Dr. Gorachand Dutta (PhD)

Assistant Professor Grade-I
School of Medical Science and Technology (SMST), IIT Kharagpur, India
Brain Korea-21 Fellow & NRF- Fellow (South Korea)
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Research: Biosensors, Analytical Chemistry, Electrochemistry, Microfluidics, Lab-on-a-chip

Employment

Jun. 2019 – Present	**Assistant Professor Grade-I** School of Medical Science and Technology (SMST), IIT Kharagpur, India
Sep. 2017 – Jun. 2019	**Research Associate** Centre for Biosensors, Bioelectronics and Biodevices (C3Bio), Department of Electronic & Electrical Engineering, University of Bath, UK
Jan. 2016 – Sep. 2017	**Postdoctoral Research Scholar** Department of Mechanical Engineering, Michigan State University, USA
Mar. 2015 – Dec. 2015	**Postdoctoral Research Scholar** Department of Chemistry and Chemistry Institute for Functional Materials, Pusan National University, South Korea

Education

Sep. 2010 – Feb. 2015	**Ph.D. in Electrochemistry and Biosensor** *"Washing-Free Electrochemical Immunosensors and Dependence of Electrocatalytic Activities on Pretreatments and Aging".* Department of Chemistry and Chemistry Institute for Functional Materials, Pusan National University, South Korea
Jul. 2008 – May 2010	**M.Sc. in Chemistry** *"An asymmetric dinuclear copper(II) complex with phenoxo and acetate bridges: synthesis, structure and magnetic studies".* Department of Chemistry, Indian Institute of Technology Guwahati (IITG), India
Jul. 2005 – May 2008	**B.Sc. in Chemistry** Department of Chemistry, Vidyasagar University, India

Editorial Board Member

2022-Present	Guest Editor for Micromachines-MDPI (IF: 3.5)
2022-Present	Guest Editor for Frontiers in Chemistry (IF: 5.5)
2021-Present	Guest Editor for Frontiers in Sensors on the topic "Nanobiotechnology Enabled Point-of-Care Devices"
2020– Present	Review Editor for Frontiers in Sensors.
2024- Present	Editorial Member of Scientific Report, Nature Portfolio

Teaching, Management & Mentoring Experience

July 2019 – Present	Nuclear Medicine (NM) for UG and MEMS & Biosensor for PG in SMST, IIT Kharagpur
Apr. 2018 – Jun. 2018	Kick Start Teaching in Higher Education in University of Bath, UK
Jan. 2018 – May 2018	Teaching & Co-Supervision of final year project students in University of Bath, UK
Jan 2016 – Sep. 2017	Teaching and Co-Supervision of PhD students in Michigan State University, USA
Mar. 2015 – Dec. 2015	Teaching and Co-Supervision of M.Sc and PhD students in Pusan National University, South Korea
June 2019 - Present	Guiding/guided 10 PhD students and 15 Masters Students at IIT Kharagpur

Membership

Mar. 2021 – Dec. 2021	IEEE Member, Technical Activities Chair IEEE Kharagpur Section
Sep. 2024- Present	Member of Royal Society of Chemistry (MRSC)

Referee of Peer-Reviewed International Journals

Biosensors and Bioelectronics (IF: 10.62), Scientific Reports (IF: 4.12), Communications Medicine (Nature Journal), Sensors and Actuators B: Chemical (IF: 5.7), International Journal of Biological Macromolecules (IF:

3.7), 3 Biotech (1.5), Analytical Biochemistry (IF: 2.2), Applied Physics A (IF: 1.7), and International Journal of Communication Networks and Distributed Systems (IJCNDS) (IF: 0.86), Journal of Electronics and Sensors, Materials Science for Energy Technologies, Microchimica Acta (IF: 5.3).

Research Funding

Title of study	**From**	**To**	**Funding Agency**	**Grant Amount (INR)**	**Status: Completed/ ongoing**	**Briefly mention objective and outcome of the project**	**No. of publications/ IP from this project if any**
"*Electrochemical Printed Chip Device for Next Generation Point-of-Care Disease Detection*". **(PI)**	Nov. 2019	Oct. 2022	MHRD, SRIC, IIT Kharagpur	28 Lakhs	Completed	To develop a fast-response within a short span of ten (10) minutes duration for single step Lab-on-a-chip biosensor platform to detect multiple disease biomarkers.	Publications (03)
"*Noninvasive Electrochemcial Patch Biosensor for Point-of-Care Monitoring of Skin Infection*". **(PI)**	Nov. 2020	Oct. 2022 (PI)	Science and Engineering Research Board (SERB), India	22.10 Lakhs	Completed	To develop a low-cost disposable noninvasive printed chip based biosensor patch for psoriasin detection using label-free technique.	Publications (04)/ IP under process
"*Non-enzymatic Microfluidic Electrochemical Multiplex Sensor for Cost-effective Soil Testing*". **(PI)**	Mar. 2021	Mar. 2025	Indo-German Science & Technology Centre (IGSTC)	116.29 Lakhs	Ongoing	The main objective of this project is to provide an enzyme-free multiplexed sensing device for rapid on-site detection of NO_3^- and organophosphates in soil. Envisioned for commercial marketing, the device will be an important step towards sustainable agriculture, which will significantly improve the livelihood of rural farming communities in the countries and help in safeguarding water resources from pollution.	Publications (02)/ IP under process
"Fabrication of a wash-free electrochemical lab-on-a-chip for point-of-care early diagnostics	Mar. 2021	Sep. 2023	Department of Science & Techno	34.51 Lakhs	Completed	Specific objective of the project is to develop a preliminary prototype for label-free redox cycling based electrochemical	Publications (03)/Patent (01 submitted)

simultaneous detection of multiple protein markers in women with rheumatoid arthritis". **(PI)**			logy (DST), India			immunosensor for simultaneous detection of three biomarkers in clinical samples of rheumatoid arthritis (RA) patients for point-of-care applications.	
"Developing a water quality monitoring device" **(PI)**	Jan. 2024	Mar. 2025	Central Public Health and Environmental Engineering Organisation CPHEEO	25.49 Lakhs	Ongoing	The main objective to develop a novel electrochemical lab on a chip device which will be simple, miniaturized, and handy and would directly detect and quantify the amount of fluoride, nitrate, phosphate and total arsenic ion (inorganic contaminants) present on ground water.	
"Fabrication of a wash free electrochemical aptasensor device HEAT for Hepatitis A, E virus surveillance" **(PI)**	Jan. 2024	Jan. 2026	Indian Council of Medical Research (ICMR)	49.61 Lakhs	Ongoing	Low cost and wash-free aptasensor for the rapid, simultaneous detection of Hepatitis E and Hepatitis A virus with portable IoT enabled potentiostat for remote surveillance without sophisticated instrumentation.	
"Final Validation, Marketing and Dissemination of Developed Electrochemical LabelFree Biosensing Device Rheumotron Moby for the Detection of Multiple Rheumatoid Arthritis Biomarkers Rheumatoid Factor, AntiCyclic Citrullinated Peptide Antibody and CReactive Protein" **(PI)**	Jan 2024	Jan 2026	Indian Council of Medical Research (ICMR)	49.4 Lakhs	Ongoing	The proposed project aims to develop and validate a diagnostic device for detection of multiple biomarkers for early diagnosis and follow-up of Rheumatoid Arthritis (RA) patients. The device developed will quantitatively detect three RA biomarkers: Rheumatoid Factor, Anti-Cyclic Citrullinated Peptide Antibody and C - reactive protein in whole blood samples in point-of-care settings.	
"Fabrication of a	Feb	Feb	Indian Council	46.6	Ongoing	1. Detection and monitoring	

smart lab-on-a-chip to detect salivary biomarkers of oral cancer and malignant transition of oral premalignancy for point-of-care diagnostics and machine learning-based predictive modelling" **(PI)**	2024	2027	of Medical Research (ICMR)	Lakhs		levels of IL-8 and sCD44 levels correlating with disease severity in saliva of clinicallydiagnosed OPMDs and OSCCs patients. 2. Exploration of soluble PD-L1 in saliva as a potential prognostic biomarker inOPMDs and OCs in relation to PD-L1 expression in lesions. 3. Development of a smart multiplexed biosensorincorporating all the biomarkers for the point-of-care detection of OPMD and OSCC. 4. ML-based predictive modelbuilding of cancer prognosis by correlating clinical, histological and salivary biomarker-based attributes and validation.	
"Development of an early warning toxic gas detection system for reducing work related risk among sewage workers" **(Co-PI)**	Jan 2025	Mar 2026	Indian Council of Medical Research (ICMR)	70.6 Lakhs	Ongoing	To monitor toxic gases (H2S, CO, O2 and CH4) in sewers, assess knowledge/ awareness about gases that would cause health hazards including death, type of conventional practices used as preventive measures and development of cost effective technique for measuring the toxic gas.	

Research Interest

- Ultra-sensitive biosensor using magnetic bead assays, nanoparticles, CNT, Dendrimer
- Enzyme based immunosensor (ELISA)
- Bio- MEMS for low-cost integration technologies
- Microfluidics
- Printed bioelectronics
- Lab-on-PCB (Printed Circuit Board)
- Lab-on-a-chip devices for biomedical diagnostics
- Electrochemical characterization and application of nanomaterials for fuel cell

Publications

Journals

1. P. Mukherjee, M. Mandal, B. Mukherjee, **G. Dutta*,** Nonenzymatic Electrochemical Sensor Device for On-Site Nitrate Determination Using Copper Anchored Magnetite Nanocomposites, Langmuir, 2025, DOI: 10.1021/acs.langmuir.4c04903. (Just accepted).
2. B. Mukherjee, M. Mandal, R.R. Suresh, S. Kar, B.K. Parida, S. Chakraborty, **G. Dutta,** A non-enzymatic highly stable electrochemical sensing platform based on allylamine capped copper nanoparticles for the detection of the soil nitrate content, Analyst, 2025, DOI: https://doi.org/10.1039/D4AN01345J. (IF: 3.6)
3. B. Datta, B. Manasur, G. Sreelekha, P. Verma, C. Adak, R. P. Shukla, **G. Dutta***, Quantification of L-lactic acid in human plasma samples using Ni-based electrodes and machine learning approach, Talanta, 2025, 286, 127493, DOI: https://doi.org/10.1016/j.talanta.2024.127493. (IF: 5.6)
4. S. Verma, A. Sen, N. Dutta, P. Sengupta, P. Chakraborty, **G. Dutta*,** Highly Specific Non-Enzymatic Electrochemical Sensor for the Detection of Uric Acid Using Carboxylated Multiwalled Carbon Nanotubes Intertwined with GdS-Gd2O3 Nanoplates in Human Urine and Serum, Langmuir, 2024, 40, 21427-21441. DOI: https://doi.org/10.1021/acs.langmuir.4c02233 . (IF: 3.7)
5. N. Dutta, R.R Suresh, **G. Dutta*,** Adsorption-controlled electrochemical reaction with reversible dimerization, coupled to a preceding chemical reaction on porous graphenic surface: Modelling and application in label-free capacitive biosensing, Journal of Electroanalytical Chemistry, 2024, 118540. DOI: https://doi.org/10.1016/j.jelechem.2024.118540. (IF: 4.1)
6. S. Vishnu, S. Maity, A. C Maity, M. S Kumar, M. Dolai, A. Nag, Y. Bylappa, **G. Dutta** , B. Mukherjee, A. Das, Development of a fluorescent scaffold by utilizing quercetin template for selective detection of Hg^{2+}: Experimental and theoretical studies along with live cell imaging, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 2024, 315,124249. DOI: https://doi.org/10.1016/j.saa.2024.124249 . (IF: 4.3)
7. P. Biswas, A. Mukherjee, P. Goyal, P. Bhattacharya, **G. Dutta*,** S. Chakraborty, A rapid diagnostic technology for isolating rare blood group patients under medical emergency using a three-fold paper-polymer microfluidic kit, Sensors and Actuators B: Chemical, 2024, 409, 135650. DOI: https://doi.org/10.1016/j.snb.2024.135650. (IF:8.0)
8. Ashish, P. Biswas, B. Datta, C. Kanike, A. Atta, **G. Dutta***, A study on the dynamics of bacterial growth using biocompatible 3D-printed microfluidic device - Chemical Engineering Journal, 2024,493,152687. DOI: https://doi.org/10.1016/j.cej.2024.152687 (IF: 13.3)
9. R.R Suresh, **G. Dutta*,** Tailoring the pore accessibility using proteins in laser induced porous graphitic structures: Correlating the physicochemical & electrochemical characteristics- Electrochimica Acta, 2024,483,144027. DOI: https://doi.org/10.1016/j.electacta.2024.144027. (IF: 5.5)
10. R. Jain, S. Verma, **G. Dutta*** , A Machine Learning-based approach for Simultaneous Detection of Interfering Analytes in Electrochemical Nanobiosensors, bioRxiv, 2024. DOI: https://doi.org/10.1101/2024.03.11.584459

11. B. Datta, P. Bhatt, **G. Dutta*,** A Redox Mediator-Free Highly Selective and Sensitive Electrochemical Aptasensor for Patulin Mycotoxin Detection in Apple Juice Using Ni–NiO Pseudocapacitive Nanomaterials,- Journal of Agricultural and Food Chemistry, 2024,72, 5993-6005. DOI: https://doi.org/10.1021/acs.jafc.3c07886. (IF: 5.7)
12. N. Pandey, M. Mandal, D. Samanta, G. Mukherjee, **G. Dutta***, A nanobody based ultrasensitive electrochemical biosensor for the detection of soluble CTLA-4–A candidate biomarker for cancer development and progression - Biosensors and Bioelectronics, 2023, 242, 115733.DOI: https://doi.org/10.1016/j.bios.2023.115733 (IF:10.7)
13. T. Sarkar, N. Dutta, **G. Dutta***, A new biosensing platform based on L-cysteine-capped Fe_3O_4 nanoparticles embedded in chitosan-MWCNT matrix: Electrochemical kinetic and sensing studies - Biosensors and Bioelectronics: X, 2023, 15, 100412. DOI: https://doi.org/10.1016/j.biosx.2023.100412 .(IF:10.61)
14. S. Sinha, A. Basu, J. Shukla, S. Dasgupta, **G. Dutta**, S. Das, A smartphone-integrated low-cost, reagent-free, non-destructive dried blood spot-based paper sensor for hematocrit measurement, Analytical Methods, 2023, 15, 3532-3542. DOI: https://doi.org/10.1039/d3ay00688c .(IF:2.7)
15. N. P Rao, M. S Kumar, S. Vishnu, B. Mukherjee, N. Karthik, **G. Dutta** , A.K Das, A fast survey on recent developments in designing colorimetric and fluorescent sensors for the selective detection of essential amino acids, Analytical Methods, 2023, 15, 2546-2577. DOI: I: 10.1039/D3AY00155E .(IF:2.7)
16. P. Choudhury, S. Biswas, G. Singh, A. Pal, N. Ghosh, A.K. Ojha, S. Das, **G. Dutta**, K. Chaudhury, Immunological profiling and development of a sensing device for detection of IL-13 in COPD and asthma, Bioelectrochemistry, 2022, *143*, 107971. DOI: https://doi.org/10.1016/j.bioelechem.2021.107971 (IF: 5.373)
17. S. Liu, A. Ay, Q. Luo, X. Hu, K. Białas, **G. Dutta**, D. Moschou, A. Regoutz, Oxidation of copper electrodes on flexible polyimide substrates for non-enzymatic glucose sensing, Materials Research Express, 2022, *9*, 045010. DOI: https://doi.org/10.1088/2053-1591/ac656f . (IF: 1.99)
18. S. Chattopadhyay, R. Ram, A. Sarkar, **G. Dutta**, & S. Chakraborty, Reagent-free Hemoglobin Estimation on a Spinning Disc, **Microchemical Journal**, 2021, *168*,106463. DOI: https://doi.org/10.1016/j.microc.2021.106463. (IF: 3.594)
19. P. Choudhury, S. Biswas, G. Singh, A. Pal, N. Ghosh, A. K. Ojha, S. Das, **G. Dutta**, K. Chaudhury, Immunological profiling and development of a sensing device for detection of IL-13 in COPD and asthma, Bioelectrochemistry, 2022, *143*, 107971. DOI: https://doi.org/10.1016/j.bioelechem.2021.107971 (IF: 5.373)
20. **G. Dutta**, F.C.B. Fernandes, P. Estrela, D. Moschou, P. R. Bueno, Impact of surface roughness on the self-assembling of molecular films onto gold electrodes for label-free biosensing applications, **Electrochimica Acta**, 2021, *378*, 138137. DOI: https://doi.org/10.1016/j.electacta.2021.138137. (IF: 6.215)
21. **G. Dutta**, A. Regoutz, D. Moschou, Enzyme-assisted glucose quantification for a painless Lab-on-PCB patch implementation, **Biosensors and Bioelectronics**, 2020, *167*, 112484. DOI: https://doi.org/10.1016/j.bios.2020.112484. (IF: 10.257)
22. A. Paul, N. Dutta, D. Moschou, **G. Dutta***, Advanced integrative sensing technologies for detection of drug-resistant tuberculosis in point-of-care settings,

Sensors International, 2020, *1*, 100036. DOI: https://doi.org/10.1016/j.sintl.2020.100036.

23. **G. Dutta***, A. Jallow, D. Paul, & D. Moschou, Label-free electrochemical detection of S. mutans exploiting commercially fabricated printed circuit board sensing electrodes, **Micromachines**, 2019, *10*, 575. DOI: 10.3390/mi10090575. (IF: 2.5)
24. **G. Dutta**, P. B. Lillehoj, Wash-free, label-free immunoassay for rapid electrochemical detection of *Pf*HRP2 in whole blood samples, **Scientific Reports**, 2018, *8*, 17129. DOI: 10.1038/s41598-018-35471-8. (IF:4.122)
25. **G. Dutta**, S. Nagarajan, L. J. Lapidus, P. B. Lillehoj, Enzyme-free electrochemical immunosensor based on methylene blue and the electro-oxidation of hydrazine on Pt nanoparticles, **Biosensors and Bioelectronics**, 2017, *92*, 372–377. DOI: 10.1016/j.bios.2016.10.094. (IF: 10.257)
26. **G. Dutta**, P. B. Lillehoj, An ultrasensitive enzyme-free electrochemical immunosensor based on redox cycling amplification using methylene blue, **Analyst**, 2017, *142*, 3492-3499. DOI: 10.1039/c7an00789b. (IF: 3.906)
27. **G. Dutta**, H. Yang, Effects of aging on electrocatalytic activities of pt and pd nanoparticles, **Journal of Electrochemical Science and** Technology, 2016, *7*, 27-32. DOI: 10.5229/JECST.2016.7.1.1. (IF: 0.972)
28. K. Das, S. Goswami, **G. Dutta**, S. Maity, T. K. Mandal, K. Khanra, N. Bhattacharyya, Concentration dependent relay-recognition by same analyte: Dual fluorescence switch-on by hydrogen sulfide via Michael addition followed by reduction and staining bio-activity, **Organic & Biomolecular Chemistry**, 2016, *14*, 570-576. DOI: 10.1039/C5OB02008E. (IF: 3.564)
29. **G. Dutta**, S. Park, A. Singh, J. Seo, S. Kim, H. Yang, Low-interference washing-free electrochemical immunosensor using glycerol-3-phosphate dehydrogenase as an enzyme label, **Analytical Chemistry**, 2015, *87*, 3574-3578. DOI: 10.1021/ac504485a. (IF: 6.320)
30. A.-M. J. Haque, J. Kim, **G. Dutta**, S. Kim, H. Yang, Redox cycling-amplified enzymatic Ag deposition and its application in highly sensitive detection of creatine kinase-MB, **Chemical Communication**, 2015, *51*, 14493-14496. DOI: 10.1039/C5CC06117B. (IF:6.834)
31. S. Park, J. Kim, H. Ock, **G. Dutta,** E-C. Shin, H. Yang, Sensitive electrochemical detection of vaccinia virus in a solution containing a high concentration of L-ascorbic acid, **Analyst**, 2015, *140*, 5481-5487. DOI: 10.1039/c5an0186a. (IF: 3.906)
32. **G. Dutta**, A.M.J. Haque & H.Yang, Improvement of the electrocatalytic activities of long-aged Pt electrodes and the change of the improved activities with aging,**ElectrochimicaActa**,2014, *141*, 319-323.
DOI: 10.1016/j.electacta.2014.07.087. (IF:4.803)
33. **G. Dutta**, S. Kim, S. Park, & H. Yang, Washing-free heterogeneous immunosensor using proximity-dependent electron mediation between an enzyme label and an electrode, **Analytical chemistry**, 2014, *86(9)*, 4589-4595. DOI: https://pubs.acs.org/doi/10.1021/ac5006487 (IF:6.320)
34. **G. Dutta**, Jo, K., Lee, H., Kim, B., H. Y. Woo, & H. Yang, Time-dependent decrease in the enhanced electrocatalytic activities observed after three different pretreatments of gold electrodes, **Journal of Electroanalytical Chemistry**, 2012,*675*, 41-46. DOI: https://doi.org/10.1016/j.jelechem.2012.04.011 (IF: 3.807)

35. K. Jo**, G. Dutta**, J. W. Kim, & H.Yang, Facile decrease in the electron-transfer rate and surface roughness of gold by ultrasonic treatment, **Chemical Communications**, 2012, *48*(70), 8841-8843. DOI: https://doi.org/10.1039/C2CC33875K (IF: 5.996)
36. **G. Dutta**, & H. Yang, Effect of Fenton's reagent on the electrocatalytic activity of gold nanoparticles, **Electrochemistry communications**, 2011, *13(12)*, 1328-1331. DOI: https://doi.org/10.1016/j.elecom.2011.08.002. (IF: 4.333)
37. **G. Dutta**, R. K. Debnath, A. Kalita, P. Kumar, M. Sarma, R. B. Shankar, & B. Mondal, An asymmetric dinuclear copper (II) complex with phenoxo and acetate bridges: Synthesis, structure and magnetic studies, ***Polyhedron***, 2011, *30(2)*, 293-298. DOI: https://doi.org/10.1016/j.poly.2010.10.029. (IF: 2.343)

Book

1) Metal-Oxide Gas Sensors(2023), **IntechOpen.** ISBN 978-1-80356-963-5. Editor: Dr. Soumen Dhara, **Dr. Gorachand Dutta** .
2) MEMS and Microfluidics in Healthcare: Devices and Applications Perspectives (2023), **Springer Nature** Publication. ISBN 978-981-19-8713-7. Editor: Dr. Koushik Guha, Dr. Arindam Biswas, **Dr. Gorachand Dutta**, Dr. K Srinivasa Rao.
3) Next-Generation Nanobiosensor Devices for Point-of-Care Diagnostics(2023), **Springer** Publication. ISBN 978-981-19-7129-7. Editor: **Dr. Gorachand Dutta**.
4) Next Generation Smart Nano-Bio-Devices(2023)**, Springer** Publication. ISBN 978-981-19-7106-8. . Editor: **Dr. Gorachand Dutta**, Dr. Arindam Biswas.
5) Computational Intelligence for Wireless Sensor Networks: Principles and Applications (2022), **CRC Press** Taylor & Francis Group. ISBN 978-0-367-60888-0. S. K. Chaurasiya, J. Dutta, A. Biswas, **Gorachand Dutta**, M. K. Sarkar.
6) Modern Techniques in Biosensors: Detection Methods and Commercial Aspects (2021), **Springer** Publication. ISBN 978-981-15-9612-4. Editor: **Dr. Gorachand Dutta**, Dr. Arindam Biswas, Dr. Amlan Chakrabarti.

Book Chapter

1. **"**Lab-On-Chip Electrochemical Biosensor for Rheumatoid Arthritis**".** R. K. Ram, N. Dutta, J. Shukla, **G. Dutta*** (2023) in MEMS and Microfluidics in Healthcare: Devices and Applications Perspectives (pp. 157-181). Springer Nature Singapore.

2. "Role of Biosensors in Regenerative Therapeutics: Past, Present, and Future Prospect" M. Mandal, J. Shukla, B. Datta, **G. Dutta*** (2023) in Regenerative Medicine: Emerging Techniques to Translation Approaches (77-95). Springer Nature Singapore.

3. **"**Fabrication of Blue Laser-Induced Graphene Electrodes and Evaluation of Their Electroanalytical Performance**".** R. R Suresh, S. Das, A. Ashish, **G. Dutta*** (2023) in Micro and Nanoelectronics Devices, Circuits and Systems (pp. 241-249). Springer Nature Singapore.

4. **"**Electrochemical Detection of Cancer Fingerprint: A Systematic Review on Recent Progress in Extracellular Vesicle Research from Lab to Market**".** B. Datta, N. Dutta, A. Ashis, M. Mandal, J. Shukla, R. Suresh, P. Choudhury, K. Chaudhury, & **G.**

Dutta* (2022) in Next-Generation Nanobiosensor Devices for Point-Of-Care Diagnostics (pp. 47-77). Springer Nature Singapore.

5. **"**Machine learning-enabled biosensors in clinical decision making" . S. Verma, R.P Shukla, **G. Dutta*** (2022) in Next-Generation Nanobiosensor Devices for Point-Of-Care Diagnostics (pp. 163-194). Springer Nature Singapore.

6. **"**Application of Radiopharmaceuticals in Diagnostics and Therapy". P. Sarkar, S. Khatana, B. Mukherjee, J. Shukla, B. Das, **G. Dutta*** (2022) in Next-Generation Nanobiosensor Devices for Point-Of-Care Diagnostics (pp. 227-249). Springer Nature Singapore.

7. **"**Electrochemical biosensor designs used for detecting SARS-CoV-2 virus: A review**".** R. Titus, M. Mandal, **G. Dutta*** (2022) in Next Generation Smart Nano-Bio-Devices (pp. 187-209). Springer Nature Singapore.

8. **"**Antibody-Based Sensors for Pathogen Detection**"**. N Dutta, A Kumar, A Kumari, S Maan, **G Dutta**, VG Joshi (2022) in Protocols for the Diagnosis of Pig Viral Diseases (pp. 171-193). Humana, New York, NY.

9. **"**Current Methods and Future of Tuberculosis (TB) Diagnosis**"**. S. Sood, R. Arya, N. Dutta, A. Paul, R. K. Behera, R. K. Nanda, & **G. Dutta*** (2021) in Modern Techniques in Biosensors (pp. 163-182). Springer, Singapore.

10. **"**Redox Cycling Technologies for Point-of-Care Immunodiagnostics in Various Matrices**"** (***Invited***). **G. Dutta***, D. Moschou. (2021) in Immunodiagnostic Technologies from Laboratory to Point-Of-Care Testing (pp. 75-91). Springer, Singapore. https://link.springer.com/chapter/10.1007/978-981-15-5823-8_4

11. **"**Nanobiosensors Based Diagnostics System: Transducers and Surface Materials**"** (***Invited***). **G. Dutta***. (2020) in Nanobiomaterial Engineering (pp. 1-13). Springer, Singapore. https://doi.org/10.1007/978-981-32-9840-8_1

Selected Peer-Reviewed Conference Paper

1. S. Maity, M. Mahadevappa, **G. Dutta**, & J. Chatterjee. Computer aided Diabetes Diagnosis using Textural Features of Saliva Crystallogram Images. In **2021 IEEE Second International Conference on Control, Measurement and Instrumentation (CMI)** (pp. 76-80). IEEE.
2. M. Tetik, O. Kap, **G. Dutta**, V. Kilic, D. Moschou, & N. Horzum. An enzyme-free glucose biosensor based on CuO nanostructures anchored on flexible printed circuit board. In **3rd International Eurasian Conference on Biological and Chemical Sciences (EurasianBioChem 2020).**

Review Paper

1. N. Pandey, D. Biswas, N. Dutta, A. Hansda, **G. Dutta**, G. Mukherjee, Sensing Soluble Immune Checkpoint Molecules and Disease-Relevant Cytokines in Cancer: A Novel

Paradigm in Disease Diagnosis and Monitoring, Frontiers in Sensors, 2022, DOI: https://doi.org/10.3389/fsens.2022.789771

2. M. Mandal, N. Dutta, **G. Dutta***, Aptamer-based biosensors and their implications in COVID-19 diagnosis, Analytical Methods 13 (45), 5400-5417. DOI: https://doi.org/10.1039/D1AY01519B
3. S. Sahu, **G. Dutta***, Emerging evidence for serum procalcitonin estimation at point-of-care and advancement in quantitative sensing strategies over the past decade, **Sensors International**, 2021, 2, 100107. DOI: https://doi.org/10.1016/j.sintl.2021.100107
4. N. Dutta, P.B. Lillehoj, P. Estrela, **G. Dutta***, Electrochemical Biosensors for Cytokine Profiling: Recent Advancements and Possibilities in the Near Future, **Biosensors**, 2021, *11*, 94. DOI: doi.org/10.3390/bios11030094. (IF: 3.240)
5. R. Mandal, **G. Dutta***, From photosynthesis to biosensing: Chlorophyll proves to be a versatile molecule, **Sensors International**, 2020, *1*, 100058. DOI: https://doi.org/10.1016/j.sintl.2020.100058.
6. **G. Dutta**, Electrochemical biosensors for rapid detection of malaria, **Materials Science for Energy Technologies**, 2020 3, 150-158. DOI:https://doi.org/10.1016/j.mset.2019.10.003
7. **G.Dutta**, Microfluidic devices for label-free DNA detection, **Chemosensors**, 2018, 6, 43. DOI: https://doi.org/10.3390/chemosensors6040043
8. **G.Dutta**, Wash-Free Redox Cycling Based Electrochemical Biosensors for Point-of-Care Diagnostic Applications, **Biomedical Journal of Scientific & Technical Research**,2018, *10*(3), 7845-7847.

Patents

1. Biosensor with a redox cycling of the electron transfer mediator
   H. Yang, S. Park, **G. Dutta**
   Pub. No.: 10-2014-0044285
   Pub.: Date: April 14, 2014
2. Electrochemical sensing scheme based on methylene blue, hydrazine, and a metal catalyst (Submitted)
   G. Dutta, P. B. Lillehoj
3. Redox Adsorption-Dependent Phasance-Based Biosensor (Filed)
   N. Dutta, **G. Dutta** Application no. : 202431030038
4. Redox Adsorption-Associated Capacitive Immunosensor for the Detection of Rheumatoid Arthritis Biomarker Panel (Filed) N. Dutta, **G. Dutta** Application No. : 202531019373
5. Electrochemical Nitrate Sensing Device for Onsite Soil and Water Quality Monitoring (Filed) B. Mukherjee, **G. Dutta** Application no. : 202431105087
6. Non-enzymatic Electrochemical Salivary Urea Sensor Device for Point-of-Care Settings (Filed) R. R. Suresh, **G. Dutta** Application no. : 202431086850
7. Non-Enzymatic Electrochemical Sensor for NonInvasive Sebum Based Point-of-Care Parkinson's Disease Detection (Filed) M. Mandal, Sandhya S, M.K.Acharya, **G. Dutta** Application no. : 202531019409
8. Non-Enzymatic Electrochemical Multiplex Aptasensor Platform for On-Site Pesticide Detection (Filed) M.Mandal, **G. Dutta** Application no. : 202531013744

Awards & Scholarships

1. Prestigious Pusan National University Postdoctoral Research Fellowship, South Korea 2015.
2. Prestigious BK-21 Fellowship and NRF Fellowship from Korean Research Foundation (KRF).
3. Received best five oral presentation award at International BK21 conference 2012 Korea.
4. Received International Travel Grant from KRF to attending 62nd Annual Meeting of the International Society of Electrochemistry, Toki Messe, Niigata, Japan.