Subhadip Chakraborty

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Objective

To work in a reputed institute where personal and academic skills can be developed.

Educational Qualification

Year of passing	Institute	Examination	University / Board	CGPA/ % of marks obtained	Class/ Division
2021	University of Calcutta	Ph. D.	University of Calcutta	-	-
2013	Banaras Hindu University	M.Sc. in Physics (Electronics Specialization)	BHU	7.97 (CGPA)	First
2011	A.B.N. Seal College	B.Sc. in Physics	University of North Bengal	61.5%	First
2008	Jenkins School	Higher Secondary	W.B.C.H.S.E.	85%	First
2006	Jenkins School	Madhyamik (Secondary)	W.B.B.S.E.	94.12%	First

Present Status

Working as a Temporary Faculty in the Centre for Healthcare Science and Technology at IIEST, Shibpur since 23.01.2023.

Professional Experience

Post Doctoral Research Associate, Department of Chemical and Biological Sciences, S.N. Bose National Centre for Basic Sciences: 25.06.2021 to 23.01.2023.

Academic Awards

1. **DST INSPIRE Scholarship** during Under- and Post graduation.
2. **DST INSPIRE Fellowship** to pursue Doctoral studies.
3. **DST AWSAR Award** for popular scientific story writing.

Area of Research Interest

- Experimental Biophysics.
- Bio-electronics.
- Biomedical engineering for clinical diagnostic applications.
- Nano-technology for bio-sensing applications.

Details of professional training

1. Experience in a variety of **electrical/electrochemical measurement techniques implemented in the domain of electronic sensors for bio-analytical measurements**.

2. Have expertise in **analytical modelling and simulation of sensing devices with a variety of bio-constituents**.

3. Have expertise in the **electrical characterization of a wide variety of physiological, chemical and environmental constituents**. Well aquinted with relevant **LabVIEW** interfacing.

4. Have expertise in **designing and fabricating Point of Care devices for clinical measurements**.

5. Have experience of fabricating **nanowire based sensing devices**.

6. Have work experience in **Dielectric Relaxation, THz**, **FTIR and UV-vis spectroscopic studies.**

7. Have expertise in **classical molecular dynamics (MD) simulations**.

7. Have experience in **surface property analysis by contact angle measurement**.

8. Well acquainted with the following experimental techniques which have been employed in the research tenure:

a) Scanning electron microscopy
b) Atomic force microscopy
c) X-ray diffraction

Course taught

1. Data Analytics and Soft Computing (Biomedical Engineering M.Tech).
2. Biomedical Sensors and Instrumentation (Biomedical Engineering M.Tech).
3. Nano and Micro-fabrication Techniques (Biomedical Engineering M.Tech).
4. Nanotechnology in medicine and biology (PG level Open Elective Subject).

Transferable Skills

- Organization.
- Teamwork.
- Project management.
- Laboratory management.
- Public speaking.

Projects

1. Have worked on the project "**Centre of Excellence in Systems Biology & Biomedical Engineering**" (Phase I & II) while pursuing Ph.D. as an independent fellow.
2. Associated with the WBDITE sponsored project **"Design and Implementation of Digital Micro-fluidic Based Chips for Bio-Medical Applications"** while pursuing Ph.D. as an independent fellow.
3. Associated with the DST-SERB sponsored project **"Point-of-care Electronic Diagnosis of Anemic Diseases by Employing Impedimetric Techniques"** while pursuing Ph.D. as an independent fellow.

Experience in Dissertation Mentoring

Have mentored Fifteen (15) Post Graduate and Five (5) Under Graduate dissertations.

International/ National Conferences as Contributory Speaker

Have participated in Four (4) International and Two (2) National Conferences as a contributory speaker.

International conferences as a contributory speaker

1. ICMTECH- 2016, Delhi University, Delhi.
2. ISDCS-2018, IIEST, Shibpur.
3. IWPSD-2019, SNBNCBS and IIT-KGP, Kolkata.
4. MSSND-2019, Jadavpur University, Kolkata.

Invited Lecture

One Day International Webinar on Emerging Trends in Electronic Science, organised by Department of Electronics in collaboration with IQAC of Fakir Chand College, Diamond Harbour, West Bengal, India.

Title of Talk: ***Genesis of Lab-on a-Chip Devices for Electronic Bio-sensing.***

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.
2. **Subhadip Chakraborty**, Partha Pyne, Rajib Kumar Mitra, and Debasish Das Mahanta. "Hydrogen bond structure and associated dynamics in micro-heterogeneous 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 two-electrode 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, Accepted.**
11. 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**, **Accepted.**
12. 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**.
13. 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

14. 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
15. 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.
16. 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.
17. 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 non-polar/ionic adulterants in milk.* **LWT, 2020,** 136, 110347.
18. 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
19. 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.
20. 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

1. 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
2. **Subhadip Chakraborty**, Chirantan Das, Rajib Saha, Anupam Karmakar, Sanatan Chattopadhyay, Arindam Chatterjee, Madhusudan 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, 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
5. 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.
7. 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.
8. 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.

Total Citation: 301; h-index: 9; i-10 index: 8.

Referees for Professional Recommendation

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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.

Place: Kolkata
Date: 02.03.2024

(Subhadip Chakraborty)