

# Subhadip Chakraborty

Reference state st

😯 Kolkata: 700084

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Work Experience

Transferable Skills

Research mentoring.

Public speaking.



Temporary Faculty, Centre for Healthcare Science

Bose

Postdoctoral Research Associate, S.N.

National Centre for Basic Sciences, Kolkata.

Laboratory development and management.

Academic curriculum development.

and Technology, IIEST, Shibpur.

January 2023 to present.

June 2021 to January 2023.

Organization and Teamwork. Project management.

As a dedicated and innovative researcher and educator, currently serving as a Temporary Faculty member in the Centre for Healthcare Science and Technology at IIEST, Shibpur. Engaged in cutting-edge bioelectronic research as well as fundamental biophysical research. Active in classroom teaching and other relevant academic activities. Aiming to contribute to a reputed organization by sharing expertise and simultaneously enhancing personal and professional skills.

### Education

- Secondary, Jenkins School, WBBSE, 2006, 94.12%
- Higher Secondary, Jenkins School, WBCHSE, 2008, 86.14%
- B.Sc. (Physics Hons), University of North Bengal, 2011, 61.5%
- M.Sc. (Physics; Electronics Special), Banaras Hindu University, 2013, 7.97 (CGPA)
- Ph. D., Electronic Science, University of Calcutta, 2021

#### Area of Research Interest

- Electronic Device Fabrication for biosensing.
- Experimental Biophysics.
- Nanotechnology.
- Biophysical chemistry.

#### Professional Training

- Fabrication of Point-of-care Electronic Biosensors.
- Nano-structure based sensor designing.
- Electrical/ Electrochemical Characterization of bio-relevant systems.
- Spectroscopic characterization of bio-relevant systems using Dielectric Relaxation, THz, FTIR and UV-vis measurements.
- Classical Molecular Dynamics simulations for small molecular systems.

#### Publications

- No. of Journal Papers (SCI/SCOPUS): 23
- No. of Conference Papers: 08

#### Citations: 366, h-index: 11; i10 index: 14

#### (Details in Annexure I)

#### **Peer Reviewer**

- Physics of Fluids, AIP. ٠
- Journal of Physics and Chemistry of Solids, Elsevier.
- Materials Advances, RSC.
- **IEEE Sensors Letters** ٠

#### **Referees for Professional Recommendation**

- 1. Prof. Sanatan Chattopadhyay, Professor, Department of Electronic Science, University of Calcutta; E-mail: scelc@caluniv.ac.in; Mobile: +91-9432082727.
- 2. Prof. Anupam Karmakar, Professor, Department of Electronic Science, University of Calcutta; E-mail: akelc@caluniv.ac.in; Mobile: +91-9432352681.
- 3. Prof. Rajib K Mitra, Senior Professor, Department of Chemical and Biological Sciences, S.N. Bose National Centre for Basic Sciences; E-mail: rajib@bose.res.in; Mobile:+91-9433776392.
- 4. Dr. Ananya Barui, Assistant Professor and Head, Centre for Healthcare Science and Technology, IIEST Shibpur; Email: ananyabarui@chest.iiests.ac.in ; Mobile:+91-9733388223.

#### Declaration

It is solemnly declared that the information furnished above is true. If any of these is found incorrect at any point of time, I shall be liable for action as per rules.

# Subsedie Clamaberty

Dr. Subhadip Chakraborty

Date: 16.04.2025 Place: Kolkata

#### Awards

- DST AWSAR Award, 2020.
- DST INSPIRE Fellowship, 2015.

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- DST INSPIRE Scholarship, 2008.

## Annexure I List of Publications

#### A. Journal Publications

- 1. Subhadip Chakraborty, Indrani Bhattacharya and Rajib Kumar Mitra: "Solvation Plays a Key Role in Antioxidant Mediated Attenuation of Elevated Creatinine Level: an In-vitro Spectroscopic Investigation." Journal of Physical Chemistry B, 2023, 127, 8576.
- Subhadip Chakraborty, Partha Pyne, Rajib Kumar Mitra, and Debasish Das Mahanta. "Hydrogen bond structure and associated dynamics in microheterogeneous and in phase separated alcohol-water binary mixtures: A THz spectroscopic investigation." Journal of Molecular Liquids, 2023, 382, 121998.
- 3. Subhadip Chakraborty, Partha Pyne, Rajib Kumar Mitra, Debasish Das Mahanta; A subtle interplay between hydrophilic and hydrophobic hydration governs butanol (de)mixing in water. Chemical Physics Letters, 2022, 807, 140080.
- 4. Subhadip Chakraborty, Rajib Saha, Anupam Karmakar, Sanatan Chattopadhyay: Fabrication and characterization of zinc oxide nanowire based twoelectrode capacitive biosensors on flexible substrates for estimating glucose content in a sample. Electroanalysis, 2021, 33, 1185.
- 5. Subhadip Chakraborty, Sreyasi Das, Chirantan Das, Kaushik Das Sharma, Anupam Karmakar and Sanatan Chattopadhyay: On-chip Estimation of Hematocrit Level for Diagnosing Anemic Conditions by Impedimetric Techniques. Biomedical Microdevices, 2020, 22.
- 6. Subhadip Chakraborty, Chirantan Das, Kakali Ghoshal, Maitree Bhattacharyya, Anupam Karmakar and Sanatan Chattopadhyay, Low Frequency Impedimetric Cell Counting: Analytical Modeling and Measurements, IRBM. 2019, 41, 23. DOI: 10.1016/j.irbm.2019.07.003.
- 7. Subhadip Chakraborty, Chirantan Das, Nirmal Kumar Bera, Dipankar Chattopadhyay, Anupam Karmakar, Sanatan Chattopadhyay: Analytical modelling of electrical impedance based adulterant sensor for aqueous sucrose solutions. Journal of Electroanalytical Chemistry. 2016; 784., DOI:10.1016/j.jelechem.2016.11.055
- 8. Subhadip Chakraborty, Chirantan Das, Rajib Saha, Avishek Das, Nirmal Kumar Bera, Dipankar Chattopadhyay, Anupam Karmakar, Dhrubajyoti Chattopadhyay, Sanatan Chattopadhyay: Investigating the quasi-oscillatory behavior of electrical parameters with the concentration of D-glucose in aqueous solution. Journal of Electrical Bioimpedance, 2015; 6(1):10., DOI:10.5617/jeb.2363
- 9. Subhadip Chakraborty, Chirantan Das, Anupam Karmakar, Sanatan Chattopadhyay: Analyzing The Quasi-oscillatory Nature Of Electrical Parameters With The Concentration Of Sucrose In Aqueous Solution At Room Temperature. Advanced Materials Proceedings, 1(1), 25-31. DOI:10.5185/amp.2016/106
- 10. Subhadip Chakraborty and Debasish Das Mahanta, Local Solvation Behavior in Micro-heterogeneous and in Phase-separated Aqueous Alcohol Solutions, Biointerface Research in Applied Chemistry. 2024, 14, 1.
- 11. Debopam Bhattacharya, **Subhadip Chakraborty**, Ditipriya Hazra, Amlan Roychowdhury, Anupam Karmakar, and Sanatan Chattopadhyay. "Molecularlevel analysis of alkyl chain dependent voltage-induced microfluidic alcohol droplet actuation on Teflon/Pt/glass substrate: Revealing the unconventional directional movement." Journal of Molecular Liquids (2024): 126576.
- 12. Aindrila Roy, Debopam Bhattacharya, Payel Biswas, **Subhadip Chakraborty**, Rajen Haldar, and Sanatan Chattopadhyay. "Electrochemical Understanding of the Difference between Spherocytes Suspension from Normal Discocytes for Hemolytic Anemia Detection." IEEE Sensors Letters (2024).
- 13. Ria Saha, **Subhadip Chakraborty**, Krishnendu Sinha, Partha Pyne, Sreya Pal, Anjan Barman, Suman Chakrabarty, and Rajib Kumar Mitra. *Ion-Pairing Propensity in Guanidinium Salts Dictates Their Protein (De) stabilization Behavior*. **The Journal of Physical Chemistry Letters** 15 (2024): 10341-10348.
- 14. Debopam Bhattacharya, **Subhadip Chakraborty**, Anupam Karmakar, and Sanatan Chattopadhyay, *Understanding the voltage-induced electrowetting* and microfluidic droplet movement phenomena on a Teflon-on-flexible (TOF) substrate, **Physics of Fluids**. 2024, 36.
- 15. Pratap Kumar Pal, **Subhadip Chakraborty**, Rajib Kumar Mitra and Anjan Barman: Optimizing the Polarization and Antireflection Characteristics of Metallic Wire Grid Structures in the Terahertz Frequency Range. **Optical Materials, Accepted**.
- Kakali Ghoshal, Subhadip Chakraborty, Chirantan Das, Sanatan Chattopadhyay, Subhankar Chowdhury, Maitree Bhattacharyya: Dielectric properties of plasma membrane: A signature for dyslipidemia in diabetes mellitus. Archives of Biochemistry and Biophysics 10/2017; 635., DOI:10.1016/j.abb.2017.10.002
- 17. Chirantan Das, **Subhadip Chakraborty**, Krishnendu Acharya, Nirmal Kumar Bera, Dipankar Chattopadhyay, Anupam Karmakar, Sanatan Chattopadhyay: *FT-MIR supported Electrical Impedance Spectroscopy based study of sugar adulterated honeys from different floral origin*. **Talanta** 05/2017; 171., DOI:10.1016/j.talanta.2017.05.016
- 18. Sabarni Dutta, **Subhadip Chakraborty**, Michael Drew, Antonio Frontera, Ashutosh Ghosh: *Two Geometrical Isomers of a 1D Coordination Polymer: Rationalization by Theoretical Calculations and Variation of Electrical Properties with the Change in Binding Mode of Dicarboxylate Linker*, **Crystal Growth & Design, 2019**, 10, 5819.
- Chirantan Das, Subhadip Chakraborty, Nirmal Kumar Bera, Dipankar Chattopadhyay, Anupam Karmakar, Sanatan Chattopadhyay: Quantitative estimation of soda ash as an adulterant in aqueous sucrose solution by employing electrical impedance and capacitance spectroscopy, Measurement, 2019, 148, 106937.
- Chirantan Das, Basudev Nag Chowdhury, Subhadip Chakraborty, Subhrajit Sikdar, Rajib Saha, Anuraag Mukherjee, Anupam Karmakar, and Sanatan Chattopadhyay. A diagrammatic approach of impedimetric phase angle-modulus sensing for identification and quantification of various polar and nonpolar/ionic adulterants in milk. LWT, 2020, 136, 110347.
- 21. Chirantan Das, Subhadip Chakraborty, Nirmal Kumar Bera, Krishnendu Acharya, Dipankar Chattopadhyay, Anupam Karmakar, Sanatan Chattopadhyay: Impedimetric Approach for Estimating the Presence of Metanil Yellow in Turmeric Powder from Tunable Capacitance Measurement. Food Analytical Methods, 2019; 12, 1017. DOI:10.1007/s12161-018-01423-1
- 22. Arpita Adhikari, Sriparna De, Dipak Rana, Jyotishka Nath, Debatri Ghosh, Koushik Dutta, **Subhadip Chakraborty**, Sanatan Chattopadhyay, Mukut Chakraborty, Dipankar Chattopadhyay: Selective sensing of dopamine by sodium cholate tailored polypyrrolesilver nanocomposites, **Synthetic Metals**, **2020**, 260, 116296.
- Shramana Roy Barman, Subhadip Chakraborty, Aniruddha Mukhopadhyay, Sanatan Chattopadhyay: Optical Analysis Authenticated Electrical Impedance Based Quantification of Aqueous Naphthalene. Brazilian Journal of Analytical Chemistry 2018, 5 (21), 30. DOI: 10.30744/brjac.2179-3425.2018.5.21.30-39

#### **B. Book Chapter**

 Sanatan Chattopadhyay, Subhadip Chakraborty, Chirantan Das, Rajib Saha: Recent progresses on micro- and nano-scale electronic biosensors: A review. Nanospectrum: A Current Scenario, Edited by S. Chakrabarti, P. Mukherjee, G. Khan, A. Adhikary, P. Ptra, J. Bal, 01/2015: chapter 2. Recent progresses on micro- and nano-scale electronic biosensors: A review: pages 19-40; Allied Publishers Pvt. Ltd.., ISBN: 978-93-85926-06-8.

#### **C. Conference Proceedings**

- 1. Subhadip Chakraborty, Chirantan Das, Rajib Saha, Sreyasi Das, Raghwendra Mishra, Roshnara Mishra, Anupam Karmakar, Sanatan 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, Indian Institute of Engineering Science and Technology, Shibpur; 03/2018, DOI:10.1109/ISDCS.2018.8379645
- Subhadip Chakraborty, Chirantan Das, Rajib Saha, Anupam Karmakar, Sanatan Chattopadhyay, Arindam Chatterjee, Madhusudan Das: <u>Dielectric study of kidney stones by fabricating an MIS structure: Material analysis and challenges</u>: INTERNATIONAL SEMINAR CUM RESEARCH COLLOQUIUM ON MEMS based Sensors and Smart Nanostructured Devices, 2019.
- 3. Subhadip Chakraborty, Anupam Karmakar, Sanatan Chattopadhyay: Recent Advances in Lab-On-a-Chip [LOC] Impedimetric Biosensors Integrated with Digital Microfluidic System. B.N. Seal Journal of Science; Volume: VIII; Issue No. 1; September, 2016
- 4. Chirantan Das, **Subhadip Chakraborty**, Anupam Karmakar, Sanatan 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, Indian Institute of Engineering Science and Technology, Shibpur; 03/2018, DOI:10.1109/ISDCS.2018.8379634
- Kakali Ghoshal, Subhadip Chakraborty, Chirantan Das, Sanatan Chattopadhyay, Subhankar Chowdhury, Maitree Bhattacharyya: Unveiling the structure-function aspects of PBMCs explores new insights in diabetes and dyslipidemia. Miami Winter Symposium, 2017, Miami, USA; 01/2017
- 6. Anuraag Mukherjee, **Subhadip Chakraborty**, Chirantan Das, Anupam Karmakar and Sanatan Chattopadhyay: Study of Optical and Electrical Characteristics of chemically extracted Lotus and Taro Bio-Wax for Hydrophobic Surface Engineering. OPTRONIX-2019.
- Alivia Basak, Subhadip Chakraborty, Chirantan Das, Anuraag Mukherjee, Rajib Saha, Anupam Karmakar, Sanatan Chattopadhyay: Electrically isolated buried electrode biosensor for detecting folic acid concentration. IEEE International Symposium on Devices, Circuits and Systems, Indian Institute of Engineering Science and Technology, Shibpur; 03/2020.
- Chirantan Das, Subhadip Chakraborty, Anupam Karmakar, Sanatan Chattopadhyay: Comparative study for the impedimetric detection and quantification of adulterants in different bio-consumables. IEEE International Symposium on Devices, Circuits and Systems, Indian Institute of Engineering Science and Technology, Shibpur; 03/2020.
- Debopam Bhattacharya, Subhadip Chakraborty, Anuraag Mukherjee, Anupam Karmakar, and Sanatan Chattopadhyay: Design and Simulation of an Open EWOD Based Digital Microfluidic Device for Droplet Actuation Using COMSOL. In International Workshop on the Physics of Semiconductor and Devices, pp. 169-179. Singapore: Springer Nature Singapore, 2021.