NIT Durgapur (2017).
17. *Evolution of CMOS device and technology for low power applications*, International Conference on Microelectronics, Computing and Communication (MicroCom 2016).
18. (Session Chair) *Electrical and Electronic Devices*, IEEE International Conference on Computational Intelligence and Communication Networks (ICCICN 2014).
19. (Session Chair): *Nanomaterials and Devices*, International Conference on Computers and Devices for Communication (CODEC-15).
20. Session Chair: *Demystifying Time Varying Circuits & Systems*, 29th International Conference on VLSI Design, (2012).
21. (Session Chair) *Let There Be Light: A Challenge For Control Engineers (Key note)*, IEEE First International Conference on Control, Measurement and Instrumentation (CMI) (2016).
22. *Some selective applications of engineered beam on electronic material and devices*, National Workshop on the Application of Radiation in Physical, Chemical and Life

- Sciences (2013); UGC-DAE Consortium for Scientific Research Kolkata Centre & CRNN, CU.
23. *Nano-electronic devices: useful for developing bio-chips?* Workshop on Nanotechnology and Biochip (2014).
 24. *Emerging materials and devices for electronic applications, Emerging Materials & Devices* (EMD- 2014).
 25. *Advances in nanotechnology*, National Conference on Recent Development in Electrical, Electronics and Engineering Physics (RDE3P-2013).
 26. *Advances in nano-scale technology*, One day Seminar on "Recent trends in Frontier of Physics" (2013).
 27. *Low power high speed CMOS devices for VLSI technology*, Seminar on Emerging Technologies in the Field of Electrical, Electronics and Instrumentation Engineering. (2014).
 28. (Session Chair): Session: *Device Electronics Track-I*, AICTE sponsored National Conference on control, Communication and Device Electronics N3CD-2013.
 29. *Materials for advanced CMOS technology: Evolution and Advances*, Seminar on "Recent Trends in Material Research" (2015).
 30. *An Introduction to Nano-electronics and its Applications*, Seminar on Glimses of Advance Physics-2; (2014).
 31. Resource Person (Refresher Course): *Nano-scale metal-oxide-semiconductor field-effect-transistors (MOSFETs): Evolution and Advances*, JU (2013).
 32. Resource Person (Refresher Course): *Nano-electronics for developing Biochip*, Jadavpur University (2015).
 33. Resource Person (Faculty Development Program): *Advances in Microelectronics, VLSI Design and Optoelectronics Devices with Mixed Signal Analysis*, Narula Institute of Technology.
 34. Resource person: *VLSI Devices and Circuits*, Instruction Enhancement Programme (IEP) under SMDP-C2SD Mission.
 35. *Advancement in Solid State Device Resource Person*, Faculty Development Program, RCC Institute of Information Technology (2014).
 36. *Challenges of Moore's law and emergence of Nanowire field effect transistors*, 3 Days' workshop on Emerging and Post-CMOS Technologies, Indian Institute Engineering Science Technology (2014).
 37. *Complementary-metal-oxide-semiconductor (CMOS): A 50-year journey of electronics from micro- to nano-scale*, One Day Seminar, Tamluk College (2012).
 38. *CMOS: Device physics, Technology, Scaling and Associated Challenges*, Summer School (FabTech.) (2011), IRPE CU.

39. *Potential of strained-Si CMOS for low-power high speed circuit applications*, International Conference ICCCD 2010, IIT Kharagpur (2010).
40. *Modifications of CMOS in nano-dimension*, HMRD Summer School, IIT Kharagpur (2010).
41. *Strained-Si/SiGe systems for low power high speed CMOS applications*, One day Seminar One day Seminar on Semiconductor Devices (2010).
42. *Possibility of optoelectronic integrated circuit (OEIC) for CMOS nanoelectronics*, SPIE Student branch, JIS College Chapter (2010).
43. *SiGe for photonics and optoelectronic integrated circuit (OEIC)*, SPIE Kolkata (2010).
44. Resource person: *Metal-oxide-semiconductor field-effect-transistors (MOSFETs) in nano-scale: evolution, science and technology*, Short-term course, IIT Kharagpur (2012).
45. Resource person: *Towards nanoelectronics: MOSFET scaling and Short Channel Effects (SCE)*, Refreshers course, Department of Physics, CU (2009).
46. *Very Large Scale Integration: Device, Technology and Design challenges*, Computer Society of India (2009).
47. *CMOS VLSI: device, technology and design issues*, Computer Society of India (2009).
48. *Strained-Si CMOS: Advances and Challenges*, MHRD and AICTE Continuing Education Program (CEP), IIT, Kharagpur (2008).
49. *Nano-scale CMOS: Device, Technology and challenges*, UGC Networking Program, (NanoDev) IRPE, CU (2009).
50. *Evolution of Si CMOS: A journey from micro- to nano-dimension with associated challenges*, Faculty Development Program, Techno India College (2009).
51. *CMOS devices: Operation, Applications and Modifications in nano-era*, SemiNano, Summer school, Department of Radio Physics and Electronics, under the UGC Centre for Excellence program (2008).
52. *Challenges of Si CMOS in Nano-dimension*, Short term course, MHRD and AICTE Continuing Education Program (CEP), IIT, Kharagpur.
53. *CMOS in Nano-era: its design challenges*, workshop on the faculty training program undertaken by AICTE (2008).
54. *Very large scale integration (VLSI)*, workshop on the faculty training program, Techno India Group (2008).
55. *CMOS in nano-era: alternatives and challenges*, One Day International Symposia, Saha Institute of Nuclear Physics (2008).
56. *Very Large Scale Integration (VLSI): an overview*, workshop on the faculty training program Techno India College (2008).
57. *Si-based optoelectronic integrated circuit (OEIC)*, MHRD Summer School, IIT Kharagpur.

6. **Other Involvements:**

- Convener of the 'Clean Room': Center for Research in Nanoscience and Nanotechnology (CRNN), CU.
- Member of PG BOS, ECE, Moulana Abul Kalam Azad University of Technology.
- Member of PG BOS, ECE, National Institute of Technology, Mizoram.
- Member of PG Board, Electronic Science, APC College, Barasat State University.
- Member of the UG Board, CU, Department of Electronic Science.
- Member of the IEEE Electron Devices Society (EDS).
- Member of BOS, Belur Vidya Mandir, Computer Science.
- Coordinator of Orientation Program, CU (OP-99).
- Advisory Committee member: Several International & National Conferences.
- Organizing Committee member: Several International & National Conferences.
- Ex-Head of the Department, Department of Electronic Science, CU.
- Ex-UG BOS member, Electronic Science, Narendrapur Ramkrishna Mission.
- Ex-coordinator: Foundation year course, School of Electrical, Electronics and Computer Engineering, University of Newcastle Upon Tyne.