

Dr. Debasis Mondal

(Post. Doc., Ph. D, M. Tech, B. Tech)

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Google Scholar: <https://scholar.google.com/citations?user=gpQ2U80AAAAJ&hl=>



CURRENT POSITION

- **Assistant Professor** 8th August 2022 – Present
- Dept. of Electronics and Communication Engineering, Swami Vivekananda University, Barrackpore, Kolkata-121, West Bengal.
- Achieved **top rank (87 %)** in the **NPTEL examination**: Sensors and Actuators, 2025
- Achieved **top rank (81 %)** in the **NPTEL examination**: Fabrication Techniques for MEMs-based Sensors: Clinical Perspective, 2025

RESEARCH EXPERIENCE

- Work as a **Post-Doctoral Fellow** (under RUSA 2.0 scheme) at the **Department of Instrumentation and Electronics Engineering, Jadavpur University**, Saltlake-2nd Campus, Kolkata-98 from 28th February 2019 to 31st March 2020.
- Work as a Junior Research Fellow (JRF) at the Department of Electronics and Telecommunication Engineering, Indian Institute of Engineering Science and Technology (IIST), Shibpur and later as a **CSIR-SRF** in the same department from 19th October 2012 to 30th September 2017.
- Work as a Project Officer at the Department of Electronics and Telecommunication Engineering, Indian Institute of Engineering Science and Technology (IIST), Shibpur under **DRDO** sponsored project from 3rd September 2008 to 2nd March 2010.
- Work as a Research Assistant at the Department of Instrumentation and Electronics Engineering, Jadavpur University under **DRDO** sponsored project from 1st September 2005 to 2nd September 2008.

EDUCATION

- Doctor of Philosophy (Ph. D)** in Engineering (**Electronics and Telecommunication**) 21st December, 2017
Indian Institute of Engineering Science and Technology (IIST), Shibpur, India
Dissertation: Development of Micro/Nano Cytosensor for Electrical Characterization of Mammalian Cells.
Supervisors:
1. Dr. Chirasree RoyChaudhuri, Assistant Professor, Department of ETCE, IIST, Shibpur.
2. Dr. Jyotirmoy Chatterjee, Associate Professor, School of Medical Science & Technology, IIT-Kharagpur.
- Master of Technology (M. Tech)** in Materials Engineering 2012
Indian Institute of Engineering Science and Technology (IIST), Shibpur, India
Thesis: Fabrication of Microcellular Traps for Electrical Characterization of Biological Cells.
Percentage scored: 74.17 %
- Bachelor of Technology (B. Tech)** in **Electronics & Instrumentation Engineering** 2005
West Bengal University of Technology, Kolkata, India
DGPA: 7.57
- Higher Secondary Examination (12th Grade)** 2000
West Bengal Council of Higher Secondary Education
Percentage scored: 72.50 %
- Madhyamik Examination (10th Grade)** 1998
West Bengal Board of Secondary Education
Percentage scored: 85.87 %

PROJECT GRANTED

- Name of the project: IoT-MT-Powered health monitoring for rural Bengal: A path to accessible and affordable care for marginalized communities
- Sponsoring Agency: Swami Vivekananda University (**Seed Grant Project**)
- Amount (in Lakhs): 2.0
- Duration: 1.5 Years
- Role: **Principal Investigator (PI)**

PATENT

- ✓ A. Bhattacharya, **D. Mondal**, B. Goswami, R. Ghosh, S. Biswas, S. Nandy, and A. Sarkar, "An expert system to determine the human condition using bilateral endosomatic EDA and the method thereof", granted on 23.09.2019, Indian Patent No. 402187

PUBLICATIONS

Journals

1. Bidhan Pramanick, Naresh Mandal, **Debasis Mondal**, Chirasree RoyChaudhuri, and Suman Chakraborty, "C-MEMS Derived Glassy Carbon Electrodes-Based Sensitive Electrochemical Biosensors", **IEEE Sensors Journal** (Impact Factor: 3.301), vol. 20, pp. 12472-12478, 2020.
2. Bhaswati Chakraborty, **Debasis Mondal**, and Chirasree RoyChaudhuri, "ZnO Nanorod FET Biosensors With Enhanced Sensing Performance: Design Issues for Rational Geometry Selection", **IEEE Sensors Journal** (Impact Factor: 3.301), vol. 20, pp. 13451-13460, 2020.
3. **D. Mondal**, R. Bose, C. RoyChaudhuri, "Real Time Monitoring of Wound Healing on Nano-patterned Substrates: Non-invasive Impedance Spectroscopy Technique", **IEEE Transactions on Nanotechnology** (Impact Factor: 2.967), vol. 15, pp. 791-800, 2016.
4. **D. Mondal**, D. Pal and C. RoyChaudhuri, "Real-Time Sensing of Epithelial Cell-Cell and Cell-Substrate Interactions by Impedance Spectroscopy on Porous Substrates", **Journal of Applied Physics (AIP)** (Impact Factor: 3.2), vol. 118, p. 044701, 2015.
5. **D. Mondal** and C. RoyChaudhuri, "Extended Electrical Model for Impedance Characterization of Cultured HeLa Cells in Non-Confluent State Using ECIS Electrodes", **IEEE Transactions on Nanobioscience** (Impact Factor: 3.75), vol. 12, pp. 239-246, 2013.
6. C. RoyChaudhuri and **D. Mondal**, "Electrode Optimization for Impedance Evaluation of Biological Cell Culture under Variable Frequency Low Intensity Sinusoidal Electric Field", **IEEE Transactions on Dielectrics and Electrical Insulation** (Impact Factor: 3.1), vol. 20, pp. 382-390, 2013.
7. **D. Mondal**, C. RoyChaudhuri, L. Das, J. Chatterjee, "Microtrap Electrode Devices for Single Cell Trapping and Impedance Measurement", **Biomed Microdevices (Springer)** (IF: 3.8), vol. 14, pp. 955-964, 2012.
8. **D. Mondal** and C. RoyChaudhuri, "Real Time *In Vitro* Monitoring and Impedance Modeling of Mammalian Cell Activities on Planar ECIS and Micro/Nano Patterned Cytosensors", **ISSS Journal of Micro and Smart Systems (Springer)**, vol. 7, pp. 107-122, 2018
9. TS. Sannyashi, S. Adhikary, D. Mondal, Sk B. Akhtar, TS. Roy, "Comprehensive Delay Analysis of CMOS NAND Gates via Cadence Simulation", **Journal of Systems Engineering and Electronics**, vol. 34, pp. 240-244, 2024, DOI: [20.14118.jsee.2024.V34I12.2029](https://doi.org/10.14118/jsee.2024.V34I12.2029)
10. S. Adhikary, **D. Mondal**, TS Sannyashi, Sk B. Akhtar, TS. Roy, "Breast Cancer Detection using Image Processing", **Journal of Systems Engineering and Electronics**, vol. 34, pp. 381-388, 2024, DOI: [20.14118.jsee.2024.V34I12.2046](https://doi.org/10.14118/jsee.2024.V34I12.2046)

Conferences

1. **D. Mondal**, S. Adhikary, and T. S. Sannyashi , “Electrical Characterization of Mammalian Cells in Real-time: A Comprehensive Review” 2nd International Conference on integrative Science and Engineering, February 22-24, 2024, Swami Vivekananda University, Barrackpore, India.
2. Shreya Adhikary, **Debasis Mondal**, Tomal Suvro Sannyashi, 5G Technology in Healthcare: A detailed Survey, 2nd International Conference on Engineering Design and Computing (ICEDC), 2024, Swami Vivekananda University, Barrackpore.
3. N. Das, A. Chakraborty, S. Ray, A. Ghorai, S. Adhikary, **D. Mondal**, “Advanced IoT Based Patient Health Monitoring System by Web-Server Technology” International Conference on integrative Science and Engineering, September 28-30, 2023, Swami Vivekananda University, Barrackpore, India.
4. B. Pramanick, N. Mandal, **D. Mondal**, C. RoyChaudhuri, S. Chakraborty “C-MEMS Derived Glassy Carbon Electrodes as Sensitive Electrochemical Biosensors” **IEEE sensors conference 2018**, October 28-31, 2018, pp.1142-1145, New Delhi, India.
5. A. Singh, M. Suresh, C. S. Sharma, **D. Mondal**, C. R. Chaudhuri, “Optimization of Carbon Electrodes for Electrochemical Biosensors: Influence of Thickness on Redox Output”, International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN: 3I-2017), December 06 - 08, 2017, p. 456, IIT Roorkee, Uttarakhand, India.
6. **D. Mondal**, A. Chaudhary, S. Roy Choudhury, A. Barui, S. Das, J. Chatterjee, C. RoyChaudhuri, “Efficacy of Coplanar Waveguide Sensor for Electrical Profiling of Keratinocytes under varied Biomatrix”, International Conference on MEMS and sensors (ICMEMSS), December 18-20, 2014, IIT Madras, Chennai, India.
7. A. Chaudhary, S. Bag, **D. Mondal**, C. RoyChaudhuri, J. Chatterjee, “Study of Honey Dilution Effects on Keratinocytes using Cell Based Sensor Association with Cardinal Molecular Expression”, International Conference on Advanced Materials and Energy Technology (ICAMET) 17-19 Dec 2014, IEST Shibpur, Howrah, West Bengal, India.
8. **D. Mondal** and C. Roychaudhuri, “Electrical Characterization of Single Biological Cell with a Microcellular Trapping Platform”, Research Scholars’ Day 2014, January 29-30, 2014, IEST, Shibpur, India.
9. **D. Mondal** and C. RoyChaudhuri, “Electrical Characterization of Biological Cells on Porous Substrate using COMSOL Multiphysics”, COMSOL CONFERENCE, 2013 October 17-18, Bangalore, India
10. **D. Mondal**, A. Barui, C. Roychaudhuri, “Cell growth monitoring of keratinocytes (HaCat) using Electric Cell Substrate Impedance Sensing (ECIS)”, 20th West Bengal State Science and Technology Congress, February28-March 2, 2013, IEST, Shibpur, India
11. **D. Mondal** and C. Roychaudhuri, “Impedance Measurement of Single Biological Cell With a Microelectrode Trapping Platform”, Indo-US Workshop on Fabronics for Healthcare, December 23-24, 2012, CMERI-Durgapur, India.
12. **D. Mondal**, R. Dev Das, C. Roychaudhuri, “Fabrication of Microelectrode Traps for Electrical Characterization of Single Biological Cell”, International Conference on Smart Materials Structures and Systems, January 04-07, 2012, p. 38, Bangalore, India.
13. N. Mondal, **D. Mondal**, C. RoyChaudhuri, A. Barui, S. Dhara, J. Chatterjee, “A Simple and Sensitive Cytosensor Based Electrical Characterization of in vitro Wound Healing Assay for Keratinocytes” 2011 **IEEE/NIH Life Science Systems and Applications Workshop (LiSSA)**, 7 – 8 April 2011, pp. 47-50, Maryland, USA.

BOOK CHAPTER

1. **Debasis Mondal**, Shreya Adhikary, Predicting congestive heart disease using machine learning algorithms on dual dataset, Recent Advancements in Computational Intelligence and Design Engineering, (**CRC Press: Taylor & Francis**), DOI: <https://doi.org/10.1201/9781003596745>, eBook ISBN: 9781003596745, 2025
2. Nirmalya Samanta, Paulami Nayek, Kakali Sengupta, Suman Debnath, Arup Ratan Biswas, Shreya Adhikary, **Debasis Mondal**, Determination of the quality of irrigation water by Fuzzy: Logic based system in irrigation, Recent Advancements in Computational Intelligence and Design Engineering (**CRC Press: Taylor & Francis**), DOI: <https://doi.org/10.1201/9781003596745>, eBook ISBN: 9781003596745, 2025

3. Raja Debnath, Shreya Adhikary and **Debasis Mondal**, Smart Traffic Management System for Urban Mobility Optimization Using IoT and Decentralized Algorithms, Innovative Approaches in Engineering Research, DOI: <https://doi.org/10.62906/bs.book.211>, ISBN: 978-93-6233-761-0, 2024
4. **Debasis Mondal**, Tanmay Sinha Roy, SK Babul Akhtar, Tomal Suvro Sannyashi and Shreya Adhikary, ECIS-Based Cell Growth Monitoring: A Comprehensive Review, Computational Techniques in Modern Engineering Research, DOI: <https://doi.org/10.62906/bs.book.210>, ISBN: 978-93-6233-525-8, 2024, 139

TEACHING EXPERIENCE

- **Subject taught:** Basic Electronics
Odd Semester (2019-20)
Dept. of Construction Engineering, **Jadavpur University**, Saltlake-2nd Campus, Kolkata-98
- **Subject taught:** B.Tech: Electronics measurements and measuring instruments, Sensors and transducers, Industrial Instrumentation, Basic Electronics, Electronic Devices, Digital Electronics, Analog and Digital Communication, VLSI & Microelectronics
M. Tech: Microelectronics Technology & IC Fabrication, Sensors
2022 Aug to till date
Dept. of Electronics and Communication Engineering, Swami Vivekananda University, Barrackpore,

TRAININGS UNDERGONE

- Familiarisation Training in the Department of Operation and Maintenance at **NTPC, Farakka** from 25th June to 24th July, 2004.
- Hands on training for the operation and maintenance of MJB3 Mask Aligner, High Temperature Furnace, Spin Coating System and also got exposed to the clean rooms and related infrastructure at **CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani**, March 21-26, 2010.
- Hands on training workshop on Nanofabrication Technologies at **IIT Bombay**, October 8-12, 2012.

AWARDS

- Achieved **top rank (87 %)** in the **NPTEL examination**: Sensors and Actuators, 2025
- Achieved **top rank (81 %)** in the **NPTEL examination**: Fabrication Techniques for MEMs-based Sensors: Clinical Perspective, 2025
- Recipient of 2nd Best Paper Award at “Research Scholar Day 2014” at IEST Shibpur, India in 2014, 29th -30th January.
- Awarded Senior **Research Fellowship (SRF)** from **Council of Scientific & Industrial Research (CSIR)** in 2014.

PERSONAL DETAILS

- Date of Birth: 2nd May, 1982
- Nationality: Indian
- Language known: Bengali, English Hindi
- Marital Status: Married

Date:

Place:

DEBASIS MONDAL