Curriculum Vitae
Prof. Tarun Kanti Bhattacharyya

- *Rich academic and industrial experience of 30+ years*
- *More than 200 publications in refereed international journals and conferences.*
- *Around 8 patents (granted and filed)*
- *IBM faculty Award 2012*
- *Focus on development of sustainable technologies and technology transfer.*
- *Heading four groups under the multidisciplinary aegis. The VLSI group is hosted at world class laboratory having state of art facilities and advanced VLSI lab. This also includes state of art VLSI test laboratory developed in collaboration with Keysight Technologies. The nanobio group focuses on the nanobiosensors, chemical sensing, disease detection at early level and drug delivery devices. This group has won several awards including the DST Lockheed Martin Innovation Award 2016. Third one being high performance device lab which has state of the art multicluster MBE systems. Fourth group focuses on development of MEMS based sensors and actuators for aerospace applications. Group members include 15 research scholars.*

1. **Name:** *Prof. Tarun Kanti Bhattacharyya*

2. **Date of birth:** *30th July 1962*

3. **Current Position and Address:** *Institute Chair Professor, IIT Kharagpur*
Professor and Head, Advanced Technology Development Centre.
Professor, E&ECE Department
Professor-in-charge Advanced VLSI Laboratory, IIT Kharagpur
Professor-in-charge High performance device lab
Professor-in-charge Microelectronics and MEMS lab
Coordinator: National MEMS Design Centre.

National Coordinator Indo Taiwan Bilateral collaboration on Fabless Manufacturing

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4. **Educational Qualification:**

Sl.No.	Degree	Organisation	Speciality
1	*Ph.D. (1996)*	*Indian Association for The Cultivation of Science (Jadavpur University)*	*Amorphous and Microcrystalline Silicon Thin Films and their device applications*
2	*M.E. (1991)*	*Jadavpur University*	*Electronics & Communication Engineering*
3	*B.Tech (1987)*	*Institute of Radio Physics & Electronics, Calcutta University*	*Radio physics and Electronics Engineering*
4	*B.Sc (Hons.) (1984)*	*Calcutta University*	*Physics (Hons)*

5. Academic/ Research Experience/ Employment:

Sl.No.	Period	Post / Organisation	Key Responsibility Area
1.	*August 2022-present*	*Institute Chair Professor, IIT Kharagpur*	
2.	*November 2020-present*	*Professor & Head, Advance Technology Development Centre, IIT Kharagpur*	*Undergraduate and post graduate teaching and research in the areas of High Performance VLSI Analog and RFIC design, MEMS and Nanoelectronics. Conducting Govt. Sponsored project and consultancy projects for multinational companies. Prof in charge Advanced VLSI Laboratory, Microelectronics, MEMS Laboratory and High Performance Device Laboratory*
3.	*May 2014 – present*	*Professor,E&ECE Dept., IIT Kharagpur*	
4.	*September 2008-May 2014*	*Associate professor, E&ECE Dept., IIT Kharagpur*	
5.	*25th Sept2000-8th September 2008*	*Assintant professor, E&ECE Dept, IIT kharagpur*	
6.	*19th March,1997 –23rd September 2000*	*Deputy Manager (R&D) Advanced Materials Complex, Research & Consultancy Directorate, ACC Ltd. Salt lake Calcutta*	*Group leader and responsible for Application development of Diamond like nanocomposite thin films for electronic, optical & tribological applications using. Plasma Assisted Ion beam techniques using organic precursors. Application development for TATA BP Solar , Titan Industries etc*
7.	*20th Feb 1995 -18th March 1997*	*Scientist-C, Central Glass & Ceramic Research Institute. Council of Scientific & Industrial Research. Govt. of India. Calcutta.*	*Microanalysis of surface & interface of glass, ceramic, semiconductor materials and their thin film multilayer structure using SIMS, ESCA and AUGER techniques Development of ceramic coating materials. Scientist in charge of VG Microlab Combined SIMS, ESCA, AUGER System.*

Sl.No.	Period	Post / Organisation	Key Responsibility Area
8.	*4th July 1988 – 20th Feb 1995*	*Scientist, Indian Association for the Cultivation of Science. Calcutta -700032. Under Department of Science and Technology, Govt of India*	*Growth and Characterization Thin films and their multilayer structures for device applications such as solar cell and Thin film Transistor. Surface and Interface analysis using SIMS (Secondary Ion Mass Spectroscopy)*
9.	*3rd September 1987 – 1st July 1988*	*Development Consultant Private Ltd. Calcutta – 700016*	*Computer Hardware Engineer*

6. Areas of Specialization:

- *MEMS and Microsystems*
- *RF and Analog VLSI*
- *Nano- electronics*
- *Thinfilms*
- *Nano-scale Biosystems Engineering*
- *Nano Bio Sensors and energy storage*

7. Honours/Awards/Recognitions received:

- ***IBM Faculty Award (2012)***

- *Design of Microfluidic system for controlled Drug delivery has been selected among top 10 by India innovation growth program 2016, by* ***DST, Lockheed Martin, Indo-US S&T forum****, Stanford Graduate School of Business and Texas University, (2016) and received the Gold Medal*

- ***1st prize received based doctoral thesis*** *work of Hemendra Pandey under the theme of strategic applications at the young scientists` conclave – 2016, organised by India International Science Festival. The certificate was given by Honourable Minister of Science and Technology, Govt of India Dr. Harsh Vardhan.*

- *Performance Enhancement of Microthruster using Nano-engineered MEMS Structure for Long Term Space Mission at* ***Gandhian Young Technological Innovation (GYTI) Awards – 2014*** *With Technological Edge(TE) Award*

- ***INAE innovative students project award at Doctoral Level 2013.*** *Based on the PhD thesis Pijus Kundu "Performance enhancement of Micro thruster using nanoengineered MEMS structure for long term space mission"*

- ***Institute of Smart Structures, ISSS PG Award 2013*** *for doctoral thesis of Pijus Kundu on "Performance enhancement of Micro thruster using nanoengineered MEMS structure for long term space mission"*

- *Selected member of Indo-US Frontiers of Engineers* ***(Indo-US FoE)*** *organised by US National Academy of Engineers and Indo US science & Technology forum*

- *Chosen Member of Indo-Japan team on Advanced Micro Nano and Nano Manufacturing Science sponsored by* ***JSPS and DST****.*

- *Chosen Member of* ***INDO-US Centre for advanced and futuristic manufacturing***

- *PRSG members of Centre of Excellence in Nano Science and Technology of IIT Madras and IIT Guwahati,*
- *TPC member IEEE Sensors 2016, 2017*
- *TPC member IEEE VLSI 2007, 2017*

- *Co Chairman Technical Committee MEMSNANO 2005 conference*

- *UNIDO (Vienna) Fellowship for pursuing research as a visiting scientist at the Institute of Obeflachen und Schichtanalytik (IFOS), The University of Kaiserslautem, Germany. Under Prof.Dr. H .Oechsner*

- *Recipient of National Scholarship of Merit*

8. Research publications: (Selected Journal Papers)		
Sl. No.	**Title & Author**	**Journal details**
Publications (2022 – 2023)		
1.	*Temporal Release of Cell Cycle Regulator α-Lipoic Acid: An NIR-Light (Two-Photon) Activatable Quinoxaline-Based Nano-Prodrug Delivery System. Saugat Mondal, Ayan Chatterjee, Shreya Banerjee, Tara Singha, Antara Sikder, Tarun K. Bhattacharyya, Mahitosh Mandal, Prasanta K. Datta, Tapas K. Maiti, and ND Pradeep Singh.*	*ACS Applied Materials & Interfaces (2023).*
2.	*Design and development of a piezoelectric driven micropump integrated with hollow microneedles for precise insulin delivery. Arkaprava Datta, Shatavisha Biswas, Riddhiman Dhar, and Tarun Kanti Bhattacharyya.*	*Journal of Micromechanics and Microengineering 33, no. 7 (2023): 075003.*
3.	*Amplification of ammonia sensing performance through gate induced carrier modulation in Cur-rGO Silk-FET. Avik Sett, Lisa Sarkar, Santanab Majumder, and Tarun Kanti Bhattacharyya*	*Scientific Reports 13, no. 1 (2023): 8159.*
4.	*1.6 V Flexible Supercapacitor Enabled by rGO-Iron Vanadium Oxide (FeVO3) as an Anode and mw-CNT-Nickel Copper Oxide (Ni4CuO5) as a Cathode with High-Performance Energy Storage. Monojit Mondal, Dipak Kumar Goswami, and Tarun Kanti Bhattacharyya*	*ACS Energy & Fuels (2023).*
5.	*Reduced Graphene-Oxide-Based Silk-FET: A Facile Platform for Low Power and Room Temperature Detection of Formaldehyde. Lisa Sarkar, Avik Sett, Santanab Majumdar, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices (2023).*
6.	*Design and Development of a Piezoelectric Driven Micropump Integrated with Hollow Microneedles for Precise Insulin Delivery. Arkaprava Datta, Shatavisha Biswas, Riddhiman Dhar, and Tarun Kanti Bhattacharyya.*	*Journal of Micromechanics and Microengineering (2023).*
7.	*Synthesis of BSA-Conjugated ZnO Nanoparticle for Pb2+ Sensing Applications. Milan Sasmal,, and Tarun Kanti Bhattacharyya.*	*IETE Journal of Research 69, no. 4 (2023): 2207-2211.*
8.	*A 1.4 V asymmetric solid-state supercapacitor by bimetallic organic framework composite for augmented energy storage. Monojit Mondal, Dipak Kumar*	*Journal of Materials Science (2023): 1-16.*

	Goswami, and Tarun Kanti Bhattacharyya.	
9.	*Efficient Hydrogen Evolution via 1T-MoS2/Chlorophyll-a Heterostructure: Way Toward Metal Free Green Catalyst. Debmallya Das, Jhimli Manna, and Tarun Kanti Bhattacharyya.*	*Small Methods (2023): 2201446.*
10.	*Study of gate induced sensitivity amplification in carbon nanotube thin film transistor based ammonia sensor. Srijeet Tripathy, , Avik Sett, Santanab Majumder, and Tarun Kanti Bhattacharyya.*	*Sensors and Actuators B: Chemical (2023): 133511.*
11.	*Solution process synthesis of MoS 2-BSA-ZnO nano-bio composite for ultra low level Hg 2+ sensing applications. Rajeev Divedi, Dhar, Tarun Kanti Bhattacharyya, and Milan Sasmal.*	*IEEE Sensors Journal (2023).*
12.	*Normally-Off β-(AlxGa1-x) 2O3/Ga2O3 Modulation-Doped Field-Effect Transistors With p-GaN Gate: Proposal and Investigation. Ashvinee Deo Meshram, , Anumita Sengupta, Tarun K. Bhattacharyya, and Gourab Dutta.*	*IEEE Transactions on Electron Devices 70, no. 2 (2023): 454-460.*
13.	*High performing asymmetric supercapacitor fabricated by defect induced cathodic MnV2O7 and biowaste derive anodic activated carbon. Monojit Mondal, Dipak Kumar Goswami, and Tarun Kanti Bhattacharyya.*	*Journal of Energy Storage 57 (2023): 106177.*
Publications (2021 – 2022)		
14.	*Amplification of arsenic sensitivity in functionalized zinc oxide field effect transistor through optimization of gate electrostatics. Avik Sett, Lisa Sarkar., & T. K. Bhattacharyya.*	*Applied Physics Letters, 121(20), 203509. (2022).*
15.	*Thioglycolic Acid-Functionalized Water-Soluble MoS $ _ {\text {2}} $-Based Sensor for Toxic Ion Detection. Santanab Majumder, Avik Sett, Dipak Kumar Goswami, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices (2022).*
16.	*Emergence of Two-dimensional Nanomaterials-based Breath Sensors for Non-invasive Detection of Diseases. Avik Sett, Tanisha Rana, Umamaheswari Rajaji, Rinky Sha, Ting-Yu Liu, and Tarun Kanti Bhattacharyya*	*Sensors and Actuators A: Physical (2022): 113507.*
17.	*MoSe2 Nanostructures and Related Electrodes for Advanced Supercapacitor Developments, Rinky Sha, Palash Chandra Maity, Umamaheswari Rajaji, Ting-Yu Liu,*	*Journal of The Electrochemical Society (2022).*

	and Tarun Kanti Bhattacharyya.	
Publications (2020 – 2021)		
18.	*Design and Analysis of a CMOS Moore Fractal MOM Capacitor with an Application to an RF Active Image Reject Filter. Arup Ray, Arijit De, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices (2021).*
19.	*Pseudo Electron Injection in Amine-Modified MoS_2-Based Sensor for Humidity Monitoring. Santanab Majumder, Avik Sett, Dipak Kumar Goswami, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices 68, no. 10 (2021): 5173-5178.*
20.	*Power and area-efficient static current mode logic frequency divider in 180-nm complementary metal-oxide-semiconductor technology. Subhanil Maity, Sanjay Kumar Jana, Indranil Som, and Tarun Kanti Bhattacharyya.*	*International Journal of Circuit Theory and Applications 49, no. 8 (2021): 2396-2410.*
21.	*Dual-gate β-Ga2O3 nanomembrane transistors: device operation and analytical modelling. Anumita Sengupta, Tarun Kanti Bhattacharyya, and Gourab Dutta.*	*Journal of Physics D: Applied Physics 54, no. 40 (2021): 405103.*
22.	*High efficiency CMOS active rectifier with adaptive delay compensation. Arnab Banerjee, Tarun Kanti Bhattacharyya, and Sudip Nag.*	*Microelectronics Journal 112 (2021): 105052. DOI: https://doi.org/10.1016/j.mejo.2021.105052*
23.	*Semi analytical model for electrical transport in single wall carbon nanotube thin film transistors. Srijeet Tripathy and Tarun Kanti Bhattacharyya.*	*Solid-State Electronics 180 (2021): 107988. DOI: https://doi.org/10.1016/j.sse.2021.107988*
24.	*A Package-Cognizant CMOS On-chip Antenna for 2.4-GHz Free-space and Implantable Applications. Arup Ray, Arijit De, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Antennas and Propagation (2021).DOI- 10.1109/TAP.2021.3076555, IEEE*
25.	*Flexible Room Temperature Ammonia Gas Sensor Based on Low-Temperature Tuning of Functional Groups in Grapheme. Avik Sett, Santanab Majumder, and Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices (2021). 10.1109/TED.2021.3075197, IEEE*
26.	*Synthesis of BSA-Conjugated ZnO Nanoparticle for Pb2+ Sensing Applications. Milan Sasmal, and Tarun Kanti Bhattacharyya.*	*IETE Journal of Research (2021): 1-5. DOI- https://doi.org/10.1080/03772063.2021.1886880*
27.	*Lignocellulose based Bio-waste Materials derived Activated Porous Carbon as Superior Electrode Materials for High-Performance Supercapacitor. Monojit Mondal, Dipak Kumar Goswami, and*	*Journal of Energy Storage 34 (2021): 102229. DOI: https://doi.org/10.1016/j.est.2020.102229*

	Tarun Kanti Bhattacharyya	
28.	*Resistive Analysis of Scattering-Dependent Electrical Transport in Single-Wall Carbon-Nanotube Networks. Srijeet Tripathy; Bhargav Bose; Partha P. Chakrabarti; Tarun Kanti Bhattacharyy*	*IEEE Transactions on Electron Devices (Volume: 67, Issue: 12, Dec. 2020) Page(s): 5676 – 5684 Date of Publication: 28 October 2020, 10.1109/TED.2020.3029734*
29.	*A Wide Tunable Hysteresis CML Delay Cell for High Frequency. Indranil Som and Tarun Kanti Bhattacharyya*	*: IEEE Microwave and Wireless Components Letters (Volume: 30 , Issue: 7 , July 2020), Page-641-644 DOI: 10.1109/LMWC.2020.2997787*
30.	*MoS2-based nanosensors in biomedical and environmental monitoring applications. Rinky Sha and Tarun Kanti Bhattacharyya*	*Electrochimica Acta April 2020. DOI:10.1016/j.electacta.2020.136370*
31.	*A 7.1-GHz 0.7-mW Programmable Counter with Fast EOC Generation in 65-nm CMOS" Indranil Som; Santunu Sarangi; T K Bhattacharyya.*	*IEEE Transactions on Circuits and Systems II: Express Briefs. DOI: 10.1109/TCSII.2020.2966373. January Year: 2020 | Early Access Article | Publisher: IEEE*
32.	*Opportunities in Device Scaling for 3-nm Node and Beyond": FinFET Versus GAA-FET Versus UFET.Uttam Kumar Das; Tarun Kanti Bhattacharyya.*	*IEEE Transactions on Electron Devices. DOI:10.1109/TED.2020.2987139. Year: 2020 | Page 2633-2637.Volume: 67, Issue:6| Journal Article | Publisher: IEEE*
33.	*Functionalized Gold nanoparticles decorated Reduced Graphene Oxide sheets for efficient detection of mercury, Avik Sett, Tarun Kanti Bhattacharyya.*	*IEEE Sensors Journal, June 2020. DOI:10.1109/JSEN.2020.2973463. Volume 20, Issue 11, Page(s): 5712-5719. Publisher: IEEE*
Publications (2019 – 2020)		
34.	*Hierarchical ZnO nanorods with tailored surface defects for enhanced acetone sensing, Avik Sett, M Mondal, TK Bhattacharyya*	*IEEE Sensors Journal, 2019, Volume: 19, Issue: 10, pp. 3601 – 3608*
35.	*ZnO/ γ -Fe2O3 Heterostructure Toward High-Performance Acetone Sensing, Avik Sett ; Sayan Dey ; Prasanta Kumar Guha ; Tarun Kanti Bhattacharyya.*	*IEEE Sensors Journal.Year: 2019, Volume: 19, Issue:19, Journal Article; Publisher:IEEE*
36.	*Mixed-Phase nc-SiOX:H interlayer to improve Light Trapping and Shunt quenching in a S:H Solar cell. Gurfan Ahmad, Sourav Mandal, Ashoke Kumar Barua, Tarun K Bhattacharyya, Jatindra Nath Roy*	*IEEE Journal of Photovoltaics. Year 2019 Volume 9, Issue 1, pp.18-25*
37.	*Feasibility Studies on Nafion Membrane Actuated Micropump Integrated With Hollow Microneedles for Insulin Delivery Device*	*Richa Mishra, Tapas K. Maiti, Tarun Kanti Bhattacharyya, IEEE Journal of Microelectromechanical SystemsYear, 2019, Volume: 28, Issue: 6, pp 987- 996*
38.	*Spur reduction architecture for multiphase fractional PLLs, Debdut Biswas ; Tarun Kanti Bhattacharyya*	*DOI: 10.1049/iet-cds.2019.0041. IET Circuits, Devices & Systems.Year: 2019 | Volume: 13, Issue: 8 | Page(s) 1169-1180. Publisher: IET*

39.	*Causes of PLL spurs and their modeling, D. Biswas and T. K. Bhattacharyya*	*Analog Integr. Circuits Signal Process., vol. 100, no. 3, pp. 639-652, Sep.2019.*
40.	*Spurs in subsampling fractional PLLs , D. Biswas and T. K. Bhattacharyya*	*Analog Integr. Circuits Signal Process., vol. 100, no. 3, pp. 621-632, Sep.2019.*
Publications (2018 – 2019)		
41.	*Glassy Carbon Micro needles – new transdermal drug delivery devices derived from scalable C-MEMS process. Richa Mishra , Bidhan Pramanick, T K Maiti and T K Bhattacharyya.*	*Nature Publications Microsystems and Nano Engineering. Voliume 4 Article Number : 38 (2018)*
42.	*Development of SU-8 hollow microneedles on a silicon substrate with microfluidic interconnects for transdermal drug delivery, Richa Mishra, Tapas Kumar Maiti and Tarun Kanti Bhattacharyya*	*Journal of Micromechanics and Microengineering, Volume 28, Number 10.*
43.	*Design and scalable fabrication of hollow SU-8 microneedles for transdermal drug delivery, R.Mishra, T.K.Maiti, T.K.Bhattacharyya*	*IEEE Sensors Journal, 2018, Volume: 18 , Issue: 14, pp. 5635 – 5644*
44.	*Fabrication of BSA-MoS2 Bio-Composite Electronic Devices for Low-Power and Fast-Response Chemical Sensor, M.Sasmal, S.Majumder and T.K. Bhattacharyya*	*IEEE Sensors Journal, 2018, Volume: 18, Issue: 20, pp. 8223-8229*
45.	*Phase noise analysis of proposed PFD and CP switching circuit and its advantages over various PFD/CP switching circuits in phase-locked loops, M.K.Hati and T.K.Bhattacharyya,*	*Integration,Volume 63, pp.115-129*
46.	*Charge pump with reduced current mismatch for reference spur minimization in PLLs, D. Biswas, Tarun Kanti Bhattacharyya,*	*Analog Integrated Circuits and Signal Processing (2018) 95:209–221*
47.	*A constant loop bandwidth in delta sigma fractional-N PLL frequency synthesizer with phase noise cancellation, M.K. Hati, T.K. Bhattacharyya,*	*Integration, the VLSI Journal. https://doi.org/10.1016/j.vlsi.2018.12.003.*
48.	*Consideration of UFET Architecture for the 5 nm Node and beyond Logic Transistor, U.K.Das, G.Eneman, R.Shankar, R.Velampati, Y.S.Chauhan, KB Jinesh, T. K. Bhattacharyya,*	*IEEE Journal of the Electron Devices Society, Volume: 6, pp.1129-1135*
Publications (2017 – 2018)		
49.	*Reduction of hole injection barrier heightat TCO/P interface using a-SiO: H interlayer,G. Ahmad, S. Mandal, A.K. Barua, T.K.Bhattacharyya, J.N. Roy*	*IEEE JOURNAL OF PHOTOVOLTAICS, VOL. 8, NO. 1, JANUARY 2018.*

50.	*Mutated IWO Optimized 4-D Array for Femtocell Cognitive Radio, R. Bhattacharya, S. Saha, and T. K. Bhattacharyya,*	*IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS, VOL. 16, 2017*
51.	*A fast and efficient constant loop bandwidth with proposed PFD and pulse swallow divider circuit in ΔΣ fractional-N PLL frequency synthesizer. M. K. Hati, T. K. Bhattacharyya,*	*Microelectronics Journal 61 (2017) 21-34*
Publications (2016 – 2017)		
52.	*Band Offset Reduction at Defect-Rich p/I Interface Through a Wide Bandgap a-SiO:H Buffer Layer, G. Ahmad; S. Mandal; A. K. Barua; T. K. Bhattacharya; J. N. Roy,*	*IEEE Journal of Photovoltaics, Year: 2017, vol: pp., Issue: 99*
53.	*Mutated IWO Optimized 4-D Array for Femtocell Cognitive Radio, R. Bhattacharya; S. Saha; T. K. Bhattacharyya;*	*IEEE Antennas and Wireless Propagation Letters; Year: 2017, Volume: 16 Pages: 2614 – 2617*
54.	*Reduction of Hole Injection Barrier Height at TCO/P Interface Using a-SiO:H Interlayer Gufran Ahmad; Sourav Mandal; Asok Kumar Barua; Tarun KantiBhattacharyya; Jatindra Nath Roy*	*IEEE Journal of Photovoltaics Year: 2018, Volume: 8, Issue: 1 Pages: 8 – 15*
Publications (2015 – 2016)		
55.	*Enhanced Proton Conductivity of Graphene Oxide/Nafion Composite Material in Humidity Sensing Application, Sourav Ghosh; Ruma Ghosh; Prasanta Guha; Tarun Bhattacharyya*	*IEEE Transactions on Nanotechnology, issue 99, pp1-1, 2016*
56.	*Role of inter-tube coupling and quantum interference on electrical transport in carbon nanotube junctions, Srijeet Tripathy, Tarun Kanti Bhattacharyya,*	*Physica E, vol. 83, 314-321, 2016*
57.	*Low-field transport in bovine serum albumin functionalized ZnO nanoparticle networks by Sasmal, M, Roy, A. L., Bhattacharyya, T. K.*	*IEEE Electron Device Letter, vol.37, pp.100-102 (2016)*
58.	*Synthesis of Bovine Serum Albumin conjugated with ZnO nanosphere for high speed humidity sensing application by Sasmal, M, Maiti T.K., and Bhattacharyya,T.K.*	*IEEE Sensor Journal, Vol.16, pp.1510-1517 (2016)*
59.	*A Compact Yagi-Uda Type Pattern Diversity Antenna Driven by CPW-Fed Pseudo-Monopole by Bhattacharya, R. Garg, R. Bhattacharyya, T.K.*	*IEEE Transactions on Antennas and Propagation, Vol. 64, pp.25-32 (2016)*
60.	*Humidity Sensor Based on High Proton Conductivity of Graphene Oxide by Ghosh, S., Ghosh, R., Guha, P. K., and Bhattacharyya.,T.K.*	*IEEE Transactions on Nanotechnology, Vol.14, pp. 931-937 (2015)*

61.	*Ultra-Low Level Detection of L-Histidine Using Solution-Processed ZnO Nanorod on Flexible Substrate by Sasmal, M. Maiti, T.K. Bhattacharyya, T.K.*	*IEEE Transactions on NanoBioscience, Vol.14, pp.634 - 640 (2015)*
62.	*Design of a PIFA-Driven Compact Yagi-Type Pattern Diversity Antenna for Handheld Devices by Bhattacharya, R. Garg, R. Bhattacharyya, T. K.*	*IEEE Antennas and Wireless Propagation Letters, vol.15. pp.255-258 (2015)*
63.	*A fast automatic frequency and amplitude control LC-VCO circuit with noise filtering technique for a fractional-N PLL frequency synthesizer by Hati, M. K. Bhattacharyya, T.K.*	*Microlectronics Journal, vol.52, pp.134-136 (2016)*
64.	*Development of defector cavity and RF amplifier for bunch length detector system by Pandey, H.K.Bhattacharyya, T.K Chakrabarti, A.*	*IOP Journal of Instrumentation, vol.11, T02001 (2016)*
65.	*Conjugation of Bovine Serum Albumin With ZnO Nanosphere-A Novel Approach for Ultra-Low Level Mercury Ion Detection Milan Sasmal; Tapas Kumar Maiti; Tarun Kanti Bhattacharyya*	*IEEE Transactions on NanoBioscience Year: 2016, vol. 15, Issue: 7 pp. 748 – 755.*
Publications: (2014 – 2015)		
66.	*Electrothermal Characteristics of Electroplated Ni Based Tunable MEMS Inductor on High-Resistivity Substrate With Displacement Actuator by A Bhattacharya and T K Bhattacharyya*	*IEEE Magnetics Letters, DOI: 10.1109/LMAG.20 (2015)*
67.	*A 1.3–2.4-GHz 3.1-mW VCO Using Electro-Thermo- Mechanically Tunable Self- Assembled MEMS Inductor on HR Substrate by A Bhattacharya, D Mandal and T K Bhattacharyya*	*IEEE Transactions on Microwave Theory and Techniques, Vol: 63(2) 459 - 469 (2015)*
68.	*Synthesis of ZnO Nanosphere for Picomolar Level Detection of Bovine Serum Albumin by Sasmal, M. Maiti, T.K. Bhattacharyya, T.K.*	*Transactions on NanoBioscience, IEEE, Vol14(1) 129-137 (2015)*
69.	*Selective Detection of Hg(II) Over Cd(II) and Pb(II) Ions by DNA Functionalized CNT by Paul, A. Bhattacharya, B. Bhattacharyya, T.K.*	*Sensors Journal, IEEE, Vol:15(5)2774 - 2779 (2015)*
70.	*Electric-field assisted desorption of water molecules in DNA functionalized CNT network by Paul, A. Bhattacharya, B. Bhattacharyya, T.K*	*Sensors Journal, IEEE, DOI: 10.1109/JSEN. (2015)*
71.	*Prediction of reference spur in frequency synthesisers by Debashis Mandal, Pradip Mandal, Tarun Kanti Bhattacharyya*	*IET Circuits, Devices & Systems, DOI: 10.1049/iet-cds (2015)*
72.	*Spur reduction in frequency synthesizer with an array of switched capacitors by Debashis Mandal, Pradip Mandal, Tarun Kanti Bhattacharyya*	*International Journal of Circuit Theory and Applications, DOI: 10.1002/cta.204 (2014)*

73.	*Design, modeling and FEM-based simulations of a 1-DoF MEMS bulk micromachined piezoresistive accelerometer by R Mukhiya, R Gopal, BD Pant, VK Khanna, TK Bhattacharyya*	*Journal of Microsystem Technolgy, DOI 10.1007/s00542-0 (2014)*
Publications: (2013 – 2014)		
74.	*MEMS based normally closed silicon microregulator for gas and water by B. Pramanick, S. Das and T.K. Bhattacharyya*	*Sensors and Actuators A : Physical, 205 15-25 (2014)*
75.	*A Spur Reducing Architecture of Frequency Synthesizer using Switched Capacitors by Debasish Mandal, Pradip Mandal and T K Bhattacharyya*	*IET Circuits, Devices & Systems, 10.1049/iet-cds.201 (2014)*
76.	*A high precision SOI MEMS-CMOS ±4g Piezoresistive Accelerometer by Anindya Lal Roy, Hrishikesh Sarkar, Anupam Dutta andTarun Kanti Bhattacharyya*	*Sensors and Actuators A : Physical, 210, 77-85 (2014)*
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2. *Parasitic Capacitances on Scaling Lateral Nanowire, Uttam Kumar Das and Tarun Kanti Bhattacharyya, DOI: 10.5772/intechopen.81099.2018*
3. *Piezoelectric microvalve and micropump for controlled fluid delivery, Pramanick Bidhan (Author), Das Soumen (Author), Bhattacharyya Tarun K (Author), Lambert publishing, 2013*
4. *Chapter - MEMS Piezoresistive Accelerometers, Tarun Kanti Bhattacharyya, Anindya Lal Roy,book Micro and Smart Devices and Systems, ed K. J. Vinoy, G. K. Ananthasuresh, Rudra Pratap, S. B. Krupanidhi, Springer 2014.*
5. *MEMS-based hollow microneedles for transdermal drug delivery. Richa Mishra and Tarun Kanti Bhattacharyya. In Drug Delivery Devices and Therapeutic Systems, pp. 325-344. Academic Press, 2021.*
6. *Graphene and Its Nanocomposites Based Humidity Sensors: Recent Trends and Challenges. Avik Sett, Kunal Biswas, Santanab Majumder, Arkaprava Datta, and Tarun Kanti Bhattacharyya (2021), Intechopen, DOI: 10.5772/intechopen.98185*
7. *IPMC Based Flexible Platform: A Boon to the Alternative Energy Solution. Monojit Mondal, Arkaprava Datta, and Tarun Kanti Bhattacharyya. In Energy Storage Devices. IntechOpen, 2021.*
8. *Recent Trends in Fabrication of Graphene-Based Devices for Detection of Heavy Metal Ions in Water Avik Sett, Monojit Mondal, Santanab Majumder, and Tarun Kanti Bhattacharyya. In Sub-Micron Semiconductor Devices, pp. 75-98. CRC Press, 2022.*
9. *Synthesis of Graphene Nanocomposites Toward the Enhancement of Energy Storage Performance for Supercapacitors. Monojit Mondal, Avik Sett, Dipak Kumar Goswami, and Tarun Kanti Bhattacharyya. In Sub-Micron Semiconductor Devices, pp. 211-234. CRC Press, 2022.*
10. *Materials and Synthesis of Organic Electrode. Monojit Mondal, Arkaprava Datta, and Tarun K. Bhattacharyya. In Organic Electrodes, pp. 27-46. Springer, Cham, 2022.*

Patents:

Sl. No.	Name	Patent file No.	Date	Remarks
1	*On-chip jitter measurement circuit for high speed data and clock.*	*201931004744*	*6th Feb 2019*	*Indian Patent*
2	*High-speed voltage controlled CML hysteresis delay cell and ring oscillator using the same*	*201931004949*	*7th Feb 2019*	*Indian Patent*
3	*Low Power High Dynamic Range Programmable Gain Amplifier*	*201931017615*	*2nd April 2019*	*Indian Patent*
4	*"Microneedle and Micropump based Fluid Delivery System",*	*201831017171*	*07th May 2018*	*Indian Patent*
5	*Auto calibrated delta - sigma fractional - N frequency synthesizers with loop bandwidth calibration and phase noise cancellation unsing a PFD/DAC based unit current cell*	*1004/KOL/2015 1-43*		*Indian Patent*
6	*Stripline fed printed sandwich monopole antenna*	*Patent No.-407280 Application No 381/KOL/2014*	*12th Sept 2017*	*Indian Patent Granted 21th Sept 2022*
7	*Methods of loop bandwidth calibration and phase noise cancellation circuits in a fractional –N PLL with a special switching charge pump circuit to reduce the leakage current, o/p noise and spur*	*0957/KOL/2013*		*Indian Patent*
8	*Uniaxial MEMS piezo resistive accelerometer with enhanced cross axis signal rejection:*	*737/KOL/2013*		*Indian Patent*
9	*Novel Diamond Like Nanocomposite (DIAMAS) Material Used for Biocompatible Coating*	*Patent No. 294403 Application No 896/KOL/2008*	*19thMay 2008*	*Indian Patent Granted 16thMarch 2018*
10	*All carbon microneedles for biodegradable and biocompatible microfluidic drug delivery system*	*Application No 202231064379*		*Indian Patent*

Dissertations supervised:

1. *Ph.D..: **24***
2. *Post-graduation: MS (By research) **32**, MTech: **60***

Research Collaboration:

- *Collaboration with Professor Dave J Allstot Boeing – Egdvedt Chair Professor of Electrical Engineering, University of Washington, Seattle. Area of research RF IC design.*

- *Collaboration with Prof Baum Nauta, Department of Electrical Engineering, The University of Twente, The Netherlands. Area of research RF VLSI*

- *Collaboration with: Prof Marc Madou, Chancellor's Professor at UC Irvine. Integrated Nanosystems Research Facility (INRF), University of California, and Irvine. Area of research Bio MEMS.*

- *Collaboration with .Dr. Shin'ichi Warisawa. Department of Engineering Synthesis, the University of Tokyo. Area of Research. Micro/ Nano Fabrication*

- *Collaboration with: Professor Richard B Brown Dean of Engineering*

  E&CE. Department, University of Utah, USA. Area of Research: VLSI for RF telemetry for Biomedical application

- *Collaboration with Prof Mario Zen, University of Trento Italy: MEMS and Microsystem under ITPAR program*

- *E&CE. Department, University of Utah, USA. Area of Research: VLSI for RF telemetry for Biomedical application*

- *Collaboration with Prof Mario Zen, University of Trento Italy: MEMS and Microsystem under ITPAR program*

Project Executed as P.I. (Completed & On-going)		
Sl. No.	**Project Title**	**Funding Amount**
1.	Design of LOW POWER RF MODULES (RFIC) National Semiconductor Corporation, USA	200US$ Rs. 15,276,410/-
2.	Design of ADC & RECEIVER for WIRELESS APPLICATION (ADCR) Si2 Micro, USA	Rs. 8,000,000/-
3.	Design & Processing of MEMS MICRO-STRUCTURE for Mechanical Property Evaluation (PMMP) DRDO	Rs. 1,000,000/-
4.	Synthesis of functional groups for IMMOBILIZATION OF FUNCTIONAL PROTEINS ON MEMS BASED MICRO-SENSOR SURFACES (IFP) Indo Italy ITPAR project	Rs.15,701,400/-
5.	Development of MEMS BASED COMPONENTS FOR RF APPLICATIONS (RFA) NPMASS , ADA	Rs. 16,562,000/-
6.	Development of MBE CLUSTER TOOL BASED EPITAXIAL NANO- SEMICONDUCTOR INFRASTRUCTURE and PROCESS INTEGRATION FACILITY for HIGH PERFORMANCE RF/MICROWAVE COMPOUND SEMICONDUCTOR HETEROSTRUCTURE NANO-DEVICES ON SILICON (ENS) MeitY	Rs. 497,992,000/-
7.	DESIGN AND FABRICATION OF HIGH SENSITIVITY MICROMACHINED SILICON TUNNELING ACCELEROMETER WITH MICRO-G RESOLUTION (DFH) DST	Rs. 10,00,000/-
8.	AVLSI CONSORTIUM (LSI) Several Multinational Companies	Rs. 100,000,000/-
9.	Development of READOUT SYSTEM FOR MUON SYSTEM IN CBM EXPERIMENT AT FAIR. (NSC) DAE	Rs. 50,00,000/-
10.	Development & Realisation of SILICON TUNNELING ACCELEROMETER (DTA) ISRO	Rs. 35,00,000/-
11.	DST FIST PROJECT TO STRENGTHEN THE RESEARCH FACILITIES IN THE DEPARTMENT (DPF) DST	Rs. 3,2400,000/-
12.	RESEARCH WORK USING MBE (RWU) SRIC IIT Kharagpur,	Rs. 17,80,000/-
13.	Development of MEMS BASED ACCELEROMETERS FOR AEROSPACE APPLICATIONS (BAA) NPSM ADA	Rs. 4,74,47,500/-
14.	Upgrading facilities for MEMS DESIGN ACTIVITIES AT NATIONAL RESOURCE CENTRES (MDA) NPSM , ADA	Rs. 38,73,840/-
15.	BIO INSPIRED SOLAR ENERGY CONVERSION BY CHLOROPHYL HYDROGEL NANOHYBRID, JUXTAPOSING CHLOROPHYLL EXFOLIATED GRAPHEME AS ELECTRODE MATERIAL (BEN) DST **(On-going)**	Rs. 3,199,000/-

Sl. No.	Project Title	Funding Amount
16.	NANO ELECTRONICS NETWORK for RESEARCH AND APPLICATION (NNETRA) - IIT KHARAGPUR (NRK) IIT Kharagpur, DST & MeitY **(On-going)**	Rs. 496,600,000/-
17.	NANO ENGINEERED PAIN FREE DRUG DELIVERY SOLUTIONS (GPD) DST & MeitY **(On-going)**	Part of NNETRA Project
18.	NANOTELECTRONICS NETWORK for RESEARCH AND APPLICATION (NNETRA) - (RNK) **(On-going)**	Part of NNETRA Project
19.	SPECIAL MANPOWER DEVELOPMENT PROGRAMME for CHIPS TO SYSTEM DESIGN (MDD) MeitY **(On-going)**	Rs. 14,751,000/-
20.	VISVESVARAYA PHD. SCHEME for ELECTRONICS AND IT (VVP) MeitY **(On-going)**	Rs. 17,800,000/-
21.	A Low Cost Microfluidic Platform For High Throughput Production Of Anti-Cancer Immunotherapeutic Vaccine For Personalized Medical Treatment (SERB, DST) **(On going)**	Rs.4,706,691/-
TOTAL Rs. (One hundred twenty nine crores thirteen lakhs eighty nine thousand eight hundred forty one.)		**Rs. 129,13,89,841**
USD equivalent		***16.40 Million USD***